Study Program: Informatics	
Type and level of studies: Bachelor studies	
Course name: Operational Research	
Lecturer: Petrović J. Milena	
Status: Elective	
ECTS: 10	
Attendance Prerequisites: /	

Course aims
Introducing basic notions and methods of operational research (linear, nonlinear and integer programming).

Course outcome
The students are able to perform mathematical modelling and to solve practical problems by applying quantitative methods using modern software tools.

Course content
Theoretical part
Introduction to Operational Research (OR) and Mathematical Programming: OR methodology, mathematical model, near-optimal solutions, optimal solutions, local and global optima. Linear programming (LP) and its properties. Geometric interpretation of LP. General, symmetrical, standard and canonical form of the LP problem. Simplex method. Possible outcomes of the simplex method. The dual problem, its properties and applications. Open and closed transportation problems (TP). Some specific problems of TP.

Dual problem of LP, its properties and application possibilities. Open and closed transport problem (TP). Some special problems of TP. Standard combinatorial optimization problems (assignment, backpack, etc.) and their solving with exact and approximate methods. Integer Programming and Solution Methods. Basic properties of nonlinear programming (NP). Application of LP and NP in business analytics.

Practical part
Exercises, Other forms of teaching.

Literature:
1. J.A. Lawrence, B.A. Pasternack, Applied Management Science, John Wiley & Sons Inc. 2002.
2. М. Вујошевић, Методе оптимизације у инжењерском менаџменту, АИНС-ФОН, Београд, 2012.
3. С. Крчевинац и др, Операциона истраживања, ФОН, Београд, 2013

Number of active classes				Other classes
Lectures: 4	Practical classes: 4	Other forms of teaching:	Students' research work	

Teaching methods
Lectures are in accordance with the topic in *course content*, computer practice and independent student research work.

Assessment (maximum 100 points)			
Course assignments	**points**	Final exam	**Points**
activity during lectures	**10**	written exam	**20**
practical classes	**30**	oral exam	**20**
term test(s)	**20**	....	
seminar(s)			
Total	**50**		**50**