

*Preliminary, October 24, 2008*

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**BUSINESS FINANCE 827: Fixed-income Securities**  
**Winter Quarter 2009**  
**(Monday & Wednesday, 1:30 pm – 3:18 pm)**

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**Course description:**

Fixed-income securities include any claim whose value or risk is related to interest rates and interest rate uncertainty. While it is relatively easy to formulate the income claims of fixed-income securities, valuing and hedging these securities are more challenging tasks. This course explores key issues in fixed-income valuation, fixed-income portfolio management, and fixed-income risk management. Students will learn tools for valuing and modeling the risk exposures of fixed-income securities and their derivatives, with the ultimate goal of applying these skills in a career in financial services, consulting, portfolio management, and fixed-income sales and trading.

The course is divided into four parts, covering separately (1) basics of fixed-income securities, (2) Price volatility & portfolio management (3) Interest rate models & valuation of bonds with embedded options; and (4) fixed income derivatives & financial engineering

When possible, concepts are explained through hands-on applications and examples, rather than through advanced mathematics, to make the course accessible for students.

**Prerequisites:**

Finance 810 is the only prerequisite for Finance 827.

Fixed income is a technically demanding area, and although no math other than algebra is required, students should be comfortable with basic statistics (such as variance, correlation, linear regression and probability distributions) and fundamental financial ideas (principally time value of money and compounding). Occasionally concepts will be explained using some calculus, but this should only require a basic conceptual understanding.

The unofficial motto of this class will be “if you cannot compute it, then you don’t understand it.” There will be five spreadsheet based problem sets in which you will be asked to implement concepts discussed in class (We will be using Microsoft Excel).

Modeling fixed income securities and their associated risk is a crucial skill, and it is my hope that this class will not only develop your theoretical understanding, but also extend your abilities to implement this analysis in a spreadsheet environment. Some class time will be devoted to implementation issues, and I will be available to discuss these ideas both during my office hours and by appointment.

**Required readings:**

*Required text:* Frank J. Fabozzi, 2004, *Bond Markets, Analysis, and Strategies* (sixth edition), Prentice Hall (ISBN 0-13-198643-0). The book is available at the bookstore and at [www.amazon.com](http://www.amazon.com) (at a discount).

There is a required course packet that contains two HBS cases. It is available from Tuttle Uni-print (formerly Tuttle Cop-ez.).

Course lecture notes are posted on the course web site. Please bring your notes and a calculator (financial or scientific) to class each day to follow along with the lecture presentation.

Lectures are supplemented with required readings from the course text book.

Additional readings (both required and optional) also may be posted on the class website or distributed in class.

Finally, please read Section C of *The Wall Street Journal* each day. Articles from the *Journal* will serve as the basis for class discussions.

If any student is interested in having another fixed-income or risk management textbook, I recommend the following:

Fixed-income

- Frank J. Fabozzi, 2005, *Fixed-income Mathematics: Analytical and Statistical Techniques* (4<sup>th</sup> edition), McGraw-Hill Companies, Inc.
- Frank J. Fabozzi, 2001, *The Handbook of Fixed-income Securities* (6<sup>th</sup> edition), McGraw-Hill Companies, Inc.
- Leland E. Crabbe and Frank J. Fabozzi, 2001, *Managing a Corporate Bond Portfolio*, edited by Leland E. Crabbe, John Wiley & Sons, Inc. (Hardcover and E-book)
- Tuckman, Bruce, 2002, *Fixed Income Securities* (2<sup>nd</sup> edition), Wiley Finance.

Risk Management

- René Stulz, *Risk Management and Derivatives*, 2002, Southwest Publishing Company.
- Michel Crouhy, Dan Galai, and Robert Mark, 2001, *Risk Management*, McGraw-Hill Companies, Inc.
- Philippe Jorion, 2001 *Value at Risk* (2nd edition), McGraw-Hill Companies, Inc.

**Credit Risk and Derivatives**

- Darell Duffie and Kenneth J. Singleton, *Credit Risk: Pricing Measurement, and Management*, Princeton University Press. (Advanced book)
- Janet M. Tavakoli, 1998, *Credit Derivatives: A Guide to Instruments and Applications*, John Wiley & Sons, Inc.

**Requirements and grading:**

There are seven (7) graded group homework and case assignments, a group presentation, a country-watch and one take-home exam in this class.

The homework and case assignments are group work, with each group working independently of all other groups. These assignments will consist of a mix of exam-style problems, Excel-based modeling exercises and case-type discussion questions. Groups can have no more than four (4) members. Your group's homework solutions are due at the beginning of class on the due date. No late homework will be accepted.

The group presentation and paper will be on a sector of the fixed income market or a fixed-income product. Students will work in their groups for the presentation and paper. Further details about the presentation will be discussed in class.

There is one take-home exam. The exam will be given out Wednesday, February 18<sup>th</sup> and is due by the start of class on Monday, February 23<sup>rd</sup>.

Item	Percentage of total grade
Graded assignments (7) (Grade: 0, 1, or 2)	45%
Group presentation and paper	15
Exam	40

The primary principles for grading in this course are as follows:

- The requirements of the course are identical for everyone.
- The average grade in this course will be a B+.
- No assignment or exam score will be dropped.

Class participation is an important part of the course. I consider such things as attendance, the ability to initiate and participate in discussions that clarify and extend presented material, participation in hands-on in-class exercises, and respecting your fellow classmates' views on particular issues.

I will keep track of students' participation and use this information to evaluate students whose course total is near a letter grade cut-off.

**Office hours and reviews:**

Unless announced otherwise, I am available to meet with students on an individual basis either before class or by appointment in my office. Please speak to me before class or email me to make an appointment for an office visit. Please give me a general

idea of the topic you'd like to discuss so that I can be as prepared as possible for your visit.

**Course website:**

I will maintain a website through Carmen. The URL is <https://carmen.osu.edu>.

I will use the website to post course slides, readings, assignments, and solutions. Please check it on a regular basis.

**Communication:**

Email

The quickest way to contact me is by e-mail at [minton\\_15@fisher.osu.edu](mailto:minton_15@fisher.osu.edu). I will usually respond within a few hours.

**Fisher Honor Statement and Academic Misconduct:**

*The Fisher Honor Statement* reads as follows:

As a member of the Fisher College of Business community, I am personally committed to the highest standards of ethical behavior. Honesty and integrity are the foundation from which I will measure my actions. I will hold myself accountable to adhere to these standards. As a leader in the community and business environment, I will pledge to live by these principles and celebrate those who share these ideals.

—Honor Statement of the Fisher College of Business, The Ohio State University

The Fisher Honor Statement is enforced in Finance 827. In registering for Finance 827, you have agreed to abide by this statement.

**Group assignments** must be the original and complete work of only the students in that group, all of whose names must appear on the write-up. You may not use any materials containing solutions or partial solutions to the assignments, which includes solutions prepared by current and former students at Fisher and elsewhere. You may discuss the assignment only with members of your group or the instructor prior to handing in your solution. Substantial contributions by each group member on each assignment are expected.

**The exam** must be the original work of the student whose name appears on the exam. You may not communicate with any other individual regarding the exam.

In accordance with *University Faculty Rule 3333-5-487*, all instances of alleged academic misconduct will be reported to the Committee on Academic Misconduct, which recommends appropriate sanctions to the Office of Academic Affairs.

**STUDENTS WITH DISABILITIES**

Any student who feels he or she may need an accommodation based on the impact of a disability should contact me privately to discuss your specific needs.

**Course Outline:**

The course outline begins on the next page. Although it may not be clear at all times how important it is to read the textbook, you will find it substantially more difficult to grasp the big picture and to apply the concepts in exam problems if you do not study the textbook.

Students are encouraged to take good notes during class and to review them with their group members prior to the next class. If there are major areas in need of clarification, please mention them to me.

It is possible that we will not be able to cover all the material on the schedule. If so, the schedule will change, but the exam and assignment dates will not change.

### Finance 827 Course Outline

Class	Date	Assignment	Lecture Topic	Readings
1	1/5		<ul style="list-style-type: none"> <li>○ Course overview</li> <li>○ Introduction – Bond classes &amp; Bond characteristics</li> </ul>	<ul style="list-style-type: none"> <li>○ Fabozzi: Chapter 1</li> </ul>
2	1/7		<ul style="list-style-type: none"> <li>○ Interest rates and the Fed</li> </ul>	
3	1/12		<ul style="list-style-type: none"> <li>○ Bond pricing</li> </ul>	<ul style="list-style-type: none"> <li>○ Fabozzi: Chapters 2 and 6</li> </ul>
4	1/14	Problem Set 1 due	<ul style="list-style-type: none"> <li>○ Yields</li> </ul>	<ul style="list-style-type: none"> <li>○ Fabozzi: Chapter 3</li> <li>○ Market Risk – What the Yield Curve does and doesn't Tell Us (course website)</li> </ul>
5	1/19		NO CLASS – MLK Holiday	<ul style="list-style-type: none"> <li>○</li> </ul>
6	1/21	HBS Case	<ul style="list-style-type: none"> <li>○ HBS Case: Deutsche Bank</li> <li>○ Bond Price Volatility: Duration &amp; convexity</li> </ul>	<ul style="list-style-type: none"> <li>○ Fabozzi: Chapter 4</li> </ul>
7	1/26	Problem Set 2 due	<ul style="list-style-type: none"> <li>○ Bond Price Volatility: Duration &amp; convexity</li> </ul>	<ul style="list-style-type: none"> <li>○ Fabozzi: Chapter 4</li> </ul>
8	1/28		<ul style="list-style-type: none"> <li>○ Bond portfolio management</li> </ul>	<ul style="list-style-type: none"> <li>○ Fabozzi: Chapters 22 and 23</li> <li>○ Understanding the Butterfly Strategy (course website)</li> </ul>
9	2/2	Problem Set 3 due	<ul style="list-style-type: none"> <li>○ Mortgage backed securities</li> </ul>	<ul style="list-style-type: none"> <li>○ Fabozzi: Chapters 10, 11, and 12</li> </ul>

<b>Class</b>	<b>Date</b>	<b>Assignment</b>	<b>Lecture Topic</b>	<b>Readings</b>
10	2/4		<ul style="list-style-type: none"> <li>○ Bond options and Interest rate models</li> </ul>	<ul style="list-style-type: none"> <li>○ Fabozzi – Chapters 5 and 16</li> <li>○ Lecture note on Black, Derman Toy model (course website)</li> <li>○ Chapter 17 (optional)</li> </ul>
11	2/9	Problem Set 4 due	<ul style="list-style-type: none"> <li>○ Interest rate futures</li> </ul>	<ul style="list-style-type: none"> <li>○ Fabozzi – Chapter 26</li> </ul>
12	2/11		<ul style="list-style-type: none"> <li>○ Interest rate swaps</li> </ul>	<ul style="list-style-type: none"> <li>○ Fabozzi – Chapter 28</li> </ul>
13	2/16		<ul style="list-style-type: none"> <li>○ Interest rate options</li> </ul>	<ul style="list-style-type: none"> <li>○ Fabozzi – Chapter 27</li> <li>○</li> </ul>
14	2/18	Problem Set 5 due	<ul style="list-style-type: none"> <li>○ Credit risk</li> </ul>	<ul style="list-style-type: none"> <li>○ Exam given out at end of class</li> <li>○ Fabozzi: Chapters 7, pages 162 – 171, Chapter 20 (optional) and Chapter 26</li> <li>○ Who rates the raters (course website)</li> <li>○ Credit-Rating Industry May Get More Oversight (course website)</li> </ul>
15	2/23	Exam due at start of class	<ul style="list-style-type: none"> <li>○ Credit risk continued and credit derivatives</li> </ul>	<ul style="list-style-type: none"> <li>○ Chapter 29</li> </ul>
16	2/25		<ul style="list-style-type: none"> <li>○ Credit Derivatives</li> <li>○ First American Bank Credit Default Swap</li> </ul>	<ul style="list-style-type: none"> <li>○ HBS Case: Read over case. We will work the case in class</li> </ul>
17	3/2		<ul style="list-style-type: none"> <li>○ Group Presentations</li> </ul>	
18	3/4		<ul style="list-style-type: none"> <li>○ Group presentations</li> </ul>	
	3/9	Group paper due. Please drop off the paper at 834 Fisher Hall (my office).		