# Game Theory–Econ 980

Instructor: Konstantinos Serfes

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## Course Description

Game theory studies how people, firms, countries–players in general–interact in situations where the actions of one player affect all players. The purpose of this course is to introduce first year business Ph.D. students to the most important concepts in game theory in a very accessible way. In particular, we will emphasize rigorous analysis of simple examples (and applications) rather than complicated or incomplete analysis of general models. This will facilitate the students' understanding of key ideas without getting bogged down in unnecessary mathematical formalism.

## Main readings

- Required: Steven Tadelis. *Game Theory: An Introduction.* Princeton University Press (my lecture notes and slides are uploaded on Bb Learn).
- Optional: William H. Sandholm. *Lecture Notes on Game Theory and Information Economics*. (uploaded on Bb Learn; more advanced).

## Grading

There will be: i) an exam (30% of the total grade), ii) 7 problem sets (30% of the total grade) and iii) a research project and a presentation (40% of the total grade).

### Research project and presentation

Each student should choose a topic of his/her interest that uses game theory. You must seek my approval of the topic. The goal of the research project is to extend the literature in one meaningful direction. The presentation during week 9 or 10 should consist of an introduction/motivation, a

quick literature review, the model and a sketch of the results. The purpose of the presentation is for the author to receive feedback from the audience. The final research paper is due during week 12 (see the schedule).

## Schedule

The schedule is tentative and subject to change.

**Week 1, 09/25 - 09/29:**

- Chapter 1: Preliminaries
- Chapter 2: Rationality and common knowlwdge

**Week 2, 10/02 - 10/06:**

- Chapter 3: Pinning down beliefs: Nash equilibrium
- Chapter 4: Mixed strategy

**Week 3, 10/09 - 10/13:**

- Chapter 5: Dynamic games of complete information: Preliminaries
- Chapter 6: Credibility and sequential rationality

**Week 4, 10/16 - 10/20:**

- Chapter 7: Repeated games

**Week 5, 10/23 - 10/27:**

- Chapter 8: Bayesian games

**Week 6, 10/30 - 11/03:**

- Chapter 9: Auctions and competitive bidding
- Chapter 10: Sequential rationality with incomplete information

**Week 7, 11/06 - 11/10:**

- Chapter 11: Signaling games

**Week 8, 11/13 - 11/17:**

- Chapter 12: Building a reputation
- Exam, Friday, November 17th

**Week 9, 11/20 - 11/24:**

- Monday class: Presentations
- No class on Wednesday (Thanksgiving)

**Week 10, 11/27 - 12/01:** Presentations

**Week 11, 12/04 - 12/08:** No class

**Week 12, 12/11 - 12/15:** Research paper must be submitted on Wednesday Dec. 13th by 17:00.

## Academic Policies

- Centralized Syllabus Policies and Statements
- Academic Calendars