

Syllabus: EC 327, Introduction to Game Theory

University of Oregon

Fall 2019

Class Times: Tues/Thurs, 8:30AM-9:50AM Classroom: 32 Tykeson Hall

Instructor: Zachary Kiefer

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Office Hours: Tues/Thurs, 10:30AM-11:30AM Office: 507 Prince Lucien Campbell Hall

TA: James Holste

TA Email: jholste@uoregon.edu

TA Office Hours: Monday, 4PM-5PM

TA Office: 406 Prince Lucien Campbell Hall

Course Website: Hosted on Canvas

Course Description: In many circumstances, you will be faced with a decision where the outcome of the decision does not only depend on your own choice, but on choices made by other people facing related decisions. In such a situation, it becomes necessary to predict the behavior of the other decision-makers in order to make an informed decision. Game theory is a useful tool for analyzing these situations and forming effective strategies.

In the first part of the class, we will focus on building an understanding of Nash Equilibria (the basic “solution” to a game) and how to find them. In the second part of the class, we will examine a variety of games which use, extend, or adapt Nash Equilibrium to model decision-making.

Optional Textbook: *Games of Strategy* by Dixit, Skeath, and Reiley, published by W. W. Norton (ISBN 9780393124446). Copies will be available at the Duck Store. The textbook will not be required for homework, but may be a useful secondary resource for review and further study. A copy will be placed on course reserve at Knight Library.

iClicker: We will be using iClicker for some in-class activities. **The smartphone and tablet app will not work with Canvas.** You will need to use one of the physical devices: the Duck Store sells them, but a used iClicker works fine, and there are usually also students selling theirs.

Grades: Your grade for this course will be based on two exams, four homework assignments, iClicker, and your participation in practical exercises to be performed during class. The components of your grade will be weighted as follows:

Midterm Exam	25%
Final Exam	25%
Homework	30%
iClicker	10%
In-Class Activities	10%
In-Class Extra Credit	up to 5%

Grading Scale: Letter grades will be assigned as follows:

	93-100% → A	90-92% → A-
87-89% → B+	83-86% → B	80-82% → B-
77-79% → C+	73-76% → C	70-72% → C-
67-69% → D+	63-66% → D	60-62% → D-
	59% or below → F	

Homework: Four homework assignments will be given during the class, and the lowest score will be dropped. Homework will be collected during lecture, or you may submit it to me in my office before the lecture. Solutions will be posted after class on the due dates.

I do not mind if you work on the homework in groups, but if you do you must still submit your work as individuals.

Late Homework Policy: Late homework will be accepted until 5PM, the day after the deadline, at a 20% penalty. If you wish to submit homework later than this, I am happy to provide feedback on it, but you will not receive points for it.

Exams: The midterm will be administered during class on Thursday, October 31, and the final exam will be administered at 8:00AM, in our normal classroom, on Friday, December 13. The final will not technically be comprehensive, but concepts from the first half of the course will remain relevant until the end of the course. I may apply a curve to each exam.

Make-Up Exam Policy: A make-up exam will only be given in the case of documented serious illness or family emergency, and barring truly exceptional circumstances, I will expect you to inform me of the reason for your absence in writing earlier than 5PM on the day of the exam. You should be aware that make-up exams may be more difficult than the original exam, since I will be writing them on short notice.

Participation: There will be frequent opportunities to earn participation points in this course: I will be using iClicker to check your comprehension during most lectures, so that I can quickly see how well you grasp the material. These iClicker questions will be graded entirely on participation.

From time to time, we will also break into groups and actually play games as an in-class activity. The games themselves will mostly be graded on participation, but you will also earn extra credit points: the better you do in the game, the more extra credit you will earn.

Tentative Schedule: Over the ten weeks of the class, I plan to cover the following topics:

- Week 1:** Introduction; Rational Choice Theory; Strategic-Form Games; Nash Equilibrium
- Week 2:** Finding Nash Equilibria by Elimination; Finding Nash Equilibria by Best Response
- Week 3:** Games with More Than Two Players; Continuous Strategies
- Week 4:** Extensive-Form Games; Subgames; Subgame-Perfect Nash Equilibrium
- Week 5:** *Combining Simultaneous and Sequential Moves*; MIDTERM EXAM
- Week 6:** Uncertainty; Mixed Strategies; Mixed-Strategy Nash Equilibrium
- Week 7:** Graphical Methods; Information; Signaling
- Week 8:** Voting; Strategic Moves
- Week 9:** Collective-Action Games; THANKSGIVING BREAK
- Week 10:** Repeated Games; *Advanced Games with Continuous Strategies*
- Finals Week:** FINAL EXAM

Italicized topics are tentative: if we require more time for the previous topics, these will be dropped from the schedule.

Laptops and Other Devices: If you bring a laptop or other device to class as an aid to note-taking, please sit in the back row of the classroom when we are not performing an in-class activity. All devices should remain muted during class: if it makes noise at any point during class, you will be asked to put it away and not bring it back. In particular, if your cellphone rings and is not immediately silenced, I reserve the right to answer it and have a nice chat with whoever called you.

University Policies:

Accessibility: The University of Oregon is working to create inclusive learning environments. Please notify me if there are aspects of the instruction or design of this course that result in disability-related barriers to your participation. You are also encouraged to contact the Accessible Education Center in 155 Oregon Hall at 541-346-1155 or uoac@uoregon.edu.

Academic Integrity: Academic Misconduct: The University Student Conduct Code (available at conduct.uoregon.edu) defines academic misconduct. Students are prohibited from committing or attempting to commit any act that constitutes academic misconduct. By way of example, students should not give or receive (or attempt to give or receive) unauthorized help on assignments or examinations without express permission from the instructor. Students should properly acknowledge and document all sources of information (e.g. quotations, paraphrases, ideas) and use only the sources and resources authorized by the instructor. If there is any question about whether an act constitutes academic misconduct, it is the students' obligation to clarify the question with the instructor before committing or attempting to commit the act. Additional information about a common form of academic misconduct, plagiarism, is available at researchguides.uoregon.edu/citing-plagiarism. -From the Office of the Dean of Students

Prohibited Discrimination and Harassment Reporting: Any student who has experienced sexual assault, relationship violence, sex or gender-based bullying, stalking, and/or sexual

harassment may seek resources and help at safe.uoregon.edu. To get help by phone, a student can also call either the UO's 24-hour hotline at 541-346-7244 [SAFE], or the non-confidential Title IX Coordinator at 541-346-8136. From the SAFE website, students may also connect to Callisto, a confidential, third-party reporting site that is not a part of the university.

Students experiencing any other form of prohibited discrimination or harassment can find information at respect.uoregon.edu or aaeo.uoregon.edu or contact the non-confidential AAEO office at 541-346-3123 or the Dean of Students Office at 541-346-3216 for help. As UO policy has different reporting requirements based on the nature of the reported harassment or discrimination, additional information about reporting requirements for discrimination or harassment unrelated to sexual assault, relationship violence, sex or gender based bullying, stalking, and/or sexual harassment is available at Discrimination & Harassment.

Specific details about confidentiality of information and reporting obligations of employees can be found at titleix.uoregon.edu.

Mandatory Reporting of Child Abuse: UO employees, including faculty, staff, and GEs, are mandatory reporters of child abuse. This statement is to advise you that your disclosure of information about child abuse to a UO employee may trigger the UO employee's duty to report that information to the designated authorities.

Diversity: The University of Oregon is dedicated to the principles of equal opportunity and freedom from unfair discrimination for all members of the university community and an acceptance of true diversity as an affirmation of individual identity within a welcoming community. This course is committed to upholding these principles by encouraging the exploration, engagement, and expression of distinct perspectives and diverse identities.

All of us associated with the course—you included—are expected to value each class member's experiences and contributions and to communicate disagreements respectfully. Please notify me if you feel aspects of the course undermine these principles in any way. You may also notify the Department of Economics at 541-346-8845. For additional assistance and resources, you are also encouraged to contact the following campus services:

- Office of Equity and Inclusion: 1 Johnson Hall | 541-346-3175 | oied.uoregon.edu
- Center on Diversity and Community: 54 Susan Campbell Hall | 541-346-3212 | codac.uoregon.edu
- Bias Response Team: 164 Oregon Hall | 541-346-1134 | brt@uoregon.edu | bias.uoregon.edu