This half of the course introduces students to basic non-cooperative game theory at the graduate level. The main audience for this course is Ph.D. students.

The primary objective of this class is to introduce students to basic game theory that may be useful for both (1) learning advanced game theory, and (2) applying game theory in other fields. In both cases, the material is expected to provide a foundation that is helpful in research.

Broadly, the topics covered in this class include an introduction to strategic games, extensive games, games with uncertainty, games with complete information, and games with incomplete information. The solution concepts covered include pure-strategy Nash equilibrium, mixed-strategy Nash equilibrium, rationalizability, sub-game perfect Nash equilibrium, Bayesian Nash equilibrium, and sequential equilibrium.

Given the limited time and the quick pace at which material is covered, it is strongly recommended that students who have not had game theory before concurrently study material covered in a standard undergraduate course in game theory. This will help students develop economic intuition and keep pace. There are many good undergraduate textbooks in game theory. For example, “Strategy: an introduction to game theory,” by Joel Watson, and “An introduction to game theory,” by Martin Osborne are both useful. Moreover, students are expected to be comfortable with the material in economics 801, with basic probability manipulations, and to be familiar with logical mathematical arguments.

The required texts for this class are (1) Microeconomic Theory, by Mas-Colell, Whinston, and Green, Oxford University Press, (abbreviated MWG,) and (2) Lecture Notes on Introductory Game Theory, a custom publication for this course. I teach mainly from my lecture notes, but broadly, we shall cover chapters 7, 8, and 9 from MWG. For pedagogical reasons, I cover the material a little differently.

Please note:

1. This class covers a large amount of material in a short time. Students should be prepared to spend substantial time outside class on review and homework assignments. Please let me know if you start spending excessive amounts of time on this class, relative to your other core classes.

2. Grading: mid-term, 25% (November 20), and final, 25%.

3. For additional questions, please feel free to contact me during office hours or by appointment.