Economics 2100: Intermediate Microeconomics
Syllabus

April 24, 2023

Instructor: Natacha Spitzer, PCPSE 548
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Lectures: MWF 5:15 – 7:45 pm, Room TBA
Office hours: TBA

Scarcity implies the need to make choices. Microeconomics is the study of how individuals and society make choices. That is, the study of how individuals respond to incentives and the resulting impact on social outcomes. The course will focus on how the terms of trade between buyers and sellers are set. The course emphasizes the development of the mathematical tools needed to reason carefully about incentives and necessitates a taste for long chains of reasoning (see below for prerequisites).

This course is *not* a laundry list of facts to memorize or recipes to follow. Its purpose is to change the way you think. This will be accomplished by posing questions whose answers will challenge your intuition. Merely recording the answers is insufficient, one must understand the reasoning process by which one arrives at them.

The course requires you to perform computations that are useful to convince you of things that you might at first disbelieve. Regular homework assignments will aid you in these computations. We will also work out review problems together in class.

Please feel free reach out to me if you have any questions or comments about the course. I reserve the right to make modifications to the syllabus as needed throughout the term.

Course Material

1. "Prices & Quantities: Fundamentals of Microeconomics" by Rakesh V. Vohra

2. Slides for each lecture will be posted ahead of class on Canvas (which will be updated from time to time).

3. Optional for the course is: Jeffrey M. Perloff, *Microeconomics: Theory and Applications with Calculus*, fourth or fifth edition.

4. Perloff is not the only textbook of its kind available. There are many substitutes. For example, *Introduction to Economic Analysis* by McAfee, Lewis and Dale which is a free, open source text book available at https://www.kellogg.northwestern.edu/faculty/dale/ieav21.pdf

Canvas. https://canvas.upenn.edu Canvas is used to post announcements, slides, homework assignments, homework solutions, additional handouts, and other important materials. You are responsible for regularly checking, downloading and reading materials posted on the site, as they form an integral part of the class. **Handouts, homework problems, solutions and other material prepared by me are *not* for distribution to those outside of the current class.** Sic Vos Non Vobis.[1]

Piazza. Piazza will be used for all class discussions and questions. Any questions to do with class material and organization should be posted there. Post all content-related questions about problem sets, lectures, and the course on Piazza. This is a great way to collaborate with classmates. I will monitor, and occasionally post, on this forum. Piazza participation in answering questions (not asking) will count for 10% of your final grade.

Email. Use for correspondence that is not appropriate for Piazza. Emails will receive a response within 24 hours Monday through Friday. *Include Econ 2100 in the subject line*.

Prerequisites

Introductory microeconomics and macroeconomics (Econ 1 and 2); Math 104 and Math 114 or 115 or students who have received a B+ or better in Math 104 may take Econ 101 and Math 114 or 115 concurrently. Transfer students for Math 104 must complete Math 114 or 115 before enrolling in Econ 101. All enrollment is through permission of the department.
The course assumes knowledge of multivariate calculus, and a **strong** understanding of these mathematical tools is crucial to success in the course.

1. Functions and Properties of Functions

    - Monotonicity
    - Continuity
    - Concavity and Convexity
    - Logarithmic functions
    - Homogeneous functions

2. Derivatives

    - How to take a derivative
    - Product and Quotient Rules
    - Chain Rule
    - Partial derivatives

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[1] "For you, but not yours," written by Virgil in response to plagiarism by Bathyllus.

3. Solving optimization problems

- Unconstrained optimization: find the extrema of a function (maxima/ minima)
- Constrained optimization: Substitution method
- Constrained optimization: Lagrange's method
- Comparative statics of solution functions
- Comparative statics of optimal value functions

Grading

The final grade will depend on

- 6 homework assignments. (25%)

- Piazza participation. (10%)

- 2 midterm exams. (25%)

- One cumulative final exam. (40%)

Exams

Exams are closed book. Exam attendance is mandatory. There are *no* make-up exams; students excused from an exam will see the weights on the subsequent exams adjusted upwards to account for the absence.[2]

No assistance may be given or received during an exam.[3] Students are expected to abide by the Code of Academic Integrity in the completion of assignments, papers and exams.

All graded exams (except the final) will be distributed in class.

Assignments

Homework assignments are to be submitted by the beginning of class on the due date via Canvas. **No late work is accepted**. Homework assignments will be graded by me directly on Canvas.

Write-ups must be your original work. You may not use materials containing solutions or partial solutions to the assignments (including solutions prepared by current or former students).

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[2]http://economics.sas.upenn.edu/undergraduate/course-information/course-policies has a list of valid excuses for missing an exam.

[3]The Economics Department Course Policies, which include rules about exam attendance, make-up exams, grading appeals, etc., are available at: http://economics.sas.upenn.edu/undergraduate/course-information/course-policies.

If your analysis contains information from outside sources, you should properly cite those sources.

While you are required to complete the assignments individually, I don't wish to discourage learning from one's peers. This leaves room for ambiguity, so I will try to make expectations as clear as possible. In brief:

1. Discussing the *general* ideas behind the problems is permitted.

2. Writing formal solutions should be *completely individual*, done in the equivalent of separate rooms.

As discussions of general ideas gradually become more specific, some judgment is unavoidable, but here's the kind of interaction I have in mind: If a peer conveys an idea which seems central to the solution, *do not write it down.....immediately.* Approach the problem again on your own as if afresh, influenced by however much of their idea you remember. If you can re-create it without notes, you have mastered it, and I'm happy to give you credit. In this way we can let everyone help each other learn, while steering a wide berth around simple copying.

How to Prepare for Exams

1. Space your practice out rather than compressing it into a short period.
   If you spread five hours of study into one hour a day, you'll remember more than if you study for five hours on one day. Memories have a short half-life and need reinforcement.

2. Practice retrieving information rather than recognizing it.
   Don't mistake the ability to recognize something for an ability to recall it. In an exam you don't get marks for things being familiar, you get marks for recalling relevant information and using it to answer the question.

3. Figure out what you don't know.
   Revision is not for reassurance but to identify what you don't know or understand.

4. Rehearse.
   No one has learnt how to swim from YouTube. Study for an exam by testing yourself on writing full answers under exam conditions.

Tentative Course Outline

These dates are not fixed in stone. I may adjust them according to the pace of the class.

DAY	DATE	TOPIC AND READINGS
Monday	5/22	Introduction and the rational buyer model

		Vohra (V) §1.1–1.4
		Monopoly, Demand Sensitivity, and Consumer Surplus
		V §1.5–1.7, 2.1–2.5
		Perloff (P) §5.1, Chapter 11
Wednesday	5/24	Monopoly (cont.) and Costs
		V §2.8, 2.10
		P §7.1, 7.2
		Costs (cont.) and Welfare
		V §2.6
		P Chapter 11
Friday	5/26	(Homework Assignment 1 due)
		Welfare (cont.), Regulating Monopoly and Sales
		V §, 2.7, 2.11, Chapter 3
		P Chapter 12
		Sales (cont.) and Price Discrimination
		V Chapter 3
		P Chapter 12
Monday	5/29	Memorial Day observed (no class)
Wednesday	5/31	(Homework Assignment 2 due)
		Price Discrimination (cont.) and Strategic Behavior
		V Chapter 4
		P Chapter 13
		Game Theory
		V Chapter 4
		P Chapter 13
Friday	6/2	Midterm 1 in class
		Imperfect Competition
		V Chapter 4
		P Chapter 14
Monday	6/5	Collusion
		V Chapter 4
		P Chapter 14
		Sequential Games
		V Chapter 4
		P Chapter 14
Wednesday	6/7	Product Differentiation
		V Chapter 4
		P Chapter 14
		Preferences and Utility
		V Chapter 5
		P Chapter 3
Friday	6/9	(Homework Assignment 3 due)
		Utility Maximization I
		Topics: Diminishing MRS, An Example, The Equimarginal Principle, Sales v Income Taxes

V Chapter 5
P Chapter 3, §5.2, 5.4
Utility Maximization II
Topics: Transfers v Subsidies, Changing Prices and Income,
Income and Substitution Effects
V Chapter 5
P Chapter 3, §5.2, 5.4

Monday	6/12	Utility Maximization III and Perfect Competition

Topics: Benefit/Cost of a Price Change, Compensating Variation,
Perfect Competition, Pareto Efficiency of Competitive Partial Equilibrium
V Chapters 5,6
P Chapters 2, 9
The Exchange Economy
Topics: The Free Market, Exchange, The Edgeworth Box, Pareto Efficiency
V Chapter 6
P Chapters 2, 9

Wednesday	6/14	(Homework Assignment 4 due)

Competitive General Equilibrium
Topics: Endowments and Prices, Price-Taking Behavior, Walrasian Equilibrium,
The First Welfare Theorem
V Chapters 6
P Chapter 10
Competitive Equilibra II
Topics: Existence, Plausibility of the Competitive Assumption,
Intertemporal Allocation, Taxes on Savings
V Chapters 6
P Chapter 10

Friday	6/16	Midterm 2 in class

Competitive Equilibria with Production
Topics: A Robinson Crusoe Economy, Competitive Economy,
Competitive Equilibrium, What Should Firms Do?
V Chapters 6
P Chapter 10

Monday	6/19	Juneteenth (no class)
Wednesday	6/21	(Homework Assignment 5 due)

Externalities I
Topics: Introduction, A Production Externality, Pareto Inefficiency, Remedies
V Chapter 7
P Chapter 17
Externalities II
Topics: Another Parable, Tragedy of the Commons 1 and 2, Carbon Trading
V Chapter 7
P Chapter 17

Friday	6/23	(Homework Assignment 6 due)

Public Goods

Topics: Free Riding, Contributing to the Public Good, Vaccinations,
Can the Market Help?
    V Chapter 7
    P Chapter 17
Catch Up/Review

Monday	6/26	Review
		Topics: The Themes, Pareto Inefficiencies, Optimization and Efficiency, Equilibria
Wednesday	6/28	Final Exam in class