

PORTLAND STATE UNIVERSITY
Department of Economics
Winter 2007

EC399: INTRODUCTION TO MATHEMATICAL ECONOMICS

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Class Meetings: SB2 247
TR 16:40 – 18:30
Office Hours*
TR 10:00 – 11:00
*By Appointment

Syllabus

Prerequisites	MATH 111.
Course Description	This course presents the mathematics required for studying economics at the undergraduate level. Mathematical concepts are developed in the context of economics and applications are drawn from a wide range of fields in economics including microeconomics, macroeconomics, economics growth, international trade, international finance, labor and environmental economics, industrial organization and development economics. The course covers equations, functions, sets, matrix algebra, total and partial differentiation, as well as optimization using the Lagrange-Multiplier method.
Learning Objectives	This course is intended to assist economics majors in becoming comfortable with the basic mathematical tools used in economic analyses. This course is designed to accomplish the following learning objectives. Students should develop skills that allow them to: 1) Thoroughly understand mathematical methods and concepts employed in economic models, equilibrium analysis, and comparative static analysis. Mathematical techniques include, but are not limited to, equations, functions, sets, matrix algebra, differential calculus, and constrained optimization using the Lagrange-multiplier method. 2) Competently apply mathematical methods in problems and applications that aim to analyze economic problems. Mastering these goals will prove useful in concurrent and later courses as well as in future work and research. It will also provide a solid foundation that will allow undergraduates to provide useful analytical economic services to an employer. Finally, an understanding of mathematical economics will allow students to comprehend the articles in the leading economics journals and keep up with advances in economic science after graduation.
Required Text	" <i>Fundamental Methods of Mathematical Economics</i> ", by Alpha C. Chiang and Kevin Wainwright, 4 th ed., McGraw-Hill Irwin, ISBN: 0-07-010910-9.

Graded Components

This course involves a significant amount of homework designed to give students plenty of “hands-on experience” with the mathematical techniques covered in class. Homework assignments will require students to solve exercises and work through applications. Assignments and exams are discussed in more detail below:

1. Five problem sets will be assigned and graded but only four of these will count toward your course grade (assignment with the lowest score will be dropped). Each homework assignment is worth 10% of the course grade for a total of 40% (after dropping the lowest homework grade). Homework assignments are intended to facilitate comprehension and practice with application of mathematical techniques such as linear and non-linear models, partial and total derivatives, among others (learning objective 1).
2. There will be a Midterm and a Final exam each worth 30% of the course grade. Midterm and Final exams are designed to test the extent to which students have mastered the mathematical techniques, including problem solving and application of mathematical concepts to analysis of common economic problems (learning objective 2).

Policies

- The exams cannot be rescheduled or made up, so do not take the course if you cannot take the exams during their scheduled times. The only exceptions to this rule are: (i) documented medical emergencies; and (ii) absence due to active military, police, and/or jury duty (need letter from the appropriate official).
 - Improving your grade through “extra work” is NOT an option in this class!
 - An *Incomplete* (letter grade “I”) or a *Withdrawal* (letter grade “W”) is not to be viewed as a substitute for a failing grade in this course (letter grade “F”).
 - Students with documented learning disabilities or special needs, must contact both the Testing Center and the course instructor at least a week in advance of scheduled exams times.
 - Class attendance is highly recommended. If you miss class, it is your responsibility to find out what you missed, get notes from peers, etc.
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Tentative Schedule

Week	Topic	Reading
Week 1	- The Nature of Mathematical Economics - Economic Models	Chapters 1, 2
Week 2	- Equilibrium Analysis in economics Homework No. 1: <u>DUE Thursday, January 18th, 2007</u>	Chapter 3
Week 3	Linear Models and Matrix Algebra	Chapter 4
Week 4	- Linear Models and Matrix Algebra Homework No. 2: <u>DUE Thursday, February 1st, 2007</u>	Chapter 4
Week 5	- Linear Models and Matrix Algebra (Continued) Midterm Exam: <u>Thursday, February 8th, 2007</u>	Chapter 5
Week 6	- Linear Models and Matrix Algebra (Continued) Homework No. 3: <u>DUE Thursday, February 15th, 2007</u>	Chapter 5
Week 7	Comparative Statics and the Concept of the Derivative	Chapter 6
Week 8	- Rules of Differentiation and their use in Comparative Statics Homework No. 4: <u>DUE Thursday, March 1st, 2007</u>	Chapter 7
Week 9	Comparative-Static Analysis of General-Function Models	Chapter 8
Week 10	- Constrained Optimization – The Lagrange-Multiplier Method Homework No. 5: <u>DUE Thursday, March 15th, 2007</u>	Chapter 12 (12.1 – 12. 3, and 12.5 only)
Finals Week	Final Exam: <u>Tuesday, March 20th, 2007, 17:30 – 19:20.</u>	