

Course: MS-3832 Advanced C++ Programming (Sec. 001)

Fall, 2005

Time & Loc: Tues, Thurs: 3:00pm – 3:50pm in R-103

Lab: Fri: 2:00pm – 3:50am in R-103

Instructor: Dr. Jeffrey Blessing

Email: blessing@msoe.edu and www.msoe.edu/~blessing/ms3832

Office: R-305

Hours: Mon thru Fri: 11am – 11:50am;
Mon thru Thr: 2:00pm – 2:50pm, and by appointment

Phone: 277-7194

Text: C++ *How to Program*, 4th Edition, by Deitel & Deitel, Prentice-Hall, 2002,
packaged in *The Complete C++ Training Course*, 4th Edition by Deitel.

Objective: This course continues looking into computer systems and software by studying one of the popular high-level languages, C++. The course provides in-depth study into the structured concepts of program and algorithm design. Specifically, the inheritance and polymorphism features of the language are covered, with particular focus placed on algorithm development using the Standard Template Library (STL). Lab exercises using Microsoft's Visual C++ and Unix/Linux K-Develop and Gnu g++ compiler will be used to reinforce the topics presented in the lecture, while demonstrating the multi-platform nature of this widely-adopted systems programming language.

(Prerequisite: MS-3812)

Grading:*

| | |
|-----------------|-----|
| Pgming Assign. | 40% |
| Weekly Quizzes | 30% |
| Final (week 11) | 30% |

* No incomplete grades will be given without very extenuating circumstances.

Attendance: Attendance may be taken at each lecture. Exam and Quiz material will come from both the textbook and classroom discussions.

Late Policy: Assignments are due at the beginning of the class period that was designated as their due date. A 10% penalty will be assessed for each day an assignment is late.

Class Sharing: You are encouraged to share information found in newspapers, books, periodicals, on the web, etc. related to the topics in this course. You can even go as far as to show another student your work. However, you are not to give your work to other students. If you use content from another source, you must reference that source in your work. Any attempt to pass off someone else's work as your own is plagiarism and is subject to academic discipline.

Chronology:

- Review of the Microsoft Visual Studio Environment
- Projects, Separate Compilation, Building & Debugging Programs
- Review the C++ Programming Language:
 - Pointers and References

Object-oriented Programming Basics

New topics in the C++ Language:

Inheritance and taxonomies

Polymorphism and dynamic behavior

String Processing

Data Structures (Vectors, Lists, Matrices)

Templates and the STL

Recursive Procedures & Functions

Strings, Lists, Stacks, Queues

Sorting Algorithms (Heapsort, Quicksort, Mergesort)

Trees & Binary Trees

Hashing Algorithms and Hash Tables

Sets & Multi-sets

Maps & Multi-maps

Graph Algorithms: (if time)

Graph Representation

Shortest Path Problems

Spanning Trees

Circuits & Cycles

Directed & Undirected Graphs