

# POS 4715: Politics and the Theory of Games

## **DETAILS**

Classroom: BEL 004

Summer B, M-F 3:35 – 4:50

Course website on Canvas

## **INSTRUCTOR**

Mr. William Schultz

Office: Bellamy 557-B (near the political science graduate computer lab)

Office hours: TUES from 1:00-2:00; THURS from 1:00-2:00.

Email: [wbs15@my.fsu.edu](mailto:wbs15@my.fsu.edu)

## **ON COURSE TIMING AND OFFICE HOURS**

We will be meeting every weekday during the 2019 Summer B semester. I've set aside office hours on Tuesdays and Thursdays for meeting with students in this class. Please come see me with any questions, concerns, things you'd like to learn more about, etc. If you cannot make office hours, please send an email and we'll work something out.

## **COURSE DESCRIPTION**

This course introduces the basics of a mathematical (and sometimes philosophical) research tool called game theory. No prior knowledge of game theory is needed to take it. Game theory is widely used in social research, and also in fields like biology, computer science, and electrical engineering. Some game-theoretic concepts have even filtered into popular culture (*e.g.*: zero-sum game; the prisoners dilemma).

In the social sciences, game theory helps researchers develop theories of human behavior under strategic interdependence: when the costs and benefits of your choices depend on the costs and benefits of someone else's. Many phenomena studied by political scientists fall under this category, like conflicts over the distribution of scarce resources or competition to win positions of social power.

This class should give you a general understanding of how game theory helps us deal with strategic interdependence in political research. We'll cover basic "toy" models that mostly exist to illustrate important concepts to students, but we'll also go over some applications of game theory in published work that should be within your grasp as beginners.

## **COURSE MATERIALS**

Osborne, M. J. (2004). *An introduction to game theory* (Vol. 3, No. 3). New York: Oxford university press.

Some days will instead have readings drawn from articles published in academic journals. These will be posted on Canvas. Do the assigned readings BEFORE each class. They will be important to your understanding of the course content.

## **GRADING PHILOSOPHY AND EXPECTATIONS**

Grades in college have several purposes: assessment; signaling *knowledge*; and signaling *effort* to master the course material. In my personal view, the last purpose is most important. That is my priority when designing and grading assignments.

### **GRADING SCALE**

The scale used in this course is standard to many at FSU. Final grades ending in .5 or higher will be rounded up (92.5 earns an A), and final grades below .5 will be rounded down (92.4 earns an A-). Note that the numbers listed below are percentages.

<b>A</b>	93 to 100	<b>B-</b>	80 to 82	<b>D+</b>	67 to 69
<b>A-</b>	90 to 92	<b>C+</b>	77 to 79	<b>D</b>	63 to 66
<b>B+</b>	87 to 89	<b>C</b>	73 to 76	<b>D-</b>	60 to 62
<b>B</b>	83 to 86	<b>C-</b>	70 to 72	<b>F</b>	<60

### **EARNING YOUR GRADE**

Your overall grade will be out of 500 points.

#### **TWO homeworks:** 200 points = 40%

- One homework assignment (100 points) will be due before the midterm. The second (100 points) will be due before the final exam.
- Both assignments will ask you to solve games similar (or identical) to those we discussed in class, and to use them to BRIEFLY theorize about politics.
- The assignments will appear on Canvas, but you must submit written copies to me in person. Precise due dates are in the schedule below. The first homework will be available starting the first day of class.
- After receiving your grade on the first homework, you will have a week to resubmit a new writeup with corrections to your mistakes. For each mistake you fix, you will recover  $\frac{3}{4}$  of the points you lost.
- You can work in groups, but everyone must submit separate writeups.

#### **TWO in-class exams:** 250 points = 50%

- There will be a midterm (125 points), and a final exam (125 points). They are technically not cumulative, but some skills tested in the midterm will still be important in completing the final. These tests are open book and open notes.
- They will be practical tests: as in the homework assignments, you will be solving games and interpreting them. There will not be multiple choice questions! Both exams will be MOSTLY a review of material discussed in class or covered in homework (*i.e.*, re-solving games you have seen before).
- These tests will each also introduce a new game (or two) to you. Solving the new game will require applying the strategies and concepts covered by your instructor in class. Think of this part of each exam as a creative thinking exercise.
- There will be review sessions before each test, where we will go over all the techniques and concepts needed to answer questions on the test.
- Similarly to above, you can submit corrections for your first test.

**Attendance via name generator (see below): 50 points = 10%**

### **CLASS PARTICIPATION AND ATTENDANCE**

Although this course is lecture based, they are participatory lectures. I will frequently ask questions. Rather than call on students who raise their hands, I will use a random name generator. If your name comes up on the random generator and you are not in class to attempt to answer my question (or are not willing to try and provide an answer), you will lose your "participation and attendance" points for that day. If your name comes up, I only ask that you make your best guess to provide the correct answer. You will not lose points if your answer is wrong. I believe very strongly that there is no shame in being wrong, and that it's an important part of learning. I'm wrong sometimes, too.

You will have three "pass days," where being absent will not impact your grade. This is in addition to University excused absences (see below).

### **ACADEMIC HONOR POLICY**

The Florida State University Academic Honor Policy outlines the University's expectations for the integrity of students' academic work, the procedures for resolving alleged violations of those expectations, and the rights and responsibilities of students and faculty members throughout the process. Students are responsible for reading the Academic Honor Policy and for living up to their pledge to "...be honest and truthful and... [to] strive for personal and institutional integrity at Florida State University." (Florida State University Academic Honor Policy, found at <http://dof.fsu.edu/honorpolicy.htm>.)

### **AMERICANS WITH DISABILITIES ACT**

Students with disabilities needing academic accommodation should: (1) register with and provide documentation to the Student Disability Resource Center; and (2) bring a letter to the instructor indicating the need for accommodation and what type. This should be done during the first week of class. This syllabus and other class materials are available in alternative format upon request.

For more information about services available to FSU students with disabilities, contact the:

Student Disability Resource Center  
874 Traditions Way  
108 Student Services Building  
Florida State University  
Tallahassee, FL 32306-4167  
(850) 644-9566 (voice)  
(850) 644-8504 (TDD)  
[sdrc@admin.fsu.edu](mailto:sdrc@admin.fsu.edu)  
<http://www.disabilitycenter.fsu.edu/>

### **UNIVERSITY ATTENDANCE POLICY**

Excused absences include documented illness, deaths in the family and other documented crises, call to active military duty or jury duty, religious holy days, and official University activities. These absences will

be accommodated in a way that does not arbitrarily penalize students who have a valid excuse. Consideration will also be given to students whose dependent children experience serious illness.

### **MISSED/LATE ASSIGNMENTS**

It is University policy to accept missed exams and tests for documented medical reasons, family crises, call to active military duty or jury duty, religious holy days, and official University activities. I follow these guidelines gladly. I also give deference to parents with dependent children who are sick.

Late homework assignments drop 10% of their full worth for each day they are late. I will still accept them by email.

### **PETITIONS FOR A GRADE CHANGE**

I consider written petitions for a change of grade on assignments. However, I require students to wait two business days after receiving a grade before submitting their petition.

### **TECHNOLOGY POLICY, and CLASSROOM COURTESY**

I require cell phones to be silenced and put away during lecture. I have no issue with students taking notes on laptops. But if it seems like use of your laptop is distracting other students, I reserve the right to ask you to put it away. On a similar note, do not engage in private conversations during class, as it is disrespectful to other students who are trying to pay attention.

Please arrive on time, and let me know if you have a compelling reason to leave early. When entering late or leaving early, please do so quietly and with minimal interruption. I reserve the right to dismiss disruptive individuals from the classroom and report them to the Dean of Students.

### **EMAIL POLICY**

Please include your first and last name and course information in the subject line of your email. When I receive your email, I will make effort to respond in a timely manner, usually within 48 hours. You may receive a reply sooner than that, but you should not expect an immediate response. Please treat all email correspondences with your instructor as you would treat any other professional exchange. I expect emails to be respectful and polite, to use correct grammar and complete sentences.

### **SYLLABUS CHANGE POLICY**

Except for changes that substantially affect parameters of evaluation, including grading, this syllabus is subject to change at discretion of the instructor. I will provide you with advance notice in class and via your university registered email contact.

### **TENTATIVE SCHEDULE**

The tentative course schedule is below. Topics covered and dates are subject to change with advance notice. Due dates of assignments will not change.

## Schedule

**Class 1, May 13th** — First day attendance and reviewing the syllabus.

**Class 2, May 14th** — Why formal modeling? And what's game theory?

**Read for today:**

- **O & R**
  - Pages 1-4
- **Fiorina (1975)**
  - Abstract, Introduction, "Why Models?" starting on 136

**Class 3, May 15th** — The assumption of rationality

**Read for today:**

- **O & R**
  - Pages 4-7
- **Ostrom (1991)**
  - "The Limits of Rational Choice Theories in Normative Analysis" (page 238) until the right column of page 239
- **Feddersen (2004)**
  - Introduction

**Class 4, May 16th** — Games of strategy

**Read for today:**

- **O & R**
  - Pages 13-21

**Class 5, May 17th** — Solution concepts, and the Nash equilibrium

**Read for today:**

- **O & R**
  - Pages 21-35

**Class 6, May 20th** — Best-response functions (and a review of derivatives)

**Read for today:**

- **O & R**
  - Pages 35-45

**Class 7, May 21st** — Other topics: dominance, symmetry, and "equilibrium search"

**Read for today:**

- **O & R**
  - Pages 45-53

**Class 8, May 22nd** — Example: n-person prisoner's dilemma

**Read for today:**

- **O & R**
  - Exercise 33.1; Illustration 2.8.4; Exercise 44.1

**Class 9, May 23rd** — Example: using natural resources

**Read for today:**

- **Gardner et al. (1976)**
  - Pages 335-340
- **Apestequia and Maier-Riguad (2006)**
  - Pages 650-654

**Class 10, May 24th** — Example: electoral competition

**Read for today:**

- **O & R**
  - Pages 70-76

**No class, May 27th** — Memorial Day

**Class 11, May 28th** — The basics of mixed strategy games, 1

**Read for today:**

- **O & R**
  - Pages 99-104
  - Pages 106-108 (4.2 through 4.3.2)

**Class 12, May 29th** — The basics of mixed strategy games, 2

**Read for today:**

- **O & R**
  - Sections 4.3.4 and 4.3.5
  - Sections 4.5 and 4.7

**Class 13, May 30th** — Mixed strategy example: crime and punishment

**Read for today:**

- **Tsebelis (1990)**
  - Pages 258-264

**Class 14, May 31st** — Review for midterm.

- **Homework 1 due in class**

**Class 15, June 3rd** — The basics of extensive form games

- **O & R (skim)**
  - Pages 153-161; 164-169

**June 4th** — Midterm

**Class 16, June 5th** — Reviewing midterm

**Class 17, June 6th** — Extensive form example: exit, voice and loyalty

**Read for today:**

- **Clark, Golder and Golder (2017)**
  - Beginning until “AN EXTENDED EVL MODEL OF POLITICS” on 727

**Class 18, June 7th** — Extensive form example: ultimatum games and *finite* bargaining models

**Read for today:**

- **O & R**
  - Pages: 181-182; 465-468; 475-477

**Class 19, June 10th** — The basics of imperfect information games

**Read for today:**

- **O & R**
  - Pages 273-282

**Class 20, June 11th** — Imperfect examples: costly signals and terrorist recruitment

**Read for today:**

- **Polnaszek and Stephens (2014)**
  - Abstract, and “Model and Predictions” (page 2)
- **Hegghammer (2012)**
  - Abstract. Theoretical Framework (page 6). Screening (9 until 12).

**Class 21, June 12th** — Extensive imperfect games

**Read for today:**

- **O & R**
  - Pages 313-318
  - “Beliefs” Pages 323-324
  - Pages 328-329

**Class 22, June 13th** — Extensive form imperfect example: courts and the rule of law

**Read for today:**

- **Weingast (1997)**
  - “The Model,” starting on page 246, up through the first paragraph on page 50
  - “Implications of the Model for Limited Government” on pages 251 and 252.

**Class 23, June 14th** — Infinite bargaining games

**Read for today:**

- **O & R**
  - Pages 468-475

**Class 24, June 17th** — Repeated prisoners dilemmas, and the “folk theorem”

**Read for today:**

- **O & R**
  - Pages 419-427

**Class 25, June 18th** — Review for final

- **Homework 2 due in class**

**June 19th** — Final exam