

**F772
Financial Economics II
Fall 2019 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
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Office: DSB 320
Tel: (905) 525-9140 x 23981
Office hours: by appointment

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 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.

LEARNING OUTCOMES

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

COURSE MATERIALS AND READINGS

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

EVALUATION

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.

Grade	Points	Equivalent Percentages
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 being well prepared for classes and presentations (as required).

Mid-term and Final Exam

Mid-term and final exam are cumulative.

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.

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

MISSED ACADEMIC WORK

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.

www.degroote.mcmaster.ca

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 Program Office normally within 10 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.

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.

TENTATIVE COURSE SCHEDULE

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Week	Date	Topic
1-2	Sep 12 and 19	- Introduction to Diffusion Process - Stochastic Calculus and the Itô Formula - Martingales and Pricing Kernels
3-4	Sep 26 and Oct 3	- Black-Scholes Analysis - No-Arbitrage Pricing
5-6	Oct 10 and 17	- General Theory for Continuous Diffusion Processes - Equilibrium Asset Returns in Continuous Time
7	Oct 24	Mid-term exam
8-9	Oct 31 and Nov 7	- Stochastic Volatility Models - Jump Diffusion Processes
10-11	Nov 14 and 21	- Interest Rate Models
12	Nov 28	- Credit Risk Models
13	Dec 5	- Students' presentations