

# FINC462/662

## Fixed Income Securities

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Prof. Matt Fleckenstein

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Office Hours: Mondays, 8am-10am, 310 Purnell Hall or by appointment.

### COURSE DESCRIPTION

This course is an introduction to fixed income markets and the analytic tools used by participants in these markets. Fixed income markets have been changing dramatically over the past few years, especially after the financial crisis. New regulation, aggressive monetary policy that led to zero nominal rates, large expansions of government debt, new empirical behavior of Treasury securities, and the design of new securities have had and continue to have a major impact on how fixed income markets work. By its nature, fixed income is a very broad subject that would literally take years to cover in depth. Of necessity, this course needs to be selective. To strike a balance between coverage and institutional details we will focus primarily on the fundamental concepts underlying fixed income markets; with a solid grasp of the underlying theory, it should be much easier to pick up the rest while working in the industry. The course will be quantitative with lots of formulas and number crunching. However, we will cover advanced real-world models and valuation techniques used by many banks and hedge funds which is an important asset to have in the competitive world of Wall Street.

### LEARNING OBJECTIVES

After completing this course, students will

- have a thorough understanding of bond markets, the instruments traded in these markets, and bond market conventions used to quote and price fixed-income securities.
- understand the market for U.S. Treasury securities, the types of instruments available in this market, and how Treasury securities are issued and traded in the financial markets.
- be able to apply basic time-value-of-money concepts to price bond instruments and understand the concept of discount factors and their role in valuing fixed-income securities.
- understand how to use replicating portfolios and the law of one price to value fixed income securities.
- have a thorough understanding of the term structure of interest rates and how it can be used to price fixed-income securities.

- know the price-yield relation of bonds and its use in quantifying the sensitivity of bond prices to changes in interest rates.
- be able to use the duration and convexity of bonds to hedge interest rate risk of single bond investments as well as bond portfolios.
- know and be able to implement several bond trading strategies that are commonly used in fixed income markets.
- be familiar with forward contracts and futures contracts.
- have a thorough understanding of interest rate derivatives, be able to price interest rate swaps and know how to use interest rate swaps to hedge interest rate risk.

### CLASS TIMES

Section	FINC 462-011	FINC 462/662-012
Day(s)	Tue, Thu	Tue, Thu
Time	11.00am-12.15pm	3.30pm-4.45pm
Location	Purnell Hall 324A	Purnell Hall 327

### OFFICE HOURS

Office hours will be held in person on Mondays from 8.00am to 10.00am in 310 Purnell Hall, or by appointment.

### PREREQUISITES

FINC 311 (Principles of Finance) and 314 (Investments) are prerequisites. A good understanding of basic algebra, calculus, and statistics is key to mastering the material covered in this course. It will also be useful if you already have some familiarity with: Present Value, compounding of interest rates, the CAPM, Black-Scholes. If you are unfamiliar with these concepts, it will simply mean a little bit more work for you as we go through the associated topics in class.

### COURSE WEBPAGE

<https://fleckenstein-m.github.io/FINC462-662-SP2023/>

### COURSE MATERIALS

All course materials will be posted on the course webpage at <https://fleckenstein-m.github.io/FINC462-662-SP2023/>.

The recommended textbook is Bond Markets, Analysis, and Strategies, Tenth Edition by Frank J. Fabozzi and Francesco A. Fabozzi.

Additional resources are

- Fixed Income Markets and Their Derivatives, 3rd edition, Suresh Sundaresan.
- Fixed Income Securities: Tools for Today's Markets, 3rd edition, Bruce Tuckman and Angel Serrat.
- Fixed Income Securities: Valuation, Risk, and Risk Management, Pietro Veronesi.
- Fixed Income Analysis, 3rd edition, Barbara S. Petitt, Jerald E. Pinto, and Wendy L. Pirie.

### GRADING POLICY

Your final grade is based on *i)* two midterm exams, *ii)* a final exam, and *iii)* class participation. Grading is on a curve. This means that you will be ranked relative to all students in both sections based on your two midterms, the final exam, and quizzes. The weighting shown below under Final Grade Breakdown determines your final rank among all students enrolled in the sections I teach.

- 10% Class Participation
- 30% Midterm 1
- 30% Midterm 2
- 30% Final Exam

### EXAM SCHEDULE

#### 1. Midterm 1

- *March 9, 2023*

#### 2. Midterm 2

- *April 13, 2023*

#### 3. Final Exam

Section	FINC 462-011	FINC 462/662-012
Date	May 25, 2023	May 24, 2023
Time	10.30am-12.30pm	3.30pm-5.30pm
Location	Purnell Hall 324A	Purnell Hall 327

## ASSESSMENT COMPONENT: CLASS PARTICIPATION

You are expected to come to class and be prepared to answer questions on the material. *Homework assignments* will be given nearly every week, and will be announced in class and posted on the course webpage. You are expected to work on the homework assignments in groups of three. Homework assignments must be submitted in class before the lecture starts on the date the assignment is due. In addition, I reserve the right to ask the groups to solve up to three questions from the homework assignments in front of the class. The groups can select the problems they would like to present. I also reserve the right to give *Quizzes* in class. These will not officially be announced beforehand. The in-class quizzes will be modeled on the examples in the lecture material, after the topic is covered.

## DATA ASSIGNMENTS

There will be two data assignments during the semester. These two assignments are optional.

## COURSE OUTLINE

1. Introduction to Fixed Income
2. U.S. Treasury Bond Market
3. Time Value of Money
4. Bond Valuation
5. Term Structure of Interest Rates
6. Duration & Convexity
7. Spot Rates, Forward Rates, Expectations Hypothesis
8. Forward Rate Agreements and Futures Contracts
9. Interest Rate Swaps & Floating Rate Bonds
10. Relative value trades the U.S. Treasury notes and Inflation Protected Securities (TIPS)

## EXPECTATIONS

The Higher Education Act of 1965 (Amended) defines a credit hour as the following:

*Credit hour: Except as provided in 34 CFR 668.8(k) and (l), a credit hour is an amount of work represented in intended learning outcomes and verified by evidence of student achievement that is an institutionally established equivalency that reasonably approximates not less than (1) One hour of classroom or direct faculty instruction and a minimum of two hours of out of class student work each week for approximately fifteen weeks for one semester or trimester hour of credit, or ten to twelve weeks for one quarter*

*hour of credit, or the equivalent amount of work over a different amount of time.*

This course is three credit hours. I expect you to: - Come to class with a copy of the lecture slides, ready to go through them. Prior to each class, I recommend skipping through the next 25 slides or so. - Review the lecture slides after we have gone over them in class, making sure that you understand what we went over in class. - Attempt the examples in the lecture slides. - To the extent that you do not understand some of the material, ask questions, either via e-mail (if the questions are short) or during office hours. If you have a long question, but cannot make regularly scheduled office hours, e-mail me to make an appointment and we will find a mutually agreeable time.

## POLICIES

### **Fairness**

I will make every effort to treat students with dignity and fairness and to be sensitive to the diversity that exists within the student body. Students with disabilities who request help will be given reasonable accommodation with the assistance of the Office of Disability Support Services (<http://sites.udel.edu/dss>). Please feel free to speak to me in private about any related issues.

### **Academic Misconduct**

Students are expected to abide by the University of Delaware Code of Conduct. Among other things, please do not submit plagiarized work or give or receive information during exams and please provide proper acknowledgment in work when applicable. *Academic misconduct includes the use of websites such as CourseHero and Chegg.* The University's General Counsel has provided the following regarding such websites.

*Notice: The University of Delaware owns a non-exclusive right to faculty materials that will be given to you during the course. These materials include ideas and comments provided by the instructor during class; test questions; handouts and course materials; and other materials representing the copyright-protected intellectual property of course instructors. You are prohibited from entering into relationships with web sites such as Course Hero, Notehall, or similar sites under which you agree, in exchange for the payment of a fee or salary, to post these materials online. Violations of this prohibition will be referred to the Student Conduct Office for investigation and disciplinary action under UD's Code of Conduct.*

### **Classroom Conduct**

Please silence all cell phones and do not text in class. Laptops and tablets will be permitted in class for note-taking purposes, but please do not distract your classmates

by using your laptop to surf the internet or conduct other business during lecture. I reserve the right to ban the use of laptops and tablets if they become a distraction. I also ask that students remain professional and respectful during class discussions.

### **Questions Outside of Class**

For any questions that have not been sufficiently answered in class, please e-mail me or come to office hours.

### **Absences from Exams**

Absences from quizzes and exams will only be excused with written documentation from an appropriately accredited professional (e.g. a medical doctor).

### **Other Policies**

As a general rule, I will follow the University of Delaware's policies on any issues that are not spelled out in this syllabus. This includes, but is not limited to, UD's Title IX policies (<https://sites.udel.edu/sexualmisconduct/title-ix/>).

## **ACKNOWLEDGMENTS**

This course draws on materials used by Jack Bao (at UD), Francis Longstaff (at UCLA), Debbie Lucas (at MIT), and Jay Wellman (at SUNY-Binghamton).