

**Commerce 4FJ3  
Fixed-Income Analysis  
Fall 2023 Course Outline**

**Finance and Business Economics Area  
DeGroote School of Business  
McMaster University**

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**COURSE OBJECTIVE**

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This course presents an advance treatment of core concepts and theories in the field of fixed-income securities. In particular, this course focuses on using theoretical models and pricing approaches to analyze the fixed-income securities and explain the term structure of interest rates.

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**INSTRUCTOR AND CONTACT INFORMATION**

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**Instructor: Dr. Luo**

**Course website: A2L**

**Office Hours: by appointment**

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**COURSE ELEMENTS**

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Credit Value:	3	Leadership:	Yes	IT skills:	yes	Global view:	Yes
A2L:	Yes	Ethics:	No	Numeracy:	Yes	Written skills:	yes
Participation:	Yes	Innovation:	Yes	Group work:	Yes	Oral skills:	Yes
Evidence-based:	Yes	Experiential:	Yes	Final Exam:	Yes	Guest speaker(s):	Yes

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## COURSE DESCRIPTION

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This course provides students with an understanding of fixed-income securities and their markets. In particular, the course will cover the models and methods used to value, analyze and hedge interest rate products. The course integrates theory and practice and focuses on the implementation of various models, as well as their derivation. Methods and tools needed to understand the models and related theory will also be developed.

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## LEARNING OUTCOMES

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Upon completion of this course, students will be able to complete the following key tasks:

- Conduct the analysis for the fixed-income securities;
- Use Excel spreadsheet to model immunization strategy to hedge interest rate risk.
- Use the models or methods to price most of fixed-income securities;
- Explain the term structure of interest rates by using a variety of methods.

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## REQUIRED COURSE MATERIALS AND READINGS

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**Required textbook:** Options, Futures, and Other Derivatives, 11<sup>th</sup> edition, by John Hull. Pearson Publisher.

**Optional readings:**

- (1) Bond Markets, Analysis and Strategies by F. Fabozzi, 10<sup>th</sup> ed., Prentice Hall
- (2) Financial Modeling by Simon Benninga, 5th edition, The MIT Press.

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## EVALUATION

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There are four components contributing to course evaluation. Each component and its weight are listed below. Students' final percentage grades are computed based on all the weights for components.

### Components and Weights

<b>Participation</b>	<b>10%</b>
<b>Excel Assignments</b>	<b>10%</b>
<b>Term Test 1</b>	<b>30%</b>
<b>Term Test 2</b>	<b>30%</b>
<b>Group Project</b>	<b>20%</b>
<b>Total</b>	<b>100%</b>

### Conversion

At the end of the course your overall percentage grade will be converted to your letter grade in accordance with the following conversion scheme.

LETTER GRADE	PERCENT	LETTER GRADE	PERCENT
A+	90 - 100	C+	67 - 69
A	85 - 89	C	63 - 66
A-	80 - 84	C-	60 - 62
B+	77 - 79	D+	57 - 59
B	73 - 76	D	53 - 56
B-	70 - 72	D-	50 - 52
		F	00 - 49

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## COURSE DELIVERABLES

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The lecture for this course will be delivered in person on the weekly basis and detailed information will be provided in our course website prior to the weekly lecture. The participation in the weekly lecture is required and will be accounted toward to the class participation grade. The lecture slides will be provided weekly prior to the weekly lecture.

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## COMMUNICATION AND FEEDBACK

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Students who wish to correspond with instructors or TAs directly via email must send messages that originate from their official McMaster University email account. This protects the confidentiality and sensitivity of information as well as confirms the identity of the student. Emails regarding course issues should NOT be sent to the Area Administrative Assistants. All students must receive feedback regarding their progress prior to the final date by which a student may cancel the course without failure by default.

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## REQUESTING RELIEF FOR MISSED ACADEMIC WORK

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In the event of an absence for medical or other reasons, students should review and follow the Academic Regulation in the Undergraduate Calendar “Requests for Relief for Missed Academic Term Work” and the link below;

<http://ug.degroote.mcmaster.ca/forms-and-resources/missed-course-work-policy/>

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## ACADEMIC INTEGRITY

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You are expected to exhibit honesty and use ethical behaviour in all aspects of the learning process. Academic credentials you earn are rooted in principles of honesty and academic integrity. **It is your responsibility to understand what constitutes academic dishonesty.**

Academic dishonesty is to knowingly act or fail to act in a way that results or could result in unearned academic credit or advantage. This behaviour can result in serious consequences, e.g. the grade of zero on an assignment, loss of credit with a notation on the transcript (notation reads: “Grade of F assigned for academic dishonesty”), and/or suspension or expulsion from the university.

For information on the various types of academic dishonesty please refer to the [Academic Integrity Policy](https://secretariat.mcmaster.ca/university-policies-procedures-guidelines/), located at <https://secretariat.mcmaster.ca/university-policies-procedures-guidelines/>

The following illustrates only three forms of academic dishonesty:

- plagiarism, e.g. the submission of work that is not one’s own or for which other credit has been

obtained.

- improper collaboration in group work.
- copying or using unauthorized aids in tests and examinations.

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## AUTHENTICITY/PLAGIARISM DETECTION

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***Some courses may*** use a web-based service (Turnitin.com) to reveal authenticity and ownership of student submitted work. For courses using such software, students will be expected to submit their work electronically either directly to Turnitin.com or via an online learning platform (e.g. A2L, etc.) using plagiarism detection (a service supported by Turnitin.com) so it can be checked for academic dishonesty.

Students who do not wish their work to be submitted through the plagiarism detection software must inform the Instructor before the assignment is due. No penalty will be assigned to a student who does not submit work to the plagiarism detection software.

**All submitted work is subject to normal verification that standards of academic integrity have been upheld** (e.g., on-line search, other software, etc.). For more details about McMaster's use of Turnitin.com please go to [www.mcmaster.ca/academicintegrity](http://www.mcmaster.ca/academicintegrity).

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## COURSES WITH AN ON-LINE ELEMENT

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***Some courses may*** use on-line elements (e.g. e-mail, Avenue to Learn (A2L), LearnLink, web pages, capa, Moodle, ThinkingCap, etc.). Students should be aware that, when they access the electronic components of a course using these elements, private information such as first and last names, user names for the McMaster e-mail accounts, and program affiliation may become apparent to all other students in the same course.

The available information is dependent on the technology used. Continuation in a course that uses on-line elements will be deemed consent to this disclosure. If you have any questions or concerns about such disclosure please discuss this with the course instructor.

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## ONLINE PROCTORING

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**Some courses may** use online proctoring software for tests and exams. This software may require students to turn on their video camera, present identification, monitor and record their computer activities, and/or lock/restrict their browser or other applications/software during tests or exams. This software may be required to be installed before the test/exam begins.

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## CONDUCT EXPECTATIONS

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As a McMaster student, you have the right to experience, and the responsibility to demonstrate, respectful and dignified interactions within all of our living, learning and working communities. These expectations are described in the [Code of Student Rights & Responsibilities](#) (the “Code”). All students share the responsibility of maintaining a positive environment for the academic and personal growth of all McMaster community members, **whether in person or online**.

It is essential that students be mindful of their interactions online, as the Code remains in effect in virtual learning environments. The Code applies to any interactions that adversely affect, disrupt, or interfere with reasonable participation in University activities. Student disruptions or behaviours that interfere with university functions on online platforms (e.g. use of Avenue 2 Learn, WebEx or Zoom for delivery), will be taken very seriously and will be investigated. Outcomes may include restriction or removal of the involved students’ access to these platforms.

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## ACADEMIC ACCOMMODATION OF STUDENTS WITH DISABILITIES

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Students with disabilities who require academic accommodation must contact [Student Accessibility Services](#) (SAS) at 905-525-9140 ext. 28652 or [sas@mcmaster.ca](mailto:sas@mcmaster.ca) to make arrangements with a Program Coordinator. For further information, consult McMaster University’s [Academic Accommodation of Students with Disabilities](#) policy.

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## ACADEMIC ACCOMMODATION FOR RELIGIOUS, INDIGENOUS OR SPIRITUAL OBSERVANCES (RISO)

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Students requiring academic accommodation based on religious, indigenous or spiritual observances should follow the procedures set out in the [RISO](#) policy. Students should submit their request to their Faculty Office ***normally within 10 working days*** of the beginning of term in which they anticipate a need for accommodation or to the Registrar's Office prior to their examinations. Students should also contact their instructors as soon as possible to make alternative arrangements for classes, assignments, and tests.

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## COPYRIGHT AND RECORDING

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Students are advised that lectures, demonstrations, performances, and any other course material provided by an instructor include copyright protected works. The Copyright Act and copyright law protect every original literary, dramatic, musical and artistic work, **including lectures** by University instructors.

The recording of lectures, tutorials, or other methods of instruction may occur during a course. Recording may be done by either the instructor for the purpose of authorized distribution, or by a student for the purpose of personal study. Students should be aware that their voice and/or image may be recorded by others during the class. Please speak with the instructor if this is a concern for you.

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### EXTREME CIRCUMSTANCES

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The University reserves the right to change the dates and deadlines for any or all courses in extreme circumstances (e.g., severe weather, labour disruptions, etc.). Changes will be communicated through regular McMaster communication channels, such as McMaster Daily News, A2L and/or McMaster email.

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### RESEARCH USING HUMAN SUBJECTS

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All researchers conducting research that involves human participants, their records or their biological material are required to receive approval from one of McMaster's Research Ethics Boards before (a) they can recruit participants and (b) collect or access their data. Failure to comply with relevant policies is a research misconduct matter. Contact these boards for further information about your requirements and the application process.

McMaster Research Ethics Board (General board): <https://reo.mcmaster.ca/>

Hamilton Integrated Research Ethics Board (Medical board): <http://www.hireb.ca/>

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### ACKNOWLEDGEMENT OF COURSE POLICIES

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Your enrolment in Commerce **4FJ3** will be considered to be an implicit acknowledgement of the course policies outlined above, or of any other that may be announced during lecture and/or on A2L. **It is your responsibility to read this course outline, to familiarize yourself with the course policies and to act accordingly.**

Lack of awareness of the course policies **cannot be invoked** at any point during this course for failure to meet them. It is your responsibility to ask for clarification on any policies that you do not understand.

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## TENTATIVE COURSE SCHEDULE

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The following topics will be presented in the sequence that the topics are listed below.

- Topic 1: Bond Basics (reading: Chapter 4)
- Topic 2: Managing interest rate risk (reading: lecture notes)
- Topic 3: immunization strategy (reading: lecture notes)
- Topic 4: Approaches for pricing fixed-income derivatives (reading: lecture notes)
- Topic 5: Forward contract (reading: lecture notes) and Interest rate futures (reading: Chapter 6)
- Topic 6: Interest Rate Swaps (reading: Chapter 7)
- Topic 7: Credit Derivative (reading: Chapter 25)
- Topic 8: Martingales and measures (reading: Chapter 28)
- Topic 9: Interest rate derivatives: The standard market models (reading: Chapter 29)
- Topic 10: Equilibrium models of the short rate (reading: Chapter 31)
- Topic 11: NO-arbitrage models of the short rate (reading: Chapter 32)
- Topic 12: HJM, LMM, and multiple zero curves (reading: Chapter 33)