COURSE OBJECTIVES AND DESCRIPTION

This course is designed for students wishing to acquire a better understanding of equity and debt markets and how governments use financial markets to raise capital, manage risk and fund future employee-pension obligations. Specifically, we will focus on some fundamental corporate-finance concepts that are essential to the understanding of debt and equity markets and then turn to how those concepts relate to taxable and tax-exempt financing and other uses of financial markets by governments. Topics will include the measurement of risk and return, market efficiency, efficient portfolios, options and derivatives, fixed income basics and the structure of the municipal debt market, the structure of interest rates, fixed income risk and credit ratings. Time permitting, we will also discuss privatization and talk about when it makes fiscal sense. The course will use problems and short cases to help students develop skills they can apply directly in the workplace.

Class Discussion: Participation and discussion is expected. All students should come to each class prepared to discuss issues raised in the class assignment for that lecture or to explain their solutions to assigned problems to the best of their ability. You are also encouraged to send “Fuzzy-Point” emails prior to class if you are unclear about anything in the readings.

Class Notes: Weekly class notes will be available as PowerPoint files on the Blackboard web-site. The notes will be posted to Blackboard the Thursday prior to each class. Please either print these notes out and bring them to class with you or bring your wireless-enabled laptop to class with you.

Course Communications: From time to time, I may wish to communicate to you concerning course assignments or modifications to the syllabus. I will send announcements by email and post them to the course Blackboard page. Because this is a new course, some of those announcements are likely to be about changes in the structure and content of the course and the assignments due each week. Please check your e-mail and the Blackboard site at least once a week throughout the term. If you miss a lecture, you will be able to download copies of the class notes and any handouts that were distributed from Blackboard.

Time Commitment: Like most finance courses, this one will be fast paced and require a
commitment of at least ten hours per week including class time. It will also call upon you to master a portion of the material on your own and extend what you have learned in new ways.

Contact Information:
Professor Bob Purcell
Office: 217 Milne Hall
Phone: 518-442-5276
Email: mpurcell@albany.edu
Office Hours: Thursdays 4:30 to 7:00 PM and by appointment

Schedule of Classes:

<table>
<thead>
<tr>
<th>Class</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>August 31</td>
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<tr>
<td>2</td>
<td>September 7</td>
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<td>3</td>
<td>September 14</td>
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<td>4</td>
<td>September 21</td>
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<tr>
<td>No Class</td>
<td>September 28</td>
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<td>5</td>
<td>October 5</td>
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<td>6</td>
<td>October 12</td>
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<td>7</td>
<td>October 19 – Midterm Exam</td>
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<td>8</td>
<td>October 26</td>
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<td>9</td>
<td>November 2</td>
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<td>November 23</td>
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<td>12</td>
<td>November 30</td>
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<tr>
<td>13</td>
<td>December 7</td>
</tr>
<tr>
<td>14</td>
<td>December 14 – Final Exam</td>
</tr>
</tbody>
</table>

TEXTS AND OTHER MATERIALS:

The primary texts for the course as well as the reading packet described below will be available at the Mary Jane Bookstore. The texts are:


Reading Packet: Materials for the corporate-finance section of the course are from Brealey-Myers-and-Allen. Students who intend to work in finance may want to purchase the text. It is widely used in core corporate-finance courses at leading business schools. These materials will be handed out in class.


Municipal Finance Readings have been drawn from the PSA text below. These materials will be available in PDF format on the course Blackboard site.

**TVM Review:** If you are unsure of the time-value-of-money concepts, you should go back to the Finkler book used in PAD-501 to review them. You may also want to reread the bond-valuation sections in Chapter 5 of Finkler. We will not be covering the basic TVM concepts in class.


**Blackboard Fabozzi Readings:** In addition to the text listed above, we will be using several chapters from the Fabozzi handbook. These readings will be posted to Blackboard and are referred to as “Fabozzi 2” in the syllabus. The Blackboard password is “pad647”. If you expect to work in the debt finance area or want a more complete treatment of fixed-income markets for future reference, you may want to buy the book.


**Calculator:** To check you spreadsheets, you will need a financial calculator that can do time-value-of-money calculations. The one you used for PAD-501 will work. If you do not have a calculator that can do time-value-of-money calculations, please buy a Sharp, HP or a TI calculator that has that capability. You will see functions like PV, N, I, FV on appropriate calculators. Financial calculators are available at places like Staples, Office Depot, and Amazon.com.

**GRADING**

- 20% of your grade will be based on your homework assignments.
- 40% of your grade in this course will be based on the midterm exam.
- 40% of your grade will be based on the final exam.

All required readings and assignments must be completed prior to class. Your grade for the course will be lowered if you are not prepared to discuss assigned problems and conceptual issues in class.

**ASSIGNMENTS**

There are problems and discussion questions spread throughout the course. They are meant to help you gain familiarity with the tools discussed in the lectures. Make sure that you set aside the time necessary to complete each assignment. Also, be sure to complete all of the calculations far enough in advance of the class session to allow time to think about what the results mean from a manager’s perspective. We will be spending a fair amount of class time doing exactly that.

Assignments not in the assigned readings are included in the syllabus. All assignments must be
completed using a spreadsheet program like Excel and your answers must either be clearly formatted or prepared in a word processor like Word and presented in an understandable format. Assignments include unstructured “raw spreadsheet output” will lose credit. Solutions to the assigned problems will be reviewed in class and posted to the course Blackboard site each week on Thursday morning.

Where possible, Excel templates will be posted to Blackboard in the “Templates” folder. Whenever they are available, I strongly suggest that you use them to structure your approach to the problems. Spreadsheet output must be formatted using a word processing program like Work or Word Perfect. With the exception of the course paper, assignments will not be graded. You will receive credit for the assignments if you make reasonable effort to solve the problems and present your solution in an intelligible way.

Assignment must be submitted at the beginning of the class when they are due. If you must miss a class, be sure to put your assignment in my mailbox in Milne before class starts. If you can not get to the Milne before class, you may fax your assignments to my attention at 518-442-5298. Be sure to include a cover page asking that the fax be put in my mailbox. If you email the assignment, be sure that it is formatted in a way that facilitates printing. Raw, unformatted spreadsheets will not be accepted. **LATE ASSIGNMENTS WILL NOT RECEIVE CREDIT.**

The schedule of assignments is as follows.

<table>
<thead>
<tr>
<th>Assignment Number</th>
<th>Class Due</th>
<th>Grade Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Class 2</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Class 3</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>Class 4</td>
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<td>4</td>
<td>Class 5</td>
<td>2</td>
</tr>
<tr>
<td>5</td>
<td>Class 6</td>
<td>2</td>
</tr>
<tr>
<td>Midterm Exam</td>
<td>Class 7</td>
<td>40</td>
</tr>
<tr>
<td>6</td>
<td>Class 9</td>
<td>2</td>
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<tr>
<td>7</td>
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<td>3</td>
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<tr>
<td>8</td>
<td>Class 11</td>
<td>3</td>
</tr>
<tr>
<td>9</td>
<td>Class 12</td>
<td>3</td>
</tr>
<tr>
<td>Final Exam</td>
<td>Class 14</td>
<td>40</td>
</tr>
</tbody>
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**Method of Instruction:** Lectures will meet for 180 minutes each week. These sessions will mix lecture, problems, and discussion teaching methods. The lectures will focus primarily on conceptual and analytical material. The book also contains descriptive material. You will be responsible for the descriptive material, even if we do not have enough time to cover it in class. To allow adequate class time to discuss critical and difficult issues, I will rely on you to read required chapters and complete the assigned problems prior to class and to be familiar with the descriptive material in the chapters.

**Course Outline:**

**CLASS 1: Introduction and Discussion of the Equity and Default-Risk Premiums and Expected Returns:** We will review the syllabus, introduce the major topics we
will be covering during the semester and begin a discussion of equity pricing and the equity risk premium and how it relates to expected returns. We will also spend time discussing possible impacts of a US Government default and downgrading might have on securities pricing and the capital markets.

**CLASSES 2-3: Risk, Return and Efficient Markets:** We will continue our discussion of risk and return and start to talk about market efficiency and what it means for securities pricing. This discussion will carry over into class three.

**Read for Class:**
- BMA – The Value of Common Stocks – Chapter 5
- BMA - Intro to Risk and Return – Chapter 8
- BMA – Risk and return – Chapter 9
- BMA – Efficient Markets and Behavioral Finance – Chapter 14

**Due for Class 2:**
- BMA Chapter 8 – Introduction to Risk and Return Problems 2, 3, 9 and 10
- Templates for problems 2 and 3 are on Blackboard

- BMA Chapter 9 – Risk and Return Problems 1, 2, and 7

**Due for Class 3:**
- BMA Chapter 14 – Efficient Markets and Behavioral Finance Problems 12 and 18 (Hint: you will need to regress the returns for the stocks against the market to get estimates of alpha and beta for problem 18)

**CLASS 4:** **Efficient Markets and Options:** We will complete our discussion of market efficiency and spend some time discussing alternative views of market behavior. These theories are especially significant for investment portfolio decisions. For example, private-equity and hedge-fund investments that are popular with pension and endowment managers represent a departure from the efficient-market hypothesis. We will also begin our discussion of options, the first of several so-called derivative products we will be talking about. As we will learn after the midterm, options are often embedded in fixed-income securities and have a material impact on their pricing and risk.

**Read for Class:**
- BMA – Understanding Options - Chapter 21

**Due for Class 3:**
- BMA Chapter 21 – Understanding Options Quiz questions 1 to 10

- BMA Chapter 22 – Valuing Options Quiz Problems 1, 3, 5 and 6

**CLASSES 5-6: Options and Options Pricing:** We will complete our discussion of options and look at how options are priced.
Read for Class 5: BMA – Valuing Options - chapter 22

Due for Class 5: Go to one of the major newspapers like the Wall Street Journal, New York Times or the Financial Times or choose an online site that provides option prices, pick two major companies and get the market prices of three call options with different strike prices and/or expiration dates for each company. Record the option price, the strike prices and expiration dates for each option. Then calculate the intrinsic and time values for each option. Think about why options different strike prices and exercise dates differ in their overall pricing as well as the intrinsic and time components of those prices. Finally, think about what you read in the option pricing chapter and write a one paragraph explanation of what the time premium represents in financial terms. In class 6, we will finish discussing option pricing, discuss the midterm exam and do a review of the material from the first five classes.

Due for Class 6: BMA Chapter 22 – Valuing Options
Practice Questions 9 and 12

CLASS 7: Midterm Exam 40% of course grade: The midterm exam will cover the corporate-finance topics from the first six classes. The midterm will focus on the materials in the class notes and assignments. You may bring two pages of 8 1/2 x 11, double-sided notes to the exam. The exam will be administered on a computer.

CLASS 8: Fixed Income Securities and Municipal Bond Basics: We will review the midterm exam and briefly discuss bonds and the actors in fixed-income markets with particular attention to tax-exempt government financial instruments. We will only be touching the high points.

Read for Class 8: Fabozzi 2: Overview of Types and Features of FI Securities – Chapter 1
PSA – Basics of Municipal Bonds – Chapter 1
PSA – The Municipal-Bond Industry – Chapter 2
PSA – The Issuers – Chapter 3
PSA – How the Underwriter Works – Chapter 4
PSA – The Secondary Market – Chapter 5
PSA – Regulatory & Disclosure Requirements – Chapter 9
Fabozzi 2 – Municipal Bonds – Chapter 11

CLASS 9: Yield Measurement and Advanced Bond Pricing Concepts: In PAD-501, we treated bond returns as if there was only one way of looking at them and talked about bond maturities as if the size and timing of intermediate cash flows did not matter. In this class, we will quickly review basic bond-pricing concepts and expand our definition of how yield is measured to include the role of spot prices. We will also discuss two measures of yield that are widely used by government
financial managers – net and total interest cost.

Read for Class 9:
- Fabozzi 2: Risk Associated with Investing in Fixed Income Securities – Chapter 2
- Fabozzi 2: Bond Pricing, Yield Measures and Total Return: Chapter 5
- Fabozzi 2: Taxable Equivalence: Chapter 11 pages 271-272 only
- Finkler: Net and Total Interest Cost: Chapter 5 pages 206-07
- Fabozzi 1: Spot Rates and Their Role in Valuation: Chapter 2
- Fabozzi 1: Measuring Price Sensitivity to Interest Rate Changes: Chapter 4

Due for Class 9:

1. What is the value of a 3 year, $10,000 par-value, zero-coupon bond based on semi-annual compounding if current interest rates are 5.75%?

2. You want to buy a $10,000 par-value corporate bond with a 7% coupon maturing in 2011. As with most bonds, interest is paid twice each year. Current interest rates for that bond are 5.75%.
   A. If you buy the bond with exactly 3 years to go to maturity, what will the bond be worth?
   B. If you were to buy the same bond with 6 remaining coupons and 90 days between the settlement date and the date of the next coupon payment, what would the bond be worth? Note this is the full or "dirty" price of the bond. What was the value of "w" (the fractional portion of the year through the next coupon payment)? Did you use the exact (365 day convention) or the 360 day convention to calculate "w"? Why?
   C. How much of the payment in question c would represent accrued interest from the date of the last coupon payment that must be paid to the seller? How much of the payment in question a represented accrued interest? Was accrued interest calculated on a simple or a compound basis? Would your answer change if this were a US Government bond?
   D. What is the "clean" price of the bond?
   E. What is the current yield on the bond purchased in question 2-a with 3 years (6 full coupons) to go? What is the current yield on the bond purchased with 90 days to go to the next coupon?
   F. What is the yield to maturity for the bond in question 2-a? How does that rate compare to the one used to find the price of the bond? Does that calculation assume a simple or compounded return? Can the investor’s actual return differ from the yield to maturity? Why or why not?

3. Describe total return. How does total return change as interest rates change over time? Why?

4. If you buy a tax-exempt bond with a 4% coupon rate and your marginal tax rate is 30%, what is your taxable equivalent rate of return?

CLASS 10: Callable Bonds and Their Pricing: In class 10, we will finish our discussion of
duration and convexity and turn to the problem of callable bonds and how they are valued. To do that, we will extend the binomial model to value bonds with embedded calls and other bond structures with contingent cash flows.

Read for Class 10:
- Fabozzi 1: Overview of the Valuation of Bonds with Embedded Options: Chapter 5
- Fabozzi 1: Binomial Model I: Valuing Callable Bonds: Chapter 6
- Fabozzi 1: Binomial Model II: Valuing Other Bond Structures: Chapter 7

Due for Class 10:
1. Use the bootstrap model to calculate the spot rate schedule for US government bonds with $100 nominal par values and the YTM schedule shown below. You may find it helpful to look at the class notes for a general bootstrap formula and sample calculations.

<table>
<thead>
<tr>
<th>Period</th>
<th>Years</th>
<th>YTM</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.5</td>
<td>2.30%</td>
</tr>
<tr>
<td>2</td>
<td>1.0</td>
<td>2.50%</td>
</tr>
<tr>
<td>3</td>
<td>1.5</td>
<td>2.70%</td>
</tr>
<tr>
<td>4</td>
<td>2.0</td>
<td>2.85%</td>
</tr>
<tr>
<td>5</td>
<td>2.5</td>
<td>3.00%</td>
</tr>
<tr>
<td>6</td>
<td>3.0</td>
<td>3.10%</td>
</tr>
</tbody>
</table>

2. Using the spot rates you calculated in Problem 1, calculate the static spread for a $100 par value, three-year corporate bond with a coupon rate of 4.40% in a market where such bonds have a yield to maturity of 4.85%. Hint! Set up the problem in Excel and use Goal Seeker to solve for the spread. See the class notes for the structure of that analysis.

3. You own a 6% US Government Bond with a nominal par value of $100 and 10 years to maturity. The current yield to maturity for the bond is 4.5%.
   a. Calculate the duration for the bond based on 30 basis point increases and decreases in interest rates.
   b. Calculate the Maccuauley duration for the bond at the yield to maturity and use that to estimate the percentage change in bond prices for a 30 basis point change in market rates.
   c. Calculate the convexity for the bond for a 150 basis point upward and downward change in market rates.
   d. Combine the duration and convexity estimates to estimate the percentage change in bond price for a 150 basis point change in market rates.
   e. Assume a flat yield curve and do a scenario analysis to calculate bond values with a 150 basis-point increase and decrease in market rates. How does those percentage changes in value compare to the estimates you generated when you combined duration and convexity?

CLASS 11: The Term-Structure of Interest Rates: We will complete our discussion of
valuing bonds with embedded options and other cash-flow distortions. Then, building on our discussion of yield measurement, we will talk about how interest rates are determined. We will begin with the macroeconomic determinants of interest rates. That will include the role of the Federal Reserve Bank in managing both interest rates (fiscal policy) and the national money supply (monetary policy). Then, we will turn to how the timing of cash flows leads to what is called the term structure of interest rates and talk about three competing theories of what determines term structure. Finally, we will add factors that are specific to tax-exempt markets.

Read for Class 11: Fabozzi 2: The Term Structure of Interest Rates – Chapter 7
PSA – Fundamentals of Muni Interest Rates – Chapter 8
(Pay special attention to pages 151-155)

Due for Class 11:
1. Given the maturity structure for a corporate bond issuer shown in the table below and constant one-year interest rate volatility (STD) of 10%, calculate the three-year binomial interest rate tree. Note: the rates shown below are for maturities of one to four years.

<table>
<thead>
<tr>
<th>Maturity</th>
<th>YTM</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2.70%</td>
<td>100</td>
</tr>
<tr>
<td>2</td>
<td>3.10%</td>
<td>100</td>
</tr>
<tr>
<td>3</td>
<td>3.50%</td>
<td>100</td>
</tr>
<tr>
<td>4</td>
<td>4.00%</td>
<td>100</td>
</tr>
</tbody>
</table>

2. Using the binomial interest tree you calculated in problem one, what is the value of a $100 par-value, 5.5% coupon corporate-bond with four-years left to maturity. The bond was issued by the organization for which the interest-tree was derived? The bond has no call features.

3. If the bond described in problem one could be called at 101% of par value at any time after one year, what would its value be? You may assume that the issuer will call the bond whenever the call price is less than the computed value of the bond.

4. What is the value of the call feature for the bond valued in problems two and three?

5. Colonie has a 5.00%, $50,000,000 callable, general-obligation bond issue outstanding. The bond has 10 years left to maturity. The cost of refinancing the bond is 2.5% of its par value and the call premium for the bond is 3.00% above par. Colonies’ Finance director plans to sell the new issue sixty days before calling the old issue. As a result, the Town will have to pay an extra 60 days of interest on the outstanding bond issue. Hint: use the model in the “Fixed Income Markets and Pricing” class notes as the basis for your calculations.

   a. Current interest rates for municipalities with Colonies’ credit rating are 4.3%. Should Colonie call the old issue?

   b. If the finance director believes that the issue should only be called if the net present-value savings on the bond issue are greater than $100,000, what is the highest reissue rate at which Colonie will refinance the bonds?

6. You just obtained the prices in the table below for a corporate issuer’s bonds with one to three years maturities and the corresponding US Treasury yields.
Calculate the forward probabilities of default for both the two and three year corporate maturities. Hint: use the model in the “Yield Measurement & Advanced Bond Pricing Concepts” class notes as the basis for your calculations.

<table>
<thead>
<tr>
<th>Period</th>
<th>Corporate</th>
<th>Treasury</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>0.926</td>
<td>0.930</td>
</tr>
<tr>
<td>2</td>
<td>0.840</td>
<td>0.848</td>
</tr>
<tr>
<td>3</td>
<td>0.800</td>
<td>0.813</td>
</tr>
</tbody>
</table>

CLASS 12: **Forward Rate Analysis.** We will complete our discussion of the term structure of interest rates and explore some additional concepts for analyzing the term structure of interest rates.

Read for Class 12: Fabozzi 2: Overview of Forward Rate Analysis – Chapter 8

Due for Class 11: 1. Given the yields-to-maturity for the on-the-run US Government bond below:

   a. Calculate the spot-rate curve.
   b. Calculate the forward rates.
   c. Generate a binomial interest-rate tree with imputed annual volatility of 20%. Make sure you adjust rates, coupons and volatility for maturities!
   d. Value a 2.2% coupon US government bond with 2 years left to maturity using the rate structures generated in parts a to c.
   e. Value the bond assuming a flat yield curve and compare that value to the ones generated in part d.

<table>
<thead>
<tr>
<th>Maturity</th>
<th>YTM</th>
<th>Price</th>
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<tbody>
<tr>
<td>0.50</td>
<td>1.20%</td>
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<tr>
<td>1.00</td>
<td>1.80%</td>
<td>100</td>
</tr>
<tr>
<td>1.50</td>
<td>2.20%</td>
<td>100</td>
</tr>
<tr>
<td>2.00</td>
<td>2.50%</td>
<td>100</td>
</tr>
</tbody>
</table>

CLASS 13: **Fixed-Income Risk, Credit Ratings and Asset Valuation Decisions:** In class 13, we will ask how rating agencies and investors factor the possibility of default into pricing decisions and relate that to the yield-curve spreads. WE will also look at two examples of government privatization and discuss if and when privatizing public assets makes fiscal sense.

Read for Class 13: Fabozzi 2: Risk Associated with Investing in FI securities- chapter 2
Fabozzi 2: Guidelines in Credit Analysis of GO & Revenue Bonds Ch. 34
Purtell & Fossett: Hey You Never Know: Selling Lotteries in America - on Blackboard
Purtell, Fossett & Hosseini: To Lease or Not to Lease: Is that the Infrastructure Question? - on Blackboard

CLASS 14: **FINAL EXAMINATION - 40% OF COURSE GRADE:** The final examination will cover all topics from class seven through class fourteen. The final exam will focus on the materials in the class notes and the exercises. You will be permitted to bring two pages of 8 1/2 x 11, double-sided notes to the final exam. The exam
will be administered on a computer.