

Economics 387 (01) (Introduction to Mathematical Economics I)

Instructor:	Lucia Vojtassak	Lecture Location:	ST 129
Phone:	403 220 6550	Lecture Days/Time:	MWF 15:00 – 15:50
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Office:	SS 336		
Office Hours:	M 9:00 – 9:50 R 13:00 – 13:50	Fall 2018	

Course Description:

Essential mathematical background for studying Economics: economic models and equilibrium analysis, basic techniques of calculus including application in comparative statics, unconstrained and constrained optimization, and their applications to resource allocation problems.

Course Objectives/Learning Outcomes:

This course introduces students to the application of mathematical methods in economic theory. Techniques discussed include economic models, single and two-variable calculus, optimization (unconstrained, equality constrained, inequality constrained), equilibrium analysis, comparative static analysis. Applications from microeconomic and macroeconomic theory and econometrics are used to illustrate concepts throughout the course.

Course Outline:

<u>Part I</u>		Chapter(s)
1. Introduction to Mathematical Economics and Review		
Sept 7, 2018	The Nature of Mathematical Economics	1
2. Economic Models		2
Sept 10 – 17, 2018	Mathematical Models; Algebra; Types and Properties of Functions (including exponential and Logarithmic function); Functions of Two or More Independent Variables	part of 10
<u>Part II</u>		
3. Equilibrium Analysis in Economics		3
Sept 19 – 21, 2018	Partial Market Equilibrium (linear, nonlinear); General Market Equilibrium; Applications	
<u>Part III</u>		
4. Comparative Statics and the Concept of Derivative		6
Sept 26 – 28, 2018		
5. Rules of Differentiation and their Uses in Comparative Statics		7
Oct 1 – 5, 2018	Differentiation; Partial Differentiation; Applications to Comparative – Statics Analysis	

6. Comparative Static Analysis of General Function Models	8
Oct 12 – 19, 2018	Differentials, Total differentials; Total Derivatives; Derivatives of Implicit Functions; Comparative Statics of General Function Models
Part IV	
7. Single-Variable Optimization	9 - 10
Oct 22 – Nov 5, 2018	Relative Maximum and Minimum; Second and Higher Derivatives; Maclaurin and Taylor Series, Nth- Derivative Test for Relative extremum, Applications
8. Multi-Variable Optimization	11
Nov 9 – 21, 2018	Two-choice Variables: necessary and sufficient conditions; Linear Models with Quadratic Objectives; Comparative Statics and the Envelope Theorem
9. Constrained Optimization	12
Nov 23 – 26, 2018	The Lagrange Multiplier Method; Interpreting the Lagrange Multiplier
Part V	
10. Economic Dynamics and Integral Calculus	14
Nov 30 – Dec 7, 2018	

Prerequisites:

Economics 201 and 203; and one of Mathematics 249, 251, 253, 265 or 281.

Corequisites:

Economics 301 and 303; Mathematics 211.

Required Textbook(s):

Chaing, Alpha C., and Kevin Wainwright 2005. *Fundamental Methods of Mathematical Economics*, 4th edition. McGraw-Hill.

Reserved Readings:

Chiang, A., and K. Wainwright (2005). *Fundamental Methods of Mathematical Economics*. 4th Edition. McGraw-Hill.

Hands D.W. (2004). *Introductory Mathematical Economics*. Oxford Press.

Hess, P. N. (2001). *Using Mathematics in Economic Analysis*. Oxford Press.

Hoy et al (2011). *Mathematics for Economics*. MIT.

Sydsaeter et al (2012). *Essential Mathematics for Economic Analysis*. 4th Edition. Pearson.

Desire2Learn:

This course will make use of the Desire2Learn (D2L) platform. Students who are registered in the course can log on at <http://d2l.ucalgary.ca> through their student centre. Please note that D2L features a class e-mail list that may be used to distribute course-related information. These e-mails go to your University of Calgary e-mail addresses only.

Grade Determination and Final Examination Details:

5 assignments

4 best count 5% each **20%** Due dates: Sept 21, Oct 5, Oct 22, Nov 5, Nov 26, 2018.

5 Tests

4 best count 10% each **40%** In class: Sept 24, Oct 10, Oct 24, Nov 7, Nov 28, 2018.

Final Examination

40%

100%**Grading Scale**

A+	95 – 100	B	73 – 76	C-	60 – 62
A	85 – 94	B-	70 – 72	D+	56 – 59
A-	80 – 84	C+	67 – 69	D	50 – 55
B+	77 – 79	C	63 – 66	F	0 – 49

A passing grade on any particular component of the course is not required for a student to pass the course as a whole.

As per the Writing Across the Curriculum Statement in the Calendar, writing and grading thereof will be a factor in the evaluation of student work.

Any student work which remains undistributed after the last day of classes will be available to students through the instructor's office during his office hours.

Assignments:

- Five short assignments are to be submitted at the beginning of class on the date due. Answers to assignments will be either discussed in class shortly after each assignment falls due or posted on the D2L. For this reason, late assignments will be given a score of zero, although you may still wish to have the work corrected and returned without a score being recorded. Please do not slide assignment under my office door – they will not be marked.
- Students are encouraged to discuss the assignments with their classmates, but each must write up their own answers. Copying or misrepresenting someone else's work as your own is a serious offence, which will not be tolerated. Your attention is directed to the "Statement of Intellectual Honesty" in the 2018-2019 Calendar. Taking credit for someone else's work is something for which I show zero tolerance.

Examination:

- Tests and final exam will not consist of the multiple-choice questions.
- Tests will be held in classroom during regular lecture hours and will last 50 minutes.
- The lowest test mark will be ignored.
- Tests are designed to reward diligence. In particular, most students who diligently prepare for the tests will go into the final exam with a sound mark. On the other hand, students who do not
- Take the time to prepare for the tests will go into the final exam with a weak mark, or will have dropped the course before the final exam.
- There will be a Registrar scheduled final examination, lasting 2 hours. It will be a comprehensive examination of all-material covered in the course.

7. The tests and exam must be completed during the specified time. Extra time will not be given for any reason.
8. All examinations will be closed-book.
9. Answers to the tests and the final exam questions must make use of equations and diagrams wherever possible. Numerical questions require numerical answers.
10. THERE WILL BE NO MAKEUP OR DEFERRED EXAMS under any circumstances, nor may the exams be written early. Students unable to write the exams because of documented illness, family emergency, religious observance, or university-sanctioned event will have the weight shifted to the final examination; otherwise a grade of zero will be assigned. If a student cannot write their final exam on the date assigned by the Registrar's Office, they need to apply for a deferred exam www.ucalgary.ca/registrar/exams/deferred_final. Under no circumstance will this be accommodated by the department. Any student who finds it necessary to miss the one or more of the tests must notify the instructor in advance and produce a valid medical certificate or other required documentation in order to have the weighting adjusted. This adjustment will result in the final exam counting for 40% plus the weight of the excused missed test(s).
11. Examinations will not be given before the indicated examination date. For further information see the 2018-2019 Calendar.
12. The use of a simple calculator during test and examination is permitted. The use of graphing calculators, cell phones, and computers is not permitted.

Email Policy:

Please note that the following types of emails will receive no response: emails not addressed to anyone in particular; emails where the recipient's name is not spelled correctly; anonymous emails; emails in which the sender has not identified which course and section he/she is taking; and, emails involving questions that are specifically addressed on this course outline.

Reappraisal of Grades and Intellectual Honesty:

For reappraisal of graded term work, see Calendar I.2

<http://www.ucalgary.ca/pubs/calendar/current/i-2.html>

For reappraisal of final grade, see Calendar I.3

<http://www.ucalgary.ca/pubs/calendar/current/i-3.html>

Statement of Intellectual Dishonesty, see Calendar K.4

<http://www.ucalgary.ca/pubs/calendar/current/k-4.html>

Plagiarism and Other Academic Misconduct, see Calendar K.5

<http://www.ucalgary.ca/pubs/calendar/current/k-5.html>

Academic Accommodations:

The student accommodation policy can be found at: ucalgary.ca/access/accommodations/policy.

Students needing an accommodation because of a disability or medical condition should communicate this need to Student Accessibility Services in accordance with the Procedure for Accommodations for Students with Disabilities ucalgary.ca/policies/files/policies/student-accommodation-policy.

Students needing an Accommodation based on a Protected Ground other than disability should communicate this need, preferably in writing, to the course instructor.

Important Dates:

Please check: <http://www.ucalgary.ca/pubs/calendar/current/academic-schedule.html>

Student Organizations:

Faculty of Arts Students' Association (F.A.S.A.):

Economics Department Representative

Office: SS 803, E-mail: econrep@fasaucalgary.ca and Web: www.fasaucalgary.ca.

Society of Undergraduates in Economics:

<https://www.ucalgarysue.com/>.

Society of Undergraduates in Economics is a student run organization whose main purpose is to assist undergraduate economics students to succeed both academically and socially at the University of Calgary. Services include access to the exam bank, career events such as Industry Night and information sessions, mentorship programs, and social events for members. They invite you to join by contacting SUE at societyofundergradsineconomics@gmail.com.

Faculty of Arts Program Advising and Student Information Resources:

- Have a question, but not sure where to start? The Arts Students' Centre is your information resource for everything in Arts! Drop in at SS102, call them at 403-220-3580 or email them at artsads@ucalgary.ca. You can also visit the Faculty of Arts website at <http://arts.ucalgary.ca/undergraduate> which has detailed information on common academic concerns, including program planning and advice.
- For registration (add/drop/swap), paying fees and assistance with your Student Centre, contact Enrolment Services at 403-210-ROCK [7625] or visit them in the MacKimmie Library Block.
- Online writing resources are available at <http://www.ucalgary.ca/ssc/resources/writing-support>.

Evacuation Assembly Point

In case of an emergency evacuation during class, students must gather at the designated assembly point nearest to the classroom. The list of assembly points is found at www.ucalgary.ca/emergencyplan/assemblypoints

Please check this website and note the nearest assembly point for this course

Safewalk

The safewalk program provides volunteers to walk students safely to their destination anywhere on campus. This service is free and available 24 hrs/day, 365 days a year.

Call 403-220-5333

Freedom of Information and Protection of Privacy (FOIP) Act:

Personal information is collected in accordance with FOIP. For more information, see

<http://www.ucalgary.ca/legalservices/foip/foip-hia>.

Internet and Electronic Communication Device information:

The use of cell phones for any purpose in class is prohibited. Computers and tablets may be used for note-taking only. Taking photographs with any camera/electronic device is prohibited without prior approval.