

GAME THEORY: SYLLABUS

Instructor: Xiang Sun

Wuhan University, Economics and Management School
Academic Year 2014–2015, 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: 1400036 | 20141005164 (金融学)/20141005165 (经济学)/20141005166 (数理弘毅班)

Time: Week 1–18, Wednesday, 14:05–14:50, 14:55–15:40, 15:45–16:30

Venue: 1 区老外 101

Module website: <http://www.xiangsun.org/teaching>. If you can not access, please use VPN.

Instructor: 孙祥

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- Mailbox: 11-13

Office hours: By appointment

Teaching assistants:

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- 孙一腾; E-mail: nnsyt@qq.com

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*, 2014.

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:

- Four homework sets: 25% (group working, each group consists of at most 4 students)
 - Homework 1 (7%): 2.31/2.33, 2.39/2.43, 2.64, 3.21, 3.26, 5.20/5.27, 6.11, due 22 Oct. 2014
 - Homework 2 (4%): 7.17, 7.37, 8.37, 9.10, due 1 Dec. 2014
 - Homework 3 (10%): for lectures 8–11, due 10 Dec. 2014
 - Homework 4 (4%): for lectures 12–13, due 15 Dec. 2014
- Closed-book mid-term test: 25%
 - Date: 3 Dec. 2014
 - Time: 1400–1630
 - Venue: 老外楼 101

- Scope: Lectures 2–7
- Closed-book final examination: 50%
 - Date: 24 Dec. 2014
 - Time: 14:30–16:30
 - Venue: 老外楼 101
 - Scope: Lecture 1–13
- Bonus:
 - 1 mistake in my notes = 1 mark
 - 3 typos in my notes = 1 mark
 - [Sun] 5.15 = 3 marks
 - [Sun] 7.39 = 3 marks

Each mistake, typo, and bonus question will be counted once. First come first get.

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.
- No permission is ever given to a student to write the mid-term test or final examination in advance of its date.
- Cheating = 0 mark
- The student who misses the mid-term test can have the weight of the missed mid-term test shifted to the final examination, and the student who misses the final examination can request a make-up, 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 test or examination will be missed.
 - The student submits an official medical certificate to the instructor within 3 working days of mid-term test or final examination.
- Students who do not write a mid-term test, or the final examination and fail to meet both criteria receive a 0 mark.

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 8–11, dynamic game
- Part 5: Lecture 12, social choice
- Part 6: Lecture 13, cooperative game

Tentative time table:

Week	Lecture	Date	[OR]	[Sun]	Topics	Remarks
1	1	Sep. 10	1	1	Introduction	
2	2	Sep. 17	2.1–2.4	2	Strategic games	
3	3	Sep. 24	2.5–2.6	3–4	Bayesian games, auction	
5	4	Oct. 8	3.1–3.3	5–6	Mixed-strategy Nash equilibrium, correlated equilibrium	
6	5	Oct. 15	4	7	Rationalizability	
7	6	Oct. 22	5.1–5.3	8	Knowledge model	HW 1
8	7	Oct. 29	5.4–5.5	9	Interactive epistemology	
9	8	Nov. 5	6	10	Extensive games	
13	9	Dec. 1	7	11	Bargaining games	HW 2
13		Dec. 3			<i>Mid-term test</i>	
14	10	Dec. 8	8	12	Repeated games	
14	11	Dec. 10	11–12	13	Extensive games with imperfect information	
15	12	Dec. 15		15	Social choice theory	HW 3
15	13	Dec. 17	13–15	18	Coalitional games	
16		Dec. 24			<i>Final examination</i>	HW 4
		Dec. 26			<i>Announce final marks</i>	
		Jan. 24			<i>Submit final marks</i>	

Some useful web sites:

- <http://www.gametheorysociety.org>
- <http://www.gametheory.net>