MATH 340: LINEAR PROGRAMMING

January 2020

SCHEDULE: Section 202, 12:00-13:00 MWF in BUCH A201

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INSTRUCTOR IN CHARGE: Richard Anstee Office: MATHX 1114
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OFFICE HOURS: To be announced during the first week of lectures.

WEBSITE: https://hugolav.github.io/teaching/math3402020.html

TEXT: *Linear Programming* by Vašek Chvátal. The way to present the theory of LP will follow their approach. A significant amount of material will be posted on the instructor in charge's webpage to supplement the text. The 'extra' chapters beyond the basics (Chapter 11 and on) can give an idea of the extensions and applications of the theory that we will cover.

OUTLINE:

Simplex Method (chapters 1-4,8)	2 weeks
Duality Theory (chapters 5,9)	2 weeks
Revised Simplex Method (chapters 6,7)	2 weeks
Sensitivity Analysis (chapter 10)	2 weeks

Optional topics: (note: students can influence the choice of topics) Applications and some modelling techniques (chapters 11-14), Game theory (chapter 15), Network flow problem (part III), Optimal transport theory.

3 weeks

GRADING: The grade will be computed as 55% final; 15% midterm; 30% quizzes and assignments.

QUIZZES: Emphasis on computational problems. There will be 5 quizzes. They will be 25 minutes in length. Practice questions will be given in advance. Students, at the beginning of term, can opt out of quizzes if they wish and grades will be computed accordingly.

ASSIGNMENTS: There will be 5 assignments. They will have an emphasis on theory. Some assignments will also give computational questions and you will be able to utilize the computer Lab and the LINDO and LINGO software for Linear programming (available in the computer lab in LSK 310; you will be given accounts) or software of your choosing. Students may work together on assignments but must write up their solutions independently. Copying is forbidden. Any 2 (or more) assignments with some virtually identical answers deemed the result of copying (from any source) will be given 0 total credit. The students are reminded of the plagiarism policies of the University.

MIDTERM: In class, 55 minutes, scheduled for the week of Feb. 24-28.

FINAL: 3 hours.

MISSED WORK: From time to time students may be unable to finish assignments or attend midterms or the final exam. In the case of the Final Exam, you will need to present your situation to the Dean's Office of your Faculty to be considered for a deferred exam. See the Calendar

for detailed regulations. Your performance in a course up to the exam is taken into consideration in granting a deferred exam status (e.g. failing badly generally means you will not be granted a deferred exam). In Mathematics, generally students sit the next available exam for the course they are taking, which could be several months after the original exam was scheduled. In the case of the Midterm, there are no make-up midterms in this course. Missing the midterm for a valid reason normally results in the weight of that midterm being transferred to the final exam. Examples of valid reasons include illness and travel to play a scheduled game for a varsity team. Examples of reasons that are not valid include conflicts with personal travel schedules or conflicts with work schedules. Any student who misses the midterm is to present to their instructor the Department of Mathematics self-declaration form on the Mathematics undergraduate page
http://www.math.ubc.ca/Ugrad/ugradForm/Student_Declaration_Academic_Concession_MATH.pdf
for reporting a missed assessment to their instructor within 72 hours of the midterm date or quiz date or the assignment due date. This policy conforms with the UBC Vancouver Senate's Academic Concession Policy V-135 and students are advised to read this policy carefully. Follow the same prcedure for amissed quiz/assignment. The special treatment is available once per course. Apart from that special situation do the following: please contact me before class time on the due date, and given your reasons for the missed work. Assuming the reasons are legitimate, I will note that you will be missing the quiz/assignment. In cases where the missed work has been allowed, your grade is computed out of a smaller number than 100 and then scaled appropriately to get a grade out of 100. For example, if a midterm counts 15% and a student informs me in advance of legitimate reasons for missing the midterm, the student would have a grade computed out of 85 and then this would be scaled to a grade out of 100 by multiplying by 100/85. Without advance notice (to me by email or phone message to Math Office etc) the default will be a grade of 0 in the missed work. A student must finish a significant amount of term work in order to pass the course.