

# Financial Markets and Investments FM 2557B Course Outline

## 1. Course Information

### Course Information

Course Name: Financial Markets and Investments  
Course Number: FM2557B  
Term: Winter 2023  
Class Time/Location:  
Tue 9:30 AM – 10:30 AM in TC141  
Thu 9:30 AM – 11:30 AM in NCB113  
Tutorial Time/Location:  
Thu 4:30 PM – 5:30 PM in NCB113

### List of Prerequisites

A minimum mark of 60% in Calculus 1501A/B or Applied Mathematics 1413, or Calculus 1301A/B with a minimum mark of 85%.

### List of Antirequisites

Business Administration 4413A/B

Unless you have either the requisites for this course or written special permission from your Dean to enroll in it, you may be removed from this course and it will be deleted from your record. This decision may not be appealed. You will receive no adjustment to your fees if you are dropped from a course for failing to have the necessary prerequisites.

## 2. Instructor Information

Instructor	Email	Office	Phone	Office Hours
Ashley McAlpine	amcalpi3@uwo.ca	WSC 274	Ext 82771	MWF 10:00 AM – 11:00 AM
TA – Peiheng Gao	pgao47@uwo.ca			

Students must use their Western (@uwo.ca) email addresses when contacting their instructors. Be sure to indicate the course number (FM 2557) in the subject line.

### 3. Course Syllabus, Schedule, Delivery Mode

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

- Describe the characteristics and terms of the main derivatives instruments (including forwards and futures).
  - Distinguish between long and short positions for both assets (including short selling of stocks) and derivatives on assets.
  - Recognize the transaction costs affecting profit calculations for both assets and derivatives on assets (including commissions and bid-ask spread).
- Describe the characteristics and terms relating to both forward contracts and prepaid forward contracts.
  - Define and recognize the following terms relating to the timing of stock purchases: outright purchase, fully leveraged purchase, prepaid forward contract, and forward contract.
  - Determine payoffs and profits for both long and short positions on forward contracts.
  - Calculate prices for both forward contracts and prepaid forward contracts on stocks with no dividends, continuous dividends, and discrete dividends.
  - Construct a synthetic forward from the underlying stock and a risk-free asset and identify arbitrage opportunities when the synthetic forward price is different from the market forward price.
- Describe the characteristics and terms relating to both futures contracts and the associated margin accounts.
  - Define and recognize the following terms relating to the mark-to-market process: Marking to market, margin balance, maintenance margin, and margin call.
  - Evaluate an investor's margin balance based on changes in asset values.
- Explain the cash flow characteristics and terms relating to various options.
  - Define and recognize the following terms relating to option classification: call and put options, expiration date, strike price, moneyness, and option style.
  - Calculate the payoff and profit on both long and short positions with respect to both call and put options.
  - Calculate the payoffs on exotic options: Asian (arithmetic and geometric), barrier, compound, gap, and exchange.
  - Calculate the payoffs on exotic options: lookback, chooser, shout, rainbow, and forward start.
- Apply option strategies in a risk management context.
  - Recognize that a long put can be used as an insurance strategy for a long stock position and a long call can be used as an insurance strategy for a short stock position.
  - Understand how the following option strategies can be used as tools to manage financial risk or speculate on price or volatility: option spreads (bull, bear, ratio), collar, straddle, strangle, and butterfly spread.
  - Evaluate the payoff and profit of the option strategies described above.
- Explain the general properties of options that affect option prices.
  - Apply put-call parity to European options on stocks with no dividends, stocks with continuous dividends, stocks with discrete dividends, currencies, and bonds.
  - Compare options with respect to term-to-maturity and strike price.
- Evaluate the duration and convexity of bonds and apply immunization.

## Lecture Schedule

Week	Dates	Topic
1	Jan 10 & 12	Introduction to markets and derivatives Overview of stocks, bonds, and derivatives
2	Jan 17 & 19	Buying, selling, and short selling Introduction to forwards, and how arbitrage works
3	Jan 24 & 26	Continuing analysis of forwards and introducing the replicating portfolio Introduction to puts and calls
4	Jan 31 & Feb 2	Put-call parity <b>Midterm 1</b>
5	Feb 7 & 9	Various option strategies Introduction to using options to manage risk
6	Feb 14 & 16	Deeper analysis of forwards with continuous dividends Introduction and analysis of futures contracts
7	Feb 20 – 24	Reading Week
8	Feb 28 & Mar 2	Deeper analysis of futures including asset allocation and cross hedging
9	Mar 7 & 9	Interest rate determinants <b>Midterm 2</b>
10	Mar 14 & 16	Interest rate forwards, Eurodollar futures.
11	Mar 21 & 23	Duration and convexity Asset-Liability matching
12	Mar 28 & 30	Introduction and analysis of swaps
13	Apr 4 & 6	Review for final exam

The tutorial scheduled each week will be led by the TA. During this time, the TA will review the solutions for the suggested textbook questions.

All classes and tutorials will be held in-person.

- In the event of a COVID-19 resurgence during the course that necessitates the course delivery moving away from face-to-face interaction, affected course content will be delivered entirely online, either synchronously (i.e. at the times indicated in the timetable) or asynchronously (i.e. posted on OWL for students to view at their convenience). The grading scheme will not change. Any remaining assessments will also be conducted online as determined by the course instructor.

## University Accreditation Program – Canadian Institute of Actuaries (CIA)

### Honours Specialization Program in Actuarial Science

#### If you are in 2<sup>nd</sup> or 3<sup>rd</sup> year

If you graduate from with an HSP in Actuarial Science, this course will be one of the courses that you will take in your program that will allow you to be exempt from the preliminary exams of the Society of Actuaries (SOA). This is under the new **CIA program accreditation program**. If your plan is to become a fully qualified actuary working in Canada, then all you would need to do is graduate from your HSP in actuarial science. You would then be eligible for the CIA Capstone Exam. Taking and passing this exam, along with an online module and a practice education course, would make you eligible to become an ACIA (associate of the Canadian Institute of Actuaries).

#### If you are in 4<sup>th</sup> year

This course is accredited under the Canadian Institute of Actuaries (CIA) University Course Accreditation Program (UAP) for the 2022-23 academic year. Achievement of the established exemption grade in this course may qualify a student from exemptions from writing certain preliminary exams. **This is the last year of the CIA course accreditation program.**

### Major in Actuarial Science

If you are a student in a major in Actuarial Science, the CIA program accreditation program will not apply to you. If your plan is to become a fully qualified actuary, you will need to continue to write and pass the preliminary exams of the SOA. However, for 2022-23 this course is still accredited under the Canadian Institute of Actuaries (CIA) University Course Accreditation Program (UAP) for the 2022-23 academic year. Achievement of the established exemption grade in this course may qualify a student from exemptions from writing certain preliminary exams. **This is the last year of the CIA course accreditation program.**

Please see the following link for full details:

<http://www.cia-ica.ca/membership/university-accreditation-program---home>

In addition to the university's internal policies on conduct, including academic misconduct, candidates pursuing credits for writing professional examinations shall also be subject to the **Code of Conduct and Ethics for Candidates in the CIA Education System** and the associated **Policy on Conduct and Ethics for Candidates in the CIA Education System**. (<https://www.cia-ica.ca/docs/default-source/2020/220065e.pdf>)

## 4. Course Materials

### **Textbook**

Robert L. McDonald (2013). Derivatives Markets 3rd Ed, Pearson Education, ISBN 0-321-254308-4.

Students can order a physical copy through the Book Store's website or purchase an e-book version through the following link:

<https://www.pearson.com/en-ca/subject-catalog/p/derivatives-markets/P200000005976/9780137612864>

### **SOA Study Note**

Michael A. Bean (2017). Determinants of Interest Rates.

<http://www.soa.org/Files/Edu/2017/fm-determinants-interest-rates.pdf>

Students are responsible for checking the course OWL site (<http://owl.uwo.ca>) on a regular basis for course material and updates. This is the primary method by which information will be distributed to all students in the class.

If students need assistance with the course OWL site, they can seek support on the OWL Help page. Alternatively, they can contact the Western Technology Services Helpdesk by phone at 519-661-3800 or ext. 83800.

### **Technical Requirements**

For students who are starting the semester abroad, or in the event of a COVID-19 resurgence, the following technical requirements apply:

- Stable internet connection
- Computer with working microphone
- Zoom

## **5. Methods of Evaluation**

The overall course grade will be calculated as listed below:

- Midterm 1     25%    (1.5 hours, tentatively scheduled for Feb 2)
- Midterm 2     25%    (1.5 hours, tentatively scheduled for Mar 9)
- Final Exam    50%    (3 hours, to be scheduled by registrar's office)

Calculators: Any non-programmable calculator may be used in this course.

Format of Exams: In-person, closed-book, written answer.

Note: After receiving grades, students will have seven days to submit any regrade requests. After this seven-day period, regrade requests will NOT be accepted.

**CIA course accreditation (last year this applies):** This course with a minimum mark of 75%, along with Actuarial Science 2553A (minimum mark of 75% in both), can give you an exemption for the FM exam.

### **Rounding of Marks Statement**

Across the Sciences Undergraduate Education programs, we strive to maintain high standards that reflect the effort that both students and faculty put into the teaching and learning experience during this course. All students will be treated equally and evaluated based only on their actual achievement. **Final grades** on this course, irrespective of the number of decimal places used in marking individual assignments and tests, will be calculated to one decimal place and rounded to the nearest integer, e.g., 74.4 becomes 74, and 74.5 becomes 75. Marks WILL NOT be bumped to the next grade or GPA, e.g. a 79 WILL NOT be bumped up to an 80, an 84 WILL NOT be bumped up to an 85, etc. The mark attained is the mark you achieved, and the mark assigned; requests for mark “bumping” will be denied.

## **6. Student Absences**

### **Absences from Mid-terms**

If you are unable to meet a course requirement due to illness or other serious circumstances, you must provide valid medical or supporting documentation to the Academic Counselling Office of your Faculty of Registration as soon as possible. For further information, please consult the University's medical illness policy at

[https://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/accommodation\\_medical.pdf](https://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_medical.pdf).

The Student Medical Certificate is available at

[https://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/medicalform.pdf](https://www.uwo.ca/univsec/pdf/academic_policies/appeals/medicalform.pdf).

If you are given approval from academic counselling, you will write a make-up mid-term.

### **Absences from Final Examinations**

If you miss the Final Exam, please contact the Academic Counselling office of your Faculty of Registration as soon as you are able to do so. They will assess your eligibility to write the Special Examination (the name given by the University to a makeup Final Exam).

You may also be eligible to write the Special Exam if you are in a “Multiple Exam Situation” (e.g. more than 2 exams in 23-hour period or more than 3 exams in a 47-hour period).

## **7. Accommodation and Accessibility**

### **Religious Accommodation**

When a course requirement conflicts with a religious holiday that requires an absence from the University or prohibits certain activities, students should request accommodation for their absence in writing at least two weeks prior to the holiday to the course instructor and/or the Academic Counselling office of their Faculty of Registration. Please consult University's list of recognized religious holidays (updated annually) at

<https://multiculturalcalendar.com/ecal/index.php?s=c-univwo>.

### **Accommodation Policies**

Students with disabilities are encouraged to contact Accessible Education, which provides recommendations for accommodation based on medical documentation or psychological and cognitive testing. The policy on Academic Accommodation for Students with Disabilities can be found at:

[https://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/Academic Accommodation\\_disabilities.pdf](https://www.uwo.ca/univsec/pdf/academic_policies/appeals/Academic_Accommodation_disabilities.pdf).

## **8. Academic Policies**

The website for Registrarial Services is <http://www.registrar.uwo.ca>.

In accordance with policy,

[https://www.uwo.ca/univsec/pdf/policies\\_procedures/section1/mapp113.pdf](https://www.uwo.ca/univsec/pdf/policies_procedures/section1/mapp113.pdf),

the centrally administered e-mail account provided to students will be considered the individual's official university e-mail address. It is the responsibility of the account holder to ensure that e-mail received from the University at their official university address is attended to in a timely manner.

**Scholastic offences** are taken seriously, and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at the following Web site:

[http://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/scholastic\\_discipline\\_undergrad.pdf](http://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf).

In the event of another health lock-down, the final exam in this course will be conducted using a remote proctoring service. By taking this course, you are consenting to the use of this software and acknowledge that you will be required to provide **personal information** (including some biometric data) and the session will be **recorded**. Completion of this course will require you to have a reliable internet connection and a device that meets the technical requirements for this service. More information about this remote proctoring service, including technical requirements, is available on Western's Remote Proctoring website at: <https://remoteproctoring.uwo.ca>.

## 9. Support Services

Please visit the Science & Basic Medical Sciences Academic Counselling webpage for information on adding/dropping courses, academic considerations for absences, appeals, exam conflicts, and many other academic related matters: <https://www.uwo.ca/sci/counselling/>.

Students who are in emotional/mental distress should refer to Mental Health@Western (<https://uwo.ca/health/>) for a complete list of options about how to obtain help.

Western is committed to reducing incidents of gender-based and sexual violence and providing compassionate support to anyone who has gone through these traumatic events. If you have experienced sexual or gender-based violence (either recently or in the past), you will find information about support services for survivors, including emergency contacts at

[https://www.uwo.ca/health/student\\_support/survivor\\_support/get-help.html](https://www.uwo.ca/health/student_support/survivor_support/get-help.html).

To connect with a case manager or set up an appointment, please contact [support@uwo.ca](mailto:support@uwo.ca).

Please contact the course instructor if you require lecture or printed material in an alternate format or if any other arrangements can make this course more accessible to you. You may also wish to contact Accessible Education at

[http://academicsupport.uwo.ca/accessible\\_education/index.html](http://academicsupport.uwo.ca/accessible_education/index.html)

if you have any questions regarding accommodations.

Learning-skills counsellors at the Student Development Centre (<https://learning.uwo.ca>) are ready to help you improve your learning skills. They offer presentations on strategies for improving time management, multiple-choice exam preparation/writing, textbook reading, and more. Individual support is offered throughout the Fall/Winter terms in the drop-in Learning Help Centre, and year-round through individual counselling.

Western University is committed to a thriving campus as we deliver our courses in the mixed model of both virtual and face-to-face formats. We encourage you to check out the Digital Student Experience website to manage your academics and well-being: <https://www.uwo.ca/se/digital/>.

Additional student-run support services are offered by the USC, <https://westernusc.ca/services/>.