

The Chinese University of Hong Kong
2nd Term, 2020-2021
Econ 3160 Game Theory
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Syllabus

Course Description. This is an introductory course in game theory. Topics include normal form games, extensive form games, repeated games, Bayesian games, Nash equilibrium, subgame perfect Nash equilibrium, Bayesian Nash equilibrium, and weak perfect Bayesian equilibrium. Various economics applications will be also be discussed.

Students are assumed to be familiar with basic probability theory and differentiable calculus.

Learning Outcomes. After taking this course, students are expected to understand the basic concepts, techniques, and results in game theory. They should be able to analyze economic issues by using techniques in game theory.

Reading Materials. Teaching materials are mainly based on the following two textbooks:

1. Gibbons, Robert (1992), *Game Theory for Applied Economists*. Princeton: Princeton University Press.
2. Osborne, Martin J. (2009), *An Introduction to Game Theory*. International Edition. Oxford: Oxford University Press

Other supplementary references will also be used.

Mode of Teaching. All classes will be conducted online through Zoom. Face-to-face teaching may be resumed when the pandemic stabilizes.

Assessment. The course grade is counted as follows:

Mid-term Exam	50%
Final Exam	50%

There is no make-up exam for the mid-term examination. A student who is absent from the mid-term examination due to sickness should provide a

medical certificate, and the final exam will count 100% of his/her grade in this course.

Course Outline.

1. Introduction and mathematical review
2. Static games of complete information: normal form games, dominated strategies, Nash equilibrium, mixed strategies
3. Dynamic games of complete information: extensive form games with perfect information, backward induction, subgame perfect Nash equilibrium, repeated games, extensive form games with imperfect information, weak perfect Bayesian equilibrium
4. Static games of incomplete information: Bayesian games, Bayesian Nash equilibrium
5. Dynamic games of incomplete information: signalling games, cheap talk games, weak perfect Bayesian equilibrium, perfect Bayesian equilibrium
6. Cooperative games (if time allows): coalitional games, core, Shapely value, Nash axiomatic bargaining

Academic Honesty. Attention is drawn to University policy and regulations on honesty in academic work, and to the disciplinary guidelines and procedures applicable to breaches of such policy and regulations. Details may be found at <http://www.cuhk.edu.hk/policy/academichonesty/>.