

Artificial intelligence and computational social choice

Level: Master 2

Track: Economics, Data and Decision Science

Semester: 9

Teaching hours: 21 hours of lectures

Teaching language: English

Teacher: Fede Fioravanti

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Course's objectives:

The primary goal of this course is to explore computational social choice, with a special focus on judgment aggregation. More broadly, students will examine the connections between social choice theory and contemporary challenges in artificial intelligence, gaining insight into how these concepts inform and enhance modern AI applications.

Lesson plan:

The first part of the course covers the topics of voting, fair allocation, matching, and judgment aggregation. The second part explores the intersection between social choice and artificial intelligence

Skills developed:

- Understand core concepts of computational social choice, including formal models, key properties, and theoretical limitations.
- Understand interdisciplinary connections between social choice, logic, philosophy, and artificial intelligence.
- Develop critical thinking and communication skills to analyse research problems and present formal arguments effectively.

Grading system:

The final grade consists of a weighted sum of a quiz, participation, and an oral presentation. The quiz covers all the topics presented on the course. The oral presentation consists of presenting some research papers.

Prerequisites:

Some knowledge of Social Choice Theory is recommended, although not necessary, as this course is self-contained.

Bibliography / references:

- Handbook of Computational Social Choice, by Brandt, Conitzer, Endriss, Lang and Procaccia.
- Judgment Aggregation, by Dietrich and List (January 2026 version).
- Social Choice Theory: A Modern Approach with Computational Aspects, by Felix Brandt (Manuscript available at www.social-choice-theory.com).
- Research papers will be provided for this course.