

## Incoming student mobility

UNIOS University Unit: SCHOOL OF APPLIED MATHEMATICS AND INFORMATICS

### COURSES OFFERED IN FOREIGN LANGUAGE FOR ERASMUS+ INDIVIDUAL INCOMING STUDENTS

Department or Chair within the UNIOS Unit	School of Applied Mathematics and Informatics
Study program	Graduate Mathematics and Informatics Education Study Programme
Study level	Graduate (master)
Course title	Optimization Methods and Applications
Course code (if any)	MI004
Language of instruction	English
Brief course description	<p>Syllabus.</p> <ol style="list-style-type: none"> <li>1. Introduction. Local and global minimum. Concavity and convexity of a functions and convex sets. Illustrative examples of optimization problems.</li> <li>2. One-dimensional minimization. Golden section, parabola method and Brent's method. Newton method and its modifications. Application method one-dimensional minimization at practices.</li> <li>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.</li> <li>4. The problem of conditional minimization. Necessary and sufficient conditions for optimality. Gradient method with projection. Newton method with projection.</li> <li>5. Linear programming. The definition of linear programming problems. Examples of linear programming problems. Graphical solving linear programming problems.</li> <li>6. Simplex method. Optimality condition. Derivatation and the implementation of the simplex method. The use of linear programming for solving problems in the field of operations</li> </ol>

## ERASMUS+

EU programme for education, training, youth and sport

	research.
Form of 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	Ivana Kuzmanović Ivičić