Stevens Institute of Technology
WebCampus.Stevens
Syllabus

Course Number: FE630: Portfolio Theory and Risk Management

Professor Name: Natasha Dexter **Evening phone number: 973-762-2716** **E-mail address: ndexter@stevens.edu**	**Office Hours: By appt. only**

Overview

An essential introduction to modern portfolio theory and optimal portfolio selection using optimization techniques such as linear programming. Addresses portfolio performance evaluation and international diversification. Probe financial risk management, emphasizing Value-at-Risk (VAR) analysis and methods. Exploit credit risk and credit derivatives. Examples from case studies are drawn from contemporary scenarios.

Prerequisites

FE610, FE620, FE621.

Requirements: Assignments require knowledge of one of the following programming languages: C++, Excel, Visual Basic for Applications (VBA) or Java.

Topics

1. Introduction to Financial Securities & Markets

PART A: Modern Portfolio Theory

- Mean Variance Portfolio Theory: Opportunity Set & Efficient Portfolios
- Simplifying the Portfolio Selection Process: Single-Index Model, Multi-Index Models, Calculation of Efficient Frontier
- Utility Theory. Objective Functions. Stochastic Dominance
- International Diversification
- Equilibrium Pricing Theories: The Capital Asset Pricing Model (CAPM). Alternatives to CAPM. Empirical Tests. The Arbitrage Pricing Theory (APT) Model
- Evaluation of Portfolio Performance

PART B: Risk Management and Banking Capital

- Market Risk: Value at Risk
- Credit Risk & Credit Derivatives
- Operational Risk
- Managing Banking Capital and the Basel Accord

Pedagogy

The course will employ lectures, class discussion, in-class individual assignments, and individual projects. We will have a regular audio meeting class on Interwise every week, Wed 7.70 – 9.30

Students are encouraged to post questions in the discussion group/forum. In general this encourages students to exchange ideas, view points on issues related to homework and project. Active participators will be awarded bonus points decided by instructor.

Please email your instructor only within the WebCt mail system. Do not use the instructor's normal email address unless in exceptional cases when response is needed immediately. Usually response should be received in 48 hours.

Required Text(s)

Textbook 1. Modern portfolio theory and investment analysis, by Edwin J. Elton, Martin J. Gruber, Stephen J. Brown, William N. Goetzmann, Willey, 2007 - ISBN – 0-470-05082-9 7th Edition

Textbook 2. Options, Futures and Other Derivatives, by John C. Hull, Prentice Hall, 6th ed. 2006, ISBN: 0-13-149908-4.

Recommended Texts

Grinold & Kahn. *Active Portfolio Management*. 2nd Edition, 2000. McGraw-Hill. ISBN 0-07-024882-6.

Allen. *Financial Risk management*. 2003. Wiley. ISBN 0-47-121977-0.

Required Readings

Readings will be assigned for each week. These will be found on the course website. Each week the students should consult the week by week schedule and prepare the material that is going to be discussed on the Interwise communication site. Students will have to read the chapters in advance before participating in the audio lecture. Student participation is encouraged and rewarded.
You are advised to make use of the lecture notes posted on Webct, written by Professor Fotios Harmantzis who taught this course in the past.

Assignments

The course has 3 homework assignments and Portfolio Game project.

The assignments and their weights are as shown below:

1. Homework	30%
2. Portfolio Game Project	20%
3. Final	50%
TOTAL	**100%**

Course Schedule

Week	Subject	Assignment Due
1	Introduction to Financial Securities & Markets	CH 1 -3 in [1]
2	Mean Variance Portfolio Theory: Opportunity Set & Efficient Portfolios.	CH 4 -6 in [1]
3	Simplifying the Portfolio Selection Process: Single-Index Model, Multi-Index Models, Calculation of Efficient Frontier.	CH 7 -9 in [1]
4	Utility Theory. Objective Functions.	CH 10 -11 in [1] HW Assignment 1 due
5	International Diversification.	CH 12 in [1]
6	Equilibrium Pricing Theories: The Capital Asset Pricing Model (CAPM).	CH 13 -14 in [1]
7	Alternatives to CAPM. Empirical Tests. The Arbitrage Pricing Theory (APT) Model	CH 15 -16 in [1]
8	Performance Evaluation.	CH 25 in [1] HW Assignment 2 due
9	Market Risk: Value at Risk.	CH 18 in [2]]
10	Managing Market Risk	CH 5 in Allen. *Financial Risk management*. 2003.
11	Credit Risk	CH 20 in [2]
12	Credit Derivatives	CH 21 in [2] HW Assignment 3 due
13	Operational Risk. Managing Banking Capital and the Basel Accord	Portfolio Game Project due
14	Final Exam	Final Exam due