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. 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 28 May, 18 June, 9 July and 23 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 guidance, 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 readings will be drawn from the two textbooks listed below, both of which are available to borrow from the University of Köln library. If you would like to discuss alternative textbooks pitched at a similar level, please reach out to me directly.

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

Note that, aside from in the final session, all readings are recommended rather than required. Selected readings will be made available to students by the instructor via ILIAS.

Key Dates.

- 16 April 2024: first session
- 30 April 2024: Assignment #1 distributed
- 28 May 2024: Assignment #1 due; Assignment #2 distributed
- 18 June 2024: Assignment #2 due; Assignment #3 distributed
- 9 July 2024: Assignment #3 due; Assignment #4 distributed
- 16 July 2024: last session
- 23 July 2024: Assignment #4 due

Course Schedule

16 April: Fundamentals of Rational Choice

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

23 April: The Problem of Social Choice I

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

30 April: The Problem of Social Choice II

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

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[1]Note: a solutions manual for students is available to download from the publisher's website (link).

7 May: Strategic Behavior in Politics

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

14 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.

21 May: NO CLASS (Pfingstferien)

28 May: Electoral Competition

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

4 June: Strategic Interaction over Time

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

11 June: Bargaining Theory

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

18 June: Legislative Bargaining

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

25 June: Coalition Formation

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

2 July: NO CLASS

9 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.

16 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.*
- Mathew McCubbins and Michael Thies. 1996. 'Rationality and the Foundations of Positive Political Theory.' *Rebaiasan [Leviathan]* 19: 7-32.