15.414 Financial Management

This course provides a rigorous introduction to the fundamentals of modern financial analysis and applications to business challenges in capital budgeting, project evaluation, corporate investment and financing decisions, and basic security analysis and investment management. The five major sections of the course are: (A) an introduction to the financial system, the six unifying principles of modern finance, and fundamental present-value relations; (B) valuation models for both stocks and bonds and capital budgeting; (C) methods for incorporating uncertainty into valuation models, including portfolio theory, mean-variance optimization, and the Capital Asset Pricing Model; (D) valuation of derivative securities; and (E) applications to corporate financial decisions, including capital budgeting, project financing, and corporate risk management.

Course Materials

  - Brealey, Myers, and Allen is the world’s most popular finance text. It provides a thorough introduction to financial theory and practice.

- Class Notes
  - Class notes will be available on STELLAR (only Lecture 1 notes will be distributed in class). They contain material not found in Brealey, Myers, and Allen, and provide alternate perspectives on the major themes of the course.

- Reading Packet
  - The reading packet, available from Copy Tech, contains cases and a few additional readings.

Course Requirements and Grading

Grades will be determined by class participation (15%) and your performance on the assignments (45%) and final exam (40%).

As noted in the course outline, there will be written assignments consisting of four problem sets and one case. **You should work together on the assignments in your study groups.**
Recitations

Recitations provide the opportunity to review class materials and present additional applications and problems. Helen Yang (heleny@mit.edu), a MIT Sloan Fellow Flex second-year student, and Amy Zhou (amyzhou@mit.edu), a fourth-year Ph.D. student, will hold recitations as indicated in the course outline. Helen and Amy will also be available outside of class for additional help. Students seeking intensive one-on-one help should talk with Professors Kaminski, Lo, or Marsha Warren about additional resources that are available.

Administrative Assistant

Jayna Cummings, E62–621A, (617) 258–5727, jcummin@mit.edu.

Additional Readings (not required)

   – BKM focuses exclusively on capital markets. They provide a more rigorous and thorough analysis of investments than Brealey, Myers, and Allen.

   – Bernstein is one of the most well-respected and influential practitioners in the financial industry, and the founding editor of the Journal of Portfolio Management. This is a lively and beautifully written account of the most important ideas in academic finance, many of which were developed at MIT in the 1960’s and 1970’s.

   – Hull provides a straightforward introduction to options, futures, and swaps (collectively called financial derivatives). The book discusses the valuation of these securities, the mechanics of trading, and the use of financial derivatives in managing risk.
# Course Schedule

This is an approximate schedule for the course; some material may take longer or shorter to cover than the time allotted.

## Lectures

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# Recitations

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Course Outline

Chapters listed below refer to the course textbook, Brealey, Myers, and Allen (BMA); articles referenced using the authors’ last names are provided in the Readings Packet.

PART A. INTRODUCTION

Session 1  Introduction to Finance and Course Overview
- Financial decisions of households and corporations
- Objectives of corporate financial managers.
- Approaches to valuing financial and real assets
- The role of financial markets
- Unifying principles of finance

Read Kahneman and Tversky (1982), Maloney and Mulherin (2003)

Session 2  Present Value Relations 1
- Net Present Value (NPV)
- Opportunity cost of capital
- Discount rates and the time value of money

PART B. VALUATION

Session 3  Present Value Relations 2
- Mechanics of NPV calculations
- Compound interest
- Annuity and perpetuity formulas
- Real vs. nominal cash flows

Session 4  Fixed Income Securities 1
- Fixed-income markets
- Term structure of interest rates
- Market conventions, properties of bond prices

Session 5  Fixed Income Securities 2
- Measuring and hedging interest rate risk
- Inflation risk, credit risk
Session 6  **Equity Securities**  Chapter 4
- Discounted Cash Flow (DCF) model
- EPS, P/E, discount rates

Assignment Due: Problem Set 1

Session 7  **Capital Budgeting**  Chapter 5-6
- Capital budgeting criteria
- NPV rule, cash flow calculations, discount rates

Read Graham and Harvey (2001)

Session 8  **Trading Lab Session (Please note the location on calendar)**
Read CRL Handout

Session 9  **Case Discussion**
Assignment Due: Acid Rain Case

**PART C. RISK AND RETURN**

Session 10  **Introduction to Risk and Return**  Chapter 7.1 – 7.2
- Historical asset returns
- The time value of money

Session 11  **Portfolio Theory 1**  Chapter 7.2 - 7.4
- Measures of risk
- Risk and investment horizon

Session 12  **Portfolio Theory 2**
- Diversification, systematic and idiosyncratic risk
- Portfolio optimization
- Efficient risk/return trade-offs

Session 13  **The Capital Asset Pricing Model (CAPM) 1**  Chapter 8.1 – 8.2
- The CAPM and linear risk/return trade-offs

Read Jagannathan and McGrattan (1995)
Session 14  **The Capital Asset Pricing Model (CAPM) 2**  Chapter 8.3

- Applications of the CAPM

**Assignment Due: Problem Set 2**

Session 15  **Practical Implications**  Chapter 8.4

- Extensions of the CAPM
- Empirical evidence
- Estimating alpha, beta, and the cost of capital

Session 16  **Market Efficiency**  Chapter 13

- Origins of the Efficient Markets Hypothesis
- Implications and empirical tests of the EMH
- Behavioral finance and neuroeconomics
- The Adaptive Markets Hypothesis

Read Lo (2005, 2007)

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**PART D.  DERIVATIVES**

Session 17  **Forwards and Futures Contracts 1**  Chapter 26.4

- Definitions of forward and futures
- Arbitrage pricing relations

Session 18  **Forwards and Futures Contracts 2**

- Using forwards and futures to hedge

Session 19  **Options**  Chapter 20–21

- Basic properties of options
- Valuation of options
- Binomial and Black-Scholes option pricing models
PART E. CORPORATE FINANCE

Session 20  Corporate Financing 1
- Risk and the cost of capital

Assignment Due: Problem Set 3

Session 21  Corporate Financing 2
- Raising capital
- Source of funds
- Leverage, risk, and the M&M Theorems

Read Kim and Ritter (1999) and Smith (1986)

Session 22  Corporate Financing 3
- Optimal capital structure
- Corporate taxes, after-tax WACC
- Financial distress.

Read Myers (1984)

Session 23  Corporate Risk Management
- The 3 P’s of Total Risk Management
- Risk management and the M&M theorems
- Risk management and corporate governance

Read Lo (1999)

Assignment Due: Problem Set 4

Session 24  Course Review
Review course notes and bring your questions to class
Readings Packet

Cases


Articles


