

Gabriel Desgranges
gabriel.desgranges@u-cergy.fr
<https://sites.google.com/site/gabrieldesgranges/home/teaching>

Choice under Uncertainty and Game Theory

- This course (9 lectures) requires some material taught in the course "Choice and Decision Theory".
- It covers 2 main topics: uncertainty (decision and general equilibrium), game theory (main equilibrium concepts and a few applications).
- The slides (together with problem and question sets, with solutions) will be available on the website (as soon as I can)
- The midterm and the final exam consist of problems analogous to those of the question and problem sets. The form of the retake exam depends on the number of the retakers.

Detailed content of the chapters

Risk and Uncertainty (chapters and sections correspond to Mas-Colell *and alii* - the course does not cover the whole content of every section)

- RU1 - Decision under uncertainty (ch 6): a criterion of choice under uncertainty: expected utility theory (6B), risk aversion (6C), the difficult comparison of payoff distribution (6D), state-dependent utility (6E), subjective probability theory (6F).
- RU2 - GE under uncertainty (ch 19, except 19G-H): model (19B, contingent commodities), Arrow-Debreu Equilibrium (19C), a model with asset markets and the link with the Arrow-Debreu economy (19D-E), examples of incomplete markets (19F)

Game Theory (chapters correspond to Osborne and Rubinstein - the course does not cover the whole content of every section)

- GT1 - Games in Strategic Form (Nash, Bayesian, correlated equilibrium, rationalizability,...) (Chapters 1, 2, 3, 4)
- GT2 - Extensive Games with Perfect Information (subgame perfect equilibrium, repeated games,...) (Chapters 6, 8)
- GT3 - Extensive Games with Imperfect Information (sequential equilibrium) (Chapter 12)
- GT4 - Cooperative Game Theory (core, Shapley value, Nash solution) (Chapters 13, 14, 15)

References (textbooks for graduate students)

The main reference for the RU part is:

- Microeconomic theory, A. Mas-Colell, M. Whinston and J. Green, 1995, Oxford University Press. Its scope is very general and mathematical. You may prefer to begin with other textbooks.¹

For the GT part, the above textbook is an important reference, but here are 2 others (the OR textbook is freely available online):

- Game Theory, D. Fudenberg and J. Tirole, 1991, MIT Press, Cambridge, Massachussets.
- A Course in Game Theory, M. Osborne and A. Rubinstein, 1994, MIT Press, Cambridge, Massachussets.

Other widely used microeconomics and/or game theory textbooks are:

- A Course in Microeconomic Theory, D. Kreps, 1990, Harvester Wheatsheaf
- Microeconomic Analysis, H. Varian, 1992 (for the 3rd edition), Norton
- Advanced Microeconomic Theory, G. Jehle and Ph. Reny, 2010 (for 3rd edition), Pearson
- Microeconomic Foundations I: Choice and Competitive Markets (Vol. 1), D. Kreps, 2012, Princeton University Press
- Lectures Notes in Microeconomic Theory, A. Rubinstein, 2006, Princeton University Press.
- Microeconomics: Behavior, Institutions, and Evolution, S. Bowles, 2006, Princeton University Press.

¹The mathematical Appendix in this textbook can be most useful as well.