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**Rutgers University**
**Finance and Economics Department**
**Fall 2018**
**Special Topic Object-Oriented Programming I (22:839:614:40)**

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**Instructor**: Dr. John Jenq    jjenq@rutgers.edu
**Time**: Wednesday 6:00pm – 9:00pm @ 1WP 216
**Office Hour**: By appointment, WP 1105F
**TA** Yuanhan Hu  yuanhan.hu@rutgers.edu (Office Hour: Thursday. noon-2pm, MQF study area)
**Recitation:** Thursday 9am to 12pm  @WP 216
**Final Exam**: Wed, Dec. 5, 2018
**Final Project**: Wed, Dec. 12, 2018
**Textbook** C++ How to Program, by P. J. Deitel and H. M. Deitel, 10th ed. Prentice Hall,
ISBN13: 9780134448237

**Course Description**

This course assumes some computer programming language experience like C. 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. Other C++ features will also be covered. This course is focus on hand-on experience of developing financial related computer applications

**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 and other C++ library
C++ applications in finance

**Evaluation**

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|---|---|---|
| Homework | 30% | |
| Midterm Exams | 30% | (tentatively 10/3 and 11/7 each 15%) |
| Projects | 15% | |
| Final Exam | 25% | |

**Reference Text**  Problem Solving with C++, by Walter Savitch, 7th ed. Addison Wesley (easy for beginner)
Introduction to C++ for Financial Engineers: An Object-Oriented Approach, by D. Duffy, Wiley
Objects, Abstraction, Data Structures and Design Using C++, by Elliot B. Koffman, and Paul A. T. Wolfgang, Wiley, ISBN 978-0-471-46755-7
Introduction to C++ for Financial Engineers: An Object-Oriented Approach, by D. Duffy, Wiley

**Grades**

A >=93, A- >=90-93, 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