

<b>STUDY MODULE DESCRIPTION FORM</b>		
Name of the module/subject <b>Selected branches of mathematics I</b>		Code <b>1010331121010345153</b>
Field of study <b>Control Engineering and Robotics</b>	Profile of study (general academic, practical) <b>general academic</b>	Year /Semester <b>1 / 2</b>
Elective path/specialty <b>-</b>	Subject offered in: <b>polish</b>	Course (compulsory, elective) <b>obligatory</b>
Cycle of study: <b>First-cycle studies</b>	Form of study (full-time, part-time) <b>full-time</b>	
No. of hours Lecture: <b>1</b> Classes: <b>1</b> Laboratory: <b>-</b> Project/seminars: <b>-</b>		No. of credits <b>2</b>
Status of the course in the study program (Basic, major, other) <b>basic</b>		(university-wide, from another field) <b>university-wide</b>
Education areas and fields of science and art <b>technical sciences</b>		ECTS distribution (number and %) <b>3 100%</b>
<b>Responsible for subject / lecturer:</b>  dr Wiesława Nowakowska email: wieslawa.nowakowska@put.poznan.pl tel. 616652320 Wydział Elektryczny ul. Piotrowo 3A 60-965 Poznań		
<b>Prerequisites in terms of knowledge, skills and social competencies:</b>		
1	<b>Knowledge</b>	Basic knowledge of differentiation and integration.
2	<b>Skills</b>	Solving problems
3	<b>Social competencies</b>	Student understands the need and knows the possibility of studying (postgraduate courses, second-degree studies), improving language skills, professional, personal and social skills.
<b>Assumptions and objectives of the course:</b> The recognizing methods of solving of differential equations and applications of differential equations.		
<b>Study outcomes and reference to the educational results for a field of study</b>		
<b>Knowledge:</b>		
1. To know types of differential equations and methods of their solving - [K_W01+++] 2. To understand the concept of The Laplace transform and know it properties and methods of calculation - [K_W01+++]		
<b>Skills:</b>		
1. To recognize type of differential equation and solve it - [K_U02+ K_U05+] 2. Apply The Laplace transform to solve linear differential equations and systems of linear differential equations with constant coefficients - [K_U02+ K_U05+]		
<b>Social competencies:</b>		
<b>Assessment methods of study outcomes</b>		
Lectures: written exam checking theoretic knowledge and ability it application Classes: tests during the semester and the direct activity during the classes		
<b>Course description</b>		
First order differential equations. Differential equations of higher order-reduction of order. Linear differential equations of higher order. Systems of linear differential equations with constant coefficients The Laplace transform and it application to differential equations.		

<b>Basic bibliography:</b>		
1. W. Żakowski, W. Leksiński, Matematyka, t. IV, WNT, Warszawa, 1994.		
2. J. Morchało, Z. Ratajczak, J. Werbowski, Równania różniczkowe w zastosowaniach, Wyd. Politechniki Poznańskiej, Poznań, 1995.		
3. W. W. Stiepanow, Równania różniczkowe, PWN, Warszawa, 1964.		
4. I. Folyńska, Z. Ratajczak, Z. Szafranski, Matematyka, cz. III, Wyd. Politechniki Poznańskiej, Poznań, 2001.		
<b>Additional bibliography:</b>		
1. M. Gewert, Z. Skoczylas, Równania różniczkowe zwyczajne, Oficyna Wyd. GiS, Wrocław, 2001.		
2. W. Krywicki, L. Włodarski, Analiza matematyczna w zadaniach, Część II, PWN, Warszawa, 2006. 3.		
3. W. Stankiewicz, Zadania z matematyki dla wyższych uczelni technicznych. Część II, PWN, Warszawa, 2006.		
<b>Result of average student's workload</b>		
<b>Activity</b>	<b>Time (working hours)</b>	
1. Lectures	15	
2. Classes	15	
3. Exam/passing lectures consultations	5	
4. Preparation for classes	15	
5. Preparation for exam/ passing lectures	15	
<b>Student's workload</b>		
<b>Source of workload</b>	<b>hours</b>	<b>ECTS</b>
Total workload	65	3
Contact hours	35	1
Practical activities	0	0