
Financial Modelling I, 2018-2019
FM3520B, Section 001

Course Outline

Instructor Information:

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Course Information:

Course Description: This course is a first course in modern financial mathematics: pricing and hedging derivatives securities. We will work in a discrete time setting throughout this course: finance in continuous time is covered in FM4521B and FM3613B. Discrete-time market models, option pricing and replication, risk-neutral valuation and martingale measures, and the fundamental theorem of asset pricing. Discrete-time interest rate models, duration, convexity, and immunization. Black-



Course Objectives:

After completing this course, students understand the fundamental economic and mathematical aspects of financial markets in a discrete-time setting. In particular, students will be able to:

Use put-call parity to determine the relationship between prices of European put and call options and to identify arbitrage opportunities.

Calculate the value of European and American options using the binomial model.

Identify situations where the values of European and American options are the same.

Interpret option sensitivities, the Greeks.

Explain and demonstrate how to control risk using the method of Delta-hedging.

Pricing via risk-

<http://www.music.uwo.ca/>, and our own McIntosh Gallery <http://www.mcintoshgallery.ca>. Information regarding health- and wellness-related services available to students may be found at <http://www.health.uwo.ca/>. Students seeking help regarding mental health concerns are advised to speak to someone they feel comfortable confiding in, such as their faculty supervisor, their program director (graduate chair), or other relevant administrators in their unit. Campus mental health resources may be found at http://www.health.uwo.ca/mental_health/resources.html. To help you learn more about mental health, Western has developed an interactive mental health learning module, found here: http://www.health.uwo.ca/mental_health/module.html. This module is 30 minutes in length and provides participants with a basic understanding of mental health issues and of available campus and community resources. Topics include stress, anxiety, depression, suicide and eating disorders. After successful completion of the module, participants receive a certificate confirming their participation.

Accessibility: 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 Services for Students with Disabilities (SSD) at 661-2111 ext. 82147 if you have questions regarding accommodation.

Support Services: Learning-skills counsellors at the Student Development Centre (SDC) (<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. Additional student-run support services are offered by the USC, <http://westernusc.ca/services>. The website for Registrar Services is <http://www.registrar.uwo.ca>.

Classroom Environment:

The Department has adopted a "Mutual Expectations" policy governing the classroom environment and all work submitted by students. The full text of the policy can be found at: http://www.stats.uwo.ca/mutual_expectations.pdf. In summary, the policy was developed under the premise that all interactions between students and faculty should be governed by the principles of courtesy, respect and honesty. Students who are in emotional/mental distress should refer to: Mental Health@Western <http://www.uwo.ca/uwocom/mentalhealth/> for a complete list of options about how to obtain help.

Canadian Institute of Actuaries University Accreditation Program:

This course is accredited under the Canadian Institute of Actuaries (CIA) University Accreditation Program (UAP). Achievement of the established exemption grade in this course may qualify a student for exemptions from writing certain preliminary exams. Please note, a combination of courses may be required to achieve a single exemption. Please see the following link for full details: <http://www.cia-ica.ca/membership/uap/information-for-students>.