

Assignments and grades

The final grade reflects scores on weekly quizzes (5%), weekly problem sets (30%), a midterm exam (30%), and a final exam (35%). There is also an opportunity for extra credit.

- *Quizzes.* Weekly quizzes ask simple questions about the assigned lecture videos (not the Zoom recordings). The schedule below indicates the deadlines for submitting one's answers.
- *Problem sets.* There are five problem sets. Students are permitted to work on the problem sets in groups, but each student must write up and submit their own solutions, and a student must be prepared to explain their answers to the TA or instructor upon request.

The deadlines for the problem sets are indicated on the schedule below. They should be submitted to the Canvas website before 9:30am, pacific time, on the day indicated. If a problem set is submitted late, a penalty of two points will be applied for each day that has passed since the deadline. (They are worth 20 points each, except for the fifth problem set, which is shorter and worth only 10 points.)

- *Exams.* The midterm exam covers all the material from lectures and the problem sets prior to the date of the midterm exam. The final exam is cumulative and tests all material covered in lectures and the problem sets during the quarter.
- *Extra credit.* You will receive extra credit, enough to boost your final grade by one percentage point, if you volunteer for my list of “ready interlocutors” whom I will sometimes call on during the Zoom meetings to answer questions. The questions will typically be easy, or perhaps moderately challenging. You are permitted to answer with “pass” up to two times during the quarter without jeopardizing the extra credit (and if you are absent from the Zoom meeting then that automatically counts as using one of your two “pass” options). **You must sign up the first week of the quarter if you wish to take advantage of this opportunity for extra credit.**

A student's fraction of the 100 points will be converted to a final letter grade according to the following (provisional) rule:

90–100% = A or A-,
80–89% = B-, B, B+,
70–79% = C-, C, C+,
60–69% = D,
≤ 59% = F.

How to succeed in this course

- *Mindset.* Be patient, adopt a growth mindset, and take personal responsibility for your education. When you are reading the textbook and get confused, do not blame the author. Go back and re-read, slowly, and figure out why you are confused. After re-reading the textbook and notes, consult with a peer, TA, or the instructor.

- *Preparing for the Zoom sessions.* You should read the assigned sections of the textbook and lecture notes and watch the assigned lecture videos (see schedule below) before coming to the Zoom meeting. You should use the Zoom meeting to ask questions about what you didn't understand.
- *How to read/watch.* When you sit down to read the textbook or the lecture notes, or to watch a lecture video, think of this activity as analogous to participating in a strenuous group exercise class. The text/notes/video are like the instructor of the group exercise class, and if all you do is read the text and watch the video, this is like passively watching the instructor as the instructor performs the exercises. This is not going to work. To get “fit,” you need to participate in the exercises, not just watch passively from afar. You need to have a pencil and paper on hand as you read so that you can work through exercises and examples on your own. You should try to come up with your own examples, in addition to those given in the book or notes, to illustrate the abstract concepts being presented. This is the hard work that will actually create and strengthen the neural connections that produce understanding and problem-solving ability.
- *How to study.* Do as many of the exercises in the textbook and lecture notes as you can. Try constructing your own exercises by making modifications to the games presented in the textbook or lecture notes and seeing whether the modifications affect your solutions, and why or why not. Try explaining your solutions and the definitions of game-theoretic concepts to a peer.
- *How to write solutions to game theory problems.* When you write your solutions to the problem sets, you must explain your reasoning, and you need to express yourself clearly and precisely. As you write, you may find it helpful to imagine you are the instructor writing out the solutions for other students, with the goal of helping them understand the material. Use complete sentences; choose your words accurately; proof-read and edit your writing.

Academic honesty

Please familiarize yourself with the university's policies regarding academic integrity. Academic dishonesty will be punished to the maximal extent permitted by university policy. For more information about what constitutes academic dishonesty and the potential repercussions, see the information at the following link:

<https://academicintegrity.ucsd.edu/>

In this course, copying text from another student's problem set and discussing the midterm exam or the final exam during the exam period constitute academic dishonesty. Working on problem sets with other students is permitted—indeed, encouraged—but students must write up their own solutions.

Required materials

We will use Martin Osborne's *An Introduction to Game Theory*. The first three chapters are available on Osborne's website:

<https://www.economics.utoronto.ca/osborne/igt/>

Advanced track

The problem sets and exams have additional “advanced” problems. These are optional and ungraded.

Schedule

[1] **June 28.** No class per UC policy, in recognition of Juneteenth.

[2] **June 29.** Rational agents, preferences, and payoff functions

- Syllabus.
- Lecture notes, §§1–2
- Osborne, *Introduction to Game Theory*, 1.1, 1.2

Assigned video: “Rational agents, payoff functions”

[3] **June 30.** Concept of a strategic game; the Prisoner's Dilemma

- Osborne, 2.1, 2.2
- Lecture notes, §§4–6

Assigned video: “The concept of a strategic game”

[4] **July 1.** Additional games; concept of a Nash equilibrium

- Osborne, 2.3–2.6
- Lecture notes, §§7–9

Assigned video: “Nash equilibria to strategic games,” “Additional simple games”

[5] **July 5.** No class due to July 4th holiday.

[6] **July 6.** Nash equilibria to simple games; stag hunt game

- Osborne, 2.7.1-2.7.4

- Lecture notes, §§10, 11
- **First problem set due**

Assigned video: “Stag hunt”

[7] **July 7.** Public goods provision; voter turnout; application to empirical inquiry

- Osborne, 2.7.5-2.7.9
- Lecture notes, §§12–16
- Fowler, James. 2006. “Altruism and Turnout.” *The Journal of Politics* 68(3): 674–683.

Assigned video: “Public goods provision,” “Voter participation”

[8] **July 8.** Dominant actions; voting games.

- Osborne, 2.9.1-2.9.4
- Lecture notes, §17

Assigned video: “Dominant actions”

[9] **July 12.** Electoral competition

- Osborne, 3.3, up until Exercise 72.1
- Lecture notes, §20

Assigned video: “Hotelling-Downs model of electoral competition”

[10] **July 13.** More models of electoral competition

- Exercise 72.3 (Electoral competition in two districts) in Osborne
- Exercise 73.1 (candidates who care about location of winning position) in Osborne
- Lecture notes, §§21, 22
- **Second problem set due**

Assigned video: “Elections with ideologically motivated candidates”

[11] **July 14.** Expected utility theory

- Osborne, 4.1
- Lecture notes, §23

Assigned video: “Expected utility”

[12] **July 15.** Nash equilibria in mixed strategies; **midterm exam opens on Canvas**

- Osborne, 4.2, 4.3

- Lecture notes, §24

Assigned video: “Mixed strategies,” “Nash equilibria in mixed strategies”

[13] **July 19.** Voter turnout, revisited

- Exercise 118.2 (Voter participation) in Osborne
- Osborne, 4.6
- Lecture notes, §25

Assigned video: “Extensive-form games”

[14] **July 20.** Extensive-form games; strategies in extensive-form games

- Osborne, 5.1, 5.2
- Lecture notes, §§26, 27
- **Third problem set due**

Assigned video: “Strategies in extensive-form games”

[15] **July 21.** Nash equilibrium; backwards induction; subgame perfect equilibrium

- Osborne, 5.3, 5.4
- Lecture notes, §§28–30

Assigned video: “Nash equilibria to extensive-form games” and “Subgame perfect equilibria”

[16] **July 22.** Ultimatum game; holdup game

- Osborne, 5.5, 6.1.1, 6.1.2
- Lecture notes, §§31, 32

Assigned video: “Ultimatum game”

[17] **July 26.** Agenda control

- Osborne, 6.1.3
- Lecture notes, §33
- **Fourth problem set due**

Assigned video: “Agenda control”

[18] **July 27.** Buying votes

- Osborne, 6.3
- Lecture notes, §34

Assigned video: “Buying votes”

[19] **July 28.** Application to empirical inquiry: experimental tests of altruism

- Steffen Andersen et al. 2011. “Stakes Matter in Ultimatum Games.” *American Economic Review* 101: 3427–3439.
- James Andreoni, Justin M. Rao, and Hannah Trachtman. 2017. “Avoiding the Ask: A Field Experiment on Altruism, Empathy, and Charitable Giving.” *Journal of Political Economy* 125(3): 625–653 (read through the end of the second paragraph on p. 629).

[20] **July 29.** Review session.

- **Fifth problem set due.**