

# ECO 765: Games and Information

Hunter College  
Department of Economics

**Professor:** Michael Levere (ml3721@hunter.cuny.edu)

**Office Hours:** Tuesday 9:30-10:30 pm, Room TBD

**Class Meetings:** Tuesday, 7:35-9:25 pm, North Building C114

**Required Textbook:** Robert Gibbons, *Game Theory for Applied Economists* (1992).

**Recommended Textbook:** Joel Watson, *Strategy: An Introduction to Game Theory* (2018).

**Course Description:** Game theory explores the strategic interaction between two actors. It is the foundation of modern microeconomics. Game theory can be used to predict where soccer players will attempt to shoot a penalty kick, whether a used car for sale is likely to be a lemon, how firms make hiring and production decisions, and how countries are expected to respond to threats of tariffs. This course will mostly be based in theoretical math, but will try to remain grounded in how the theory can apply to real world situations.

**Program learning outcomes:** This course will help you achieve the following core program-level learning outcomes:

- Explain core concepts in microeconomic theory, macroeconomic theory, and applied econometrics.
- Demonstrate ability to apply economic analysis to specific problems arising in a diversity of subfields of the discipline.
- Effectively communicate the application of economic reasoning, quantitative methods and evidence in a professional setting.

**Course-level learning outcomes:** By the end of this course, you will be able to:

- Explain equilibrium concepts for different games
- Predict people's behavior in strategic situations
- Evaluate how private information affects strategic interactions

**Co-requisites:**

1. ECO 701 Microeconomic Theory

**Class participation (10%):** The first component of your grade is class participation. You must attend class, have prepared for class, and engage in discussion. Regular participation is expected.

**Problem Sets (20%):** You will have two to three problem sets to work on during the semester. You can work on the problem set with your fellow classmates, but each student must submit his or her own final write-up of the problems. I will grade a subset of the problems that I think will accurately reflect your assessment. Solutions will be made available to help you in preparing for exams.

**Midterm (30%):** We will have an in-class midterm on October 30. The date of the midterm is non-negotiable. If you must miss the midterm for a verifiable medical/legal/sports reason, your midterm grade will be your grade on the final exam. An unexcused absence on the midterm without appropriate documentation will result in a zero.

**Final exam (40%):** The final exam will be cumulative, and will be on December 18 during our regularly scheduled class time. The date of the final is non-negotiable.

**E-mail policy:** I will always do my best to reply to any e-mail you send within 24 hours. My response will typically be of a similar length as your e-mail. If you have more detailed questions, I suggest you attend office hours. I will generally be available on Tuesdays before class as well. If you would like to meet outside of the regular office hours after class, please e-mail to schedule an appointment.

**Textbooks:** The required text for this course is Robert Gibbons' *Game Theory for Applied Economists*. This textbook forms the basis for the material we will cover in the course. Joel Watson's text *Strategy: An Introduction to Game Theory* is a little less formal, but provides useful background for those who are less familiar with the concepts. Watson covers most of the same topics as Gibbons, but in not quite as much depth. It is highly recommended that you get this textbook, though it is not strictly required.

**Note:** There will be no class on September 11 or September 18.

Academic dishonesty will not be tolerated. No dictionaries, cell phones, headphones, or PDAs of any kind are allowed during exams, nor is talking to other students, however briefly or for whatever reason. Hunter College regards acts of academic dishonesty (e.g., plagiarism, cheating on examinations, obtaining unfair advantage, and falsification of records and official documents) as serious offenses against the values of intellectual honesty. The College is committed to enforcing the CUNY Policy on Academic Integrity and will pursue cases of academic dishonesty according to the Hunter College Academic Integrity Procedures.

In compliance with the American Disability Act of 1990 (ADA) and with Section 504 of the Rehabilitation Act of 1973, Hunter College is committed to ensuring educational parity and accommodations for all students with documented disabilities and/or medical conditions. It is recommended that all students with documented disabilities (Emotional, Medical, Physical, and/or Learning) consult the Office of AccessABILITY, located in Room E1214B, to secure necessary academic accommodations. For further information and assis-

tance, please call: (212) 772-4857 or VRS (646) 755-3129.

In compliance with the CUNY Policy on Sexual Misconduct, Hunter College reaffirms the prohibition of any sexual misconduct, which includes sexual violence, sexual harassment, and gender-based harassment retaliation against students, employees, or visitors, as well as certain intimate relationships. Students who have experienced any form of sexual violence on or off campus (including CUNY-sponsored trips and events) are entitled to the rights outlined in the Bill of Rights for Hunter College.

- a. Sexual Violence: Students are strongly encouraged to immediately report the incident by calling 911, contacting NYPD Special Victims Division Hotline (646-610-7272) or their local police precinct, or contacting the College's Public Safety Office (212-772-4444).
- b. All Other Forms of Sexual Misconduct: Students are also encouraged to contact the College's Title IX Campus Coordinator, Dean John Rose (jtrose@hunter.cuny.edu or 212-650-3262) or Colleen Barry (colleen.barry@hunter.cuny.edu or 212-772-4534) and seek complimentary services through the Counseling and Wellness Services Office, Hunter East 1123.

CUNY Policy on Sexual Misconduct Link:

<http://www.cuny.edu/about/administration/offices/la/Policy-on-Sexual-Misconduct-12-1-14-with-links.pdf>

## General Topic Outline

Note: The reading list is subject to change. I will let you know what you should plan to read for the next class at the end of each week's class.

Topic	Reading
<b>Static Games of Complete Information</b>	
Representing Games	Watson, Chs. 2-5
Strategies and Dominance	Watson, Chs. 6-7; Gibbons p. 4-8
Nash Equilibrium and applications	Gibbons Ch. 1
<b>Dynamic Games of Complete Information</b>	
Backwards Induction	Gibbons Ch. 2.1
Subgame Perfect Nash Equilibrium	Gibbons Ch. 2.2
Repeated Games	Gibbons Ch. 2.3
<b>Static Games of Incomplete Information</b>	
Incomplete Information and Bayesian Nash Equilibrium	Gibbons Ch. 3.1-3.2
<b>Dynamic Games of Incomplete Information</b>	
Signaling and Screening	Gibbons Chs. 4.1-4.2
Adverse Selection	In Class