

THE UNIVERSITY OF WESTERN ONTARIO  
LONDON, ONTARIO, CANADA  
Applied Mathematics **3817b**  
Optimization  
Course Outline Winter 2013

- Instructor:** Prof. Zinovi Krougly, MC 214, Email: [zkrougly@stats.uwo.ca](mailto:zkrougly@stats.uwo.ca)  
<http://www.stats.uwo.ca/faculty/krougly/>
- Class Times:** M W F 9:30 AM - 10:30 AM in UCC 61
- Office Hours:** TBA
- Prerequisite(s):** Calculus 1301A/B, 1501A/B, or Applied Mathematics 1413;  
Applied Mathematics 2413, 2415, or 2813B.
- Course Text:** **Introduction to Operations Research**, by Frederick S. Hillier and Gerald J. Lieberman, McGraw Hill, 9<sup>th</sup> ed., 2010.
- Optional:** **Optimization in Operations Research**, by Ronald L. Rardin, Prentice Hall, 1998  
(Will be held the Taylor library on a reserve basis).
- Course Website:** <http://owl.uwo.ca>

**Course Description:** An introduction to linear programming, formulating, simplex method, duality theory and sensitivity analysis, nonlinear optimization, unconstrained and constrained optimization, quadratic programming, discrete optimization, applications.

**Course Outline by Topical Areas:**

Timings given are approximate.

- Classification of Optimization Problems, Introduction to linear programming (1/2 week)
- Graphical Solutions (1/2 week)
- Solving Linear Programming Problems: Simplex Method (1 weeks)
- Simplex Method in Matrix Form, Revised Simplex Method (1 week)
- Sensitivity Analysis and Duality (1 week)
- Unconstrained Nonlinear Optimization (3 weeks)
- Constrained Nonlinear Optimization (2 week)
- Quadratic Programming (1 week)
- Portfolio Optimization (1 week)
- Discrete optimization (1 week)

**Method of Evaluation:**

- 4 Assignments : 20%
- Midterm exam: 30% (TBA)
- Final Exam: 50% (TBA)

The final exam will be cumulative, with greater emphasis placed on material taught after the midterm. Class participation will be considered in assessing final grades, and may result in up to a 2% bonus in certain situations.

## **Addendum to all Applied Mathematics Course Outlines:**

The UWO Senate Academic Handbook has specified that the following points should be added to all course outlines:

Plagiarism: Students must write their essays and assignments in their own words. Whenever students take an idea, or a passage from another author, they must acknowledge their debt both by using quotation marks where appropriate and by proper referencing such as footnotes or citations. Plagiarism is a major academic offence (see Scholastic Offence Policy in the Western Academic Calendar). If you are unable to meet a course requirement due to illness or other serious circumstances, you must provide valid medical or other supporting documentation to the Dean's office as soon as possible and contact your instructor immediately. It is the student's responsibility to make alternative arrangements with their instructor once the accommodation has been approved and the instructor has been informed. In the event of a missed final exam, a "Recommendation of Special Examination" form must be obtained from the Dean's Office immediately. For further information: <http://www.uwo.ca/univsec/handbook/appeals/medical.pdf>.

A student requiring academic accommodation due to illness, should use the Student Medical Certificate when visiting an off-campus medical facility or request a Records Release Form (located in the Dean's Office) for visits to Student Health Services. The form can be found here: [https://studentservices.uwo.ca/secure/medical\\_document.pdf](https://studentservices.uwo.ca/secure/medical_document.pdf)

### **Accessibility Statement**

Please contact the course instructor if you require material in an alternate format or if you require any other arrangements to make this course more accessible to you. You may also wish to contact Services for Students with Disabilities (SSD) at 661-2111 x 82147 for any specific question regarding an accommodation.