

Doctoral Program in Economics



Academic year 2020/21

ADVANCED MICROECONOMICS

Period:

Second term: February/April 2021

Course hours:

34

Teachers:

Leonardo Boncinelli (8), Annalisa Luporini (8), Laura Sabani (8), Stefano Vannucci (10)

Exam methods:

Written exam

Prerequisite

Microeconomics 1

Module 1: Non-Cooperative Game Theory (L.Boncinelli: 8 hours)

Programme

Representation forms: information and strategies, extensive form and strategic form. Solution concepts: dominated strategies, rationalizability, Nash equilibrium. Equilibrium refinements: backward induction, subgame perfection, perfect Bayes-Nash equilibrium, sequential equilibrium, trembling hand perfection, forward induction. Repeated games and Folk Theorems. Classes of games: prisoner dilemma, stag hunt, hawk-dove, centipede game, public goods game, ultimatum game, dictator game.

Educational objectives

Learn the methods and techniques of non-cooperative game theory, and the ability to apply them to represent and understand cheap-talk models and the ability to apply them to represent and understand socio-economic phenomena

Bibliographical references

Fudenberg D, Tirole J. : Game Theory. MIT Press 1991.
Lecture slides will be made available.

Module 2: Mechanism Design (A.Luporini: 8 hours)

Programme

Introduction to mechanism design. First and second-price auctions as a first example of mechanism design. The revelation principle. Dominant strategy implementation and Bayes-Nash implementation. Strong implementation. Public project financing: the Clarke-Groves mechanism: Efficiency, individual rationality and the problem of budget balancing.

Principal/agent models with adverse selection. The single-agent model. Multi-agent models: Bayes-Nash implementation and multiple equilibria. Dominant strategy implementation. Augmented mechanisms as efficient solutions to the multiplicity problem.

Educational objectives

This module is meant to provide an introduction to mechanism design with a special emphasis on principal-agent models.

Bibliographical references

Mas-Colell, Whinston, Green: Microeconomic Theory. OUP 1995, chpt. 23

Notes from the instructor. Slides of the lectures will also be available.

Module 3: Strategic Communication (L. Sabani: 8 hours)

Programme

Strategic communication of private information via cheap-talk messages. The fundamental theorem: Crawford and Sobel theorem. Application of the theory of cheap talk to various settings.

Educational objectives

Learn the methods and techniques of cheap-talk models and the ability to apply them to represent and understand socio-economic phenomena

Bibliographical references

Lecture slides will be made available

A selection of relevant readings will be suggested during classes.

Module 4: Game Formats (S.Vannucci: 10 hours)

Programme

Games as data structures for multi-agent system modeling. Classical game theory and evolutionary game theory: the main differences. Game formats: strategic, extensive, coalitional. Cooperative and non-cooperative solution rules. Examples: toy games, auction games, voting games, two-sided matching games.

Educational objectives

This module is meant to provide a firm grasp of the basic syntax of game-theoretic models, and a glimpse at their scope.

Bibliographical references

H. Keiding: Game Theory. A Comprehensive Introduction. World Scientific 2015.

H. Moulin: Game Theory for the Social Sciences (2nd edition). New York University Press 1986.

M.Osborne, A. Rubinstein: A Course in Game Theory. MIT Press 1994.

Lecture slides will be made available.