This is an advanced undergraduate course in industrial organization. We will study the behavior of firms and the structure of markets. The first goal is to apply microeconomic theory to understand when and how firms exercise market power, and the impact of market power on market efficiency and consumer welfare. The second goal is to apply these insights to analyze antitrust cases.

The text for this course is by Luis Cabral, *Introduction to Industrial Organization*, 2nd edition, MIT Press, 2017 (ISBN: 978-0-262-03594-1). This book provides a description of the basic theory and it contains many illustrative examples. The level of the exposition is similar to that of the class lectures. Readings on several of the antitrust cases discussed in class can be found in *The Antitrust Revolution*, edited by John Kwoka and Lawrence White, 7th edition, Oxford, 2019 (ISBN: 978-0-190-66885-3), as well as some earlier editions of Kwoka & White. Many Kwoka & White cases and some additional readings will be posted on Canvas.

There will be weekly problem sets. Problem sets must be submitted by 11 am on their due dates, via Crowdmark. Late problem sets will not be accepted. You may work in groups on problem sets, and turn in your answers as a group, as long as the group has no more than three people. Discussing problem sets with other groups is allowed and encouraged, but problem sets are meant to be reflective of each group’s work. Copying another group’s assignment, permitting another group to copy from your assignment, or jointly writing up answers across groups will result in no credit for the entire assignment for all involved students. Furthermore, dividing up problem set questions across students is discouraged. Problem sets are intended to help you study the material and to learn important skills, and skipping a problem entirely will be detrimental to your learning.

There will be one midterm exam and a final. The midterm will be during class time on Monday, October 19. The final is scheduled for Monday, December 7 at 3pm. The final will be cumulative and cover material from the entire quarter, but it will emphasize material covered after the midterm. Both exams will be open book and open notes. The approximate weighting scheme for the final grade will be:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Problem Sets</td>
<td>25%</td>
</tr>
<tr>
<td>Midterm Exam</td>
<td>30%</td>
</tr>
<tr>
<td>Final Exam</td>
<td>45%</td>
</tr>
</tbody>
</table>

Any student who misses the midterm or final without a good reason will receive no credit for the exam. Medical reasons require written confirmation from the Student Health service or your doctor. Non-medical reasons require a written excuse from the WCAS Office of Studies. A makeup for the midterms will be permitted only if there is a good reason for missing the exam. Suspicion of academic dishonesty will be immediately referred to the Dean’s office.
Any student requesting accommodations related to a disability or other condition is required to register with AccessibleNU (accessiblenu@northwestern.edu; 847-467-5530) and provide professors with an accommodation notice from AccessibleNU, preferably within the first two weeks of class. All information will remain confidential.

The Teaching Assistant for the course is Junyan Guan, junyanguan2016@u.northwestern.edu. Junyan will hold a discussion section each week, on Fridays at 9:50, in which he will discuss the problem sets, review class material and cover some supplemental material. His office hours will be on Thursdays, 2:30-4:30.

Provisions for remote learning:

The plans for how the course will be run are described below. However, I may modify various aspects, depending on feedback I receive from you and my own evaluation. I always welcome feedback on how to improve the course, but your feedback is especially welcome this year.

All lectures, TA sessions and office hours will be conducted through Zoom. The Zoom passcode for these meetings is: econ349. Links to these events will be posted on Canvas. Lectures and TA sessions will be broadcast “live” over Zoom at the times scheduled by the registrar. These will be recorded and links to the recordings will also be posted on Canvas. Office hours will be held “live” on Zoom and will not be recorded. Office hours will be conducted as open Zoom sessions where all students attending office hours are admitted to the ongoing Zoom session. If you would like a private meeting, this can be arranged by appointment with either myself or Junyan. I will remain in the Zoom session for 10 minutes after every lecture to answer additional questions.

I will lecture by sharing the screen of an iPad that has slides that I can write on. You will be able to see my face in one of the smaller screens off to the side, along with the faces of your classmates attending the lecture. I will post copies of the slides used during lectures before the topics are covered in class. You may find it useful to print out hard copies of the lecture slides before attending lectures in order to review the material in advance and/or to take notes during the lecture. The slides contain material that will be covered in class, as well as supplemental material, some of which will be covered in class. As far as exams are concerned, you are only responsible for the material covered in class.

I encourage you to attend the live class, if possible. Students gain a lot from listening to others’ questions and from asking clarification questions. Students attending live lectures will have their audio muted. Audio will be turned on when you ask a question or make a comment. (This helps reduce background noise.) I encourage you to keep your video on while attending live lectures, if you feel comfortable doing so. It will help me to stay engaged if I am able to see you. I hope that we will have a lot of class interaction and discussion. Junyan will co-host all lectures and help manage the class. There will be many different ways to ask a question in class. One way to ask a question will be to use the chat function. Junyan will monitor the chat. If Junyan determines that it would be useful to get an immediate answer from me to a question posed in chat, he will interrupt me. Junyan may answer some questions in chat. I plan to stop frequently to ask if there are questions, and Junyan will pose some of the chat questions in these stopping points. You may also use the “raise your hand” feature during lectures. Junyan will monitor
raised hands and may stop me if a number of hands are raised. Alternatively, I will turn first to
students with raised hands whenever I pause to ask if there are any questions.

Both the midterm and the final will be administered synchronously. I will upload the tests at the
scheduled starting times, and you will be responsible for uploading your answers in the allotted
time. You will have one and a half hours to complete the midterm, which will be designed to
take 80 minutes. Similarly, you will have 130 minutes to complete the final, which will be
designed to take two hours. In both cases, the additional 10 minutes are allocated so you can
upload the exam. Further delays will be penalized. If you have any logistical issues while taking
a test, please email me immediately and I’ll help you sort them out without incurring this
penalty. Students with ANU accommodations will receive the appropriate extensions (with the
same 10 minutes to upload their exams).

Students will be required to upload answers to homework and exams as pdf files. This will allow
students to submit handwritten answers. If you have access to a scanner, you can use it to create
a pdf of your answers once you have completed the homework or exam. If not, a number of apps
exist for smart phones that will allow you to take a picture of each page of your answer and then
convert the pictures into a single pdf. Junyan will post an announcement with more information
about the different apps that are available. (On exams, where there is some time pressure, I
recommend that everyone plan to submit pdfs of hand written answers.) You will have had the
chance to upload several problem sets before you take the midterm, so everyone should have
experience with the uploading process before taking an exam under some time pressure.

Recordings of Synchronous Remote Class Sessions:

This class will be recorded by the instructor for educational purposes. These recordings will be
shared only with students enrolled in the course and will be deleted at the end of Fall Quarter.

Unauthorized student recording of classroom or other academic activities (including advising
sessions and office hours) is prohibited. Unauthorized recording is unethical and may also be a
violation of University policy and state law. Students requesting the use of assistive technology
or an accommodation should contact AccessibleNU.

Unauthorized use of classroom recordings –including distributing or posting them – is also
prohibited. Under the University’s Copyright Policy, faculty own the copyright to instructional
materials – including those resources created specifically for the purposes of instruction, such as
syllabi, lectures and lecture notes, and presentations. Students cannot copy, reproduce, display or
distribute these materials. Students who engage in unauthorized recording, unauthorized use of a
recording or unauthorized distribution of instructional materials will be referred to the
appropriate University office for follow-up.
Course Outline

Class discussion will cover the following topics. The chapters and cases referred to are those in Cabral and Kwoka & White (KW).

1. Introduction
   Cabral, Chapter 1

2. Cost Functions and Perfect Competition
   Cabral, Chapters 3 and 4

3. Monopoly
   Cabral, Chapter 5

4. Market Definition and Durable Goods

5. Price Discrimination
   Cabral, Chapter 6
   “For the First Time, Cubs are Offering a Cheap-Seat Lottery at Wrigley. It’s a Smokescreen,” Chicago Tribune, April 8, 2018.

6. Oligopoly Competition with Homogeneous Products
   Cabral, Chapter 8

7. Oligopoly Competition with Differentiated Products
   Cabral, Chapter 14, Section

8. Collusion and Pricing in Repeated Games
   Cabral, Chapter 9


9. Product Differentiation
   Cabral, Chapter 14, Section

10. Entry and Market Structure
   Cabral, Chapters 10 and 12


11. Horizontal Mergers
   Cabral, Chapter 11


KW Case 9: “Prices, Market Definition and the Effects of Merger: Staples, Office Depot and Office Max”


12. Vertical Price Restraints and Vertical Mergers
   Cabral, Chapter 13


KW Case 20: “Cartel Ringmaster or Competition Creator? The Ebooks Case against Apple (2013)”


13. Research and Development and Innovation

Cabral, Chapter 15

KW Case 15: “Pharmaceutical Patents and Pay-for-Delay: Actavis (2013)”


