

Econ 510H, Fall 2022

Advanced Micro Theory: Economics of Social Networks

Instructor: Jaden Yang Chen

Class Time: T&R, 3:30 pm - 4:45 pm, 202 Dey Hall.

Office Hours: Tuesday, 2 pm – 3 pm or by appointment at yangch@unc.edu, Gardner 301.

Class Description

This course introduces the social networks and their applications in economics. The goal is to sustain, mentor research experience of students who are major in economics. Tools of graph theory and game theory will be taught and then used to analyze networks. In this course, we will cover the following topics, e.g., group behavior, contagion, information aggregation, voting and social choice theory.

Prerequisites

Economics 400 and 410 with a grade of C or better. Permission from the instructor is required for students lacking the prerequisites. Some parts of the course will require familiarity with basic calculus (e.g., taking derivatives), linear algebra (e.g., matrix multiplication) and probability theory (e.g., conditional probability, Bayes' rule).

Textbook

Networks, Crowds and Markets by David Easley and Jon Kleinberg, Cambridge University Press, 2010

There is an online version of the textbook at <https://www.cs.cornell.edu/home/kleinber/networks-book/>.

Course Outline

Below is the tentative schedule for the semester.

1. Introduction to networks, crowds, and markets [Aug 16]
2. Contagion on social networks [Aug 18, 23 & 25]
3. Social learning and information cascades [Aug 30, Sep 1, 8, 13]
4. Voting and Information aggregation [Sep 15, 20]
5. Social choice theory [Sep 27, 29, Oct 4, 11]
6. Matching [Oct 13, 18, 25, 27]

7. Information asymmetry [Nov 3, 8, 10]

8. Auction (if we have time) [Nov 15, 17]

9. Term paper presentation.

Course Requirements

- *Problem set.* There will be 5 homework assignments, which will be posted on Canvas. If you get stuck, you can discuss with me during my office hours. Late submission will not be accepted. Please be aware that it is your responsibility to point out any grading or clerical errors within one week of receiving the assignment back.
- *Midterms.* There will be 2 in-class midterms on September 22 and November 1. If a student misses a midterm, the weight of that midterm in the course grade will be added to the weight on the student's final. An exception will be made for University approved absences (see <http://catalog.unc.edu/policies-procedures/attendance-gradingexamination/>); students with this type of absence may request a make-up examination at a time convenient to both student and instructor.
- *Term papers.* Every student needs to submit a term paper of 10-15 pages length. You may work in a group up to 3 students. I will provide a set of topics, which will be discussed after the first midterm. You can also work on your own topic after getting my approval. Once topics are assigned, you are strongly encouraged to discuss with me as early as possible before my office hour gets too crowded. Every group (or individual) will need to give a 20-min presentation of your paper.

Grades

- Problem Sets: 20%
- First Midterm (Sep 22): 20%
- Second Midterm (Nov 1): 20%
- Term Paper (30%)
- Participation (10%)

Attendance Policy

You are expected to attend every lecture. As stated in the University's [Class Attendance Policy](#), no right or privilege exists that permits a student to be absent from any class meetings, except for these University Approved Absences:

1. Authorized University activities
2. Disability/religious observance/pregnancy, as required by law and approved by [Accessibility Resources and Service](#) and/or the [Equal Opportunity and Compliance Office](#) (EOC)

3. Significant health condition and/or personal/family emergency as approved by the [Office of the Dean of Students](#), [Gender Violence Service Coordinators](#), and/or the [Equal Opportunity and Compliance Office](#) (EOC).

If there are situations that may result in absence and are not university approved, please discuss with me directly.

Honor Code

All students are expected to follow the guidelines of the UNC Honor Code. If you are unsure about which actions violate the Honor Code, please consult studentconduct.unc.edu.

Syllabus Changes

I reserve the right to make changes to the syllabus including project due dates and test dates. These changes will be announced as early as possible.