

。 GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	, PG_00052287								
Field of study	Mathematics								
Date of commencement of studies	October 2024		Academic year of realisation of subject			2024/2025			
Education level	second-cycle studies		Subject group						
Mode of study	Full-time studies		Mode of delivery			at the university			
Year of study	1		Language of instruction			Polish			
Semester of study	2		ECTS credits			4.0			
Learning profile	general academic profile		Assessment form			assessment			
Conducting unit	Divison of Dynamical Systems -> Institute of Applied Mathematics -> Faculty of Applied Physics and Mathematics								
Name and surname	Subject supervisor		dr hab. Sergey Kryzhevich						
of lecturer (lecturers)	Teachers dr hab. Sergey Kryzhevich								
Lesson types and methods	Lesson type	Lecture	Tutorial	Laboratory	Projec	t	Seminar	SUM	
of instruction	Number of study hours	30.0	0.0	0.0	0.0	30.0		60	
	E-learning hours included: 0.0						_		
Learning activity and number of study hours	Learning activity	Participation in classes includ plan	n didactic led in study	Participation in consultation hours		Self-study		SUM	
	Number of study hours	60		5.0		35.0		100	
Subject objectives	clear 119 / 5 000 Wprowadzenie do podstawowych narzędzi i metod związanych z teorią układów nieliniowych równań różniczkowych zwyczajnych.								
Learning outcomes	Course outcome		Subject outcome			Method of verification			
Subject contents	Linear systems of differential equations. The matrix method. Basic methods of solving nonlinear systems. First integrals, Lyapunov functions, stability. Classification of fixed points.								
Prerequisites and co-requisites	Assessment in the following subjects: algebra, analysis, differential equations								
Assessment methods	Subject passing criteria		Passing threshold			Percentage of the final grade			
and criteria	Exam		51.0%		50.0%				
	Project		51.0%			50.0%			
Recommended reading	Basic literature	literature		 Arrowsmith, D.K. and Place, C.M. (1982) Ordinary Differential Equation. Chapman and Hall, New York. Coddington, Earl A.; Levinson, Norman (1955). Theory of Ordinary Differential Equations. New York: McGraw-Hill. 					
	Supplementary literature		 W. Hurewicz, Lectures on Ordinary Differential Equations, Dover Publications, ISBN 0-486-49510-8 Hartman, Philip (2002) [1964], Ordinary differential equations, Classics in Applied Mathematics, vol. 38, Philadelphia 						
	eResources addresses		Adresy na platformie eNauczanie:						

Example issues/ example questions/ tasks being completed	During the first classes, the student receives a topic to independently develop and present the project within the set deadline. The theoretical knowledge acquired during lectures and seminars is tested in the exam.
	State and prove the properties of the matrix exponent.
	State and prove the theorem of stability by firs approximation.
	Determine the type of fixed points for a nonlinear autonomous system of second order.
Work placement	Not applicable

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