

EC 427/527 Games & Decisions

Summer 2022

Department of Economics, University of Oregon

Instructor: Ethan Holdahl (email: eholdahl@uoregon.edu)

Course Website: Canvas

Time and Location: __, on Zoom!

Office Location and Hours:

Holdahl: __, on Zoom!

Overview

Game theory is a discipline that provides a mathematical methodology for modeling and analyzing interactive decisions among multiple agents. Game theory has a wide range of applications in economics, political science, anthropology, biology, computer science, etc.

In the course, we will use mathematical notations, some algebra, calculus, and basic probability theory. Definitions will be stated formally, and arguments will be developed rigorously. I hope that by taking this course, you can develop an understanding of what constitutes a good mathematical model for addressing an economic question.

Prerequisites

EC311 (Intermediate Microeconomic Theory) and EC 320 (Introduction to Econometrics) are pre-requisites for this course. If you have not passed these prerequisites prior to the start of the term, you must drop the course unless you have explicit written permission from me to take it. If you do not drop the course and do not have permission to take it, you will be given an F for this class. In addition to the required prerequisites, it is strongly recommended that you take calculus (at least MATH 241) before you take EC 427/527, as this course will use differentiation.

Assignments and Grading

Problem sets: There will be weekly homework. Problem sets will be posted by Wednesday night and due in class every Wednesday. I strongly encourage you to work in groups, but you must write the homework in your own language.

Exams: There is one midterm (Th July 28th in class) and a final exam (Th Aug 11th in class).

Grades: Homework counts for 10%, midterm counts for 40%, the final counts for 50%.

Grading Policies: No makeup exams will be given. In the case of a missed midterm due to unanticipated emergency situations, the student will be allowed to put the weight of

the missed exam on the final exam, provided I am notified as soon as possible. A missed final due to an unanticipated emergency will be handled with an “incomplete” for the course, assuming that I agree the situation represents an unanticipated emergency. Be aware that that the Registrar will automatically convert a grade of “incomplete” to an F after one calendar year. Do not take this class if you already know you cannot make one of the scheduled exams.

Grading will be consistent with the typical distribution for economics classes.

Differentiation of Graduate vs. Undergraduate Students: If you are enrolled in the EC 527 version of this class, you will have to complete an extra essay in addition to the regular homework assignments. This essay will require you to master material that is not covered in the lectures and it involves additional readings. Also, the grading criteria that are used for graduate students are stricter than those for undergraduate students in the sense that I expect graduate students to be more rigorous in their arguments.

Concerns regarding 500-level instruction/evaluation by GE instructor of record:

Any concerns that a graduate student may have regarding conflict of interest, privacy concerns, unfairness related to having a GE in an instructional/evaluative role, and so forth should be directed toward Professor Van Kolpin (associate department head).

Professor Kolpin can be contacted at vkolpin@uoregon.edu.

Academic Dishonesty Policy: Academic dishonesty (from plagiarizing work to cheating on exams) will not be tolerated. Please acquaint yourself with the Student Conduct Code, which is published in the Schedule of Classes each term.

Students with Disabilities: If you have a documented disability and anticipate needing accommodations in this course, please make arrangements with me during the first week of the term. Please request that the counselor for students with disabilities (164 Oregon Hall) sends me a letter verifying your disability.

Student Athletes: If you are a student athlete and will need special accommodations, it is your responsibility to notify me in a timely and appropriate manner, and to support your request for special accommodations by providing appropriate documentation.

Recommended Texts

The textbook is optional, though I encourage you to purchase one.

- Martin J. Osborne “An Introduction to Game Theory,” Oxford University Press, 2004. ISBN 0-19-512895-8.

Tentative Course Outline

Unit 1: Preferences, utility, and rationality

Unit 2: Dominance, iterated dominance, and rationalizability

Unit 3: Pure strategy Nash equilibrium

Unit 4: Mixed strategy Nash equilibrium and the minmax theorem

Unit 5: Bayesian games

Unit 6: Extensive form games with perfect information

Unit 7: Extensive form games with imperfect information

Unit 8: Repeated games

Syllabus Statement Regarding Sexual Violence

(Senate Task Force to Address Sexual Violence and Survivor Support)

The UO is committed to providing an environment free of all forms of discrimination and sexual harassment, including sexual assault, domestic and dating violence and gender-based stalking. If you (or someone you know) has experienced or experiences gender-based violence (intimate partner violence, attempted or completed sexual assault, harassment, coercion, stalking, etc.), know that you are not alone. UO has staff members trained to support survivors in navigating campus life, accessing health and counseling services, providing academic and housing accommodations, helping with legal protective orders, and more.

Please be aware that all UO employees are required reporters. This means that if you tell me about a situation, I may have to report the information to my supervisor or the Office of Affirmative Action and Equal Opportunity. Although I have to report the situation,

you will still have options about how your case will be handled, including whether or not you wish to pursue a formal complaint. Our goal is to make sure you are aware of the range of options available to you and have access to the resources you need.

If you wish to speak to someone confidentially, you can call 541-346-SAFE, UO's 24-hour hot-line, to be connected to a confidential counselor to discuss your options. You can also visit the SAFE website at safe.uoregon.edu.

Syllabus Statement Regarding COVID-19

Course content and delivery will adapt to reflect the COVID-19 risk and University policy.