



## COURSE (MODULE) DESCRIPTION

Course title	Code
Game Theory	

Staff	Department
<b>Coordinator:</b> Associate Professor Yi Zheng <b>Others(s):</b>	Department of Economic Policy, Faculty of Economics and Business Administration

Study cycle	Course type
	Elective course

Mode of delivery	Period of implementation	Language of instruction
In-person / Remotely	Spring semester	English

Requirements for student	
<b>Prerequisites:</b> Basic microeconomics and mathematics (calculus, probability).	<b>Additional requirements (if any):</b> N/A

Number of ECTS credits	Student's workload	Contact hours	Individual working hours
5	130	48	82

Purpose of the course unit (module): programme competences to be developed		
<p>This course develops analytical and strategic thinking skills essential for economics, finance, and business administration. It aims to develop the following programme-level competences:</p> <ol style="list-style-type: none"> <li>1. Strategic decision-making in competitive environments</li> <li>2. Economic modeling and analysis</li> <li>3. Application of theoretical tools to real-world problems</li> <li>4. Communication of complex strategic insights</li> </ol>		
Learning outcomes of the course unit (module)	Teaching and learning methods	Assessment methods
Understand and apply core game theory concepts: Nash equilibrium, subgame perfection, backward induction, Bayesian equilibrium	Lectures; Exercise sessions (problem sets published after each lecture); Group assignment (oral presentation); Interactive discussions and applications; Final exam (closed-book)	Final Exam (60%, Closed book); Group assignment (40%) applying game theory to a real-world strategic problem (oral presentation in class)
Analyze strategic interactions in markets, firms, and negotiations		
Apply game theory to pricing, competition, auctions, and contract design.		
Evaluate information economics problems: moral hazard, signaling, and adverse selection		
Use strategic reasoning in business and financial contexts		
Communicate strategic insights effectively through written and oral formats, including group assignments		

Content: breakdown of the topics	Contact hours						Self-study work:time and assignments		
	Lectures	Tutorials	Seminars	Practical classes	Lab works	Peer-teaching	Contact hours	Self-study	Assignments
1: Introduction to Game Theory & Strategic Thinking  Topics: Normal form games, best response, Nash equilibrium  Games: Prisoner’s Dilemma, Pedestrian vs Motorist, etc.  Applications: Strategic pricing, competitive advertising, market entry.	3		2				5	9	Osborne Ch. 1–2; Dixit & Nalebuff Ch. 1;
2: Simultaneous Games with Complete Information  Topics: Pure and mixed strategy Nash equilibrium, dominated strategies, iterated elimination  Games: Matching Pennies, Battle of the Sexes, Coordination Game, etc.  Applications: Coordination problems, competitive strategy.	3		2				5	9	Readings: Osborne Ch. 3–4; Dixit & Nalebuff Ch. 2–3
3: Sequential Games with Perfect Information  Topics: Extensive form games, game trees, backward induction, subgame perfection  Games: Modified Battle of the Sexes, Lender vs Debtor, Lender vs Debtor with enforcement, etc.  Applications: Strategic pricing, entry deterrence, enforcement in lending	6		3				9	15	Osborne Ch. 5; Fudenberg & Tirole Ch. 3
4. Bargaining and Repeated Games  Topics: Bargaining with finite horizon, repeated games (finite and infinite), punishment strategies, reputation  Games: Dictator Game, Ultimatum Game, Rubinstein Bargaining, Centipede Game, etc.  Applications: Negotiation, tacit collusion, long-term strategic relationships	6		3				9	15	Osborne Ch. 6; Dixit & Nalebuff Ch. 4
5. Extensive Games with Incomplete Information  Topics: Information sets, consistent beliefs, sequential rationality, Weak Perfect Bayesian Equilibrium	6		3				9	15	Fudenberg & Tirole Ch. 6; Selected journal articles provided in class

Games: Modified Prisoner's Dilemma, Sale vs Production, Modified Entrant vs Incumbent									
Applications: Strategic entry, contract enforcement									
6: Information Economics	8		3				11	19	Selected journal articles provided in class
Topics: Moral hazard, adverse selection, signaling, principal-agent problems, mechanism design									
Games: Spence's Job Market Signaling Game, Akerlof's Market for Lemons, etc.									
Applications: Labor markets, insurance, market design									
<b>Total</b>	<b>32</b>		<b>16</b>				<b>48</b>	<b>82</b>	

Assessment strategy	Share in %	Time of assessment	Assessment criteria
Group Assignment	40	During the semester	Group assignment (presentation of the case: graded on a scale of 1 to 5; report: graded on a scale from 1 to 5)
Exam	60	During the semester	<p>The exam will be in the form of a closed book test. The answers shall be assessed as follows:</p> <p>10 points: excellent knowledge and abilities;  9 points: very good knowledge and abilities;  8 points: good knowledge and abilities;  7 points: fair knowledge and abilities;  6 points: satisfactory knowledge and abilities.  5 points: Poor knowledge and abilities; answers provided for approximately one-third of the questions, with numerous errors.  4 to 0 points: unsatisfactory knowledge and abilities</p> <p>To pass the course, students need to score at least 50% on the final exam.</p> <p>No external/retake exam is allowed.</p>

Author	Published in	Title	Issue No.or Volume	Publishing house or Internet site
<b>Required reading</b>				
Osborne, M. J	2004	An Introduction to Game Theory	1 <sup>st</sup> Edition	Oxford University Press
Fudenberg, D., & Tirole, J.	1991	Game Theory	1 <sup>st</sup> Edition	MIT Press
<b>Supplementary reading</b>				
Dixit, A., & Nalebuff, B.	2010	The Art of Strategy: A Game Theorist's Guide to Success in Business and Life	Illustrated Edition	W. W. Norton & Company
Tadelis, S	2024	Game Theory: An Introduction	2 <sup>nd</sup> Edition	Princeton University Press
Baird, D. G., Gertner, R. H., & Picker, R. C.	1998	Game theory and the law	1 <sup>st</sup> Edition	Harvard University Press
Maschler, M., Zamir, S., & Solan, E.	2020	Games theory	2 <sup>nd</sup> Edition	Cambridge University Press
Additional readings from academic journals (both classic and recent publications) will		Topics include strategy setting, pricing, corporate social responsibility, and more.		

be provided throughout the course				
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