Carnegie Mellon University
Heinz College

90-908 Ph.D. Microeconomics I
Course Syllabus, Fall 2023

INSTRUCTOR

Brian Kovak
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LECTURE

9:30-10:50am Tuesday and Thursday Aug 29 - Dec 7
Hamburg Hall 1004
Course website: www.cmu.edu/canvas

TEACHING ASSISTANT

Shahriar Noroozizadeh
Discussion Section: Fridays 9:30-10:50am
Hamburg Hall 1004
Office Hours: on zoom by appointment
E-Mail: snoroozi@andrew.cmu.edu

HOMEWORK GRADER

Yuan An
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COURSE ORGANIZATION[1]

There will be three exams, October 3, November 16, and during the university final exam period, December 11-15. The final exam time is set by the University and will be announced during the fall semester. Students who have scheduling conflicts for the first two exams must make arrangements at least two weeks in advance, and students should not make plans during the final exam period before learning the third exam schedule.

Ten graded problem sets will be given throughout the semester. Problem sets are due at the start of lecture on the due date and will be uploaded to the course grading system via Gradescope. The lowest problem set score will be automatically dropped from your grade. This policy will cover any conflicts,

[1] Thanks are due to Lowell Taylor for originally providing much of the material for this course

illnesses, or other issues requiring you to miss a problem set. Late problem sets will be deducted 10 percentage points per day late. You must notify the homework grader if you plan to submit a problem set after the due date, and late submission may not be available when exam dates are near.

The final score is a weighted average of scores received on the exams and problem sets, with weights 0.25 for all problem sets combined, and 0.25 for each of the three exams.

Keep me informed of any issues that are likely to affect your course performance so we can address the issues before they become intractable. This includes scheduling conflicts, religious holidays, serious illness (without requiring disclosure of personal medical information), etc.

The teaching assistant will hold weekly discussion sections on Friday mornings, covering course material, homework questions, and general review. I expect that you will attend this session prepared with relevant questions about lecture material and homework.

TEXTBOOKS

The following two textbooks are required for the course. In order to give students time to obtain these books, the required readings for the first few weeks of class are available on the Canvas website. Alternate editions may be used if preferred; the relevant homework problems are posted on Canvas to avoid any confusion resulting from changes across editions.

W. Nicholson and C. Snyder, *Microeconomic Theory: Basic Principles and Extensions*, 10th ed. (Mason, OH: Thomson, 2008).

H. Varian, *Microeconomic Analysis*, 3rd ed. (New York: Norton, 1992).

COURSE CONTENT

Microeconomics is the study of the ways in which individuals and firms make choices, and how these choices interact. Economics shares with other behavioral sciences the general goal of explaining and predicting human behavior. The distinguishing feature of the economic approach is an emphasis on rational decision-making under conditions of scarcity. Because of the central role of markets, i.e., the price system, in describing the outcomes of individual and firm decision-making, microeconomics is sometimes called *price theory*.

Ph.D. Microeconomics I provides a semester-long introduction to microeconomic theory and its application. The primary objective of the course is to familiarize students with the microeconomic paradigm and develop an appreciation of the usefulness (and limitations) of microeconomic analysis. A further goal of the course is to develop and exercise students' ability to use economic analysis in examining applied issues, and, more generally, to help students acquire formal modeling skills—the ability to reduce real-world problems to useful and mathematically tractable representations.

This course is designed for the following students: (i) Ph.D. students who want to increase their exposure to microeconomics, but do not expect to use formal microeconomics in their research (i.e., students for whom this course is likely to be their *last* course in microeconomics); (ii) Ph.D. students who plan to study microeconomics beyond the introductory level of this course, but do not have the background for the Ph.D. economic theory sequence offered at the Tepper School; and (iii) masters level students (or perhaps the occasional undergraduate) with an especially high level of interest and a good background in mathematics. Note that this course is *not* a close substitute for the first course in the Tepper microeconomics sequence (Ph.D. Microeconomics I). Some students may find this course to be a useful supplementary course to Tepper's Ph.D. Microeconomics sequence. Students who have sufficient preparation are encouraged to investigate the Ph.D. Microeconomics sequence offered at Tepper.

There are no formal prerequisites for this course. However, students are assumed to have a solid working knowledge of multivariate calculus. You will take brief math quiz in the first lecture to help you determine whether your math training is sufficient for the course. Prior exposure to microeconomics in a good undergraduate-level course is helpful but not required.

COURSE STRUCTURE AND POLICIES

Unless there is a change in CMU policy due to pandemic-related developments, lecture will be conducted in-person, as scheduled by the registrar. That said, each of us may occasionally need to participate from home due to personal Covid exposure, childcare closures, etc. and I will do everything I can to accommodate these issues. This may include the option of streaming lecture from home or posting recorded lectures for the relevant material. Please note that you are not permitted to share these recordings. This is to protect your FERPA rights and those of your fellow students. More broadly, recordings of course sessions and all other course materials are provided solely for educational use by students enrolled in the course and may not be distributed to any other person or posted on the internet without the express written permission of the course instructor.

Please keep me informed of your needs as the semester progresses. I will adhere to all CMU Covid-19 mitigation strategies and students must do the same. I will alert the class to any changes in Covid-19 related policies as they are announced by the University.

Although I will not take formal attendance, I expect that you will attend and will be engaged in the course material while in class. The information presented in lecture will help you to succeed in the homework and exams, and I will strive to make everything we cover interesting and relevant to your research goals. If you miss lecture, I expect you to get lecture notes from a classmate:

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I will be teaching from the whiteboard during lecture, and my lecture notes will be posted on the CMU Canvas website (www.cmu.edu/canvas). I do this as a service to students and will strive to have notes posted before the relevant lecture but cannot guarantee this in all cases. Since many economic models

admit very helpful graphical representations, I encourage you to take notes on paper or tablets and draw the diagrams along with me. The posted notes have spaces for you to draw your own diagrams. With this in mind, I discourage the use of laptop computers during class.

While students are welcome and encouraged to study together in groups, all work submitted in this class must be your own. For problem sets, you may discuss problems with classmates, but you should submit your own solutions to the problems reflecting your individual understanding. Exams will be completed individually, without any interaction with others. You may use a calculator during exams. In this class, any use of generative AI for any graded course assignment is prohibited. Passing off any generated content as your own (for example, cutting and pasting content into written assignments or paraphrasing AI content) constitutes an academic integrity violation.

Any student found to be in violation of these policies will incur academic disciplinary actions consistent with University policies. For official CMU definitions of cheating and plagiarism, and academic disciplinary procedures that will be followed in the case of a violation, see: http://www.cmu.edu/policies/student-and-student-life/academic-integrity.html

If you have a disability and are registered with the Office of Disability Resources, I encourage you to use their online system to notify me of your accommodations and discuss your needs with me as early in the semester as possible. I will work with you to ensure that accommodations are provided as appropriate. If you suspect that you may have a disability and would benefit from accommodations but are not yet registered with the Office of Disability Resources, I encourage you to contact them at access@andrew.cmu.edu.

It is my intent that students from diverse backgrounds and perspectives be well served by this course, that students' learning needs be addressed both in and out of class, and that the diversity that students bring to this class be viewed as a resource, strength, and benefit. It is my intent to present materials and activities that are respectful of diversity: gender, sexuality, disability, age, socioeconomic status, ethnicity, race, and culture. Your suggestions are encouraged and appreciated. Please let me know ways to improve the effectiveness of the course for you personally or for other students or student groups. In addition, if any of our class meetings conflict with your religious events, please let me know so that we can make arrangements for you.

Take care of yourself. Do your best to maintain a healthy lifestyle this semester by eating well, exercising, avoiding drugs and alcohol, getting enough sleep and taking some time to relax. This will help you achieve your goals and cope with stress.

If you or anyone you know experiences any academic stress, difficult life events, or feelings like anxiety or depression, we strongly encourage you to seek support. Counseling and Psychological Services (CaPS) is here to help: call 412-268-2922 and visit http://www.cmu.edu/counseling/. Consider reaching out to a friend, faculty or family member you trust for help getting connected to the support that can help.

If you or someone you know is feeling suicidal or in danger of self-harm, call someone immediately, day or night:

CaPS: 412-268-2922
Re:solve Crisis Network: 888-796-8226
If the situation is life threatening, call the police
On campus: CMU Police: 412-268-2323
Off campus: 911

The best way to get in touch with me is to send me an email. I will be checking email regularly and will strive to respond within one day. If there is an emergency, my cell phone number is 610-772-0877 (Please only use this in truly serious situations). I expect that you will also check your CMU email account at least one per day, as all announcements will be made through the Canvas system, which automatically emails your CMU account.

TENTATIVE OUTLINE

August 29: Introduction

Nicholson and Snyder, Chapters 1 – 2

Aug 31 – September 12: Theory of the Consumer

Nicholson and Snyder, Chapters 3 – 5
Varian, Chapters 7 – 8

September 14 – 19: Individual and Market Demand

Nicholson and Snyder, Chapters 5 – 6
Varian, Chapters 9 – 10

September 21 – 26: Uncertainty

Nicholson and Snyder, Chapter 7
Varian, Chapter 11

September 28 Exam 1 Review

October 3: **Exam 1**

October 5 – 12, 24: Theory of the Firm

Nicholson and Snyder, Chapters 9 – 11

Varian, Chapters 1 – 5

October 17-19 **Mid-semester break**

October 26 – 31: Competitive Markets

Nicholson and Snyder, Chapters 12 – 13
Varian, Chapter 13

November 2, 9: Monopoly

Nicholson and Snyder, Chapter 14
Varian, Chapter 14

November 7 **Democracy day**

November 16: **Exam 2**

November 14, 21, 28: Game Theory, with Application to Oligopoly

Nicholson and Snyder, Chapters 8, 15
Varian, Chapters 15 – 16

November 23: **Thanksgiving break**

November 30 – December 7: Other Topics: Intertemporal Choice, Externalities, and Public Goods

Nicholson and Snyder, Chapter 19
Varian, Chapters 19, 23-24

Finals Week (December 11 – 15): **Exam 3** (date and time set by University)