

TOPICS IN ADVANCED MICROECONOMICS 1: SYLLABUS

Instructor: Xiang Sun

Wuhan University, Economics and Management School
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Chinese title: 高级微观经济学专题 1

Prerequisite: Calculus (basic), Linear Algebra (intermediate), Probability (basic)

Course description: This course provides an overview and synthesis of research on social and economic networks, drawing on studies by sociologists, economists, computer scientists, physicists, and mathematicians.

The course begins with some empirical background on social and economic networks, and an overview of concepts used to describe and measure networks. Next, we will cover a set of models of how networks form, including random network models as well as strategic formation models, and some hybrids. We will then discuss a series of models of how networks impact behavior, including contagion, diffusion, learning, and peer influences.

Modular credit: 2 modular credits

Modular number:

Time: Week 1–12, Wednesday, 09:50–12:15

Venue: 5-206

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

Instructor: 孙祥

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Office hours: By appointment

Teaching assistants:

Main references:

- Matthew Jackson, *Social and Economic Networks*, Princeton University Press, 2010.
I will distribute the electronic version.

Language:

- Lectures are in English and Chinese.
- Lecture notes is in English.

Grading:

- Performance (10%)
- Home work (40%)
- Closed-book final examination (50%)

Bonus:

- Attendance.
- A short proposal (within 5 pages) to analyze some network phenomena, up to 20 marks.
- 2 mistakes in my slides = 1 mark, up to 3 marks.
5 typos in my slides = 1 mark, up to 2 marks.
Each mistake and typo will be counted once. First come first get.
- Several bonus questions will be given in lectures.

Tentative time table:

#	Week	Date	Topics	Sections
1	1	Sep. 6	Introduction	1
2	2	Sep. 13	Representing and measuring networks	2
3	3	Sep. 20	Erdos-Renyi graphs	4
4	4	Sep. 27	Generalized random graphs and small-world model	4
	5	Oct. 4	Holiday	
5	6	Oct. 11	Growing random networks and power laws	5
6	7	Oct. 18	Strategic network formation	6
7	8	Oct. 25	Diffusion through networks	7
8	9	Nov. 1	Learning on networks	8
9	10	Nov. 8	Games on networks	9
10	11	Nov. 15	Search on networks: navigation and web search	
11	12	Nov. 22	TBA	
	14	Dec. 6	Final examination	
	22	Jan. 31	Proposal submission	

Some useful web sites:

- [MOOC: Social and Economic Networks: Models and Analysis](#)
- [MOOC: Networks Illustrated: Principles without Calculus](#)