PORTLAND STATE UNIVERSITY
Department of Economics
Fall 2013

EC 480/580: MATHEMATICAL ECONOMICS

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Class Meetings: UTS 306
 TR   2:00 pm – 3:50 pm
Office Hours*
 W   11:00 am – 1:00 pm
 *By Appointment

Syllabus

Prerequisites	EC 380 [or equivalently: Univariate Calculus (MTH 251, 252), Multivariate Calculus (MTH 254), and Linear Algebra (MTH 261)].
Course Description	This course presents some of the fundamental mathematical techniques required for studying economics at the graduate level. Mathematical concepts are developed in the context of economics and applications are drawn from a wide range of fields including microeconomics, macroeconomics, economic growth, international trade, and environmental economics, among others. The course covers optimization (unconstrained and constrained), discrete and continuous compounding and discounting, comparative static analysis, and problems of economic dynamics.
Learning Objectives	This course is intended to assist students in becoming comfortable with mathematical techniques used in economic analyses at both the undergraduate and graduate level. To this end, the learning objectives are:

1) Thoroughly understand mathematical methods and concepts employed in economic models and equilibrium analysis. Mathematical techniques include, but are not limited to the use of integral calculus in economic dynamics, optimization methods, continuous time analyses, and discrete time analyses.

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 and in future work and research. It will also provide a solid foundation that will allow graduates to provide useful analytical services to an employer and stay current with advances in Economics.

Required Text	"*Fundamental Methods of Mathematical Economics*", by Alpha C. Chiang and Kevin Wainwright, 4th 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 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 homework assignments will be administered and graded throughout the quarter term (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 (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

- 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).

- Concerns and questions related to graded components in this class need to be resolved within a week from the date the assignment (or exam) in question has been graded and returned.

- Improving your grade through "extra work" is not an option in this class! In addition, an Incomplete (letter grade "I") or a Withdrawal (letter grade "W") is not to be viewed as a substitute for an "F".

- Students with documented learning disabilities or special needs, must contact me at least a week in advance of scheduled exams if use of the Testing Center's facilities is required. It is the student's responsibility to arrange for accommodations through the Testing Center and provide me with the appropriate documentation in the beginning of the term.

- Familiarize yourself with PSU academic honesty policies. Minimum penalty for academic dishonesty in this class will be letter grade "F" for the assignment or exam in question.

- Turn off your cellular phone, beeper, pager, or any other communication device/PDA that may disturb, disrupt, or in any way impede the learning process during class meetings.

Week	Topic	Reading
Tentative Schedule		
Week 1	♦ Optimization: A Special Type of Equilibrium Analysis	Chapter 9
Week 2	♦ Optimization: A Special Type of Equilibrium Analysis ♦ Exponential and Logarithmic Functions ♦ *Homework Assignment No. 1: Due Thursday, Oct. 10th, 2013*	Chapters 9 & 10
Week 3	♦ Exponential and Logarithmic Functions	Chapter 10
Week 4	♦ Optimization: The Case of More than One Variable ♦ *Homework Assignment No. 2: Due Thursday, Oct. 24th, 2013*	Chapter 11
Week 5	♦ **Midterm Exam:** *Thursday, October 31st, 2013* ♦ Optimization with Equality Constraints	Chapter 12
Week 6	♦ Optimization with Equality Constraints (continued) ♦ Further Topics In Optimization	Chapter 12 & 13
Week 7	♦ Further Topics In Optimization ♦ *Homework Assignment No. 3: Due Tuesday, Nov. 12th, 2013*	Chapter 13
Week 8	♦ Economic Dynamics and Integral Calculus ♦ *Homework Assignment No. 4: Due Thursday, Nov. 21st, 2013*	Chapter 14
Week 9	♦ Economic Dynamics and Integral Calculus ♦ Continuous Time: First-Order Differential Equations. ♦ *No class on Thursday, Nov. 28th, 2013 – Happy Thanksgiving!*	Chapter 14 & 15
Week 10	♦ Continuous Time: First-Order Differential Equations. ♦ *Homework Assignment No. 5: Due Thursday, Dec. 5th, 2013*	Chapter 15
Finals Week	♦ **Final Exam:** *Monday, December 9th, 2013 (10:15 am - 12:05 pm)*. Note: The final exam is not cumulative. All material covered since the midterm exam will be tested on the final.	