

EC4301: Microeconomics Analysis III
Semester 2, AY 2021-22

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Time and Location Mondays, 9am-12nn, Online (E-Learn_C) **Office Hours** By appointment

Textbooks

1. *A Primer in Game Theory*, Robert Gibbons
2. (Supplementary reading) *An Introduction to Game Theory*, Martin J. Osborne
3. *Contract Theory*, by Patrick Bolton and Mathias Dewatripont (abbreviated as BD). Published in 2005, M.I.T. Press
4. *An Introduction to Economic Analysis*, by Preston McAfee and Tracy Lewis, freely accessible at <https://open.umn.edu/opentextbooks/textbooks/47>
5. *Lecture Notes on Auctions* (to be distributed)
6. Additional materials to be posted on the LumiNUS

Objective

This module will cover advanced undergraduate topics of microeconomics. Students' knowledge of standard microeconomic theory along with calculus and basic probability will be assumed and used to cover a variety of topics in asymmetric information (Bargaining, Contracts, Auctions, Team problems, Contests). Game theory, a language necessary for this course, will be taught in the first four lectures. (Not all students have taken a prior module in game theory, although some basics have been covered in EC3101 Microeconomic Analysis II.)

Grading

Mid-term exam (30%), CA (10%, based on tutorials), and final exam (60%);

Mid-term exam will be held during regular lecture hours, in week 7. The final exam is comprehensive. Both exams are closed-book. The preferred mode for the mid-term as well as final is face-to-face. However, if face-to-face exam cannot be arranged, we will have to rely on remote online exam. If for reasons excusable by university rules (such as medical grounds) a student misses the mid-term, a make-up exam or an assignment will substitute it and the lecturer will decide which one. But note that taking a make-up mid-term after the regular mid-term is publicly available means that the level of difficulty will be adjusted because the ones taking the make-up are better informed about the style of questions. The interpretation of "equal difficulty" is entirely up to the discretion of the lecturer.

Grading Policy

Any request for modification to mid-term exam marks means the entire exam will be re-graded and the overall marks may go up, down, or remain unchanged. Re-graded marks will be final.

Tutorials

Tutorials will require major input from the students in the form of presentations of pre-assigned exercises. Unless announced otherwise, tutorial presentations will be held in the last 50 minutes of lectures starting from week 3. Students will be asked to form small groups for tutorial presentations.

Lectures

Please note the following information:

1. The class will be conducted entirely online.
2. Students are required to attend classes weekly.
3. The attendance report for tutorials will be captured by Zoom, LumiNUS (where applicable).
4. I plan to record the class using Zoom recording (any technical failure is beyond my control).

Tentative Schedule

Lecture 1: Static Games of Complete Information (Gibbons Ch 1; Osborne Chs. 2-4)

Lecture 2: Dynamic Games of Complete Information (Gibbons Ch 2; Osborne Ch 2; Osborne Chs. 5-7)

Lecture 3: Continue with Lect. 2 materials, then move on to -- Static Games of Incomplete Information (Gibbons Ch 3; Osborne Ch 9)

Lecture 4: Dynamic Games of Incomplete Information (Gibbons Ch 4; Osborne Ch 10)

Lectures 5-9:

Contract Theory -- Adverse Selection and Moral hazard

- Hidden Information, Screening (BD Ch 2)
- Hidden Information, Signaling (BD Ch 3)
- Hidden Action, Moral Hazard (BD Ch 4)

Also, Ch. 19 on *Agency Theory* in McAfee and Lewis is useful reading.

Week 7 must be reserved for a mid-term exam during Lecture hours

Lectures 10-11:

Auction Theory -- Notes on Auctions from a lecture monograph to be distributed. Additionally, you may consult the two Game Theory books by Gibbons, and Osborne, and the Contract Theory book by BD (Ch. 7), and Ch. 20 on *Auctions* in McAfee and Lewis.

- Independent Private value Auction

- (a) First-price auction
- (b) Second-price auction
- (c) Revenue Equivalence (intuitive discussion)
- (d) Efficiency
- (e) Risk-aversion (only a limited review)
- Interdependent value Auctions
 - (a) Common-value auction (time permitting)
 - (b) Affiliated-value auction (time permitting)

Lectures 12-13:

Team Problems

- Journal article: Holmstrom, B. (1982). Moral Hazard in Teams. *Bell Journal of Economics*, 13, 324-340
- Notes to be distributed

Contest Theory

- Relevant materials to be posted on the LumiNUS

Expect some adjustments and modifications as the semester progresses.