ADVANCED MICROECONOMICS 2

Mechanism Design

Fall 2022

Instructor:	Tangren Feng	**Time:**	TBD
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Description: Mechanism design theory defines institutions as non-cooperative games, and compares different institutions in terms of the equilibrium outcomes of these games. It allows economists and other social scientists to analyze the performance of institutions. Mechanism design has produced a large number of important insights in a wide range of applied contexts, influencing economic policy as well as market institutions. This course gives an introduction to mechanism design theory for second year Economics and Finance Ph.D. students.

Prerequisites: Mechanism design can be viewed as reverse engineering of game theory. Students are assumed to have taken a game theory course at the level of an advanced undergraduate class in game theory, or Bocconi's first year Ph.D. micro sequence. The course does not assume previous knowledge in mechanism design.

Problem Sets: Problem sets will be posted in every other week. Please give rigorous and complete answers. Typed answers are ideal. Homework will be graded on a +/− basis. You will receive a + if you tried to answer every question, and if your answer shows some understanding of the material. If you get stuck trying to answer a question, to get a +, you must explain which problem caused you to get stuck.

Assessment: Problem sets (60%), final assignment (40%).

Office Hours: By appointment.

Textbook and Lecture Notes: The main reference is Tilman Börgers, An Introduction to the Theory of Mechanism Design, Oxford University Press, 2015 (with a chapter by Daniel Krähmer and Roland Strausz).

Class Policy:

- Regular attendance is essential and expected.
- Despite the predictable difficulties of remote teaching, interactions are strongly encouraged. Feel free to interrupt me with question.

Tentative Course Outline:

Introduction . . . . ≈ 1 lectures
▌ Cheap Talk, Information Design, and Mechanism Design
▌ Food Banks
One-agent Mechanism Design: Screening . . . . ≈ 1 lectures
Bayesian Mechanism Design: Examples . . . . ≈ 2 lectures
▌ Single unit auctions
▌ Public goods
▌ Bilateral trade and the Myerson–Satterthwaite impossibility theorem
Dominant Strategy Mechanisms: Examples . . . . ≈ 1 lectures
▌ Single unit auctions
▌ Public goods
▌ Bilateral trade
Bayesian Mechanism Design: General Theory . . . . ≈ 2 lectures
▌ Bayesian revelation principle
▌ Characterization of incentive compatibility
▌ Full Surplus Extraction
Dominant Strategy Mechanisms: General Theory . . . . ≈ 2 lectures
▌ Characterization of incentive compatibility
▌ Gibbard–Satterthwaite impossibility theorem
▌ Quasilinear utilities and VCG mechanisms
Informational Interdependence . . . . ≈ 1 lecture
Robust Mechanism Design . . . . ≈ 2 lecture
Matching . . . . ≈ 1 lecture