



ECON 450 A01

Game theory in economics

Course Outline – Fall 2024 (CRN 11136)

UVic Land Acknowledgement

We acknowledge and respect the Ləkʷəŋən (Songhees and Esquimalt) Peoples on whose territory the university stands, and the Ləkʷəŋən and W̱SÁNEĆ Peoples whose historical relationships with the land continue to this day.

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Lectures: Mondays and Thursdays 14:30-15:50 Elliott 060

Lab: Fridays 14:30-15:20 BEC 160

Office Hours: Wednesdays 1:00 – 3:00 or by appointment

Course Content

Game Theory is the study of how individuals make decisions when they are aware that the actions of others affect their wellbeing, and that their actions affect the welfare of others. This interaction among decision-makers who behave purposefully (but whose individual interests can often be at odds with those of others) result in “strategic” decisions.

In game theory, “strategic” is defined broadly and without negative connotation. The definition provided by the Oxford dictionary is instructive: “relating to the identification of overall aims and interests and the means of achieving them”.

Any situation involving interaction between economic agents is referred to as a “game”, and the agents involved are the “players”. In this course, we examine several types of games categorized primarily according to two criteria: 1) whether a game is “static” or “dynamic”; and 2) whether or not players have “complete” or “incomplete” information about the circumstances of the game. As the course progresses, we will play simplified representations of more complex games in class and in the lab, to explore fundamental principles and relate our simplified games to identifiable elements of observable economic situations. This will allow us to look at strategic interactions in the context of simple childhood games (e.g. tic-tac-toe, rock-paper-scissors), in games often used by economists to isolate basic incentives (e.g. chicken, prisoner’s dilemma, beauty contest), as well as in a selection of more complex situations such as auction bidding, bargaining, imperfect markets, voluntary funding of public goods, voting, agenda manipulation, sports contests and many others.

Course Outline

1. Introduction
2. Static Games with Complete Information
Readings: Gibbons Ch. 1; B&F Chapters 1, 2, 4, 5 and 10
3. Dynamic Games with Complete Information
Readings: Gibbons Ch. 2; B&F Chapters 6, 7 and 9
- 4*. Static Games with Incomplete Information
Readings: Gibbons Ch. 3; B&F Chapters 13 and 14
- 5*. Dynamic Games with Incomplete Information
Readings: Gibbons Ch. 4; B&F Chapter 15)

* As time allows. These sections have received minimal coverage in recent years, as we focus concentrate on developing more applications of games of complete information.

Learning Outcomes

At the end of the course, successful students will be able to

- categorize games according to whether they are static or dynamic; their information structure; and their mathematical properties.
- apply the appropriate solution method to solve for the game's equilibrium
- design simple mechanisms/policies to affect game equilibria;
- assess and critique the important but difficult task of testing theory against human behavior via laboratory experiments.

Textbook

The following textbooks are not formally required. However, students who wish to do well will greatly benefit from reading the relevant chapters referenced in the previous sections of which are organized in the same manner as this course.

Robert Gibbons, Game Theory for Applied Economists. Princeton University Press, 1992; and,

Bierman and Fernandez, Game Theory with Economic Applications, Second Edition, published by Addison-Wesley. This is a more chatty text than Gibbons.

Laboratory:

Many computer-mediated economic games will be played in the laboratory sessions scheduled during the Semester. There will be a lab almost every week. The data generated during these labs will be used in class, always in a way that maintains students' privacy. Laboratory sessions are essential parts of the course and all students are expected to attend. Attendance will be kept and will count for 5% of the course grade.

Course prerequisites

Prerequisite:

ECON203 - Intermediate Microeconomics I

Pre- or corequisites:

ECON350 - Mathematical Economics I: An Introduction to Static Methods

One of ECON225 - Writing for Economists OR ENGR240 - Technical Writing

Brightspace

The Brightspace page will be populated as the semester proceeds with all lecture notes and hundreds of practice problems drawn from various textbooks and past examinations from this course.

Problems and Exercises

Well in excess of 100 problems, along with their solutions, will be posted on Brightspace. IT IS YOUR RESPONSIBILITY TO ENSURE THAT YOU CAN DO THESE PROBLEMS ON YOUR OWN. Start early! Game theory is challenging because all problems are somewhat different and many require being clever at finding a path to their solution. The very first skill is having the ability to recognize what family of game a problem belongs to, then its mathematical structure. This will suggest the correct solution concept and approach. For this reason, most problems on the Brightspace are not neatly organized to correspond to a specific section of the course. So be prepared to first ask yourself whether we have covered this game!!

It is impossible to pass this course without becoming an effective problem solver. Doing these problems is the best preparation for exams. Start early and keep looking at problems every week.

All announcements will be posted in *Brightspace*. Students are advised to check it frequently.

Grading

Lab Attendance*	5%
Best of two mid-terms	25%
Worst of two mid-terms	20%
Final Exam (cumulative)	50%

* Grades for lab attendance are assigned negatively: one grade point lost for each lab missed. There are typically 8 labs during the semester. Missing 5 or more results in a grade of zero on attendance.

Exam Schedule:

- Mid term 1: October 17 in class
- Mid term 2: November 21 in class
- Final Exam: Scheduled by the Office of the Registrar.

Mandatory/Essential Course Components

All three exams are essential course requirements, meaning, they must be attempted in order to pass the course. These essential course requirements are deferrable.

Lab attendance is not considered essential course component. This means that failure to attend will only result in a grade of zero for the missed lab (up to a maximum of 5 points lost) but will not trigger a N (incomplete) grade. Lab attendance is not deferrable and must therefore be attended on the required date.

Grading Scale

A+	A	A-	B+	B	B-	C+	C	D	F or N
90-100	85-89	80-84	77-79	73-76	70-72	65-69	60-64	50-59	0-49

Students should review the University's more detailed [summary of grading](#).

Missing Assessments

Should students encounter a situation where they miss an exam or cannot submit an assignment at its due date, they may qualify for an academic concession. Students are required to indicate the specific grounds on which they are requesting an academic concession and to provide a justification outlining the impact of the circumstances on their ability to complete course requirements. For in-course extensions, please [fill in the form and follow the instructions on the form](#). In case you miss the final exam, fill in a [request for a deferral](#).

Students are advised not to make work or travel plans until after the examination timetable has been finalized. Students who wish to finalize their travel plans at an earlier date should book flights that depart after the end of the examination period. Students do not qualify for an academic concession if travel plans conflict with the examination.

Course Policies

This course adheres to the [Undergraduate Course Policies](#) of the Department of Economics that deal with the following issues:

- Academic concessions
- Academic integrity (plagiarism and cheating)
- Attendance
- Grading
- Inclusivity and diversity
- Late adds
- Late assignments
- Repeating courses

- Review of an assigned grade
- Sexualized violence prevention and response
- Students with a disability
- Term assignments and debarment from examinations
- Travel plans
- Waitlists

The following policies are explicitly included because of their importance:

Waitlist Policies

- Instructors have no discretion to admit waitlisted students or raise the cap on the course.
- Students on the waitlist should discuss with the instructor how to ensure they are not behind with coursework in the event they are admitted.
- Registered students who do not participate as specified in this outline during the first 7 calendar days from the start of the course may be dropped from the course.
- Registered students who decide not to take the course are responsible for dropping the course and are urged to do so promptly out of courtesy toward waitlisted students.
- Waitlist offers cease after the last date for adding courses irrespective of published waitlists.

Academic Integrity

Academic integrity requires commitment to the values of honesty, trust, fairness, respect, and responsibility. Students are expected to observe the same standards of scholarly integrity as their academic and professional counterparts. A student who is found to have engaged in unethical academic behaviour, including the practices described in the [Policy on Academic Integrity](#) in the University Calendar, is subject to penalty by the University.

Review [What is Plagiarism](#) for the definition of plagiarism. Note: Submitted work may be checked using plagiarism detection software.

Student Code of Conduct

The Humanities, Science, and Social Sciences Faculties have adopted this [Student code of conduct](#). Please, review.

University Policies

- University Calendar - Section "[Information for all students](#)"
- [Creating a respectful, inclusive and productive learning environment](#)
- [Accommodation of Religious Observance](#)
- [Student Conduct](#)
- [Non-academic Student Misconduct](#)
- [Accessibility](#)
- [Diversity / EDI](#)
- [Equity statement](#)
- Discrimination and Harassment [Policy](#)

- [Policy on Human Rights, Equity and Fairness](#) - The University is committed to promoting, providing and protecting a positive, supportive and safe learning and working environment for all its members.

Sexualized Violence Prevention & Response

UVic takes sexualized violence seriously, and has raised the bar for what is considered acceptable behaviour. Students are encouraged to learn more about how the university defines sexualized violence and its overall approach by visiting www.uvic.ca/svp. If you or someone you know has been impacted by sexualized violence and needs information, advice, and/or support please contact the sexualized violence resource office in Equity and Human Rights (EQHR). Contact svpcoordinator@uvic.ca.

Resources for Students

[UVic Learn Anywhere](#) - UVic Learn Anywhere is the primary learning resource for students that offers many learning workshops and resources to help students with academics and learning strategies.

[Centre for Accessible Learning](#) - Students with diverse learning styles and needs are welcome in this course. In particular, if you have a disability/health consideration that may require accommodations, you are free to approach me; however, you must register with the [Centre for Accessible Learning](#) (CAL) for formal arrangements to be made. The CAL staff are available by appointment to assess specific needs, provide referrals and arrange appropriate accommodations. The sooner you let us know your needs the quicker we can assist you in achieving your learning goals in this course.

[Centre for Academic Communication](#) - Offers coaching on [academic integrity](#), including preventing accidental plagiarism. Provides support to students with time management, reading, writing, speaking, understanding academic expectations, and other aspects of academic communication as well as creating academic posters, blogposts, PowerPoint slides, and e-portfolios.

[Health Services](#) - University Health Services (UHS) provides a full service primary health clinic for students, and coordinates healthy student and campus initiatives.

[Support Connect](#) - a 24/7 mental health support service for students

- Toll-free (calls from North America): 1-844-773-1427
- International collect calls: 1-250-999-7621

[Counselling Services](#) - Counselling Services can help you make the most of your university experience. They offer free professional, confidential, inclusive support to currently registered UVic students.

[Indigenous Student Services](#) - Indigenous UVic students have access to many sources of support on campus. Before, during and after your time at UVic, you are encouraged to explore programs and services available to you, such as [Indigenous counselling services](#) and the [Elders in Residence](#), as well as non-academic programs that may be of interest to you.

[International Student Support](#) - The University of Victoria offers a number of resources to support international students as they pursue their studies. UVic's [International Centre for Students](#) is the primary office supporting international students on campus at the university-wide level and provides various supportive program through the [UVic Global Community Initiative](#), including a Mentorship Program and Conversation Partner Program.

For academic advising-related questions, students in the Economics Department are also encouraged to meet with the Economics Undergraduate Advisor (Brooklynn Comish-Trimble, ecadvice@uvic.ca) as well as an academic advisor in the [Academic Advising Centre](#) early in their studies to help map out a plan to declare a major and complete university program requirements. Other resources include the [Centre for Academic Communication](#) and the [Math and Stats Assistance Centre](#).

The International Student Liaison in the Economics Department is Dr. Paul Schure who can help you connect with other international and domestic students in the Department. His email address is schure@uvic.ca. Please, reach out if you are interested.

Course Experience Survey (CES)

I value your feedback on this course. Towards the end of term you will have the opportunity to complete a confidential course experience survey (CES) regarding your learning experience. The survey is vital to providing feedback to me regarding the course and my teaching, as well as to help the department improve the overall program for students in the future.

When it is time for you to complete the survey, you will receive an email inviting you to do so. If you do not receive an email invitation, you can go directly to the [CES log-in](#). You will use your UVic NetLink ID to access the survey, which can be completed on your laptop, tablet or mobile device. I will remind you nearer the time, but please be thinking about this important activity, especially the following three questions, during the course.

What strengths did your **instructor** demonstrate that helped you learn in this course?

Please provide specific suggestions as to how the **instructor** could have helped you learn more effectively.

Please provide specific suggestions as to how this **course** could be improved.

E-mail Correspondence

Emails should be limited to critical matters, such as inability to attend class, an exam, or prolonged illness, and should include the course name and number in the subject line. Questions on course material are most easily answered during office hours or in class. The standard format for writing a letter must be used. This means it should begin with a salutation (e.g. Dear...), include full sentences and it must conclude with a signature that includes your **full name and V#**. Text message lingo should not be used.

Electronic Devices

No electronic device other than a basic non programmable calculator can be used during examinations.

Educational Technology involving storage outside Canada

Our weakly labs make use of VECONLAB, which is a web-based platform for conducting economics experiments. This platform is located at the University of Virginia (ie. outside of Canada). You will have the opportunity to make up a user name of your choice during the first lab. This will ensure that no personal information is stored outside of Canada.