FIN4014 – Fixed Income Securities
Fall 2017

Instructor: Prof. Tong Yu
Office: 423, Lindner Hall
Class Time/Venue: MWF 2:30-3:25pm
Classroom: 216, Lindner Hall
Phone #: (513) 556-7110
Office Hour: MW1–2pm or by appointment
E-mail: tong.yu@uc.edu
Course website: https://canopy.uc.edu

COURSE DESCRIPTION
This course provides a detailed analysis of the fixed income market. It covers pricing and risk of fixed income securities, portfolios, and derivatives. It offers in-depth coverage of government, municipal, corporate debt as well as mortgage securities. This course discusses several important practical issues, including how the Federal Reserve uses monetary policy to influence the term structure of interest rates, bond immunization, and active bond trading strategies. This course aims to help students to establish a solid foundation in understanding fixed-income securities and furthermore to apply such knowledge to real world investment decisions in bond markets. On completion of the course students should be able to achieve the following learning objectives:

- To have a good understanding of alternative fixed-income securities
- To apply learnt knowledge to real world investment decisions in bonds, mortgages, and mortgage backed securities.
- To prepare professional examinations, such as the Chartered Financial Analyst (CFA) and the Financial Risk Manager (FRM)

TEXTBOOK

SUPPLEMENTARY MATERIALS
2. Additional reading materials and lecture notes will be posted on the course website on Blackboard before corresponding class meetings. Students are responsible for obtaining course materials from the course website. Please make sure that the email address on Blackboard is valid. Students should complete required reading before lectures. I strongly encourage you to think about the latest developments in the economy and markets. Besides WSJ, popular financial press such as CNBC, Financial Times, and Economist is a good source of news and articles.
GRADING
Your grade will consist of homework quizzes, exams, and projects.

- Class Participation: 5%
- Homework Assignments: 5%
- Mini Projects: 10%
- Quizzes: 10%
- 2 Mid-term: 20%
- Final exam: 30%

A student with a reasonable conflict with any exam or assignment due date must contact the professor as early as possible to arrange an alternative date.

GRADING SCALE (Subject to the Instructor’s Discretion)

<table>
<thead>
<tr>
<th>Score Range</th>
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<td>63 - 60</td>
<td>D-</td>
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HOMEWORK
Homework assignments include i) the end-of-chapter questions and ii) group exercises including writing summaries for Wall Street Journal articles assigned by the instructor. Group exercises are a team work. Solutions for the end-of-chapter problems will be posted shortly after the due day. Homework will be graded on a 10-point scale. Late homework results in a 25% drop in the grade.

PROJECTS
There are two mini projects. You will work on projects in a team containing no more than 5 people. For each mini project, you need to prepare a report that consists of a brief summary (facts and issues), analysis, and solutions (to the list of questions I provide to you). You are encouraged to work with the same team as the one formed for the group homework purpose. The case report should be typed neatly and submitted in groups. Detailed instructions for case assignments will be posted.

QUIZZES and EXAMS
Quizzes: There are 2 quizzes. The quizzes will be given at the beginning of the class and each takes you approximately 25 minutes. Quizzes are open book.

Exams: There are a mid-term exam and a final exam. Exams are not open book while you are allowed to bring in a piece of formula sheet.

ATTENDANCE
Attendance could be taken at the beginning of classes. Class participations are strongly encouraged.
ACADEMIC HONOR CODE
All students are responsible for abiding by the Student Honor Code of the College of Business at the University of Cincinnati.

The first violation of this code not only merits the specific sanctions of the violation, but also will be noted on the student’s record; a second offense leads to dismissal. Any allegations of misconduct must respect student rights and follow due process, as outlined in the University of Cincinnati’s Student Code of Conduct (see the following link: http://www.uc.edu/conduct/Code_of_Conduct.html). Non-College of Business students taking the course should also familiarize themselves with the Code as they will be subject to the Code while in this course.

Students are allowed to work together on homework assignments. Of course, no form of collaboration is allowed during the quizzes and exams.

MISCELLANEOUS
• Turn-off cellular phone
• Do NOT consume food in the classroom
• Laptop and tablets could be allowed but ONLY for class-related materials
TENTATIVE COURSE OUTLINE

T1. GENERAL INTRODUCTION ON BONDS AND BOND PRICING

Reading: Ch. 1 - Introduction
         Ch. 2 – Pricing of Bonds

Topics:

Sectors of U.S. Bonds
Risks associated with bonds
Pricing a bond
  • Basics
  • Dirty versus clean prices
  • Price quote and accrual interest
Floating rate bonds

T2. MEASURING BOND YIELD & BOND RETURN

Reading: Ch. 3 – Measuring yield

Topics:

Internal rate of return – a review
Conventional yield measures
Total return – evaluate performance from investing in a bond/portfolio

T3. DURATION, CONVEXITY, & INTEREST RATE RISK

Reading: Ch. 4 – Bond Price Volatility

Topics:

Duration
Convexity
Price adjustment due to duration and convexity

Mini Project 1:
-- Interest Rate Changes and Investments
T4. **RISK AND TERM STRUCTURE OF BOND YIELDS**

Reading: Ch. 5 – Factors Affecting Bonds Yields and Term Structure of Interest Rates

Topics:
- Risk Structure
- Term Structure
- Swap Rate Yield Curve

T5. **ALTERNATIVE FIXED INCOME SECURITIES**

Reading: Ch. 6 – Treasury and Federal Agency Securities
- Ch. 7 – Corporate Debt Instruments
- Ch. 8 – Municipal Securities
- Ch. 9 – International Bonds

Topics:
- Treasury Securities; Stripped Treasury Securities; Federal Agency Securities
- Corporate Bonds and Ratings; Medium-term Notes; Commercial Papers; Bank Loans
- Municipal Securities
- International Bonds

T6. **MORTGAGES & AGENCY MORTGAGE BACKED SECURITIES**

Reading: Ch. 10 – Residential Mortgage
- Ch. 11 – Agency Mortgage Backed Securities

Topics:
- Residential Mortgage Loans
- Confirming Loans
- Risks Associated with Investing in Mortgage Loans
- Issuers of Agency Pass-Through Securities
- Prepayment Conventions and Cash Flow
- Cash Flow Yield

Mini Project 2:
-- Investing in the house market

T7. **COLLATORIZED MORTGAGE OBLIGATIONS**

Reading: Ch. 12 – Agency Collateralized Mortgage Obligations and Stripped Mortgage-Backed Securities

Topics:
- Agency Collateralized Mortgage Obligations
- Stripped Mortgage-Backed Securities
T8. ASSET BACKED SECURITIES & COLLATERALIZED DEBT OBLIGATIONS

Reading: Ch. 15: Asset-Backed Securities

Topics:
- Creation of an Asset-Backed Securities
- Collateral Type and Securitization Structure
- Major types of Asset Backed Securities
- Collateralized Debt Obligations

T9. BOND PORTFOLIO MANAGEMENT STRATEGIES

Reading: Ch. 24 – Bond Portfolio Management Strategies

Topics:
- Spectrum of Bond Portfolio Strategies
- Active Portfolio Strategies
- Smart Beta Bond Strategies
- The Use of Leverage

T10. BOND PORTFOLIO CONSTRUCTION

Reading: Ch. 25: Bond Portfolio Construction

Topics:
- Brief Review of Portfolio Theory and Risk Decomposition
- Application of Portfolio Theory to Bond Portfolio Construction
- Tracking Error
- Cell-Based Approach to Bond Portfolio Construction
- Portfolio Construction with Multi-Factor Models

Mini Project:
-- Investing in the Housing Market

T11. LIABILITY FUNDING STRATEGIES

Reading: Ch. 27: Liability-Driven Investing for Defined Benefit

Topics:
- Understanding the liabilities of DB pension plan liabilities
- LDI Strategies
T12. INTEREST RATE FUTURES CONTRACTS

Reading: Ch. 29: Interest Rate Futures Contracts

Topics:

Interest rate Futures Contracts
Pricing and Arbitrage in the Interest Rate Future Markets
Bond Portfolio Management Applications
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<tr>
<th>Date/Assignment</th>
<th>Subjects</th>
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<tr>
<td>Week of 8/21/2017</td>
<td>Introduction on Bonds and Bond Pricing Chapters 1, 2</td>
<td>(T1)</td>
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<td>Week of 8/28/2017</td>
<td>Measuring Bond Yield and Returns Chapters 3</td>
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<td>Week of 9/4/2017</td>
<td>Duration, Convexity, Interest Rate Risk Chapter 4</td>
<td>(T3)</td>
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<td>Week of 9/11/2017</td>
<td>Term Structure (1)</td>
<td>(T4)</td>
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<td>Week of 9/18/2017</td>
<td>Term Structure (2)</td>
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<td>Week of 9/25/2017</td>
<td>Alternative Fixed Income Securities Chapters 6, 7, 8, 9</td>
<td>(T5)</td>
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<td>Week of 10/2/2017</td>
<td>Mortgages &amp; Agency Mortgage Securities Chapters 10, 11</td>
<td>(T6)</td>
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<td>Week of 10/9/2017</td>
<td>Agency Mortgage Securities (Cont’d) Chapter 11</td>
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<td>Week of 10/16/2017</td>
<td>Collateralized Mortgage Obligations Chapter 12</td>
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<td>Week of 10/23/2017</td>
<td>Asset Backed Securities, CDO &amp; CDS Chapter 15</td>
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| Week of 10/30/2017 | Bond Portfolio Management Strategies | (T9)  
| Reading | Chapter 24 |
| **Exam 2** | |
| Week of 11/6/2017 | Bond Portfolio Constructions | (T10)  
| Reading | Chapter 25 |
| 11/10: Veteran Day | |
| **Homework 4 Assigned** | |
| Week of 11/13/2017 | Liability Driven Bond Strategies | (T11)  
| Reading | Chapter 27 |
| Week of 11/20/2017 | Interest Rate Futures Contracts | (T12)  
| Reading | Chapter 29 |
| **Thanksgiving, 11/23-26** | |
| **Homework 5 Assigned** | |
| Week of 11/30/2017 | Interest Rate Futures Contracts (Cont’d) | (T12)  
| Reading | Chapter 29 |
| **12/8/2017** | **Final Exam; 10:30 – 12:30pm** |