**Government 7074: Game Theory II – Advanced Topics**

Spring 2010

Professor: Kevin Morrison  
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White Hall 315

Class Location: Stimson 119  
Class Time: Mondays, 2-4:25pm  
Office Hours: By appointment

**GOALS OF THE COURSE**

This class completes the one-year sequence in PhD-level game theory in Cornell’s Government Department. The course has two goals. The first is to round out graduate students’ knowledge of the basic technical skills required to do professional-level, game-theoretic work in political science. The second is to enable graduate students to develop their own game-theoretic papers. With regard to the first goal, the class will cover the following topics: coalitional games, Bayesian games, extensive games of incomplete information, bargaining, evolutionary games, mechanism design, and auctions. We will also spend a week discussing the mathematics of optimization. With regard to the second goal, we will spend several sessions talking about what makes a game-theoretic paper “good” and the empirical implications of models, as well as discussing and developing students’ own projects.

**PRE-REQUISITES**

The pre-requisite for this course is a grade of B+ or above in GOVT 7073 or some equivalent course. If you have not taken 7073, please see the instructor.

**GRADING**

Exercise related to the first goal of the course:

Problem sets: 35%

- There will be one problem set per week in the first part of the class. These sets will be posted on the course’s Blackboard site (usually on Tuesdays) and due at the beginning of the next class session. I will take off one point for every day extra you take to turn in the set. *I will not accept problem sets more than two days late, unless the circumstances are exceptional, and only with prior approval.* “I have a lot of work” is not an exceptional circumstance. Note that since there are only five problem sets, I will *not* be dropping your lowest individual problem set grade in this class (as in 7073).

As in 7073, you may work in small groups to complete the sets, within a few guidelines. (1) You must attempt to solve all the problems before you meet in a group. (2) You must turn in your problem set individually, but you should
include the names of other students with whom you consulted. (3) You should only turn in completed problems that you could, after having completed the assignment, answer again correctly.

Exercise related to the second goal of the course:

Final paper: 65%
- You will be expected to develop a model of your own, using the techniques that you have learned during this year of game theory. We will discuss the requirements of the paper in class, but given the time that will be devoted to it in class, I hope it will approach the level of a draft of a potentially publishable paper.

The 65% figure will actually be a combination of three grades related to the paper. The first five percent will be based on the presentation of your abstract right before spring break. The next 20 percent will be based on your presentation to the class at the end of the course. The final 40 percent will be based on the paper that you turn in, due May 14, 2010. As opposed to 7073, where the grade was principally based on the model, in 7074 I will be grading the overall paper, which I expect to be well written, thorough, etc. It should be apparent from this breakdown that I expect no incompletes to emerge from this class.

CORNELL UNIVERSITY POLICIES AND REGULATIONS

Participation in this class commits students and instructors to abide by Cornell’s expectations and policies regarding equal opportunity and academic integrity. Further, it implies permission from students to submit their written work to services that check for plagiarism. Each student in this course is expected to abide by the Cornell University Code of Academic Integrity. It is your responsibility to familiarize yourself with university policies regarding plagiarism and other violations of academic integrity. Violations of the University Code of Academic Integrity will be firmly dealt with in this class. The Code can be found on the web at:

http://cuinfo.cornell.edu/Academic/AIC.html

In addition, I will observe all university policies addressing racial, ethnic, gender, sexual preference, or religious discrimination and all forms of harassment; I will conduct class in conformance with the provisions of the Americans with Disabilities Act. Students are expected to familiarize themselves with pertinent policies and to bring any concerns related to them to my attention.
REQUIRED TEXTS

These books were not used in GOVT 7073 and are required for 7074:


The books are the same as those in GOVT 7073:


NOTE: In this particular class, there will be students who took 7073 when the third edition of Dixit/Skeath was not out yet. We will deal with this in class. If you only have the second edition, you do not need to buy the third edition if you don’t want to. In the readings below, I copy the title of the chapter from the third edition, which is always the same as the title from the second edition.

SCHEDULE OF CLASSES AND READINGS

January 25: Coalitional Games and the Core

- Dixit/Skeath/Reiley Chapter 19, “Markets and Competition”
- Osborne Chapter 8

February 1: Bayesian Games

- Dixit/Skeath/Reiley Chapter 9, “Uncertainty and Information,” Sections 1 and 2
  - This chapter has changed, so users of the previous edition should get the new chapter
- Osborne Chapter 9 (except 9.6 and 9.8)

February 8: Theory of Extensive Games with Incomplete Information

- Dixit/Skeath/Reiley Chapter 9, remaining
- Osborne Chapter 10, through page 336
February 15: Illustrations of Extensive Games with Incomplete Information

- Osborne Chapter 10, remaining

February 22: Bargaining

- Dixit/Skeath/Reiley Chapter 18, “Bargaining”
- Osborne Chapter 16

March 1: Evolutionary Equilibrium

- Dixit/Skeath/Reiley Chapter 13, “Evolutionary Games”
- Osborne Chapter 13

March 8: What makes a game-theoretic paper “good”?


- Thomson, Chapter 1, “Writing Papers.”

Optional


March 15: Paper abstracts presented in class

March 29: Mathematics of optimization


April 5: Empirical implications of theoretical models


Optional


April 12: Mechanism Design

- Dixit/Skeath/Reiley Chapter 14, “Mechanism Design”
  - Note this chapter does not appear in the 2nd edition.

April 19: Auctions

- Dixit/Skeath/Reiley Chapter 17, “Bidding Strategy and Auction Design”
- Osborne 9.6 and 9.8

- Chapter 2 of Thomson, “Giving Talks”

April 26 and May 3: Paper presentations