

# CSCI 140 LAB OUTLINE

## C++ LANGUAGE AND OBJECT DEVELOPMENT

TEXT: Online Cyberclassroom C++ in the Lab Deitel/Deitel/Neito

TEXT: C++ How To Program 5th Edition Deitel/Deitel

**Approved:**

**Effective:**

MATERIAL TO BE COVERED	SECTIONS FROM TEXT	TIME LINE
Introduction, general hardware notions, memory organization. Gaining access to your machine and local resources, student local/global accounts on MS Win2000 LAN and UNIX subnet. Accessing local file system and file server. Using text editors (IDE, MS DOS, UNIX), getting started with C++, a simple C++ program. Utilizing C++ arithmetic, selection structure (if, if/else and switch), repetition structure (while, for and do/while). Practice with arithmetic assignment operators, increment and decrement operators, relational operators, logical operators, preprocessor directives (#include, #define), macros, conditional compilation, assertions.	1, 2, 4, 5 & App F1-F8	5 Hours
Programming with 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, recursive functions, inline functions, function overloading.	6	3.75 Hours
Utilizing C++ concepts: arrays, pointers and strings; on-dimensional and multidimensional arrays, array applications to sorting and searching, pointer variables, pointers vs. arrays, pointer arithmetic, arrays of pointers, function pointers. Understanding passing arrays to functions. Basic character and C-string processing, bitwise operators, character and string libraries.	7 & 8	3.75 Hours
Using C++ classes, struct vs. class, encapsulation, class scope, controlling access to members (public and private), constructors, destructors, interface and implementation files, software reusability, constant objects and constant member functions, friends, the "this" pointer, static class members, composition, data abstraction, information hiding. managing dynamic memory allocation/deallocation (new and delete) in C++.	3, 9, & 10	7.5 Hours
Operator overloading: fundamentals and restrictions, overload as member functions vs. as friend functions, stream-insertion<<and stream-extraction>> operators, overloading unary operators and binary operators, copy constructor, converting between types, case studies, C++ strings.	11 & 18	3.75 Hours
Implementing inheritance and polymorphism: base class and derived classes, protected members, 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, virtual destructors, the v-table.	12 & 13	6.25 Hours

**C++ LANGUAGE AND OBJECT DEVELOPMENT**  
 TEXT: Online Cyberclassroom C++ in the Lab Deitel/Deitel/Neito  
 TEXT: C++ How To Program 5th Edition Deitel/Deitel

**Approved:**

**Effective:**

<b>MATERIAL TO BE COVERED</b>	<b>SECTIONS FROM TEXT</b>	<b>TIME LINE</b>
Utilizing C++ stream Input/Output: stream I/O classes and objects, stream output, stream input, stream manipulators, stream format states, stream error states, unformatted I/O with read and write.	15	2.5 Hours
Using templates in C++: function templates, class templates	14	1.25 Hours
How does exception handling work in C++: error-handling techniques, basics of C++ exception handling (try, throw and catch).	16	1.25 Hours
Utilizing file in C++, file processing data heirarchy, files and streams sequential access files, random access files.	17	2.5 Hours
Basics of data structures and Standard Template Library: linked lists, stacks, queues, trees, introcuton to STL, containers and algorithms.	21 & 23	2.5 Hours

\*\*\* 1 Hours = 1 hour of face time. \*\*\*\*This outline allows for 3 hours of review, testing and project presentation.

16 Week Term: 1 week = 2.8333 hours (face time)    6 Week Term: 1 week = 7.5 hours (face time)

**NOTES:**

There are 6 lab handouts that will direct student work through all the chapters we cover from the lab book. The lab handouts require that you show your work. Work will be collected and graded. There are also 4 projects that will be graded. One project will require that you write a report and make a class presentation. The lab and projects grade will represent up to 35% of the course grade. A few questions on the comprehensive Final Exam will be on specific problems from the last two projects.

Submitted by: Pop