

MATHEMATICAL PRINCIPLES FOR ECONOMIC ANALYSIS

(ECTS 5)

General goals

1. Acquiring advanced knowledge in mathematical analysis and their application in economic theory

Specific goals

Course introduces and presents to the students the elements of advanced mathematics required in the economic theory analysis while focusing on the following topics: linear algebra, functions of several variables, differential calculus for functions of several variables. The goal of the course is to apply acquired mathematical knowledge in economic theory examples with the purpose of different approach to it. The economic examples that will be considered are the following:

- IS-LM analysis
- Budget set in the space of goods, input space, Investment model
- Markov model of employment
- Investments and arbitrage
- Leslie population model
- Pure exchange economy
- Hotelling's Lemma. Shepard's Lemma
- Equilibrium, Welfare Economics

Students attending the module will accumulate specific knowledge to solve homework, exercises, preliminary and final exams. Also, students will be able to think analytically about economic theories and defend their opinions with arguments. This will for sure develop students specific skills which will make them competitive at the labor market.

2. Students will develop their critical and analytical thinking

Through discussions, problem modeling and interpretation of solutions, students will learn how to make decisions based on analytical tools.

3. Students will learn how to use technology for problem solving

Through using various software and tools students will solve real optimization problems and learn how to create a good interpretation.