

# GAME THEORY: SYLLABUS

Instructor: Xiang Sun

Wuhan University, Economics and Management School  
Academic Year 2020–2021, Semester 1

**Chinese title:** 博弈论

**Prerequisite:** (Advanced) Game Theory

**Course description:** This course introduces the theory of matching and market design, and discusses how the theory can be applied to these and other applications.

**Modular credit:** 3 modular credits

**Modular number:** EC412

**Time:** Week 1–16, Thursday, 09:50–12:15

**Venue:** 6-305

**Module website:** <https://www.xiangsun.org/teaching>, for announcements and lecture notes downloading.

**Instructor:** 孙祥

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  - Before asking questions, please briefly read [提问的智慧](#)
  - Before sending e-mails, please read Topic 7 in [WISE 学生礼仪指南](#)
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**Office hours:** By e-mail appointment

**Teaching assistant:** Not available

### Main references:

- [RS] Alvin E. Roth and Marilda Sotomayor, *Two-Sided Matching: A Study in Game-Theoretic Modeling and Analysis*, Cambridge University Press, 1992.
- [SU] Tayfun Sönmez and M. Utku Ünver, Matching, Allocation, and Exchange of Discrete Resources, in *Handbook of Social Economics, Volume 1A* (Jess Benhabib, Alberto Bisin and Matthew O. Jackson eds.), Chapter 17, 781–852, Elsevier B.V., 2011.
- [AT] Atila Abdulkadiroğlu and Tayfun Sönmez, Matching Markets: Theory and Practice, in *Advances in Economics and Econometrics Theory and Applications, Volume II*, Tenth World Congress.
- [Sun] Xiang Sun, *Matching and Market Design: Theory and Practice*, 2018.  
Electronic version is available at [Sun's homepage](#). The latest version is on February 28, 2018.

### Language:

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

### Supplementary readings:

- 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。（中文翻译很糟糕）
- [Information for the Public: Stable matching: Theory, evidence, and practical design.](#)
- [Scientific Background: Stable allocations and the practice of market design.](#)

### Grading:

- 10% for the class performance,
- 50% for the individual presentation on the chosen paper,
- 40% for the individual report on the chosen paper.

The selection criteria for a paper to present/report are as follows:

- 2010 or more recent.
- Related to the topics covered.
- Published on *Econometrica*, *American Economic Review*, *Journal of Political Economy*, *Quarterly Journal of Economics*, *Review of Economic Studies*, *Journal of Economic Theory*, *Theoretical Economics*, *Games and Economic Behavior*, *American Economic Journal: Microeconomics*, *Management Science*.
- The chosen paper should be submitted to me for my approval before Monday of Week 13.

The criteria for presentation are as follows:

- The date/time of the presentation should be determined together with the chosen paper.

- The presentation should be at most 20 minutes.
- The slides for presentation should be organized as follows: Motivation, Model, Main Result, Interpretation/Implication, Conclusion. (10 pages are preferred)

The criteria for report are as follows:

- The report needs to be written in A4 paper, and the number of pages is between 2 and 3.
- The report should be written in Chinese, except terminologies.
- The report should be organized as follows: Motivation, Model, Main Result, Interpretation/Implication, Conclusion.
- The report should be submitted before Monday of Week 18.

**Tentative time table:**

#	Week	Date	Topics	Sections
1	1	Sep. 10	Introduction, Marriage problem 1: DA algorithm	[RS] 2.1–2.3, [Sun] 1–2.3
2	2	Sep. 17	Marriage problem 2: Properties of stable matchings	[RS] 2.3–3.1, [Sun] 2.4–2.6
3	3	Sep. 24	Marriage problem 3: Incentive compatibility	[RS] 4.1–4.3, [Sun] 2.7–2.8
	4	Oct. 1	Holiday	
4	5	Oct. 8	College admissions	[RS] 2.4–2.5, [Sun] 3.1–3.6
5	6	Oct. 15	Housing market and TTC	[SU] 2.2, [Sun] 4.1–4.4
6	7	Oct. 22	House allocation and dictatorship	[SU] 2.1, [Sun] 5.1–5.6
7	8	Oct. 29	House allocation with existing tenants and YRMH-IGYT	[SU] 2.3, [Sun] 6.1–6.5
8	9	Nov. 5	Random matching: RP and PS	[Sun] 8.1–8.6
9	10	Nov. 12	School choice 1: Acyclicity	[SU] 4.3–4.4, [Sun] 9.1–10.2
10	11	Nov. 19	School choice 2: Efficiency improvement	[Sun] 11.1–11.4
11	12	Nov. 26	School choice 3: Affirmative action	[Sun] 12
12	13	Dec. 3	Kidney exchange	[Sun] 13.1–13.3
	14	Dec. 10	Presentation 1	
	15	Dec. 17	Presentation 2	
	16	Dec. 24	Presentation 3	
	18	Jan. 4	Reports submission	