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 university study programme in mathematics (Master level) Branches: • Financial Mathematics and Statistics • Mathematics and Computer Science

Study level	Graduate (master)

Course title	Nonlinear optimization
Course code (if any)	M129
Language of instruction	English
Brief course description	Syllabus. 1. Introduction and motivation. Illustrative examples. 2. Convex and quasi-convex functions. Lipschitz-continuous functions. Local and global minimum. 3. One-dimensional minimization of differentiable functions. The method of tangents. Newton's method. 4. One-dimensional minimization of non-differentiable functions. Half method. Gold cut method. Piavsky method, Shubert method, DIRECT method. 5. Multidimensional minimization of differentiable functions. The gradient method. Newton's method. Quasi-Newton methods. Conjugate Direction Method. 6. Multidimensional minimization of non-differentiable functions. The Nelder-Mead method. DIRECT method, Branching and fencing method. Population algorithms. 7. Nonlinear least squares problem. Gauss-Newton method. The Marquardt method. 8. Nonlinear problems of the smallest absolute deviations. Application of DIRECT algorithm.

Form of teaching	Consultative teaching.
Form of assessment	Lectures and exercises are obligatory. The exam consists of a written and an oral part. Upon completion of the course, students can take the exam. Successful midterm exam scores replace the written exam.
Number of ECTS	7
Class hours per week	3+2+0
Minimum number of students	
Period of realization	Summer semester
Lecturer	Kristian Sabo