

Spring 2020

## Economics 101: Intermediate Microeconomics

January 16, 2020

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office hours: Monday 3–4pm and Wednesdays 11am–12noon.

**Teaching Assistants** (all teaching assistant office hours are held in PCPSE141):

Di Tian, [tiandi@sas.upenn.edu](mailto:tiandi@sas.upenn.edu), office hours: Mondays 9:30am–11:30am.

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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.

In the recitations, TAs will cover problems typically drawn 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 homework. The review sessions are for practice at the problems. Larger questions about the 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.

The class is not a spectator sport, and it is important you don't approach it as such. Inspecting the answer to a problem or following the reasoning of another is 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 your "solution" does not agree with the provided solution, make sure you understand what you did wrong.

## Course Material

1. “Prices & Quantities: Fundamentals of Microeconomics” by Rakesh V. Vohra, book manuscript on Canvas (please do NOT post or otherwise distribute).
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 the TAs and myself are *not* for distribution to those outside of the current class.** Sic Vos Non Vobis.<sup>1</sup>

**Piazza.** Piazza will be used for all class discussions and questions. Any questions to do with class material and organization should be posted there. To enroll in piazza for this class, follow the following link: [piazza.com/upenn/spring2020/srs\\_econ1010012020a](https://piazza.com/upenn/spring2020/srs_econ1010012020a). Post all content-related questions about problem sets, lecture, and the course on piazza. This is a great way to collaborate with classmates. Course instructors will monitor, and occasionally post, on this forum.

**Email.** Use for correspondence that is not appropriate for piazza. Emails will receive a response within 24 hours Monday through Friday. *Include Econ 101 in the subject line.*

## Grading

The final grade will depend on

- 6 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%)

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<sup>1</sup>“For you, but not yours,” written by Virgil in response to plagiarism by Bathyllus.

No scores are dropped.

Piazza participation in answering questions (not asking) will be used for final grade allocation in marginal cases.

## 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 bushfires in Australia.

## Course Calendar

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

- Jan 28 (Tues): Homework 1 due
- Feb 6 (Thurs): **Exam #1** in class
- Feb 13 (Thurs): Homework 2 due
- Feb 24: **Drop period ends**
- Feb 25 (Tues): Homework 3 due
- Mar 3 (Tues): **Exam #2** in class
- Mar 7–15: Spring break
- Mar 19 (Thurs): Homework 4 due
- Mar 30: **Last day to withdraw**
- Apr 2 (Thurs): **Exam #3** in class
- Apr 9 (Thurs): Homework 5 due
- Apr 21 (Tues): Homework 6 due
- May 5 (Tues): **Final Exam** 12noon–2 pm

## 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>2</sup> There are *no* make-up exam; students 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>3</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>2</sup><http://economics.sas.upenn.edu/undergraduate/course-information/course-policies> has a list of valid excuses for missing an exam.

<sup>3</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/course-information/course-policies>.

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. Assignments are to be clearly and legibly written in ink; make sure to *staple* the filled out coversheet available in Canvas and staple . **No late work is accepted.** Graded homework assignments will be distributed in recitation.

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, 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.

## Recitation Sections

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

Recitations begin Jan 24, 2020.

## 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.