

# ECONOMICS 445: INDUSTRIAL ORGANIZATION

Fall 2023

---

<b>Instructor:</b>	Marco Duarte	<b>Office:</b>	Gardner Hall 208B
<b>Email:</b>	<a href="mailto:duartema@unc.edu">duartema@unc.edu</a>	<b>Office hours:</b>	TR 1:00-2:00pm, W 10:00-11:00am
<b>Class time &amp; Location:</b>	TR 9:30–10:45 am, Dey Hall 206 (Section 001) TR 11:00–12:15 pm, Dey Hall 206 (Section 002)		
<b>Midterm Exam 1:</b>	Sep. 28th	<b>Midterm Exam 2:</b>	Nov. 2nd
<b>Final Exam:</b>	Tuesday, Dec. 12th, 8:00 am (Section 001) Saturday, Dec. 9th, 8:00 am (Section 002)		
<b>Recommended textbook:</b>	Introduction to Industrial Organization, Luis Cabral, MIT Press (2nd edition)		

---

## 1 Overview

**Prerequisites:** ECON 400 and 410; a grade of C or better in ECON 400 and 410 is required.

In this class, we will study the causes and consequences of firms' strategic behavior, focusing on situations in which the assumptions behind perfect competition do not hold. Our main analytical tools will be microeconomic theory and game theory. We will supplement our theoretical work with empirical evidence from academic research and popular media.

The topics we will study include pricing, product design, imperfect competition, collusion and cartels, firm-to-firm supply relationships, and mergers. Within each topic, we will consider the impact of firms' actions on others and on consumer welfare. We will also consider the motivation for and the impact of US antitrust law on these settings.

Economics is more a way of thinking rather than a collection of facts, and industrial organization (IO) is no exception. Our main objective is to develop the ability to use economic models to understand a broad range of problems. These models, when constructed well, can be both simple and powerful. Your ability to construct, analyze, and interpret models is best developed through practice, and our class meetings, assignments, and exams will focus on providing this practice.

## 2 Learning Resources

I will use **Canvas** to distribute and collect notes, readings, homework assignments, etc. Please get familiar with Canvas ([Canvas' help page](#)) and verify that you can log on to the course page.

**Readings:** There is no required textbook for this class. Your notes from class, together with lecture slides, will be sufficient to keep up with the course. However, if you would like to have an external reference, previous versions of this class used Introduction to Industrial Organization by Luis Cabral (2nd edition).

I also encourage you to keep up with current economics-related events. Good popular press sources for economic content include the Economist, the Wall Street Journal, and the New York Times, but you can find plenty of economic content in virtually any newspaper. There are also many online news sources and podcasts that are worth checking out: Planet Money, Freakonomics, FiveThirtyEight, and many more. While not all of these resources focus on IO, they are likely to provide interesting opportunities to think about the economic forces common to IO and other microeconomics areas.

**Writings:** We will often supplement the class notes with readings collected from popular media (newspapers, magazines, etc.) that are related to the topics covered in class. To help you build your economic intuition and argumentation, I will also assign writing projects that will be due on predetermined dates and submitted through Canvas. The writing must be about any article from the list posted in Canvas, and you

are free to choose the one you like the most. The text must have a maximum of two pages and contain the following: (i) a summary of what is being reported; (ii) what are the economic forces at play, and how the situation can be translated into what we have seen in class; (iii) a simple numerical/graphical argumentation of the problem. I will randomly select a subset of submissions for a more detailed evaluation. You will receive full credit (1 point) for (honestly) attempt and 0 for missing.

**Problem Sets:** I will post problem sets on Canvas to help you reinforce what is learned in class. You must upload your solution before 11:59 pm of the due date using Canvas. Collaboration (in groups of at most four students) is encouraged, as long as you indicate on you submit your own writeup and indicate who you collaborated with. Problem sets grades are based on completion. You will receive full credit (1 point) for (honestly) attempt and 0 for missing. I will randomly select a subset of questions/submissions for a more detailed evaluation. I will post solutions for each problem set on Canvas at the same time the assignment is due. As a consequence, **no late work will be accepted**. However, you will be allowed to drop your lowest problem set and writing score (so you have the option not to turn in one).

**Math Requirement:** I will require you to use basic calculus during this course. If you remember what a **derivative** is, its rules, and its application for optimization, you will not have any problems with the math that we use here. If you feel the need to review and/or reinforce your math skills to follow the lecture, contact me **as soon as possible**. I am happy to provide you with references and material for that.

### 3 Exams & Grading

- Exams will be closed books and notes, and cumulative: all material that has been covered in class up to that point is fair game.
- I will not reschedule exams other than for University Approved Absences (also refer to the Attendance policy section)
- In the case of a student with a University Approved Absence justification missing one of the two midterms, the final grade will be based on a reweight using only one midterm and the final exam (to use this exception as a way to increase your final grade is **not** a good strategy).
- Together with a numeric score, I will assign a letter grade for each exam based on your performance relative to the class. The final letter grade will be computed using a weighted GPA.
- The weights for each activity are as follow:

Midterm 1	20%
Midterm 2	20%
Final Exam	35%
Problem Sets (5x)+Writings (2x)	25%

- *Example:* Suppose that a student got an A (4) in the first midterm, a B (3) in the second, and a C (2) in the final exam. It also completed all the assignments. Therefore, its final letter grade will be:

$$4 \times 0.2 + 3 \times 0.2 + 2 \times 0.35 + 4 \times 0.25 = 3.1(B)$$

- All course grades will be stored and displayed on Canvas. It is your responsibility to ensure that the grades on this course page are accurate. Re-grade requests must be provided within one week of receiving your score and accompanied by a **written** explanation of why you think you deserve a higher score. When you submit an assignment for a re-grade, everything will be re-scored, and your grade may go up or down.
- If you feel that your performance is apart from your expectations, you should contact me **as soon as possible** so we can identify the problems and tailor an action plan.
- The level of the numerical grades can be unusual for some students. A low numeric grade **does not automatically imply** a lower letter grade at the end of the semester. Grades will be curved so that final letter grades have a similar distribution from previous versions of this class.

## 4 Course Outline

Below is a tentative schedule for the semester. The exact dates for topics and assignments may change. If that's the case, I will try to give as much advance notice as possible.

Date	Topic	Assignments	LC chapter
<b>Part 1: Introduction and Conceptual Foundations</b>			
Aug. 22	Course objectives and introduction		
Aug. 24	Demand, production, and cost functions		2, 3
Aug. 29	Perfect competition & Monopoly	PS1 assigned	4.1-4.4, 5.3-5.5
<b>Part 2: Price Discrimination</b>			
Aug. 31	Price Discrimination I		6.1-6.4
Sep. 7	Price Discrimination II		6.1-6.4
Sep. 12	Price Discrimination III		6.1-6.4
Sep. 14	Auctions	<b>PS1 due</b> , PS2 assigned	
<b>Part 3: Static Oligopoly Theory</b>			
Sep. 19	Game Theory I		7.1-7.3
Sep. 21	Game Theory II		7.1-7.3
Sep. 26	<i>Review</i>	<b>PS2 due</b>	
Sep. 28	<b>*** MIDTERM I ***</b>		
Oct. 3	Competition w/ homog. products I	PS3 assigned	8.2-8.3
Oct. 5	Competition w/ homog. products II		8.2-8.3
Oct. 10	Competition w/ homog. products III		8.2-8.3
Oct. 12	Competition w/ diff. products I	<b>PS3 due</b> , PS4 assigned	14.1-14.2
Oct. 17	<b>*** DATA SPEAKER ***</b>	<b>Writing 1 due</b>	
Oct. 24	Competition w/ diff. products II		14.1-14.2
Oct. 26	Market Structure and Outcomes		
Oct. 31	<i>Review</i>	<b>PS4 due</b>	
Nov. 2	<b>*** MIDTERM II ***</b>		
<b>Part 4: Dynamic Oligopoly Theory</b>			
Nov. 7	Entry and Foreclosure	PS5 assigned	
Nov. 9	Game Theory III: Repeated Games		7.3
Nov. 14	Collusion I		9
Nov. 16	Collusion II		9
Nov. 21	<b>*** THANKSGIVING ***</b>		
Nov. 23	Horizontal Mergers		11

Nov. 28	Vertical Relationships	13.1-13.2
Nov. 30	Misc. Topics	
Dec. 5	<i>Review</i>	

---

**PS5 due, Writing 2 due**

## 5 Policies and expectations

### 5.1 Attendance policy

Engagement in the course (demonstrated through attention, comments, questions, active listening, and participation in in-class activities) is expected and part of the learning experience. While I understand that students may not be able to attend every class, students must likewise understand that an absence from class may result in missed information and, consequently, a lower grade.

**University Policy** : As stated in the University’s Class Attendance Policy, no right or privilege exists that permits a student to be absent from any class meetings, except for these University Approved Absences:

1. Authorized University activities: University Approved Absence Office (UAAO) website provides information and FAQs for students and FAQs for faculty related to University Approved Absences
2. Disability/religious observance/pregnancy, as required by law and approved by Accessibility Resources and Service and/or the Equal Opportunity and Compliance Office (EOC)
3. Significant health condition and/or personal/family emergency as approved by the Office of the Dean of Students, Gender Violence Service Coordinators, and/or the Equal Opportunity and Compliance Office (EOC).

**Mask use.** UNC-Chapel Hill is committed to the well-being of our community – not just physically, but emotionally. If you feel more comfortable wearing a mask, you are free to do so. There are many reasons why a person may decide to continue to wear a mask, and we respect that choice.

### 5.2 Honor code

I expect all students to follow the guidelines of the UNC Honor Code. In particular, students are expected to refrain from “lying, cheating, or stealing” in the academic context. You can read more about the honor code at [studentconduct.unc.edu](http://studentconduct.unc.edu). In any course, including mine, what constitutes cheating can change from one activity to another. For example, collaboration may be encouraged for an assignment but qualify as cheating during an exam. If you are unsure, please ask me to clarify. In remote classes, there may be many temptations for using online exchange sites, such as Chegg. Note that these sites provide names of students who have used their materials, and they routinely cooperate with institutions around academic integrity issues. Please don’t get caught up with honor code issues just because it appears to be simple and untraceable. It is not!

### 5.3 Accessibility Resources and Services

The University of North Carolina at Chapel Hill facilitates the implementation of reasonable accommodations, including resources and services, for students with disabilities, chronic medical conditions, a temporary disability or pregnancy complications resulting in barriers to fully accessing University courses, programs and activities.

Accommodations are determined through the Office of Accessibility Resources and Service (ARS) for individuals with documented qualifying disabilities in accordance with applicable state and federal laws. See the ARS Website for contact information: <https://ars.unc.edu> or email [ars@unc.edu](mailto:ars@unc.edu).

## 5.4 Counseling and Psychological Services

If you or anyone you know is struggling with mental health, I encourage you to seek counseling. CAPS is strongly committed to addressing the mental health needs of a diverse student body through timely access to consultation and connection to clinically appropriate services, whether for short or long-term needs. Go to their website: <https://caps.unc.edu/> or visit their facilities on the third floor of the Campus Health Services building for a walk-in evaluation to learn more. (source: Student Safety and Wellness Proposal for EPC, Sep 2018).

## 5.5 Title IX Resources

Any student who is impacted by discrimination, harassment, interpersonal (relationship) violence, sexual violence, sexual exploitation, or stalking is encouraged to seek resources on campus or in the community. Reports can be made online to the EOC at <https://eoc.unc.edu/report-an-incident/>. Please contact the University's Title IX Coordinator (Elizabeth Hall, interim – [titleixcoordinator@unc.edu](mailto:titleixcoordinator@unc.edu)), Report and Response Coordinators in the Equal Opportunity and Compliance Office ([reportandresponse@unc.edu](mailto:reportandresponse@unc.edu)), Counseling and Psychological Services (confidential), or the Gender Violence Services Coordinators ([gvsc@unc.edu](mailto:gvsc@unc.edu); confidential) to discuss your specific needs. Additional resources are available at <https://safe.unc.edu>.

## 5.6 Syllabus changes

I reserve the right to make changes to the syllabus, including assignment due dates and test dates. These changes will be announced as early as possible.