

**FINA 475-001 –FIXED INCOME SECURITIES**  
**Spring 2019 – John DeMeo**  
**Course Information**

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Office: Room 483D

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Office Hours: Tuesdays 10-11am and 3-4pm and other times by appointment). I will announce the occasional office hour on Wednesdays. I am very flexible with times outside these hours given we can Video/Audio chat via Zoom. *Please contact me via email.*

Class time: Tuesday/Thursday 11:40am – 12:55pm

Classroom: Moore – Room 136

### Course Objectives

This course is designed to provide extensive coverage of the wide range of fixed-income products and the tools employed by market participants to analyze them. The key feature of *Fixed Income Securities* is that it strongly emphasizes the applications of the material presented in class to problems/situations encountered by market participants. The course, which is very quantitative in nature and requires understanding and explaining concepts beyond knowing formulas.

The specific objectives of the course are listed below:

- Immerse the student in the fundamental principles of fixed-income securities and an introduction to portfolio management basics.
- Deepen the student's understanding of fixed-income valuation models.
- Give each student the opportunity to solve problems encountered by practitioners in fixed-income markets.

### Required Textbook

**Fabozzi, *Bond Markets, Analysis, and Strategies*, Ninth Edition (2016), Pearson.**

**Technology:** A financial calculator (HP12C /Texas Instruments BAII Plus or equivalent tool with PV/FV functions.

Grade	Weight	Approximate Date <i>(subject to change)</i>
Quiz #1	5%	TBD before Exam #1
Quiz #2	10%	TBD before Exam #2
Exam #1	25%	Thursday February 14 <sup>th</sup>
Exam #2	25%	Thursday March 28 <sup>th</sup>
Final Exam	30%	<b>Tuesday May 7th at 11:30am</b>
Class Contribution	5%	Ongoing

## Top Hat

We will be using the Top Hat ([www.tophat.com](http://www.tophat.com)) classroom response system in class. You will be able to submit answers to in-class questions using Apple or Android smartphones and tablets, laptops, or through text message. Attendance will be taken using TopHat.

You can visit the Top Hat Overview (<https://success.tophat.com/s/article/Student-Top-Hat-Overview-and-Getting-Started-Guide>) within the Top Hat Success Center which outlines how you will register for a Top Hat account, as well as providing a brief overview to get you up and running on the system.

An email invitation will be sent to you by email. Send me an email if you did not receive an invitation. You can register by simply visiting our course website:  
<https://app.tophat.com/e/115997>

Note: our Course Join Code is **115997**

Top Hat requires a paid subscription, and a full breakdown of all subscription options available can be found here: [www.tophat.com/pricing](http://www.tophat.com/pricing)

Should you require assistance with Top Hat at any time, due to the fact that they require specific user information to troubleshoot these issues, please contact their Support Team directly by way of email ([support@tophat.com](mailto:support@tophat.com)), the in app support button, or by calling 1-888-663-5491.

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## Exams

The format for all three exams will be mixture of short essay, multiple choice, and problems. **Everyone must take the exams on the scheduled dates.** There may be limited exceptions or possibility of alternative times depending on a valid documentation. (Our last day of class is **Thursday, April 25<sup>th</sup>**)

## Grade Scale

All assignments and tests will be scored out of 100 points, and then weighted by the percentages listed above. The overall percentage score will determine your final grade. If you achieve an overall percentage in the ranges below, you will receive at worst the letter grade associated with that range. It is possible (albeit rare) that grades will be curved at the end of the semester, so that some scores in a particular range will obtain a letter grade associated with a higher range. For example, it is possible that a 77 overall average could result in a B grade. **Note – there are no extra credit opportunities.**

90-100	A
87-89	B+
80-86	B
77-79	C+
70-76	C
60-69	D
< 60	F

## Classroom Expectations

To encourage you to contribute to class, your grade depends on my *subjective* assessment of your contribution to class over the semester. You start the semester with a grade for contribution to class equal to **3 out of 5%**. You can increase that grade by contributing to class in a positive manner (e.g., participation, facilitating discussion, asking about market-based current events). You can decrease that grade by not attending class regularly. **TOPHAT will be used to take attendance.** Unexcused absence from more than **20 percent** of the scheduled class sessions is excessive and the instructor may choose to exact a grade penalty for such absences. It is of particular importance that a student who anticipates absences in excess of 20 percent of the scheduled class sessions receives prior approval from the instructor. Communicate!

## Career Chats

One of my responsibilities is developing and providing “Career Management and Guidance” for Finance majors. I am available to chat with you on a voluntary basis. More details on this will be discussed in class.

## **Bond Market News and Discussions**

Students should be prepared to discuss the fixed income markets each day. This will count toward the participation grade. You can start by being prepared to speak to the rate changes in the treasury market. Cite the current 2 year, 10yr, 30 yr US Treasury bond rates and how they changed over the last few days.

The second part is to discuss a news item related to fixed income. It could be how a certain market news item impacted the treasury market that day - or it could be about the corporate bond credit markets, or the mortgage markets. Ideally, let's primarily stick to the US Bond markets but International markets are fair game.

At that point, we will open it up to questions about the topic discussed. Students will ask the presenter more details about the article. Questions count as participation! After that, students can bring up other news items they would like to discuss.

### **News Resources**

**Great discounts on WSJ Access – \$4 for 4 weeks – or \$48 for the year**

<http://r.wsj.net/lcm2D>

Markets Page

[http://markets.wsj.com/?mod=Home\\_MDW\\_MDC](http://markets.wsj.com/?mod=Home_MDW_MDC)

Rates Page

[http://online.wsj.com/mdc/public/page/mdc\\_bonds.html](http://online.wsj.com/mdc/public/page/mdc_bonds.html)

Bond Market News – this is likely not to be free!

<http://www.wsj.com/public/page/news-fixed-income-bonds.html>

Other Sources

Bloomberg Terminal in Trade room!

<http://www.cnbc.com/bonds/>

<https://www.bloomberg.com/markets/rates-bonds/government-bonds/us>

<http://www.reuters.com/finance/bonds>

<http://money.cnn.com/data/bonds/>

<https://www.briefing.com/investor/markets/bond-market-update/>

## Learning Objectives

The following represents a list of things I trust you will learn this semester. NOTE: For now, this is a fluid list and I may change the order, delete or add topics based on the direction we take. I will make it very clear what will be covered on any particular exam.

- Explain the general features of fixed-income securities, floaters, inverse floaters, caps and floors, call and refunding provisions, and sinking funds.
- Identify and explain the various types of risks associated with investing in fixed-income securities.
- Calculate a bond value with traditional bond valuation.
- Explain the importance of the shape of the price/yield relationship for an option-free bond.
- Explain why bonds change in price.
- Understand the process of valuing bonds between coupon payment dates including day count conventions, clean price, accrued interest, and the full price.
- Calculate and interpret the total return for a bond held to maturity.
- Explain scenario analysis.
- Explain how portfolio total return is calculated.
- Explain the three sources of dollar returns from investing in bonds.
- Calculate and interpret current yield.
- Explain how to calculate yield to maturity, yield to call, yield to put, yield to worst with the bond pricing formula.
- Explain how the following are calculated: discount margin, cash flow yield, nominal spread, and option-adjusted spread
- Explain the importance of the curvature of the price/yield relationship.
- Calculate and interpret Modified Duration.
- Explain what the convexity measure tells us.
- Explain how convexity and duration are used together.
- Calculate and interpret the approximate percentage price change due to duration and convexity.
- Define and interpret the negative convexity for callable bonds.
- Explain Effective (Option-adjusted) Duration for bonds with embedded options
- Review Fixed Income Benchmarks and how they are used in practice by portfolio and risk managers.
- Explain how a portfolio manager adds value relative to a benchmark.
- Define in some detail the following terms: Treasury inflation protected securities, Federal-related institutions securities, GSE securities, Corporate Bonds, Mortgage backed securities

## Learning Objectives (continued)

- Explain the par curve and how is it constructed
  - Explain the spot curve and how they are calculated.
  - Distinguish spot rates vs. strip rates
  - Explain what forward rates are and how are they calculated.
  - Explain how par rates, spot rates and forward rates are related to each other.
  - Discuss in some detail the types of yield curve shifts and how are they related.
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- Explain how arbitrage-free valuation works.
  - Explain how stripping/reconstitution works.
  - Explain the basic features of a mortgage loan and loan amortization.
  - Explain what prepayment models are and why they are critical to mortgage investors
  - Define in some detail the following terms: mortgage pass-through, servicing fees, guarantee fees, conditional (constant) prepayment rate, PSA standard prepayment model, extension risk, contraction risk, conventional pass-throughs, CMOs, and stripped MBS.
  - Define in some detail the following structures: CMO sequential-pay structures and accrual (Z) bonds.
  - Explain how an interest rate swap works.
  - Explain how a swap's fixed rate is determined.
  - Explain how a swap's value is affected by changes in interest rates.
  - Explain how a swap's floating payments are determined.

**Students with Disabilities:** The University of South Carolina provides high-quality services to students with disabilities, and we encourage you to take advantage of them. Students with disabilities needing academic accommodations should: (1) Register with and provide documentation to the Student Disability Resource Center in LeConte College Room 112A, and (2) Discuss with the instructor the type of academic or physical accommodations you need.

## **University of South Carolina Honor Code**

It is the responsibility of every student at the University of South Carolina Columbia to adhere steadfastly to truthfulness and to avoid dishonesty, fraud, or deceit of any type in connection with any academic program. Any student who violates this Honor Code or who knowingly assists another to violate this Honor Code shall be subject to discipline.

This Honor Code is intended to prohibit all forms of academic dishonesty and should be interpreted broadly to carry out that purpose. The following examples illustrate conduct that violates this Honor Code, but this list is not intended to be an exhaustive compilation of conduct prohibited by the Honor Code:

1. Giving or receiving unauthorized assistance, or attempting to give or receive such assistance, in connection with the performance of any academic work.
2. Unauthorized use of materials or information of any type or the unauthorized use of any electronic or mechanical device in connection with the completion of any academic work.
3. Access to the contents of any test or examination or the purchase, sale, or theft of any test or examination prior to its administration.
4. Use of another person's work or ideas without proper acknowledgment of source.
5. Intentional misrepresentation by word or action of any situation of fact, or intentional omission of material fact, so as to mislead any person in connection with any academic work (including, without limitation, the scheduling, completion, performance, or submission of any such work).
6. Offering or giving any favor or thing of value for the purpose of influencing improperly a grade or other evaluation of a student in an academic program.
7. Conduct intended to interfere with an instructor's ability to evaluate accurately a student's competency or performance in an academic program.

Whenever a student is uncertain as to whether conduct would violate this Honor Code, it is the responsibility of the student to seek clarification from the appropriate faculty member or instructor of record prior to engaging in such conduct.

Suspected violations of the honor code will be reported to the Office of Academic Integrity. Violations of the honor code will result in disciplinary measures.

For more information about academic integrity issues, go to the following website:

[https://sc.edu/about/offices\\_and\\_divisions/student\\_conduct\\_and\\_academic\\_integrity/](https://sc.edu/about/offices_and_divisions/student_conduct_and_academic_integrity/)

***As of January1, 2019***