

**Microeconomic Analysis II: Game Theory  
G6212, Spring 2009**

**Course Website:** <http://courseworks.columbia.edu>

**Instructor:**

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Office Hours: Wed 12.30-2.00pm (tentative); other times can be arranged by appointment.

**Teaching Assistant:**

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Office Hours: Fri 10.30am-12.00pm in Uris Library.

Recitation: Thu 6.10-8.00pm in 501-B IAB.

**Description:** G6212 is the second semester course in the Ph.D. core microeconomics sequence. It consists of two halves: *Game Theory* (first half) and *Contracting under Asymmetric Information* (second half, taught by Patrick Bolton). This half of the course provides an introduction to noncooperative game theory, which is a methodology to analyze the interaction of agents in strategic situations.

**Logistics:** Lectures are twice a week, Mon and Wed, 9.10-10.25am. This part of the course runs until March 11.

**Prerequisites:** The formal prerequisites to this course are G6211 and approval by the Department DGS. Substantively, a basic background in math is necessary (in particular, we will use multivariate optimization, some linear algebra, and a little real analysis). If you are not a Ph.D. student in Economics, please talk to me.

**Assignments:** I will assign weekly problem sets. You are encouraged to work with your classmates in solving them, but I request each of you to write up and turn in your own answers. Solutions to the problems will be posted on the course website.

**Grading:** Your homework will be graded on a satisfactory/unsatisfactory basis, but this is purely for you to track your understanding of the material. Homework will not count towards your grade. Instead, your grade (for this part of the course) will be determined by a mid-term exam. We will work out a suitable date and time for the exam.

**Readings:** I recommend that you concentrate your reading on my lecture notes that are available from the course website. The closest textbook treatment is:

- ★ Mas-Colell, Whinston, and Green (1995), *Microeconomic Theory* [MWG]

Lectures will follow their development reasonably closely. There are other well-known graduate level books you can also consult, such as:

- Kreps (1990), *A Course in Microeconomic Theory*
- Varian (1992, Third Edition), *Microeconomic Analysis*
- Fudenberg and Tirole (1991), *Game Theory*
- Osborne and Rubinstein (1994), *A Course in Game Theory*

Kreps is relatively chatty and has good intuition; Varian is very concise but often insufficient for our purposes; Fudenberg and Tirole and Osborne and Rubinstein are more advanced treatments, but well worth owning.

If at any point you want to look at advanced undergraduate level treatments for more applications, examples, and non-technical discussion, there are many good options out there, such as Gibbons (1992) *Game Theory for Applied Economists*. Feel free to ask me for other references.

### **Order of Topics:**

- 1. Introduction.** MWG Chapter 7.
- 2. Simultaneous-Move (Static) Games.** MWG Chapter 8.
- 3. Sequential-Move (Dynamic) Games.** MWG Chapter 9.
- 4. Imperfect Competition (incl. Repeated Games).** MWG Chapter 12.