Spring 2021 Political Science 631
Introduction to Deductive and Analytical Approaches to Political Phenomena
Mondays and Wednesdays, 10:15am – 11:30am

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Office hours on Zoom: Tuesdays 10:00-11:00am or by appointment
Weekly TA sessions: Thursdays 10:15am – 11:30am

Course Overview

Today game theory has become one of the standard analytical tools to explain phenomena ranging from differences in electoral systems to interstate wars. Accordingly, it is important to be at least good consumers of game-theoretic models to keep up with the frontier research in political science. The main goal of this course is to teach the fundamentals of non-cooperative game theory. I expect the students to become good consumers of applied game theoretic research as well as develop some simple game theoretic models by the end of the semester.

Strong mathematical background is not required to take this course, yet we will work on some mathematical tools as we go along. One important thing that students should know about game theory is that mastering it needs time and effort. Thus, students should expect to do considerable work outside the classroom, in particular on the weekly problems sets. I do not want anyone to get discouraged when s/he finds herself/himself not even know where to begin with a problem. This is a very typical part of the learning experience. Practice is the single most important thing in learning game theory. The students will see that new concepts will make more sense and become clear as they do more practice.

Textbook

There is one required textbook for this course.

- Martin Osborne, 2004. *An Introduction to Game Theory.* Oxford: Oxford University Press.

Grades and Evaluation

There will be weekly problem sets. I encourage students to work together on the problem sets; however, all work you submit with your name on it must be entirely your own work.

Pawel will hold weekly TA sessions to go over the problem sets. Late submissions are therefore NOT acceptable.

There will be three open-book, open-note exams: two midterm exams and a final exam. Even though I encourage you to work in groups on the problem sets, each student should keep in mind that they must master the material to do well on the exams.

Participation: 5%
Problem sets: 25%
Midterm exams: 40% (20% each)
Final exam: 30%

Make-up Exam Policy

Make-up exams will only be allowed under very limited and precise conditions of a medical emergency or equivalent documented catastrophes. The student must notify me in advance in writing. If a student cannot do so because of a last-minute emergency, then he/she must notify me or leave a message for me before the end of the exam period. Every student who misses an exam must provide a properly documented, acceptable excuse. Except for special circumstances, this means that there are medical reasons for missing the exam; I will be forced to assign a score of zero for the exam to any student who fails to conform to those rules.

Academic Dishonesty

Academic dishonesty will not be tolerated. Representing someone else's work as their own or to cheat in any other manner will be pursued with disciplinary action and will result in an "F" grade for the class. See www.integrity.duke.edu/ugrad/student.html.

Tentative Class Schedule --- please note there may be a day or two we may need to reschedule!

January 20

Welcome and Introduction

January 25, 27, February 1

Chapter 1: Rational Choice Theory
Chapter 2: Nash Equilibrium: Theory

February 3, 8

Chapter 3: Nash Equilibrium: Illustrations (skip the illustrations 3.2, 3.5 and 3.6)

February 10, 15, 17

Chapter 4: Mixed Strategy Nash Equilibrium (skip the illustrations 4.11 and 4.12)

February 22, 24

Chapter 5: Extensive games with Perfect Information: Theory

March 1

Midterm Exam 1 (open book, open note exam)

March 3, 8

Chapter 6: Extensive games with Perfect Information: Illustrations (skip the illustrations 6.3 and 6.4)

March 10

Vacation Day. No class.

March 15

Chapter 6: Extensive games with Perfect Information: Illustrations (skip the illustrations 6.3 and 6.4) continued

March 17

Chapter 7: Extensive Games with Perfect Information: Extension and Discussion (skip the illustrations 7.3 and 7.5)

March 22, 24

Chapter 9: Bayesian Games (skip the illustrations 9.6 - 9.8)

March 29

Midterm II (open book, open note exam)

March 31, April 5

Chapter 9: Bayesian Games (skip the illustrations 9.6 - 9.8) continued

April 7

Chapter 10: Extensive Games with Imperfect Information (skip 10.6 and 10.8)

April 12

Wellness Day. Please use our regular class time to engage in reflection and wellness endeavors. A list of wellness strategies and programs is available at https://studentaffairs.duke.edu/duwell/wellness-day-2021.

April 14, 19, 21

Chapter 10: Extensive Games with Imperfect Information (skip 10.6 and 10.8) continued

Final Exam as scheduled by the University Registrar, April 28, 2-5pm (open book, open note exam)