

**Spring 2014**  
**Corporate Finance FNCE 100**  
**Wharton School of Business**

***Syllabus***

**Course Description**

This course provides an introduction to the theory, the methods, and the concerns of corporate finance. It forms the foundation for all subsequent courses such as speculative markets, investments and corporate finance. The purpose of this course is to develop a framework for analyzing a firm's investment and financing decisions. Since the emphasis is on the fundamental concepts underlying modern corporate finance, the approach will be analytical and rigorous, and some familiarity with accounting, mathematical, and statistical tools is necessary. The topics covered in the course include (1) discounted cash flow (time value of money), (2) capital budgeting, (3) valuation of stocks, (4) valuation of bonds, (5) security market efficiency, (6) corporate financing and optimal capital structure, (7) portfolio analysis and the Capital Asset Pricing Model (CAPM), and (8) options.

**Grading:**

There are two midterms, each counting 30%, and a final exam, counting 40%. The midterms are scheduled for Monday, February 24 and Monday, April 7. Both midterms will be given from 6:15 – 8:15 PM.

In addition, there will be two cases. Each student must perform satisfactorily in the cases to pass the course. More will be said about the cases in class.

**Attendance:**

Students are responsible for all material presented in class. You must attend the section in which you are enrolled.

**Required Reading:**

The textbooks are *Corporate Finance by Ross, Westerfield, and Jaffe, 10<sup>th</sup> edition* and the accompanying Solutions Manual. Students may use either the customized (for FNCE 100) versions of these books or the full versions.

## **Readings:**

### **a) Value and Capital Budgeting**

Firms and individuals invest in a large variety of assets. The objective of these investments is to maximize the value of the investment. In this part, we will develop tools that can be used to determine the best investment from several alternatives.

- Ch. 4 Discounted Cash Flow Valuation
- Ch. 5 Net Present Value and Other Investment Rules
- Ch. 6 Making Capital Investment Decisions
- Ch. 8 Interest Rates and Bond Valuation
- Ch. 9 Stock Valuation

### **b) Capital Structure**

As with capital-budgeting decisions, firms seek to create value with their financing decisions. Therefore, firms must find positive NPV financing arrangements. However, to maximize NPV in financial markets, firms must consider taxes, bankruptcy costs, and agency costs. In this part, we will develop the methodology to maximize the value of the financing decision.

- Ch. 14 Efficient Capital Markets and Behavioral Challenges
- Ch. 16 Capital Structure: Basic Concepts
- Ch. 17 Capital Structure: Limited Use of Debt
- Ch. 18 Valuation and Capital Budgeting for the Levered Firm

### **c) Risk and Portfolio Analysis**

In this part, we will investigate the relationship between expected return and risk for portfolios and individual assets. This relationship determines the shareholders' required (expected) return and the firm's cost of equity capital. The capital-asset-pricing model is used to measure risk and expected return.

- Ch. 10 Risk and Return: Lessons from Market History
- Ch. 11 Return and Risk: The Capital-Asset-Pricing Model (CAPM)
- Ch. 13 Risk, Cost of Capital, and Valuation

### **d) Options**

In this part, we study both the principles and uses of options.

- Ch. 22 Options and Corporate Finance

## DETAILED DESCRIPTION OF TOPICS

The first four topics deal with the time value of money and its application to capital budgeting:

### TOPIC I – FUTURE AND PRESENT VALUE

This topic examines one of the most important concepts in all of corporate finance, the relationship between \$1 today and \$1 in the future.

Chapter 4	Compounding – the one period case
Assignment 1	Discounting – the one period case
	Compounding beyond one year
	Discounting beyond one year
	Compounding more rapidly than once a year
	Annual percentage rate vs. effective annual yield
	Continuous compounding
	Multiperiod valuation
	Short cuts for multiperiod valuation:
	Perpetuity
	Growing perpetuity
	Annuity
	Growing annuity
	Examples
	Pension fund and Mortgage

### TOPIC II – THE RULES OF CAPITAL BUDGETING

This topic examines alternative approaches to capital budgeting.

Chapter 5	Definition of capital budgeting
Case: NETCO	The justification for net present value
	Independent vs. mutual exclusive projects
	Simple net present value example
	Payback example
	Problems with payback
	Internal rate of return (IRR)
	Problems of IRR with independent projects
	Borrowing vs. lending
	Multiple rates of return
	No internal rates of return
	Problems of IRR with mutually exclusive returns
	Timing
	Scale
	Replacement chains

### TOPIC III – THE PRACTICE OF CAPITAL BUDGETING

This topic considers the practical application of capital budgeting techniques. Most of the emphasis here is on the determination of cash flows.

Chapter 6	<ul style="list-style-type: none"> <li>Brief review of capital budgeting</li> <li>Relation between cash flow and accounting income</li> <li>Important considerations in determining cash flows <ul style="list-style-type: none"> <li>Incremental cash flows</li> <li>Opportunity costs</li> <li>Taxes</li> <li>Stockholders vs. tax books</li> </ul> </li> <li>Working capital and capital budgeting</li> <li>Inflation and capital budgeting <ul style="list-style-type: none"> <li>Interest rates and inflation</li> <li>Cash flow and inflation</li> </ul> </li> <li>Discounting: nominal vs. real</li> <li>Direct cash flow effects of purchase and sale of capital assets <ul style="list-style-type: none"> <li>Initial outlay</li> <li>Depreciation</li> <li>Resale of used asset</li> </ul> </li> </ul>
-----------	--

### TOPIC IV – VALUATION OF STOCKS AND BONDS

This topic uses earlier techniques (present value and future value) to value stocks and bonds.

Chapter 9 (Excl. Sect. 9.6)	<p>Stocks</p> <ul style="list-style-type: none"> <li>Brief discussion of discount rate</li> <li>Relationship between short-term investor and long-term investor</li> <li>Dividends vs. capital gains</li> <li>Estimating growth</li> <li>Difference between income and growth stocks</li> <li>Growth opportunities</li> <li>Price-Earnings ratio</li> <li>Pitfalls in applying dividend discount model and related approaches</li> </ul>
Chapter 8, including appendix	<p>Bonds</p> <ul style="list-style-type: none"> <li>Pure discount bonds</li> <li>Coupon bonds</li> <li>Interest rates and bond prices</li> </ul>
Assignments 2 and 3	<ul style="list-style-type: none"> <li>Coupon vs. yield to maturity</li> <li>Term structure of interest rates <ul style="list-style-type: none"> <li>Spot rates and yield to maturity</li> <li>Forward rates</li> </ul> </li> </ul>

<p>Explanation of term structure Corporate Debt</p>
---

The next five topics deal with capital structure decisions.

TOPIC V – EFFICIENT CAPITAL MARKETS AND CAPITAL STRUCTURE

This topic defines efficient capital markets, presents empirical evidence, and shows why timing decisions on capital structure are suspect.

Chapter 14	<p>Definition of efficient capital markets</p> <p>Types of market efficiency</p> <p>Empirical evidence</p> <p>Implications for corporate managers</p>
------------	---

TOPICS VI AND VII – CAPITAL STRUCTURE WITHOUT TAXES AND WITH TAXES

Topic VI examines the basic issues of capital structure, finishing with the Modigliani-Miller relationship without taxes. Topic VII extends the Modigliani-Miller relationship to the world of corporate taxes.

<p>Chapter 16 (pp. 494 - 510) Assignment 4</p>	<p>The goal of the manager: Maximizing the value of the firm</p> <p>The relationship between firm value and stock price</p> <p>How to maximize value: The traditionalist's approach</p> <p>A counter-example to traditionalist approach</p> <p>    The effect of leverage on value: Modigliani-Miller (MM) Proposition I</p> <p>    The effect of leverage on required equity return: Modigliani-Miller (MM) Proposition II</p> <p>Justification for equality between personal and corporate borrowing rate</p> <p>Example when inequality between rates occurs</p> <p>The concept of market value balance sheets</p>
<p>(pp. 510 – 519) Assignment 5 Case: Central Express</p>	<p>The basic paradigm: The pie chart</p> <p>Why the IRS treats interest more favorable than dividends</p> <p>The value of the tax shield</p> <p>The value of the levered firm: MM Proposition I</p> <p>The effect of leverage on required equity return: MM Proposition II</p> <p>Market value balance sheets</p> <p>Effect of leverage on stock prices</p>

## TOPIC VIII – ADJUSTED PRESENT VALUE, WEIGHTED AVERAGE COST OF CAPITAL AND FLOWS TO EQUITY

This topic shows how the earlier material on capital structure can be used to perform capital budgeting on levered firms.

Chapter 18 (Excluding 18.7)	Adjusted Present Value (APV) The base case: Review of capital budgeting Tax shield Market Value Balance Sheets Weighted average cost of capital (WACC) The cost of equity The cost of debt Calculating WACC Flows to Equity Determining cash flows Determining discount rate EPS and shareholder risk Comparison of WACC and APV The scale enhancing project The known debt level case A suggested guideline Recapitalization LBO Example
--------------------------------	--

## TOPIC IX – COSTS OF DEBT AND OPTIMAL CAPITAL STRUCTURE

Topic IX shows why firms must balance the tax benefits of debt with agency costs of debt when considering capital structure.

Chapter 17 (Excluding 17.7 and 17.8)	Relationship between MM theory with taxes and real world behavior The search for costs of debt: Bankruptcy Direct costs of financial distress Indirect costs of financial distress Who bears costs of financial distress Taxes vs. bankruptcy costs: The tradeoff The three determinants of debt level Decision-Making in the real world Agency costs of equity Application to LBOs Bonding the managers How LBOs reduce agency costs The future of LBOs
---	--

The next three topics deal with the relationship between risk and returns in its application to the determination of the discount rate in capital budgeting.

#### TOPIC X – STATISTICAL CONCEPTS AND AN OVERVIEW OF CAPITAL MARKETS

Chapter 10	Preview of the next three topics Review of definition of return Risk statistics for an isolated stock Variance Standard deviation Risk statistics for a diversified investor Covariance Correlation An historical perspective to risk and return
------------	--

#### TOPIC XI – RETURN AND RISK

The topic develops the relationship between the expected return on a stock and its risk.

Chapter 11	Statistical parameters for a portfolio Expected return on a portfolio Variance and standard deviation of a portfolio The efficient frontier Efficient set for 2 assets Efficient set for many assets Efficient set and diversification Efficient frontier and riskless borrowing and lending The relationship between risk and return Beta: The measure of risk for individual security in context of a large portfolio Expected return as compensation for beta The capital asset pricing model (CAPM) Empirical evidence on CAPM Determining beta in the real world Formula for calculating beta
------------	--

## TOPIC XII – THE CAPM AND CAPITAL BUDGETING

This topic shows how discount rates for projects can be determined from the relationship between risk and return.

Chapter 13 (Excl. Sect. 13.11)	Review of rationale for choosing a discount rate Relationship between beta of a stock and beta of a project Determinants of beta of a project Practical application of CAPM to capital budgeting
-----------------------------------	---

## TOPIC XIII – OPTIONS

This topic discusses both the principles and uses of options.

Chapter 22 (Excl. 22.8 – 22.11)	Definition of calls and puts Combinations of options Covered calls Put-call parity Other option strategies
------------------------------------	--



### **RECOMMENDED END-OF-CHAPTER PROBLEMS (Not to be handed in)**

While attending class and reading the textbook are obviously necessary for learning the FNCE 100 material, doing end-of-chapter problems is also an extremely important way to understand and reinforce the material. Students should work through the following end-of-chapter problems. While I strongly urge all students to attempt both the suggested and additional problems, students should, at the very least, tackle the suggested ones.

#### **Chapter 4**

##### **Suggested:**

Basic: # 3, 4, 6, 12, 13, 14, 15, 16

Intermediate: # 21, 24, 25, 26, 27, 28, 30, 34, 38, 40, 41, 45, 46, 49

Challenge: # 52, 54, 56, 57, 65, 66, 67, 68, 69, and 70

#### **Chapter 5**

##### **Suggested:**

Basic: # 1, 5

Intermediate: # 11, 13

Challenge: # 23, 28

##### **Additional Practice Problems:**

Basic: # 6

Intermediate: # 14, 17

#### **Chapter 6**

##### **Suggested:**

Basic: # 1, 3, 4, 5, 9

Intermediate: # 14, 15, 23, 25

Challenge: # 30, 31, 33, 34

##### **Additional Practice Problems:**

Intermediate: # 19

Challenge: # 38a

#### **Chapter 9**

##### **Suggested:**

Basic: # 1, 4, 9  
Intermediate: # 13, 14, 15, 16, 18, 22, 24, 27, 28  
Challenge: # 34, 35, 38

**Additional Practice Problems:**

Intermediate: # 17, 25, 26  
Challenge: # 36

Note:

#26 – the P/E ratio that you are asked to calculate is the trailing P/E ratio.

**Chapter 8**

**Suggested:**

Basic: # 3, 4  
Intermediate: # 14, 15, 16, 17, 18  
Challenge: #28

and # 1 – 6 in Appendix to Bond Chapter

**Additional Practice Problems:**

Intermediate: # 21, 23

**Chapter 14**

**Suggested:**

Concept Questions: # 2, 3, 5, 6, 7  
Basic: # 2, 3, 4

**Additional Practice Problems:**

Concept Questions: # 11

**Chapter 16**

**Suggested:**

Basic: # 1, 2, 12, 13, 14, 15, 16  
Intermediate: # 17, 18, 19, 23, 24, 25  
Challenge: #26

Note:

#26 – while this is a theoretical question, the rudiments of this question will be discussed in class.

**Chapter 18** (excluding the CAPM questions which will not be on the second midterm)

**Suggested:**

Basic: # 1, 3

Intermediate: # 10, 11, 12

Challenge: # 15, 16, 17

**Chapter 17**

**Suggested:**

Concept Questions: # 1, 2, 4

Intermediate: #8

**Chapter 10**

**Suggested:**

Basic: # 1, 2, 12, 17

Intermediate: #23

**Additional Practice Problems:**

Basic: # 4, 6

**Chapter 11**

**Suggested:**

Basic: # 1, 2, 3, 5, 10, 12, 16

Intermediate: # 24, 26, 28, 29, 30, 31

Challenge: # 34, 36, 37, 38

Note:

#24 – “has only 96 percent of the risk” should be read as “has only 96 percent of the beta risk.”

#37 – the sentence “Assume the CAPM holds” should be ignored.

#38 – uses calculus which will not be on exam.

**Additional Practice Problems:**

Basic: # 6, 9  
Intermediate: # 22

**Chapter 13**

**Suggested:**

Basic: # 1, 3, 5, 10, 11, 12, 13  
Intermediate: # 16, 19, 21  
Challenge: #24 (ignore part e and flotation cost)

Note:

#24 – this is a good problem to go over but ignore calculations of flotation cost, which you will not be responsible for on the final

**Chapter 18** (CAPM questions which can be on the final exam but not on the second mid-term)

**Suggested:**

Basic: #4  
Intermediate: #13

**Chapter 22**

**Suggested:**

Concept Questions: # 1, 2, 3, 4, 5, 6, 7, 11, 12, 13  
Basic: #2, 3