POLITICS AND STRATEGY

IMT Lucca Institute for Advanced Studies
Spring 2008

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Office Hours. Mondays, 15.00-17.00, or by appointment

Objectives. This course introduces students in the research area of Political Science and Institutional Change (PSIC) to important topics in microeconomics and game theory. I have designed it as a hybrid version of a set of classes taught by two graduate school advisors of mine at UCLA. Christian Hellwig is an associate professor in the Department of Economics. Michael Chwe was trained as an economist but works in the Department of Political Science. He is also an associate professor. The course material draws heavily on Hellwig's ECON 11 class and Chwe's POL SCI 30 class.

Microeconomic theory and game theory have at least two key characteristics in common. Both use formal models to make sense of real-world events. Moreover, both take self-interested individuals, firms, or governments with clear objectives and constraints as the starting point for analysis. Game theory highlights strategic interactions in particular. Politics is about various sorts of conflict, over electoral office, government policy, and so on. Conflict involves strategy as players compete to achieve their most preferred outcomes.

The microeconomics portion à la Hellwig comprises 25 percent of the course. It introduces students to formal economic analysis with an emphasis on consumer theory. We will study basic economic models and assumptions, individual preferences and utility functions, and utility maximization and choice.

The game theory portion à la Chwe comprises 75 percent of the course. It introduces students to the strategic analysis of conflict. We will characterize political phenomena in terms of simple mathematical models. Topics will include simultaneous-move games, sequential games, repeated games, and applications such as Condorcet's paradox, agenda-setting, and regime change.

For additional details, please see the course schedule as outlined ahead.

Textbooks. The course material will be largely self-contained. The textbook for the microeconomics portion is the 9th or international editions of *Microeconomic Theory* by Walter Nicholson. The textbooks for the game theory portion are *Game Theory for Applied Economists* by Robert Gibbons and the 2nd edition of *Games of Strategy* by Avinash Dixit and Susan Skeath. Our library has copies of each of these texts. The course schedule lists the relevant chapters or sections.

Requirements. I will post all lecture notes on-line. However, students will be expected to attend each class session. I encourage active participation during class. A problem set with 5 to 7 exercises will accompany each lecture. It will be due for collection the following week. I will post the answers on-line at that time. Though I will not grade the problem sets, the final exam will be based heavily on them. To succeed in the course, it is thus imperative that students understand how to solve the weekly exercises. I encourage students to visit my office hours for help as necessary. Class attendance along with the problem sets will count towards 25 percent of the course grade. The final exam will be comprehensive and will count towards the remaining 75 percent.

Course Schedule.

1. Tuesday, 8 April (14.00-17.00)

What is microeconomics? Introduction to economic models. Example: the pencil economy. Representation of individual preferences. Characterization of utility functions.

Chapter 1 of Nicholson provides an overview of economic models.
Chapter 2 of Nicholson reviews the mathematics of optimization.
Chapter 3 of Nicholson discusses preferences and utility functions.
Chapter 4 of Nicholson discusses utility maximization and choice. We will only cover the first half of this chapter.

2. Tuesday, 15 April (14.00-17.00)

Characterization of indifference curves. Definition of budget sets. Characterization of optimal choice. Lagrangian method.

Please refer to *chapters 2 to 4* of Nicholson as described before.

3. Tuesday, 22 April (14.00-17.00)

Introduction to game-theoretic models. Role of rationality. How to characterize simultaneous-move games. Prisoners' dilemma.

Chapters 1 and 2 of Dixit and Skeath provide an overview of game theory.

4. Monday, 5 May (16.30-19.30)

How to solve simultaneous-move games. Dominant strategies. Iterative elimination. Strategy profiles. Pure Nash equilibria. Mixed Nash equilibria.

Sections 1.1 and 1.3 of Gibbons discuss the relevant topics for simultaneous-move games.
Chapter 4 of Dixit and Skeath discusses pure strategies. We will not cover section 4.5.
Chapter 7 of Dixit and Skeath discusses mixed strategies.

5. Wednesday, 7 May (16.30-19.30)

Introduction to sequential-move games. Identification of sub-games. Sub-game perfect equilibria. Backwards induction.

Sections 2.1A, 2.2A, and 2.4 of Gibbons discuss the relevant topics for sequential-move games. *Chapter 3* of Dixit and Skeath does the same.

6. Wednesday, 14 May (14.00-17.00)

Political applications. Centrism in American versus European politics. Condorcet's paradox. Different voting systems. Role of agenda-setting.

Chapter 15 of Dixit and Skeath discusses strategy and voting.

7. Tuesday, 20 May (14.00-17.00)

Political applications. Threshold models and regime change. Nash equilibria in repeated games. Matching games.

Sections 2.3A and 2.3B of Gibbons discuss the repeated version of the prisoners' dilemma. *Chapter 11* of Dixit and Skeath does the same.
Please also refer to *Chapter 15* of Dixit and Skeath as described before.

8. Comprehensive Final Exam

To be scheduled.