COURSE DESCRIPTION

This course assumes no prior computer programming language experience. It is designed for learning object oriented programming using C++ programming language. Basic concepts such as data types, control structures, classes design, class hierarchy, class libraries, inheritance, polymorphism, I/O handing, exceptions, templates and standard template libraries will be covered. This course is focus on hand-on experience of developing financial related computer applications.

COURSE MATERIALS

Reference Text: Problem Solving with C++, by Walter Savitch, 7th ed. Addison Wesley (good for beginner)
Introduction to C++ for Financial Engineers: An Object-Oriented Approach, by D. Duffy, Wiley

COURSE OUTLINE

Introduction to Computers and C++ Programming
The basic of C++
C++ data type, expression
Input/output
Flow controls
Predefined functions and user defined functions
Function overloading
Call by reference and call by value
Stubs and Drivers for debugging functions
More on I/O
Arrays, Strings and vectors
Pointers and dynamic arrays
Definition of classes
Class components
Object interaction
Grouping objects
Designing classes
Friend functions
Operator overloading
Namespaces and separate compilations
Pointers and Linked lists
Stacks and queues Recursion
Class inheritance
Polymorphism
Handling errors and exceptions
Templates
Standard template library
C++ applications in finance

EVALUATION

<table>
<thead>
<tr>
<th>Component</th>
<th>Weight</th>
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<tbody>
<tr>
<td>Homework</td>
<td>40%</td>
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<tr>
<td>Quizzes</td>
<td>5%</td>
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<tr>
<td>Midterm</td>
<td>15%</td>
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<tr>
<td>Final Project</td>
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<tr>
<td>Final Exam</td>
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GRADES

A >=92, A- 90-92, B+ 86-89, B 83-85, B- 80-82, C+ 76-79, C 73-75, C- 70-72, D+ 66-69 D 60-65, F<60