

**F772  
Financial Economics II  
Fall 2020 Course Outline**

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

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***COURSE OBJECTIVE***

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This course extends Financial Economics I (F771) to include continuous-time asset pricing models and approaches. The objective of the course is to equip students with the necessary analytical capabilities to utilize these models and approaches in the valuation of derivative securities, interest rate instruments, and other securities in general.

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***INSTRUCTOR AND CONTACT INFORMATION***

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**Dr. Peter Miu**  
Instructor  
[miupete@mcmaster.ca](mailto:miupete@mcmaster.ca)  
Office: DSB 320  
Tel: (905) 525-9140 x 23981  
Office hours: by appointment

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***COURSE DESCRIPTION***

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The course starts with an introduction to diffusion process and stochastic calculus. We will then consider the Black-Scholes model and the application of no-arbitrage pricing in a number of derivative securities. We will also examine equilibrium pricing of assets under continuous time. Stochastic volatility models and jump diffusion processes and their implications will be studied. Finally, we will review term-structure models of interest rates, and explore and compare different models of default risk.

This course is intended mainly for second-year finance Ph.D. students. However, doctoral students and advanced master's students from other areas are also welcome to take the course.

The course assumes background knowledge in microeconomics and finance theory (at least at the master's level). It also requires a mathematical background that includes upper-level undergraduate calculus, matrix algebra, and statistics.

There will be weekly live and synchronized lectures (via Zoom or Microsoft Teams) at the scheduled class time. Meeting weblinks will be provided by email prior to class meetings.

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### ***LEARNING OUTCOMES***

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

- Understand the use of continuous-time process to model asset returns
- Appreciate the underlying economic assumptions of Black-Scholes option pricing model
- Conduct no-arbitrage asset pricing
- Model asset returns with jump diffusion process
- Appreciate the characteristics of stochastic volatility models
- Understand the use of different interest rate models

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### ***COURSE MATERIALS AND READINGS***

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We will mostly follow *Theory of Asset Pricing* (2008) by George Pennacchi.

We may also use materials from the following textbooks.

- *Asset Pricing and Portfolio Choice Theory* by Kerry Back
- *Options, Futures and Other Derivatives* by John C. Hull
- *Arbitrage Theory in Continuous Time* by Tomas Björk
- *Dynamic Asset Pricing Theory* by Darrell Duffie
- *Continuous-Time Finance* by Robert C. Merton

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### ***EVALUATION***

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Participation	15%
Mid-term Exam	35%
Final Exam	50%
Total	100%

## ***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.

<b>Grade</b>	<b>Points</b>	<b>Equivalent Percentages</b>
A+	12	90 – 100
A	11	85 – 89
A-	10	80 – 84
B+	9	77 – 79
B	8	73 – 76
B-	7	70 – 72
F	0	69 and under

## ***Participation***

This includes attending lectures, being well prepared for classes, and presentations (as required).

## ***Mid-term and Final Exam***

Mid-term and final exam are cumulative. Both exams will be timed.

Please review the Graduate Examinations Policy:

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

## ***What To Do When You Have Questions/Comments***

If you have any question related to the topics that we cover in class, please feel free to talk to me in class and/or in my office. You can also send me an e-mail and I will attempt to respond to it within 48 hours. In case you have any comments and/or concerns about the course, I hope that you will not hesitate to let me know.

Please note that it is the school's policy that students who wish to correspond with instructors 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.

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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, located at:

<https://secretariat.mcmaster.ca/university-policies-procedures-guidelines/>

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

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## ***MISSED ACADEMIC WORK***

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Late assignments will not be accepted. No extensions are available except under extraordinary circumstances. Please discuss any extenuating situation with your instructor at the earliest possible opportunity.

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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.

[www.degroote.mcmaster.ca](http://www.degroote.mcmaster.ca)

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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## **STUDENT ACCESSIBILITY SERVICES**

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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](mailto: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>

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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 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 Program Office normally within 10 working days of the beginning of term. 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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### ***POTENTIAL MODIFICATION TO THE COURSE***

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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.

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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### ***ACKNOWLEDGEMENT OF COURSE POLICIES***

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Your enrolment in BUS F772 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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<b>Week</b>	<b>Date</b>	<b>Topic</b>
1-2	Sep 10 and 17	- Introduction to Diffusion Process - Stochastic Calculus and the Itô Formula - Martingales and Pricing Kernels
3-4	Sep 24 and Oct 1	- Black-Scholes Analysis - No-Arbitrage Pricing
5-6	Oct 8 and 15	- General Theory for Continuous Diffusion Processes - Equilibrium Asset Returns in Continuous Time (Part 1)
7	Oct 22	<b>Mid-term exam</b>
8	Oct 29	- Equilibrium Asset Returns in Continuous Time (Part 2)
9-10	Nov 5 and 12	- Stochastic Volatility Models - Jump Diffusion Processes
11-12	Nov 19 and 26	- Interest Rate Models
13	Dec 3	- Credit Risk Models