

# Game Theory — Syllabus

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## Course Description

This is an introductory course in game theory for undergraduate students. We will cover foundational concepts using minimal mathematical tools. The course comprises:

- Expected utility: assumptions; the functional form; attitudes to risk.
- Static games: game frames; weak and strict dominance; expected utility; mixed strategies; Nash equilibrium.
- Dynamic games: game trees; behavioral strategies; backward induction; subgame-perfect equilibrium.
- Examples and applications: second price auctions; the pivotal mechanism; Cournot competition; ultimatum and trust game.

There is a mandatory laboratory session, details below.

## Texts and References

We will follow Bonanno, G. (2024), *Game Theory* (3rd ed.), Kindle Direct Publishing. The text is freely available online [here](#) (we cover parts I and II) and is complemented by a series of videos on the author's website, as well as by material written by me and available at [this link](#). As an alternative, students may consult Osborne, M. J. (2004), *An Introduction to Game Theory*, Oxford University Press. We cover all material in Bonanno's book except proofs of formal results and Section 3.5 (perfect-information games with two players).

Students are encouraged to attend the lectures, read the relevant chapters, and **solve the exercises in the book. Exercises are a crucial part of the learning process.** I am available to discuss any questions or difficulties—please email me.

## Schedule and Topics

Lectures closely follow the book. The tentative schedule is as follows:

**Week 1:** Ordinal games in strategic form.

**Week 2:** Perfect-information games.

**Week 3:** General dynamic games.

**Week 4:** Expected utility theory.

**Week 5:** Cardinal strategic-form games.

**Week 6:** Cardinal extensive-form games.

## Laboratory Experience

The goal of the laboratory is to acquaint students with experimental methods in game theory. It consists of one short session. The organization depends on your language:

**If you speak Italian**, you will complete the session with Professor Papa. Instructions:

Please enroll in the Game Theory course at <https://delphi.uniroma2.it/> as soon as possible, so we can collect your email address.

Book only one session.

Sessions:

Session 1: 16:00–18:00 (Monday, 24th March);

Session 2: 16:00–18:00 (Tuesday, 25th March);

Session 3: 16:00–18:00 (Wednesday, 26th March).

How to book a session:

Enroll in the Game Theory course at <https://delphi.uniroma2.it/>.

Then go to <http://www.didaweb.it/cimeo/index.asp>. Use your email (the same used for enrollment) as the username. Password: lab2022.

**If you don't speak Italian**, you will complete the session with me. It will take place at the same time as one of Professor Papa's sessions, during one of my classes. Details will be discussed in class.