Overview. Why do some governments redistribute more than others? Can voters effectively hold politicians accountable for their behavior? Can we identify the 'will of the people' through elections? Rational choice models of political decision-making have been used to answer all these questions and many more. This course will introduce students to key analytical concepts and mathematical results from social choice theory – the study of how individual preferences are aggregated – as well as game theory – the study of decision-making by rational agents within a strategic environment. It will also illustrate how the mathematical models developed in these fields can be used to understand recent political events and dilemmas. Finally, towards the end of the course, we will engage with ongoing debates on how mathematical models can and should be interpreted, empirically evaluated, and used by political scientists. By the end of the course, students should be able to (i) solve and interpret simple mathematical models and (ii) to apply such models to the study of political behaviour, processes and outcomes.

Prerequisites. In order to succeed in this course, students should be comfortable with, or willing to brush up on, high school algebra and basic probability theory. In one week, we will also make some use of univariate calculus. I suggest some useful resources for revising these topics up to the expected level below, under 'Readings'. Moreover, students should be able to understand and express themselves in English, as this will be the classroom language – though perfection is neither expected nor required. All coursework should also be completed in English.

Assessment. Your performance in this course will be evaluated using a portfolio examination, comprising of four, equally weighted, graded assignments. The assignments will require students to apply the concepts and tools covered in the class to solve and comment on simple social choice or game theoretic problems. Students will have several weeks to complete each assignment. Completed assignments should be uploaded to ILIAS by 23:59 CET on 23 May, 13 June, 4 July and 25 July respectively.

You may discuss the problems with other students, but answers should be written up independently. Two nearly identical assignments will receive zero, and late submissions will be penalized unless previously arranged with the instructor. If you work with others, please indicate their names on your submission.

Formatting. You are encouraged to use the document preparation system LaTeX to write up your assignments, which is well-suited for typesetting mathematical content. To provide some initial guid-

ance, a LaTeX tutorial will be uploaded to ILIAS along with the first assignment for students to consult in their own time. However, you may upload handwritten assignments if you wish (so long as handwriting is neat and legible).

Readings. Most required readings will be drawn from the two textbooks listed below.

- Kenneth A. Shepsle. 2010. Analyzing Politics: Rationality, Behavior, and Institutions.
- Steve Tadelis. 2013. Game Theory: An Introduction.[1]

In addition to the required (starred) readings, on occasion, I suggest some additional references for students who would like to deepen their understanding of individual topics. Note that there are **no** required readings in some weeks. All readings will be made available to students by the instructor via ILIAS. Finally, here are some useful resources on mathematical methods:

- Schaum's Outline of Probability and Statistics (4th edition), chapter 1.
- Schaum's Outline of Calculus (6th edition), especially chapters 9-10, 13-15.

Key Dates.

- 18 April 2023: first session
- 2 May 2023: Assignment #1 distributed
- 5 May 2023: deadline for exam registration on KLIPS
- 23 May 2023: Assignment #1 due; Assignment #2 distributed
- 13 June 2023: Assignment #2 due; Assignment #3 distributed
- 4 July 2023: Assignment #3 due; Assignment #4 distributed
- 11 July 2023: last session
- 25 July 2023: Assignment #4 due

Course Schedule

18 April: Fundamentals of Rational Choice

- *Tadelis, *Game Theory*, chs. 1-2 (skip ch. 2.4-2.5).

25 April: The Problem of Social Choice I

- *Shepsle, *Analyzing Politics*, chs. 3-4.

2 May: The Problem of Social Choice II

- *Shepsle, *Analyzing Politics*, p. 90-110.

---

[1]Note: a solutions manual for students, as well as the first six chapters of the textbook, are available to download from the publisher's website (link).

9 May: Strategic Behaviour in Politics

- *Tadelis, *Game Theory*, chs. 3-5.

16 May: Coordination and Collective Action

- *Shepsle, *Analyzing Politics*, ch. 8-9.
- Brian Barry. 2005. 'Is it rational to vote? Five types of answer and a suggestion.' *British Journal of Politics and International Relations* 7: 442-459.

23 May: Electoral Competition

- *Shepsle, *Analyzing Politics*, p. 111-123.
- Mueller, *Public Choice III*, ch. 11.

30 May: NO CLASS (Pfingstferien)

6 June: Strategic Interaction over Time

- *Tadelis, *Game Theory*, ch. 7-8.

13 June: Bargaining Theory

- *Tadelis, *Game Theory*, ch. 11.

20 June: Legislative Bargaining

- Mueller, *Public Choice III*, ch. 17.

27 June: Coalition Formation

- *Shepsle, *Analyzing Politics*, ch. 16.
- Mueller, *Public Choice III*, p. 278-295.

4 July: Democracy and Redistribution

- Torben Iversen and Max Goplerud. 2018. 'Redistribution without a median voter: Models of multidimensional politics.' Annual Review of Political Science 21: 295-317.

11 July: Use and Abuse of Models

- *Donald Green and Ian Shapiro. 1994. *Pathologies of Rational Choice Theory: A Critique of Applications in Political Science*, chs. 2-3.
- Jack Paine and Scott A. Tyson. 2019. "Uses and abuses of formal models in political science", in the *SAGE Handbook of Political Science: A Global Perspective.*