



FIN-218F-1: Portfolio Financial Modeling

Fall 2018

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Professor Office Hours: Mondays and Wednesdays 2pm-3pm

Other times by appointment

Class Meeting Days & Times: Fridays 9:30am-12:20pm

Class Meets in Room:

Teaching Assistant: Hieu Nguyen

Email: hieunt78@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 USING EXCEL AND VBA**
- B) DEVELOP SKILLS FOR IMPLEMENTING MEAN VARIANCE COVARIANCE PORTFOLIO OPTIMIZATION**
- C) DEVELOP SKILL SETS FOR BLACK-LITTERMAN APPROACH TO PORTFOLIO OPTIMIZATION**
- D) UNDERSTAND MONTE CARLO SIMULATIONS FOR INVESTMENTS AND PORTFOLIOS**
- E) APPLICATION OF PORTFOLIO MODELING SKILLS DEVELOPED IN THE COURSE TO REAL INSTITUTIONAL PORTFOLIO MODELING PROJECT AND PRESENTATION**

Required Textbook

Financial Modeling, by Simon Benninga, 4th edition, The MIT Press, Cambridge, MA

I may assign other 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

The best way to learn financial modeling is by doing it! There will be three modeling assignment that are designed to give students an opportunity to develop portfolio financial modeling skills at each stage based on real market data. Each of the assignments are designed to be building blocks of an integrated portfolio modeling project.

Portfolio Modeling Project and Presentation

A final portfolio modeling project is designed to apply and integrate the skills developed in the course to real world institutional portfolios modeling. Therefore, a successful completion of this course requires a final portfolio financial modeling project and presentation. You will form a group of two and select institutional portfolios that I will approve early in the semester. I will provide a detailed guideline and framework for this 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

<u>Date</u>	<u>Topics</u>	<u>Readings</u>
8/31	<ul style="list-style-type: none"> • Introduction to Portfolio Financial Modelling • Data Tables • Matrices implementations in excel • Array Functions 	Financial Modelling, 4 th edition. Chapters 31, 32,34
9/7	<ul style="list-style-type: none"> • Introduction to Visual Basic Application (VBA) • Mean Variance Portfolio Optimization-Introduction 	Financial Modelling, 4 th ed. Chapters 8 and 36
9/14	<ul style="list-style-type: none"> • Financial Modeling Project description and modeling framework <ul style="list-style-type: none"> ○ Institutional Investors’ Risk and Return Objectives and Constraints • Efficient Portfolio Optimization 	Financial Modelling, 4 th ed. Chapter 9
9/21	<ul style="list-style-type: none"> • Models of Estimating Variance-Covariance Matrix <ul style="list-style-type: none"> ○ Sample Variance Covariance Matrix ○ Single Index Model ○ Constant Correlation Model ○ Shrinkage Model ○ Implied Options based model 	Financial Modelling, 4 th edition Chapter 10
9/28	<ul style="list-style-type: none"> • Unconstrained and Constrained Portfolio Modeling • Efficient Portfolios With and Without Short Sales • Estimating Betas and Security Market Line 	Financial Modelling, 4 th edition Chapters 9, 11 and 12
10/5	<ul style="list-style-type: none"> • The Black-Litterman Approach to Portfolio Optimization • Monte Carlo Simulation of Investments and Portfolios • Integrated Portfolio Modeling Review for the final project 	Financial Modelling, 4 th edition, Chapter Chapters 13 and 27

10/12	<ul style="list-style-type: none"><li data-bbox="321 199 818 233">• In class Final Project Presentations	Final Modeling Project and Report due on 10/11 on Latte at 1pm. Please bring the hard copies of your model and report at the beginning of the presentation day
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Please note that I reserve 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.