

# ECON 251: Price and Allocation Theory

Department of Economics  
Williams College  
Fall 2022  
(syllabus revised September 12, 2022)

## 1 Contact Information and Course Logistics

### 1.1 Professor: Dr. Pamela Jakiela

Email: [pj5@williams.edu](mailto:pj5@williams.edu)

### 1.2 Teaching Assistant: Jamie Liu

Email: [jbl6@williams.edu](mailto:jbl6@williams.edu)

### 1.3 Course Meetings

Mondays, Wednesdays from 11:00 AM to 12:15 PM in Griffin 7 and on zoom

*Everyone attending class meetings in person must wear a mask (N95, KN94, or surgical).  
Anyone experiencing cold/flu/covid symptoms should participate via zoom.*

### 1.4 Course Websites

<https://pjakiela.github.io/ECON251/>

Most course materials are available on the public website for the course: that is where I will post problem sets and other assignments, lecture outlines, class meeting and assignment schedules, and other course information.

<https://glow.williams.edu/courses/3493711>

I use glow to post course materials that cannot be shared publicly – specifically, videos of the lectures, a pdf of the course reading packet, and the link for joining office hours over zoom. The syllabus is also posted on glow for your reference.

<https://www.gradescope.com/courses/432869>

All problem sets, readings response assignments, modeling assignments, and exams will be posted on and submitted through gradescope. You'll receive an email inviting you to join the course, and that will allow you to set up a gradescope account linked to your Williams email address.

## 1.5 Office Hours

### 1.5.1 Professor Jakiela's Office Hours

My office hours are on Fridays from 11:00 AM to 1:00 PM. Office hours are hybrid: you can come to my office (339 Schapiro) or you can join via zoom (the link is on glow). *If you attend office hours in person, you must be wearing a mask (N95, KN94, or surgical). Please do not attend in-person office hours if you are experiencing any cold/flu/covid symptoms.*

If you have a course that conflicts with my scheduled office hours, you can email me to set up an appointment for an alternate time. I am unable to meet in the evening or on weekends.

*I will not be holding office hours on Friday September 30 or Friday December 2.*

### 1.5.2 TA Jamie Liu's Office Hours

Jamie Liu's office hours are on Tuesdays from 6:00 to 8:00 PM in Schow 030A and on Fridays from 2:00 to 4:00 PM in NSB 002.

## 1.6 Communication

Email is the best way to contact me ([pj5@williams.edu](mailto:pj5@williams.edu)). I will try to respond to course-related emails within two working days of receipt.<sup>1</sup> I am sometimes overwhelmed by the volume of email I receive; if I have not responded to you within two working days, please feel free to send me an email reminder.

## 2 What Is This Course About? Who Should Take It?

### 2.1 Course Description

ECON 251 introduces students to the microeconomic approach to the study of human behavior, with a focus on individual decision-making and strategic interactions. We study the behavior of individuals and households in a variety of consumption settings (including buying goods and services, labor supply, saving for the future, and investing in human capital and preventive health); risk and time preferences; the behavior of producers of goods and services; market interactions and market failures; game theory; and imperfect information.

My approach to intermediate microeconomics may differ from the approach taken by other faculty members, reflecting my research interests in behavioral economics and international development. Much of the most interesting microeconomic research from the last several decades is focused on the ways that traditional economic models – of perfect markets, of self-interested consumers, etc. – are wrong in important, substantive ways. Our focus in

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<sup>1</sup>So, if you send me an email on Tuesday at noon, I will try to respond by the end of the day on Thursday. I do not check my email on weekends. If you send me an email on Friday afternoon, I will respond to it by the end of the day on Tuesday.

this course is on learning to use the mathematical tools of economics to build testable, empirically valid models of individual choices in a range of settings.

This course will help you begin to learn to “think like an economist” while also understanding the strengths and weaknesses of economists’ approach(es) to social policy. Many of the topics we study will be familiar to you from ECON 110. Our approach will be more mathematically rigorous, but the hope is that it will also be more psychologically nuanced and better informed by the realities of incomplete information and imperfect markets.

## 2.2 Learning Objectives

Students who complete ECON 251 should be comfortable:

1. Solving constrained optimization problems, including utility maximization, cost or expenditure minimization, and profit maximization problems;
2. Finding the equilibrium price and quantity traded in simple models of perfect and imperfect competition;
3. Finding the pure and mixed strategy Nash equilibria in  $2 \times 2$  normal-form games and in some simple one-shot games involving more than two players; and
4. Finding the subgame perfect Nash equilibrium in dynamic games with complete and perfect information.

## 2.3 Prerequisites

This course is hard. ECON 251 may well be the hardest course you take at Williams. It involves a lot of math, particularly calculus. You will take a lot of derivatives and solve an extraordinary number of constrained optimization problems. You need to be comfortable with calculus going into the course if you hope to do well. Students who have not completed or placed out of MATH 130 should not enroll in the course.

Even if you have completed the necessary prerequisites, you may wish to delay taking ECON 251 until you have built a strong foundation in calculus and probability/statistics. Familiarity with multivariable calculus is helpful but not required as we will be using partial derivatives throughout the course. Some familiarity with statistics and probability is also very helpful. Most Williams students take ECON 251 in their second year, by which time they have typically completed STAT 161. Students who have not completed or placed out of at least one college-level stats course may wish to delay taking ECON 251 until they have built a stronger foundation in probability and statistics.

## 3 Health Protocols

1. Wear a (N95, KN94, or surgical) mask in class and in office hours.
2. Do not come to class or attend in-person office hours if you are ill (with covid or anything else beyond a mild sniffle). If you test positive for covid, follow campus guidelines in determining when to return to class.

3. Lectures and office hours will be accessible via zoom. Links to access the zoom rooms for lectures and office hours will be posted on glow. If you wish to attend Jamie Liu's TA office hours via zoom, please send her an email.
4. We may be forced to switch to remote instruction or cancel classes if I test positive for covid or if I am forced to stay home to care for a child who tests positive for covid. Any changes to course modality will be communicated over email.

## 4 Tentative Class Schedule and Important Dates

There are two 24-hour take-home exams take place during class time on October 19–20 and December 7–8. These exams cannot be rescheduled (except in an emergency). *If you have a foreseeable conflict with either of those dates, you must discuss your options with me by September 16.*

<b>Dates</b>	<b>Description</b>
9/9	Organizational Meeting
9/12	What Is Economics?
9/14	Budget Sets
9/19	Demand Functions
9/21	Income and Substitution Effects
9/26, 9/28	Preferences and Utility
10/3, 10/5	Utility Maximization
<b>10/10</b>	<b>Reading Period: NO CLASS</b>
10/12	Labor Supply
<b>10/17</b>	<b>Exam Review</b>
<b>10/19</b>	<b>Take-Home Exam 1: NO CLASS</b>
10/24	Revealed Preference
10/26	Expected Utility
10/31, 11/2	Intertemporal Tradeoffs
11/7, 11/9	Production
11/14	Monopoly
11/16	Competitive Equilibrium
11/21	Imperfect Information
<b>11/23</b>	<b>Thanksgiving: NO CLASS</b>
11/28, 11/30	Game Theory
<b>12/5</b>	<b>Exam Review</b>
<b>12/7</b>	<b>Take-Home Exam 2: NO CLASS</b>

## 5 Readings

### 5.1 Course Reading Packet

Course reading packets will be passed out on the first day of class. The reading packet includes one book chapter and five articles that we will read over the course of the semester. For each of these readings, you will complete a reading response assignment that must be submitted before class (deadlines available on the course website and on gradescope).

## 5.2 Lecture Outlines and Textbooks

I will post lecture outlines on the course website. When appropriate, I will also highlight optional readings from two textbooks that complement the lectures, both of which can be downloaded from glow:

- *Models in Microeconomic Theory* by Martin J. Osborne and Ariel Rubinstein (published by Open Book Publishers). This book is available for free from the publisher's website: <https://www.openbookpublishers.com/product/1171>.
- *Game Theory for Applied Economists* by Robert Gibbons (published by Princeton University Press).

## 6 Assignments and Grading

Grades are calculated as follows:

Higher Exam Score	30 points
Lower Exam Score	15 points
Problem Sets	30 points
Modeling Exercises	10 points
Readings Response Assignments	10 points
Class Participation	3 points
Surveys	2 points

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### 6.1 Exams

There are two 24-hour take-home exams: the first on October 19/20 and the second on December 7/8. *If you have a conflict with either of these dates, please discuss it with me during the first week of class.* These exams are open-book and open-notes, but you must not work together, seek help from anyone, or provide help to any other students.

### 6.2 Problem Sets

Problem sets are posted on the course website and submitted via gradescope. Problem sets are due Friday by 11:00 PM. The first problem set is due September 16; subsequent problem sets are due every Friday after that except after an exam. In calculating your final grade, we drop your lowest problem set grade.

You may work together on problem sets, but your write-up must be your own work. You may also seek help from the TA and from the Quantitative Skills Program. The TA will only be able to offer assistance on some of the problem set questions.

### **6.3 Readings Response Assignments**

Reading assignments will be posted on the web and submitted through gradescope. To earn credit for completing each assignment, you must complete the associated comprehension quiz prior to the relevant class meeting (assignments are due on Sundays by 11:00 PM; specific dates are posted online and on gradescope).

### **6.4 Theoretical Modeling Assignments**

Over the course of the semester, you will be asked to submit three one-page assignments, each of which will involve writing a new economic model of behavior by extending one of the theoretical models we discuss in class. These written assignments are due on Sundays. In calculating your final grade, we will drop your lowest modeling assignment grade.

### **6.5 Class Participation**

Active, constructive participation in lectures, either in person or via zoom, counts toward your final grade. Students who attend class regularly, pay attention, and ask an occasional question should expect to receive 2 out of 3 possible class participation points. To earn the third point, you must make regular, correct, insightful comments during class. Your class participation grade is not reported in gradescope or elsewhere.

I do not expect students to have perfect attendance: if you need to miss class once or twice during the semester, you do not need to seek approval from me in advance (though you are welcome to alert me if you wish). If you expect to miss more than two or three classes, or you encounter challenges that prevent you from attending class consistently, you should discuss these issues with me in office hours or over email. Regular absences will result in a loss of class participation credit unless they are discussed with and approved by me in a timely manner.

### **6.6 Surveys and Other Ungraded Assignments**

Over the course of the semester, you will be asked to complete a few surveys, online experiments, and other ungraded questionnaires. These contribute to your final grade in that you earn credit for completing these activities on time.

### **6.7 Late Assignments**

Unless otherwise stated, all (unexcused) late assignments will be penalized: the maximum grade will be lowered by 10 percent for every day late for the first five days (including weekends). Assignments can only be submitted more than five days late with permission from the instructor.

## **7 Honor Code**

All exams and assignments are open book and open notes, and you are free to use calculators at any time. You are not allowed to work together, ask for or accept help from another

student or from anyone outside the course, or assist any other student on exams.

You are encouraged to work together on problem sets, but you should prepare your own write-up. If, at any point in the semester, two students upload or submit identical work through gradescope (for example, if two students upload the same image or screen shot of their work on a problem set), neither student will receive credit for that assignment.

## **8 Tutoring through the Peer Academic Support Network**

As a Williams student, you can use the free tutoring services provided by the Peer Academic Support Network. Step-by-step instructions for finding and scheduling tutoring sessions are on the Peer Academic Support Network webpage: <https://www.williams.edu/peer-academic-support/>.

## **9 Health and Accessibility Resources**

Students with disabilities or disabling conditions who experience barriers in this course are encouraged to contact me to discuss options for access and full course participation. The Office of Accessible Education is also available to facilitate the removal of barriers and to ensure access and reasonable accommodations. Students with documented disabilities or disabling conditions of any kind who may need accommodations for this course or who have questions about appropriate resources are encouraged to contact the Office of Accessible Education at [oaestaff@williams.edu](mailto:oaestaff@williams.edu).

## **10 Classroom Culture**

The Williams community embraces diversity of age, background, beliefs, ethnicity, gender, gender identity, gender expression, national origin, religious affiliation, sexual orientation, and other visible and non visible categories. I welcome all students in this course and expect that all students contribute to a respectful, welcoming and inclusive environment. If you have any concerns about classroom climate, please come to me to share your concern.

## **11 How Long Is This Syllabus? This One Goes to Eleven**

Congratulations on making it to the end of the syllabus. Do professors enjoy writing syllabi? Not really. Do students enjoy reading them? Probably not. Hopefully, this document will provide us with a shared set of expectations for the semester, making the course more constructive and enjoyable for everyone. Also, if you send me an email containing a picture of a red panda before September 12 (subject line: ECON 251 RED PANDA), you will earn a point of extra credit.