

## For Bidding Purposes only

### Capital Markets - B7306-002-20171

Spring 2017

Tuesdays, 6:00pm - 9:00pm

Warren 209

**PROFESSOR MARK ZURACK**

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### REQUIRED COURSE MATERIAL

#### Investments

*Zvi Bodie, Alex Kane, and Alan J. Marcus, tenth edition (BKM)*

Selected Readings are on electronic reserve and accessible through the Study.net (SN) and Library Reserves (LR) tabs in Canvas.

### REQUIRED PREREQUISITES AND CONNECTION TO THE CORE

#### CONNECTION WITH THE CORE

Capital Markets and Investments builds on knowledge from the Corporate Finance, Managerial Statistics, and Decision Models courses to understand asset valuation and investment decisions. Capital markets uses and builds upon the basic valuation tools developed in Corporate Finance such as arbitrage valuation, time value of money, understanding risk-return tradeoffs, the CAPM, and asset valuation. In analyzing various markets and assets, Capital Markets uses a large amount of material from Statistics, including the following: statistical modeling, random variables and distributions, parameter estimators, hypothesis testing, and regression. Optimization methods and stochastic modeling tools from Decision Models are also widely used, especially in portfolio construction and risk control. There are also some connections, though to a lesser degree, with Global Economic Environment especially in the Fixed Income Unit in discussing bond markets and the role of central banks and monetary policy.

## COURSE DESCRIPTION AND OBJECTIVES

This course has two purposes: (1) To introduce the principles of asset valuation from an applied perspective, and (2) To introduce different techniques to manage investment portfolios. It is designed to provide you sufficient background to understand current events in Global Markets, take more advanced Markets classes in the school, as well as give you a framework to manage your own assets.

The course breaks down into four areas:

**Asset Allocation** - Reviews different quantitative techniques used to measure returns and risk. Compares long term behavior of different asset classes and how investors allocate their wealth across Asset Classes.

**Equity Markets** - Covers theory on valuing individual stocks as well as constructing stock portfolios. We also touch on the different forms of both active and passive investing.

**Fixed Income Markets** - Teaches basic bond valuation focusing on the term structure of interest rates as well as notion of forward rates as well as the evaluation of credit and call risk.

**Derivatives Markets** - The valuation and use of futures and options markets are introduced.

The materials will be delivered through a combination of lectures, guest speakers, case studies and readings.

## ASSIGNMENTS

**All assignments must be completed in writing with hard copies handed in before class.** Some assignments will be Type A, some Type B.

For Type A assignments, each student must participate in a group discussion regarding the assignment before submission and review and if needed edit the final submission. **Collaboration across groups is not allowed.**

For Type B Assignments, each student should attempt to answer the questions on their own before collaborating with other students. Each student should hand in their own submission for Type B Assignments.

## METHOD OF EVALUATION

Class Participation and Assignments	40%
Take-home Exam	35%
Final Project	25%

An important component of Class Participation is attendance which will be tracked. I reserve the right to downgrade (including failing) any student who misses a significant number of classes, or does not complete all of the assignments. I will try to avoid cold calling, with the exception being case discussions. During class, please do not use laptops, tablet computers, and smartphones. Exceptions will be made with my prior approval.

Notice that there is a Final Project in the Method of Evaluation. The Final Project is an oral presentation in response to a case study I will hand out toward the end of the semester. Each group will meet with me for 20 minutes at a mutually convenient time to present your project. Attendance is mandatory.

## PRE-RECORDED CLASSES

As part of a course I recently taught, I pre-recorded four classes that are part of Capital Markets. All of the material covered in these classes will be discussed LIVE in class. However, feel free to use the following pre-recorded classes as review material if needed.

### **Pre-recorded Class 1:** The Tools of Investing

This class begins by exploring the metrics used to evaluate public investments. We go over return measures like Arithmetic and Geometric averages, and risk measures like Variance, Standard Deviation and Correlation.

### **Pre-recorded Class 2:** Portfolio Construction, Beta, Systematic and Non-Systematic Risk

In this class, we review the calculations used in the Portfolio section of Equities.

### **Pre-recorded Class 3:** Introduction to Fixed Income Markets and Bond Pricing

We review the different types of securities that exist in fixed income markets. Then we show why a bond's price must be the present value of its coupons and return of principal. We review the relationship of prices and yields.

### **Pre-recorded Class 4:** Options Introduction

In this class I describe the workings of the options market and introduce strategies and valuation.

## COURSE OUTLINE

### 1. The Tools of Investing/Asset Allocation (01/17)

After a brief discussion on the structure of the course, the class begins by exploring the metrics used to evaluate public investments. We go over return measures like Arithmetic and Geometric averages, and risk measures like Variance, Standard Deviation and Correlation. We then define what an Asset Class is and the different Asset Classes used to construct an investment portfolio.

The class then explores the process of determining what percent of an overall portfolio should be allocated to each asset class. This requires understanding not only the returns and risk of each asset class, but also how the correlation of different asset classes affects the overall risk of the portfolio.

#### Readings:

- Chapter 5, pp. 127-137, BKM
- Glossary, BKM
- Issues in Strategic Asset Allocation (Litterman, Robert B.), pp. 104-109 (SN)
- Hedge Funds 101 (Schwager, Jack D.), Part Two: Hedge Funds as an Investment, Chapter 11, pp. 195-210 (click on "Click here for full text" on the Reserves page) (LR)

### 2. Asset Allocation - Guest Speaker (01/24)

After completing our discussion on Asset Allocation, Adam Grealish from Betterment will provide an overview of how Betterment manages its assets and take questions.

Guest Speaker: Adam Grealish, Betterment

Assignments:

Assignment (1) - Asset Allocation Introduction (Type B)

### 3. Case Study/Equity Valuation (01/31)

By studying the issues faced by the Yale Endowment Fund in developing an asset allocation strategy this class attempts to give you a real world perspective on how both institutions and individuals construct investment portfolios.

The second half of the class explores quantitative ways to value individual equities. We start by describing basic measures like market vs. book and intrinsic value, then explore the use of dividend discount and price/earnings models.

Readings:

- [Yale University Investments Office: February 2015](https://cb.hbsp.harvard.edu/cbmp/pl/58520187/58520192/cdc3e6236281e0d757dce936d8ce18ac) (Lerner, Josh)  
(<https://cb.hbsp.harvard.edu/cbmp/pl/58520187/58520192/cdc3e6236281e0d757dce936d8ce18ac>)
- [The Yale Endowment 2015](#) (Yale University) (LR)
- Norway: The New Yale? (Zweig, Jason) (LR)
- Chapter 18, pp. 591-623, BKM

Assignments:

Assignment (2) - Questions on Yale Case (Type A)

### 4. Going from Stocks to Portfolios (02/07)

In this class we explore the process of constructing an investment portfolio. We start by reinforcing the virtues of diversification then describe how portfolios are constructed. We explore the Capital Asset Pricing Model (CAPM), a theory which is the basis of modern investing. We then discuss how investment managers who do not believe the market is efficient use quantitative techniques to optimally trade off risk and return.

Readings:

- Chapter 9, pp. 291-302 - BKM
- The Arithmetic of "All-In" Investment Expenses (Bogle, John C.) (LR)
- If You Can't Beat 'Em (Silver, Nate) Chapter 11, pp. 329-369 (SN)
- Why Did Wall Street Crash and Warren Buffet Prosper? (Cain, Susan) Chapter 7, pp. 155-177 (SN)
- Investor, Know Yourself (Statman, Meir) (LR)

Assignments:

Assignment (3) - Equity Valuation (Type B)

### 5. Introduction to Fixed Income (02/14)

After completing our discussion on portfolio construction, the course then leaves Equities and moves on to Fixed Income Markets. We review the different types of securities that exist in fixed income markets. Then we show why a bond's price must be the present value of its coupons

and return of principal. We review the relationship of prices and yields and discuss reinvestment and early unwind risk.

Readings:

- Chapter 14, pp. 445-467 - BKM
- [GM Asset Management and Martingale's Low Volatility Strategy](http://www8.gsb.columbia.edu/caseworks/ProfessorMarkZurack/e000)  
(<http://www8.gsb.columbia.edu/caseworks/ProfessorMarkZurack/e000>)

Assignments:

Assignment (4) - Portfolio Analysis, Martingale Case (Type A)

#### 6. The Term Structure of Interest Rates (02/21)

We start class by introducing the notion of the term structure of interest rates. That brings us to forward rates, their computation, interpretation (expectations hypothesis) and how they may be created by detailing a series of transactions which has the effect of locking in a specific forward rate. We use this knowledge to understand the expected future return of owning bonds.

Readings:

- Chapter 15 - BKM

#### 7. Duration and Convexity/Corporate Bonds and Credit Risk (02/28)

We start with a guest speaker who reviews how an investor evaluates credit risk and how that risk translates into a higher yield than what is paid on a comparable Treasury.

The class then explores the use of duration as a measure of bond price sensitivity to interest rate changes. We examine how this measure can be used to assist in the risk management of a portfolio of bonds. We move onto convexity, which provides further insight into the risk management of bond portfolios. Then we review what has been discussed so far in the course.

Guest Speaker: TBD

Readings:

- Chapter 14, pp. 468-475; Chapter 16, pp. 515-528 - BKM

Assignments:

Assignment (5) - Bond Pricing (Type A)

**Exams: Exam handed out**

#### 8. International Fixed Income/Indices and Exchange Traded Funds (03/21)

During the first half of the class Phil Guarco from J.P. Morgan reviews the currency risks inherent in all non-dollar investments, focusing on fixed income markets.

We then move on to the last portion of the course which explores the implementation of investment decisions focusing on Derivatives. We start with Indices and Exchange Traded Funds.

Guest Speaker: Philip Guarco, J.P. Morgan

**Exams: Exam due**

## 9. Futures and Swaps (03/28)

The class explores the trading and valuation of Equity Futures and Swaps. My discussion on Futures will focus on Stock Index Futures, with specific discussion focusing on how futures are traded and valued.

We then discuss how Equity Swaps are used to leverage long positions on individual stocks and establish short stock positions.

Readings:

- Chapter 3, pp. 80-83; Chapter 22, pp. 770-781; Chapter 23, pp. 806-810 - BKM
- Mechanics of the Equity Lending Market (Cohen, Jeff), Chapter 2, pp. 9-16 (SN)

## 10. Introduction to Options/Options Valuation (04/04)

The class moves on to Options, starting with basic strategies and valuation. Although options pricing can be complex, I try to provide you intuition on what drives pricing leaving out the higher mathematics.

Readings:

- Chapter 20, pp. 679-687; 698-700; Chapter 21, pp. 722-725 - BKM

## 11. Options Strategies/Fixed Income Securities with Embedded Options (04/11)

After completing Options Valuation, this class presents a broad overview of the Options strategies most frequently followed by investors.

We then explore different types of Fixed Income Securities and Derivatives, specifically Structured Notes, Credit Default Swaps, Callable Bonds and Convertible Bonds.

Readings:

- Chapter 20, pp. 689-698 - BKM
- Tutorial on Using Options in Active Strategies (Tsu, Maria E.) (Canvas Misc Files)

Assignments:

Assignment (6) - Futures, Swaps and Options Valuation (Type A/Type B)

## 12. Trading/The Future of Capital Markets (04/18)

The course ends with trading followed by a broad discussion on the future of Capital Markets, led by Adam Parker, Chief U.S. Equity Strategist at Morgan Stanley. We start with a review of who the main participants are in trading equities and bonds and what function they serve. We then cover how to trade, focusing on the different types of orders that are placed and where those orders are executed.

Readings:

- Chapter 3, pp. 59-74 - BKM
- Findings Regarding the Market Events of May 6, 2010 (CFTC & SEC), Executive Summary only, pp. 1-8 (LR)
- Enhancing Our Equity Market Structure (White, Mary Jo) (LR)

Guest Speaker: Adam Parker, Morgan Stanley