

# Linear Optimization

MATH 5801W (MAT 5303), Fall 2021

[School of Mathematics and Statistics, Carleton University](#)

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**Instructor:** Dr. Kevin Cheung

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**Course description:** Linear programming problems; simplex method, upper bounded variables, free variables; duality; postoptimality analysis; linear programs having special structures; integer programming problems; unimodularity; knapsack problem.

**Prerequisite:** Linear algebra, computer programming and permission of the School

**System requirements:** Students must have their own computers on which [Visual Studio Code](#) and [Julia programming language](#) can be installed. Students must also have reliable internet access and are fully responsible for resolving their own computer/connection issues and learning how to create proper files for assignment submissions. Students experiencing **technical issues** with Brightspace should contact the [ITS service desk](#).

**Textbook:** An official set of course notes is available for free through Brightspace. Supplementary videos accompanying the course notes are accessible online in Brightspace.

**Lectures:** The course is web-based with **no face-to-face lectures**.

**Office hours:** Tue and Thu from 13:30 to 14:30.

## Evaluation scheme:

The final mark consists of 100 points distributed as follows:

### Quizzes — 11 in total (maximum 30 points):

- Each quiz is worth 3 points. Only the top ten scores are used.

### Assignments — 4 in total (maximum 40 points):

- Each assignment is worth 10 points.
- Due dates: [Sep 29](#), [Oct 20](#), [Nov 17](#), [Dec 8](#)

**Midterm exam (10 points):** 60 minutes **between 6am and 11pm Ottawa time on Nov 2**.

**Final exam (20 points):** Formally scheduled during the Fall 2021 final exam period.

## Policies for assignments:

- **Up to two** assignments no more than 24 hours late are accepted.
- Submissions for assignments must follow the submission requirements.

**Communication:** It is the students' responsibility to check for announcements in Brightspace and their Carleton email account every business day. Communication between students and the instructor is through electronic means only except for PMC students with a letter of accommodation. All email to the instructor must be made from Carleton email accounts.

**Messages originating from non-Carleton email addresses are typically ignored.**

**Regrade requests:** Students may request to have any evaluated term work regraded if it has been incorrectly graded. Such a request must be submitted to the instructor in writing (briefly describing what has been incorrectly graded) no later than five (5) business days after the work is first returned. All regrades are final.

**Students must conform to the University's Academic Integrity Policy. Failure to be informed of the expectations regarding academic integrity is not a valid excuse for violations of the policy.** Minimum penalties for violations of the Carleton Policy on Academic Integrity are:

- First offence, first-year students (< 4.0 credits completed): No credit for assignment/activity in question, or a final grade reduction of one full letter grade (e.g., A- becomes B-, if reduction results in an F, so be it), whichever penalty is greater.
- First offence (everyone else): F in the course
- Second offence: One-year suspension from program
- Third offence: Expulsion from the University

**Pregnancy/Religious Accommodation:** Write to the instructor with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details, visit the [Equity services website](#).

**Students with disabilities requiring academic accommodations** in this course must register with the Paul Menton Centre for Students with Disabilities (PMC) for a formal evaluation of disability-related needs. Documented disabilities could include but are not limited to mobility/physical impairments, specific Learning Disabilities (LD), psychiatric/psychological disabilities, sensory disabilities, Attention Deficit Hyperactivity Disorder (ADHD), and chronic medical conditions. Registered PMC students are required to contact the PMC, 613-520-6608, every term to ensure that I receive your Letter of Accommodation, no later than two weeks before the first assignment is due or the first in-class test/midterm requiring accommodations. If you only require accommodations for your formally scheduled exam(s) in this course, please submit your request for accommodations to PMC by the deadlines published on the [PMC website](#).