

Corporate Finance

The objective of this course is to provide a rigorous introduction to the fundamental principles of asset valuation, investment and financing decisions of firms. The main topics covered in class include: the time value of money; diversification, risk and return; capital budgeting; arbitrage and hedging; corporate financing decisions.

Course Materials

- Required textbook: R.A. Brealey, S.C. Myers and F. Allen, *Principles of Corporate Finance*, McGraw-Hill, 9th edition, 2008. The book contains assigned readings for the course and may prove useful in future courses. All assigned readings should be completed **prior** to the class for which they are scheduled.
- Recommended: *Solutions Manual* to practice questions in the textbook.
- Slides posted on the course web site: These slides have been designed to accompany the lectures. As a suggestion, you may want to print them out and bring them to each lecture to ease note taking.
- Practice problem sets: Each chapter of the textbook contains numerous problems; additional problem sets and their solutions will be posted on the course web site. Although these problem sets are not assigned, they are strongly recommended. It is important that you try the problems before you see the solution, otherwise the exam will be the first time you have to solve a problem without any additional help.

Evaluation

Your grade for the course will be based on your performance on three quizzes, a final exam, and class participation. The course grade is determined as follows:

$$\text{Grade} = 0.10 * \text{Participation} + 0.25 * (2 \text{ Best Quizzes}) + 0.40 * \text{Final}$$

Though there are three quizzes, I will take your two highest scores in computing your course grade. The exam and quizzes are closed book and closed notes. You should bring writing utensils and a calculator (no laptops) to the exams. Since the lowest quiz score does not count towards your final grade, there are no make-up quizzes under any circumstances. Please also note that there will be no make-up final except as required by university policy, in which case you have to obtain a permission from the dean's office.

Regrading Policy

There are no verbal appeals of grades. You must provide a written statement as to where and why there is a problem. All regrade requests must be submitted within one week (not later!) after handing back the exam. Importantly, the entire exam or quiz will be regraded. As a result, the overall score may increase, remain the same, or decrease.

Office Hours and all other relevant course information will be posted on the course webcafe page at:

<https://webcafe.wharton.upenn.edu/eRoom/fnce/100-sp08-2>

You will need to have a Wharton computing account to access the webcafe page. Enrolled non-Wharton students may obtain an account at:

<http://accounts.wharton.upenn.edu>

Academic Integrity

Academic honesty is expected. An act of dishonesty, such as cheating of any form, will lead to grade penalties, withdrawal or failure in the course.

Course Outline

1 Discounting: During this class we will cover the intuition and basic mechanics associated with the time value of money. In particular,

- Present and future values
- Multi-period discounting
- Compounding
- Perpetuities and annuities

**** Assigned Reading: Chapters 1, 2.1–2.2, 3**

2 Bond Valuation: After a brief overview of some of the institutional details of bonds, this class focuses on valuing debt securities using the financial mathematics techniques developed in the previous class.

- Pure discount and coupon bonds
- Interest rates and bond prices
- Yield to maturity and term-structure of interest rates
- Real and nominal interest rates
- Spot and forward rates

**** Assigned Reading: Chapters 4, 15.1, 25.1–25.6.**

3 Valuation of Stocks: This class provides an overview of equity securities (stocks or equities) focusing on their valuation. In addition, we will discuss financial ratios that are widely used in practice such as dividend yields and price/earnings multiples.

- Applying present value techniques to value stocks
- Valuation of stocks that pays constant vs growing dividends
- Dividend yields and price gains
- Valuation using P/E-multiples and its limitations
- Present value of growth opportunities

**** Assigned Reading: Chapters 5, 15.2**

4 Portfolio Analysis and Diversification: This class provides an overview of asset allocation. We will discuss how investors can reduce the risk of their portfolios without sacrificing any expected return by simply spreading their wealth over a number of assets in an appropriate way. We will begin with a simple two-asset example to illustrate the intuition behind diversification. The analysis is then extended to the N-asset case, followed by some discussion of practical issues.

- Risk preferences
- Realized vs expected investment returns
- Measuring portfolio risk and return
- Concept of diversification, its benefits and limits
- Minimum variance portfolio
- Efficient frontier

**** Assigned Reading: Chapters 8.1–8.3, 9.1, Review notes on basic statistics and utility**

5 Asset Pricing Models: This class extends the material covered earlier in deriving the Capital Asset Pricing Model (CAPM). This model is widely used in capital budgeting exercises in practice and is one of the cornerstones of modern finance. The primary use of the CAPM is in determining the appropriate discount rate to use in computing Net Present Values (NPVs). This class emphasizes the difference between covariance and variance risks, and highlights the difference between systematic sources of risks (which are priced or rewarded by the market) and diversifiable risk (which is not priced).

- Market risk or beta – covariance risk v.s. variance risk
- Risk-return tradeoff
- Capital Market Line and Security Market Line
- Systematic vs idiosyncratic risk
- The role of the CAPM in capital budgeting
- Alternative asset pricing models

**** Assigned Reading: Chapters 8.4, 9.2–9.4**

6 Investment Decisions and Capital Budgeting: This class provides an overview of capital budgeting - determining which investments a firm should undertake. The net present value (NPV) rule, which is widely used in practice, is developed and illustrated with several examples. In addition, we will discuss a number of alternative evaluation techniques including internal rate of return and payback period, highlighting potential problems with their use.

- Net present value of an investment proposal
- Optimal investment decisions
- Determining relevant cash flows to use in the NPV analysis
- Internal rate of return of an investment proposal and its limitations
- Payback rule and its pitfalls
- Investment decisions with limited resources
- Choosing between mutually exclusive investment proposals with different lives

**** Assigned Reading: Chapters 6 and 7**

7 Forward and Futures Contracts: This class provides an overview of forward and futures contracts. Forwards and futures belong to the class of securities known as derivatives since their value is derived from the value of some other security. The price of a foreign exchange forward contract, for example, depends on the price of the underlying currency and the price of a pork belly futures contract depends on the price of pork bellies. Derivatives trade both on exchanges (where contracts are standardized) and over-the-counter (where the contract specification can be customized). The focus of this class is on (1) definitions and contract specifications of the major exchange-traded derivatives, (2) the mechanics of buying, selling, exercising, and settling forward and futures contracts, (3) derivative trading strategies including hedging, and (4) the relationships between derivatives, the underlying security, and riskless bonds.

- Determining the payoffs of forward and futures contracts
- Mechanics of buying, selling, exercising, and settling forward and futures contracts
- Margin accounts and “marking to market”
- Valuation of forward and futures contracts
- Arbitrage and hedging

**** Assigned Reading: Chapters 27.1–27.3**

8 Option Contracts: This class provides an overview of option contracts. Likewise forwards and futures, options belong to the class of securities known as derivatives since their value is derived from the value of some other security. The price of a stock option, for example, depends on the price of the underlying stock and the price of a foreign currency option depends on the price of the underlying currency. The focus of this class is on (1) definitions and contract specifications of the major exchange-traded options, (2) the mechanics of buying, selling, exercising, and settling option contracts, (3) option trading strategies including hedging, and (4) the relationships between options, the underlying security, and riskless bonds. In particular, it is possible to form combinations of derivatives and the underlying security that are riskless, providing a means of valuing options.

- Types and payoffs of option contracts
- Mechanics of buying, selling and exercising option contracts
- Put-call parity
- Black Scholes formula to determine the price of options
- Sensitivity of option prices
- Debt and equity as options
- Hedging with options

**** Assigned Reading: Chapter 21**

9 Financing decision of the firm – Leverage and the Weighted Average Cost of Capital: This class considers the financing decision of the firm. What mix of debt (loans/bonds) and equity (shares) should the firm use to raise funds to finance its investments? The seminal Modigliani and Miller propositions, with and without corporate taxes, are reviewed. The main theme of the class is to evaluate a new investment opportunity for the firm where the appropriate discount rate is unknown. This discount rate could be computed directly from the CAPM if the appropriate beta was known, however in this class we consider the case where the beta of the new project is unknown. In many cases, the beta of another company that is made up primarily of assets like the new project is available. However, adjustments must be made to reflect how differences in capital structure affect beta risk. The procedure for doing this is illustrated via a comprehensive example.

- Capital structure in a world with perfect capital markets
- Capital structure, expected returns and betas
- Weighted Average Cost of Capital (WACC)
- Lever and unlever betas

**** Assigned Reading: Chapter 18**

Tentative Schedule

Lecture	Date	Topic
1	Jan. 16	Introduction and Discounting
2	Jan. 23	Discounting & Bond Valuation
3	Jan. 28	Bond Valuation
4	Jan. 30	Bond Valuation
5	Feb. 04	Stefano Risa Guest Lecture
6	Feb. 06	Bond Valuation & Valuation of Stocks
7	Feb. 11	<i>Quiz 1 on Discounting and Bond Valuation</i>
8	Feb. 13	Valuation of Stocks & Portfolio Analysis and Diversification
9	Feb. 18	Portfolio Analysis and Diversification
10	Feb. 20	Portfolio Analysis and Diversification
11	Feb. 25	Portfolio Analysis and Diversification
12	Feb. 27	<i>Quiz 2 on Valuation of Stocks & Portfolio Analysis and Diversification</i>
13	Mar. 03	Asset Pricing Models
14	Mar. 05	Asset Pricing Models
15	Mar. 17	Asset Pricing Models
16	Mar. 19	Investment Decisions and Capital Budgeting
17	Mar. 24	Investment Decisions and Capital Budgeting
18	Mar. 26	Forward and Futures Contracts
19	Mar. 31	<i>Quiz 3 on Asset Pricing Models & Investment Decisions and Capital Budgeting</i>
20	Apr. 02	Forward and Futures Contracts
21	Apr. 07	Forward and Futures Contracts
22	Apr. 09	Option Contracts
23	Apr. 14	Option Contracts
24	Apr. 16	Financing decision of the firm
25	Apr. 21	Financing decision of the firm
26	Apr. 23	Financing decision of the firm
27	Apr. 28	Review for the Final