



General Course Information

Instructor: Nancy Bower
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Office Location MacKinnon 708
Office Hours Tuesday 1:30-3:00, Thursday 10:30-12:00
Department Economics and Finance

TA's: Esmond Lun (Maple TA contact): tlun@uoguelph.ca
David Xiao: hxiao01@uoguelph.ca
Office Location TBA
Office Hours TBA
Department Economics and Finance

Class Schedule: ECON*2770*01 – Monday, Wednesday, and Friday 12:30-1:20, MCKN 031
ECON*2770*02 – Monday, Wednesday, and Friday 8:30-9:20, MINS 300

Lab Schedules: ECON*2770*0101 – Friday 9:30-10:20 AM MCKN 233
ECON*2770*0102 – Friday 1:30-2:20 PM MCKN 238
ECON*2770*0103 – Friday 2:30-3:20 PM MACN 316
ECON*2770*0204 – Tuesday 8:30-9:20 AM MCKN 238
ECON*2770*0205 – Wednesday 3:30-4:20 PM MCKN 236

Pre-requisites: ECON*1100, ECON*1050, MATH*1000 or MATH*1080 or MATH*1200

Course Description

The course aims to provide students with the basic mathematical tools required for elementary theoretical economic analysis. The mathematics largely covers calculus and matrix algebra. The emphasis is not only on the mathematics but also on the building and solution of economic models.

Indicative Content

Review (little economics, mostly math background): student's responsibility

1. Basic arithmetic and algebra: Hoy, et al., Ch 1 (pp. 3 -10)
2. Sets, subsets, functions: Hoy, et al., Ch 2.1 - 2.4 (pp. 11 - 60)
3. Continuity of functions of one variable with economic applications: Hoy, et al., Ch 4 (pp. 100-126)

Regular course material (more economic examples and applications):

4. Sequences and limits: Hoy, et al., Ch 3
5. Derivatives and differential for functions of one variable: Hoy, et al., Ch 5
6. Unconstrained optimization of functions of one variable: Hoy, et al., Ch 6

7. Systems of linear equations:	Hoy, et al., Ch 7
8. Matrices:	Hoy, et al., Ch 8
9. Determinants and the inverse matrix:	Hoy, et al., Ch 9
10. Calculus for functions of n-variables:	Hoy, et al., Ch 11.1 - 11.5
11. Optimization of functions of n-variables:	Hoy, et al., Ch 12
12. Constrained optimization:	Hoy, et al., Ch 13.1-13.2

Course Assessment

			Associated Learning Outcomes	Due Date/ Location
Assessment 1:	20%	Maple TA Assignments Best 10 of 11	See Learning Outcomes 1-5	Refer to Course Policies
Assessment 2:	40%	2 Midterms (20% each)	See Learning Outcomes 1-5	Midterm 1: Fri, October 16, 7-9pm, ROZH 101 Midterm 2: Fri, November 13, 7- 9pm, ROZH 101
Assessment 3:	40%	Final Exam	See Learning Outcomes 1-5	Thurs, December 17 2:30-4:30 PM Location: TBA
Total	100%			

Teaching and Learning Practices

Lectures All assignments, midterms and finals will cover material covered in the lectures. It is imperative you have a complete set of notes. I do not post my class notes online and they will not be available on Courselink. I would like you to attend class.

Labs Weekly labs are additional to lectures and are intended to help with the content of the course, and to help you develop independent learning skills. Solutions to lab exercises will be explained to you by the TA and they will not be available on Courselink. I would like you to attend labs.

Course Resources

Required Texts:

Mathematics for Economics 3rd edition, Hoy, Livernois, McKenna, Rees, and Stengos, MIT Press, 2011

*Textbook can be purchased at the University of Guelph Bookstore or the Guelph Campus Co-op Bookstore.

Maple TA:

Assignments in this course will make use of the online application **Maple TA**, which is accessible from the Maple TA link, located in the top navigation bar in Courselink. Click the Maple TA link in the top navigation bar of the course website, or enter the following web address in your browser: <http://www.uoguelph.ca/mapleta/login/login.do>. (If accessing Maple TA via the direct web link, make sure to bookmark the page in your web browser, so you can easily

access it later).

Please review the Maple TA Syntax and Maple TA Quick Reference which can be found in CourseLink. It is advised that you keep the syntax sheet handy when completing your Maple TA Assignments, so you may wish to print out the document or save the file to your hard drive for reference.

Course Policies

Maple TA Assignments

These are completed online and your marks are recorded automatically. Maple TA assignments are graded online and you will be able to see your marks and feedback. From time-to-time the marks for the Maple TA assignments will be uploaded to Courselink; however you can always access your marks in Maple TA.

Maple TA Assignments must be completed before the assignment closes. Requests for extensions will be considered only in extreme circumstances. Computer related problems are not valid reasons for an extension; it is your responsibility to begin each assignment well in advance of when it closes.

Within Maple TA you will find three types of assignments:

- **Practice:** These assignments will be available in advance of the graded assignments and provide you with an opportunity to practice for the assignments, without being graded. Practice versions of Assignments will be open Sunday through Wednesday of each week. Then it will close and the Graded version will open. The practice assignments will be labelled in Maple TA as "Assignment 2 Practice", for example. For the practice assignments you have an unlimited number of attempts. These assignments will not count for marks.
- **Graded:** These assignments are a required part of the assessment in this course and will count toward your final mark. Generally each graded Maple TA Assignment will be open from 5pm Wednesday to 5pm Sunday. Most weeks will contain an A and B section (e.g., "Assignment 1A Graded" and "Assignment 1B Graded"), both of which are required. Consult the table below for the specific open and close dates of each assignment.
- **Review:** These assignments will be available after graded version has been completed and are provided to you as practice for the final exam. No marks are associated with these assignments.

You must complete each assignment by the time listed on the **Schedule**, so plan ahead – do not leave your assignment to the last minute. Graded assignments in Maple TA will be called "Syntax Graded", "Assignment 1A Graded" "Assignment 1B Graded" and so on. Each assignment mark will be the best of up to 5 attempts; the assignments are algorithmically generated, so you will find that each attempt will be a different set of questions. The sum of the best of 5 attempts of the A and B assignment will be recorded as your assignment mark. These 10 marks along with the mark you get on the Syntax will constitute your 11 marks. The best 10 out of your 11 assignment marks will count for your final mark. Each is worth 2%, giving a total of 20% for assignments.

Maple TA Assignment Schedule

Tentative Schedule of Dates			
All assignments close/open at 5:00 PM on the dates given			
<i>Assignment Number</i>	<i>Practice Opens</i>	<i>Practice Closes and Graded Opens</i>	<i>Graded Closes and Review Opens</i>
Syntax	Sept 10	Sept 16	Sept 27
Assignment 1	Sept 10	Sept 16	Sept 27
Assignment 2	Sept 20	Sept 23	Sept 27
Assignment 3	Sept 27	Sept 30	Oct 4
Assignment 4	Oct 4	Oct 7	Oct 11
Oct 12 and Oct 13 No Classes			
Assignment 5	Oct 18	Oct 21	Oct 25
Assignment 6	Oct 25	Oct 28	Nov 1
Assignment 7	Nov 1	Nov 4	Nov 8
Assignment 8	Nov 8	Nov 11	Nov 15
Assignment 9	Nov 15	Nov 18	Nov 22
Assignment 10	Nov 22	Nov 25	Nov 29

Midterms

Make-up exams will only be given if the student has a documentable illness or compassionate reason for missing the exam. I realize that some students participate in university athletics, university clubs, or have other compelling reasons for not being able to write an exam on the scheduled date. Let me know as soon as possible if you have a conflict with a midterm so that you can be approved to write the make-up exam. If you miss one of the midterm exams the weight will be placed on the final exam. If both midterms are missed a zero will be received for the 2nd midterm unless suitable documentation is presented.

Final Exam

Any student who has a time conflict with the final exam may not register for this course. Note the final exam day and time in the Course Assessment section above. Please check immediately to make sure you do not have a conflict.

University Policies

Academic Consideration

When you find yourself unable to meet an in-course requirement because of illness or compassionate reasons, please advise the course instructor in writing, with your name, id#, and e-mail contact. See the academic calendar for information on regulations and procedures for

Academic Consideration: <http://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-ac.shtml>

Academic Misconduct

The University of Guelph is committed to upholding the highest standards of academic integrity and it is the responsibility of all members of the University community, faculty, staff, and students to be aware of what constitutes academic misconduct and to do as much as possible to prevent academic offences from occurring.

University of Guelph students have the responsibility of abiding by the University's policy on academic misconduct regardless of their location of study; faculty, staff and students have the responsibility of supporting an environment that discourages misconduct. Students need to remain aware that instructors have access to and the right to use electronic and other means of detection. Please note: Whether or not a student intended to commit academic misconduct is not relevant for a finding of guilt. Hurried or careless submission of assignments does not excuse students from responsibility for verifying the academic integrity of their work before submitting it. Students who are in any doubt as to whether an action on their part could be construed as an academic offence should consult with a faculty member or faculty advisor.

The Academic Misconduct Policy is detailed in the Undergraduate Calendar:

<https://www.uoguelph.ca/registrar/calendars/undergraduate/2015-2016/>

Accessibility

The University of Guelph is committed to creating a barrier-free environment. Providing services for students is a shared responsibility among students, faculty and administrators. This relationship is based on respect of individual rights, the dignity of the individual and the University community's shared commitment to an open and supportive learning environment. Students requiring service or accommodation, whether due to an identified, ongoing disability or a short-term disability should contact Student Accessibility Services as soon as possible.

For more information, contact SAS at 519-824-4120 ext. 56208 or email csd@uoguelph.ca or see the website: <http://www.uoguelph.ca/csd/>

Course Evaluation Information

Please refer to: <https://www.uoguelph.ca/economics/course-evaluation>

Drop date

The last date to drop one-semester courses, without academic penalty, is November 6, 2015. For regulations and procedures for Dropping Courses, see the Academic Calendar:

<https://www.uoguelph.ca/registrar/calendars/undergraduate/2015-2016/>

Course Learning Outcomes

In keeping with the University's Learning Outcomes, the Department of Economics and Finance *Learning Outcomes* (*skills* and *knowledge* competencies) for this course are:

SKILLS:

1) Written Communication

Many questions posed in lectures, midterms, quizzes and practice assignments require economic interpretation of the answers. Students obtain significant experience in developing logical statements about the economic (and mathematical) models and their results.

2) Analytical Problem Solving

The main emphasis of this course is the learning of mathematical tools and their relationship to economic analysis. Students obtain extensive experience in lectures, midterms, quizzes and practice assignments developing their ability to solve problems analytically.

3) Numerical Problem Solving

This course is designed to teach mathematical tools and their relationship to economic analysis. Students obtain extensive experience in lectures, midterms, quizzes and practice assignments developing their ability to solve problems numerically. These are typically done as examples of more general mathematical models. See point 2) above.

KNOWLEDGE:

4) Mathematical Techniques and Understanding

A principle main goal of this course is for students to attain knowledge of mathematical techniques, such as unconstrained optimization in one variable and several variables, constrained optimization, and linear algebra. The expectation is that students not only learn the methods for the purpose of short term recall but to develop a strong understanding of the mathematic principles involved in order to facilitate further learning and application of the material beyond this course in future economics (and other) courses.

5) Economic Modelling

Equally important as the goal in point 1) above, we expect students to attain knowledge of economic modeling in a way that facilitates a deep and critical perspective of proposed economic analysis both in economic courses and more broadly in economic discourse.