

**Commerce 4FE3
Derivatives
Winter 2020 Course Outline**

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

COURSE OBJECTIVE

During the past three decades, there has been tremendous growth in the use of derivative securities such as futures, forwards, swaps and options, both as part of stand-alone trading strategies and for managing risk. These securities are commonly referred to as "derivatives" because their values depend upon or is derived from the values of other assets. This course presents a conceptual framework for understanding derivative securities, their respective pricing techniques, and how to design appropriate investment and risk management strategies.

INSTRUCTOR AND CONTACT INFORMATION



**Lecture: Tues, 830 - 1120
TSH B106**

Alicia Damley, CFA, CPA, CA
Instructor

damleya@mcmaster.ca

Office Hours: by appointment only

Lulu Zhang
zhangl40@mcmaster.ca
TA Office: TSH 602
TA Office Hours: Mon, 1100 - 1200

Course website: Avenue 2 Learn (A2L)

Course resources and announcements will be communicated via A2L. This should be your first stop for course related information.

We are here to help you succeed!

Both our course TA, Lulu Zhang, and I are here to help you navigate this course successfully.

Outside of class, it is easiest to connect via email. We can address a question quickly via email or setup a time to speak directly. I endeavor to respond to emails within 48 hours. For our mutual benefit and protection, please send all emails from your Mac id. If I have not responded to your inquiry within 48 hours, please re-send it in case it has been lost between our in-boxes.

Please always remember to:

- be courteous and respectful in all communication
- not send emails within 48 hours of a mid-term, exam or assignment due date. We are all busy. And it is important to plan accordingly!

COURSE ELEMENTS

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

COURSE DESCRIPTION

The course is highly analytical and involves the use of the available financial data to solve derivatives pricing problems, devise risk-adjusted investment strategies, and apply analytical methods to a range of practical applications. Students will be introduced to spreadsheet-based derivative pricing and will also get to work with a range of financial data sources (e.g. Bloomberg and Thomson Reuters).

LEARNING OUTCOMES

Upon completion of this course, students will be able to identify, assess, measure, and manage:

- Identify and distinguish between the various forms of derivatives instruments.
- Apply futures and option strategies for portfolio management and hedging purposes.
- Price futures and options logically and systematically.
- Use options Greeks for financial engineering and risk management purposes.
- Use swaps and other derivatives for risk management purposes.

In aggregate, students will develop a sound understanding of the following topics:

- Pricing and managing risk with futures contracts;
- Pricing and managing risk with interest rate derivatives;
- Pricing and managing risks with swaps;
- Pricing and managing risks with standard as well as advanced options contracts;
- Options Greeks and the Black-Scholes-Merton Model; and
- Trading and risk management strategies using derivatives.

COURSE MATERIALS AND READINGS

Required textbook: Hull, Options, Futures, and Other Derivatives, Tenth (10th) Edition; Pearson Higher Education, 2018. ISBN: 9780134472089

Further reading material may be suggested by the instructor or handed out during the lectures. Students are expected to come to class on time and be prepared for the class, i.e., to have read the assigned readings. Students are also encouraged keep themselves up-to-date with current issues in international finance, as they may be discussed in class when appropriate.

Calculator:

The use of a McMaster standard calculator is allowed during examinations in this course. See McMaster calculator policy at the following URL:

www.mcmaster.ca/policy/Students-AcademicStudies/UndergraduateExaminationsPolicy.pdf

EVALUATION

Learning in this course results primarily from in-class discussion and participation of comprehensive business cases as well as out-of-class analysis. The balance of the learning results from the lectures on strategic concepts, from related readings, and from researching your presentations, cases, assignments, simulation decisions and projects. All work will be evaluated on an individual basis except in certain cases where group work is expected. In these cases, group members will share the same grade adjusted by peer evaluation. Your final grade will be calculated as follows:

Components and Weights

| | |
|------------------------|-------------|
| Assignments (2) | 25% |
| Mid-Term Exam | 30% |
| Final Exam | 45% |
| Total | 100% |

NOTE: The use of a McMaster standard calculator is allowed during examinations in this course. See McMaster calculator policy at the following URL:

www.mcmaster.ca/policy/Students-AcademicStudies/UndergraduateExaminationsPolicy.pdf

Communication and Feedback

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. Instructors are required to provide evaluation feedback for at least 10% of the final grade to students prior to Week #9 in the term. Instructors may solicit feedback via an informal course review with students by Week #4 to allow time for modifications in curriculum delivery.

ACADEMIC INTEGRITY

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.

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.

It is your responsibility to understand what constitutes academic dishonesty. For information on the various types of academic dishonesty please refer to the *Academic Integrity Policy*, located at:

www.mcmaster.ca/academicintegrity

The following illustrates only three forms of academic dishonesty:

1. Plagiarism, e.g. the submission of work that is not one's own or for which other credit has been obtained.
2. Improper collaboration in group work.
3. Copying or using unauthorized aids in tests and examinations

AUTHENTICITY/PLAGIARISM DETECTION

In this course we will be using a web-based service (Turnitin.com) to reveal authenticity and ownership of student submitted work. Students will be expected to submit their work electronically either directly to Turnitin.com or via Avenue to Learn (A2L) plagiarism detection (a service supported by Turnitin.com) so can be checked for academic dishonesty. Students who do not wish to submit their work through A2L and/or Turnitin.com must still submit an electronic and/or hardcopy to the instructor. No penalty will be assigned to a student who does not submit work to Turnitin.com or A2L. All submitted work is subject to normal verification that standards of academic integrity have been upheld (e.g., on-line search, other software, etc.). To see the Turnitin.com Policy, please go to;

www.mcmaster.ca/academicintegrity

REQUESTING RELIEF FOR MISSED ACADEMIC WORK

Students may request relief from a regularly scheduled midterm, test, assignment or other course components. Please refer to the policy and procedure on the DeGroot website at the link below;

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

STUDENT ACCESSIBILITY SERVICES

Students who require academic accommodation must contact Student Accessibility Services (SAS) to make arrangements with a Program Coordinator. Academic accommodations must be arranged for each term of study. Student Accessibility Services can be contacted by phone 905-525-9140 ext. 28652 or e-mail sas@mcmaster.ca.

For further information, consult McMaster University's Policy for Academic Accommodation of Students with Disabilities:

<http://www.mcmaster.ca/policy/Students-AcademicStudies/AcademicAccommodation-StudentsWithDisabilities.pdf>

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

Students requiring academic accommodation based on religious, indigenous or spiritual observances should follow the procedures set out in the RISO policy. Students requiring a RISO accommodation should submit their request, including the dates/times needing to be accommodated and the courses which will be impacted, to their Faculty Office normally within 10 days of the beginning of term 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.

POTENTIAL MODIFICATION TO THE COURSE

The instructor reserves the right to modify elements of the course during the term. There may be changes to the dates and deadlines for any or all courses in extreme circumstances. If either type of modification becomes necessary, reasonable notice and communication with the students will be given with explanation and the opportunity to comment on changes. It is the responsibility of the student to check their McMaster email and course websites weekly during the term and to note any changes.

ACKNOWLEDGEMENT OF COURSE POLICIES

Your enrolment in Commerce 4FE3 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.

COURSE SCHEDULE

**Commerce 4FE3
Derivatives
Winter 2020 Course Schedule**

| Week | Date | Topic & Chapter(s) |
|-----------|--------|--|
| 1 | Jan 7 | Introduction (Chp 1) Futures markets and central counterparties (Chp 2) |
| 2 | Jan 14 | Interest rates (Chp 4) Determination of forward & futures prices (Chp 5) |
| 3 | Jan 21 | Mechanics of options markets (Chp 10) Properties of stock options (Chp 11) |
| 4 | Jan 28 | Hedging strategies using futures (Chp 3) Trading strategies involving options (Chp 12) |
| 5 | Feb 4 | Binomial trees (Chp 13) |
| 6 | Feb 11 | The Black-Scholes-Merton model (Chp 15) Options on stock indices and currencies (Chp 17.3 – 6) Assignment #1 due on Feb 14 @1700 via Avenue |
| 7 | Feb 18 | Winter Recess – no class |
| 8 | Feb 25 | Mid-Term Examination (in-class) |
| 9 | Mar 3 | Interest rate futures (Chp 6) Swaps (Chp 7) |
| 10 | Mar 10 | The Greek letters (Chp 19) |
| 11 | Mar 17 | The Greek letters (Chp 19) cont'd |
| 12 | Mar 24 | Options on stock indices and currencies (Chp 17) |
| 13 | Mar 31 | Volatility smiles (Chp 20) |
| 14 | Apr 7 | Basic numerical procedures (Chp 21) Assignment #2 due April 7 @1700 via Avenue @ |