Course Outline

Instructor: Simon Power                                                                                                     Fall 2017
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Prerequisite
The prerequisite for this course is ECON 1402 (or equivalent) with a grade of C- or higher, as outlined in the 2017-2018 Undergraduate Calendar. Students who believe that they have taken a similar background course or courses from another university must provide appropriate documentation to the Department of Economics Undergraduate Administrator, Amanda Wright (LA C875).

Introduction
ECON 4004 Operations Research I constitutes the first half of a basic one-year undergraduate sequence in Operations Research/Management Science for students in Economics and Business. The course covers linear programming, duality, sensitivity analysis, transportation problems, and network problems with an emphasis on problem formulation, methods of solution, and interpretation of results.

ECON 4004 precludes additional credit for BUSI 2300 (no longer offered), MATH 3801, and SYSC 3200.

Organization
The class will meet once a week at 8:35 a.m. on Tuesdays for a 2 hour and 50 minute lecture with a short intermission. There will be four (4) required assignments and a final exam. The final exam will be scheduled by Examination Services during the regular final examinations period (December 10-22).

cuLearn and the Carleton email system will be used extensively as a means of communication with students. Therefore, students are strongly advised to access cuLearn and check their Carleton email at regular intervals in order to check for new information. To access cuLearn and the Carleton email system, students require a MyCarletonOne account. For questions about MyCarletonOne accounts, students should access http://carleton.ca/its/get-started/ (and then click on either New Students or New Grad Students, as appropriate) or contact the ITS Service Desk (4th Floor, MacOdrum Library, telephone: 613-520-3700).

**Academic Integrity**
Please ensure that you are familiar with and comply with the Carleton University Academic Regulations as they apply to Academic Integrity: http://calendar.carleton.ca/undergrad/regulations/academicregulationsoftheuniversity/academicintegrity/

**Assignments**
Assignments will be posted on cuLearn and will be due in class according to the following schedule:

<table>
<thead>
<tr>
<th>Assignment #1</th>
<th>Posted</th>
<th>Due</th>
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<tbody>
<tr>
<td>Assignment #2</td>
<td>October 3</td>
<td>October 17</td>
</tr>
<tr>
<td>Assignment #3</td>
<td>October 17</td>
<td>November 7</td>
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<tr>
<td>Assignment #4</td>
<td>November 7</td>
<td>November 21</td>
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<td></td>
<td>November 21</td>
<td>December 5</td>
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Students may wish to work together on assignment material, BUT each student MUST write up their own assignments INDEPENDENTLY. In this connection, please be sure to read Section 14.3 of the Academic Regulations of the University in the 2017-2018 Undergraduate Calendar, especially with regard to plagiarism and unauthorized cooperation and collaboration. For further information on recognizing and avoiding plagiarism, see “Pammett on Plagiarism and Paraphrasing” at www.carleton.ca/economics/course/writing-preliminaries

**Evaluation**
The final % grade for this course will be calculated as follows:

- Assignments 40% (4 assignments each worth 10%)
- Final Examination 60%

This % grade will then be converted into the alphabetical grade system using the standard equivalences, as outlined in Section 2.3 of the Academic Regulations of the University in the 2017-2018 Undergraduate Calendar.
In the event that one or more assignments are not submitted, the weight of the missed assignment(s) will not be transferred to the final examination without a documented and compelling reason.

Students who do not write/attend the final examination because of illness or other circumstances beyond their control may apply to write a deferred examination. In order to write a deferred examination, students must contact the Registrar’s Office. (For further details, see Section 2.5 of the Academic Regulations of the University in the 2017-2018 Undergraduate Calendar.) In the event that a student writes a deferred examination, the deferred examination will carry the same weight as the final examination in determining the course grade. Needless to say, any deferred examination will not be identical to the original final examination.

Also, course grades may be scaled upwards or downwards in a rank-preserving manner in order to better fit the relevant departmental distributional norm. Finally, please note that: “Standing in a course is determined by the course instructor subject to the approval of the Faculty Dean. This means that grades submitted by an instructor may be subject to revision. No grades are final until they have been approved by the Dean.”

**Academic Accommodation**

You may need special arrangements to meet your academic obligations during the term because of disability, pregnancy or religious obligations. Please review the course outline promptly and write to me 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.

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 your Instructor receives 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 require accommodations for your formally scheduled exam(s) in this course, please submit your request for accommodations to PMC by Nov 10, 2017 for the Fall 2017 term.

You can visit the Equity Services website to view the policies and to obtain more detailed information on academic accommodation at [www.carleton.ca/equity/accommodation](http://www.carleton.ca/equity/accommodation)

**Academic Assistance**

Students should be aware of and feel free to take advantage of the services of the Writing Tutorial Service (4th Floor, ML) and the Student Academic Success Centre (302 TB).

**Textbook**

The required textbook for this course is:

The accompanying Student Solutions Manual is highly recommended. It contains detailed solutions to a selection of questions from the textbook.

NOTE: This textbook will also be used for ECON 4005 Operations Research II, to be offered in Winter 2018.

**Computer Package**

An integral part of this course will be the use of the LINDO linear programming package, a copy of which is bound in with the Winston textbook on a CD-ROM.

NOTE: There are several different packages on the Winston CD-ROM. You should be careful to install ONLY the LINDO package on your personal computer at this time. In order to do this, be sure to install LINDO by clicking on the setup.exe icon in the LINDO folder. Do NOT install all of the programs on the Winston CD-ROM. Further information will be given in class. (There is one program on the CD-ROM that may be required for ECON 4005 Operations Research II. This program only has a 120-day evaluation period and you do not want to start this 120-day period prematurely.)

**Course Content**

1. Basic Linear Algebra, Winston Ch.2
2. Introduction to Linear Programming, Winston Ch. 3
3. Simplex Algorithm, Winston Ch. 4
4. Sensitivity Analysis and Duality, Winston Chs. 5 and 6
5. Transportation, Assignment, and Transshipment Problems, Winston Ch. 7
6. Network Models (Shortest Path, Critical Path Methods), Winston Ch. 8

IF YOU HAVE ANY PROBLEMS WITH THIS COURSE, PLEASE LET ME KNOW!

IF I DON’T KNOW THAT YOU HAVE A PROBLEM, I CAN’T FIX IT!