Incoming student mobility

UNIOS University Unit: DEPARTMENT OF MATHEMATICS

COURSES OFFERED IN FOREIGN LANGUAGE
FOR ERASMUS+ INDIVIDUAL INCOMING STUDENTS

Department or Chair within the UNIOS Unit	Department of Mathematics

Study program	Graduate Mathematics and Informatics Education Study Programme - obligatory

Study level	Graduate (master)

Course title	Optimization Methods and Applications
Course code (if any)	MI004
Language of instruction	English
Brief course description	Syllabus. 1. Introduction. Local and global minimum. Concavity and convexity of a functions and convex sets. Illustrative examples of optimization problems. 2. One-dimensional minimization. Golden section, parabola method and Brent's method. Newton method and its modifications. Application method one-dimensional minimization at practices. 3. Multidimensional minimization without constraints. Gradient method. Steepest descent method. Methods of Newton type. Minimization of non-differentiable function (Nelder-Mead method). Graphical presentations. Application of multidimensional minimization. 4. The problem of conditional minimization. Necessary and sufficient conditions for optimality. Gradient method with projection. Newton method with projection. 5. Linear programming. The definition of linear programming problems. Examples of linear programming problems. Graphical solving linear programming problems. 6. Simplex method. Optimality condition. Derivativation and the implementation of the simplex method. The use of linear programming for solving problems in the field of operations

	research.
Form of teaching	Consultative teaching.
Form of assessment	Lectures and exercises are compulsory. The exam consists of written and oral part, which can be taken after the lectures. Upon completion of the course, students can take the exam. Successful midterm exam scores replace the written exam. Exercises are partially auditory and partially laboratory with the use of computers. During the semester students can write homework or making seminar paper, which can contribute to the final grade.
Number of ECTS	6
Class hours per week	3+2+0
Minimum number of students	
Period of realization	Winter semester
Lecturer	Ninoslav Truhar