UNSW Business School

School of Economics

ECON2112

GAME THEORY AND BUSINESS STRATEGY

Course Outline

Semester 1, 2017

Part A: Course-Specific Information

Students are also expected to have read and be familiar with **Part B Supplement to All Course Outlines**. This contains Policies on Student Responsibilities and Support, Including Special Consideration, Academic Misconduct and Plagiarism, and Key Dates.

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1 STAFF CONTACT DETAILS

Lecturer in Charge: Carlos Pimienta
Room: QUAD 3125.
Phone: The best way to contact me is via email.
Email: c.pimienta@unsw.edu.au
Consultation Times: Thursdays 3-5pm

Other lecturers: Gabriele Gratton
Room: UNSW Business School 470A
Phone: The best way to contact me is via email.
Email: g.gratton@unsw.edu.au
Consultation Times: Thursday 5-7pm

Tutor names: TBA

1.1 Communication with Staff

You should feel free to contact your lecturer(s) about any academic matter. However, we strongly encourage, for efficiency, all enquiries about the subject material be made at lectures or tutorials or during consultation time. Discussion of course subject material will not be entered into via lengthy emails. Phone calls are strongly discouraged.

Email correspondence on administrative matters (e.g. advising inability to attend tutorials) will be responded to within 48 hours, but not over weekends. Please note that the lecturer has no advance notice of the date and time of the exam.

2 COURSE DETAILS

2.1 Teaching Times and Locations

Lectures start in Week 1 (to Week 13), with no class in Week 7. The Time and Location is:

Thursdays 12:00-2:00pm, Chemical Science Theatre M18

Tutorials start in Week 2 (to Week 13), with no class in Week 8. A full list of tutorials, times and tutors will be on the Course Website.

2.2 Units of Credit

The course is worth 6 units of credit. There is no parallel teaching in this course.

2.3 Summary of Course

Game theory is a structured way to think about strategic interactions and it is fundamental to the understanding of modern business strategy. This course introduces students to the basic tools of Game Theory and its applications to business choices. The course will cover normal form and extensive form games, games of perfect and imperfect/incomplete information, and will introduce equilibrium concepts such as Nash Equilibrium, Subgame-Perfect Equilibrium and Perfect Bayesian Equilibrium. We will also look at repeated games and the theory of reputation. The course will equip students with an understanding of the basic principles of strategic analysis, and enable them to apply the abstract theory to specific real-world problems.

2.4 Aims and Relationship to Other Courses

ECON2112 is offered as part of the economics stream in the B.Com and B.Econ degrees. Prerequisites for this course are ECON1101 and ECON1202. It aims to build on basic theories and knowledge learnt in Micro 1 and Quantitative Analysis. The knowledge acquired in this course is further developed and put to use in complementary courses such as Economics of Corporations and Managerial Economics.

2.5 Student Learning Outcomes

The Course Learning Outcomes are what you should be able to DO by the end of this course if you participate fully in learning activities and successfully complete the assessment items.
The Learning Outcomes in this course also help you to achieve some of the overall Program Learning Goals and Outcomes for all undergraduate coursework students in the Business School. Program Learning Goals are what we want you to BE or HAVE by the time you successfully complete your degree. You demonstrate this by achieving specific Program Learning Outcomes - what you are able to DO by the end of your degree.
For more information on the Undergraduate Program Learning Goals and Outcomes, see Part B of the course outline.

The following table shows how your Course Learning Outcomes relate to the overall Program Learning Goals and Outcomes, and indicates where these are assessed:

Program Learning Goals and Outcomes		**Course Learning Outcomes**	**Course Assessment Item**
This course helps you to achieve the following learning goals		*On successful completion of the course, you should be able to:*	*This learning outcome will be assessed in the following items:*
1	Knowledge	Understand the basic principles of strategic analysis including solution concepts, and be able to apply the abstract theory to concrete problems.	• Tutorial Problems • Exam
2	Critical thinking and problem solving	• Compute pure and mixed strategy Nash equilibria in normal form games. • Solve perfect information games using backwards induction. • Compute pure and mixed subgame perfect equilibria in extensive form games. • Formulate strategic problems in analytical terms and analyse them using tools provided by the theory.	• Tutorial Problems • Exam
3a	Written communication	Construct written work which is logically and professionally presented.	• Tutorial Problems • Exam
3b	Oral communication	Communicate ideas in a succinct and clear manner.	• Tutorial Participation

4	Teamwork	Work collaboratively to complete a task.	Not specifically assessed.
5a.	Ethical, environmental and sustainability considerations	Not specifically addressed in this course.	Not specifically assessed.
5b.	Social and cultural awareness	Formulate social interaction in analytical terms and analyse them using tools provided by the theory.	• Tutorial Problems • Exam

3 LEARNING AND TEACHING ACTIVITIES

3.1 Approach to Learning and Teaching in the Course

The philosophy underpinning this course and its Teaching and Learning Strategies are based on "Guidelines on Learning that Inform Teaching at UNSW. These guidelines may be viewed at: www.guidelinesonlearning.unsw.edu.au. Specifically, the lectures, tutorials and assessment have been designed to appropriately challenge students and support the achievement of the desired learning outcomes. A climate of inquiry and dialogue is encouraged between students and teachers and among students (in and out of class). The lecturers and tutors aim to provide meaningful and timely feedback to students to improve learning outcome. Approach to Learning and Teaching in the Course

3.2 Learning Activities and Teaching Strategies

The examinable content of the course is defined by the references given in the Lecture Schedule, the content of Lectures, and the content of the Tutorial Program.

Lectures
The purpose of Lectures is to provide a logical structure for the topics that make up the course; to emphasize the important concepts and methods of each topic, and to provide relevant examples to which the concepts and methods are applied.

Tutorials
Tutorials are an integral part of the subject. Tutorial problems will build on the material discussed in class with the lecturer.

Out-of-Class Study
While students may have preferred individual learning strategies, it is important to note that most learning will be achieved outside of class time. Lectures can only provide a structure to assist your study, and tutorial time is limited.

An "ideal" strategy (on which the provision of the course materials is based) might include:

- Reading of the relevant chapter(s) of the text and any readings before the lecture. This will give you a general idea of the topic area.
- Attendance at lectures. Here the context of the topic in the course and the important elements of the topic are identified. The relevance of the topic should be explained.
- Attending tutorials and attempting the tutorial questions.

4 ASSESSMENT

4.1 Formal Requirements

- In order to pass this course, you must:
- Achieve a composite mark of at least 50 out of 100; and make a satisfactory attempt at ALL assessment tasks (see below).

4.2 Assessment Details

	Assessment Task	Weighting	Length	Due date
1	Tutorial Participation	7%	See below	At tutorial
2	Problem sets	18%	See below	See below
4	Mid-session Exam	25%	45 minutes	Week 6
6	Final Exam	50%	2 hours	As scheduled in official exam period
		100%		

4.3 Tutorial Participation

Marks Guide for Tutorial Participation

0	Below 80% of attendance as required by UNSW and Business School rules. Attendance at 9 of 11 tutorials will be deemed as meeting the requirement. Students must sign on by 10 minutes from start of tutorial to qualify as 'in attendance'. Signing on for another student will be treated as misconduct.
3	Has satisfied the attendance requirement (attended at least 9 tutorials) but has not contributed to class discussion.
4-7	Has attended 10-11 tutorials and contributed to class discussion in relevant and constructive ways.

If, owing to illness or other exceptional circumstances, you are unable to attend your usual tutorial, you may try to attend another tutorial in the same week. However, you are required to attend your usual tutorial class at least 9 times during the session. This allows for occasional absence due to minor illness and other reasons, hence special consideration applications will not reduce this requirement.

Students should also note that, in certain circumstances, such as where a request for special consideration is made in relation to assessment items, tutorial attendance will be taken into account in determining your final assessment or whether special consideration is granted.

4.4 Tutorial Problem Sets

Tutorial problem sets are set for 6 weeks, and students are required to submit solutions to their tutor at the beginning of tutorial (no more than 10 minutes late). The problems will be discussed in the tutorial the following week.

Tutors will mark each of the 6 problem sets as follows:

Description	Mark
Solutions not submitted or barely attempted	0
Solutions attempted but substantially incorrect	1
Solutions substantially correct	2
Excellent work	3

A student can get at most a total of 6x3=18 marks. As this component of assessment is worth less than 20%, special consideration does not apply to any of the components of tutorial assessment**.**

4.5 Midsession Exam

There will be a mid-session exam in week 6. The exam will take place during the lecture time and it will be 45 minutes in length. The location will be confirmed closer to the time. The exam will cover topics from week 1 to 5. It is essential, for this reason, that students attend all the lectures.

There will be **NO supplementary tests** offered for the mid-session exam. You should make every effort to take the mid-session exam. Students who fail to attend the examination will need to apply for Special Consideration.

In cases of serious illness, students will need full and convincing documentation of that illness. Students who are found to be genuinely too ill to have attended the exam will have their mark in the remaining assessment tasks re-weighted to include the mark reserved for the missed test. In all other cases of non-attendance students will receive a grade of zero. Employment obligations or holiday plans of any kind are not acceptable reasons for absence from any test/examination.

Applications for special consideration must be **lodged online through myUNSW within 3 working days of the assessment** (Log into myUNSW and go to My Student Profile tab > My Student Services channel > Online Services > Special Consideration). Then submit the originals or certified copies of your supporting documentation and a completed Professional Authority form (pdf - download here) to Student Central.

4.6 Final Exam

The format of the final exam will be discussed in class.

A sample exam will be put up on Course website. Students should note that, given changes in the course, past exam papers for this subject may be misleading. All material covered in the lectures and tutorial program is examinable.

4.7 Quality Assurance

The Business School is actively monitoring student learning and quality of the student experience in all its programs. A random selection of completed assessment tasks may be used for quality assurance, such as to determine the extent to which program learning goals are being achieved. The information is required for accreditation purposes, and aggregated findings will be used to inform changes aimed at improving the quality of Business School programs. All material used for such processes will be treated as confidential and will not be related to course grades.

5 COURSE EVALUATION AND DEVELOPMENT

Each year feedback is sought from students and other stakeholders about the courses offered in the School and continual improvements are made based on this feedback. UNSW's myExperience Survey Tool is one of the ways in which student evaluative feedback is gathered. You are strongly encouraged to take part in the feedback process.

6 COURSE RESOURCES

The website for this course is on UNSW Moodle at: http://moodle.telt.unsw.edu.au

It is essential, for the successful completion of this unit, that **students attend all lectures**, as the examination will focus on material presented and discussed in lectures.

The textbook for this course is:

Gibbons, Robert. *Game theory for applied economists*. Princeton University Press, 1992.

Additional material will be posted on the course website.

7 COURSE SCHEDULE

7.1 Lecture Schedule

Lectures start in Week 1 and finish in Week 13. There is no class in Week 7.

LECTURE SCHEDULE		
Week	Topic	Reference
Week 1 27 February	Nash Equilibrium	Gibbons 1.1A, 1.1C
Week 2 6 March	Admissibility and Mixed Strategies	Gibbons 1.1B, 1.3A
Week 3 13 March	Normal form games: Applications	Gibbons 1.2
Week 4 20 March	Extensive form games. Perfect Information.	Gibbons 2.4.A, 2.1A
Week 5 27 March	Subgame Perfect equilibrium	Gibbons 2.2.A, 2.4.B
Week 6 03 April	Extensive form games: applications. Midsession Exam	Gibbons 2.1.B
Week 7 10 April	NO LECTURES *(Friday 14 April is Good Friday public holiday)*	
Mid-semester break: Friday 14 – Saturday 22 April inclusive		
Week 8 24 April	Incomplete Information; Bayes-Nash equilibrium *(Tuesday 25 April is Anzac Day public holiday)*	Gibbons 3.1A-C
Week 9 1 May	Applications of Bayes-Nash Equilibirum	Gibbons 3.2A-B and examples from notes
Week 10 8 May	Dynamic Games of Incomplete Information	Gibbons 4.1
Week 11 15 May	Perfect Bayesian Equilibrium	Gibbons 4.2
Week 12 22 May	Applications of Perfect Bayesian Equilibrium; Signalling I	Gibbons 4.2B and examples from notes
Week 13 29 May	Signalling II	

7.2 Tutorial Schedule

Tutorials start in Week 2 and finish in Week 13. There is no class in Week 8.

TUTORIAL SCHEDULE		
Week	Topic	Reference
Week 1 27 February	NO TUTORIALS	
Week 2 6 March	Computing Nash equilibrium	Problem Set 1 is due
Week 3 13 March	Solutions to Problem Set 1	Problem Set 2 is due
Week 4 20 March	Solutions to Problem Set 2	Problem Set 3 is due
Week 5 27 March	Solutions to Problem Set 3	
Week 6 03 April	Bayes rule I	
Week 7 10 April	Solutions to Midterm *(Friday 14 April is Good Friday public holiday)*	
Mid-semester break: Friday 14 – Saturday 22 April inclusive		
Week 8 24 April	NO TUTORIALS *(Tuesday 25 April is Anzac Day public holiday)*	
Week 9 1 May	Bayes rule II	Problem Set 4 is due
Week 10 8 May	Solutions to Problem Set 4	Problem Set 5 is due
Week 11 15 May	Solutions to Problem Set 5	Problem Set 6 is due
Week 12 22 May	Solutions to Problem Set 6	
Week 13 29 May	General Revision	