

# ECON 478 – Game Theory and Economics

Winter 2023 – Section 1

## Instructor

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Office Hours: Thu 1-3pm, or by appointment

## Grader

TBD

Email:

## Course Information

### Prerequisites

ECON 378 – We will use concepts from probability theory to model risk and uncertainty.

ECON 380 – Lagrangians: They're not going away.

### Content

Econ 478 is a rigorous introduction to game theory and its applications. Game theory is the study of strategic interactions between individuals and organizations. Important applications include imperfect competition, insurance markets, and bargaining. We will study both simultaneous and sequential move games, as well as games with imperfect information and games that are repeatedly played. For all of these types of games, we will discuss the Nash Equilibrium and, when appropriate, refinements of the Nash Equilibrium.

### Learning Outcomes

Econ 478 students will be able to:

1. Demonstrate an understanding of the game theoretic method of analysis.
2. Define a Nash Equilibrium and discuss refinements of the Nash Equilibrium concept.
3. Think abstractly and rigorously about strategic interaction.

### Text

*An Introduction to Game Theory*, by Martin J. Osborne

Readings and homework will be assigned from the textbook. Solutions to selected problems can be found at the author's website: <https://www.economics.utoronto.ca/osborne/igt/>

## Assessment

### Problem Sets

Homework problems will be assigned from the textbook and due once a week **at 11am on Monday**. You are allowed to work in groups, but each student must turn in their own copy of solutions. Homework is turned in by uploading a clear and legible PDF file of your solutions to Learning Suite. (I would suggest using the free Adobe Scan app which uses your cellphone's camera to produce a good quality PDF file. [Link.](#)) **Generally, late work will not be accepted.** Homework will be graded by giving 5 points for each problem you put a good-faith effort in solving, whether right or wrong. Another 1 to 5 points per problem are possible depending on the quality of the answer. At the end of the semester, your two lowest assignments will be dropped from the average. Weight is 25% of the final grade.

### Attendance

Attendance to lectures is expected and will be incentivized by being a part of your grade. I will take attendance each lecture at some randomly determined time (after the add/drop deadline). You get four free absences throughout the semester. 8% of the final grade.

### Tests and Final Exam

There will be two tests during the semester as well as a final exam. See the schedule below and note that **lectures will still be held** during testing periods. All tests and exams will be closed book and closed notes. The tests are not cumulative; each test will only cover new material not previously tested. The final exam will be cumulative, with an emphasis on material covered after the second test. **Early tests and makeup tests are not offered**, except possibly because of official university travel. Conflicts due to official university travel should be disclosed at the beginning of the semester to facilitate appropriate planning. Each test is 18% of the final grade. The final exam is 27% of the final grade.

	Time	Location
Test 1	16-18 February (Late fee begins at 7pm, 17 Feb.)	Testing Center
Test 2	23-25 March (Late fee begins at 7pm, 24 Mar.)	Testing Center
Final Exam	Saturday, 22 April, 11am–2pm	3712 HBLL

### Course Engagement

You can earn up to 4 percentage points by doing each of the following:

- **Questionnaire.** Complete a brief questionnaire during the first 2 weeks of the semester. The questionnaire can be found on Learning Suite under the "Exams" tab. 1% of the final grade.
- **Office Visit.** Meet with me in my office or via Zoom at least once before the first test. You do not have to have a question about the class. I may ask you questions about yourself to get to know you. 1% of the final grade.
- **Mid-course evaluation.** Complete a mid-course evaluation. 1% of the final grade.
- **Course evaluation.** Complete BYU's official course evaluation at the end of the semester. 1% of the final grade.

## Grade Policy

As stated above, the final grade will be calculated with the following weights:

- Problem Sets – 25%
- Attendance – 8%
- Course Engagement – 4%
- Tests and Final – 63%

Final letter grades will be determined by curve, with the average being about a B. The tests and final exam are not separately curved. Students who have put in the effort to attend lecture and complete the assignments do not normally get below a C-.

You are welcome to come to me with any questions regarding grading. **However, grades are not typically changed.** Grades will be posted on BYU Learning Suite throughout the semester.

## Course Flexibility and Syllabus Exceptions

While it is my responsibility to maintain rigorous academic standards, I have designed the course with flexibility in mind to help accommodate most situations in a reasonable way.

- Provided that the classroom is set up for it and barring technological difficulties, I will record each lecture and post it on Learning Suite. Every student in the class will have access to the recorded lectures for study purposes. Regular in-person attendance to lectures is still expected.
- As previously introduced, the two lowest homework scores will be dropped and four absences from lectures will be allowed. This policy is designed to accommodate sickness and other unforeseen emergencies. It is not intended for you to attend a job interview, go to a friend's wedding, etc.

Despite the above accommodations, I recognize that exceptions to the syllabus may sometimes be warranted. I will grant such exceptions on a case-by-case basis. I will try to be understanding, but please be aware that the granting of an exception is not automatic. These are generally the things I consider when granting an exception: (1) the extent to which the situation could have been avoided by your choices; (2) whether accommodations to your situation are already addressed by the policies stated in the syllabus; and (3) fairness to your fellow students.

Please don't hesitate to approach me if you feel you need an exception. I am always willing to discuss your situation with you.

## University Policies

### Honor Code

In keeping with the principles of the BYU Honor Code, students are expected to be honest in all of their academic work. Academic honesty means, most fundamentally, that any work you present as your own must in fact be your own work and not that of another. Violations of this principle may result in a failing grade in the course and additional disciplinary action by the university. Students are also expected to adhere to the Dress and Grooming Standards. Adherence demonstrates respect for yourself and others and ensures an effective learning and working environment. It is the university's expectation, and every

instructor's expectation in class, that each student will abide by all Honor Code standards. Please call the Honor Code Office at 422-2847 if you have questions about those standards.

### **Preventing and Responding to Sexual Misconduct**

Brigham Young University prohibits all forms of sexual harassment—including sexual assault, dating violence, domestic violence, and stalking on the basis of sex—by its personnel and students and in all its education programs or activities. University policy requires all faculty members to promptly report incidents of sexual harassment that come to their attention in any way and encourages reports by students who experience or become aware of sexual harassment. Incidents should be reported to the Title IX Coordinator at [t9coordinator@byu.edu](mailto:t9coordinator@byu.edu) or (801) 422-8692 or 1085 WSC. Reports may also be submitted online at <https://titleix.byu.edu/report> or 1-888-238-1062 (24-hours a day). BYU offers a number of resources and services for those affected by sexual harassment, including the university's confidential Sexual Assault Survivor Advocate. Additional information about sexual harassment, the university's Sexual Harassment Policy, reporting requirements, and resources can be found in the University Catalog, by visiting <http://titleix.byu.edu>, or by contacting the university's Title IX Coordinator.

### **Student Disability**

Brigham Young University is committed to providing a working and learning atmosphere that reasonably accommodates qualified persons with disabilities. A disability is a physical or mental impairment that substantially limits one or more major life activities. Whether an impairment is substantially limiting depends on its nature and severity, its duration or expected duration, and its permanent or expected permanent or long-term impact. Examples include vision or hearing impairments, physical disabilities, chronic illnesses, emotional disorders (e.g., depression, anxiety), learning disorders, and attention disorders (e.g., ADHD). If you have a disability which impairs your ability to complete this course successfully, please contact the University Accessibility Center (UAC), 2170 WSC or 801-422-2767 to request a reasonable accommodation. The UAC can also assess students for learning, attention, and emotional concerns. If you feel you have been unlawfully discriminated against on the basis of disability, please contact the Equal Employment Office at 801-422-5895, D-285 ASB for help.

*The mission of Brigham Young University is to assist individuals in their quest for perfection and eternal life.*