

BEPP 2500, Fall 2021

Managerial Economics

(Syllabus for Fall 2022 is not available yet)

This is a course in intermediate microeconomics. Microeconomics is the scientific study of social behavior with a focus on economic issues. Microeconomics is based on three principles: individuals respond to incentives, individual behavior aggregates into equilibrium social behavior, and we can use normative criteria to find desirable outcomes.

The goals of the course are to master microeconomics and to apply microeconomics to problems in business, policy, and social science. Have you wondered: “How should Uber set prices?”; “How does trade with China affect American manufacturing?”, “Why are Playstation games expensive while Sony sells the console at cost?”, “Should income tax rates for millionaires be 75%?”, “Should Spotify start charging per song?”, “Why did Apple design iOS and manufacture iPhones, while Google built Android, but manufactures a small share of Android phones?” “What are the benefits to society of an individual getting vaccinated against covid?” These are the types of questions we will consider.

General organization

For Fall 2021, the course will be fully in person, pending other instructions from the School.

Lectures

Each lecture covers a topic and solves a problem. After each lecture we will post a practice problem with solutions, and the problem set will have a problem related to the lecture. The exams are extremely consistent with these problems. Mastering the lecture content and problems is the best way to prepare for the exams.

Recitations

Recitations are taught by our graduate TAs, and will cover problems and the class content of the week. Attendance is required. See the schedule below for dates.

Additional resources

- **Piazza:** You are encouraged to use our Piazza site when you have questions. The undergraduate TAs will be active helping students on Piazza, and we expect this to be a lively community. ***Always ask questions on Piazza first***, including admin questions, because you are helping other students who have the same question. Piazza link:
<https://piazza.com/upenn/fall2021/bepp250>
- **TAs/Program coordinator:** After Piazza, your primary point of contact for any course-related matters are your TAs. For administrative matters, you can contact the program coordinator Beth Moskat. If your question relates to course rules and logistics, please read the syllabus before contacting us.

- **Office hours:** The undergraduate TAs and the faculty have weekly drop-in office hours (see the schedule). You are welcome to come to office hours to get help with problem sets, the material generally, and preparing for exams. See Canvas for the schedule.
- **Background readings:** We will post a background reading on Canvas prior to every lecture with short question to be answered on-line. Students are expected to read the articles prior to lecture to foster class discussion and this will be part of the participation grade. The exams may ask big picture questions about the readings. You don't have to memorize every detail, if you broadly understood the reading you will get the questions right.
- **Textbook:** There are no required textbooks for this course. If you would like to use a textbook, we recommend *Intermediate Microeconomics with Calculus: A Modern Approach* by Hal Varian. Any edition is fine. While the class slides, problems sets, and practice problems have all of the content we expect you to know, the book may be a helpful additional resource. Professor Rakesh Vohra from the Penn Economics Department also has an excellent new book in preparation. We posted his current draft .pdf on Canvas, and it is an excellent resource if you want to study further.
- **Past Exams:** We will post many past exams on Canvas with solutions. While we are making this content available, beware that BEPP 250 has changed over the years. While the last two or three years of past exams are the most relevant, older exams often cover different topics and have different types of problems.

Grading

Grades depend on attendance and participation (15%), problem sets (10%), two midterms (20% each), and a final exam (35%).

Problem Sets: There will be 7 problem sets. Problem sets should be uploaded as pdf documents on Canvas by 11:59PM (EST) on the due date, always on a Sunday. See the schedule for due dates. No credit is given for late submissions. Solutions are posted the day after the due date. **Students are free to work together but must submit their own answers.**

Exams: Exams are closed book. You do not need a calculator and do not have to bring one. Exams will be consistent with our problem sets, problems in lectures, and practice problems, so making sure to master these problems is the best way to prepare. Remember that you are bound by the Penn Code of Student Conduct (see below). Cheating is wrong – plain and simple. Just act ethically and keep in mind that we know more than you do about cheating.

Attendance and participation: We will keep a record of attendance to lectures and recitations. We will also assess your answers to the questions about the background readings and keep track of Piazza participations and the quality of in-class interventions and questions.

Staff

| | Email | Office Hours |
|---------------------------|--|----------------------------|
| Course Coordinator | | |
| Beth Moskat | emoskat@wharton.upenn.edu | |
| Undergraduate TAs | | |
| Elizabeth Brover | lbover@sas.upenn.edu | Fridays, 8:30-10:00 a.m. |
| Siram Tolety | tsr23@wharton.upenn.edu | Thursday, 3:30-5:00 p.m. |
| Vishesh Patel | visheshp@seas.upenn.edu | Monday 1:45-3:15 p.m. |
| Vineet Veeramachaneni | veevinn@wharton.upenn.edu | Wednesday, 1:45-3:15 p.m. |
| Graduate TAs | | |
| Jing Xiang Ng (head TA) | xiangng@wharton.upenn.edu | |
| Benji Smith | benjamrs@wharton.upenn.edu | |
| Justin Lam | jflam@sas.upenn.edu | |
| Faculty | | |
| Eduardo Azevedo | eazevedo@wharton.upenn.edu | Tuesdays 12-2 @ Vance 329 |
| Gilles Duranton | duranton@wharton.upenn.edu | Fridays 3-5 pm @ Vance 452 |

Other Information

Prerequisites: Students need to have taken ECON 1, ECON 10 or an equivalent course. They should also have taken MATH 103 or an equivalent course.

Attendance: Attendance in lectures and recitations is mandatory. Attendance will be recorded within 5 minutes of the start of each lecture and recitation. The class will have a seating chart so please be in your proper seat on time. Exams will be based on the material covered in lectures. Each student has a credit of three excused absences across lectures and recitations. This should cover religious holidays, illnesses, and other legitimate reasons for missing a class. Additional absences (beyond two) are unexcused and will lower your attendance grade. If you miss a class, you are encouraged to report and explain it using the [Course Absence Report](#). CAR is solely for informational purposes; its use cannot hurt you (in particular, it will not affect your course grade) and could help you (by keeping Academic & Advising well-informed of any possible problems; remember, they are there to support you).

Ethics: We expect you to abide by the University of Pennsylvania's Code of Academic Integrity. Violations of the code carry serious sanctions. Violations include the altering of exams after we have returned the exams. In the spirit of discouraging any temptation to engage in such unethical practices, we keep photocopies of midterm and final exams before returning them to students. The faculty will turn all cases of code violations over to the Office of Student Conduct and reserve the right to impose additional sanctions, including a failing grade for the assignment / exam and the course.

Electronics: We do generally not allow the use of electronic devices, such as smartphones, tablets, laptops, smartwatches in class.

Re-grading Policy: If you wish to dispute a grade on an exam, follow the steps below:

- 1) Carefully read the answer sheet posted on Canvas. Take at least 24 hours to think about the answers before submitting a re-grade request.
- 2) If you decide to submit a request, submit it in writing on a separate piece of paper and attach that sheet to your exam. **Do not write on the exam.** Additionally:
 - a) For each part of the exam that you think was mis-graded, give a written explanation of your view.
 - b) You must submit the entire original exam (not just the question(s) you wish to have re-graded). Your score could go down or up with re-grading.
 - c) We reserve the right to re-grade the whole exam (even questions not requested for a re-grade).
 - d) Submit your regrade request via email to the head TA.
 - e) The deadline for regrade requests is one week from when the solutions are posted.

Policy for Missing an Examination: We expect you to attend the midterm and final exams. You will receive zero points for a missed exam, unless you have a medical or personal emergency or some unavoidable school-related conflict that is recognized and excused by the instructor. If you have a conflict, contact Beth Moskat in advance.

Students with Disabilities: Requests for academic accommodations need to be made during the first two weeks of the semester, except under unusual circumstances, to arrange reasonable accommodations. Students must register with Student Disabilities Services (SDS) for disability verification and for determination of reasonable academic accommodations.

Content

| Lecture # | Topic | Varian Chapter |
|-----------|---|----------------|
| 1 | Intro | |
| 2 | Comparative statics | 1, 15 and 16 |
| 3 | Consumer theory 1 | 2 to 4 |
| 4 | Consumer theory 2 | 5 |
| 5 | Firm theory: cost minimization | 19 to 21 |
| 6 | Firm theory: cost curves | 22 |
| 7 | Firm theory: supply | 23 and 24 |
| 8 | Consumer surplus and the invisible hand | 14 |
| 9 | Commodity taxation | 16 |
| 10 | International trade | |
| 11 | Monopoly pricing | 25 |
| 12 | Price discrimination | 26 |
| 13 | Price discrimination | 26 |
| 14 | Game theory: static games | 29 and 30 |
| 15 | Game theory: dynamic games | 29 and 30 |
| 16 | Game: Opeq | |
| 17 | Oligopoly 1: bertrand and cournot | 28 |
| 18 | Oligopoly 2: stackelberg and mergers | 28 |
| 19 | Oligopoly 3: differentiated products | 28 |
| 20 | Vertical integration | |
| 21 | Auctions | 18 |
| 22 | Externalities | 35 |
| 23 | Adverse selection | 38 |

Schedule

Monday / Wednesday Lectures (Gilles Duranton)

| Week | Date | Lecture # |
|------|--|--|
| 1 | Monday, 30 August 2021 Wednesday, 1 September 2021 | No lecture (vacations) 1 |
| 2 | Monday, 6 September 2021 Wednesday, 8 September 2021 | No lecture (labor day) 2 |
| 3 | Monday, 13 September 2021 Wednesday, 15 September 2021 | 3 4 |
| 4 | Monday, 20 September 2021 Wednesday, 22 September 2021 | 5 6 |
| 5 | Monday, 27 September 2021 Wednesday, 29 September 2021 | 7 No lecture (exam prep) |
| 6 | Monday, 4 October 2021 Tuesday, 5 October 2021 Wednesday, 6 October 2021 Friday, 8 October 2021 | No lecture (exam) First Exam @ 7PM 8 First Exam Makeup @ 9AM |
| 7 | Monday, 11 October 2021 Wednesday, 13 October 2021 | 9 10 |
| 8 | Monday, 18 October 2021 Wednesday, 20 October 2021 | 11 12 |
| 9 | Monday, 25 October 2021 Wednesday, 27 October 2021 | 13 14 |
| 10 | Monday, 1 November 2021 Wednesday, 3 November 2021 | 15 No lecture (exam prep) |
| 11 | Monday, 8 November 2021 Tuesday, 9 November 2021 Wednesday, 10 November 2021 Friday, 12 November 2021 | No lecture (exam) Second Exam @ 7PM 16 (OPEQ game) Second Exam Makeup @ 9AM |

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|----|---------------------------------|---------------------------|
| 12 | Monday, 15 November 2021 | 17 |
| | Wednesday, 17 November 2021 | 18 |
| 13 | Monday, 22 November 2021 | 19 |
| | Wednesday, 24 November 2021 | No lecture (Thanksgiving) |
| 14 | Monday, 29 November 2021 | 20 |
| | Wednesday, 1 December 2021 | 21 |
| 15 | Monday, 6 December 2021 | 22 |
| | Wednesday, 8 December 2021 | 23 (last lecture) |
| 16 | Friday, 17 December 2021 | Final exam @ TBD |

Tuesday / Thursday Lectures (Eduardo Azevedo)

| Week | Date | Lecture # |
|------|--------------------------------|--------------------------------|
| 1 | Tuesday, 31 August 2021 | No lecture |
| | Thursday, 2 September 2021 | 1 |
| 2 | Tuesday, 7 September 2021 | 2 |
| | Thursday, 9 September 2021 | 3 |
| 3 | Tuesday, 14 September 2021 | 4 |
| | Thursday, 16 September 2021 | 5 |
| 4 | Tuesday, 21 September 2021 | 6 |
| | Thursday, 23 September 2021 | 7 |
| 5 | Tuesday, 28 September 2021 | 8 |
| | Thursday, 30 September 2021 | No lecture (exam prep) |
| 6 | Tuesday, 5 October 2021 | No lecture (exam) |
| | Tuesday, 5 October 2021 | First Exam @ 7PM |
| | Thursday, 7 October 2021 | 9 |
| | Friday, 8 October 2021 | First Exam Makeup @ 9AM |
| 7 | Tuesday, 12 October 2021 | 10 |
| | Thursday, 14 October 2021 | No lecture (fall break) |

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|----|--|---|
| 8 | Tuesday, 19 October 2021 Thursday, 21 October 2021 | 11 12 |
| 9 | Tuesday, 26 October 2021 Thursday, 28 October 2021 | 13 14 |
| 10 | Tuesday, 2 November 2021 Thursday, 4 November 2021 | 15 No lecture (exam prep) |
| 11 | Tuesday, 9 November 2021 Tuesday, 9 November 2021 Thursday, 11 November 2021 Friday, 12 November 2021 | No lecture (exam) Second Exam @ 7PM 16 (OPEQ game) Second Exam Makeup @9AM |
| 12 | Tuesday, 16 November 2021 Thursday, 18 November 2021 | 17 18 |
| 13 | Tuesday, 23 November 2021 Thursday, 25 November 2021 | 19 No lecture (Thanksgiving) |
| 14 | Tuesday, 30 November 2021 Thursday, 2 December 2021 | 20 21 |
| 15 | Tuesday, 7 December 2021 Thursday, 9 December 2021 | 22 23 (last lecture) |
| 16 | Friday, 17 December 2021 | Final exam @ TBD |

Recitation Schedule

| Week | Date | Recitation # |
|------|----------------------------|--------------------------------|
| 1 | Friday, September 3, 2021 | 1 |
| 2 | Friday, September 10, 2021 | 2 |
| 3 | Friday, September 17, 2021 | 3 |
| 4 | Friday, September 24, 2021 | 4 |
| 5 | Friday, October 1, 2021 | 5 |
| 6 | Friday, October 8, 2021 | 6 |
| 7 | Friday, October 15, 2021 | No recitation (fall break) |
| 8 | Friday, October 22, 2021 | 7 |
| 9 | Friday, October 29, 2021 | No recitation (family weekend) |

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|----|---------------------------|------------------------------|
| 10 | Friday, November 5, 2021 | 8 |
| 11 | Friday, November 12, 2021 | No recitation (game week) |
| 12 | Friday, November 19, 2021 | 9 |
| 13 | Friday, November 26, 2021 | No recitation (Thanksgiving) |
| 14 | Friday, December 3, 2021 | 10 |
| 15 | Friday, December 10, 2021 | 11 |

Problem Set Schedule

| Problem Set # | Due Date (Sunday by 11:59PM on Canvas) | Lectures covered |
|---------------|--|------------------|
| 1 | Sunday, 19 September 2021 | 1 to 4 |
| 2 | Sunday, 3 October 2021 | 5 to 7 |
| 3 | Sunday, 17 October 2021 | 8 to 10 |
| 4 | Sunday, 31 October 2021 | 11 to 13 |
| 5 | Sunday, 21 November 2021 | 14 to 17 |
| 6 | Sunday, 5 December 2021 | 18 to 20 |
| 7 | Sunday, 12 December 2021 | 21 to 23 |

Lecture and Recitation Locations

Lecture Locations

| Section | Faculty | Day/Time | Classroom |
|---------------|-----------------|---------------------|-----------|
| BEPP 2500-001 | Gilles Duranton | MW 01:45-03:15 P.M. | JMHH 265 |
| BEPP 2500-002 | Gilles Duranton | MW 03:30-05:00 P.M. | JMHH 265 |
| BEPP 2500-003 | Eduardo Azevedo | TR 08:30-10:15 A.M. | LAUD AUD |
| BEPP 2500-004 | Eduardo Azevedo | TR 10:15-11:45 A.M. | LAUD AUD |

Recitation Locations

| Section | TA | Time | Classroom |
|---------------|-------------|--------------------------|-----------|
| BEPP 2500-201 | Benji Smith | FRIDAY, 8:30-9:30 A.M. | SHDH 1201 |
| BEPP 2500-202 | Benji Smith | FRIDAY, 10:15-11:15 A.M. | SHDH 1201 |
| BEPP 2500-203 | Benji Smith | FRIDAY, 12:00-1:00 P.M. | SHDH 1201 |
| BEPP 2500-204 | Justin Lam | FRIDAY, 1:45-2:45 P.M. | SHDH 1201 |
| BEPP 2500-205 | Justin Lam | FRIDAY, 3:30-4:30 P.M. | SHDH 1201 |
| BEPP 2500-206 | Justin Lam | FRIDAY, 10:15-11:15 A.M. | SHDH 1203 |
| BEPP 2500-207 | Benji Smith | THURSDAY, 3:30-4:30 P.M. | JMHH F92 |
| BEPP 2500-208 | Justin Lam | THURSDAY, 5:15-6:15 P.M. | JMHH F92 |