ECON 3010 – Intermediate Microeconomics

Fall 2024

Time: Tuesday / Thursday 3:30 – 4:45 pm

Location: Nau Hall 211

Instructor: Po-Hsuan Lin (sbe2ju@virginia.edu)

Office: Monroe Hall 332

Office Hour: Tuesday 5:00 – 6:00 pm

TA: Pin-Chao Wang (pw6xp@virginia.edu)

Office Hour: Wednesday 1:00 – 3:00 pm (Monroe Basement)

Course Description

Microeconomic theory is the study of models that economists use to describe how agents (consumers, firms, governments, etc.) make decisions and how these decisions affect market outcomes and welfare. We begin by analyzing how consumers and firms make optimal decisions given their budgetary and physical/technological constraints. We then study how these individual decisions translate into competitive market equilibria and examine the conditions under which the "invisible hand" of the market optimizes welfare.

In the second half of the course, rather than assuming a perfectly competitive market, we will explore some important sources of market failures, including externalities, market power (monopolies), and asymmetric information. A key tool for economists in analyzing situations where strategic interactions between people influence outcomes is game theory. The final section of the course will be a basic introduction to game theory and its applications in economics, including imperfectly competitive markets (e.g., oligopolies), public goods, and principal-agent problems.

This course is designed to provide a rigorous introduction to the tools that underlie nearly all economic analysis, including many of the upper-level applied courses you will take in the future. The best way to succeed in this course is to stay on track and practice problem-solving regularly. This is a problem-solving course, and the homework is intended to help you develop and refine your problem-solving skills.

Mathematical Requirements and Preparation

The course will introduce you to the key tools used in modern economics to explain behavior at the microeconomic level. These tools are often mathematical in nature, and include graphs, algebra, and calculus. This course assumes proficiency in Calculus I, particularly with derivatives of single-variable functions. Students must be comfortable with concepts such as the power rule, sum rule, quotient rule, product rule, and chain rule for taking derivatives, as well as derivatives of natural logarithms and exponential functions. While we will build upon this foundation, the course will introduce and extensively use partial derivatives for functions of multiple variables. To support your learning of these new concepts, a playlist on these concepts is available in our Canvas website.

The use of math should not obscure from the economics. The focus of the course will be on learning how to analyze a problem economically, and developing your reasoning and problem-solving skills, not blindly applying mathematical formulae. To succeed in the course, you should be comfortable enough with the math that it operates "in the background" so we can focus on learning the economics.

Textbook

There is **no** required textbook for the class. Everything will be self-contained in the lectures, and so you should be able to learn everything just by coming to class and working through the homework. However, a textbook can be a helpful secondary reference. Any intermediate microeconomics textbook would work fine, but the one that we will follow mostly closely is:

Jeffrey M. Perloff, *Microeconomics: Theory and Applications with Calculus, 5th edition*

You can find this for sale at the bookstore. Used versions and older editions that you may be able to find online should be perfectly adequate.

Discussion Section

You should have enrolled in one of the discussion sections on Thursday 7 pm or 8 pm. The discussion sections are an important part of the course because they will be focused on showing how to set up and solve problems. The TA will cover both the problem sets and some addition that were not assigned. Most importantly, you will have the opportunity to ask any questions about the material.

Grading

Your course grade will be calculated according to the following formula. The rest of the syllabus will go over each of these items in detail.

Exam 1	25%
Exam 2	25%
Exam 3	25%
Assignments	20% (lowest one will be dropped)
Classroom Activities	5%

Exams

There will be three (ALMOST non-cumulative) in-class exams on the following dates.

Exam 1	Thursday, October 3rd, 3:30 – 4:45 pm (regular class time)
Exam 2	Thursday, November 7th, 3:30 – 4:45 pm (regular class time)
Exam 3	Thursday, December 6th, 3:30 – 4:45 pm (the last day of regular classes)

All exams will be taken during your scheduled class period. Please note that the third exam is on the last day of regular classes. The material in this class builds on itself, so understanding earlier topics is essential for fully grasping the later material. Therefore, I strongly recommend that you do not fall behind. These three exams are (almost) non-cumulative and will focus primarily on material covered since the previous exam. However, to incentivize you to review and understand the material from earlier exams, Exam 2 and Exam 3 will each include one problem from the material covered in previous exams.

Exams will be closed book and closed notes. The exams will mainly consist of problem-solving questions similar to those found in the homework, with the possibility of some short-answer questions as well. They will test your ability to set up, analyze, and solve problems by applying the economic and mathematical tools developed in the course, rather than your ability to memorize facts, figures, or definitions.

Missed Exams: If you have to miss an exam for a valid reason (hospitalization, serious illness, death in the family, important religious holidays, and authorized university activities), the weight on that exam will be shifted equally across the subsequent exam(s).

If you need to miss an exam, you must tell me as soon as possible before exam day with the reason you cannot take it (again, valid reasons are hospitalization, serious illness, death in the family, important religious holidays, and authorized university activities – these are taken directly from the College of Arts and Sciences website). If you do not do this, you will receive a zero for the missed exam.

Assignments

There will be (roughly) 8-10 problem sets assigned throughout the course. For the problem sets, you may work with a group of up to 3 members. Each group can turn in one submission for all members. You are not required to work in a group, but I strongly recommend it. You can find your own group, or, during the first week of class, I will send out an email for those who would like to be assigned a group.

While I think groupwork is useful because you will learn a lot from your peers, it is still in your interest to learn how to solve the problems, and not simply copy solutions from a classmate. Free-riding on your group mates is a violation of the Honor Code. Further, I cannot overemphasize the importance of completing and understanding the problem sets to your success in the course.

The goal of the course is for you to learn to think and reason like an economist, and the best way of doing that is by solving many problems. Learning how to apply the concepts of the course to unfamiliar problems takes practice. The exam questions will be similar in style to the problem sets, so if you do not take the time to do the problem sets yourself, you almost certainly will not do well on the exam. To incentive you to understand the homework problems, one question on each exam will be very similar to a homework problem.

Assignment Grading: For each assignment, we will choose one problem at random for careful grading. Your (or your group's) score on this randomly chosen problem will be your grade for the entire assignment. Thus, just because you received a perfect score on an assignment does not mean that you did everything correctly on all problems. Solutions will be posted, and it is your responsibility to check your work against the solutions to ensure you understood and completed the problems correctly.

Note: Each assignment is due 7 days after it is assigned. No late assignments will be accepted. The problem set with the lowest score will be dropped.

Gradescope

We will be using Gradescope to submit your homework assignments. Make sure to access Gradescope via Canvas. Gradescope may allow you to register independently through their website, but if you do not go through Canvas, your grades will not be linked to the Canvas Gradebook, which is the basis for your final course grade.

Problem sets will be posted to Gradescope for download. Once you have your solutions, you can either type them up, or neatly hand-write them. You can then either scan them or use a scanning app on your phone to get a pdf file of your solutions. You can then log back into Gradescope and upload your solutions. When doing so, you will assign each page of your document to the associated question.

Each group only needs to upload one pdf. The person who submits the assignment can (and must) select all of their group members to ensure everyone gets credit for the assignment.

Classroom Activities

There may occasionally be quizzes and classroom experiments throughout the semester. Your performance in these classroom activities will be evaluated based on participation.

Class Discussion and Feedback

All official class announcements (regarding assignments, exams, changes to the syllabus, etc.) will be made via Canvas. All other discussion related to the class will be done via Piazza. Rather than emailing me or the TA your questions about the material, problem sets, or even course logistics, you should post them to Piazza.

I generally will not respond to emails asking about class material, and instead will direct you to post your question on Piazza. This is not to be rude but is for efficiency purposes: by having everything in one location, the entire class can benefit from the discussion. In addition, your question may already have been asked, in which case you can find the answer immediately.

SDAC Accommodations

To discuss accommodations as certified by the Student Disability Access Center, please contact me as early in the semester as possible.

Course Outline

The outline of topics is tentative and subject to change. The stars (**) indicate topics where we will depart more substantially from the textbook. The assigned readings will still be helpful but be sure to study the class notes as well.

Date	Topics	Reading (Perloff, 5th ed.)
8/27	Logistics; Math Review	
8/29, 9/3	Preferences; utility functions; indifference curves	3.1 – 3.2
9/5, 9/10	Marginal rates of substitution; budget sets; constrained choice	3.3 – 3.4
9/12, 9/17	Demand curves; comparative statics; income and substitution effects; labor supply	4.1 – 4.3, 5.4
9/19	Consumer welfare and policy analysis	5.1 – 5.3
9/24	Production and supply	6.2 – 6.5, 7.3
9/26	Perfect competition	9.2 – 9.5
10/1	Buffer class before Exam 1	
10/3	**Exam 1**	
10/8, 10/10	General Equilibrium	10.1 – 10.3**
10/10, 10/15	General Equilibrium, Monopoly	11.1 – 11.5
10/17, 10/22	Externalities and public goods	17.1-17.3, 17.5-17.6**
10/24, 10/29	Game theory: strategies, best responses, Nash equilibria	13.1-13.2**
10/31	Auctions	13.3**
11/5	**No Class (Election Day)**	
11/7	**Exam 2**	
11/12, 11/14	Oligopoly	14.3 – 14.5
11/19, 11/21	Asymmetric information and moral hazard	18.1-18.4, 19.1-19.3**
11/26	Frontiers in (Behavioral) Game Theory	
12/3	Buffer class / Review	
12/6	**Exam 3**	