

15.401 Course Syllabus
Finance Theory I**Course Description**

The objective of this course is to equip students with the fundamental concepts and tools underlying modern finance. The topics of the course include: (1) introduction to finance; (2) valuation of financial and real assets; (3) portfolio choice and asset pricing models; and (4) introduction to derivative securities. 15.401 is a prerequisite for all finance electives.

Course Materials

REQUIRED:

- Chen, *15.401 Lecture Notes (Fall 2008)*, available at <http://stellar.mit.edu>
- Brealey, Myers and Allen, *Principles of Corporate Finance* (9th edition), McGraw Hill (BMA)
- Acid Rain: The Southern Company (A), HBS Case, MIT Copy Technology Center (E52-045)

RECOMMENDED:

- Bodie, Kane and Marcus, *Investments* (8th edition), McGraw Hill (BKM)
- *The Wall Street Journal*

Course Requirements

- Lectures
Section E: TTH 1:00 – 2:30 p.m., E51-325
Section F: TTH 2:30 – 4:00 p.m., E51-325
- Assignments include 5 problem sets and 1 case write-up.
 - Problem sets and the Acid Rain case write-up should be done individually (Type 1).
 - 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.

- **Problem sets and midterm are both optional.** Your grade is the highest among the following options:

	Option A	Option B	Option C	Option D
problem sets	0%	0%	20%	20%
midterm	0%	25%	0%	25%
final	90%	65%	70%	45%
case write-up	5%	5%	5%	5%
participation	5%	5%	5%	5%

Office Hours

Thursdays 4:00 – 5:30 p.m., and by appointment.

TA Recitations (optional) and Office Hours

Weekly recitations Fridays in E51-345 at 12:30-2:00 p.m.

TA office hours: Mondays at 4-6 p.m. Location: E52-460.

Course Website

Course information (syllabus, lecture notes, problem sets and solutions, recitation schedule, announcements, additional course material, etc.) will be posted on <http://stellar.mit.edu>. Please check it regularly.

Teaching Assistants

Stavros Valavanis and Ngoc-Khanh Tran are the TAs for the course. They will answer questions through the email address 15401ef_fall08@mit.edu. Please do not use individual email addresses for questions.

Contact Information

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Professional Standards

MIT Sloan Professional Standards. Posted on Stellar 15.401 course website.

Course Outline

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

Part A.	Introduction
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Sept. 4	Introduction to Finance
	Financial decisions. Approaches to valuation of financial and real assets. Roles of financial markets. Objectives of financial managers.
Reading:	BMA Chapter 1, 2. (BKM Chapter 1, 2, 3.)
Sept. 9	Present Value (PV)
	Present value. Mechanics of PV calculations. Compound interest.
Reading:	BMA Chapter 3.
TA Recitation:	Friday, September 12.
Part B.	Valuation
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Sept. 11, 16, 18	Fixed-Income Securities
	Term structure of interest rates. Forward interest rates. Interest rate risk. Inflation risk. Credit risk.
Reading:	BMA Chapter 3, 4, 24. (BKM Chapter 14, 15, 16.) Salomon Brothers, "Understanding Duration and Volatility" (15.401 Course Packet).
TA Recitation:	Friday, September 19.
Assignment:	Problem Set 1 due Tuesday, September 23.
Sept. 23, 25	Common Stocks
	Dividend Discount Model (DDM). EPS. P/E ratio. PVGO.
Reading:	BMA Chapter 5. (BKM Chapter 18, 19.)
TA Recitation:	Friday, September 26.
Assignment:	Problem Set 2 due Tuesday, October 7.
Sept. 30, Oct. 2, 7	Capital Investments
	Capital budgeting. Cash-flow calculations. Project Interaction.
Reading:	BMA Chapter 6, 7.
TA Recitation:	Friday, October 3.
Assignment:	Acid Rain Case due Tuesday, October 14.

Part C. Return and Risk

Oct. 9 Introduction to Return and Risk

Measuring risk. Historic asset returns. Random walks.

Reading: BMA Chapter 8.1. (BKM Chapter 5.)

TA Recitation: Friday, October 10.

Assignment: Practice Exam Questions. No need to hand in.

Oct. 14 Midterm Review

Oct. 16 Midterm Exam (in class)

Oct. 21, 23 Portfolio Choice

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

Reading: BMA Chapter 8, 9.1. (BKM Chapter 6, 7.)

TA Recitation: Friday, October 24.

Assignment: Problem Set 3 due Tuesday, October 28.

Oct. 28, 30, Nov. 4 Capital Asset Pricing Model (CAPM)

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

Reading: BMA Chapter 9, 10.1, 10.3. (BKM Chapter 9.)

TA Recitation: Friday, October 31.

Nov. 6, 13 Efficient Market Hypothesis

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

Reading: BMA Chapter 14. (BKM Chapter 11.)

TA Recitation: Friday, November 7, 14.

Assignment: Problem Set 4 due Tuesday, November 18.

Part D. Introduction to Derivatives

Nov. 18, 20 Forwards and Futures

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

Reading: BMA Chapter 27. (BKM Chapter 22, 23, 27.)

TA Recitation: Friday, November 21.

Nov. 25, Dec. 2

Options and Their Applications

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

Reading:

BMA Chapter 21, 22. (BKM Chapter 20, 21.)

TA Recitation:

Friday, December 5.

Assignment:

Problem Set 5 due Tuesday, December 2.

Dec. 4

Stock Picking Tournament Group Presentations

Dec. 9, 11

Final Review

Assignment:

Practice Exam Questions. No need to hand in.

Dec. 16

Final Exam, 1:30PM - 4:30PM.