

Course Outline for Financial Modeling 3817B Optimization Methods Winter 2022

1. Course Information

Course Information

Financial Modeling 3817B Optimization Methods

Lecture Hours: Monday, Wednesday, Friday 9:30am-10:30am

The course will be delivered synchronously using Zoom in January, or until further notice from the university. When returning to in-person classes, the location is AHB 2B04.

Some important dates:

January 10 first day of classes

February 19–27 Reading Week

April 8 last day of classes

Prerequisites

Mathematics 1600A/B and one of Calculus 2302A/B, Calculus 2502A/B or Calculus 2402A/B.

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

Instructor: Junquan Xiao

E-mail: jxiao48@uwo.ca

Office: WSC 214A

Office Hours: Mon. 11:30am-12:30pm

Students must use their Western (@uwo.ca) email addresses when contacting their instructors. Please indicate the course number (FM3817) in the subject line.

3. Course Syllabus

The course will cover approximately the following topics:

- Nonlinear optimization: gradient and Hessian tests, Lagrange multipliers
- Linear programming: The Simplex Method
- Duality theory for linear programming and Farkas type lemmas
- Sensitivity analysis for linear programming
- Integer programming
- Quadratic programming

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>.

4. Course Materials

Textbook: None. We will use the class notes from Prof. Hristo Sendov.

For online classes and assessments, you will need a laptop or computer, a working microphone and webcam and a reliable internet connection.

All material will be posted on the course OWL site (<http://owl.uwo.ca>). Students are responsible for checking the course OWL site on a regular basis for news and updates. This is the primary method by which information will be disseminated to all students in the class.

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. Methods of Evaluation

There will be four quizzes, one midterm, and one final exam. The quizzes will be worth 20% of the final grade, the midterm exam 35%, and the final exam 45%. There will be NO make-up to either the quizzes

or the midterm. If you miss the quizzes or the midterm (with documentation from the Academic Counselling office or self-reporting), the weight of the test(s) will be moved to the final exam. All the quizzes, the midterm and the final exam are closed-book exams.

The homework problem sets will be posted about 9 days before the quizzes. If we can return to in-person classes in the dates of the quizzes listed below, you do not have to hand in the homework questions, instead there will be a 30-minute quiz testing two of the homework problems. The problems on the fifth homework problem sets will be tested on the final exam. If we can't return to in-person classes in the dates of the quizzes, we will not have the quizzes tested in class. Instead, I will announce two of the homework questions at the end of the class and you will have 15 minutes to scan and submit your solutions. The rest of the homework questions may be used on the exams.

Quizzes: There will be four quizzes, each worth 5%. Tentative dates:

	Problem set posted on	Tested on
1	January 26	February 4
2	February 9	February 18
3	March 9	March 18
4	March 23	April 1
5	April 6	The final exam

Midterm Tests: Friday, March 4, 2022, 9:30-10:30am in class. The last lecture covered on the midterm is Friday, February 18.

Final Exam

The final exam (worth 45%) will be a three-hour cumulative closed-book examination. It will be scheduled by the Registrar's office. (Examination period: April 10-30, excluding April 15–17 for Easter and Passover)

The **overall course grade** will be calculated as listed below:

- Four quizzes 20%
- Midterm 35%
- Final Exam 45%

6. Student Absences

Academic Consideration for Student Absences

Students who experience an extenuating circumstance (illness, injury or other extenuating circumstance) sufficiently significant to temporarily render them unable to meet academic requirements may submit a request for academic consideration through the following routes:

- (i) Submitting a Self-Reported Absence (SRA) form provided that the conditions for submission are met. To be eligible for a Self-Reported Absence:
 - an absence must be no more than 48 hours
 - the assessments must be worth no more than 30% of the student's final grade

- no more than two SRAs may be submitted during the Fall/Winter term
- (ii) 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.
- (iii) Submitting appropriate documentation for non-medical absences to the Academic Counselling office in their Faculty of Registration.

Note that students are required to **contact their instructors** within 24 hours of the end of the period covered.

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. **All documentation required for absences that are not covered by the Self-Reported Absence Policy must be submitted to the Academic Counselling office of a student's Home Faculty.**

For the policy on Academic Consideration for Student Absences – Undergraduate Students in First Entry Programs, see:

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

and for the Student Medical Certificate (SMC), see:

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

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>.

Absences from Final Examinations

If you miss the Final Exam, please contact the Academic Counselling office of your Faculty of Registration as soon as you are able to do so. They will assess your eligibility to write the Special Examination (the name given by the University to a makeup Final Exam).

You may also be eligible to write the Special Exam if you are in a “Multiple Exam Situation” (e.g., more than 2 exams in 23-hour period, more than 3 exams in a 47-hour period).

7. Accommodation and Accessibility

Accommodation Policies

Students with disabilities work with Accessible Education (formerly SSD), which provides recommendations for accommodation based on medical documentation or psychological and cognitive testing. The policy on Academic Accommodation for Students with Disabilities can be found at:

https://www.uwo.ca/univsec/pdf/academic_policies/appeals/Academic_Accommodation_disabilities.pdf,

8. Academic Policies

The website for Registrarial Services is <http://www.registrar.uwo.ca>.

In accordance with policy,

https://www.uwo.ca/univsec/pdf/policies_procedures/section1/mapp113.pdf,

the centrally administered e-mail account provided to students will be considered the individual's official university e-mail address. It is the responsibility of the account holder to ensure that e-mail received from the University at his/her official university address is attended to in a timely manner.

Only non-programmable calculators will be allowed during tests.

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.

9. Support Services

Please visit the Science & Basic Medical Sciences Academic Counselling webpage for information on adding/dropping 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 Accessible Education at (519) 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/mentalhealth>) 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>.