ECO326 Advanced Economic Theory: Game Theory, Winter 2020

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Contact

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Course description

This is a class in game theory. Game theory analyzes the behavior of small groups of agents in strategic situations, ie., situations where the actions of each of the agents may affect payoffs or incentives of the others. The class will be quite rigorous as one of its goals is to give you some idea about what people study in a formal economics graduate program. The main emphasis will be on learning formal concepts and methods how to approach and think about games. As illustrations, we will see a broad range of application from economics, political science, sociology, job search, dating, etc. At the end of the class, you will be able to

- describe a situation that you encounter in your work or life and that involves interaction of two or more people as a game,

- identify key features of the game (number of players, actions, payoffs, whether the game has simultaneous or sequential moves, whether there is any incomplete or asymmetric information) and describe a formal model of the game,

- analyze the game and predict what behavior or what actions are likely to be chosen.

Course Prerequisites

It is your responsibility to check whether you have correct prerequisites for this class. The Department strictly enforces the prerequisites – if you do not have them you will be dropped, no exceptions. The calendar description of the class says

Prerequisite:

- ECO200Y1(70%)/ ECO204Y1/ ECO206Y1,

- ECO220Y1(70%)/ ECO227Y1/ (STA220H1(70%), STA255H1(70%))/ (STA237H1(70%), STA238H1(70%))/ (STA257H1, STA261H1).

Exclusion: ECO316H1, ECO326H5
Recommended Preparation: MAT223H1/MAT240H1, MAT235Y1/MAT237Y1/ECO210H1
Distribution Requirement Status: This is a Social Science course Breadth
Requirement: Society and its Institutions (3)

Readings

The required text for this course is Martin J. Osborne, An introduction to game theory (Oxford University Press, New York, 2004).

Date	Topic	Readings
11/1	1. Games. Dominant strategies.	1,2.1-2.5, 2.9
18/1	2. Iterated elimination and rationalizability	12.1-4* (see comment below)
25/1	3. Nash equilibrium.	2.6-2.8, 3.1
1/2	4. Nash equilibrium - examples.	3.2, 3.5
8/2	5. Mixed strategies.	4.1-4.5, 4.9
22/2 during regular lecture time	Midterm.	
1/3	6. Extensive form games. Subgame perfection.	5.1-5.5, 6.1-6.2
8/3	7. Extensive form games - examples.	7.1-7.2, 7.6-7.7
15/3	8. Repeated games.	14.1-14.2,14.4-14.6,14.7.1,14.10.1
22/3	9. Games with incomplete information.	9.1-9.3
29/3	10. Games with incomplete information II.	9.4-9.5, 7.6
5/4	11. Auctions.	3.5, 9.6
TBD	Final exam.	

*In general, I encourage you to do the reading *before* the lecture. The only exception is the reading assigned for Lecture 2 (and denoted with asterisk) - the material in chapter 12 may be difficult to read before the lecture.

** In the Fall semester, this is an additional lecture scheduled (not on Monday) to make up for Thanksgiving.

Many of the problems will come from the textbook and many of them have online solutions. The solutions that cannot be found online will be discussed during the tutorial after the lecture. You are responsible for all the material covered in class, the assigned readings, and the practice problems.

Grade

There will be one midterm, on February 22, and the final exam on a date yet to be determined. The midterm will cover materials from Lectures 1-5. The final exam will be cumulative with an emphasis on the second half of the class. The course grade will be a weighted average between the midterm and the final

exam, with 60% of the grade for the higher score of the two and 40% weight on the lower score. The total weight of midterm and the final is 94% of your grade.

Additionally, you will receive up to 2% for participation in Game Quizzes on Quercus and between 0-4% from the results of those Quizzes.

Online exams

Both tests, midterm and final, will be taken online. The exams will be open-book. **The midterm will take place online, on February 22, during the regular lecture time scheduled for your section: either between 9.40-12.30 am or 6.00-8.50 pm, depending on your section.** The midterm will take 2h, but we need you to sign up 20min. before and you will be given 30 min. after the end of for have extra time for uploading your answers.

It is very important that you carefully read the Exam Protocol document on Quercus. In particular, to take tests in this course, you are responsible to have the following equipment:

- stable internet connection that allows you to stream video image,

- computer with a charger (to read questions on Crowdmark, possibly to submit answers),

- phone with a charger (for audio/video invigilation on Zoom, to scan documents, and, possibly to submit answers),

- paper and pen/pencil.

Regrades

I accept applications for re-grades if: (1) they are made in writing and given to me personally along with your entire paper, (2) they clearly specify which questions were improperly marked and explains why, (3) they are submitted within one week after each exam or midterm is returned. In addition, I generally regrade entire exams, not just individual questions. Your score may go up, go down or remain unchanged.

Make-up midterm

You are required to attend the midterm. Should you need to miss a midterm, 1. I will need a documented, valid excuse. An example of a documented, excused absence is an original note from a doctor that states you are physically unable to attend the final. The only accepted note is a fully completed University of Toronto Medical Certificate completed by a qualified medical doctor (e.g., not an acupuncturist, chiropractor, or other health care professional) and with the doctor's OHIP registration number. 2. I need to be contacted before the exam. When both (1) and (2) are satisfied, you will be able to take the make-up midterm. The make-up midterm is scheduled for Friday, 10 days after the original midterm date (hence, the following week), 9-11, place to be determined.

Should you miss the midterm without satisfying one of the two above conditions, or should you miss the make-up midterm, you will automatically get 0 points for the midterm.

Any absence during the final exams is dealt according to the standard university procedures.

Drop dates

Please make sure you check the calendar to make sure you're aware of the add/drop deadlines and the associated penalties:

http://www.artsandscience.utoronto.ca/ofr/calendar/Sessional-Dates.html.

Email policy

I will try to respond to emails within 24 hours outside of weekends. However, I do not respond to emails that ask a question that can be answered by looking at the syllabus or course website.

Any questions about the course content, lectures, problem sets, etc. must be asked either on Piazza, or during the office hours. My response to such emails will be: Ask it on Piazza.

Academic honesty

I take any attempts to cheat (either actively or by assisting/facilitating cheating) very seriously. Any student caught or suspected will be referred to OASI and will be subject to penalties as prescribed by the University. THis is especially important when the exams are done online.

Please read carefully the Exam Protocol document listed on Quercus.