

FM9593B Course Outline 2023

1. Course Information

Course Information

Course Name: Monte Carlo Methods and Financial Applications

Course Number: FM9593B

Academic Term: Winter, 2023

Lecture Hours: MWF 1:00 - 2:00 PM

Lecture Room

List of Prerequisites

A third-year undergraduate understanding of probability and statistics is required for this course. Students should be comfortable with commonly used univariate and multivariate distributions, expectations (including variance and covariance), transformation of variables, linear regression, estimation, and basic statistical tests. The ability to program in a quantitative programming environment such as R is also required. It would be helpful (although not necessary) to have basic knowledge of ordinary and partial differential equations, stochastic processes, stochastic differential equations, and Ito calculus. As most of the examples are from financial applications, some knowledge of finance and derivatives pricing would also be useful.

Unless you have either the requisites for this course or written special permission from your Dean to enroll in it, you may be removed from this course and it will be deleted from your record. This decision may not be appealed. You will receive no adjustment to your fees in the event that you are dropped from a course for failing to have the necessary prerequisites.

2. Instructor Information

| Instructors | Email | Office | Phone | Office Hours |
|----------------|--|---------|-----------------------|--------------|
| Hao Yu | hyu@stats.uwo.ca | WSC 217 | 519-661-3622 (x83622) | TBA |
| TA: Jiaxuan Lu | jlu572@uwo.ca | | | |

Students must use their Western (@uwo.ca) email addresses when contacting their instructors.

Office hour format: in-person or through Zoom by appointment.

3. Course Syllabus, Schedule, Delivery Mode

This course is intended to be an introduction to Monte Carlo simulation methods. Topics to be covered include

1. Random number generation (RNG) for uniform, non-uniform, discrete and continuous

- (i) For medical absences, submitting a Student Medical Certificate (SMC) signed by a licensed medical or mental health practitioner to the Academic Counselling office of their Faculty of Registration.
- (ii) Submitting appropriate documentation for non-medical absences to the Academic Counselling office in their Faculty of Registration.

Note that in all cases, students are required to contact their instructors within 24 hours of the end of the period covered, unless otherwise instructed in the course outline

Students should also note that individual instructors are not permitted to receive documentation directly from a student, whether in support of an application for consideration on medical grounds, or for other reasons.

For further information, please consult the University's medical illness policy at

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

The Student Medical Certificate is available at

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

7. Accommodation and Accessibility

Religious Accommodation

When a course requirement conflicts with a religious holiday that requires an absence from the University or prohibits certain activities, students should request accommodation for their absence in writing at least two weeks prior to the holiday to the course instructor and/or the Academic Counselling office of their Faculty of Registration. Please consult University's list of recognized religious holidays (updated annually) at

<https://multiculturalcalendar.com/ecal/index.php?s=c-univwo>.

Accommodation Policies

Students with disabilities are encouraged to contact Accessible Education, which provides recommendations for accommodation based on medical documentation or psychological and cognitive testing. The policy on Academic Accom

Scholastic offences are taken seriously, and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at the following Web site:

http://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf.

All required papers may be subject to submission for textual similari