Economics 485A: Game Theory with Applications to Economics
University of Washington, Summer 2022

Instructor: Victoria Ziqi Hang
Lectures: T/Th 8:30-10:40 am
Office Hours: T 4:00 – 5:00 pm on Zoom (link on Canvas), T/Th after class
Email: ziqih@uw.edu

Course Description

We will introduce several models and tools to analyze rational and non-cooperative decision-making in static or dynamic game environments under either complete or incomplete information, review equilibrium concepts and their properties, and discuss some applications of non-cooperative game theory in economic analysis. We will mainly follow Gibbons' textbook.

At the end of the course, students should be able to build games that represent common economic situations, understand standard economic models based on simple game theory, and apply standard solution concepts to static games, dynamic games, repeated games, and games of incomplete information.

Prerequisites

Econ 300. Students are also expected to be comfortable with using elementary partial derivatives and solving systems of equations. Please reconsider this class if you are not.

Course Page

https://canvas.uw.edu/courses/1556465
You are responsible for regularly checking it and staying on top of the announcements, including but not limited to the readings and homework schedules.

Course Organization and Teaching Model:

This is primarily a traditional lecture course, with problem sets and exams. Lectures will mainly be offered in-person (PCAR 395). Both remote lectures on Zoom (if any) and in-person lectures will not be recorded. Problem sets must be submitted via Canvas. Exams will be given in person. Students will not be able to complete the class remotely.

Course Textbook

Required:
- *Game Theory for Applied Economists*, by Robert Gibbons, Princeton University Press.

Recommended:

- *The Art of Strategy*: *A Game Theorist's Guide to Success in Business and Life*, by Avinash Dixit and Barry Nalebuff, Norton, 2010
- *Thinking Strategically*, by Avinash Dixit and Barry Nalebuff, Norton, 1993
- *An Introduction to Game Theory*, Osborne, Oxford 2004
- *A Course in Game Theory*, Osborne and Rubinstein, MIT 1994

Problem Sets and Tests
These will be graded on clarity and accuracy. Please box your final answers and clearly show the steps.

Problem Sets		15%
Quiz 1	Jul. 7	10%
Midterm	Jul. 21	25%
Quiz 2	Aug. 4	10%
Final	Aug. 18	35%

All dates except for the final exam are subject to change. Please make sure to follow my updates closely.

In addition, your class participation will count for 5% of your grade. For the lectures on Zoom (if any), you will be asked to turn on your camera.

Problem Sets:
They do not need to be typed but do need to be easy to read. You can scan your handwritten answers and upload pdf files on Canvas.

Tests:
All quizzes and exams are **cumulative**.

Washington state law requires that UW develop a policy for accommodation of student absences or significant hardship due to reasons of faith or conscience, or for organized religious activities. The UW's policy, including more information about how to request an accommodation, is available at Religious Accommodations Policy (https://registrar.washington.edu/staffandfaculty/religious-accommodations-policy/).

Accommodations must be requested within the first two weeks of this course using the Religious Accommodations Request form (https://registrar.washington.edu/students/religious-accommodations-request/).

Academic integrity

Academic integrity is the cornerstone of the Department's rules for student conduct and evaluation of student learning. Students accused of academic misconduct will be referred directly to the Office of Community Standards and Student Conduct for disciplinary action pursuant to the Student Conduct Code and, if found guilty, will be subject to sanctions. Sanctions range from a disciplinary warning to academic probation, to immediate dismissal for the Department and the University, depending on the seriousness of the misconduct. Dismissal can be, and has been, applied even for first offenses. Moreover, a grade of zero can be assigned by the instructor for the course.

Behavior that constitutes academic misconduct includes but is not limited to cheating on exams or quizzes (copying answers from others, using unauthorized materials, a student not taking their own quiz/exam, etc.), copying homework answers, plagiarism.

You may read more at http://www.washington.edu/cssc/facultystaff/academic-misconduct/.

Readings (from Gibbons)

pp. 1-7 (strict dominance)

pp. 8-12 (Nash equilibrium)

pp. 14-21 (Cournot)

pp. 21-22 (Bertrand)

pp. 29-32 (mixed strategy)

pp.55-57 and 115-122 (extensive form)

pp.57-64 (backward induction and Stackelberg)

pp.71-79 (subgame perfection)

pp. 82-107 (repeated games)

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pp. 143-154 (static games of incomplete information)

pp. 173-183 (dynamic games of incomplete information)

pp. 183-190 (signaling games)

pp. 233-239 (refinement of PBE)