

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject Optimization methods		Code 1010842121010821741
Field of study Electronics and Telecommunications	Profile of study (general academic, practical) general academic	Year /Semester 1 / 2
Elective path/specialty Multimedia and Consumer Electronics	Subject offered in: Polish	Course (compulsory, elective) obligatory
Cycle of study: Second-cycle studies	Form of study (full-time, part-time) full-time	
No. of hours Lecture: 1 Classes: - Laboratory: 1 Project/seminars: -		No. of credits 2
Status of the course in the study program (Basic, major, other) other		(university-wide, from another field) from field
Education areas and fields of science and art technical sciences Technical sciences		ECTS distribution (number and %) 2 100% 2 100%
Responsible for subject / lecturer: dr inż. Piotr Zwierzykowski email: piotr.zwierzykowski@put.poznan.pl tel. 061 665 3903 Wydział Elektroniki i Telekomunikacji ul. Piotrowo 3A 60-965 Poznań		
Prerequisites in terms of knowledge, skills and social competencies:		
1	Knowledge	Has extended, in-depth knowledge of those branches of mathematics which are used in formulating and solving problems in electronic and telecommunications (K2_W00).
2	Skills	Is able to communicate freely in English. Is able to discuss professional matters in English; is able to use knowledgeably English language sources (K2_U01).
3	Social competencies	Is aware of the limitations of his/her current knowledge and skills; is committed to lifelong learning (K2_K04).
Assumptions and objectives of the course: The goal of the subject is presentation of basic mathematical methods used in optimization process.		
Study outcomes and reference to the educational results for a field of study		
Knowledge: 1. Have systematic knowledge necessary to understand basic optimization methods and it application in solving engineering problems. - [K2_W03]		
Skills: 1. Is able to used optimisation methods to solve typical problems found in elections and telecommunication - [K2_U05]		
Social competencies: 1. Is aware of limitations of its own knowledge and skills and understand the need for further education - [K2_K04]		
Assessment methods of study outcomes		
Lecture: - test exam on the Moodle e-learning platform Laboratory excercises: - finish note of the project		
Course description		

<p>Main topics:</p> <ol style="list-style-type: none"> 1 - Introduction to the Optimization Methods 2 - Direct search methods 3 - Linear programming 4 - Heuristic methods 5 - Multi-dimensional optimisation 6 - Gradient methods 7 - Application of the optimisation methods 		
<p>Basic bibliography:</p> <ol style="list-style-type: none"> 1. J. Kusiak, A. Danielewsk-Tulecka, P. Oprocha, <i>Optymalizacja. Wybrane metody z przykladami zastosowań</i>, Wydawnictwo Naukowe PWN, Warszawa 2009 (dostępne również w ibuk.pl) 2. A. Stachurski, <i>Wprowadzenie do optymalizacji</i>, Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa, 2009 3. K. Amborski, <i>Podstawy metod optymalizacji</i>, Oficyna Wydawnicza Politechniki Warszawskiej, Warszawa, 2009 		
<p>Additional bibliography:</p> <ol style="list-style-type: none"> 1. Z. Michalewicz and D. Fogel, <i>How to Solve It: Modern Heuristics</i>, Springer, 2004 2. M. Pioro, D. Medhi, <i>Routing, Flow, and Capacity Design in Communication and Computer Networks</i>, Morgan Kaufman Publishers, 2004 3. P. Siarry, Z. Michalewicz, <i>Advances in Metaheuristics for Hard Optimization</i>, Springer, 2008 		
<p>Result of average student's workload</p>		
<p>Activity</p>	<p>Time (working hours)</p>	
1. Lecture	15	
2. Laboratory exercises	15	
3. Preparation to laboratory exercises	15	
<p>Student's workload</p>		
<p>Source of workload</p>	<p>hours</p>	<p>ECTS</p>
Total workload	50	2
Contact hours	35	1
Practical activities	30	1