

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

Basic bibliography:

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. Foltyńska, Z. Ratajczak, Z. Szafranski, Matematyka, cz. III, Wyd. Politechniki Poznańskiej, Poznań, 2001.

Additional bibliography:

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.

Result of average student's workload

Activity	Time (working hours)
1. Lectures	15
2. Classes	15
3. Exam/passing lectures consultations	5
4. Preparation for classes	15
5. Preparation for exam/ passing lectures	15

Student's workload

Source of workload	hours	ECTS
Total workload	65	2
Contact hours	35	1
Practical activities	0	0