



Dartmouth College  
Department of Economics  
Spring 2011

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## Econ 81: Advanced Topics in Microeconomics

**Meets:** 2A time slot, Tuesday and Thursday 2:00–3:50 a.m., Rockefeller 209. X-hour Wednesday 4:15–5:05 p.m.

**Professor:** Christopher Snyder. Office hours: Wednesday 10:00–11:45 a.m., 1:45–3:00 p.m., and by appointment; Silsby 312A; telephone 646–0642; email [chris.snyder@dartmouth.edu](mailto:chris.snyder@dartmouth.edu); webpage <http://www.dartmouth.edu/~csnyder>.

### Texts:

Hoy, Michael, *et al.* (2001) *Mathematics for Economists*. (2nd ed.) Cambridge, Massachusetts: MIT Press. Required text, available for purchase at the bookstore. (Abbreviated HLMRS.)

Athey, Susan, Paul Milgrom, and John Roberts. (1998) *Robust Comparative Statics*. Mimeo, Stanford University. Available for download via the link on Blackboard. (Abbreviated AMR.)

Nicholson, Walter, and Christopher Snyder. (2008) *Microeconomic Theory: Basic Principles and Extensions*. (10th ed.) Mason, Ohio: Thomson South-Western. Chapters 8 and 18 in PDF files available for download via the link on Blackboard. (Abbreviated NS.)

Rasmusen, Eric. (2007) *Games and Information* (4th ed.) Malden, MA: Blackwell. Chapter 13 on Auctions. (Abbreviated Rasmusen.)

Other articles will be distributed as needed via Blackboard.

**Overview and Philosophy:** The course will cover various topics in microeconomics at a more advanced level than typically covered in undergraduate courses. The first unit, which will span more than half the course, will cover mathematical economics including comparative statics, matrix algebra, the Kuhn-Tucker method for inequality-constrained optimization, and differential equations. For each of these topics, we will cover both theory and microeconomic applications.

The remainder of the course will cover asymmetric information, including such topics as adverse selection, mechanism design, auction theory, signaling games, and cheap talk. This unit will be based on material in Chapters 8 and 18 of Nicholson and Snyder, supplemented with a few sections of other chapters and journal articles.

**Prerequisites:** Math 8 (multivariable calculus) and Econ 20, 21, and 22 with a grade of A- or better in each.

**Course Requirements:** In view of the limited class time and amount of material to be covered, and the nature of the class as a seminar, students will be expected to undertake a substantial amount of work independently and to be able to present their work and ideas when called on.

- *Attendance and participation:* There will be 19 classes; attendance and participation are required. Students can receive up to two extra credit points in this category. One point will be awarded for perfect attendance. One point will be awarded for exemplary participation (being well prepared for all but a few classes, volunteering insightful comments or offering them when called on). Attendance and participation are also important elements for students seeking letters of recommendation in this class.
- *Problem sets:* Approximately five long problem sets will be assigned, collected and graded. Late problem sets, or problem sets not handed in, will receive a 0. Students will be allowed to work together in groups of two on problem sets and submit a solution for the group. Students should make three copies of the solution, one for the professor, and one each for the students to study from.
- *Projects:* Students will complete two projects. The first is to identify an interesting topic from a previous economics class in which comparative-statics analysis was applied. Students will prepare a four-page paper describing the project and the nature of the comparative statics analysis done previously, and then using the tools studied in class to extend and generalize the analysis as far as possible. Grade will be based on the interest in the topic, the rigor of the analysis, and the quality of the write up (grammar, organization, etc.).

The second project, due toward the end of the term, will be to apply computer software to solve a selection of the problems already done by hand in class. This can be done in groups of two. Students who have an alternative topic that they would prefer to work on can ask the professor for special permission.

- *Exams:* A midterm will be given in class on April 28. The final is tentatively scheduled for Saturday, June 5, at 3:00 p.m. The final is comprehensive, although it will be weighted somewhat toward material after the midterm. There will be no make-ups for missed exams.

- *Extra credit:* As mentioned, students can receive up to two extra credit points (added to their overall course score out of 100) for attendance and participation. Another possible avenue for extra credit is that students can attend any approved economics seminar on campus and have up to four points added to a problem set (overall, out of 100) or a credit of equal weight added to a project or exam grade. The amount of extra credit depends on the quality of a one-page response to the seminar. The response can summarize the seminar content, discuss the student's reaction to the material, and in the best case focus on instances where the material from the course appeared in the seminar or paper.

**Grading:**

Participation	up to +2 extra credit
Problem Sets	15%
Project 1	15%
Project 2	15%
Midterm	25%
Final	30%

**Academic Integrity:** Students are expected to abide by the honor code. The following are details on academic integrity as it relates to this class. Exams will be open-note and open-book but students may not communicate with each other during the exam. Students may work on problem sets with members of their study groups (groups of no more than two unless there are integer problems) and submit one solution for the group reflecting the work of both. Students can discuss their first project with their classmates in broad terms, and may have another student proofread their work, but must complete the assignment independently. The second project is again a group project. Extensions on the projects' deadlines will carry a penalty (automatic grade reduction). If you have a question about an issue of academic integrity, ask ahead of time before you act to avoid any problems.

**Study Groups:** Early in the term, students will form study groups with one other classmate (unless integer problems). The groups will work together on problem sets and the second project. Students are encouraged to study with their group throughout the term.

**Blackboard:** The Blackboard web-based application will be used to post course materials and to facilitate communication via email.

**Disabilities:** Students with learning, physical, or psychiatric disabilities enrolled in this course that may need disability-related classroom accommodations are encouraged to make an office appointment to see me before the end of the second week of the term. All discussions will remain confidential, although the Student Disability Services office may be consulted to discuss appropriate implementation of any accommodation requested.

## Econ 81 Schedule

	Tues.	Wed. X-hour	Thurs.
Week 1	Mar. 29 <b>Introduction</b>	Mar. 30	Mar. 31 <b>Comparative Statics</b>  HLMRS 14
Week 2	Apr. 5 <b>Aside on Linear Algebra</b>  PS 1 assigned	Apr. 6	Apr. 7 <b>Comparative Statics</b>  AMR 1-2
Week 3	Apr. 12 <b>Comparative Statics</b>  AMR 1-2 PS 1 due, PS 2 assigned	Apr. 13	Apr. 14 <b>Comparative Statics</b>
Week 4	Apr. 19 <b>Concave Programming</b>  HLMRS 15 PS 2 due, PS 3 assigned	Apr. 20	Apr. 21 <b>Concave Programming</b>
Week 5	Apr. 26 <b>Differential Equations</b>  HLMRS 21-24 PS 3 due	Apr. 27	Apr. 28 <b>Midterm</b>
Week 6	May 3 <b>Differential Equations</b>  PS 4 assigned	May 4	May 5 <b>Differential Equations</b>
Week 7	May 10 <b>Differential Equations</b>  PS 4 due	May 11	May 12 <b>Cheap Talk</b>  NS 8: pp. 273-281, Crawford & Sobel (1982)
Week 8	May 17 <b>Cheap Talk</b>  PS 5 assigned	May 18	May 19 <b>Screening</b>  NS 18: pp. 642-663, 667-669
Week 9	May 24 <b>Screening</b>	May 25	May 26 <b>Auctions</b>  Rasmusen Ch. 13
Week 10	May 31 <b>Review</b>  PS 5 due	<b>Final Exam:</b> Mon. June 6, 11:30 a.m.	

Key:  
 Class   
 No Class   
 Possible Class