

## **ECON 101 (Fall 2015) Intermediate Microeconomics**

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### **Description**

Microeconomics is the formal study of how individuals respond to incentives and how those responses shape social outcomes. The principal themes of the course will be the theory of consumer and producer (firm) behavior, the equilibrium reached between these individuals when markets are perfectly competitive, and what happens when markets are imperfect, or fail entirely. 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. Rather, its purpose is to change the way you think. This will be accomplished by posing questions whose answers will challenge your intuition. What will be important is not merely recording the answers but understanding the reasoning process by which one arrives at them.

The course requires that you perform some computations that by themselves, are unimportant, but are useful to convince yourself of things that you might at first disbelieve. Weekly homework assignments will allow one to get practice at these things.

In the recitation sessions, the TA will cover problems from a file of review problems (*ReviewProb.pdf*) posted on CANVAS (which I will announce in class or via e-mail). The problems for each session are selected to mirror those on the homeworks. The answers to each of the review problems are included. The review sessions are for practice at the problems. Larger questions about relevance of the course to this and that should be addressed to me. Some, but not all, of the problems are of the cookbook variety. The non-cookbook problems are designed to tax your reasoning faculties rather than ability to pattern match.

This class is not a spectator sport. Inspecting the answer to a problem or following the reasoning of another is simply insufficient; one needs to attempt problems and work through these difficulties on one's own before turning to the solution. If thinking were easy, everyone would be doing it.

## Course Material

Optional for the course is: Jeffrey M. Perloff, *Microeconomics: Theory and Applications with Calculus*, 3rd Edition (on reserve at van Pelt). CANVAS will be used for posting 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 myself is *not* for distribution to those outside of the current class.**

## 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 multivariate calculus, and a strong understanding of these mathematical tools is crucial to succeed in the course. To emphasize : if you are uncomfortable with basic calculus, this course is not appropriate for you. Below is a list of topics that you are expected to be familiar with. Most of these concepts are reviewed in Perloff's Calculus Appendix and the relevant section of the Appendix is listed.

1. Functions and Properties of Functions (Perloff A.1 - A.2)
  - Monotonicity
  - Continuity
  - Concavity and Convexity
  - Logarithmic functions
  - Homogeneous functions
2. Derivatives (Perloff A.3, can skip Euler's Homogenous Function Theorem)
  - How to take a derivative
  - Product and Quotient Rules
  - Chain Rule
  - Partial derivatives

### 3. Solving optimization problems (Perloff A.4 - A.6)

- 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

- 10 Homework exercises each graded out of 10 points. (15 %)
- 3 In class exams each graded out of 50 points. (worth 15% each of total grade)
- One final exam, graded out of 50 points. (40 %)

No scores are dropped.

## Exams

Exams are *open book* with calculators (even scientific) permitted, but no 'smart' devices such as tablet, laptop or phone with intelligence exceeding that of a plant. Exam attendance is mandatory. Students who miss a midterm for an allowable reason *must* report their absence on the Course Absence Reporting (CAR) System.<sup>1</sup> There will be *no* make-up exam; students who are excused from an exam will see the weights on the *subsequent* exams and final adjusted upwards to account for the absence.

No assistance may be given or received during an exam.<sup>2</sup> Students are expected to abide by the Code of Academic Integrity in the completion of assignments, papers and exams.

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<sup>1</sup><http://economics.sas.upenn.edu/undergraduate-program/course-information/guidelines/policies> has a list of valid excuses for missing an exam.

<sup>2</sup>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-program/course-information/guidelines/policies>

## Laptop Use

You may use your laptop in class. However, this is not a *carte blanche* to employ it to distract classmates by tracking your portfolio, instant messaging, tweeting, blogging, booking a flight or updating yourself on the whereabouts of Brangelina.

## Office Hours and Contact Info

The TA for your recitation section will hold two office hours of an hour duration. Check with them for the time and place. My office ours are Monday and Tuesday from 11 am to 12 pm in McNeil 451.

## Assignments

Homework assignments to be submitted at the beginning of class on the due date. Submissions **must** follow the following format: the answer is clearly displayed **first**, demarcated, followed by a justification written in clear, concise English. Mangled telegrams and streams of consciousness should be avoided. Marks are deducted for submissions that don't follow this format, are hard to read or incomprehensible. **No late work will be accepted.**

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). If your analysis contains information from outside sources, then you must properly cite the sources.

While you are required to complete the assignments individually, one does not wish to discourage encourage learning from one's peers. This leaves room for ambiguity, so I will try here 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.

These guidelines leave a gray area as discussions of general ideas gradually become more specific. Some judgment calls are unavoidable, but here's the kind of interaction I have in mind: If a peer conveys an idea which seems to be 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.

## **Course Outline**

### **Week 1: Introduction and Rational Buyer Model**

Perloff Pg. 138-139

### **Week 2: Monopoly Pricing & Elasticity**

Chapter 1 from handout on CANVAS, Perloff Pg. 365-372

### **Week 3: Monopoly Pricing & Costs**

Chapter 1 & 2 from handout on CANVAS, Perloff Pg. 206-230

### **Week 4: Welfare & Price Discrimination**

Perloff Pg. 140-143, 376-378. 396-401, 406-425, Chapter 3 from handout on CANVAS

### **Week 5: Bundling & Versioning**

Perloff Pg. 427-430, Chapter 3 from handout on CANVAS

### **Week 6 & 7: Imperfect Competition: Introduction**

Perloff Pg. 446-458, Chapter 4& 5 from handout on CANVAS

### **Week 8 & 9: Imperfect Competition: Substitutes & Complements**

Perloff Pg. 490-517, Chapter 4& 5 from handout on CANVAS

### **Week 10: Consumer Theory**

Perloff Pg. 58-92, Chapter 6 from handout on CANVAS

### **Week 11: Perfect Competition**

Perloff Pg. 101-118, 246-287, Chapter 7 from handout on CANVAS

### **Week 12: Perfect Competition**

Perloff Pg. 288-320, 325-359, Chapter 7 from handout on CANVAS

### **Week 13: Market Failure**

Chapter 7& 8 from handout on CANVAS

### **Week 14: Adverse Selection**

Perloff Chapter 18, Chapter 9 from handout on CANVAS

### **Week 15: Adverse Selection**

Perloff Chapter 19, Chapter 9 from handout on CANVAS

## Course Calendar

These dates are not fixed in stone. I reserve the right to change them to adjust to the pace of the class.

- Sept 3: Homework 1 due
- Sept 10: **Exam #1** in class
- Sept 17: Homework 2 due
- Sept 24: Homework 3 due
- Oct 1: Homework 4 due
- Drop period ends.
- Oct 6: **Exam #2** in class
- Oct 8: No class (fall break)
- Oct 15: Homework 5 due
- Oct 22: Homework 6 due
- Oct 29: Homework #7 due
- Nov 3: **Exam #3** in class
- Nov. 6 Last day to withdraw.
- Nov 12: Homework #8 due
- Nov 19: Homework # 9 due
- Nov 26: No class (thanksgiving)
- Dec 3: Homework #10 due
- Dec ??: **Final Exam** Date to be set by registrar.

## Recitation Sections

These are used to go over problems in the review packet. The problems to be covered each week will be posted on CANVAS.

Recitation Sections:

201: Monday, 2-3pm

202: Monday, 12-1pm

203: Friday, 11-12pm

204: Friday, 2-3pm

205: Monday, 9-10am

206: Friday, 1-2pm

207: Monday, 3-4pm

208: Friday, 3-4pm

*\*No recitations on 9/4- 9/7 (Labor Day), 9/25-9/28 (Pope) 10/9-10/12 (mid-semester break), 11/27-11/30 (Thanksgiving)*