

Microeconomic Theory II

Central European University
Department of Economics
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General Information

Course level: This is the compulsory core course for first year MA students

Credits: 4 credits (8 ECTS credits)

Time: Winter Semester

General Description

The purpose of this course is to present some issues which are part of the core of modern microeconomics: theory of general equilibrium, public goods and externalities, elements of game theory and topics in information economics. The course is a continuation of the Microeconomic Theory I course. During the course both rigour and intuition will be emphasized.

Goals of the Course

Main goal of the course is to present the main ideas and models of the most important parts of modern microeconomic theory: general equilibrium, game theory and contract theory. Those ideas and models form now a standard methodology in economic theory and are used again and again in all fields in economics. Henceforth, this course will provide students with a solid foundation for more topical courses like industrial organization, labour economics, public finance, corporate finance, law and economics, international trade and so on.

Learning Outcomes

Successful completion of the course enables students to

- Understand how mathematical methods and rigorous analysis are used to formalize economic concepts and ideas.
- Posses a critical understanding of modern microeconomic theory at the introductory graduate-level of difficulty.
- Be able to set up and solve mathematical models describing specific economic problems at the introductory graduate-level of difficulty.
- Understand and formalize the notion of market equilibrium.
- Understand and formalize the inefficiencies arising from non-competitive market structures.

- Understand and formalize strategic interaction of economic agents.
- Understand and formalize the inefficiencies arising from asymmetric information distribution between economic agents.

Course Requirements and Assessment

There will be seven homework assignments and the final exam. Homework assignments will consist of problems similar to those that you will encounter on the exams. While you should tackle the assigned problems first on your own, you are encouraged to discuss them with your fellow classmates. Moreover, students can form groups at most of four people to solve problems. Every group can handle one copy of the homework assignment. Homeworks will be graded on effort. Solutions will be presented during the seminars. The final exam will cover material of the entire course. The course grade will depend on the homework and exam scores:

Homework assignments: up to 30%

Final exam: more than 75%.

Main textbooks

During the course we will use mainly the following textbooks:

- Varian, Hal, *Microeconomic Analysis*, New York: W.W. Norton, 1992.
- Gibbons, Robert, *A Primer in Game Theory*, New York: Harvester Wheatsheaf, 1992.
- Salanié, Bernard, *The Economics of Contracts. A Primer*, Cambridge, Mass.: MIT Press, 1997.
- Mas-Collel, Andreu, Michael D. Whinston, and Jerry R. Green, *Microeconomic Theory*, New York: Oxford Univ. Press, 1995.
- Kreps, David M., *A Course in Microeconomic Theory*, Princeton: Princeton Univ. Press, 1990.
- Fudenberg, Drew and Jean Tirole, *Game Theory*, Cambridge, Mass.: MIT Press, 1995.
- Laffont, Jean-Jacques and David Martimort, *The theory of incentives; the principal-agent model*, Princeton: Princeton Univ. Press, 2002.

Detailed course outline and reading list

Positions marked by (*) are optional.

Weeks 1-3: Topics in General Equilibrium

- **Equilibrium with production:** Robinson economy, First and second theorem of welfare economics, 2x2x2 model - Varian (1992) ch. 18; Mas-Collel, Whinston and Green (1995), ch. 15.C; Koutsoyiannis (1979), ch. 29; (*)Varian (1992), ch. 29
- **Social choice and welfare:** social welfare functionals, the Arrow impossibility theorem, single-peaked preferences, social welfare functions – Varian (1992), ch. 22; Mas-Collel et al. (1995), ch. 21.A-21.D; (*)Varian (1998) ch. 30
- **Market failures:**
 1. **Public Goods** - efficient provision of public good, private provision of public good, Lindahl allocations, the Groves-Clarke mechanism – Varian (1992) ch. 23; (*)Danziger (1976); (*)Laffont (1988) ch. 2; (*)Varian (1998) ch. 34
 2. **Externalities** - examples and definitions, solutions: Pigovian taxes, property rights; efficiency conditions. – Varian (1992) ch. 24; (*)Laffont (1988) ch. 1; (*)Varian (1994); (*)Varian (1998) ch. 31

Weeks 4-6: Elements of Game Theory

- **Static Games of Complete Information:** normal-form representation of the game, dominant strategies, iterated strict dominance, Nash equilibrium in pure and mixed strategies. Application: Cournot and Bertrand equilibrium in oligopoly.– Gibbons (1992), ch. 1; (*)Fudenberg and Tirole (1995), 1.1-1.3; (*)Kreps (1990), 12.1-12.2, 12.4-12.5; (*)Osborne (2004) ch. 1-4.
- **Dynamic Games of Complete Information:** extensive-form representation of games, backward induction, subgame-perfect Nash equilibrium. Application: international trade with tariffs – Gibbons (1992), ch. 2; Fudenberg and Tirole (1995) ch. 3.5, 3.6; (*)Osborne (2004) ch. 5.
- **Repeated Games and Folk Theorem:** two-stage repeated games, infinitely repeated games, folk theorem. Application: collusion vs competition in dynamic duopoly. – Gibbons (1992), ch. 2; Fudenberg and Tirole (1995) ch. 5.1, 5.2; (*)Kreps (1990) 14.1-14.4; (*)Osborne (2004) ch. 14.
- **Static Games with Incomplete Information:** Conditional Expected Utility, Bayesian-Nash equilibrium. Application: First-price and second-price sealed bid auctions – Gibbons (1992) ch. 3.1, 3.2; (*)Fudenberg and Tirole (1995) ch. 6.1-6.5; (*)Osborne (2004) ch. 9.

Weeks 7-9: Topics in economics of information

- **Adverse selection:** Akerlof model of labor market; collapse of the market – Mas-Collel et al. (1995), ch. 13.B; Akerlof (1970); (*) Varian (1992) ch. 25.9; (*)Kreps (1990) ch. 17.1.

- **Models of hidden information: Principal-Agent Approach, Monopolistic screening** – Salanié (1997), ch. 2; Macho-Stadler and Pérez-Castrillo (1997), ch. 4.1, 4.2; (*)Laffont and Martimort (2002), ch. 2; (*)Bolton and Dewatripont (2005), ch. 2.
- **Moral hazard: Simple model with two effort levels, moral hazard in teams. Application: credit rationing** – Salanié (1997) ch. 5.1; Varian (1992) ch. 25.4; (*)Laffont and Martimort (2002), ch. 4; (*)Kreps (1990) ch. 16.1, 16.2; (*)Holmstrom (1982); (*)Bolton and Dewatripont (2005), ch. 4.
- **Signalling: Introduction to Perfect Bayesian Equilibrium, Signalling games, Application: Spence's education model** – Gibbons (1992), ch. 4.1, 4.2.A, 4.2.B; Mas-Collel et al. (1995), ch. 13.C; (*)Kreps (1990) ch. 16.1, 16.2, 17.1 ; (*)Bolton and Dewatripont (2005), ch. 3; (*)Osborne (2004) ch. 10..

References

- Akerlof, George A., "The market of lemons: quality uncertainty and the market mechanism," *Quarterly Journal of Economics*, 1970, pp. 488–500.
- Bolton, Patrick and Mathias Dewatripont, *Contract Theory*, Cambridge, Mass.: MIT Press, 2005.
- Danziger, Leif, "A Graphic Representation of the Nash and Lindahl Equilibria in an Economy with a Public Good," *Journal of Public Economics*, 1976, 6, 295–307.
- Fudenberg, Drew and Jean Tirole, *Game Theory*, Cambridge, Mass.: MIT Press, 1995.
- Gibbons, Robert, *A Primer in Game Theory*, New York: Harvester Wheatsheaf, 1992.
- Holmstrom, Bengt, "Moral Hazard in Teams," *The Bell Journal of Economics*, 1982, 13 (2), 324–340.
- Koutsoyiannis, A., *Modern Microeconomics*, London: Macmillan, 1979.
- Kreps, David M., *A Course in Microeconomic Theory*, Princeton: Princeton Univ. Press, 1990.
- Laffont, Jean-Jacques, *Fundamentals of Public Economics*, Cambridge, Mass.: MIT Press, 1988.
- _____ and David Martimort, *The theory of incentives; the principal-agent model*, Princeton: Princeton Univ. Press, 2002.
- Macho-Stadler, Inés and J.David Pérez-Castrillo, *An introduction to economics of information: incentives and contracts*, Oxford: Oxford Univ. Press, 1997.
- Mas-Collel, Andreu, Michael D. Whinston, and Jerry R. Green, *Microeconomic Theory*, New York: Oxford Univ. Press, 1995.
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- _____, "A Solution to the Problem of Externalities when Agents are Well-Informed," *American Economic Review*, 1994, 84 (5), 1278–93.
- _____, *Intermediate Microeconomics: A Modern Approach*, New York: W.W. Norton, 1998.