

Financial Modeling 3817B – **Optimization Methods for Financial Modelling** Section 001

Instructor Information

Instructor	Dr. Azaz Sharif
Email	asharif@stats.uwo.ca
Class Time	M W F 9:30 AM – 10:30 AM in TC-204
Office Hours	Mon, Wed from 3:00 pm to 4:00 pm at WSC#105, OR, by appointment ** Any changes to these hours will be announced in class and posted under Announcements on our OWL site.

Course Information

Course Description	An introduction to linear programming, simplex method, duality theory and sensitivity analysis, formulating linear programming models, nonlinear optimization, unconstrained and constrained optimization, quadratic programming.
Prerequisites	Mathematics 1600A/B and one of Calculus 2302A/B, 2502A/B, or 2402A/B. In case of conflict or questions, consult the Academic Counselling Office of your home department.
Antirequisites	The former Applied Mathematics 3817A/B.
Pre, Co-requisites Warning	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. You can be deregistered at any time even after writing the final exam. 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.
Textbook	Introduction to Operations Research, by Frederick S. Hillier and Gerald J. Lieberman, McGraw Hill, 10 th ed., 2015.

Course Objectives

By the end of the course the students should have a basic understanding of:

1. Classification of Optimization Problems, Introduction to linear programming, Graphical Solutions
2. Linear Programming Problems: Simplex Method
3. Simplex Method in Matrix Form, Revised Simplex Method
4. Sensitivity Analysis and Duality
5. Nonlinear Programming and Multi-variable Optimization, Nonlinear Equations
6. Constrained Nonlinear Optimization, Lagrangian, Penalty and Barrier Methods
7. Optimization Using Quadratic Forms, Quadratic Programming
8. Discrete Optimization, Branch and Bound Methods
9. Applications: Portfolio Optimization, Optimization Toolbox

Students should check OWL (<http://owl.uwo.ca>) 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.

Assessments

The overall course grade will be calculated as listed below:

Assignments (4/5)	20%
Midterm (TBA)	30%
Final Exam (TBA)	50%

What is expected from the student:

Students are responsible for learning the material presented in lectures, for learning how to solve the suggested exercises, and for demonstrating that learning on exams, quizzes, and/or assignments. For each hour of lecture, an average student should spend about 2 hours studying the material at home. This includes reading the relevant sections of the textbook and, above all, doing the exercises at the end of each section. Do as many of them as necessary to feel comfortable with the material. This course covers a lot of material, and is cumulative, so it will be necessary to work **regularly** throughout the term to do well.

Department Policy on Missed Course Requirements

If you are unable to meet a course requirement due to illness or other serious circumstances, you must provide valid medical or supporting documentation to the Academic Counselling Office of your home faculty as soon as possible. If you are a Science student, the Academic Counselling Office of the Faculty of Science is located in WSC 140, and can be contacted at scibmsac@uwo.ca.

For further information, please consult the university's medical illness policy at http://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_medical.pdf.

Missed Midterms: The policy of the department of Statistical and Actuarial Sciences is that there will be no make-up exams for missed midterms or tests. If recommendation for accommodation is received from your Dean's office, the weight of the missed midterm will be reassigned to the final exam. If no recommendation is received, then you will receive a mark of 0 for your midterm.

Missed Final Exam: If you miss the Final Exam, please contact your faculty's Academic Counselling Office as soon as you are able to do so. They will assess your eligibility to write the Special Exam (the name given by the university to a make-up Final Exam). You may also be eligible to write the Special Exam if you are in a "Multiple Exam Situation" (see http://www.registrar.uwo.ca/examinations/exam_schedule.html).

Academic Policies

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

In accordance with policy, <http://www.uwo.ca/its/identity/activatenonstudent.html>, 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.

Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at this website: http://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf.

Computer-marked, multiple-choice tests and exams may be subject to submission for similarity review by software that will check for unusual coincidences in answer patterns that may indicate cheating.

Student Health and Wellness

As part of a successful student experience at Western, we encourage students to make their health and wellness a priority. Western provides several on campus health-related services to help you achieve optimum health and engage in healthy living while pursuing your degree. For example, to support physical activity, all students, as part of their registration, receive membership in Western's Campus Recreation Centre. Numerous cultural events are offered throughout the year. Please check out the Faculty of Music web page <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 (undergraduate 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.

Support Services

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.

The policy on Accommodation for Students with Disabilities can be found here:
www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_disabilities.pdf

The policy on Accommodation for Religious Holidays can be found here:
http://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_religious.pdf

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>.

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 519-661-2111 ext. 82147 if you have questions regarding accommodation

Email Communication

You are welcome to communicate with your instructor by email, **but email communication should only be used to provide them with information or to ask a question that requires a brief response**. For more lengthy discussions and for discussions on lectures/course material please see your instructor during their scheduled office hours or by appointment. If you do email them, please use your UWO account, as these are often the only e-mails read.

Attendance

Classroom attendance is viewed as an important part of the learning process. Students are advised that excessive absenteeism may result in the student being disbarred from the final exam (see Western Academic Calendar).

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:

<https://www.uwo.ca/stats/undergraduate/mutual-expectations.html>. 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.