University of Ottawa
ECO 3145 Mathematical Economics I
Fall 2007

Prof. Leslie Shiell   Office hours:
Rm. 10122, Desmarais Bldg.   Tues. 10:00-12:00
55 Laurier Ave. East   Fri.   10:00-12:00
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Course description:

This course equips students with the mathematical skills necessary to understand the practice of modern economics. It serves as the gateway to the honours program, which is designed to prepare students for graduate work in economics or to work as professional economists upon completion of the bachelor's degree.

Prerequisites:

1. ECO 1102, 1104, MAT 1300, 1302.
2. In terms of the textbook, I will assume students have mastered the material in chs. 4, 5.1 – 5.5, 6, 7.1 – 7.4, 7.6. Catch-up reading should be completed during the first week of class.

Course requirements:

1. Exams

There will be one quiz, two midterms and a cumulative final exam. The quiz, a review of matrix algebra, will be held on Sept. 19. (See the course outline below for the relevant sections of the text. This material will NOT be covered in class.) The first mid-term will be held Oct. 12 (last day of new material Oct. 3), and the second Nov. 16 (last day of new material Nov.7).

2. Homework

Homework problems will be assigned regularly (at least every week). These problems are not marked. Answers will be provided. These problems are the best way – in fact the only way – to learn the material and prepare for the exams.

3. Attendance

Attendance is not compulsory. However, regular attendance will be required if a student wishes to (a.) consult me outside of class or (b.) request a deferred final exam. For this purpose, regular attendance shall be understood to mean no more than five absences during the semester. Two lates will be treated as equivalent to one absence.

Make-up classes:

If I must cancel a class, it will be made up on a Saturday, 10:30 – 12:00, location TBA.

Marking scheme:

There are two marking schemes for the course. I will calculate the final grade using both marking schemes and then give the student the best mark of the two.

Scheme I: quiz 5%, best midterm 35%, worst midterm 15%, final exam 45%.
Scheme II: quiz 5%, final exam 95%.

Missed exams:

There will be no make-up exams given for missed midterms. If a student has a legitimate reason for missing a midterm (e.g. sickness or bereavement), then marking scheme I will be: quiz 5%, single midterm 40%, final exam 55%. If a student misses both midterms, he/she will be evaluated according to marking scheme II. The student will be required to document his/her reason for missing a mid-term. An unjustified absence will result in a mark of zero on the exam.

Bonus marks, re-marking and bumping:

All students are entitled to an automatic bonus of three percentage points on all work. Students have the right to request a re-mark; however, they will forfeit the bonus for that piece of work. I am willing to re-mark entire exams but not individual questions. Therefore, the mark could go up or down. I do not bump letter grades. For example, a final mark of 69.9% remains a C+, since it already includes the 3% bonus.

Resources:

The required text is Alpha C. Chiang and Kevin Wainwright, *Fundamental Methods of Mathematical Economics*, 4th ed. (McGraw-Hill Irwin, 2005). It is available at the U of O Bookstore. I will also make my lecture notes and selected other materials available through the "Virtual Campus" at <www.maestro.uottawa.ca>. The notes provide an outline of the material but do not replace the text.

Course outline:[1]

0.   Review of matrix algebra: C&W, ch. 4, 5.1 – 5.5
I.   Some mathematical tools: C&W, ch. 6, 7.1 – 7.4, 7.6, 8.1 – 8.4, 9.1 – 9.4, 11.1 – 11.4
II.   Static optimization – unconstrained: C&W, ch. 9.1 – 9.4, 11.1 – 11.6
III.   Implicit functions: C&W, ch. 8.5-8.6
IV.   Taylor series: C&W, ch. 9.5
V.   Static optimization – equality constraints: C&W, ch. 12.1-12.5, 13.5 (13.5 not in 3rd ed.)
VI.   Static optimization – inequality constraints: C&W, ch. 13.1-13.4 (21.1-21.4)
VII.   Exponential and logarithmic functions: C&W, ch. 10
VIII.   Integral calculus: C&W, ch. 14.1-14.5 (13.1-13.5)
IX.   Difference equations: C&W, ch. 17.1-17.3, 17.6 (16.1-16.3, 16.6)
X.   Differential equations: C&W, ch. 15.1, 15.3, 15.6, 15.7 (14.1, 14.3, 14.6, 14.7)

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[1] There is a 3rd edition of the text, under Chiang's name only, which includes the same material except for "The Envelope Theorem" in section V which is missing from the 3rd edition. Most of the chapter references are the same. Where they differ, I have added the reference for the 3rd edition in small font and parentheses.