FIN-218F-1: Portfolio Financial Modeling

Spring 2018

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Professor Office Hours: TBA

Class Meeting Days & Times: Tuesdays 12:30PM - 3:20PM

Class Meets in Room: TBA

Professor Office Hours:

Teaching Assistant: Shian Zhu
Email: zhus@brandeis.edu

TA Office Hours: TBA

COURSE DESCRIPTION

This course introduces fundamental methods and frameworks for portfolio financial modeling. Topics covered include mean-variance- covariance portfolio optimization, Black-Litterman approach to portfolio optimization, Monte Carlo simulation and other portfolio modeling methods. The course is designed to be hands-on implementation of these models using data and hence requires solid understanding of matrix and array functions and how to implement them in excel and Visual Basic Applications (VBA).

PREREQUISITES

FIN 201a and FIN 212a. Students are expected to know basic excel.
LEARNING GOALS:

A) DEVELOP PORTFOLIO MODELING SKILLS IN EXCEL AND VBA

B) DEVELOP SKILLS FOR IMPLEMENTING MEAN VARIANCE COVARIANCE PORTFOLIO OPTIMIZATION

C) DEVELOP SKILL SET FOR BLACK-LITTERMAN APPROACH TO PORTFOLIO OPTIMIZATION

D) INTRODUCES MONTE CARLO SIMULATION OF INVESTMENTS AND PORTFOLIOS

Required Textbook


I may assign additional readings on some of the topics during the semester.

Regular reading of the Wall Street Journal, the Economist, Financial Times and other financial press is strongly recommended.

Course Requirements

**Attendance:** All students are required to attend and actively participate in each class throughout the semester. We will take class attendance. Unless there is a documented medical and family emergency where students may be excused upon providing documentation, any student who miss a class, his/her final percentage point will be reduced by 1% for each class missed.

**Final Grade Determination**

- Financial Modeling Project 35%
- Presentation of Financial Modeling Project 15%
- Financial Modeling Case/Assignments 30%
- Class Participation 20%

Total 100%

Please read the following description of what is expected in each of the above section used for determination of the total course grade.
Modeling Assignments/Problem Sets

The best way to learn financial modeling is by doing it! There will be series of assignments and problem sets designed to give students an opportunity to develop portfolio financial modeling skills. Some of the assignments could be done in a group of 2-3 students and some of them are individual assignments. I will let you know which assignments are group assignments and which are done individually.

Portfolio Modeling Project/Final Exam

Early in the semester, I will give you the option to do portfolio modeling final project or take final exam. Students who decide to do the final project will choose a real institutional portfolio and model using the modeling methods that we will be developing throughout the semester. I will give you further guideline about the project in due course.

Class Participation

The teaching methodology of this course combines lectures, cases and textbook readings as stated above and hence students are expected to come prepared to each class and actively participate in class discussion

Workload Expectation

Success in this two-credit course is based on the expectation that students will spend a minimum of 9 hours of study time per week in preparation for class (readings, papers, discussion sections, preparation for exams, etc.)

Academic Honesty

You are expected to be honest in all of your academic work. Please consult Brandeis University Rights and Responsibilities for all policies and procedures related to academic integrity. Students may be required to submit work to TurnItIn.com software to verify originality. Allegations of alleged academic dishonesty will be forwarded to the Director of Academic Integrity. Sanctions for academic dishonesty can include failing grades and/or suspension from the university. Citation and research assistance can be found at LTS - Library guides.

ACCOMMODATION FOR DISABILITIES:

If you are a student with a documented disability on record at Brandeis University and wish to have a reasonable accommodation made for you in this class, please see me immediately. For more information go to: http://www.brandeis.edu/disability

Office Hours
You may see me during my regular office hours or by appointment (which you should request by email).

**Use of Laptop Computers and Cell Phones in Class:**
Cell phones must be turned off during lectures. Laptops may be used but only to browse the lecture slides or take notes.

**Detailed COURSE OUTLINE**

<table>
<thead>
<tr>
<th>Class</th>
<th>Topics</th>
<th>Readings</th>
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| 1     | • Introduction to Portfolio Financial Modelling  
       • Data Tables  
       • Matrices implementations in excel  
       • Array Functions | Financial Modelling, 4th ed. Chapters 31, 32, 34 |
| 2     | • Introduction to Visual Basic Application (VBA)  
       • Mean Variance Portfolio Optimization-Introduction | Financial Modelling, 4th ed. Chapters 8 and 36 |
| 3     | • Estimating Variance-Covariance Matrix  
       • Efficient Portfolio Optimization | Financial Modelling, 4th ed. Chapters 9 and 10 |
| 4     | • Efficient Portfolio Without Short Sales  
| 5     | • The Black-Litterman Approach to Portfolio Optimization | Financial Modelling, 4th ed. Chapter 13 |
| 6     | • Monte Carlo Simulations for Investments and portfolios | Financial Modelling, 4th ed. Chapters 25, 26 and 27 |
| 7     | Final Project Presentation: During the final exam scheduled by Registrar | |

This is preliminary or draft schedule. I reserves the right to add and remove readings from the course and to alter or modify the lecture schedule as required. I will give you advance notice of any such changes or modifications.