

FNCE 7250 Fixed Income Securities
Fall 2023
Syllabus

Instructor

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Office hours SHDH 2252: Monday 1.30pm – 3.00pm
Office hours Zoom: Friday 11.00am – 12.30pm

Please make an appointment if you want to meet on other days, either in-person or virtual. Teaching Assistants will also hold office hours; their times will be posted on the Canvas course page.

Course Description

This course covers the valuation and application of a wide variety of fixed income securities and their derivatives. Fixed income securities are financial claims including pure discount bonds, coupon bonds such as Treasury notes and corporate bonds, floating rate notes, callable bonds, among many others, issued by public or private entities. In the first half of the course, we focus on yield curve construction, duration and convexity, and formal term structure models. The goal is to introduce you to at least one equilibrium model and one no-arbitrage model, and to analytical tools used in interest rate modeling and risk management.

In the second half of the course, we first focus on interest rate derivatives such as interest rate swaps and options, including caps, floors, and swaptions. We will examine the popular SABR volatility model, and discuss the transition of the market for IRDs to a state without LIBOR. We also look beyond interest rate risk, and study other risks that can be inherent in fixed income securities such as credit risk, illiquidity risk, and the risks stemming from securitization. For example, we will study a structural model to understand the sources of credit risk more deeply, and will examine the securitizations used to create Islamic bonds. The course concludes with a discussion about credit derivatives.

How FNCE 7250 relates to other classes at Wharton

Students must have taken Corporate Finance (FNCE 6110) and Statistics (STAT 6130/6210) before enrolling into Fixed Income Securities. It is also useful to know the material covered in Macroeconomics and the Global Economy (FNCE6130), but the course is not a prerequisite.

Financial Derivatives (FNCE 7170) also covers derivative securities outside of the area of fixed income. Capital Markets (FNCE 7380) covers some bond market segments that I do not cover plus of course other asset classes such as equity. International Financial Markets (FNCE 7190) also deals with some of the derivatives that you learn about in my class, though the applications tend to be within exchange rates, money markets, and currency derivatives.

Class Meetings & Recordings

We meet Mondays and Wednesdays in JMHH F90, our first meeting is on August 30. I expect students to attend all sessions. If you cannot attend a session due to an excused absence, then I can make a recording available. Requesting a recording for additional review of the material is also fine.

Please turn off and put away your phones, they are too distracting for you and the students around you. You may use tablets for notetaking purposes. All standards in our [Learning Agreement](#) apply. Please respect the classroom as an inclusive learning environment where diverse points of view and experiences can be shared to facilitate everyone's learning.

Course Materials

1. I will post lecture slides and reading material on the course page on Canvas.
2. 'Adventures in Debentures' is a course pack created by Prof. Michael Gibbons during the many years he taught this course. I will make it available to you via Canvas. Please note, we will not cover all chapters of this course pack. I will outline which chapters are relevant.
3. This course does not have a required textbook, but I am suggesting three textbooks that cover most of the material we will cover in class.

Frank Fabozzi, Bond Markets, Analysis, and Strategies, Pearson

Suresh Sundaresan, Fixed Income Markets and Their Derivatives, Elsevier; Elsevier had announced a fourth edition to be published, but has not delivered thus far.

Pietro Veronesi, Fixed Income Securities, Wiley

All three books are very helpful in mastering the material as well as a general reference on the subject. I will show you how topics covered in this class map into ‘Adventures in Debentures’ and ‘Fixed Income Markets and Their Derivatives.’

4. Academic articles. I will expose you to some important academic articles in this class. The list of academic articles includes ...

On the Pricing of Corporate Debt: The Risk Structure of Interest Rates, 1973, Robert Merton, Journal of Finance

Common Factors Affecting Bond Returns, 1991, Robert Litterman and Jose Scheinkman, Journal of Fixed Income

The Determinants of Credit Spread Changes, 2001, Collin-Dufresne, Goldstein and Martin, Journal of Finance

The Illiquidity of Corporate Bonds, 2011, Bao, Pan and Wang, Journal of Finance

Default Risk of Advances Economies: An Empirical Analysis of Credit Default Swaps during the Financial Crisis, 2011, Dieckmann and Plank, Review of Finance

The Myth of the Credit Spread Puzzle, 2018, Feldhuetter and Schaefer, Review of Financial Studies

Dissecting Green Returns, 2022, Pastor, Stambaugh, Taylor, Journal of Financial Economics

Determinants of Short-Term Corporate Yield Spreads: Evidence from the Commercial Paper Market, 2023, Huang, Liu, Shi, Review of Finance

Attendance & Participation

My goal is to make the classroom environment as engaging as possible. Your focused attention and active involvement are important. In addition, we will be using Ed Discussion for some asynchronous class discussion. Rather than emailing questions, I encourage you to post your questions on Ed Discussion. I will post a score for attendance & participation at the halfway point, and at the end of the semester.

Exams

This course has two exams, on October 11 and on December 11. Both exams are mandatory. Each exam will count for 25% of your final grade. Each exam is 90 minutes long and can be taken within a time window, 8.30am to 12pm EST, via Canvas.

If you would like to appeal a grade, please provide a written statement to me or the teaching assistants as to why there is a problem. All re-grade requests must be submitted within one week after the results have been posted.

Problem Sets and Final Project

Six problem sets will be assigned during the semester. The purpose of the problem sets is to increase your learning of the material, provide feedback, and help you prepare for the exams. Problem sets may be solved in groups (up to four students), and to be handed in as one write-up per group. The five best problem sets will count for 15% of your final grade, equally weighted.

And then there is a final project, worth 25% of your final grade, due on December 6. In the past I have given a final project consisting of two parts, equally weighted, and my plan is to do the same this Spring. The first part is typically about bond pricing and interest rate risk, the second part is typically about another risk inherent in fixed income securities that we cover in the second part of the class. Students may prepare a write-up in groups (up to four students), and the submission should be joint as well. Please limit the write-up to four pages of text; you can add tables or graphs.

Summary

Class attendance and participation: 10%

Exam 1: 25%

Exam 2: 25%

Problem sets: 15%

Final project: 25%

Ethics Matrix

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	Materials							People				
FNCE 7250 Fixed Income Securities	Calculator	Laptop / other electronics	Summary sheet	Textbooks / Class Notes	Past notes / summaries	Past exams / problems	Internet content / including Chat GPT	Group of 4	Other student(s) in same section	Student(s) in other sections (same term)	Wharton student not taking the class this term	Person outside of Wharton
Problem Sets	A	A		A			A	W	D	D		
Final Project	A	A		A			A	W	D	D		
Exam Preparation	A	A	A	A		A	A	W	W	W		
Exam 1	A	A	A	A								
Exam 2	A	A	A	A								
	A = Allowed material Shaded Cell = Not allowed							W = Allowed to work together D = Discussion of general concepts and procedures is allowed but no sharing of specific answers. Shaded Cell = Not allowed				
The information above covers many common situations but will not cover every circumstance. Remember: The Wharton Code of Ethics that you accepted requires, among other things, that you represent yourself and your work honestly, don't try to gain unfair advantage over other students, follow the instructor's guidelines and respect confidentiality of your work and the work of others. Should you have questions, please contact your ethics liaison or professor.												

FNCE 7250 Course Schedule (tentative as of July 29, 2023)

Class	Date	Topic
	Aug 28 - Monday	no class
1	Aug 30 – Wednesday	Overview of Fixed Income Securities
	Sep 4 - Monday	no class (Labor Day)
2	Sep 6 – Wednesday	Bond Valuation using Synthetics
3	Sep 11 – Monday	Interpreting Bond Yields
4	Sep 13 – Wednesday	Bond Values and the Passage of Time / Theta
5	Sep 18 – Monday	Forward Rates / Contracts
6	Sep 20 – Wednesday	Risk Measurement / Delta
7	Sep 25– Wednesday	Risk Measurement / Gamma
8	Sep 27 – Monday	Delta, Gamma, and Theta
9	Oct 2 – Wednesday	Term Structure Modeling I
10	Oct 4 – Monday	Term Structure Modeling I, including Vasicek model (equilibrium model)
11	Oct 9 – Monday	Review for Exam
	Oct 11 – Wednesday	Exam 1 (8.30am to 12pm EST)
	Oct 16 – Monday	no class (Opportunity Week)
12	Oct 18 – Wednesday	Term Structure Modeling II (will be recorded)
13	Oct 23 – Monday	Silicon Valley Bank
14	Oct 25 – Wednesday	Interest Rate Derivatives and CME Bond Options
15	Oct 30 – Monday	Floating Rate Notes, Interest Rate Swaps
16	Nov 1 – Wednesday	Interest Rate Options, Black’s Model and SABR volatility model
17	Nov 6 – Monday	Callable Bonds
18	Nov 8 – Wednesday	Corporate Bonds
19	Nov 13 – Monday	Modeling Credit Risk, including the Merton Model
20	Nov 15 – Wednesday	Illiquidity in Bond Markets
21	Nov 20 – Monday	Securitization I
	Nov 22 - Wednesday	no class (Thanksgiving break)
22	Nov 27 – Monday	Securitization II / Islamic Bonds
23	Nov 29 – Wednesday	Credit Derivatives
24	Dec 4 – Monday	Wrap Up & Review
	Dec 6 – Wednesday	Final Project Due Date
	Dec 11 – Monday	Exam 2 (8.30am – 12pm EST)