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ECO 2201H1S: MICROECONOMIC THEORY II
GAME THEORY

University of Toronto
Department of Economics

Winter 2022

COURSE DESCRIPTION AND LEARNING OBJECTIVES

This is the Game theory part of the first year Microeconomic Theory PhD sequence, the second part of the class on Information Economics and Mechanism Design is taught by Professor Gabriel Carroll. This class is designed for first year Economics Ph.D. students. The focus is to provide a technically sound introduction to game theory. We will discuss the central concepts as well as some proofs and typical proof techniques that are used in game theory. At the end of the class, you should have a solid understanding of the central concepts and results in game theory – an important basis for theoretical and applied work. Moreover, this class will provide you with the tools and skills to be able to further your knowledge in game theory through self-study, understand and assess the quality of proofs, and have an understanding of how to write proofs in game theory yourself.

The course assumes the knowledge of the materials taught in the first semester in Microeconomic Theory sequence (ECO 2200H1F). In addition, the course assumes a strong background in math, especially proof-based advanced calculus and probability theory.

LOGISTICS

Lectures:	Mon/Wed 2 – 4pm *(online for now, we will move to in-person as soon as this is feasible)*
Teaching Assistant:	Billur Gorgulu, billur.gorgulu@mail.utoronto.ca
	Office hours: *tbd*
Tutorial sessions:	Thu 4 – 6pm (subject to change – see entry survey on Quercus) *(online for now)*
Course website:	Quercus
	Students are responsible for reading course announcements, lecture notes, problem sets and other materials posted on the course website. No handouts will be distributed in class; please download them yourself.

PROBLEM SETS

There will be weekly problem sets. Some of the solutions will be discussed in tutorial session. You are encouraged to work on problems together, but I suggest writing down solutions by yourself *(you don't have to submit them since problem sets are not graded)*. Solving problems yourself is the only way to learn game theory – so make sure to solve the problems (or give it your best shot) <u>before</u> the tutorial. Problem sets will be posted (weekly) on Quercus by Thursday and will be discussed in tutorial session the following week. Solutions to the problem sets will be posted online (*after the tutorial*).

GRADING

You will be evaluated based on your performance on the term test. Your grade in Eco2201 will be the average of your grades in both units. The test will be run online. Details will be announced on Quercus and in class closer to the test date.

Test date: **Wednesday, Feb 16, 2022 or Monday, February 28, 2022, 2 – 4pm**

   the exact test date/time and format might change to accommodate the situation

TEXTBOOKS

Required textbook. I strongly recommend the following two books. They will be a great resource when studying the course materials.

Microeconomic Theory, Andreu Mas-Colell, Michael D. Whinston, and Jerry R. Green, (1995) Oxford University Press. (MWG)

Modeling Strategic Behavior, George Mailath, (2019) World Scientific Publishing.

Additional Resources:[1]

A course in game theory, Osborne, Martin J. and Rubinstein, Ariel (1994), MIT Press.

Game Theory, Fudenberg, Drew and Tirole, Jean (1992), MIT Press. (*classic, comprehensive*)

Game Theory, Maschler, Michael, Solan, Eilon and Zamir, Shmuel, (2013), Cambridge University Press. (*new, formal, comprehensive*)

Game Theory: Analysis of conflict, Myerson, Roger B., (1997), Harvard University Press.

Any additional materials and lecture notes posted on Quercus.

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[1] This is not an exhaustive list of textbooks. There are plenty of game theory books and these are just some that I like and would recommend.

COURSE TOPICS

The following is an approximate list of the topics that we will cover. I may adjust them (add/subtract/change/move) as the course progresses. The most current version of the class schedule including topics and readings are on Quercus.

1. Game theory basics
2. Nash equilibrium
3. Incomplete Information, Bayes Nash equilibrium
4. Subgame perfection
5. Bargaining
6. Repeated Games