

Instructor: Jon Williams  
Office: Gardner Hall, 300A  
Email: [jonwms@unc.edu](mailto:jonwms@unc.edu)

UNC – Chapel Hill  
Department of Economics

Spring Semester 2023

## ECON 545: Advanced Topics in Industrial Organization

### **Schedule Information:**

Class: T/TR 2:00-3:15 pm  
Class Location: Gardner 0007

Office Hours: T/TR 11:00-12:30 pm  
Office Hours Location: Gardner 300A

### **Course Description:**

Econ 545 (Advanced Topics in Industrial Organization) applies the theoretical foundations developed in Econ 445 (Industrial Organization), and related courses like Econ 510 (Topics in Microeconomic Theory) and Econ 511 (Game Theory in Economics). The applications take the form of case studies, development of computational models, empirical exercises using real-world data and frontier statistical methods in econometrics and data science. Given the range of programming experience among students, we will use Matlab during lectures to facilitate a focus on economics and minimize time spent learning a language (analogous Python code will be made available). The topics to be covered include: interaction between firms and consumers in markets that fall outside the benchmark competitive model, how firms acquire and exploit market power, game theory and information economics to analyze how firms interact strategically, price discrimination, collusion/cartels, anti-trust policy, merger analysis, and other regulatory issues.

### **Method of Evaluation:**

Assignments (30% = 2 x 15%)  
Class Presentations (40% = 2 x 20%)  
Final Presentation/Defense of Paper (30%)

At the instructor's discretion, grades will be curved to have a distribution similar to previous sections of 500-level courses in the economics department at UNC.

### **Examination Policies and Dates (subject to change):**

Final Presentation/Defense of Paper: During Scheduled Final on May 2<sup>nd</sup> 12:00-3:00pm  
Final Paper Deadline: May 2<sup>nd</sup> 12:00

### **Important Dates:**

Classes begin (end) 1/9 (4/28)  
Last day for late registration 1/13  
Holidays 1/16, 4/28  
Well-being days 2/13, 2/14, 4/6  
Spring break 3/13-3/17

**Assessments:**

**Assignments (30%):** These assignments are the core of this course (30% of final grade), given the strong focus on applications. I will post a total of two or three assignments to Sakai (or other agreed upon electronic means) two weeks before they are due. You are welcome to work with other students on the assignments (maximum of 4), but everyone must turn in his or her own version of the homework. Your assignment must clearly reflect your own work and should not contain verbatim passages from your classmates' assignments. Late work will receive no credit. We will discuss answers to the assignments in class after they are turned in.

**Research Project (70%):** In addition to assignments, you will work in a group (maximum of 5) to identify, analyze, and present your findings on an approved topic. Topics can be very flexible and in the past have included evaluation of policy or regulatory actions, merger simulations, behavioral model calibrations, or Monte-Carlo exercises related to econometric and data-science methods commonly applied in IO. This topic will be identified by the end of the second week of class (must be approved by instructor). The final results of your analysis will be presented and defended during the scheduled final time (or slightly before based on enrollment), and a copy of your paper (at least 15 pages) must be turned in by the date of the final. The content of the presentation must consist of careful and thoughtful analysis of the economic issues surrounding your chosen topic. The final presentation should last approximately 25 minutes, followed by 5 minutes of questions by the instructor (oral defense). The first part of the presentation should motivate the importance of the topic, and identify and analyze the economic issues of interest. The second part of the presentation should evaluate/critique existing policy (or absence of), provide recommendations/guidelines for optimal policy, or offer support for why policy guidance can't be given. To accomplish this end, at least twice during the semester you'll be asked to briefly present progress to the class, and you are also expected to seek out mentoring/guidance from me during and/or outside office hours multiple times throughout the semester. The three presentations during class will count for 20% each (40% total), the final presentation, oral defense, and paper will count for 30%.

**Readings:**

There will be no mandatory text for the course. The majority of our readings will come from published or working versions of academic papers, case studies, regulatory/government publications, and other sources. For reference to the theoretical concepts we apply in the course, I recommend *Industrial Organization: Contemporary Theory and Empirical Applications* by Pepall, Richards, Norman (4<sup>th</sup> Edition) and *Game Theory for Applied Economists* by Gibbons (1<sup>st</sup> Edition), and *An Introduction to Statistical Learning* by James, Witten, Hastie, and Tibshirani.

**Tentative Course Outline (order/content subject to change at instructor's discretion):*****Merger Analysis:***

- Review of current horizontal and vertical merger guidelines, and relevant oligopoly models of competition
- Related academic papers: Pesendorfer (RJE, 2003), Pesendorfer (RJE, 2005), Jacquemin and Slade (HIO), Nocke and Whinston (JPE, 2010), DOJ (1997), Carlton (WP, 2009), Whinston (HIO, 2007), Houde (AER, 2012), Allen/Clark/Houde (AER, 2014).
- Computational modeling and simulation -- build a computational model to simulate effects of different recent mergers. Compare the model's predictions to actual outcomes, and discuss potential limitations and extensions of the model.

***Price Dispersion and Discrimination:***

- Review of clustering and classification algorithms, and discrete choice models
- Related Academic papers: Shepard (JPE, 1991), McManus (RJE, 2007), Chevalier/Kashyap/Rossi (AER, 2003), Mortimer (QJE, 2007), Borenstein (RJE, 1991), Borenstein and Rose (JPE, 1994), Gerardi and Shapiro (JPE, 2009), Goldberg (JPE, 2009), Leslie (RJE, 2004), Nevo/Wolfram (RJE, 2002), Ayers/Siegelman (AER, 1995), Holmes (AER, 1989), Blackstone (JIE, 1975), Nevo/Turner/Williams (EMA, 2016)
- Empirical application -- measuring effectiveness of discriminatory pricing practices for residential broadband services and international air travel

***Collusion/Cartels and Antitrust:***

- Review of US statutes on anti-competitive behavior, and relevant models of collusion
- Related Academic papers: Shepard (JPE), Athey (ReStud), Bernheim and Whinston (RJE), Froeb (IJIO), Porter (RJE), Ciliberto and Williams (RJE), Froeb (IJIO), Snider and Youle (WP, 2015), Youle (WP, 2015), Houde (AEJ, 2013), Clark and Houde (JIE, 2014), Carlton (WP, 2003), Kaplow and Shapiro (WP, 2007), Segal and Whinston (2007).
- Empirical Application -- test for collusion among airlines using current data to investigate DOJ's recent inquiry into collusive pricing following consolidation in the industry.

***Acquisition and Exploitation of Market Power:***

- Review of relevant oligopoly models
- Related Academic papers: Ordoover and Saloner (HIO), Schmalensee (BELL, 1978), Goolsbee and Syverson (QJE, 2008), Ellison and Ellison (AEJ, 20010), Kreps and Wilson (JET, 1982), Milgrom and Roberts (JET, 1982 and EMA 1982), Bolton and Scharfstein (AER, 1990), Jacobo-Rubio/Turner/Williams (WP, 2015), Snider (2012), Snider and Williams (2015), Lederman (RJE, 2007), Lederman (JEMS, 2008)
- Empirical application -- measure impact of operational/marketing barriers on pricing and entry in the airline industry, and evaluation of regulatory/statutory steps taken to abate market power and barriers to competition.

**Sakai:**

I will use Sakai (or other agreed upon electronic means) to distribute notes, readings, homework assignments, etc. Please verify that you can log on to Sakai and access the information for this class. Attendance is still extremely important as materials will periodically be distributed in the classroom without prior notification.

**Classroom etiquette:**

My goal is to maintain a classroom environment that provides a good learning environment for everyone. To minimize distraction, you must turn off all cell phones, laptops, and other electronic devices during class, unless explicitly instructed otherwise, as there may be times during the course that an open laptop is appropriate and desirable. I expect you to arrive on time and prepared for the day's class.

This course meets the "**Research and Discovery**" objective of the IDEAs in action curriculum.

Student immerse themselves in a research project and experience the reflection and revision involved in producing and disseminating original scholarship or creative works.

**Questions for Students**

1. How do I establish my point of view, take intellectual risks, and begin producing original scholarship or creative works?
2. How do I narrow my topic, critique current scholarship, and gather evidence in systematic and responsible ways?
3. How do I evaluate my findings and communicate my conclusions?

**Learning Outcomes**

1. Frame a topic, develop an original research question or creative goal, and establish a point of view, creative approach, or hypothesis.
2. Obtain a procedural understanding of how conclusions can be reached in a field and gather appropriate evidence.
3. Evaluate the quality of the arguments and/or evidence in support of the emerging product.
4. Communicate findings in a clear and compelling ways.
5. Critique and identify the limits of the conclusions of the project and generate ideas for future work.

**Academic integrity:**

You are encouraged to work together with other students on the homework. However, each student must write up her or his own version of the homework assignment. Exams are taken individually, without any help from other students or unapproved resources. Each student is expected to maintain academic integrity and follow the UNC Honor System.