

GAME THEORY: SYLLABUS

Instructor: Xiang Sun

Wuhan University, Economics and Management School
Academic Year 2015–2016, Semester 1

Chinese title: 博弈论

Prerequisite: Calculus, Probability, Advanced Microeconomics, Basic Game Theory

Course description: This module introduces students in economics and other social sciences to game theory, a theory of interactive decision making. The module focuses on presenting basic concepts, core ideas, main results, and recent developments.

Modular credit: 3 modular credits

Modular number:

Time: Week 1–9, Tuesday and Wednesday, 14:05–14:50, 14:55–15:40, 15:45–16:30

Venue: 枫-314

Module website: <http://www.xiangsun.org/teaching>.

Instructor: 孙祥

- E-mail: xiangsun.econ@gmail.com
- Homepage: <http://www.xiangsun.org>. If you can not access, please use VPN.
- Office: Room A501-2, Liangsheng Building
- Telephone: +86 027 6875 5072
- Mailbox: 11-13

Office hours: By appointment

Teaching assistants: 瞿爱霞、杨胜寒

Main references:

[OR] Martin J. Osborne and Ariel Rubinstein, *A Course in Game Theory*, MIT Press, 1994.

Electronic version is available at [Osborne's homepage](#) or [Rubinstein's homepage](#). The latest version is on 24 Sep. 2012.

[Sun] Xiang Sun, *Lecture Notes on Game Theory: Theory and Examples*, 2015.

Electronic version is available at [Sun's homepage](#).

Language:

	Lecture notes	Lectures	Homework sets	Mid-term test	Final examination
Chinese		✓			
English	✓	✓	✓	✓	✓

Supplementary readings:

- * Robert J. Aumann, *Lectures on Game Theory*, Westview Press, 1989.
- * Drew Fudenberg and Jean Tirole, *Game Theory*, MIT Press, 1991.
- * Robert Gibbons, *Game Theory for Applied Economists*, Princeton University Press, 1992.
- Matthew O. Jackson, *Social and Economic Networks*, Princeton University Press, 2010.
- Geoffrey A. Jehle and Philip J. Reny, *Advanced Microeconomic Theory* (3rd Edition), Prentice Hall, 2011.
- * Vijay Krishna, *Auction Theory* (2nd edition), Academic Press, 2010.
- Harold Kuhn, *Lectures on Theory of Games*, Princeton University Press, 2003.
- * Michael Maschler, Eilon Solan, and Shmuel Zamir, *Game Theory*, Cambridge University Press, 2013.
- Andreu Mas-Colell, Michael D. Whinston, and Jerry R. Green, *Microeconomic Theory*, Oxford University Press, 1995.
- Roger Myerson, *Game Theory: Analysis of Conflict*, Harvard University Press, 1997.
- Martin J. Osborne and Ariel Rubinstein, *Bargaining and Markets*, Academic Press, 1990.
- Alvin E. Roth and Marilda Sotomayor, *Two-Sided Matching: A Study in Game-Theoretic Modeling and Analysis*, Cambridge University Press, 1992.
- John von Neumann and Oskar Morgenstern, *Theory of Games and Economic Behavior* (3rd edition), Princeton University Press, 1953.

Grading:

- Report on papers: 30% (group working, each group consists of at most 3 students); Selection criteria for a paper to be read
 - 2000 or more recent
 - Related to the topics covered
 - Published on Ecta, AER, REStud, JET, TE, GEB.
 - The chosen paper should be submitted to me for my approval before last lecture.
 - Report should submit before final examination.
 - Report can be hand-written or electronic.
- Closed-book quiz: 20%

- Date: 27 Oct. 2015
- Time: 1400–1630
- Venue: 枫-314
- Scope: Lectures 5–8
- No helpsheet
- Closed-book final examination: 50%
 - Date: Nov. 18/Jan. 12
 - Time: TBA
 - Venue: TBA
 - Scope: Lectures 1–15
- Bonus:
 - 10 marks for attendance
 - 1 mistake in my notes = 1 mark, up to 3marks
 - 3 typos in my notes = 1 mark, up to 2 marks
 - Each mistake and typo will be counted once. First come first get.
 - [Sun] 5.15 = 3 marks
 - [Sun] 7.39 = 3 marks

Examination policy:

- Each student should bring the student card with clear photo ID.
- Each student can bring one A4-size two-sided hand-written helpsheet.
- Each student can bring an English-to-Chinese paper dictionary.
- No permission is ever given to a student to write the quiz or final examination in advance of its date.
- Cheating = 0 mark
- The student who misses the quiz can have the weight of the missed quiz shifted to the final examination, if both of the following conditions are met:
 - The student notifies the instructor via e-mail and in advance of the date and time that the quiz or examination will be missed.
 - The student submits an official medical certificate to the instructor within 3 working days of final examination.
- Students who do not write the quiz, and fail to meet both criteria receive a 0 mark.
- There is no make-up for quiz or the final examination.

Course outline:

- Part 1: Lecture 1, history of game theory
- Part 2: Lectures 2–4, static game
- Part 3: Lectures 5–7, epistemic foundation
- Part 4: Lectures 8–12, dynamic game
- Part 5: Lectures 13–14, mechanism design
- Part 6: Lecture 15, cooperative game

Tentative time table:

Week	Lecture	Date	[OR]	[Sun]	Topics	Remarks
1	1	Sep. 8	1	1	Introduction	
1	2	Sep. 9	2.1–2.4	2	Strategic games	
2	3	Sep. 15	2.5–2.6	4	Bayesian games	
2	4	Sep. 16	3.1–3.3	6–7	Mixed-strategy Nash equilibrium, correlated equilibrium	
3	5	Sep. 22	4	8	Rationalizability	
3	6	Sep. 23	5.1–5.3	9	Knowledge model	
4		Sep. 29				
4		Sep. 30				
6	7	Oct. 13	5.4–5.5	10	Interactive epistemology	
6	8	Oct. 14	6	11	Extensive games	
7	9	Oct. 20	7	12	Bargaining games	
7	10	Oct. 21	8	13	Repeated games	
8		Oct. 27			Quiz	
8	11	Oct. 28	11–12	14	Extensive games with imperfect information 1: PBE	
9	12	Nov. 3	11–12	14	Extensive games with imperfect information 2: SE, PE	
9	13	Nov. 4		16	Social choice theory	
10	14	Nov. 10	10	17–19	Mechanism design, implementation theory	
10	15	Nov. 11	13–15	20	Coalitional games	
		Nov. 18			<i>Final examination 1</i>	
		Jan. 5			<i>Submit report</i>	
		Jan. 12			<i>Final examination 2</i>	
		Jan. 14			<i>Announce final marks</i>	
		Jan. 15			<i>Submit final marks</i>	

Some useful web sites:

- <http://www.gametheorysociety.org>
- <http://www.gametheory.net>
- 关于博弈论学习和教材选择的一点建议 by 唐前锋