ECON 350: Monopoly, Competition & Public Policy

Northwestern University ◆ Summer 2019

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Class Meetings and Attendance
We'll meet 1:00–2:50PM on Tuesdays, Wednesdays & Thursdays in the **Kellogg Global Hub, Room 1410**. Refer to the attached schedule for important calendar dates. Although attendance is not mandatory, it is expected, and some material will be presented only during class (even if most of the notes are posted to Canvas). If you do miss class, it is your responsibility to track down handouts, notes or any other information (especially regarding exams) you may have missed. When making your rational attendance choice, remember that secondhand notes may not be clear or complete, lectures will not be repeated in office hours, and that much can be learned from our collective classroom experience.

Office Hours and Communication
I check e-mail regularly, so this is your best way to contact me; if you send email, please include ECON350 in the subject. I will use Canvas to distribute materials and make announcements so please check Canvas and your NU e-mail daily. During the summer, I will often be available for drop-in office hours in KGH 3467 on Tuesdays and Wednesdays before class, though it is a good idea to email me to let me know you would like to come in. If this time doesn't work, we may be able to set up another time by appointment.

Teaching Assistant and Discussion Sections
In the summer there is not typically a teaching assistant or weekly discussion section, so we will try to work through more problems during class. To free up this time, you will need to spend some time outside of class pre-viewing the lecture slides. I will post the complete set of slides from Spring 2019.

Prerequisites and Related Courses
Formally, the prerequisites are ECON 281 (Econometrics), ECON 310-1 (Intermediate Microeconomics) and ECON 310-2 (Intermediate Microeconomics with Game Theory); the tools provided in the latter two courses will be particularly important. We will be studying a number of calculus-based profit-maximization models so you should be comfortable drawing and interpreting graphs, taking simple partial derivatives, finding Nash Equilibria, and using algebra to manipulate equations. We will introduce and incorporate straightforward economic tools only as needed. Finally, you should be aware of the natural overlap between this course and ECON 349 (Industrial Economics), which focuses less on public utilities, intellectual property, and antitrust law and cases, and more on oligopoly, pricing, and business strategy.

Readings and Equipment
The recommended textbooks are

- Viscusi, Harrington, Jr. and Sappington (2018) *Economics of Regulation and Antitrust*, 5th edition, Cambridge: MIT Press, ISBN: 978-0262038065. There is one physical copy on reserve at the Main Library's Circulation Desk.
- Kwoka and White (2018) *The Antitrust Revolution*, 7th edition, Oxford University Press, ISBN: 978-0190668839. There is one copy of the 6th edition on reserve at the Main Library's Circulation Desk.

You should obtain a 6-inch straight edge to draw graphs, as well as black pens or dark pencils for exams (we may use Crowdmark, an online grading system that scans your exam to a PDF file, allowing both of us to view it from afar).

Course Description and General Goals
This course focuses on a particular market failure - monopoly - in the context of public utility regulation, antitrust law, network effects, and intellectual property. We will review ECON 310-1,2-style microeconomic building blocks (e.g., demand, cost, elasticity) and the standard model of monopoly (and its cousin, monopsony) before turning to origins of monopoly power. First, large fixed costs of building and maintaining a physical network may generate natural monopolies in (parts of) markets for electric power, cable television, natural gas, and water. We will explore the challenges regulators face when they attempt to apply market controls such as price caps so an essential service remains affordable. Second, profit-seeking firms may try to reduce competition through entry deterrence, predation, horizontal mergers, vertical integration, or collusion. We will use economic theory and landmark legal cases to study the purpose and development of antitrust law, which is meant to reduce the adverse effects of anti-competitive business practices. Third, we will ponder the proper role of government in today's digital economy, which features a number of winner-take-all markets, in which bandwagon effects result in convergence to a single operating system, recording technology, or social network. Finally, monopoly power is often closely linked to technological change: society might be willing to trade short-term welfare loss for long-term gains by granting temporary monopolies (e.g., patents or copyrights) to provide an incentive to innovate. We will analyze the ideal scope of artificial monopoly rights and the natural tension between intellectual property and antitrust law. Throughout the course, we will consider regulatory issues in a variety of industries.

General goals pursued throughout this course are:
- To familiarize you with jargon used by economists and the media (e.g., Sherman Act, net neutrality, vertical mergers, fair use) to enhance your ability to benefit by understanding business news
- To deepen your understanding of the role of government in our society by evaluating landmark antitrust cases (e.g., Standard Oil, AT&T and Microsoft) and ongoing antitrust investigations (e.g., Facebook, Alphabet, Amazon and Apple)
- To develop your microeconomic modeling skills (e.g., graphing and interpreting cost curves, building simple games to analyze common dilemmas, formally expressing economic optimization problems), economic intuition, and decision-making ability.
- To analyze current and historical events from a strategic perspective (e.g., NU's management of the Lyrica patent and the DOJ's opposition to the AT&T – Time Warner merger) and apply our theoretical insights to the interactions of well-known firms in major industries
- To prepare you for advanced study in economics or related fields, and for the industry research you may conduct as graduate students, job candidates, informed consumers, or potential consultants

Learning Outcomes
During this course, you will use three basic tools of economic analysis (equilibrium, constrained optimization, and comparative statics) to model and analyze a variety of economic problems involving imperfect competition and profit maximization. After completing this course, you will be able to use decision- and/or game-theoretic models to analyze the following types of decisions:
1. Conduct welfare analysis for a monopoly facing a variety of demand and cost conditions
2. Predict the profit-maximizing input choices of a standard monopsony
3. Compare the performance of a natural monopoly under (no, first-best, or second-best) regulation
4. Explain an antitrust authority's concern with a merger, cartel, or case of predation
5. Show how the terms of a licensing contract will affect a patent holder's revenues
6. Explain why a multi-sided platform often grants free access to one side while charging another

Teaching Methodology and Philosophy
You will have many opportunities to engage the material, including reading the textbook, attending and actively participating in lectures, working on practice exercises or problem sets either individually or in a group, writing a group paper, and taking several exams, using office hours when necessary. The **readings** are meant to familiarize you with vocabulary and concepts, inspire questions, and give you a chance to ponder the material before we present similar ideas in different packaging. I recommend reading the relevant material both before and after class to preview and review the material. My **lectures** will typically take the form of a combination of some PowerPoint slides, discussion of interesting recent events and how to model them, and working through short problems. Posted lecture notes are intended to serve as course notes, so

you should expect the PPT slides to be unusually wordy and colorful. Moreover, I will not have time to cover all of the slides, so you will need to peruse some of them outside of class. **Ungraded sets of practice problems** give you a chance to get your hands dirty and to prepare for both class and exams. Advanced economics is like applied math, and solving problems is an important part of mastering the material. We will usually cover the relevant material before trying problems, but occasionally you may need to read ahead in the textbook and teach yourself some concepts. I encourage you to try the problems on your own, and then meet with classmates to discuss and compare answers. I.e., I want you to collaborate, but warn you that too much free riding may result in insufficient exam preparation. For a simple test of your knowledge, try explaining a problem and its solution to a friend or try tinkering with assumptions to construct some problems (with answers) on your own. The **unit exams** will test your understanding of applied microeconomic theory, including your ability to apply theory to economic problems. You should therefore focus on the systematic reasoning we are trying to develop, rather than on mere memorization. Economics does NOT lend itself to pulling all-nighters before exams. Later analysis relies on principles covered earlier, so the exams are cumulative implicitly, if not explicitly. I will post sample exam questions for you to review. Class is much more enjoyable when there is active involvement by many students, so be prepared to speak up now and then, and to **participate** in a Goldilocks sort of way – neither too little nor too much. It is both my desire and job to teach you, so please let me know if anything is frustrating your efforts so that we can try to remedy the situation. Part of your job as a responsible adult is to monitor your progress and seek help from your peers or me when necessary. Often it doesn't take much to get back on track if you take the first step of asking for assistance in **office hours**. If you feel you are in trouble, seek help early. Of course, you are welcome to use office hours even if you are not having difficulty. Given the course's design, you should adopt an active approach to learning: once you think you understand the material from the readings and lectures, work problems on old exams for practice, try the exercises at the end of the chapters, and ask yourself if you see how all of the material fits together.

Evaluation
Your course grade will be assigned based on your performance on three evenly-weighted exams:

COMPONENTS	**IMPORTANT DATES**	**POINTS**
Participation	*Attendance and contributions throughout the course*	*borderliners*
Unit 1 Examination	*Wednesday, July 10*	*100*
Unit 2 Examination	*Wednesday, July 24 (cumulative; mostly Weeks 3-4)*	*100*
Unit 3 Examination	*Thursday, August 1 (cumulative; mostly Weeks 5-6)*	*100*
	TOTAL	*300*

Exams: The course is divided into three units, each followed by a cumulative exam that focuses mostly on the current unit. Exams will feature a diversified portfolio of questions and topics designed to test your ability to employ economic theory mathematically, graphically, intuitively and in real-world scenarios. There will be plenty of old exam questions for you to practice. Due to the substantial difficulties of administering more than two examinations, I am very reluctant to offer make-up exams. However, I understand that there will be circumstances in which you cannot take an exam for an approved reason (e.g., illness or emergency). In that case, you should notify me prior to the start of the examination. We will then make arrangements to have you take a substitute exam (which likely will be in the form of either an "oral" exam in which I ask questions and you explain your answers at a white-board). A zero exam score will be assigned if you miss either exam for an unexcused reason. You must take three exams to pass the course. ***Grades:*** Course grades will be based on your performance on the three exams. For each of the three graded components you will have an approximate letter grade and a point total, and both will be used to assign a fair course grade. I grade to the curve rather than using an absolute percentage standard; in practice, this means that an exam score of 75 could be worth a C- or A- depending on whether the median score was relatively high or low. In my experience, the average grade in ECON 350 has been a B (or about a 3.1 GPA), which is consistent with departmental practice across all 300-level ECON electives. I take into account performance trends and difficulty of the exams. ***Re-grading:*** Occasionally, a student finds or suspects a grading error and requests that his/her exam be re-graded. The re-grading policy, which involves submitting a written request and your unaltered exam in a timely fashion, will be posted after the first exam.

Drops or Withdrawals
The summer drop policy is a bit different from other quarters. Although there are a wide variety of course schedules, the general policy is that students can drop a class up until 60% of the class has transpired. For our six-week course (June 24th – August 4th), the 60% point would be around July 18. After June 29th self-service (i.e., dropping using CAESAR) is over, so students must use the Add/Drop form which can be picked up at the Registrar or Dean's Office. No one has to sign this form for approval. After 60% time has passed, a student will need to formally withdraw from the class and will receive a "W" on his/her transcript. *It would be best to check with The School of Professional Studies for official deadlines during the summer.*

Academic Accommodation
Any student requesting accommodations related to a disability or other condition is required to register with AccessibleNU < *accessiblenu@northwestern.edu OR 847-467-5530* > and provide professors with an accommodation notification from AccessibleNU, preferably within the first two weeks of class. I recommend that you use accommodations for which you qualify. I will reserve a quiet room close to our regular classroom for each exam, but you may also take exams at the ANU Office if you register in advance. For all types of accommodation, all information will remain confidential. Please make your plans early and keep me informed; the 24 hours before an exam are often very busy and I may not be able to handle last-minute accommodation requests.

Professionalism and Consumer Electronics Policy
I expect a reasonable degree of *professionalism*, broadly defined to include those things that generally contribute to an environment that is conducive to learning by being courteous to us and to your classmates. Do things that generate positive externalities, such as attending, smiling, participating and helping your peers. Avoid generating negative externalities in the classroom via tardiness, naps, noisy chatter, offensive language, etc. (Potential employers tend to frown upon these inappropriate behaviors, so now is a fine time to smooth out some of the rough spots.) Please plan your restroom stops around class, and if you must enter or leave during class, do so unobtrusively. During exams, please refrain from potentially distracting behaviors (e.g., pen-clicking, coughing). Serious disruptions will not be tolerated. The use of electronic gizmos in the classroom can be a nuisance to others, so please do not be disruptive. Students are welcome to use a laptop computer in class to take notes (or follow along with lecture note PDFs) if they so wish, but you should know pedagogical research shows that you learn better by taking notes by hand! Students should not make or receive phone calls, surf the web, play games, send or receive text messages, or check or send e-mails during class. Mobile devices should have the ringer turned off and be placed in pockets or backpacks. If this becomes a problem, we may have to implement a "No screens" policy. ☺ No electronic devices (calculators, smartphones, headphones, etc.) may be used during exams.

Academic Integrity
Suspicion of academic integrity violations will be referred immediately to the Academic Dean's office; University rules prohibit subsequent discussion of the situation with the student. Our expectations in regard to issues of academic honesty are articulated at *https://catalogs.northwestern.edu/undergraduate/academic-integrity/*. While you are a Northwestern student, you will be treated as an adult and will be held accountable for your actions; consequently, you are expected to know and abide by the rules of the institution. It is important that you read and understand *Academic Integrity at Northwestern: A Basic Guide*) found at *http://www.northwestern.edu/provost/policies/academic-integrity/index.html.* Whether intentional or not, improper use of materials can be considered a violation of academic honesty. For example, you should not refer to prohibited materials (notes, another student's exam, a calculator, a smartphone) during an exam, alter an exam for re-grading, plagiarize (use another's ideas or words without acknowledging the source), or fabricate excuses or lie in connection with your academic work. If you are unsure as to what is permissible, please consult me, because ignorance is not a valid excuse.

Advertising, Survey, and Paperwork Storage Policies
I am frequently approached by students, researchers, and organizations interested in using scarce class time to administer surveys, recruit applicants or volunteers for experiment, etc. However, there are many alternative means of communicating or collecting information. If you have a message you would like to deliver to the class, please package it as a PDF file or a URL and if it is appropriate, I can post it on Canvas

for students to view if they are interested. I plan to use Crowdmark to streamline the grading and recording of your exams. I convert your paper exam to a PDF, insert grading comments, automatically send your score to Canvas, and then allow you to peruse a digital version of your graded exam. In the unlikely case we cannot use Crowdmark, I will return your graded exams to you in class. You are responsible for picking up these items in a timely manner and monitoring your scores. To respect student privacy, I will return exams only to their owner. Unclaimed exams are shredded shortly after the end of the quarter.

Reading Assignments

The following schedule is provided as a guide and may be subject to slight changes as our pace naturally varies. Each lecture will make apparent our progress in the textbook. Please mark on your calendars the important exam and due dates, which will only change under extreme circumstances and with sufficient warning. Do your best to keep up with the reading assignments, which will complement the lectures, and as you read, jot down your questions. If you find yourself getting bogged down in math, focus on the intuition and main ideas, then address the detailed economic methods later. Remember that economics tends to be cumulative in nature, so regularly ponder how each chapter adds to previous chapters. ***For the most up-to-date information as we move through the course, check Canvas.***

Planned ECON 350 Topics, Recommended Readings, and Important Dates

Mtg #	Date	Lecture Topics and Important Dates *Chapters are from Viscusi, Harrington & Sappington's ERA 5/e (2018)* *Lecture-specific readings will be posted to Canvas*
UNIT 1: Monopoly, Monopsony, Natural Monopoly & Regulation		
1	T, June 25	Introduction & Course Logistics. Review of ECON 310 Tools (MR, PED, LRAC). Standard Monopoly Models (Midpoint Pricing Rule, IEPR) *[Chp. 3]*
2	W, June 26	Monopsony (A Single Input Buyer) Natural Monopoly (Economies of Scale & Scope; Subadditivity) *[Chp. 10]*
3	Th, June 27	Regulation (1st & 2nd Best Pricing; Rate Case) & Alternatives (Demsetz Bidding, Contestability, Intermodal Rivals, Public Enterprise, P-Discriminat[n]) *[Chps. 11-13]*
4	T, July 2	Regulation in Selected Industries (electricity, water, natural gas, cable). *[This week covers Chps.14-17]*
5	W, July 3	History of Regulation: Commerce, Contracts & Due Process Clauses (De)Regulation Tales: Surface Freight (RR, Trucking, ICC), Airlines (CAB), Taxicab Medallions & Uber (also Airbnb)
	Th, July 4	*No Class – Fourth of July (Independence Day)*
UNIT 2: Antitrust, Collusion, Mergers & Landmark Cases		
6	T, July 9	Antitrust Law: Enforcing the Sherman, Clayton, FTC & later Acts *[Chps. 3 & 8]* Unit 1 Leftovers & Review
7	W, July 10	**Unit 1 Examination – Wednesday, July 10**
8	Th, July 11	Review of Game Theory, Nash Equilibrium, Cournot Duopoly Collusion (price-fixing & bid-rigging; theory; landmark and recent cases) *[Chp. 4]* *The drop deadline occurs sometime next week (usually at "60% of the course")*
9	T, July 16	Horizontal Mergers (types, theory: Williamson model) *[Chp. 6]* Merger Policy: How shd we evaluate M&A proposals? Landmark & Recent Cases
10	W, July 17	Vertical Integration (Coase's "make or buy" decision, transactions costs, hold-up, free-riding) & Vertical Restrictions (exclusive dealing, tying) *[Chp.7]*
11	Th, July 18	The Standard Oil and AT&T Cases. Unit 2 Leftovers & Review. *[Chp. 14]*
UNIT 3: Exclusionary Practices, Intellectual Property, Network Effects & New Technologies		
12	T, July 23	Review of Game Trees, Subgame Perfect Nash Equilibrium, Stackelberg Duopoly Exclusionary Practices (Entry Deterrence, Predatory Pricing, cases) *[Chp. 5]*
13	W, July 24	**Unit 2 Examination – Wednesday, July 24 @ *DIFFERENT CLASSROOM TBA***
14	Th, July 25	Managing Intellectual Property Rights (patents, ©, TM & trade secrets) *[Chp. 22]* IP Licensing (fees, royalties, exclusivity, pools) & Issues (thickets, terms, trolls)
15	T, July 30	Network Effects, Compatibility, Standards Wars, Adopting Innovations *[Chp. 9]* Multi-Sided Platforms; modern antitrust cases (from Microsoft to Alphabet)
16	W, July 31	Regulation of New Technologies (drones, CRISPR); Unit 3 Leftovers & Review
17	Th, Aug.1	**Unit 3 Examination – Thursday, August 1**

A syllabus is a contract between the instructor and students that provides information about the course and provides a commitment device to prevent arbitrary behavior. I will assume that you are familiar with, and agree to, all policies in this contract. If you object to, or do not understand, any part of this contract, please contact me immediately.