

ECON4476/8076

Topics in game theory

The theory of games helps us to understand situations where many agents interact in a strategic setting, where each agent's wellbeing depends on the behaviour of all agents. Game theory is a collection of analytic techniques widely used in many sciences. It has provided powerful tools that have successfully been applied in almost every field of economics and in many other disciplines, as well as creative and rigorous ways of developing new ideas and applications. The course covers a range of topics in advanced game theory, including current research topics. It is the natural continuation of ECON2141/2142/8053 Strategic Thinking: An Introduction to Game Theory.

Mode of Delivery	On campus
Prerequisites	For ECON8076 – you must have completed ECON2141 or ECON2142 or ECON8053 and be studying ECON8013 . For ECON4476 – you will need to contact the Research School of Economics to request a permission code to enrol in this course.
Incompatible Courses	Only one of ECON4476 / 8076 may be taken
Course Convener and Lecturer	Dr Sander Heinsalu
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Office hours for student consultation	Tuesdays 16:00-17:00 (or another time to which all students agree) or by appointment
Research Interests	Game theory, microeconomic theory
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SEMESTER 2, 2018

<http://programsandcourses.anu.edu.au/course/ECON4476>
<http://programsandcourses.anu.edu.au/course/ECON8076>

COURSE OVERVIEW

Learning Outcomes

For ECON8076: Upon successful completion of the requirements for this course, students will be able to:

- Understand selected models and concepts of game theory
- Understand articles that use intermediate and applied game theory
- Produce simple economic models with basic game theory
- Think strategically in many situations

For ECON4476: Upon successful completion of the requirements for this course, students will:

- Understand basic and intermediate techniques and principles of game theory
- Understand research that applies basic and intermediate game theory
- Model selected economic problems using simple game theory
- Analyse many situations from a strategic viewpoint

Assessment Summary

Assessment Task	Value	Due Date	Date for Return of Assessment
1. Midterm 1	20% (optional and redeemable)	17 Aug	24 Aug 2018
2. Midterm 2	20% (optional and redeemable)	28 Sept	5 Oct 2018
3. Final exam	60% - 100%	TBA	29 Nov 2018

The mid-semester exam is optional and/or redeemable: There will be no special examinations for the mid-semester exam. Instead, the weighting will be moved to the final exam.

Assessments and their timing can be changed if all students agree and the relevant administrators approve.

Research-Led Teaching

The lecturer's research is in applied game theory. Students will see the practical use of game theory in economic research. Some problems and examples will be taken from research articles in economic theory (simplified as appropriate), including Nobel prize-winning works.

Feedback

Staff Feedback

Students will be given feedback in the following forms in this course:

1. Verbal feedback (upon request) during or after lectures and tutorials.
2. Verbal feedback (upon request) in office hours.
3. Verbal feedback to the whole class after each midterm test.

It is hoped that the lectures generate (on-topic) discussion, questions and answers. All online and in-class questions will be discussed in class, thus providing feedback to the whole class.

Student Feedback

ANU is committed to the demonstration of educational excellence and regularly seeks feedback from students. One of the key formal ways students have to provide feedback is through Student Experience of Learning Support (SELS) surveys. The feedback given in these surveys is

anonymous and provides the Colleges, University Education Committee and Academic Board with opportunities to recognise excellent teaching, and opportunities for improvement.

For more information on student surveys at ANU and reports on the feedback provided on ANU courses, go to

<http://unistats.anu.edu.au/surveys/selt/students/> and
<http://unistats.anu.edu.au/surveys/selt/results/learning/>

Policies

ANU has educational policies, procedures and guidelines, which are designed to ensure that staff and students are aware of the University's academic standards, and implement them. You can find the University's education policies and an explanatory glossary at:

<http://policies.anu.edu.au/>

Students are expected to have read the [Academic Misconduct Rules 2014](#) before the commencement of their course.

Other key policies include:

- Student Assessment (Coursework)
- Student Surveys and Evaluations

Required Resources

None.

Additional course costs

None.

Examination material or equipment

Only pens are allowed in the midterm and final examinations. No calculators, dictionaries, notes or course materials.

Recommended Resources

1) textbooks (in this order)

Tadelis, Steven, *Game Theory: An Introduction*, Princeton University Press, 2013. Chapters 8, 10-14, 16-18.

Mailath, George J. and Larry Samuelson, *Repeated Games and Reputations: Long-run Relationships*, Oxford University Press, 2007.

Jehle, Geoffrey A. and Philip J. Reny, *Advanced microeconomic theory*, Prentice Hall, 2000. Chapters 8-9.

Osborne, Martin J. and Ariel Rubinstein, *A Course in Game Theory*, MIT Press, 1994. Chapters 5-12.

Myerson, Roger B., *Game Theory: Analysis of Conflict*, Harvard University Press, 1991. Chapters 2-4, 6-10.

More recent editions of these books are also fine. You may be able to read them free online, e.g. on a library website.

2) research articles

Acemoglu, D., Egorov, G. and Sonin, K., 2013. A political theory of populism. *The Quarterly Journal of Economics*, 128(2), pp.771-805.

Akerlof, G., 1970. The market for lemons. *Quarterly Journal of Economics*, 84(3), pp.488-500.

- Banerjee, A.V., 1992. A simple model of herd behavior. *The Quarterly Journal of Economics*, 107(3), pp.797-817.
- Becker, G.S., 1983. A theory of competition among pressure groups for political influence. *The quarterly journal of economics*, 98(3), pp.371-400.
- Cho, I.K. and Kreps, D.M., 1987. Signaling games and stable equilibria. *The Quarterly Journal of Economics*, 102(2), pp.179-221.
- Coase, R.H., 1972. Durability and monopoly. *The Journal of Law and Economics*, 15(1), pp.143-149.
- Crawford, V.P. and Sobel, J., 1982. Strategic information transmission. *Econometrica: Journal of the Econometric Society*, pp.1431-1451.
- Diamond, P.A., 1971. A model of price adjustment. *Journal of Economic Theory*, 3(2), pp.156-168.
- Grossman, S.J. and Hart, O.D., 1980. Disclosure laws and takeover bids. *The Journal of Finance*, 35(2), pp.323-334.
- Heinsalu, S., 2018. Dynamic noisy signaling. *American Economic Journal: Microeconomics*, 10(2), pp.225-49.
- Heinsalu, S., 2018. Investing to access an adverse selection market. Working paper.
- Heinsalu, S., 2018. Competitive pricing despite search costs when lower price signals quality. Working paper.
- Hölmstrom, B., 1979. Moral hazard and observability. *The Bell Journal of Economics*, pp.74-91.
- Holmström, B., 1982. Moral hazard in teams. *The Bell Journal of Economics*, pp.324-340.
- Holmström, B., 1999. Managerial incentive problems: A dynamic perspective. *The Review of Economic Studies*, 66(1), pp.169-182.
- Leland, H.E. and Pyle, D.H., 1977. Informational asymmetries, financial structure, and financial intermediation. *The Journal of Finance*, 32(2), pp.371-387.
- Milgrom, P. and Roberts, J., 1982. Limit pricing and entry under incomplete information: An equilibrium analysis. *Econometrica: Journal of the Econometric Society*, pp.443-459.
- Milgrom, P. and Roberts, J., 1986. Price and advertising signals of product quality. *Journal of Political Economy*, 94(4), pp.796-821.
- Morris, S. and Shin, H.S., 2001. Global games: theory and applications. Cowles Foundation Discussion Paper, No 1275R.
- Morris, S. and Shin, H.S., 2002. Social value of public information. *American Economic Review*, 92(5), pp.1521-1534.
- Kyle, A.S., 1985. Continuous auctions and insider trading. *Econometrica: Journal of the Econometric Society*, pp.1315-1335.
- Scharfstein, D.S. and Stein, J.C., 1990. Herd behavior and investment. *The American Economic Review*, pp.465-479.
- Shapiro, C. and Stiglitz, J.E., 1984. Equilibrium unemployment as a worker discipline device. *The American Economic Review*, 74(3), pp.433-444.
- Spence, M., 1973. Job market signaling. *The Quarterly Journal of Economics*, 87(3), pp.355-374.

COURSE SCHEDULE

Week	Summary of Activities	Assessment
1	Bayesian games and equilibrium concepts	
2	Adverse selection, advantageous selection	
3	Information provision in games	
4	Communication games, signalling, cheap talk	First midterm exam
5-6	Applications of communication games	
7	Screening, insurance	

8	Mechanism design, auctions	Second midterm exam
9	Moral hazard and applications	
10	Repeated games and monitoring structures	
11	Information considerations in repeated games	
12	Further applications of game theory	
	Examination period	Final exam

The topics covered and their scheduling are subject to revision as the class progresses, based on the interests of the students.

ASSESSMENT REQUIREMENTS

The ANU is using Turnitin to enhance student citation and referencing techniques, and to assess assignment submissions as a component of the University's approach to managing Academic Integrity. For additional information regarding Turnitin please visit the [ANU Online](#) website.

Students may choose not to submit assessment items through Turnitin. In this instance you will be required to submit, alongside the assessment item itself, copies of all references included in the assessment item.

Assessment Tasks

Participation

Students are expected to attend all lectures, tutorials and exams throughout the course. Do not make commitments that will prevent your attendance at the advertised times.

Assessment Task 1: First midterm exam

Details of task: In-class written exam

Assessment Rubrics

Word limit (where applicable): NA

Value: 0%-20%

Presentation requirements: None

Estimated return date: 24 Aug

Hurdle Assessment requirements (where applicable): NA

Individual Assessment in Group Tasks (where applicable): NA

Assessment Task 2: Second midterm exam

Details of task: In-class written exam

Assessment Rubrics

Word limit (where applicable): NA

Value: 0%-20%

Presentation requirements: None

Estimated return date: 05 Oct

Hurdle Assessment requirements (where applicable): NA

Individual Assessment in Group Tasks (where applicable): NA

Assessment Task 3: Final exam

Details of task: In-class written exam

Assessment Rubrics

Word limit (where applicable): NA

Value: 60%-100%

Presentation requirements: None

Estimated return date: 17 Nov

Hurdle Assessment requirements (where applicable): NA

Individual Assessment in Group Tasks (where applicable): NA

Examination(s)

The course includes two midterm exams and one final exam.

Assignment submission

Online Submission: There are no online assignments. The midterm and final exams are submitted on paper.

Extensions and penalties

Extensions and late submission of assessment pieces are covered by the Student Assessment (Coursework) Policy and Procedure.

The Course Convener may grant extensions for assessment pieces that are not examinations or take-home examinations. If you need an extension, you must request it in writing on or before the due date. If you have documented and appropriate medical evidence that demonstrates you were not able to request an extension on or before the due date, you may be able to request it after the due date.

No submission of assessment tasks without an extension after the due date will be permitted. If an assessment task is not submitted by the due date, a mark of 0 will be awarded.

Late submission is not accepted for take-home examinations.

Returning assignments

Exams can be viewed at the designated exam viewing times.

Resubmission of assignments

No resubmission of midterm exams is allowed. Midterm exams are optional and redeemable. No resubmission of final exams is allowed. Supplementary and deferred final exams follow the standard ANU policy.

Referencing requirements

All work not your own should be appropriately referenced (<http://www.anu.edu.au/students/learning-development/academic-integrity/referencing>). Choose any standard reference style (Chicago, Harvard, etc) and follow it consistently.

At this point in the document, you can insert reading lists, class activity specifications and other relevant information.

Scaling

Your final mark for the course will be based on the **raw** marks allocated for each of your assessment items. However, your final mark may not be the same number as produced by that formula, as marks may be **scaled**. Any scaling applied will preserve the rank order of raw marks (i.e. if your raw mark exceeds that of another student, then your scaled mark will exceed the scaled mark of that student), and may be either up or down.

Privacy Notice

The ANU has made a number of third party, online, databases available for students to use. Use of each online database is conditional on student end users first agreeing to the database licensor's terms of service and/or privacy policy. Students should read these carefully.

In some cases student end users will be required to register an account with the database licensor and submit personal information, including their: first name; last name; ANU email address; and other information.

In cases where student end users are asked to submit 'content' to a database, such as an assignment or short answers, the database licensor may only use the student's 'content' in accordance with the terms of service – including any (copyright) licence the student grants to the database licensor.

Any personal information or content a student submits may be stored by the licensor, potentially offshore, and will be used to process the database service in accordance with the licensors terms of service and/or privacy policy.

If any student chooses not to agree to the database licensor's terms of service or privacy policy, the student will not be able to access and use the database. In these circumstances students should contact their lecturer to enquire about alternative arrangements that are available.

SUPPORT FOR STUDENTS

The University offers a number of support services for students. Information on these is available online from <http://students.anu.edu.au/studentlife/>

Other Information

Building Access Hours

Both CBE and HW ARNDT are:

TEACHING PERIOD = Mon – Fri 07.45 to 21.15 and SAT, SUN and Public Holidays is not accessible by students.

Both CBE and HW ARNDT are:

NON TEACHING PERIOD = Mon – Fri 08.00 to 18.00 and SAT, SUN and Public Holidays is not accessible by students.

RSE has a Frequently Asked Questions page where you can find relevant policies and information on a broad range of topics, the onus is on the student to familiarise themselves with this page and the information available.

<https://www.rse.anu.edu.au/students/students/frequently-asked-questions/>