Behavioral Game Theory: Experiments in Strategic Interaction

Summer 2023

Instructor: Ricardo Barros de Aquino Fonseca – ricardo_fonseca@brown.edu

Office Hours (via Zoom)

-- Ricardo: 2 pm EST on Thursdays (7/13, 7/20, 7/27, 8/3). Access here

Also, please feel free to email any doubts or comments.

Course Description

The main goal of the course is to introduce students to the basic concepts and tools of Game Theory (GT) and Behavioral Economics (BE) and to apply these tools to real-life situations. Students will learn to analyze human behavior rigorously, think strategically, and understand some of the most common behavioral biases when making decisions.

The first part of the course will focus on the general concepts of GT. Then, we will develop the workhorse models that economists have traditionally used to study strategic behavior (the prisoner's dilemma, the centipede game, etc.) and apply them to solve real-life situations that involve decision-makers facing choices where their decisions and those of others affect the outcomes. In the second part of the course, we will introduce some of the main topics in Behavioral Economics (BE) and discuss how they are crucial to understanding certain aspects of human behavior that purely "rational" GT cannot explain.

Video lectures will introduce the conceptual background of each topic. They will be complemented with quizzes, problem sets, and two group projects that will challenge your abilities as a game theorist and behavioral scientist! Moreover, there will be two (online) lab sessions, where you will play strategic games with one another and test whether the theories seen in class work.

The course is designed to provide a comprehensive approach to learning, so all activities will be essential and require your full attention to complete successfully.

Topics and Calendar

7/10 and 7/11: Orientation and getting used to Canvas

1. **Game theory: Static Games**

7/12 Lectures 1, 2, 3, 4, Seminar 1, and GT Static Games Quiz 1 made available

7/13 GT Static Games Quiz 2 made available, GT Static Games Quiz 1 due

7/14 GT Static Games Quiz 3 made public, GT Static Games Quiz 2 due

7/15 GT Static Games Quiz 3 due

2. **Game Theory: Dynamic Games and Applications**

7/17 Lecture 5 made available, and Lab Session 1

7/18 Lecture 6 and GT Dynamic Games Quiz 1 made available

7/19 GT Dynamic Games Quiz 2 will be made public, and GT Dynamic Games Quiz 1 due

7/20 Lectures 7 and 8 made available, GT Dynamic Games Quiz 2 due, Problem Set 1 due

7/21 Free

3. **Behavioral Economics: Basics**

7/24 Lecture 9 and BE 1 Quiz available, Project 1 due

7/25 BE 1 Quiz due and Lab Session 2

7/26 Lecture 10 and BE 2 Quiz available

7/27 BE 2 Quiz due by 11:59 pm and Lecture 11 and BE 3 Quiz available

7/28 BE 3 Quiz due

4. **Topics in Behavioral Economics and Behavioral Game Theory**

7/31 Lectures 12 and 13 made available

8/01 Problem Set 2 due, Lecture 14 and BGT Quiz made available

8/02 BGT Quiz due

8/03 Free

8/04 Project 2 Due

Expectations

By the end of the course, students should be able to:

- First, understand the basic concepts in Game Theory, such as simultaneous move games and sequential move games, and how to solve them.
- Understand basic Behavioral and Experimental Economics concepts, such as fairness concerns, and how to study them with lab experiments.
- Learn to rigorously analyze daily life situations from a strategic point of view.
- Understand experiments and interpret their results.

Quizzes

Weekly quizzes will address the contents covered as we move forward with the course. They take around 20 minutes to complete.

Quizzes constitute 20% of the final grade.

Problem sets

There will be two problem sets. Although you may work in groups, we encourage you to try the problems yourself first. Only then discuss solutions with others and write them down. Finally, you should turn in individual solutions.

The first PS will be circulated on the first Thursday (13-Jul) to be turned in 20-Jul before midnight (EST). The second PS will be assigned on 25-Jul and turned in 1-Aug before midnight (EST).

Problem sets constitute 30% of the final grade (15% each).

Projects

There will be two group projects along the course: Game Theory (deadline 24-Jul) and Behavioral and Experimental Economics (deadline 04-Aug). See the Group Projects module for more information.

Projects constitute 40% of the final grade (20% each).

Lab sessions

We will meet via Zoom for two online lab sessions to play games involving strategic interactions. The dates are the following:

Lab session 1: 7/17

Lab session 2: 7/25

We will discuss the times for each at a point closer to the sessions.

Assessment

Assessment will be based on all course activities, including participation in Discussions on Canvas. The final grade will be determined as follows:

Quizzes: 20%; Problem Sets: 30% (15% each); Projects: 40% (20% each); Participation in Discussions on Canvas: 10%.

Textbook

No specific textbook will be used. The Instructor will provide all material. Some suggested literature for further insight:

Games of strategy, Dixit, Skeath, Reiley, 4th edition.

Markets, Games and Strategic Behavior, by Holt Charles.

Thinking, Fast and Slow, by Daniel Kahneman.

Behavioral Economics: Past, Present and Future, by Colin Camerer and George Loewenstein.

An Introduction to Behavioral Economics: The Complicating but Sometimes Critical Considerations, by Hugh Schwartz: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=960222 (Links to an external site.)