

# Economics 249: BUSINESS STRATEGY

Northwestern University ♦ Winter 2019

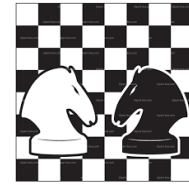
Professor James A. Hornsten

[j-hornsten@northwestern.edu](mailto:j-hornsten@northwestern.edu)

Phone: (847) 491-8220

Office: Kellogg Global Hub 3467

Updated January 8, 2019 (check Canvas for latest version)



## Class Meetings and Attendance

We will meet 9:30 – 10:50AM on *Tuesdays and Thursdays* in 2122 Sheridan Room 250. Refer to the attached schedule for important dates to mark on your calendar. Attendance is not mandatory in this course, but 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 second-hand 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

Your best way to contact me is by email, which I check regularly and try hard to answer within 24 hours. When sending email, please include ECON249 in the subject. I will use Canvas to distribute materials and make announcements so please check Canvas and your NU e-mail daily. You are welcome to come in to talk to me in my office (Kellogg Global Hub, Room 3467) on Tuesdays, 1-3PM, or Wednesdays, 9:30-10:30AM and 12:30-1:30PM. To get to my office, use the elevators next to the main entrance of the new Kellogg Global Hub, go to the 3<sup>rd</sup> floor, take a hard right through the glass doors, and go to the 11<sup>th</sup> door on the left. If these times are infeasible for you, please ask or email me for an appointment; my other winter courses meet MWF 11-11:50AM and W 6-9PM. I am the ECON Department's First-Year Adviser, so you may observe advice-seeking students in office hours, particularly around registration time. Unless you have a personal matter to discuss (e.g., your standing in the class), I usually invite all waiting students into my office so expect to find a group of students collectively discussing economics and solving problems. Office hours also provide a nice time to chat about NU, careers, hobbies, research, and life. ☺

## Recommended Readings and Equipment

In lieu of a single required text, we will use a variety of readings (e.g., textbook chapters, economic journal articles, recent articles from the business press, and old teaching materials) that will be posted on Canvas in PDF format. For timely examples of economics in the news, I will post to Canvas PDFs of (or links to) recent articles from *The Economist*, *The Wall Street Journal*, *The New York Times*, *The Financial Times*, *The Atlantic*, and other newspapers or magazines. We will also use selected chapters from the following:

- M. Baye and J. Prince (2015) Managerial Economics and Business Strategy 8/e, McGraw-Hill Irwin, ISBN 9780073523224. [*An undergraduate textbook on business strategy*]
- A. Dixit, S. Skeath, and D. Reiley (2015) Games of Strategy, 4/e, New York: W.W. Norton, ISBN 9780393919684. [*An accessible undergraduate textbook on game theory*]
- A. Dixit and B. Nalebuff (2008) The Art of Strategy: A Game Theorist's Guide to Success in Business and Life, New York: W.W. Norton, ISBN 9870393062434. [*A non-technical, intuitive intro to games*]
- L. Freedman (2013) Strategy: A History, Oxford University Press, ISBN 9780199325153. [*An historical account of the development of game theory to analyze business strategy*]

I strongly encourage you to invest in a straight edge (6 inches is sufficient). Some students find it helpful to bring multicolored pens, since we will be drawing many graphs with numerous curves. We will not be using calculators or any other electronic gadgets during exams.

## Teaching Assistant and Discussion Sections

Matt Leisten < [MatthewLeisten2014@u.northwestern.edu](mailto:MatthewLeisten2014@u.northwestern.edu) > will be our graduate teaching assistant this quarter. However, because a discussion section room and time were not assigned due to our relatively low

enrollment, we will need to schedule a one-hour time for that purpose. We will do that on the first day and adjust the class schedule on this syllabus appropriately. FRIDAYS 10-11AM ... GET A ROOM!

### **Prerequisites and Enrollment Restrictions**

Formally, the prerequisites are ECON 202 (Introduction to Microeconomics) and MATH 220 (Single-Variable Derivative Calculus). We will be studying calculus-based models of profit-maximizing firms so you should be comfortable taking simple derivatives, using algebra to manipulate equations, and drawing and interpreting graphs. While this course is targeted to non-majors (especially Business Institutions minors), it is an ECON course that will use ECON analysis and provide ECON perspectives to complement those of other disciplines; however, we will introduce and incorporate economic tools only as needed. Economics majors and minors cannot count ECON 249 towards their major/minor either as an elective or as a related course; such students, as well as MMSS and KCPU students, are strongly encouraged to take ECON 349 (which covers similar topics while employing methods developed in ECON 310-1,2, the core microeconomic theory sequence). Economics majors/minors can count ECON 249 toward the Business Institutions minor and toward the 45 courses required for graduation, but again, this course is intended for non-majors.

### **Course Description and General Goals**

According to the course catalog, ECON 249 covers “Firms’ choices of prices, capacity, location, quality, variety, investment and product innovation when navigating complex economic environments shaped by government policy and inter-firm rivalries.” Between polar extremes of monopoly and perfect competition lies the realm of imperfect competition, often inhabited by a few interdependent firms (or “oligopolists”) with varying degrees of market power. After reviewing prerequisite material on firms and profit maximization, we will use game theory to study oligopolistic firm behavior in a variety of scenarios, beginning with static models; e.g., firms compete for profit by simultaneously choosing price, capacity, or location. We then consider dynamic settings, in which firms pursue profits through R&D investments, mergers, or product launch timing. We also use dynamic settings to explore a collection of tactics managers might use to modify the business environment in ways that enhance their firms’ long-run profits. E.g., a firm may try to drive rivals out of the market, keep potential rivals from entering the market, or cooperate with rivals – strategies that may dampen competitive forces and possibly run afoul of antitrust laws. Along the way, we will analyze a number of commonly observed pricing schemes firms employ to boost profits.

General goals pursued throughout this course are:

- To familiarize you with jargon used by economists and the media (e.g., collusion, entry deterrence, capacity constraints) to enhance your ability to benefit by understanding business news
- To deepen your understanding of the role of government in our society by pondering firm behaviors addressed by antitrust law and headline cases (e.g., Standard Oil, Microsoft, Intel, Apple, Google)
- 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 skills
- To analyze current events from a strategic perspective (e.g., why Amazon is expanding into new products; pricing of streaming subscriptions) and apply our theoretical insights to the interactions of well-known firms in major industries
- To prepare you for advanced study in business-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:

1. Analyze and compare outcomes (in terms of price, total output, and various welfare measures) for a spectrum of market structures including perfect competition, oligopoly, and monopoly.
2. Use game theory to predict the actions of firms competing via prices, productive capacity, location, or other dimensions.
3. Explain a manager's incentives to engage in business strategies such as merging with another firm, investing in cost-reducing technology, joining or leaving a cartel, or deterring entry by a rival firm.

## 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, 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 on the board. 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 **problem sets** give you a chance to get your hands dirty and to prepare for both class and exams. Economics is a form of 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 **group project** will challenge small teams of students to analyze the workings of a real world product market. Using a simple product physically available in Evanston, you will gather real world evidence on prices, selection, advertising, logistics, innovation, regulation, and other important issues, and then prepare a report for a hypothetical client who wonders about the possibilities of profitably entering this market. This comprehensive project will allow us to do some casual empirical testing of some of our theories. More specific instructions, peer evaluation forms, and a sample project will be posted. The **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 old 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; office hours are often a good time to talk about the economics major, your long-run plans, etc. Given how the course is designed, 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 exams and a group project. These four graded components are weighted as follows:

<u>COMPONENTS</u>	<u>IMPORTANT DATES</u>	<u>WEIGHTS</u>
Examination 1	Tuesday, February 5 (covers Weeks 1-4)	35%
Examination 2	Thursday, March 7 (covers Weeks 5-9 primarily)	35%
Group Project	Final Report due Tuesday, March 19, at 2:00PM Peer Evaluation due Tuesday, March 19, at 2:00PM	30%
Participation	Attendance & contributions throughout course	Borderliners
	TOTAL	100%

**Exams:** The course is divided into two units, each followed by an exam. 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 applications. Old exams with full solutions will be posted; I strongly suggest you use them to better understand the types and difficulty levels of problems you will be asked to solve, as well as how efficiently you will be expected to work. Calculators and other electronic devices are prohibited during exams. In the unlikely event that you cannot take an exam for a legitimate, approved and documented reason (e.g., illness or emergency) and contact me (or the Economics Department) prior to the start of the exam, we will schedule a make-up exam (during which I will ask you questions in my office). A zero exam score will be assigned if you miss an exam for an unexcused reason. You must take both exams and make substantive contributions to the group project to pass the course. **Grades:** Course grades will be based on total points, as well as the ballpark/trajectory grades you earn on each exam. I grade to the curve rather than using an absolute percentage standard. In my experience, the average grade in courses like this has been a B (or about a 3.1 GPA). 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 to me in a timely fashion, will be posted after the first exam.

#### **Academic or Athletic Accommodation**

Any student requesting accommodations related to a disability or other condition is required to register with AccessibleNU < [accessiblenu@northwestern.edu](mailto: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 have reserved University Hall room 122 from 11:00AM-12:45PM on the midterm exam dates (room for final exam TBA), but you may also take exams at the ANU Office if you register in advance. Students on Northwestern's varsity athletic teams who expect an academic conflict due to an official NCAA event should work with Eileen O'Rourke in Academic Services < [eileen.orourke@northwestern.edu](mailto:eileen.orourke@northwestern.edu) OR 847.491.8805 > and ask her to contact me on your behalf as soon as possible. For all types of accommodation, all information will remain confidential. Please make your plans early and keep me informed; I may not be able to handle last-minute accommodation requests.

#### **Professionalism and Consumer Electronics Policy**

We 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 who want to use a laptop or tablet to take notes or follow along with lecture note PDFs may do so, but they should sit in the front of the room. Smartphones should have the ringer turned off and be placed in pockets or backpacks. 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. If this becomes a problem, we may have to implement a "No screens" policy. No electronic devices (calculators, smartphones, headphones, watches, etc.) may be used during exams, and if you leave the room during an exam, you must leave your smartphone with a proctor.

### **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 and Survey Policy**

We are 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'd like to deliver to the class, please package it as a PDF file or a URL and if it is appropriate, we can post it on Canvas for students to view if they are interested.

### **Paper Storage Policy**

We expect to use Crowdmark to digitize homework and exams, grade them, record scores, and return work in the form of an emailed PDF. If all goes well, we will not need to return physical copies, but just in case we encounter technical difficulties, you are responsible for monitoring your scores and picking up graded physical items in a timely manner. To respect student privacy, we will physically or virtually return graded work only to its author. Unclaimed physical copies will be shredded early the next 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. Find answers to your questions about lectures, readings or homework in discussion sections and/or office hours. 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. The lecture topics, problem sets and handouts reflect the issues I wish to emphasize, so use these to guide your studying.

*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.*

## Winter 2019 Schedule of Planned 249 Topics & Important Dates

Week #	Dates	Lecture Topics and Important Dates <i>Lecture-specific readings will be posted to Canvas (Ungraded Problem Sets)</i>
<b>UNIT 1: Profit-Maximizing Firms and Market Structures</b>		
1	T, Jan 8 Th, Jan 10 F, Jan 11	Course Logistics; Profit-Maximizing Firms; Building Blocks: Demand, Marginal Revenue, Elasticity; Production, Input Mix, Cost Fcts & Curves Transactions Costs, Firm Boundaries, Vertical Integration, Mgrl Incentives <b>(PSet 1: Demand-Side Building Blocks) (PSet 2: Supply-Side Bldg Blocks)</b> <i>Friday is Add Deadline</i>
2	T, Jan 15 Th, Jan 17 F, Jan 18	The Nature of Industry (Structure-Conduct-Performance) Managing in P.C., Monopolistically Competitive, and Monopolistic Markets <b>(PSet 3: Managing Basic Firms) (PSet 4: Monopoly)</b>
3	T, Jan 22 Th, Jan 24 F, Jan 25	Monopoly Applications: Rent Seeking, Public Utilities, IP Rights, Advertising Game Theory: Nash Equilibrium, Prisoners' Dilemma, Famous 2x2 Games Static Oligopoly Models: Bertrand (prices) and Cournot (capacities) <b>(PSet 5: Games) (PSet 6: Oligopoly)</b> <i>Friday is P/N Deadline</i>
4	T, Jan 29 Th, Jan 31 F, Feb 1	Product Differentiation: Hotelling (locations) and Salop (locations) Leftovers & Review of Unit 1 <b>(PSet 7: Location)</b>
<b>UNIT 2: Dynamic Games and Business Strategy</b>		
5	T, Feb 5 Th, Feb 7 F, Feb 8	<b>UNIT 1 EXAMINATION – Tuesday, February 5 (Covers Weeks 1-4)</b> Dynamic Games: Stackelberg, First Mover (Dis)Advantages, Credible Threats <b>(PSet 8: Dynamic Games)</b>
6	T, Feb 12 Th, Feb 14 F, Feb 15	Oligopoly App <sup>ns</sup> : Entry, Exit, Technological Change, Govt Interventions Entry Deterrence: Product Proliferation, Raising Rivals' Costs, LBD <b>(PSet 9: Oligopoly Applications) (PSet 10: Business Strategy)</b> <i>Friday is the Drop Deadline</i>
7	T, Feb 19 Th, Feb 21 F, Feb 22	Advanced Business Strategy: Predatory Pricing, Products Launches Horizontal Mergers: Synergies, Williamson (tradeoffs), DOJ/FTC policy <b>(PSet 11: Business Strategy in the News) (PSet 12: Mergers)</b>
8	T, Feb 26 Th, Feb 28 F, Mar 1	Collusion: Repeated Prisoner's Dilemma, Cartel Stability, Corp. Leniency Network Effects: Critical Mass, Std Wars, Compatibility, 2-Sided Platforms <b>(PSet 13: NPV and Collusion) (PSet 14: Networks)</b>
9	T, Mar 5 Th, Mar 7 F, Mar 8	Leftovers & Review of Unit 2 <b>UNIT 2 EXAMINATION – Thursday, March 7 (Focuses on Weeks 5-9)</b> <i>The Undergraduate Withdrawal Petition Deadline is 5pm Friday</i>
10, Reading	T, Mar 12	<b>[Optional] Submit project rough draft by 11:59PM Tuesday for feedback</b> <i>WCAS Reading Period Begins Tuesday, March 12</i> <i>This is a good time to ask any remaining questions about your project!</i>
Finals Week	T, Mar 19	<b>GROUP PROJECT – DUE Tuesday, March 19, 2:00PM</b> <b>Project Peer Evaluation Forms – DUE Tuesday, March 19, 2:00PM</b>