

FNCE 235/275: Fixed Income Securities

Spring 2012
Syllabus

Instructor

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Course Description

The course covers the valuation of a wide variety of fixed income securities and derivatives including discount bonds, coupon bonds, forwards and options on fixed income securities, interest rate swaps, floating rate notes, and mortgages. The course focuses on analytic tools used in bond portfolio management and interest rate risk management. These tools include yield curve construction, duration and convexity, and formal term structure models.

Among relevant topics not covered in the course are the relation between macroeconomic variables and interest rates, taxes, multi-factor models of the term structure, and credit risk.

Prerequisites

Students must have taken introductory finance and statistics.

FNCE 235: FNCE 100-101 and STAT 101

FNCE 725: FNCE 601 and STAT 621

Lectures

FNCE 235: TTh 1:30 - 3:00 (SH-DH 211)

FNCE 725: TTh 12:00 - 1:30 (SH-DH 211)

Materials

1. The course pack contains lecture notes and is available online. The pack was created by Prof. Michael Gibbons during the many years he taught this course. We will follow it closely. See course schedule below for outline of the chapters we will cover. To assist students who have not yet decided to take the course, the first five chapters of the course pack will be posted on the course webpage.

As lectures will be following the notes in the course pack, you will need to bring the relevant chapters of the Course Pack to class. Additional handouts will be distributed during the course via *canvas* as necessary.

2. There is a supplementary textbook, available at the bookstore:

Pietro Veronesi, 2009. Fixed Income Securities: Valuation, Risk, and Risk Management

This is a new textbook, and its way of presenting the material differs somewhat from the way it is done in the course. Although students are not responsible directly for the material in this book that is not covered explicitly in class, it is very helpful in mastering the material and solving homework/exam problems, as well as a general reference on the subject.

3. Announcements, problem sets, solutions, and other materials will be posted on the course *canvas* website. Note that Wharton computing accounts are required in order to access *canvas*. Enrolled non-Wharton students may obtain an account starting on the first day of the class at:

<http://accounts.wharton.upenn.edu>

Special Drop/Add Dates

The Finance Departments Drop and Add Deadlines are different than the Universitys.

Should you decide to drop this course, you must do so through Penn In Touch by the Finance Departments drop deadline. If you drop the course after the department deadline you will receive a W on your transcript.

Those who decide to add the course after the drop deadline above need to see Andrea Rollins in the Finance department.

Requirements

1. There are two exams given in class (see Schedule for the dates). The first exam is worth 30% of the final grade and the second is worth 35%. They are discussed in more detail later in the syllabus.

2. A final project is worth 35% of the final grade. It will be, tentatively, distributed on April 12th and due on April 20th 5pm.

3. Problem sets will be assigned on a near-weekly basis. They are discussed in more detail later in the syllabus. A student whose final score is just below the margin between two letter grades may have their grade adjusted upward based on their work in problem sets and class participation. No student will have their grade adjusted downward based on problem sets and class participation.

Attendance and Class Participation

1. Attendance at lectures is strongly encouraged even though optional. The background of each student in the course differs, and I provide a few sessions that may be viewed by some students as review material. For most lectures, the Course Pack contains a preface which should help you decide whether you know the material. If you do not need to attend a particular session, feel free to miss the lecture.

2. You must attend the lecture for the section for which you are registered. There are too many students in each section to allow students to move around.

3. During class I encourage you to ask questions, although I do not guarantee that I will answer them to your satisfaction at that time. Questions from you help me better judge how the class is absorbing the material.

4. To make it easier for me to get to know you, please sit in the same seat at each class session (this will take some time to work out, with drops and adds). Please bring a name plate to class.

Problem Sets

Many problem sets will be assigned during the semester. Late answers will not be accepted. You are to turn in your answers before class begins. For all of the problem sets you may work with other students in the class.

A team of people need only submit one copy of their solution for a particular problem set. Every member of the team will receive the same grade. No team may have more than five students.

Solutions to each problem set will be available after your answers have

been turned in. Your graded answers will be returned to a file cabinet in the Finance Department in Steinberg-Dietrich Hall. The problem sets will be graded by giving a “check,” “check-minus,” or “no credit.” Most of the questions on the problem sets will not be discussed in class. Office hours and review sessions will handle questions about the problem sets.

The main purpose of the problem sets is to increase your understanding of the material and help you prepare for the exam. Problems that have been used successfully in prior years may be used again this year. You can probably track down solutions to these problems instead of working on them. Students who take this approach will regret their choice during the exams.

Examinations

There will be two in-class examinations during the semester. The (tentative) dates are listed on the course schedule. They will be closed-book. For the first exam, you may bring an 8 $\frac{1}{2}$ x 11 piece of paper of notes. You may write on both sides. For the second exam, you may bring two such pieces of paper. The second exam concentrates on material taught since the first exam, but material presented earlier may also appear on this exam. You may bring a calculator to the exam, but not a computer. Following university rules, exams may be postponed because of illness, a death in the family, or some other unusual event. If such a circumstance arises, undergraduates must petition their deans office for a makeup exam. MBA students must petition the MBA Program Office.

Final Project

This will be described later in the semester.

Grades

Based on previous years' grade distributions, the average final grade is a B⁺.

Course Schedule (preliminary and subject to change)

Class	Date	Topic (Chapters refer to the Coursepack)
1	Jan 12	Ch 1: Overview of Fixed Income Securities Ch 2: The Grammar of Fixed Income Securities
2	Jan 17	Ch 3: Data for a Recurring Illustration Ch 4: Bond Valuation Using Synthetics
3	Jan 19	Ch 5: Interpreting Bond Yields
4	Jan 24	Ch 6: Bond Values and the Passage of Time Ch 7: Forward Contracts
5	Jan 26	Ch 8: Dollar Delta 1: Risk Measurement
6	Jan 31	Ch 9: Dollar Delta 2: Risk Management Ch 10: Dollar Gamma
7	Feb 2	Ch 11: Delta, Gamma, and Theta Ch 12: Time-Adjusted Performance Profiles
8	Feb 7	Ch 13: Vasicek 1: Properties of the Short-Term Rate
9	Feb 9	Ch 14: Vasicek 2: The Term Structure
10	Feb 14	Review
11	Feb 16	Midterm
12	Feb 21	Ch 15: Vasicek 3: More Term Structure
13	Feb 23	Ch 16: Vasicek 4: The Greeks
14	Feb 28	Ch 17: Valuation by Monte Carlo Methods
15	Mar 1	Ch 18: Introduction to Bond Options
16	Mar 13	Ch 19: European Bond Options
17	Mar 15	Ch 20: American Bond Option Ch 21: Deja Vu
18	Mar 20	Ch 22: Bonds with Embedded Options 1
19	Mar 22	Ch 23: Bonds with Embedded Options 2
20	Mar 27	Ch 24: Floating Rate Notes
21	Mar 29	Review
22	Apr 3	Midterm
23	Apr 5	Ch 25: Interest Rate Swaps
24	Apr 10	Ch 26: Options on Yields
25	Apr 12	Ch 27: Floating Rate Notes with Embedded Options
26	Apr 17	Ch 28: Home Mortgages
27	Apr 19	Flexible