Stuart School of Business
ILLINOIS INSTITUTE OF TECHNOLOGY

Illinois Institute of Technology
Stuart School of Business
Course Syllabus
Fall 2010

Instructor Information

Name:	Ben Van Vliet
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Office hours:	Mondays, Thursdays from 1:00 pm – 5:00 pm. Or by appointment.
TA Information:	None

Course Information

Course #: MSF 575
Course name: C++ with Financial Applications
Course description:

This begins with a review of the C/C++ programming language, from data types, to functions, arrays, classes, dynamic memory management, data structures and the Standard Template Library. Then the focus shifts to understanding C/C++ as it applies to financial modeling, including bond and option pricing, and portfolio optimization. The course will also cover numerical techniques including simulation, root-finding and linear algebra.

Course day and time: Wednesdays, 1:00 – 3:30 pm
Course Objectives: Upon completion of this course, students will understand:

1. ISO C/C++ Syntax: including pointers, objects, Standard Template Library and design patterns.
2. Financial Modeling: including valuation techniques as well as methods of risk management.

In the end, students knowledge will be sufficient to comprehend a widely-known C++ for financial engineering text.
Pre-requisites: None.

Required Course Materials

Text:	*C++ with Financial Applications* (pdf), Van Vliet (C++FA)
Materials:	
Software:	MS Visual Studio 2008 (available in Stuart labs)
Programming Skills:	None
Text References:	None

Recommended Course Materials

Supplemental texts/readings:	*Financial Numerical Recipes in C++* (pdf), Odegaard
Software:	
Some other good books:	*C++ from the Ground Up*, Schildt
Text References:	Any other introductory C/C++ programming book.

Course & Instructor Policies

Make-up:	Course work may be made up with prior consent of the instructor.
Late work:	Late assignments will not be accepted.
Special assignments:	None.
Class attendance:	Attendance is required.
Classroom conduct:	Class participation is strongly encouraged.
Discipline:	

Grading System/Policy

Percentages for assignments:

Mid Term Exam	50%
Final	50%

Grade scale: A: 90% - 100%; B: 70% - 90%; C: 55% - 70%; E: < 55%.
Incompletes: Incomplete grades will not be given without prior consent of the instructor.

Disabilities

Reasonable accommodations will be made for students with documented disabilities. In order to receive accommodations, students must obtain a letter of accommodation

from the Center for Disability Resources and make an appointment to speak with me as soon as possible. My office hours are listed on the first page of the syllabus. The Center for Disability Resources is located in the Life Sciences Building, room 218, 312-567-5744 or disabilities@iit.edu

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Copyright/Plagiarism/Academic Integrity

Rules on Plagiarism and Academic Integrity

Plagiarism and other violations of academic integrity are strictly prohibited and subject to penalty as defined by the University. Information about the IIT academic requirements for graduate students can be found at:

http://www.iit.edu/graduate_admission/admitted_students/orientation/pdfs/Graduate_Student_Handbook.pdf

The academic integrity material in the handbook is found at page 31 in the IIT student handbook. Other parts of the handbook also contain material and rules that apply to graduate students. Students will be expected to conform to the rules and procedures set forth in the handbook.

The code of conduct governing writing by students at IIT requires original writing, prohibits plagiarism and provides severe sanctions for plagiarism. Original writing consists of thinking through ideas and expressing them in your own way. If the ideas are from other sources, use footnotes or other citation methods to indicate the source of the ideas. Plagiarism is the act of passing off someone else's work or ideas as your own. The sanctions include, but are not limited to, expulsion and the imposition of a punitive grade of 'E'.

What is Plagiarism?

Often there is some confusion as to what constitutes plagiarism. Plagiarism is the act of passing off someone else's work as your own. To assist in providing an understanding of the types of writing that constitute plagiarism, three types of are each discussed below. Also discussed below is the problem of "string citations." String citations are not plagiarism, but many professors will reject string citations because they are not the student's original work.

Word for Word copying: The use of any phrase or excerpt from another source requires the use of quotation marks around the copied material, or if the material is more than a few lines, the copied material should be placed in its own indented paragraph. A citation in proper form is always required to identify the source.

Plagiarizing by Paraphrase: When a writer uses a source, substitutes words and sentences, or even changes the order but keeps the meaning of the original, a citation is required. In the example given below, the original is on the left. The paraphrase in the right box constitutes plagiarism.

Original: It is not generally recognized that at the same time when women are making their way into every corner of our work-world, only one percent of the professional engineers in the nation are female. A generation ago, this statistic would have raised no eyebrows, but today, it is hard to believe.	Paraphrase: Few people realize now that women are finding jobs in all fields, that a tiny percentage of the country's engineers are female. Years ago this would have surprised no one, but now it seems incredible.

The writer could avoid plagiarism here by acknowledging the source and providing a proper citation.

Mosaic Plagiarism: Here the writer lifts phrases and terms from the source and embeds them in his own prose. An example follows in which the lifted phrases are underlined:

The pressure is on to get more women into engineering. The engineering schools and major corporations have opened wide their gates and are recruiting women zealously. Practically all women engineering graduates can find attractive jobs. Nevertheless, at the moment, only one percent of the professional engineers in the country are female.

Mosaic plagiarism is sometimes caused by careless note taking. However, it looks dishonest and is judged as such. The use of quotation marks around the original wording and citation avoid the problem of plagiarism. Often a better approach is to use paraphrase or to quote directly (with appropriate citations).

Plagiarism can be avoided by providing citations for the sources of any material, including *ideas, phrases, or sentences* that you have used in your paper. A number of different systems are available for providing citations. The key to all of them is that the writer must clearly identify for the reader the sources of all material (including ideas) that have come from somewhere else.

String Quotation Problem: Sometimes a student will write a paper consisting of a string of quotations. It is usually much better for a student to provide his or her own analysis and write the paper in his or her own words. Many professors will reject a paper consisting primarily of material quoted from other sources because they do not view such a paper as the student's own work. You should understand your professor's view with respect to string quotations prior to writing your paper.

Academic/Class Calendar & Assignments

Exam Date: December, 2010

Week 1: Topics: IDE. Memory. Variables, References, Pointers
Reading Assignments: C++FA 1.1, 1-14

Week 2: Topics: Arrays and Pointer Arithmetic
Reading Assignments: C++FA 1.1, 15-24

Week 3: Topics: Operators, Decision and Repetition Structures
Reading Assignments: C++FA 1.2, 1-11

Week 4: Topics: Functions
Reading Assignments: C++FA 1.2, 12-21

Week 5: Topics: Functions
Reading Assignments: C++FA 1.2 22-33

Week 6: Topics: Classes and Objects
Reading Assignments: C++FA 1.3, 1-14

Week 7: Topics: Inheritance and Polymorphism
Reading Assignments: C++FA 1.4, 1-11

Week 8: Topics: Mid Term Review
Reading Assignments:

Week 9: Topics: Mid Term Exam
Reading Assignments: C++FA 2.1, 1-9

Week 10: Topics: Templates and Data Structures
Reading Assignments: C++FA 2.1, 10-17

Week 11: Topics: STL Classes
Reading Assignments: C++FA 2.3, 1-9

Week 12: Topics: Simulation and Matrices
Reading Assignments: C++FA 2.3, 10-11

Week 13: Topics: Issues in Performance and Libraries
Reading Assignments: C++FA 2.4, 1-2

Week 14: Topics: Design Patterns
Reading Assignments: C++FA 2.2, 1-6

Week 15: Topics: Semester Review
Reading Assignments:

Week 16: Topics: Final Exam