JOHNSON GRADUATE SCHOOL OF MANAGEMENT

CORNELL UNIVERSITY

[COURSE NUMBER] Si Zuo

NBA 6955 Industrial Organization, Consulting and Business Strategy

Fall 2022

COURSE SYLLABUS

Instructor: Si Zuo

Lecture Times: M/W **1:15pm-2:30pm**; Aug 22nd-Oct.7th (Note: I change the class starting time to 1:15 pm since many students need to take classes from 2:45 pm.)

Location: **Breazzano Family Center 123**

Office Hours: M 2:40 pm -3:10 pm; W 2:40 pm-3:40 pm, Breazzano Family Center 302; W 7-8 pm on Zoom; Or by appointment.

Email: sz549@cornell.edu

Final project: group presentation on Oct 5th. Group report due Oct 12th at 11:59 pm.

Prerequisites: ECON 1110 (any course equivalent to Introductory Microeconomics) or permission of the instructor. The course is open to MBA and graduate students.

Note: Please ask for permission from the instructor if you have not taken the Econ 1110.

Course Description: Industrial organization (IO) studies consumers' demand, optimal pricing, firm competition, and policy intervention. For example, how does Microsoft's acquisition of Blizzard affect consumers? What is the optimal pricing for smartphone apps? How does the personalized recommendation change consumers' demand on Amazon? IO studies all these questions and provides solutions using game theory, market analysis, case studies, and empirical methods.

This course aims to enable students to apply IO models to study real-world problems. We will learn (i.) the fundamentals of game theory through numerous examples; (ii.) the application of game theory models in various IO topics: pricing and firm competition, product differentiation, merger analysis (antitrust), platform and entry analysis. (iii.) market analysis and case studies for different industries/marketplaces (oil, smartphone, music streaming, social media apps, food delivery platforms, ride-sharing platforms, and EV industry). (iv.) empirical methods used in research and in the consulting industry (regression analysis, structural models, and causal inferences.)

This course is designed for students interested in industrial organization and business strategy. This course is especially helpful for students who are interested in consulting or related industry jobs. Students are expected to have taken Introductory Microeconomics (ECON 1110). There will be some mathematical computations using high-school algebra. Calculus is not required.

Textbook and Readings:

Industrial Organization: Markets and Strategies by Paul Belleflamme and Martin Peitz is the main textbook for the course. Part of the course will follow the textbook, and we will do some of the examples in the reading. You will be required to read selected chapters to enhance your understanding. This book is a widely used IO textbook and full of real-world examples.

The Art of Strategy: A Game Theorist's Guide to Success in Business and Life by Dixit and Nalebuff is the textbook for the game theory part. The book is widely read by business people and is very good at providing intuition about game theory. The pdf is available online.

Communication: Send me an email anytime if you have questions. I usually reply in several hours. If I do not reply in one day, please follow up on the email. Please also include ``NBA 6955" in your email subject, so it is easy for me to locate your email.

If you have long questions about course material, assignments, or quizzes, please post your questions on the discussion board/come to my office hour.

Grading: Your grade for the course will be based on:

- Attendance and participation (20%)
- 3 problem sets (15%)
- 3 take-home quizzes (30%)
- Group project and presentation (35%)

Attendance and Participation: Your participation will consist of 3 parts: class attendance, class participation (asking/answering questions and group discussion), and the canvas discussion.

- Class Attendance: you are expected to attend all classes in person. If you need to attend class by zoom/ can not attend class, please send me an email at least one day in advance.
- Class Participation: you are expected to ask or answer questions at least once through the course. For the group discussion (we will have the discussion almost every class from Sept 5th), you are expected to present your group answer at least once throughout the course.
- Group: We have the group discussion from Sept 7th (the group members are expected to sit together) and the group presentation in the last class. The group should consist of 5 or 6 members (5 is more preferred than 6). One of the members needs to serve as the group leader. You could find the group members before and after classes. I will also open a Discussion Board on Canvas to help you share the group information and form groups. **The groups are expected to send me the member name list by Sept 7th.** If you have difficulty finding group members, please let me know by Sept 7th so I could help.
- Canvas Discussion: I will open the canvas discussion board to students to discuss questions about class content, assignments, and quizzes. Also, students are encouraged to discuss real-world cases/events related to the class topics. You are encouraged to join the discussion and are expected to post/comment at least once on the canvas discussion board throughout the course.

Practice Sets: I will release a practice set with the solution for each chapter (not chapter 7). The practice set consists of 3-5 computation questions. And you are encouraged to check the practice set questions before you do the assignments and quizzes.

Problem Sets: 3 problem sets (one for two chapters. No problem set for chapter 7) will be distributed to practice and enhance your understanding of the materials learned in lectures. A typical problem set consists of two True/False questions (with short reasoning). Discussion is allowed, but you should submit your own answers. You need to submit your assignment on Canvas. Both handwritten and typed answers are acceptable. **The due time is every Wednesday class on Week 3, Week 5, and Week 7.** You will get 2 points off if you submit the assignment late. Your final score from the problem sets will be 3 times the average of the two highest PS scores : for example, if you get 3, 5, 5 for the three problem sets, your final score of the problem set part will be 15.

Quizzes: There will be 3 **open-book take-home quizzes**: one quiz after two chapters (there is no quiz for chapter 7). Each quiz is about 1 hour and consists of two True/False questions (with short reasoning) and one wording question. **You have a 48-hour window (the weekend) to complete the quiz.** You are allowed to check class notes. But you are not allowed to discuss it with other students. Your final score from the quizzes will be 3 times the average of the two highest quiz scores: for example, if you get 8, 10, 10 for the three quizzes, your final score of the quiz part will be 30.

Note: I will probably give a True/False question for the materials covered by guest lectures in the quiz and problem sets.

Group Project (Oct 5th, 1:25 pm-2:40 pm): The project will ask you to analyze a real-world business problem of your choice by applying the IO models learned in this course. The project provides an opportunity for you to practice how to approach a business problem and provide consulting suggestions.

The instructor will provide some real-world business problems for you, but feel free to propose a business problem of your choice. The final deliverable is a **12 min** group presentation (10min presentation + 2min Q&A). The group presentation will be in the last class on Oct 5th. All group

members are expected to participate in the presentation. Grading will be based on the presentation itself (40%), the clarity of the slides (40%), and the ability of the presenters to address questions from the audience (20%). The group needs to submit the polished slides/PPT before **Oct 12th at 11:59 pm.**

Regrading: If you have any re-grading requests, please come to my office hour (in-person/zoom) to discuss the regrading issue. Email requests will not be processed.

Academic Integrity Statement: I expect every student in this course to abide by the Cornell University Code of Academic Integrity. I strongly encourage collaboration, but each student is responsible for making sure that she or he follows the rules laid out in this syllabus, and those stated in the Code of Academic Integrity. Any work you submit must be your own or your fair share of a team project. It is a violation of the Honor Code to seek or use case or problem-specific help from others (online or in person) who have previously studied the same case or problem. Individuals who provide case or problem-specific help to current students are also in violation of the Honor Code. Any student found to have cheated on a problem set will receive a zero on that problem set. Multiple violations may result in the failure of the course.

Access to Learning: Cornell University is committed to ensuring access to learning opportunities for all students. Student Disability Services (SDS) is the Cornell office that collaborates with students who have disabilities to provide and/or arrange reasonable accommodations. If you are registered with SDS and have a faculty notification letter dated for this semester, please contact me early in the semester to review how the accommodations will be applied in the course. If you have, or think you have, a disability in any area such as mental health, attention, learning, chronic health, sensory, or physical, please contact the SDS office to arrange a confidential discussion regarding equitable access and reasonable accommodations. Students with short-term disabilities, such as a broken arm, can often work with SDS and Johnson Student Services to improve access and minimize classroom barriers for themselves. In situations where additional assistance is needed, students should contact the SDS office as noted above. If you are registered with SDS and have questions or concerns about your accommodations, please contact your SDS

Counselor. Student Disability Services is located at Cornell Health Level 5, 110 Ho Plaza, 607-254-4545, sd@cornell.edu.

Intellectual Property: As a graduate school of business education, Johnson places a tremendous value on intellectual property, defined as "any product of the human intellect that the law protects from unauthorized use by others" (Cornell Law School Legal Information Institute). As a future business leader, you should respect and protect intellectual property at Johnson and the University, as well as within the community of business scholars. This is the same behavior that will be expected of you in your future organizations. It is a theft of intellectual property to photocopy, scan, or otherwise unlawfully obtain course packets, course textbooks, solutions to assignments, etc., for this or any other Cornell class. It is also theft to distribute intellectual property without authorization (e.g. uploading assignments, answer keys, and/or exams to external websites, sharing exams or other materials with future students in the class). Stealing intellectual property or distributing intellectual property without authorization are considered violations of the Johnson Honor Code and of our community's ethical standards. Course materials distributed in class or posted on Canvas (including class notes and exams) are intellectual property belonging to the author of the material. Students are not permitted to buy or sell any course materials without the express permission of the instructor of the course. Such unauthorized behavior constitutes academic misconduct.

Caring Community: At Johnson, you are part of a diverse, caring community of students, faculty, and staff that takes its responsibility to look out for one another very seriously. Please remember that your mental health and emotional well-being are just as important as your physical health. If you need help, or if you believe a classmate needs help, please reach out to the course instructor or to any member of the Johnson Student Services staff. You can also find a comprehensive list of consultation and support services available to meet the emotional, physical, social, and spiritual needs of the entire university community at https://caringcommunity.cornell.edu/.

Course Outline and Readings

Chapter 1: Game Theory Basic Concepts (Aug 22nd, Aug 24th)

- Representation of Games
- Dominated strategies and iterated elimination of strictly dominated strategies
- Nash equilibrium
- Static game: prisoner dilemma
- Sequential game: entry deterrence game

Reading:

- Representation of Games Lecture Notes
- Art of Strategy, Chapter 3 Prisoners' Dilemmas and How to Resolve Them, Page 74-82

Chapter 2: Pricing and Firm Competition (Aug 29th, Aug 31st (first 50mins))

- Monopoly
- Perfect Competition
- Bertrand Competition
- Cournot Competition
- Discussion: market power of giant tech companies

Reading: Industrial Organization, Chapter 2 and Chapter 3.

Problem Set 1

First Quiz

Chapter 3: Product Differentiation (Aug 31th (last 15mins), Sept 7th, Sept 12th)

- Horizontal product differentiation
- Hoteling model
- Vertical product differentiation (product line pricing) (Guest Lecture by Prof. Michael Waldman (scheduled on Sept 7th, 1:25 pm-2:15 pm, Breazzano Family Center 123). Prof. Waldman will talk about price discrimination and product line design theories.)
- Discussion: Why did Microsoft's Nokia fail again?

Reading: Industrial Organization, Chapter 5.

Chapter 4: Merger Analysis and Antitrust Law (Sept 12th (last 15mins), Sept 14th, **Oct 3rd**)

- Horizontal Integration
- Vertical Integration
- Antitrust law in US and EU (Guest Lecture by Prof. Justin Johnson (scheduled on Oct 3rd, 1:25 pm-2:15 pm, Breazzano Family Center 123). Prof. Johnson will talk about his research and industry experiences in antitrust.)
- Discussion: Benefits and harms behind Google's acquisition of YouTube

Reading: Industrial Organization, Chapters 17 and Appendix B.

Problem Set 2

Second Quiz

Chapter 5: Entry Analysis (Sept 19th)

- Free entry model
- Two-stage entry game
- Entry deterrence in practice.
- Relation to the Porter's Five Forces Framework
- Discussion: Is it a good time to enter the EV industry in China/US?

Reading: Industrial Organization, Chapter 4.2 and Chapter 16

Chapter 6: Platform and Network Effects (Sept 21st, Sept 26th)

- Network effects and applications
- Imperfect information and adverse selection
- Rating and reviews
- (Guest Lecture by Prof. Thomas Jungbauer (scheduled on Sept 21st, 1:25 pm-2:15 pm, Breazzano Family Center 123). Prof. Jungbauer will talk about platforms, data and advertising.)
- Discussion: ride-sharing platforms in China and US.

Reading: Industrial Organization, Chapter 20.

Problem Set 3

Third Quiz

Chapter 7: Empirical Methods for IO Analysis (Sept 28th)

- Regression methods
- Causal inference: Lab experiment and field experiment
- (Guest Lecture by Prof. Omid Rafieian (scheduled on Sept. 28th, 1:25 pm-2:15 pm, Zoom. Prof. Rafieian will talk about machine learning, AI, and personalization.)

Reading material will be provided by the instructor.

Group Project and Presentation (Oct 5th)

6 Cases:

- Product differentiation: Convenient store war in Japan; Airbnb's Success in France
- Acquisition/merger: Facebook's acquisition of Instagram
- Entry: Is it a good time to enter the bubble tea industry in China? Is it a good time to enter the wind energy industry in the US?
- Platform: The failure of Ofo and the bicycle-sharing industry in China

Photo from 2022 Fall Class: