Advanced Financial Modelling
FM 4521B/FM 9521B
Winter 2022 Course Outline

1. Course information:

Instructor	Day/Time	Location	Contact	Office hours
Dr. Amin Hassan Zadeh	Tu: 11:30 am-12:30 pm Th: 11:30 am-1:30 pm	Online. The Zoom link will be announced in OWL. [1]	Use Messages in OWL. (to Instructor's Roleύ	Mondays 3:30 - 4:30. The Zoom link will be announced in OWL. [2]

Calendar description: In this course, you will learn continuous-time models, Brownian motion, stochastic integrals, Ito's lemma, Black-πScholes-πMerton model, arbitrage and market completeness, Black-πScholes PDE, risk-neutral pricing and martingale measures. Other topics include greeks and hedging, extensions of Black-π Scholes model, implied volatility, American option valuation, Vasicek and Cox-πIngersoll-πRoss interest rate models.

Requisites: SS2857A/B, SS3520A/B.

Course delivery and assessment with respect to the COVID-19 pandemic

Although the intent is for this course to be delivered in-person to the extent possible, the changing COVID-19 landscape may necessitate some or all of the course to be delivered online, either synchronously (i.e., at the times indicated in the timetable) or asynchronously (e.g., posted on OWL for students to view at their convenience), as deemed most appropriate by the instructor. The grading scheme will not change. Any assessments affected will be conducted online as determined by the course instructor.

When deemed necessary, tests and examinations in this course will be conducted using a remote proctoring service. By taking this course, you are consenting to the use of this software and acknowledging that you will be required to provide personal information (including some biometric data) and that the session will be recorded. Completion of this course will require you to have a reliable internet connection and a device that meets the technical requirements for this service. More information about this remote proctoring service, including technical requirements, is available on Western's Remote Proctoring website at: https://remoteproctoring.uwo.ca.

2. Course Objectives and Schedule

As a result of completing this course, students will be able to understand and apply the basics of continuous stochastic models in finance, including:

-

If students need assistance with the course OWL site, they can seek support on the OWL Help page. Alternatively, they can contact the Western Technology Services Helpdesk. They can be contacted by phone at 519-661-3800 or ext. 83800.

5. Course Materials

e

1- John Hull's (**10th ed**) Options, Futures, and Other Derivatives, Prentice Hall, New Jersey. **[H]**
2- Jaksa Cvitanic and Fernando Zapatero (2004). Introduction to the Economics and Mathematics of Financial Markets. MIT Press, Cambridge, Massachusetts. **[CZ]**

6. Methods of Evaluation

- Assignments will be available on the course OWL site. However, you will not submit your solutions to OWL. Instead,

- <u>Assignment submissions are due 11:55pm (Eastern Time) on the due date</u>. No credit will be given for submissions beyond this time unless a valid academic accommodation is obtained (see Section 7 for details on accommodation).

- Solutions to assignments will not be

https://www.uwo.ca/univsec/pdf/academic_policies/appeals/Academic

Copyright Statement

Please be aware that all course materials created by the instructor(s) are copyrighted and cannot be sold/shared. Those include materials used in assignments, tests/quizzes, midterms, and finals. Any posting/sharing of such materials in part or whole without owner's consent is considered as violation of the Copyright Act and will be considered as a scholastic offence.

In addition, online services such as Chegg are actively monitored. Any questions that are coming out from assignments and are posted to an online service will be searched. Such an activity will be considered a scholastic offence and will result in an academic penalty.

9. Support Services

- Please visit the Science & Basic Medical Sciences Academic Counselling webpage for information on add/drop courses, academic considerations for absences, appeals, exam conflicts, and many other academic related matters: https://www.uwo.ca/sci/counselling/ .

- 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 Student Accessibility Services (SAS) at 661-2147 if you have any questions regarding accommodations.

- Learning-skills counsellors at the Student Development Centre (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.

- Students who are in emotional/mental distress should refer to Mental Health@Western (http://www.health.uwo.ca/mental_health) for a complete list of options about how to obtain help.

- Additional student-run support services are offered by the USC, http://westernusc.ca/services.