

**UNIVERSITY OF TORONTO**  
**FACULTY OF ARTS AND SCIENCE**  
**DEPARTMENT OF ECONOMICS**

**ECO461– ECONOMICS OF FINANCIAL RISK MANAGEMENT**  
**Winter 2025**

|                        |   |
|------------------------|---|
| <b>Instructor:</b>     | <b>Dr. Ata Mazaheri</b>   |
| <b>Office Hours:</b>   | <b>Tuesdays 11-12PM</b>   |
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**Course Delivery**

**Please refer to the announcement on Quercus.**

**Course Description:**

The course focuses on understanding how institutions manage interest rate risk, exchange rate risk, and commodity price risk using derivatives. More specifically the course examines the use of forwards, futures, SWAPs, options, and related financial derivatives for hedging, arbitrage, and speculation in the global environment. The emphasis is on developing the motivation, issues, and techniques behind financial engineering with these derivatives, as practiced by firms and individuals.

The topics covered in this course include, the basics and the pricing of the derivatives securities, the hedging using derivatives, the value-at-risk (VaR) measure of risk, as well as credit risk:

By the end of this course you would learn:

- I. How the derivatives markets work.
- II. How they can be used to manage risk.
- III. How derivative prices are determined.
- IV. What VaR is and how it works.
- V. How to measure and hedge credit risk.

**Textbook:**

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|-----------------------|---|
| <b>Required Text:</b> | Hull, J, 2022, <i>Options, Futures, and Other Derivatives</i> , 11 <sup>h</sup> edition, Prentice-Hall Inc. |
|-----------------------|---|

## Evaluation:

|                      | Weight      | Time (Tentative)    | Location          |
|----------------------|-------------|---------------------|-------------------|
| Midterm              | <b>40%</b>  | February 11(12-2PM) | TBA               |
| Optional Assignments | 10%         | TBA                 | Upload to Quercus |
| Final Exam           | <b>60%</b>  | TBA                 | TBA               |
| Total                | <b>100%</b> |                     |                   |

## Notes:

- **Midterm:** Material covered till the end of **Lecture-5**.
- **Final Exam:** Inclusive of all the material.

## Aids Allowed for Midterm and Final Exam

- The midterm as well as the final are closed book assessments.
- For both the Midterm and the final, a **one-side** of one 8½" × 11" page with **handwritten** notes and/or formulae as well as a non-programmable calculator are allowed.

The midterm test is a two-hour test while the final is three hours long. There will be no makeup test. If you miss the midterm for any reason, the final exam will be re-adjusted for the total of 100%.

## Assignments:

There is one optional assignment worth 10%. It will be marked as follows: 10: Perfect, 7.5 satisfactory, 5, Average, 0: otherwise. Note these are bonus assignments. Details on the assignments will be posted later.

## Preparation

- This is rather fast moving course so you need to study hard. The lecture notes are posted several days ahead of the lecture. It is important to read them before attending each lecture. It is also important for you to study the textbook on a regular basis otherwise you will soon find yourself lost!
- Lectures include questions/examples and I will also post practice questions, I expect you to learn those.
- There are also questions assigned from the book. Although I do not consider them as important as my own questions, it will help your understanding if you solve some of them on a weekly basis.

## Statement on Equity, Diversity, and Inclusion (EDI)

The University of Toronto is committed to equity, human rights and respect for diversity. All members of the learning environment in this course should strive to create an atmosphere of mutual respect where all members of our community can express themselves, engage with each other, and respect one another's differences. U of T does

not condone discrimination or harassment against any persons or communities.  
If you have questions or concerns on issues related to EDI, please contact the Equity,  
Diversity and Inclusion Office: <https://www.utoronto.ca/edio/>

### **Statement on AI**

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The knowing use of generative artificial intelligence tools, including ChatGPT and other AI writing and coding assistants, for the completion of, or to support the completion of, an examination, term test, assignment, or any other form of academic assessment, may be considered an academic offense in this course.

### **E-mail Policy**

Email should NOT be seen as an alternative to meeting with the instructor (or the TA) during office hours. Nor should email be used as a mechanism to receive private tutorials (especially prior to tests) or to explain material that was covered in lectures you missed. Therefore, I will not respond to email inquiries unless it is an emergency. I will take up 'generic' questions that could be of interest to all students at the beginning of the next class.

## Course Schedule

| Date    | Topic   | Session Material                                     | Recommended Questions   |
|---------|---|--|---|
| Week-1  | <b>Introduction, Futures Markets</b>  | Chapter 1, Chapter 2                                 | 1.25, 1.26, 1.27  |
| Week-2  | <b>Futures Markets, Hedging Strategies Using Futures</b>  | Chapter 2 (Cont'd)<br>Chapter 3                      | 2.16, 2.17, 2.23<br>3.16, 3.18, 3.19, 3.20                                |
| Week-3  | <b>Interest Rates &amp; Duration<br/>Interest Rate Futures</b>                                    | Chapter 4<br>Chapter 6                               | 4.5, 4.11, 4.17, 4.22, 4.23<br>6.6, 6.10, 6.14, 6.17, 6.19                |
| Week-4  | <b>Determination of Forwards and Futures Prices</b>   | Chapter 5  | 5.16, 5.17, 5.21, 5.22, 5.23  |
| Week-5  | <b>Swaps</b>  | Chapter 7  | 7.2, 7.3, 7.9, 7.10, 7.12   |
| Week-6  | <b>Options Markets:<br/>Mechanisms, Properties, Strategies<br/>Binomial Tree, Dynamic Hedging</b> | Chapter 10<br>Chapter 11<br>Chapter 12<br>Chapter 13 | 10.9, 10.16<br>11.13, 11.15<br>12.7, 12.12, 12.18<br>13.4-13.6, 13.8-1-13 |
| Week-7  | <b>Option Valuation<br/>[The Black-Scholes-Merton Model]</b>                                      | Chapter 15   | 15.13-15.16, 15.19-15.21  |
| Week-8  | <b>Exotic Options</b>   | Chapter 26   | 26.4, 26.12, 26.19  |
| Week-9  | <b>Option Sensitivities &amp; Delta Hedging [The Greek Letters]</b>                               | Chapter 19   | 19.2, 19.3, 19.8-10, 19.14, 19.16   |
| Week-10 | <b>Value at Risk</b>  | Chapter 22: 1-4                                      | 22.8, 22.11, 22.13, 22.16, 22.21  |
| Week-11 | <b>Credit Risk</b>  | Chapter 24   | 24.1, 24.3, 24.5  |
| Week-12 | <b>Securitization and Credit Crisis of 2007</b>   | Chapter 8  |   |

*Note:* Chapter references are to John C. Hull's textbook