

ECONOMICS 630–Mathematics for Economists (Master’s Section)

Course: ECON 630 (Th, 7:20-10:00)
Term: Fall 2011
Instructor: Garrett Jones
Office Hours: Tuesday, 1:30-3:30, Carow Hall 8A. Thursday, 6-7, location TBD, Arlington campus.
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Website: I will use Blackboard this semester for all course-related materials.

Course Description

The primary goal of this course is to provide an introduction to a modern language widely used in economics: The language of mathematics. Economists use only a narrow set of idioms and expressions in this rich language, and we’ll focus on the most important ones: linear algebra, multivariate calculus, and probability. By gaining comfort with this language, you will be able to read academic articles yourself, without having to depend on third- or fourth-hand translations written by other economists or by journalists.

Another important goal of the course is to help you survive and thrive in your elective courses here at GMU: In many of those courses, whether in public choice or industrial organization or labor, you will be in courses with Ph.D. students who have usually had more rigorous mathematical training. This course should help you bridge the gap.

Required Texts

Alpha C. Chiang and Kevin Wainwright, *Fundamental Methods of Mathematical Economics*, fourth edition. The classic in the field, updated and still quite useful.

Edward T. Dowling, Schaum’s Outlines: *Introduction to Mathematical Economics*, third edition. You can never have too many solved problems. An inexpensive way to practice the skills you’ll be building.

Preston McAfee, *Introduction to Economic Analysis*, freeware at McAfee’s homepage. In the last few weeks of the course, we will cover chapters 4 and 5 of his Caltech text.

Tentative Schedule

Chiang and Wainwright, Chapters 1-4: Algebra review, mathematical syntax, and the basics of linear algebra. (Schaum: 1-2, 10).

Quiz 1 (all quizzes last 30 minutes, and will take place at beginning of class)

Chiang and Wainwright, Chapters 5-8: Linear algebra and differential calculus. (Schaum: 11-12, 3)

Quiz 2

Chiang and Wainwright, Chapters 9-12: Optimization. (Schaum: 4-9)

Quiz 3

Chiang and Wainwright, Chapter 13-14: Basics of integration and differential and difference equations. (Schaum: 14-17)

Quiz 4

McAfee, Chapters 4 and 5: Producers and Consumers behaving optimally.

Final Exam

In addition, I reserve the right to include short application-oriented readings, perhaps one per quiz.

Grading Procedures

You will have regular quizzes and a final that covers all material after (not including) Quiz 2. Ten percent of your grade will be based on informed class participation (a proxy for attendance and civil, intelligent comments).

Quizzes	60% (15% each)
Class Participation	10%
Final Exam	30%

Academic Ethics

Please note that you are at an Honor Code university. You are expected to conduct yourself in a manner that is consistent with the learning mission of the University. All forms of academic dishonesty are strictly forbidden. This includes but is not limited to the following: communicating with other students during exams; unapproved references to books, notes or “cheat sheets” during exams; and plagiarism—representing another person’s work as your own. You should be aware that plagiarism is often easy to recognize. The minimum penalty for an incident of academic dishonesty will be a score of zero on the assignment where the dishonesty occurred. For further information on academic ethics, please consult the student handbook.

Class Attendance/Missed Exams

I highly recommend class attendance, since I believe there is strong correlation between class attendance and academic performance. If you happen to miss a class, you should ask a classmate to borrow their notes. I will not, as a general rule, offer make-up exams or early finals. Exceptions will be made for students with documented illnesses.

For Further Reading:

Avinish K. Dixit, *Optimization in Economic Theory*. A short classic that covers most of this semester’s topics in 183 fast-moving, elegantly written pages.

David Kreps, *A Course in Microeconomic Theory*. The first few chapters of this text give a slow, masterful, coverage of the basics of the microeconomic theory of choice.

Dennis Lindley, *Making Decisions*. A low-tech coverage of choice under uncertainty. He recently wrote a similar book entitled *Understanding Uncertainty*.

Hal Varian, *Microeconomic Analysis*. If you’re looking to speak the language of microeconomics, this is a great place to start.

Schaum’s Outline of Probability and Statistics. Recommended if you’ve never seen probability or statistics before.