HKU BUSINESS SCHOOL
港大經管學院

Inspire·Empower·Lead

1. General Information

Course Subject	ECON
Course Number	4211
Course Title	Advanced Microeconomics
Academic Years	2024-2025
Grading Method	Letter

2. Instructors

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Subclasses: 1A

4. Course Description

Course Description	This course is designed to provide students with the analytical tools required to study economic decisions and strategic behavior at an advanced level. It covers decision theory, game theory, and mechanism design. The course is particularly recommended for students who are considering graduate study in economics. The first part of the course covers the theory of individual decision making. Most economic theories start from a model of individual decision making and then use it as a building block to model interactions between agents, groups of agents and firms, the economy as a whole, etc. In this part, we will study a suite of standard models, understand some implicit assumptions behind them, and discuss critiques of these models. The second part of the course covers game theory, which is concerned with analyzing strategic interactions among individuals. Game theory seeks to provide models of conflict and cooperation that are relevant in a large class of situations basic to almost all social sciences. It offers insight into economic, political or social situations in which individuals have different goals and preferences. The basic assumptions of game theory are that decision-makers pursue well defined bjectives (they are rational) and take into account their knowledge or expectations of other decision-makers' behavior (they are strategic). The third part of the course covers topics in mechanism design, which explores how to apply game-theoretic concepts studied insofar to design institutions. Mechanism design is the study of how to design rules or mechanisms to achieve the social planner’s desired objectives in strategic situations where individuals act rationally. This understanding is crucial for designing effective institutions in many areas, such as auctions, voting systems, and contracts, which are relevant to real-world situations.
Prerequisites	ECON2210: Intermediate Microeconomics

5. Course Objectives

1. To introduce students to graduate-level microeconomic theory and relevant techniques.

5. Course Objectives

2. To develop students' ability to apply microeconomic theory to real-world problems.
3. To prepare students for further study in microeconomics and related fields.

6. Faculty Learning Goals

Goal 1: Acquisition and internalization of knowledge of the programme discipline
Goal 2: Application and integration of knowledge
Goal 3: Inculcating professionalism
Goal 4: Developing global outlook
Goal 5: Mastering communication skills
Goal 6: Cultivating leadership

7. Course Learning Outcomes

Course Teaching and Learning Activities	Aligned Faculty Learning Goals					
	1	2	3	4	5	6
CLO1. Demonstrate understanding of models and key issues related to decision-making processes.	✔	✔	✔			
CLO2. Demonstrate ability to reproduce proofs of standard results in microeconomics.	✔	✔	✔			
CLO3. Explain the intuitive perspectives and results of the models covered.	✔	✔	✔	✔	✔	✔
CLO4. Recognize the strengths and limitations of standard models.	✔	✔	✔		✔	
CLO5. Apply mathematical tools proficiently to solve models.	✔	✔	✔			

8. Course Teaching and Learning Activities

Course Teaching and Learning Activities #	Expected Study Hours	Study Load (% of study)
T&L1. Lectures	33	27.3
T&L2. Tutorials	11	9.1
T&L3. Self study	77	63.6
	Total: 121	Total: 100

9. Assessment Methods

Assessment Methods	Description	Weight %	Aligned Course Learning Outcomes
A1. Individual Take-home Assignment	Problem sets	20%	1,2,3,4,5
A2. Mid-Term	Midterm Exam	30%	1,2,3,4,5

9. Assessment Methods			
Test/ Assessment			
A3. Final Exam		50%	1,2,3,4,5

Assessment Rubrics	
A1. Individual Take-home Assignment	
A+,A,A-	Answers to all or almost all of the questions:1. provide a comprehensive and accurate analysis of the issues raised by the question, and2. are presented in a clear, coherent, and logically structured manner.
B+,B,B-	Answers to most of the questions:1. provide a correct analysis of the issues raised by the question, and 2. are presented in a clear and logical manner.For the remaining questions, most of the answers provide some reasonable analyses of the main issues raised by the questions.
C+,C,C-	Answers to the majority of the questions provide a correct analysis of the main issues raised by the question. For the remaining questions, some of the answers provide reasonable analyses of some of the issues raised by the questions
D+,D	Answers to some of the questions provide a reasonable analysis of the main issues raised by the questions.
F	Few of the answers provide reasonable analysis of the main issue raised by the questions.
A2. Mid-Term Test/ Assessment	
A+,A,A-	Answers to all or almost all of the questions:1. provide a comprehensive and accurate analysis of the issues raised by the question, and2. are presented in a clear, coherent, and logically structured manner.
B+,B,B-	Answers to most of the questions:1. provide a correct analysis of the issues raised by the question, and 2. are presented in a clear and logical manner.For the remaining questions, most of the answers provide some reasonable analyses of the main issues raised by the questions.
C+,C,C-	Answers to the majority of the questions provide a correct analysis of the main issues raised by the question. For the remaining questions, some of the answers provide reasonable analyses of some of the issues raised by the questions
D+,D	Answers to some of the questions provide a reasonable analysis of the main issues raised by the questions.
F	Few of the answers provide reasonable analysis of the main issue raised by the questions.
A3. Final Exam	
A+,A,A-	Answers to all or almost all of the questions:1. provide a comprehensive and accurate analysis of the issues raised by the question, and2. are presented in a clear, coherent, and logically structured manner.
B+,B,B-	Answers to most of the questions:1. provide a correct analysis of the issues raised by the question, and 2. are presented in a clear and logical manner.For the remaining questions, most of the answers provide some reasonable analyses of the main issues raised by the questions.
C+,C,C-	Answers to the majority of the questions provide a correct analysis of the main issues raised by the question. For the remaining questions, some of the answers provide

Assessment Rubrics	
	reasonable analyses of some of the issues raised by the questions
D+,D	Answers to some of the questions provide a reasonable analysis of the main issues raised by the questions.
F	Few of the answers provide reasonable analysis of the main issue raised by the questions.

10. Course Grade Descriptors	
A+,A,A-	Excellent understanding of the subject, with original or astute analysis and synthesis.
B+,B,B-	Good understanding of the subject, with some room for improvement.
C+,C,C-	Adequate understanding of the subject, but lacking elaboration and organization.
D+,D	Some relevant observations, but lacking structure.
F	Little to no familiarity with the subject.

11. Course Content and Tentative Teaching Schedule	
Topic/ Session	Content
1	Decision theory. Choice correspondence, preference, and utility function. Choice under risk, vNM's axioms, expected utility representation. Choice under uncertainty, Savage and Anscombe-Aumann's theorems.
2	Decision theory. Choice correspondence, preference, and utility function. Choice under risk, vNM's axioms, expected utility representation. Choice under uncertainty, Savage and Anscombe-Aumann's theorems.
3	Decision theory. Choice correspondence, preference, and utility function. Choice under risk, vNM's axioms, expected utility representation. Choice under uncertainty, Savage and Anscombe-Aumann's theorems.
4	Game of (In)complete information. Nash equilibrium, Brouwer and Kakutani's fixed point theorems. Dominance and iterative dominance, rationalizability, correlated equilibrium. Harsanyi's approach, Bayesian Nash equilibrium, Bayes correlated equilibrium.
5	Game of (In)complete information. Nash equilibrium, Brouwer and Kakutani's fixed point theorems. Dominance and iterative dominance, rationalizability, correlated equilibrium. Harsanyi's approach, Bayesian Nash equilibrium, Bayes correlated equilibrium.
6	Game of (In)complete information. Nash equilibrium, Brouwer and Kakutani's fixed point theorems. Dominance and iterative dominance, rationalizability, correlated equilibrium. Harsanyi's approach, Bayesian Nash equilibrium, Bayes correlated equilibrium.
7	Mechanism design. Revelation principle, Bayesian incentive compatibility, Milgrom-Segal's envelope theorem. Optimal auction, virtual type, revenue equivalence. Meyrson-Satterthwaite theorem. Strategy-proofness, Gibbard-Satterthwaite theorem, VCG mechanism. Social choice, Arrow's theorem, median voter theorem.

11. Course Content and Tentative Teaching Schedule	
	Contract theory, moral hazard.
8	Mechanism design. Revelation principle, Bayesian incentive compatibility, Milgrom-Segal's envelope theorem. Optimal auction, virtual type, revenue equivalence. Meyrson-Satterthwaite theorem. Strategy-proofness, Gibbard-Satterthwaite theorem, VCG mechanism. Social choice, Arrow's theorem, median voter theorem. Contract theory, moral hazard.
9	Mechanism design. Revelation principle, Bayesian incentive compatibility, Milgrom-Segal's envelope theorem. Optimal auction, virtual type, revenue equivalence. Meyrson-Satterthwaite theorem. Strategy-proofness, Gibbard-Satterthwaite theorem, VCG mechanism. Social choice, Arrow's theorem, median voter theorem. Contract theory, moral hazard.
10	Mechanism design. Revelation principle, Bayesian incentive compatibility, Milgrom-Segal's envelope theorem. Optimal auction, virtual type, revenue equivalence. Meyrson-Satterthwaite theorem. Strategy-proofness, Gibbard-Satterthwaite theorem, VCG mechanism. Social choice, Arrow's theorem, median voter theorem. Contract theory, moral hazard.
11	Mechanism design. Revelation principle, Bayesian incentive compatibility, Milgrom-Segal's envelope theorem. Optimal auction, virtual type, revenue equivalence. Meyrson-Satterthwaite theorem. Strategy-proofness, Gibbard-Satterthwaite theorem, VCG mechanism. Social choice, Arrow's theorem, median voter theorem. Contract theory, moral hazard.

12. Required/Recommended Readings & Online Materials	
Reading	Other useful sources: • Drew Fudenberg and Jean Tirole, Game Theory (MIT Press, 1991). • David Kreps, Notes on The Theory of Choice (Routledge, 1988). • Andreu Mas-Colell, Michael D. Whinston and Jerry R. Green, Microeconomic Theory (Oxford University Press, 1995). • Martin J. Osborne and Ariel Rubinstein, A Course in Game Theory (MIT press, 1994).
Textbook	Recommended Textbook: • Hal R. Varian, Microeconomic Analysis, (W. W. Norton & Co., 1992).

13. Means / Processes for Student feedback on Course	
	Conducting mid-term survey in additional to SETL around the end of the semester
	Online response via Moodle site
	Others