

INSTRUCTOR: Jason LeGrow
 Office: MC 5113
 Email address: jlegrow@uwaterloo.ca
 Office hours: Tuesday and Wednesday, 1:30–3:00pm

TEACHING ASSISTANT: Ala Shayeghi
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CLASS TIMES: Monday, Wednesday, and Friday, 8:30-9:20am.

CLASS LOCATION: E2 1736.

WEBSITE: <https://learn.uwaterloo.ca>

PREREQUISITES: One of: MATH 106, 114, 115, 136, 146 (*i.e.*, a first course in linear algebra).

COURSE OUTLINE: I intend to cover the following topics:

1. Formulating and modelling problems as mathematical programs.
2. The simplex algorithm for solving linear programs.
3. Some theory behind the simplex algorithm, including geometry and duality.
4. Strategies for mixed-integer linear programs: branch & bound and cutting planes.

EVALUATION: Your final grade will be computed using whichever of the following three schemes is to your advantage:

	Scheme 1	Scheme 2	Scheme 3
Assignments (Best 8 of 9):	15%	15%	15%
Midterm Exam 1:	25%	15%	15%
Midterm Exam 2:	15%	25%	15%
Final Exam:	45%	45%	55%

Table 1: Computing your final grade.

There is no requirement to pass either midterm exam or the final exam in order to pass the course.

Assignments. There will be 9 assignments, due on the following dates:

1. Wednesday, January 15 at 11:59pm,
2. Wednesday, January 22 at 11:59pm,
3. Wednesday, January 29 at 11:59pm,
4. Wednesday, February 5 at 11:59pm,
5. Wednesday, February 26 at 11:59pm,
6. Wednesday, March 4 at 11:59pm,
7. Wednesday, March 11 at 11:59pm,
8. Wednesday, March 25 at 11:59pm, and
9. Friday, April 3 at 11:59pm.

Your lowest assignment grade will be dropped; if you decide not to hand in one assignment, that is the one that will be dropped. All assignments which are not dropped will have equal weight.

You will receive a Crowdmark link for each assignment, and you will need to submit your solutions on Crowdmark. You must submit each question in the corresponding box, or it will not be graded.

Midterms exams. There will be two *in-class* midterms, on the following dates:

1. Wednesday, February 12, and
2. Wednesday, March 18

Since the midterms take place during our regularly-scheduled class times, *there will be no accommodations for make-up exams.*

Final Exam. There will be a final exam, on a date and in a location to be determined by the registrar's office.

Incomplete Grades. In order to assign a grade of INC, you must have written and passed both midterm exams.

COURSE TEXTBOOK: There is no official textbook for the course; the lecture notes constitute the course materials. If, however, you would like supplementary materials, you may find the following book useful:

B. Guenin, J. Könemann, and L. Tunçel, *A Gentle Introduction to Optimization*, Cambridge University Press, 2014.

POLICIES

Attendance: Since lectures will not follow any textbook closely, you are encouraged to attend all lectures.

Email queries: Questions about the content of the course or assignments should be asked in person at office hours if possible; however, I will do my best to answer email queries in a timely fashion. Questions about assignment marking should be sent to the course instructor at jlegrow@uwaterloo.ca.

Collaboration on assignments: You are welcome to collaborate on assignments with other students presently enrolled in CO 227. However, *solutions must be written up by yourself*. If you do collaborate, please *acknowledge your collaborators in the write-up for each problem*. *If you obtain a solution with help from a book, research paper, a website, or elsewhere, please acknowledge your source*. **You are not permitted to solicit help from online bulletin boards, chat groups, newsgroups, or solutions from previous offerings of the course.**

Assignment deadlines: Late assignments will not be accepted, except in very special circumstances (usually a documented illness of a serious nature). High workloads because of midterms and assignments in other courses will not qualify as a special circumstance.

Accommodations: Students who are unable to meet assignment due dates or write a test must provide documentation verifying the events that have precluded them from meeting their academic deadlines. When illness is the cause of a missed deadline, students should seek medical treatment and provide confirmation of the illness to the instructor within 48 hours by submitting a completed University of Waterloo Verification of Illness form to support requests for accommodation due to illness.

Grade appeals: If you have any concerns about the marking of assessment questions, please send an email together with a clear description of your appeal to the instructor at jlegrow@uwaterloo.ca. Appeals should be made no later than 7 days after the return of an assessment. Solutions to assignments will be posted on the course website shortly after the assignment submission deadline.

Academic integrity: In order to maintain a culture of academic integrity, members of the University of Waterloo community are expected to promote honesty, trust, fairness, respect and responsibility. Check <http://www.uwaterloo.ca/academicintegrity/> for more information.

Grievance: A student who believes that a decision affecting some aspect of their university life has been unfair or unreasonable may have grounds for initiating a grievance. Read Policy 70, Student Petitions and Grievances, Section 4, available online at

<https://uwaterloo.ca/secretariat/policies-procedures-guidelines/policy-70>.

When in doubt, please be certain to contact the department's administrative assistant who will provide further assistance.

Discipline: A student is expected to know what constitutes academic integrity to avoid committing academic offenses and to take responsibility for his/her actions. A student who is unsure whether an action constitutes an offense, or who needs help in learning how to avoid offenses (*e.g.*, plagiarism, cheating) or about “rules” for group work or collaboration should seek guidance from the instructor, academic advisor, or the undergraduate associate dean. For information on the categories of offenses and the types of penalties, students should refer to Policy 71, Student Discipline, available online at <https://uwaterloo.ca/secretariat/policies-procedures-guidelines/policy-71>.

For information on typical penalties, check Guidelines for the Assessment of Penalties available at <https://uwaterloo.ca/secretariat/guidelines/guidelines-assessment-penalties>.

Appeals: A decision made or penalty imposed under Policy 70, Student Petitions and Grievances (other than a petition) or Policy 71, Student Discipline may be appealed if there is a ground. A student who believes he/she has a ground for an appeal should refer to Policy 72, Student Appeals, available online at <https://uwaterloo.ca/secretariat/policies-procedures-guidelines/policy-72>.

A note for students with disabilities: AccessAbility Services—located in Needles Hall, Room 1401 (website: <https://uwaterloo.ca/accessability-services/>), collaborates with all academic departments to arrange appropriate accommodations for students with disabilities without compromising the academic integrity of the curriculum. If you require academic accommodations to lessen the impact of your disability, please register with AccessAbility Services at the beginning of each academic term.

Mental health: If you or anyone you know experiences any academic stress, difficult life events, or feelings like anxiety or depression, we strongly encourage you to seek support.

On-campus Resources:

- Campus Wellness: <https://uwaterloo.ca/campus-wellness/>
- Counselling Services: available by email at counselling.services@uwaterloo.ca, or by phone at (519) 888 4567 extension 32655.
- MATES: one-to-one peer support program offered by Waterloo Undergraduate Student Association (WUSA; formerly Feds) and Counselling Services: mates@uwaterloo.ca
- Health Services: located across the creek from the Quantum Nano Centre, 1 (519) 888 4096.

Off-campus Resources:

- Good2Talk: Free confidential helpline for post-secondary students. Phone: 1 (866) 925 5454
- Here 24/7: Mental Health and Crisis Service Team. Phone: 1 (844) 437 3247

Diversity: It is our intent that students from all diverse backgrounds and perspectives be well served by this course, and that students’ learning needs be addressed both in and out of class. We recognize the immense value of the diversity in identities, perspectives, and contributions that students bring, and the benefit it has on our educational environment. Your suggestions are encouraged and appreciated. Please let us know ways to improve the effectiveness of the course for you personally or for other students or student groups.