

MIT SLOAN SCHOOL OF MANAGEMENT

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15.401
Sections C, D
Fall 2007

15.401 Course Syllabus Finance Theory I

(Current Draft: August 31, 2007.)

Course Description

This course covers modern finance theory and practice. The topics of the course include: (1) introduction to finance; (2) valuation of financial and real assets; (3) portfolio theory and asset pricing models; and (4) introduction to derivative securities. 15.401 is a prerequisite for all finance electives.

Sections A, B, C and D of 15.401 are for first-year Sloan MBA students and cover the same material. All assignments and exams are the same. Lecture notes differ.

Course Materials

REQUIRED:

- Bodie, Kane and Marcus, *Investments* (6th edition), McGraw Hill. (BKM)
- Brealey, Myers and Allen, *Principles of Corporate Finance* (8th edition), McGraw Hill. (BMA)
- 15.401 (Sections A-D) Course Reading Packet, MIT Copy Technology Center (E52-045).
- Wang, *15.401 Lecture Notes (Fall 2007)*. Posted on <http://sloanspace.mit.edu>. Also available at MIT Copy Technology Center (E52-045).

RECOMMENDED:

- The Wall Street Journal.

Course Requirements

- Regular class sessions are on Mondays and Wednesdays in E51-335 from 13:00–14:30 (Section C) and 14:30–16:00 (Section D), respectively.
- Assignments include 7 problem sets and 2 case write-ups.
 - Problem sets and the Acid Rain case write-up should be done individually.
 - The Rensselaer Advisors case write-up is done in groups (Type 3).
 - Each assignment must be handed in at the assigned time and location.
 - Late assignments are not accepted.
- There is a midterm and a final exam. The exams are closed book; one 8.5"×11" sheet of notes (two-sided) is allowed for the midterm and two 8.5"×11" sheets of notes for the final. The final exam is comprehensive.

- The course grade is determined according to the following weighting:
 - 22% midterm
 - 45% final exam
 - 21% problem sets
 - 6% Fixed income case write-up (group project)
 - 6% Acid Rain case write-up.
- Problem sets cover basics and can be skipped for those who are already familiar with the material. In this case, the extra weight is given to the midterm (for problem sets 1-3) or to the final exam (for problem sets 4-7).

Office Hours

Monday 16:00 – 17:30, and by appointment.

TA Recitations

Weekly recitations on Fridays (unless announced otherwise). See course web site on SloanSpace for time and location.

Sloanspace

Course information (syllabus, lecture notes, problem sets and solutions, recitation schedule, TA office hours, announcements, additional course material, etc.)

Teaching Assistants

- Kevin Chu, kychu@mit.edu
- Mads Faurholt-Lorgensen, mfj@mit.edu
- Konrad Haunit, khaunit@mit.edu
- Weiyang Qiu, wqiu@mit.edu

Administrative Assistant

- Sarah Grosvenor, E52-450, 253-9745 (sgrosv@mit.edu).

Professional Standards

- MIT Sloan Professional Standards. Posted on SloanSpace 15.401 course website.

Course Outline

(Schedule of topics and assignments is subject to revision.)

Part A. Introduction

Sept. 5, 10 Introduction to Finance

Financial decisions. Approaches to valuation of financial and real assets. Roles of financial markets. Objectives of financial managers.

Reading: BKM Chapter 1, 2, 3. BMA Chapter 1, 2.

Sept. 12 Present Value (PV)

Present value. Mechanics of PV calculations. Compound interest.

Reading: BMA Chapter 3.

TA Recitation: Friday, September 14.

Assignment: Problem Set 1 due Monday, September 17.

Part B. Valuation

Sept. 17, 19, 26 Fixed-Income Securities

Term structure of interest rates. Forward interest rates. Interest rate risk. Inflation risk. Credit risk.

Reading: BKM Chapter 14, 15, 16. BMA Chapter 3, 23, 24. Salomon Brothers, "Understanding Duration and Volatility" (15.401 Course Packet).

TA Review Sessions: Friday, September 21 (part 1) and Friday, September 28 (part 2).

Assignment: Problem Set 2 due Wednesday, September 26.

Rensselaer Advisors case due Monday, October 1.

Oct. 1, 3 Common Stocks

Dividend Discount Model (DDM). EPS. P/E ratio. PVGO.

Reading: BKM Chapter 18, 19. BMA Chapter 4.

TA Recitation: Friday, October 5.

Assignment: Problem Set 3 due Thursday, October 11.

Oct. 10, 15, 17 Capital Investments

Capital budgeting criteria. Cash-flow calculations. Project Interaction.

Reading: BMA Chapter 5, 6.

TA Recitation: Friday, October 12.

Assignment: Acid Rain Case due Monday, October 17.

Part C. Return and Risk

Oct. 29 Introduction to Return and Risk

Measuring risk. Historic asset returns. Random walks.

Reading: BKM Chapter 5.2-5.4. BMA Chapter 7.1.

Oct. 29 Midterm Review (Time & Location: TBA)

Oct. 31 Midterm Exam (in class)

Nov. 5, 7 Portfolio Choice

Diversification. Systematic risk and non-systematic risk. Portfolio theory. Efficient risk-return trade-off.

Reading: BKM Chapter 6.2, 7, 8. BMA Chapter 7, 8.1.

TA Recitation: Friday, November 9.

Assignment: Problem Set 4 due Wednesday, November 14.

Nov. 14, 19 Capital Asset Pricing Model (CAPM)

CAPM. Measuring betas. Applications of CAPM. Empirical evidence on CAPM. Extensions.

Reading: BKM Chapter 9. BMA Chapter 8, 9.1, 9.3.

TA Recitation: Monday, November 26.

Assignment: Problem Set 5 due Wednesday, November 28.

Nov. 21 Efficient Market Hypothesis

Efficient Market Hypothesis (EMH). Tests of EMH. Implications of EMH.

Reading: BKM Chapter 5. BMA Chapter 13.

Part D. Introduction to Derivatives

Nov. 26, 28 Forwards and Futures

Forward and futures contracts. Forward and futures prices. Hedging with forwards and futures.

Reading: BKM Chapter 22, 23. BMA Chapter 26.

TA Recitation: Friday, November 30.

Assignment: Problem Set 6 due Monday, December 3.

Dec. 3, 5, 10

Options

Options and their properties. Valuation of options: Binomial model and Black-Scholes formula.

Reading:

BKM Chapter 20, 21. BMA Chapter 20.

TA Review Sessions:

Friday, December 8.

Assignment:

Problem Set 7 due Monday, December 10.

Dec. 12

Corporate Applications of Options

Options in real investments.

Reading:

BMA Chapter 21.

Dec. 14

Final Review Session (Time & Location: TBA)

Dec. 18

Final Exam