Microeconomics 4

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Office hours: Wednesday, after class, office C27.

Introduction to the course This course offers a rigorous introduction to information economics and mechanism design. The background knowledge in mathematics and game theory at the level of Mathematics 1 (Lomys), Mathematics 2 (Caruso and Ceparano), and Game Theory (Bizzarri) at the Naples School of Economics is required for the course. Taking notes in class, participating actively, and working through the problem sets are essential for understanding the material. At the end of the course, students should be familiar with fundamental theoretical results in the literature and the relevant proof techniques.

Grading The grade is based on:

1. Exam, weighted by $2/3$.
2. Problem sets, weighted by $1/3$. Three problem sets will be distributed. One of your lowest scores is dropped and the remaining two are equally weighted.

Outline The course covers 3 main topics.

1. Screening;
2. Mechanism design;
3. The value of information and communication.

Readings Most of the course is taught at the board. There are no required readings, but the handouts and the suggested readings serve as a complement to your notes.

The following readings may help you to put the material in perspective, suggested readings are marked by an asterisk.

- Screening:

  - * "Secrets and agents," *Economics Briefs: Six Big Ideas*, by The Economist, available at https://www.economist.com/sites/default/files/econbriefs.pdf; Tim Harford's column on the FT, available at https://www.nuffield.ox.ac.uk/teaching/Economics/Bargaining/pricediscriminationillustration.pdf
  - * Kreps (2023): chapter 17;
  - * Börgers (2015), Chapter 1, 2, 5 (main reading);
  - For alternative exposures of screening at approximately the same level as the course, see the relevant chapters in Bolton and Dewatripont (2005), Salanié (1997), and Fudenberg and Tirole (1991).
  - Classic articles: Mussa and Rosen (1978).
  - Extra reading: Rochet (1985, 1987), Carroll (2023).

- Mechanism design:
  - * Börgers (2015): Chapter 3, 4, 6 (main reading).
  - Alternative textbook treatments: Jackson's notes (https://web.stanford.edu/~jacksonm/mechtheo.pdf), relevant chapters in Roughgarden (2016), Krishna (2002), MWG.
  - Classic articles: Myerson (1981), Myerson and Satterthwaite (1983), Bulow and Klemperer (1996).
  - Extra reading: Wilson (2021).

- Communication:
  - Classic articles: Crawford and Sobel (1982), Kamenica and Gentzkow (2011);
  - Extra reading: excerpt from Ran Spiegler's *The Curious Culture of Economic Theory*, Weitzman (2000), Gibbons, Matouschek, and Roberts (2013), de Oliveira (2018), Lipnowski and Ravid (2020), relevant chapters in Marschak and Radner (1972).
  - Surveys: Kamenica (2019), Bergemann and Morris (2019).

Graduate-level textbooks in microeconomic theory typically include chapters on screening and mechanism design, I recommend MWG. *Advanced Microeconomic Theory* by Jehle and Reny (2001) has a chapter on information economics written in game-theoretic language, which constitutes a complement to the mechanism-design–oriented treatment of screening in this course and deserves to be read carefully. Salanié (1997) and Bolton and

Dewatripont (2005) cover screening, mechanism design, and communication in a somewhat alternative way, but studying one of these books is a great idea. *Game Theory: Analysis of Conflict* by Myerson (1991) is a superb textbook on game theory with significant overlap of topics with this course; I strongly recommend reading this book.

References

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