

**Department of Statistical and Actuarial Sciences**  
**FM2557B Financial Markets and Investments**

## Course outline for Winter 2021



Although this academic year might be different, Western University is committed to a **thriving campus**. We encourage you to check out the [Digital Student Experience](#) website to manage your academics and well-being. Additionally, the following link provides available resources to support students on and off campus: <https://www.uwo.ca/health/>.

### Technical Requirements and Important Dates:



Stable internet connection



Laptop or computer



Working microphone



Working webcam



Classes Start	Reading Week	Classes End	Study day(s)	Exam Period
January 11	February 15 - 19	April 12	April 13	April 14 - 30

\* March 15, 2021: Last day to drop a second-term half course or a second-term full course without penalty

## 1. Course Information

### Course Information

Course Name: Financial Markets and Investments

Course Number: FM 2557B

Term: Winter

Location: Online Delivery

Lecture hour: Tue 9:30 AM – 10:30 AM, Thu 9:30 AM – 10:30 AM

Tutorial: Tue 4:30 PM – 5:30 PM

**List of Prerequisite(s)** 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 Antirequisite(s)** 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 in the event that you are dropped from a course for failing to have the necessary prerequisites.

## 2. Instructor Information



Course Coordinator	Contact Information
TBD	

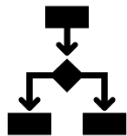
Instructor(s) or Teaching Assistant(s)	Contact Information
Kyle Leistner (Instructor)	<a href="mailto:kleistne@uwo.ca">kleistne@uwo.ca</a>
Junhe Chen (TA)	<a href="mailto:Jche64@uwo.ca">Jche64@uwo.ca</a>
Pramod Rao (TA)	<a href="mailto:ppurigal@uwo.ca">ppurigal@uwo.ca</a>

Office Hours	Zoom or MS Teams or in Person	Names
Friday 9:30 to 12:30	Zoom	Kyle Leistner

Students must use their Western (@uwo.ca) email addresses when contacting their instructors.

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

Interest rate determinants. Duration, convexity and immunization. Basic securities, financial market conventions, swaps, arbitrage pricing and hedging of forwards/futures, equity options, bonds, theories of the term structure, factors affecting option prices, arbitrage relations of calls and puts, trading strategies involving options.



Type	Mode	Dates	Time	Frequency
Lecture	Asynchronous online	N/A	3 hours	weekly
Tutorial	Synchronous online	Tuesday	4:30 to 5:30	weekly

For additional help and information throughout the semester, there will be a Q&A set up in the OWL Forum. Also, you can book schedule an appointment with either the instructor or a TA outside of regular office hours for additional help.

### Learning Outcomes

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.

### **Canadian Institute of Actuaries Actuarial Exam Accreditation**

This course is accredited under the Canadian Institute of Actuaries (CIA) [University Accreditation Program](#) (UAP). Achievement of the minimum required grades in accredited courses may provide credit for preliminary exams. Please note that a combination of

courses may be required to achieve exam credit. Details of required courses and grades at Western University are [available at:](#)

<https://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](#). For more information, please visit [Obtaining UAP Credits](#) and the [CIA FAQ."](#)

Students need Fin Mod 2555A (minimum grade of 75%), Fin Mod 2557B (minimum grade of 75%), and Fin Mod 3520A (minimum grade of 80%) in order to be eligible to receive a credit for SOA Exam IFM. Students need Act Sci 2553A (minimum grade of 75%) and Fin Mod 2557B (minimum grade of 75%) to receive credit for SOA Exam FM.

## Table of Contents and Schedule

Week	Dates	Topic	Instructor
1	Jan 11– 15	Introduction to markets and derivatives Overview of stocks, bonds, and derivatives	KL
2	Jan 18 – 22	Buying, selling, and short selling Introduction to forwards, and how arbitrage works	KL
3	Jan 25 – 29	Continuing analysis of forwards and introducing the replicating portfolio Introduction to puts and calls	KL
4	Feb 1 – 5	Put-call parity Midterm 1	KL
5	Feb 8 – 12	Various option strategies Introduction to using options to manage risk	KL
6	Feb 15 – 19	Reading Week	N/A
7	Feb 22 – 26	Deeper analysis of forwards with continuous dividends Introduction and analysis of futures contracts	KL
8	Mar 1 – 5	Deeper analysis of futures including asset allocation and cross hedging	KL
9	Mar 8 –12	Interest rate determinants Midterm 2	KL
10	Mar 15 – 19	Interest rate forwards, Eurodollar futures, and intro to duration and convexity	KL
11	Mar 22 – 26	Duration and convexity continued Asset-Liability matching	KL
12	Mar 29 – Apr 2	Introduction and analysis of swaps	KL
13	Apr 5 – 9	Review for final exam	KL
14	Apr 12		KL



## 4. Course Materials

### Text Book

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

### SOA Study Note

Michael A. Bean (2017). Determinants of Interest Rates.  
<http://www.soa.org/Files/Edu/2017/fm-determinants-interest-rates.pdf>

Students can order a physical copy through the [Book Store's](#) website and the books will be shipped directly to them. Alternatively, students can purchase an e-book version through the following link:



<https://bookstore.uwo.ca/product/cebebookid9656271>

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

All course material will be posted to OWL: <http://owl.uwo.ca>. Any changes will be indicated on the OWL site and discussed with the class.

If students need assistance, they can seek support on the [OWL Help page](#). Alternatively, they can contact the [Western Technology Services Helpdesk](#). They can be contacted by phone at 519-661-3800 or ext. 83800.

[Google Chrome](#) or [Mozilla Firefox](#) are the preferred browsers to optimally use OWL; update your browsers frequently. Students interested in evaluating their internet speed, please click [here](#).

## 5. Methods of Evaluation

The overall course grade will be calculated as listed below:

Midterm Exam 1	25%
Midterm Exam 2	30%
Final Exam	45%

Midterm 1 is one hour in length, Midterm 2 is 1.5 hours in length, and the Final Exam is three hours in length. The tentative dates for midterms 1 and 2 are February 4 and March 11 respectively. These dates need to be validated by the registrar's office. The final exam will be scheduled by the registrar's office.

Click [here](#) for a detailed and comprehensive set of policies and regulations concerning examinations and grading.

### Accommodated Evaluations

- The weight of a missed test will be transferred to the final exam
- If a make-up assessment is missed, the student will receive an INC and complete the task the next time the course is offered

### **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. Accommodation and Accessibility**

### **Accommodation Policies**

Students with disabilities work with Accessible Education (formerly SSD) which provides recommendations for accommodation based on medical documentation or psychological and cognitive testing. The Academic Accommodation for Students with Disabilities policy 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)

### **Academic Consideration for Student Absence**

Students will have up to two (2) opportunities during the regular academic year to use an on-line portal to self-report an absence during the semester, provided the following conditions are met: the absence is no more than 48 hours in duration, and the assessment for which consideration is being sought is worth 30% or less of the student’s final grade. Students are expected to contact their instructors within 24 hours of the end of the period of the self-reported absence, unless noted on the syllabus. Students are not able to use the self-reporting option in the following circumstances:

- for exams scheduled by the Office of the Registrar (e.g., December and April exams)
- absence of a duration greater than 48 hours,
- assessments worth more than 30% of the student’s final grade,
- if a student has already used the self-reporting portal twice during the academic year

If the conditions for a Self-Reported Absence are *not* met, students will need to provide a Student Medical Certificate if the absence is medical, or provide appropriate documentation if there are compassionate grounds for the absence in question. Students are encouraged to contact their Faculty academic counselling office to obtain more information about the relevant documentation.

Students should also note that individual instructors are not permitted to receive documentation directly from a student, whether in support of an application for consideration on medical grounds, or for other reasons. **All documentation required for absences that**

**are not covered by the Self-Reported Absence Policy must be submitted to the Academic Counselling office of a student's Home Faculty.**

For policy on Academic Consideration for Student Absences - Undergraduate Students in First Entry Programs, see:

[https://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/Academic\\_Consideration\\_for\\_absences.pdf](https://www.uwo.ca/univsec/pdf/academic_policies/appeals/Academic_Consideration_for_absences.pdf)

and for the Student Medical Certificate (SMC), see:

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

### **Religious Accommodation**

Students should consult the University's list of recognized religious holidays, and should give reasonable notice in writing, prior to the holiday, to the Instructor and an Academic Counsellor if their course requirements will be affected by a religious observance. Additional information is given in the Western Multicultural Calendar:

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

You may also be eligible to write the Special Exam if you are in a "Multiple Exam Situation" (see [http://www.registrar.uwo.ca/examinations/exam\\_schedule.html](http://www.registrar.uwo.ca/examinations/exam_schedule.html)).

## **7. Academic Policies**

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

In accordance with policy, <http://www.uwo.ca/its/identity/activatenonstudent.html>, 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 his/her official university address is attended to in a timely manner.

### **Contingency plan for an in-person class pivoting to 100% online learning**

In the event of a COVID-19 resurgence during the course that necessitates the course delivery moving away from face-to-face interaction, all remaining course content will be delivered entirely online, either synchronously (i.e., at the times indicated in the timetable) or asynchronously (e.g., 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.

### **All of the remote learning sessions for this course will be recorded.**

The data captured during these recordings may include your image, voice recordings, chat logs and personal identifiers (name displayed on the screen). The recordings will be used for educational purposes related to this course, including evaluations. The recordings may be disclosed to other individuals participating in the course for their private or group study purposes. Please contact the instructor if you have any concerns related to session recordings.

Participants in this course are not permitted to record the sessions, except where recording is an approved accommodation, or the participant has the prior written permission of the instructor.

The use of cell phones is permitted during the upload period of the test in order to upload answers to Gradescope. During the testing period, cell phones are not permitted.

**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).

Tests and examinations in this course will be conducted using both Zoom and the remote proctoring service, such as Proctortrack.

When Zoom is used for exam invigilation, you will be required to keep your camera on for the entire session, hold up your student card for identification purposes, and share your screen with the invigilator if asked to do so at any time during the exam. The exam session using Zoom will not be recorded.\*

Proctortrack will require you to provide personal information (including some biometric data). The session will be recorded. By taking this course, you are consenting to the use of this software.

More information about remote proctoring is available in the Online Proctoring Guidelines at the following link:

<https://www.uwo.ca/univsec/pdf/onlineproctorguidelines.pdf>

Completion of this course will require you to have a reliable internet connection and a device that meets the system and technical requirements for both Zoom and Proctortrack. Information about the system and technical requirements are available at the following links:

<https://www.proctortrack.com/tech-requirements/>

<https://support.zoom.us/hc/en-us>

\* Please note that Zoom servers are located outside Canada. If you would prefer to use only your first name or a nickname to login to Zoom, please provide this information to the instructor in advance of the test or examination.

## Professionalism & Privacy

Western students are expected to follow the [Student Code of Conduct](#). Additionally, the following expectations and professional conduct apply to this course:



- Students are expected to follow online etiquette expectations provided on OWL
- All course materials created by the instructor(s) are copyrighted and cannot be sold/shared
- Recordings are not permitted (audio or video) without explicit permission
- Permitted recordings are not to be distributed
- Students will be expected to take an academic integrity pledge before some assessments
- All recorded sessions will remain within the course site or unlisted if streamed



### **Copyright Statement**

Please be aware that all course materials created by the instructor(s) are copyrighted and cannot be **sold/shared**. Those include materials used in tests/quizzes, midterms, and finals. Any posting/sharing of such materials in part or whole without owner's consent is considered as violation of the Copyright Act and will be considered as a scholastic offence.

In addition, online services such as Chegg are actively monitored. Any questions that are coming out during midterms and finals and are posted to an online service will be searched. Such an activity will be considered as a scholastic offence and will result in academic penalty.

## **8. Support Services**

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

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 Student Accessibility Services (SAS) at (519) 661-2147 if you have any questions regarding accommodations.

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/>.

Learning-skills counsellors at the Student Development Centre (<http://www.sdc.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.

Students who are in emotional/mental distress should refer to Mental Health@Western ([http://www.health.uwo.ca/mental\\_health](http://www.health.uwo.ca/mental_health)) for a complete list of options about how to obtain help.

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