

Psc 584
Game Theory

Prof. Mark Fey
Fall 2013

Syllabus

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This course is designed to teach graduate students in political science the tools of game theory. The course will cover the standard group of essential concepts and some additional topics that are particularly important in formal theory. In addition, we will cover some specific applications of game theory in political science.

The prerequisite for the course is Psc 408, or an equivalent background in basic game theory. The course picks up where Psc 408 left off, with games of incomplete information. After covering this material, we will return to complete information for a deeper look at the theory.

Course Meetings: Lectures for the course will be twice weekly, Monday and Wednesday in Harkness 329, from 2:00 to 3:30.

Course Work: Game theory, as with most mathematical topics, is best learned by doing, rather than reading. Thus, there will be problem sets assigned (more or less) every other week covering the lecture material and readings. Due dates for the problem sets will be announced and late work will not be accepted. Solutions to the problem sets will be covered in class. The components of the final grade are: final exam (40%), midterm exam (25%), problem sets (25%), and class participation (10%).

Course Readings: The main reference for the course is a working draft of **Analytical Methods for the Study of Politics**, Volume 2, by John Duggan and myself. Chapters from this book will be distributed in class.

The required text is **Game Theory** by Drew Fudenberg and Jean Tirole, MIT Press. An additional recommended text is **Game Theory for Applied Economists** by Robert Gibbons, Princeton University Press.

The topics for the course and the relevant sections in the textbooks are listed on the next page. Naturally, this schedule may change as the semester unfolds.

Topic 0 The Basic of Bargaining

- Fudenberg and Tirole, sec. 4.4
- Gibbons, sec. 2.1.D
- Ariel Rubinstein, "Perfect Equilibrium in a Bargaining Model," *Econometrica* 50:1 (1982), 97{110 (JSTOR)
- John Nash, "The Bargaining Problem," *Econometrica* 18:21 (1950), 155{162 (JSTOR)

Topic 1 Bayesian Games and Bayesian-Nash Equilibrium

- Fudenberg and Tirole, ch. 6
- Gibbons, ch. 3
- John C. Harsanyi, "Games with Incomplete Information Played by 'Bayesian' Players, I-III," *Management Science* 4 (1967), 159{182, 320{334, 486{502 (JSTOR)
- John C. Harsanyi, "Games with randomly disturbed payoffs: a new rationale for mixed-strategy equilibrium points," *International Journal of Game Theory* 2 (1973), 1-23
- Thomas R. Palfrey and Howard Rosenthal, "Private incentives in social dilemmas : The effects of incomplete information and altruism," *Journal of Public Economics* 35 (1988) 309{332 (link)

Topic 2 Perfect Bayesian Equilibrium and Sequential Equilibrium

- Fudenberg and Tirole, ch. 8
- Gibbons, sec. 4.1
- Drew Fudenberg and Jean Tirole, "Perfect Bayesian equilibrium and sequential equilibrium," *Journal of Economic Theory* 53 (1991), 236{260

Topic 3 Signaling Games

- Fudenberg and Tirole, sec. 11.2
- Gibbons, sec. 7.1

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Topic 6