Course description

In many – perhaps most – economic interactions, there is potential for strategic behaviour, a term, “intended to focus on the interdependence of the adversaries’ decisions and on their expectations about each other’s behaviour.” (Schelling, 1960, The Strategy of Conflict). Recognising and understanding such behaviour is an essential part of any economist's toolkit and this course is designed to enable just such recognition and understanding.

Game theory has successfully been applied in a diverse range of fields, such as economics, political science, law, biology and computer science. The aim of this course is to provide an introduction to strategic thinking and analysis through the basic techniques of game theory and to illustrate the range of its applications, primarily in economics and business but also in other areas. While the level of the course will be introductory, and mathematical prerequisites are minimal, the presentation of the material will rely on precise logical arguments.

Lecturer

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Mode of instruction

The course runs through Semester 2 2014: July 21st to November 22nd. Students are expected to attend all lectures, tutorials and exams throughout this period – do not make alternative commitments that will prevent your attendance at these times. The primary mode of instruction will be through lectures, augmented by tutorials, readings and web-based problems.

Lectures
TBA

Tutorials

All students attend a one hour tutorial starting in the second week. Enrolment in tutorials will be completed online using the CBE Electronic Teaching Assistant (ETA). To enrol, follow these instructions:

2. You will see the Student Login page. To log into the system, enter your University ID (your student number) and password (your ISIS password) in the appropriate fields and hit the Login button.
3. Read any news items or announcements.
4. Select "Sign Up!" from the left-hand navigation bar.
5. Select your courses from the list. To select multiple courses, hold down the control key. On PCs, this is the Ctrl key; on Macs, it is the key. Hold this key down while selecting courses with the mouse. Once courses are selected, hit the SUBMIT button.
6. A confirmation of class enrolments will be displayed. In addition, an email confirmation of class enrolments will be sent to your student account.
7. For security purposes, please ensure that you click the LOGOUT link on the confirmation page, or close the browser window when you have finished your selections.
8. If you experience any difficulties, please contact the School Office (see page 1 for contact details).

The first tutorial will take place during the second week of class. Tutorial exercises are designed to apply and reinforce the principles taught in lectures. Tutorial questions for the following week will be available on Wattle. I emphasise that you should attempt the tutorial problems before attending the tutorial. The final exam questions will be tutorial style problems. You will only learn problem solving skills (necessary to pass the final exam) through practice, NOT by simply writing down the answers given in tutorials. You learn by doing and practicing.
Syllabus†

1. What is game theory?
2. Simultaneous move games and pure strategies
3. Simultaneous move games and mixed strategies
4. Nash equilibrium explored
5. Sequential move games
6. Extensive form games, subgame perfection, backward induction
7. Information issues – Bayesian games
8. Repeated games and folk theorems
9. More applications
   a. Strategic commitment
   b. Pricing strategies
   c. The dynamics of pricing rivalry
   d. Entry and exit

Texts

No textbook is formally required but the following would be useful (in this order)

Students interested in the Honours add-on to this course – ECON2142 – are advised to acquire the Osborne text listed above. Any more recent editions of these books will do – those above are just the ones I have. Students will be supplied with a set of selected readings and skeleton copies of the lecture slides as we proceed.

Contacts

<table>
<thead>
<tr>
<th>Role</th>
<th>Office address</th>
<th>Email</th>
<th>'phone</th>
<th>Office Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course Convenor and Lecturer: Martin Richardson</td>
<td>Room 2013, HW Arndt Bldg.</td>
<td><a href="mailto:Martin.Richardson@anu.edu.au">Martin.Richardson@anu.edu.au</a></td>
<td>61253582</td>
<td>TBA and other times by appointment</td>
</tr>
<tr>
<td>Tutor: TBA</td>
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<tr>
<td>Finn Wijnberg, RSE School Administrator</td>
<td>Room 1014, HW Arndt Bldg.</td>
<td><a href="mailto:Finola.Wijnberg@anu.edu.au">Finola.Wijnberg@anu.edu.au</a></td>
<td>61250195</td>
<td>09:00–17:00</td>
</tr>
<tr>
<td>Terry Embling, RSE Course Administrator</td>
<td>Room1013, HW Arndt Bldg.</td>
<td><a href="mailto:Terry.Embling@anu.edu.au">Terry.Embling@anu.edu.au</a></td>
<td>61250384</td>
<td>09:00–17:00</td>
</tr>
</tbody>
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† Note that no warranty, implied or express, is given concerning the coverage of this course and the lecturer issues no undertaking to cover all or any of the following material, so this is tentative only! In particular, the scheduling of topics is subject to on-the-spot revision as the class progresses.
Assessment

Assessment is based on the final exam, Problem Sets, a mid-semester exam and participation in both in-lecture surveys and online questions.

- Final exam 65-80%,
- In class surveys 5%,
- Online questions 5%,
- Mid-semester test 15% – redeemable against final,
- 2 Problem sets 5% each for 10% total.

N.B.: Regardless of these weights, a disastrous failure on the final is grounds for failing the course.

Note that the final, mid-semester and both of the Problem Sets are compulsory and failure to do them means you get zero for that component of the assessment. The mid-semester test, however, is redeemable: if you do better on the final than on the mid-semester then your final will count for 80% of your course grade rather than the default 65%.

No supplementary mid-semester examination will be offered. Students who do not attend the mid-semester test will be awarded a mark of zero and their final will be worth 80% of their course grade. Any further details regarding exams will be announced in lectures and posted on Wattle.

Extensions Policy: You may choose your own extensions for the Problem Sets subject to the following depreciation rule: For each weekday, or part thereof, a problem set is submitted late, for whatever reason, the ceiling grade will fall by 20. (The Problem Sets will be made available on Wattle on a Wednesday and are due by 4pm on Friday 1 or 2 weeks later. So, for instance, a problem set handed in late but before 4pm on the Monday will be graded out of 80, late but before 4pm on the Tuesday out of 60 and so on.) No extensions will be given, outside of these guidelines, for ANY reason.

Technology, Software, Equipment

I plan to use Wattle extensively and as my main means of getting material to you: https://wattle.anu.edu.au/. Please ensure that you have access and that you check it regularly.

Prior to a number of lectures you will be asked to participate in “on-line experiments” which will help you to focus on games and decision problems which we will discuss later in class. Once you complete a set, it will be recorded. I will have access to the information about which sets you have completed. There are no “right” and “wrong” answers to the posted problems and each set will take only a few minutes to complete. Please respond to the problems as naturally as possible. I will have the aggregated statistics of the class’ responses and we will use these in class discussion. To get the 5% assessment allocated for this component of the course you must do all of the assigned questions.

In order to participate in the experiments you will first need to register. Please do so immediately, before the first class meets:
• Please log into http://gametheory.tau.ac.il/student/.
• Our Course Number will be provided.
• The initial class password will be provided but you will have to select a new password after login.

Please remember the login name and the personal password you select. (You will be able to retrieve the password if you lost it). After registration you will be automatically directed to the first problem set which I have posted for you. Please respond to all problems. Only after you have completed the set will you receive confirmation (with a red tick) and your participation will be recorded. In case you are interrupted before you finish the set you will be able to login again and resume the set from the point at which you stopped.

Finally, we will be using some in-class surveys run through Google forms. To participate in these you will need, ideally, some form of internet access while in class: a smartphone, tablet or laptop. If you do not have these you can still participate with pen and paper. More instructions will be provided in class. Again, to get the 5% assessment allocated for this component of the course you must participate in all of the surveys.

Learning Outcomes
In order to satisfy the requirements of this course, students will need to acquire a thorough understanding of the concepts introduced during the semester, and will need to demonstrate that they can apply the corresponding tools and ideas to unfamiliar problems. Note that just memorising the steps used to solve examples discussed in lectures and assigned tutorial problems will not lead to a clear understanding of these concepts, and will not prepare students to tackle the problems they will be required to solve in the exams.

On satisfying the requirements for this course, students should have the knowledge and skills to:
- Understand how game theorists think and approach a strategic problem.
- Understand the tools taught in class and be able to recognise their application to the analysis of real world fact situations.
- Recognise the strategic issues in a problem and understand how a game theorist might decide on the appropriate tools to analyse it.

Workload
Students taking this course are expected to commit at least 10 hours a week to completing the work, comprising:
- 2 hours a week of lectures
- 1 hour a week of tutorial
- 7+ hours a week: reading, writing and tutorial preparation

Scaling
Your final mark for the course will be based on the raw marks allocated for each assignment or examination. 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.

Research-Led Teaching
As a purely graduate course, the focus of the class is on academic research in the field of trade theory. Consequently, students will learn to appreciate modelling decisions made in the literature and gain the ability to follow the research strategy of work in this field.

Feedback
As this is typically a small course, the lectures involve a lot of discussion, questions and answers. I will provide written feedback on all assessment exercises as well as a verbal review of each one (in tutorial time) and thus feedback to the class as a whole.

The course assessment involves a presentation by each student to the class as a whole and it is expected that students will provide verbal feedback to their colleagues during these presentations in a professional and helpful manner.

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. It is also expected that students will complete these surveys as a matter of best practice.

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/
General Information for all Students

CBE Student Office
http://www.cbe.anu.edu.au/
The CBE Student Office provides assistance with program and course selection, enrolment, change of program, variation to enrolment, status and other general matters. It is located on Level 2 of CBE Building 26c, contact details:
  - T: (61) 02 6125 3807
  - E: info.cbe@anu.edu.au

Main Administrative Dates
http://timetable.anu.edu.au/
The main administrative dates regarding teaching sessions, course census dates, examination period, graduation and enrolment variations (i.e. add and drop courses) are available from the ANU Timetable.

ANU Student Support
Academic Skills and Learning Centre
https://academicskills.anu.edu.au/
The Academic Skills and Learning Centre, in the Pauline Griffin Building, offers services to students regarding a range of academic issues including essay writing, note-taking, referencing, reading, examination preparation, and plagiarism.

ANU College
ANU College offers the following introductory and extended programs:
  - maths bridging courses; and
  - English language support for students from non-English-speaking backgrounds.

Information Literacy Program
http://anulib.anu.edu.au/training/
Workshops are available to undergraduate and graduate students to develop skills in handling information and communication technologies.

Policies, Procedures and Rules
ANU Students
http://students.anu.edu.au/
The Students pages on the ANU Website provide links to most of the information you need to know on matters such as enrolment and administrative procedures. See also Study@ANU (https://studyat.anu.edu.au/) and the ANU Rules and Policies (http://about.anu.edu.au/governance-structure/legislation/rules and https://policies.anu.edu.au/ppl/document_list/index.htm?audience_id=Students).

Information for Enrolled Students
Students are expected to be familiar with the ANU College of Business & Economics and university-wide policies and procedures on the following:
  - Code of Practice for Student Academic Honesty
Special Examinations
You must contact the College Office for guidance on the procedure for special examinations for final examination. Do not approach your lecturer for this information.

Special examinations are not automatically granted. If approved, successful candidates are required to contact the relevant School Office to obtain details of the special exam. If you do not sit the examination, or your application for a special examination is declined, then you will fail the course as incomplete.

It is not grounds for a further special examination if students are not contactable and miss the scheduled examination date.

Special Consideration
If illness or other disruptive events have affected your preparation for, or performance during, an examination, you can bring this to the attention of the examiners by making a request for special consideration using the Application for Special Consideration form.

Special Arrangements
If you have a disability or disorder (permanent or temporary) which makes undertaking a formal sit-down examination difficult, then you are responsible for requesting special arrangements to be made for your examination. In the past these arrangements have included the use of special equipment, additional time, writing breaks, a scribe (someone to write for you), etc.

Please contact the Examinations and Graduations Office early in the semester and at least 10 days prior to the examination period. Failure to make appropriate arrangements for an examination may result in a subsequent application for a special examination/special consideration being declined.

Disabilities
If you have an ongoing medical condition you are advised to register with the Disability Services Centre. The ANU Disability Services Centre’s website is at http://disability.anu.edu.au/.
Supplementary Examinations
In accordance with the University Examinations Rules 2009 (No. 3), you may be provided with a supplementary examination. If you have qualified for a supplementary examination, your grade will be recorded as a PX on your Notification of Results. You must notify the School Office, in writing (email is satisfactory), within 7 days of the official publication date of examination results to indicate your acceptance or otherwise to sit the supplementary examination.

If you pass the supplementary examination you will receive the grade of PS (pass at supplementary examination) and a mark of 50. If you are unsuccessful, or you decide not to sit the supplementary examination, your grade will be recorded as N (fail) and your original mark will stand.

Supplementary examinations will be held early in the next semester on dates to be advised. For information regarding the timing and venues for supplementary examinations please refer to the school website in week 2 of the current semester: http://rse.anu.edu.au/.

Travel plans should be made accordingly as travel plans are not an acceptable reason to miss a supplementary examination.

Results and Examinations
In accordance with the University Assessment Grades/Codes, CBE applies the following scale when awarding grades:

**Final Pass Grades**
- HD – High Distinction 80–100
- D – Distinction 70–79
- CR – Credit 60–69
- P – Pass 50–59
- PS – Pass at supplementary examination 50

**Final Fail Grades**
- N – Fail 00–49
- NCN – Not Completed/Fail
- WN – Withdrawn with failure

**Interim Codes** (used when a result for a course has not yet been finalised)
- DA – Deferred assessment
- PX – Offered supplementary assessment
- RP – Result pending
- WA – Withheld for administrative reasons

Results Notification
To access results students should check their ISIS accounts on the advertised date for release of examination results. After publication, students enquiring about results must provide an ANU student card as proof of identification to the Examinations, Graduations, Prizes and Timetabling Office (Building 12). For
privacy reasons students should not make enquiries regarding the results of other students.

Examination Timetable – Final Examination Period
http://timetable.anu.edu.au/
Details of the final examination timetable are available on the ANU Timetabling website. The onus is upon students to acquire their own scheduling details.

Examination Timetable – Mid-Semester Examinations
When a mid-semester exam is scheduled, timetable information will be posted by the relevant School.

Misconduct
In relation to an examination, misconduct on the part of a student includes:

- cheating;
- plagiarism (including the reproducing in, or submitting for assessment for, any examination, by way of copying, paraphrasing or summarising, without acknowledgement and with the intention to deceive, any work of another person as the student’s own work, with or without the knowledge or consent of that other person);
- submitting for an examination any work previously submitted for examination (except with the approval of the prescribed authority);
- failing to comply with the University’s instructions to students at, or in relation to, an examination;
- acting, or assisting another person to act dishonestly, in or in connection with an examination; and/or
- taking a prohibited document into an examination venue.

The administrative procedures regarding misconduct are incorporated in the ANU Discipline Rules.

Plagiarism
The College regards plagiarism as any appropriation of the ideas or expressions of another without relevant and appropriate acknowledgment. This includes unattributed appropriation of text or content and may extend to improper referencing. Plagiarism will not be tolerated in any course and all discovered instances would be pursued to the full extent allowable under the rules. Where students have doubts as to how to deal with or acknowledge source materials in course assignments they should consult the lecturer or tutor. The penalties and administrative procedures regarding plagiarism are incorporated in the ANU Policy on Academic Honesty. On-line material discussing plagiarism and referencing styles is available from the Academic Skills and Learning Centre Web page (https://academicskills.anu.edu.au/).