

Decision theory (18h)

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Course description This course is intended as an introduction to the formalization and analysis of decision making in a single-person environment. Some topics in collective (social choice) and strategic (game-theory) decision-making will also be discussed. While the course's emphasis is on the theoretical, philosophical and psychological issues of decision sciences, some attention is also given to the application of concepts to business, economic and financial problems.

Supplementary material: All the topics discussed in this class can be further examined in (the relevant sections of) classical textbooks such as *Microeconomic theory* (Mas-Colell, Whinston and Green, 1995), *Notes on the theory of choice* (Kreps, 1988), *Theory of Decision under Uncertainty* (Gilboa, 2009) and *Prospect Theory* (Wakker, 2010). Further readings are available under request.

Chapter 0. Introduction to decision theory.

Chapter 1. Decision under certainty.

1.1 Binary relations and basic rationality axioms.

1.2 Preferences and utility.

1.2 Limitations.

Chapter 2. Decision under risk.

2.1 Expected utility maximization.

2.2 Utility of money and risk aversion.

2.3 Applications: Portfolio choice, insurance behavior.

2.4 Limitations.

Chapter 3. Decision under uncertainty.

3.1 Choquet and Maxmin Expected utility maximization.

3.2 Bewley's unanimity rule.

3.3 Objective and subjective rationality under uncertainty.

3.4 Applications: Portfolio choice, insurance behavior.

3.5 Limitations, latest developments and conclusions.