BUS F772
Financial Economics II
Fall 2023 Course Outline

Finance and Business Economics
DeGroote School of Business
McMaster University

COURSE OBJECTIVE

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.

INSTRUCTOR AND CONTACT INFORMATION

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

COURSE ELEMENTS

Credit Value:	3	Leadership:	No	IT skills:	No	Global view:	No
A2L:	No	Ethics:	No	Numeracy:	Yes	Written skills:	No
Participation:	Yes	Innovation:	Yes	Group work:	No	Oral skills:	Yes
Evidence-based:	Yes	Experiential:	No	Final Exam:	Yes	Guest speaker(s):	No

COURSE DESCRIPTION

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 the term-structure models of interest rates.

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.

LEARNING OUTCOMES

Upon successful 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

COURSE MATERIALS AND READINGS

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

COURSE OVERVIEW AND ASSESSMENT

Your final grade will be calculated as follows:

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

COURSE DELIVERABLES

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

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.

If you have any question related to the topics that we cover in class, please feel free to talk to me in class. 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.

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. **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:

- plagiarism, e.g. the submission of work that is not one's own or for which other credit has been obtained.
- improper collaboration in group work.
- copying or using unauthorized aids in tests and examinations.

COURSES WITH AN ON-LINE ELEMENT

Some courses may use on-line elements (e.g. email, Avenue to Learn (A2L), web pages, TopHat, MS Teams, 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.

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.

ONLINE PROCTORING

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.

Conduct Expectations

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.

Academic Accommodation of Students with Disabilities

Students with disabilities who require academic accommodation must contact Student Accessibility Services (SAS) at 905-525-9140 ext. 28652 or sas@mcmaster.ca to make arrangements with a Program Coordinator. For further information, consult McMaster University's *Academic Accommodation of Students with Disabilities* policy.

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 should submit their request to their Faculty Office ***normally within 10 working days*** of the beginning of term in which they anticipate a need for accommodation 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.

COPYRIGHT AND RECORDING

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.

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.

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.

ACKNOWLEDGEMENT OF COURSE POLICIES

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.

COURSE SCHEDULE

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Week	Date	Topic
1-2	Sep 14 and 21	- Introduction to Diffusion Process - Stochastic Calculus and the Itô Formula - Martingales and Pricing Kernels
3-4	Sep 28 and Oct 5	- Black-Scholes Analysis - No-Arbitrage Pricing
5-6	Oct 12 and 19	- General Theory for Continuous Diffusion Processes - Equilibrium Asset Returns in Continuous Time
7	Oct 26	**Mid-term exam**
8-9	Nov 2 and 9	- Equilibrium Asset Returns in Continuous Time (cont'd)
10-11	Nov 16 and 23	- Stochastic Volatility Models - Jump Diffusion Processes
12-13	Nov 30 and Dec 7	- Interest Rate Models
14	Dec 14	**Final exam**