

HEINZ 95-710 : ECONOMIC ANALYSIS
Spring, 2024

Instructor: Dr. Mary Ellen Benedict
Time: T/Th 5:00-6:20 P.M.
Room: HBH1202
E-mail: mb17@andrew.cmu.edu
Office Hour: Monday on Zoom, 6:30-7:30 p.m. If you want an individual appointment, either face-to-face or Zoom, e-mail or text me, so that I can make arrangements.

Review/Quizzes: Friday 9:30-10:50 a.m.
TA: Zeid El-Kalani
TA E-mail: zelkylan@andrew.cmu.edu
Room: HBH1206

Office hours:
TA: Lucia Quan
TA E-Mail: zquan@andrew.cmu.edu
Office hours: By Zoom: Wednesday, 1:30-2:30 and Thursday, 1:30-2:30

Note: Both Zeid and Lucia are able to set up one-on-one appointments outside of the scheduled times. Just e-mail.

Zoom links:
MEB: Link for office hour
<https://cmu.zoom.us/j/6302581434?pwd=bElJaURqT3lZZVlaN0tUZk1jdjdWUT09&omn=98167409207>
Lucia: Link for office hour
<https://cmu.zoom.us/j/4281876377>

COURSE DESCRIPTION

The course examines microeconomic theory and its applications for management and strategy. Microeconomics enables students to make decisions, whether for marketing, production management, or consulting. It integrates mathematics and economics as decision-making tools. Students will learn how to use:

- Optimization techniques in order to find the best output level or the lowest cost method of producing a product line.
- Different market models that apply to various industries.
- Game theory strategies to consider in noncompetitive markets.

The focus of the class will be how to apply various technical techniques and economic concepts in order to become better managers.

The course will begin with an examination of the underlying structure and models of competitive markets, and the efficiency and welfare implications of those models. We will then examine

economic models that describe firm output, pricing and entry/exit decisions. These models will then be applied to a variety of market contexts, including monopoly, oligopoly, and monopolistic competition. We will also examine how to use data to analyze certain models.

OBJECTIVES:

The main objective of this course is to provide the student with an adequate level of understanding of microeconomic theory in order to apply concepts in a variety of arenas. At the end of the course, it is hoped that the student can understand how to integrate economics into everyday management decision-making.

CANVAS CONNECTION:

Syllabus, readings, and other material will be available on Canvas as I have them ready for you.

TEXT:

Required text: Hal R. Varian, *Intermediate Microeconomics*. I am using the 9th edition. You can use an earlier edition as long as you can find the right sections of the book in order to follow along.

Additional readings and handouts will be available on Canvas.

GRADING

Your grade will be divided into several components:

1.	3 Homeworks	30%
2.	3 Tests	55%
3.	Short inclass work	15%

Homework assignments will consist of numerical problems and open-ended questions (e.g. short essays or analysis questions). Students are permitted to collaborate on the homework in groups of up to **three students**. **Each Homework assignment will be submitted online via Canvas; detailed instructions will be provided with the Homework**. **Your answers will have to be submitted before the start of the Friday review session in which Homework solutions will be discussed with the class**. To minimize the possibility of confusion, please type your Homework's answers (you can use hand-writing for figures and graphs). Alternatively, you can hand-write your answers, scan the paper, and submit the digital scanned version of it – but if you do so, please make sure that your handwriting is legible and that all figures/equations are clear. If you work with other individuals, please make sure that all names are at the top of the first page of the submitted homework. Only one submission is necessary.

Tests will be administered, in person, during the Friday review sessions, and will last 1 hour and 20 minutes. Thus, review sessions are mandatory on the days when quizzes are given. Tests will consist of true/false questions, numerical problems, and open-ended questions. Tests are closed-book. **Calculators can be used during the quiz** (note: if you use a calculator app *on a smartphone*, you cannot use any other applications apart from the calculator). No collaboration (including no discussion among students) is allowed during the quiz.

Short inclass work will be administered during our classes. They will be very short, and mainly aimed at making sure that you have paid attention and/or to practice the technique of a new topic. **Your two worst-performing inclass work across all lectures will be eliminated** (that is, they will not count towards your grade). Many of these inclass pieces will be small group work.

Because the homeworks will help to prepare you for the tests, it is imperative that you work on these assignments carefully and do all of them. **UNLESS ARRANGEMENTS ARE MADE OTHERWISE, LATE HOMEWORKS WILL BE REVIEWED AND COMMENTED ON, BUT WILL RECEIVE A GRADE OF ZERO.**

On all written assignments, tests, and projects, note the following:

1. Answers should be concise, but clear. Deductions are made for wrong statements, even if you have the right statement somewhere in your discussion.
2. If you have a problem with a grade on a homework or test, feel free to come to my office hours or those of the TA to get a better explanation of why points were deducted. Be aware that any test given to me for review is open for regrading on every question.

Finally, even though this is a technical course and I will spend a great deal of time lecturing, I hope you to come prepared to class (that means **READ THE MATERIAL PRIOR TO CLASS MEETINGS**). I would like to have class discussions as often as possible and will be asking you questions. In order to prepare for these discussions, make notes on the following as you are reading:

What is the main purpose of my readings?
If I had to ask one question about this topic, what will it be?
Why does this question interest me?
How does this question tie to the purpose of the course?
What don't I understand in this chapter?

CLASSES, LECTURE SLIDES, HOMEWORK, AND QUIZZES

Some important notes about classes, lectures slides, homework, and quizzes.

First, **the relation between: a) the models and exercises discussed in class, and b) the homework and the quizzes** is the following:

- Each homework is designed to make you exercise on and **think critically** about the models and topics discussed in class. Hence, each homework will **challenge** you to reflect on a number of different topics and models discussed in class and **expand on the problems** we will solve together in class, **by combining them and critically applying them to a variety of different scenarios** with different complexities. In other words, be ready for the fact that **each homework will extend the material and the exercises discussed in class**. Some of the homework scenarios are numerical exercises. Some are open-ended questions that have **more than just one “right” answer**. In general, the homework will make you think – they will not simply ask you to “plug in” a formula and find a value.
- The tests will be similar to the homework but **shorter**, with fewer exercises and fewer calculations involved.
- Short quizzes, as mentioned, will be simple and relatively straightforward questions about class material asked at the end of a lecture.

Second, **the relation between: a) the lecture slides and b) the textbooks and readings** is the following:

- The **lecture slides I will provide cover all the topics that will be part of homework and quizzes, but not all the details**. They can be used as a summary of the relevant topics, but they are **not meant to substitute the books** and the more detailed explanations that the textbooks and the readings contain.

THEORY VS. APPLICATIONS IN THIS CLASS.

Some of our lectures will be about formal models of economic behavior and will apply (simple) mathematics to represent those models and describe that behavior. Some others of our lectures will be about applications, and may be more discursive. Different lectures may be challenging and luckily interesting in different ways.

Formal models will give us the theoretical foundations to understand the rest of the topics. So, don't get discouraged if you have never taken economic courses before, or if the first weeks will appear a bit "theoretical:" the level of mathematics necessary to do well in this class is actually quite basic, and **the theoretical tools that we will learn in the first weeks will turn useful as we will discuss more practical applications and study concrete market examples in the second part of this course.**

COLLABORATION AND INTEGRITY

Students are permitted to collaborate on the homework in groups of up to **three students**, whose names must be clearly indicated in the submitted homework (however, trust me: you will learn much more if you *first* try and do the homework by yourself, and *then* collaborate).

There is **no collaboration** on tests.

Plagiarism from online sources (e.g., using answers found online) and/or copying of another group's homework or another student's quiz, or from previous years' homework and quizzes are university offenses. Just *don't* do it. Please. It's not worth it. These rules and the academic integrity standards outlined in your student handbook will be strictly enforced. Violations of these rules or standards are considered a fundamental breach of trust and may result in failure of the course.

ABOUT THE TEXTBOOKS

I will use examples from Varian's Intermediate Microeconomics for the modeling portions of our classes. Any recent edition (from 5th onwards) is acceptable. In recent years, new copies of this textbook have become increasingly scarce and therefore pricey. I strongly recommend *not* trying to find a new version of the book, but rather purchasing or renting one of many used versions of this book available from numerous online sellers (including Amazon, which also offers a semester *rental* option) at much more reasonable prices.

While I will often adopt the approach and the arguments that you can find in Varian's textbook, in reality you may (at your own judgment) replace Varian's book with any other decent Microeconomic book, as long as you make sure to cover equivalent material to what we will cover in Varian's book.

Why do we use Varian's textbook instead of those others? Because – among other reasons - it offers a sound yet simple mathematical approach that will turn useful for other courses you will take at the Heinz College, and hopefully for your future career as well.

Finally, we will use a number of additional readings (which I uploaded to the Canvas) to discuss specific topics such as collusion, predatory pricing, and so forth.

10. HOW TO DO WELL IN THIS CLASS

Here are some tips that I (as the instructor) and previous students of this class have learnt about how to perform well in this class:

- Even if you collaborate on the homework with other students, try first to solve the exercises by yourself, alone. You will learn *much* more this way.

- **Absolutely do not “split” the questions among the members of your team** – during the quiz you will be alone in answering similar questions, and you will not have anybody to split questions with.
- Study the readings *before* the lecture – this way the topic of the lecture will not be completely novel to you, and you will find it easier to follow the lecture.
- Study the readings and the book chapters once again *after* the lecture – the **lecture slides I will provide cover all the topics that will be part of homework and quizzes, but not in complete detail**. As I mention above, the lecture slides can be used as a summary of the relevant topics, but they are **not meant to substitute the books** and the more detailed explanations that the books contain.
- Check back on Canvas the version of your homework graded and corrected by the TA. The TA will note errors and solutions in the graded homework. And since quizzes are similar (although not identical) to the
- homework, you should try and learn as much as you can from the graded, corrected homework in order to do well in the quizzes. - In addition: do attend the Friday review sessions when homeworks are discussed and solved in front of the class.
- Be ready to not just plug in formulas, but *think* about the economic problems we discussed in class in order to complete the homework.

ACADEMIC AND OTHER RESOURCES

Carnegie-Mellon University has a number of resources for students. Here is a link to academic resources: <http://www.cmu.edu/academic-integrity/headernav/guides.html>

A link to the Intercultural Communications Center: <http://www.cmu.edu/icc/>

The Office of Disability Resources: <http://www.cmu.edu/education-office/disability-resources/index.html>

CMU Counseling Center
<https://www.cmu.edu/counseling/>

COURSE SCHEDULE AND TOPICS

Readings listed below must be completed **prior** to the class for which they are listed, since we will discuss them together. Readings other than the textbook will be **available on Canvas**. The material for each class should be read by the date indicated below, even if we have not yet finished going through the previous class' lecture.

Note: for Varian's book, the chapter numbers reported below refer to the 9th edition. If you are using different editions, chapter numbers *may* have changed slightly. Please use the title of the lecture to find the appropriate chapter.

Lecture 1(Tuesday, Jan. 16th)
Topic: Introductions and Demand Curves
Today's Readings: Chapter 1
Review Course Modules on Canvas

Lecture 2 (Thursday, Jan. 18th)
Topic: Market Demand
Today's Readings: Varian, Chapters 1 con't and 15
Homework 1 can be found on Canvas

Review Session 1 (Friday, Jan. 19th)
Math review
(You can use the Mathematical Appendix in Varian's textbook to prepare)

Lecture 3 (Tuesday, Jan. 23rd)
Topic: Equilibrium
Today's Readings: Varian, Chapter 16.1-16.5, 16.9

Lecture 4 (Thursday, Jan 25th)
Topic: Firm Costs 1
Today's Readings: Varian, Chapter 19 & 21.1-21.2

Review Session 2 (Friday, January 26th)
Assignment due: Homework 1 covering Lectures 1-3

Lecture 5 (Thursday, Jan 25th)
Topic: Firm Costs II
Today's Readings: Varian, Chapter 22

Lecture 6 (Tuesday, January 30th)
Topic: Perfect Competition & the Firm's supply curve
Today's Readings: Varian, Chapters 20.1-20.7 23
Homework 2 can be found on Canvas

Review Session 3 (Friday, Feb. 3rd)
Test 1, covering Lectures 1-3

Lecture 7 (Tuesday, Feb. 6th)

Topic: Monopoly

Today's Readings: Monopoly – Varian, Chapter 25 and 26.1-26.5

Lecture 8 (Thursday, Feb. 8th)

Monopolistic Competition – Varian, Chapter 26.7-26.10

Case study: *Clashing Values, Firm Identity, and Changing Social Norms: The case of Chick-Fil-A*

Review Session 4 (Friday, Feb. 9th)

Assignment due: Homework 2 covering Lectures 4-7

Lecture 9 (Tuesday, Feb. 13th)

Topic: Game Theory

Today's Readings: Varian, Chapter 29.1-29.7

Homework 3 available on Canvas

Lecture 10 (Thursday, Feb. 15th)

Topic: Oligopoly 1

Today's Readings: Varian, Chapters 28.1-28.4

Review Session 5 (Friday, Feb. 16th)

Test 2, with a focus on lectures 4-7

Lecture 11 (Tuesday, Feb. 20th)

Topic: Collusion

Today's Readings: Varian, Chapters 28.10

Case Study: Ethyl and Rapid Price Communication (on Canvas)

Lecture 12 (Thursday, Feb. 22nd)

Topic: Strategic Behavior

Today's Readings: *Dupont and Computers (on Canvas)*

Review Session 6 (Friday, Feb. 23rd)

Assignment due: Homework 3 covering Lectures 8-11

Lecture 13 (Tuesday, Feb. 27th)

Topic: Information Technology 1

Today's Readings: Varian, Chapter 36.1-36.2

Lecture 14 (Thursday, Feb. 29th)

Topic: Information Technology 2

Today's Readings: Varian, 36.4-36.7

Review Session 7 (Friday, March 1st)

Topic: **Final Exam (time TBA)**