

# GAME THEORY: SYLLABUS

Instructor: Xiang Sun

Wuhan University, Economics and Management School  
Academic Year 2017–2018, Semester 1



**Chinese title:** 博弈论

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

**Modular credit:** 3 modular credits

**Time:** Week 1–10, Wednesday 14:05–16:30 and Friday 09:50–12:15

**Venue:** 计-201

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

**Instructor:** 孙祥

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- Homepage: <http://www.xiangsun.org> (VPN may be needed).
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- Mailbox: 11-13

**Office hours:** By appointment

Teaching assistants: 成军

#### Main references:

- [M] Xiang Sun, *Matching and Market Design: Theory and Practice*, 2017.  
Electronic version is available at [Sun's homepage](#). The latest version is on May 25, 2017.
- [G] Xiang Sun, *Lecture Notes on Game Theory: Theory and Examples*, 2017.  
Electronic version is available at [Sun's homepage](#).
- Matthew O. Jackson, *Social and Economic Networks*, Princeton University Press, 2010.

#### Language:

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

#### Supplementary readings:

- Alvin E. Roth and Marilda Sotomayor, *Two-Sided Matching: A Study in Game-Theoretic Modeling and Analysis*, Cambridge University Press, 1992.
- Toyotaka Sakai, *Market Design*, Chikumashobo Ltd., 2013.  
中文翻译：坂井丰贵著，蔡晓智译，合适，后浪出版公司，江西人民出版社，2016。
- Alvin E. Roth, *Who Gets What—and Why: The New Economics of Matchmaking and Market Design*, Eamon Dolan/Houghton Mifflin Harcourt, June 2, 2015.  
中文翻译：埃尔文·罗斯著，傅帅雄译，共享经济，机械工业出版社，2015。

#### Grading:

- A short proposal to analyze some matching/information transmission/network phenomena: 50%
- Closed-book final examination: 50%
  - Date and time: see time table
  - Venue: 计-201
  - Scope: All the lectures
- Bonus:
  - 10 marks for the attendance
  - 1 mistake in my notes/slides = 1 mark, up to 3 marks
  - 3 typos in my notes/slides = 1 mark, up to 2 marks
  - Each mistake and typo 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, 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 mid-term test 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 mid-term test, and fail to meet both criteria receive a 0 mark.
- There is no make-up for the mid-term test or the final examination.

#### Course outline:

- Part 1: Lectures 1–12, Matching and Market Design
- Part 2: Lectures 13–15, Information Design
- Part 3: Lectures 16–17, Social and Economic Networks

#### Tentative time table:

#	Week	Date	Topics	Sections
1	1	Sept. 6	Marriage problem 1: DA algorithm	[M] 1–2.3
2	1	Sept. 8	Marriage problem 2: Properties of stable matchings	[M] 2.4–2.5
3	2	Sept. 13	Marriage problem 3: Incentive compatibility	[M] 2.8–2.10
4	2	Sept. 15	College admissions	[M] 3.1–3.9
5	3	Sept. 20	Housing market and TTC	[M] 4.1–4.4
6	3	Sept. 22	House allocation	[M] 5.1–5.3
7	4	Sept. 27	House allocation with existing tenants	[M] 6.1–6.6
8	4	Sept. 29	Random matching: RP and PS	[M] 8.1–8.10
	5	Oct. 4	Holiday	
	5	Oct. 6	Holiday	
9	6	Oct. 11	School choice 1	[M] 9.1–13.3
10	6	Oct. 13	School choice 2	[M] 9.1–13.3
	7	Oct. 18	Cancel	
11	7	Oct. 20	School choice 3	[M] 9.1–13.3
12	8	Oct. 25	Kidney exchange	[M] 14.1–14.3
13	8	Oct. 27	Cheap talk	[G] 14.4
14	9	Nov. 1	Bayesian persuasion	[G] 14.5
15	9	Nov. 3	Sequential screening	[G] 15.5
16	10	Nov. 8	Games on networks	
17	10	Nov. 10	Self-learning	
	17	Dec. 24	The national entrance examination for postgraduate	
	18	Jan. 2	Final examination submission	
	22	Jan. 31	Proposal submission	

#### 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
- Website of Alvin Roth
- Market Design
- Website of Fuhito Kojima
- MOOC: Social and Economic Networks