



北京理工大学国际特色课程

Beijing Institute of Technology Global Courses

## **FIN9430 - STUDIES IN FIX INCOME SECURITIES**

### ***Syllabus***

**July. 1 - July. 19, 2024**

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Term Duration: July. 1 - July. 19, 2024  
Credit Points: 4  
Level: Postgraduate  
Instructor Name: TBA  
Home Institution: Beijing Institute of Technology  
Lecture Hour: 9:00-12:00

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### ***Course Description***

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This comprehensive course provides an in-depth exploration of advanced topics in bond valuation, pricing, and portfolio management. Students will gain a thorough understanding of various fixed-income securities, including government bonds, corporate bonds, and mortgage-backed securities. The course covers essential concepts such as bond pricing, yield measurement, risk factors affecting bond yields, and the construction and management of bond portfolios. Additionally, students will delve into credit analysis, risk modeling, and liability-driven investing strategies. A mix of teaching activities, including group discussions, case studies, and team projects, will engage students fully in the course study.

### ***Course Aims:***

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Upon successful completion of this course, students should be able to:

1. examine the functioning of money and bond markets and evaluate the latest developments within these financial domains;
2. gain insights into the fundamentals of bond pricing, duration, and convexity, along with the application of duration-based portfolio management;
3. measure and manage interest rate and credit risk;
4. identify different interest-rate models and estimate interest-rate volatility;
5. explain the impact of inflation, liquidity and segmentation on the term structure of interest rates;
6. implement analytical tools to evaluate interest rate risk and other associated risks;
7. know passive and active fixed income portfolio management techniques;
8. develop critical-thinking ability in analyzing various issues related to investing in fixed-income securities and collaborate effectively with other team members.

### ***Language of Instruction***

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English

### ***Required Textbook***

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#### ***Bond Markets, Analysis and Strategies, 10th Edition***

**Author:** Frank J. Fabozzi, Francesco A. Fabozzi

**Publisher:** The MIT Press

**ISBN:** 9780262046275

#### ***Fixed Income Securities: Valuation, Risk, and Risk Management***

**Author:** Pietro Veronesi

**Publisher:** John Wiley & Sons

**ISBN:** 9780470109106

### ***Course Hours***

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This course requires 48 hours of contact including 42 hours of lectures and one 6-hour field trip. Lectures are from Monday to Friday.

### ***Prerequisite Course***

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Students are expected to have taken **Investment Analysis** or have solid foundation of financial theory.

## ***Course Schedule***

<b>Week</b>	<b>Day</b>	<b>Chapter</b>	<b>Topic</b>	<b>Assignment/ Notes</b>
week 1	Day 1	Pricing of Bonds and Measuring Yield	Pricing a Bond; Computing the Yield or Internal Rate of Return on any Investment; Conventional Yield Measures; Potential Sources of a Bond's Dollar Return	
	Day 2	Bond Price Volatility	Price Volatility Characteristics of Option-Free Bonds; Measures of Bond Price Volatility; Convexity; Additional Concerns When Using Duration; Approximating a Bond's Duration and Convexity	Group Discussion: Calculate the Price of the Inverse Floater
	Day 3	Factors Affecting Bond Yields and the Term Structure of Interest Rates	Base Interest Rate; Risk Premium; Spot Rate; Using Spot Rate Curve to Price; Forward Rate; Determinants of Term Structure	
	Day 4	Corporate Debt Instruments and International Bonds	Bankruptcy and Creditor Rights; Corporate Debt Ratings; Corporate Bonds; Classification of Global Bond Markets; Foreign Exchange Risk and Bond Returns	
	Day 5	Residential Mortgage Loans	Origination of Residential Mortgage Loans; Types of Residential Mortgage Loans; Conforming Loans; Risks Associated with Investing in Mortgage Loans	Group Discussion: For mortgage loans, what is prepayment risk?
Week 2	Day 6	Agency Mortgage Pass-Through Securities	Sectors of the Residential Mortgage-Backed Security Market; Issuers of Agency Pass-Through Securities; Factors Affecting Prepayments and Prepayment Modeling	Group Discussion: What are the different types of agency pass-through securities?
	Day 7	Agency Collateralized Mortgage Obligations and Stripped Mortgage-Backed Securities	Agency Collateralized Mortgage Obligations; Agency Stripped Mortgage-Backed Securities; Cash Flow for Nonagency Mortgage-Backed Securities	Mid-semester Test
	Day 8	Analysis of Bonds	Drawbacks of Traditional Yield Spread	

		with Embedded Options and Residential Mortgage-Backed Securities	Analysis; Callable Bonds and their Investment Characteristics; Static Cash Flow Yield Methodology; Monte Carlo Simulation Methodology	
	Day 9	Corporate Bond Credit Analysis and Credit Risk Modeling	Analysis of Business Risk; Corporate Governance Risk Financial Risk; Overview of Credit Risk Modeling; Structural Models	
	Day 10	Industrial Visit		
Week 3	Day 11	Bond Portfolio Management Strategies and Bond Portfolio Construction	Spectrum of Bond Portfolio Strategies; Bond Benchmarks; Active Portfolio Strategies; Application of Portfolio Theory to Bond Portfolio Construction	Case Study: The Mercury Company
	Day 12	Managing a Corporate Bond Portfolio	Risk-Return for Corporate Bonds versus Equities; Corporate Bond Benchmarks; Credit Relative Value Strategies; Constraint-Tolerant Investing	
	Day 13	Liability-Driven Investing for Defined Benefit Pension Plans	Understanding the Liabilities of DB Pension Plan Liabilities; LDI Strategies; De-Risking Solutions to Mitigate Risk; Strategies for Hedging Interest-Rate Risk	
	Day 14	Review		
	Day 15	Final Exam		

**Note:** Students will be notified if the schedule of the field trip changes according to the situation.

### ***Grading Policy***

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Method	Percentage
Participation	10%
Mid-semester Test	20%
Teamwork Assignment	30%
Final Exam	40%
Total	100%

**Participation:** Students are expected to attend all course sessions punctually. Absences will impact the attendance grade. We will have some case studies, topic discussion and group discussion in class and the performance will be considered as partial attendance points or bonus.

**Mid-semester Test:** The test will be conducted over a duration of 2 hour and is a closed-book examination.

**Teamwork Assignment:** Each group is required to write a report (minimum 5000 words). Report should be in two columns, making extensive use of summary statistics and graphs. Always date Grammatical or spelling mistakes will be punished severely.

**Final Exam:** The final exam will be a comprehensive, closed-book assessment that covers the entire course content. The exam will be conducted over a duration of 3 hours.

### ***Academic Honesty***

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Academic honesty is not only a fundamental part of learning and teaching, but also a core value that this course embraces. Behaviors of academic dishonesty, as outlined hereinafter, are unacceptable and will be penalized:

- a) Plagiarism where students present work for assessment, publication or otherwise that is not their own, without appropriate attribution or reference to the original source. Plagiarism can include:
  - i) paraphrasing or copying published and unpublished work without a reference;
  - ii) adopting the ideas or concepts of others, including the structure of an existing analysis without due acknowledgement by way of reference to the original work or source.
- b) Collusion, where students present work as independent work when it has in fact been produced in whole or in part with others unless prior permission for joint or collaborative work has been given by the Course Coordinator. Collusion can include:
  - i) a student inappropriately assisting with or accepting assistance with the production of an assessment task;
  - ii) submitting work which is the same or substantially similar as another student's work for the same assessment task.
- c) Cheating, where a student acts in such a way as to seek to gain unfair advantage or assist another student to do so. Cheating can include:
  - i) submitting falsified, copied or improperly obtained data relating to results of practicum, field trips or other work as if they were genuine; submitting an assessment task with the intention of deceiving or misleading the instructor about the student's contribution to the work;
  - ii) submitting an assessment task written or answered for the student by another person or which the student has copied from another person;
  - iii) submitting the same or a substantially similar piece of work for assessment in two different courses (except in accordance with approved study and assessment schemes);

- iv) a student falsely indicating that they have been present at an activity where attendance is required;
  - v) completing an assessment task outside the conditions specified for that task.
- d) Cheating in Examinations means engaging in dishonest practice or breaching the rules regarding examinations, which can include:
  - i) communicating in any way during an examination with any person who is not an examination supervisor inside or outside the examination venue;
  - ii) giving or accepting assistance from any person who is not an examination supervisor whilst in the examination venue;
  - iii) reading, copying from or otherwise using another student's work in an examination or knowingly allowing a student to do so;
  - iv) possessing, referring to or having access to any material or device containing information directly or indirectly related to the subject matter under examination, other than that explicitly approved by the Course Coordinator;
  - v) acquiring, or attempting to acquire, possess or distribute examination materials or information without approval;
  - vi) permitting another person to attend an examination on a student's behalf or attending an examination on behalf of another student;
- e) Other dishonest acts including but not limited to:
  - i) altering or falsifying any document or record for the purposes of gaining academic advantage;
  - ii) offering or giving money or any item or service to a University staff member or any other person to gain academic advantage for the student or another person;
  - iii) inventing references.