

**ECON 101 (Fall 2017) Intermediate Microeconomics**  
**Rakesh Vohra**

This version: *July 16, 2017*

## Description

Microeconomics is the formal study of how individuals respond to incentives and the effect on social outcomes. Attention 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 recipies 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 that one perform computations that, by themselves, are unimportant, but are useful to convince oneself of things that one might at first disbelieve. Regular 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 (with solutions) (*ReviewProb.pdf*) posted on CANVAS. I will post the problems to be covered in advance via CANVAS. The problems for each session are selected to mirror those on the homeworks. 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, don't approach it as such. Inspecting the answer to a problem or following the reasoning of another is simply insufficient to master the material; 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

1. Lecture notes on CANVAS.
2. As a courtesy, a copy of the entire slide deck posted on CANVAS (which will be updated from time to time). They are not a substitute for item 1 above or the lectures but a supplement.
3. Optional for the course is: Jeffrey M. Perloff, *Microeconomics: Theory and Applications with Calculus*, 3rd or 4th 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  
<http://www.mcafee.cc/Introecon/>

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 the TAs and myself is *not* for distribution to those outside of the current class.**

## Grading

The final grade will depend on

- 7 Homework exercises each graded out of 10 points. (15%)
- 3 in-class exams each graded out of 20 points. (each worth 15% of total grade)
- One final exam, graded out of 30 points. (40%)

No scores are dropped.

## Office Hours

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 hours are Monday and Thursday from 11 am to 12 pm in McNeil 451. If you cannot make these, you are welcome to schedule an appointment outside of these hours.

## Laptop Use

You may use your laptop in class, but 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.

## 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 7: Homework 1 due
- Sept 14: Exam #1 in class
- Sept 28: Homework 2 due
- Oct 5: No class (fall break)
- Oct 9: Drop period ends
- Oct 12: Homework 3 due
- Oct 19: Exam #2 in class
- Nov 2: Homework 4 due
- Nov 9: Homework 5 due
- Nov 10: Last day to withdraw
- Nov 16: Exam #3 in class
- Nov 23: No class (thanksgiving)
- Nov 30: Homework 6 due
- Dec 7: Homework 7 due
- Dec 21, 9-11 am: Final Exam.

## 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 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

### 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

## 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 are *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.

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

## Assignments

Homework assignments to be submitted at the beginning of class on the due date. **No late work is accepted.** Graded homework assignments will be distributed in Recitation sections.

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, 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 calls are 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.

---

<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>

# **Course Outline**

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

Perloff Pg. 138-139

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

Chapter 1 from lecture notes, Perloff Chapter 11

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

Chapter 1 & 2 from lecture notes, Perloff Chapter 7

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

Chapter 3 from lecture notes, Perloff Chapter 12

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

Chapter 3 from lecture notes, Perloff Chapter 12,

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

Chapter 4& 5 from lecture notes, Perloff Chapter 13 & 14

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

Chapter 4& 5 from lecture notes, Perloff Chapter 13 & 14

## **Week 10: Consumer Theory**

Chapter 6 from lecture notes, Perloff Chapter 3 & 4

## **Week 11: Perfect Competition**

Chapter 7 from lecture notes, Perloff Chapter 8 & 9

## **Week 12: Perfect Competition**

Chapter 7 from lecture notes, Perloff Chapter 5&8 & 9

## **Week 13: Perfect Competition**

Chapter 7 from lecture notes, Perloff Chapter 5& 8 & 9

## **Week 14: Externalities**

Chapter 8 from lecture notes, Perloff Chapter 17

## **Week 15: Externalities**

Chapter 8 from lecture notes, Perloff Chapter 17

## Recitation Sections

These are used to go over problems in the review packet. Problems to be covered each week will be posted on CANVAS. \**No recitations on 9/1- 9/4 (Labor Day), 10/6-10/9 (mid-semester break), 11/24-11/27 (Thanksgiving)*

## 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.<sup>3</sup> 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.

---

<sup>3</sup>It works in reverse for chocolate.