GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Differential equations in Physics and Technology, PG_00037294
Field of study	Technical Physics

Date of commencement of studies	October 2022	Academic year of realisation of subject	2023/2024
Education level	first-cycle studies	Subject group	Obligatory subject group in the field of study
			Subject group related to scientific research in the field of study
Mode of study	Full-time studies	Mode of delivery	at the university
Year of study	2	Language of instruction	Polish
Semester of study	3	ECTS credits	4.0
Learning profile	general academic profile	Assessment form	assessment

Conducting unit	Department of Atomic, Molecular and Optical Physics -> Faculty of Applied Physics and Mathematics

Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. inż. Maciej Demianowicz
	Teachers	dr hab. inż. Maciej Demianowicz

Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	30.0	0.0	0.0	0.0	60
	E-learning hours included: 0.0						

Learning activity and number of study hours	Learning activity	Participation in didactic classes included in study plan	Participation in consultation hours	Self-study	SUM
	Number of study hours	60	4.0	36.0	100

Subject objectives	Students become acquainted with methods of solving most popular differential equations encountered in physics and technics.

Learning outcomes	Course outcome	Subject outcome	Method of verification
	K6_W03	The student has a deep and structured knowledge in the field of the theory of differential equations and knows how to apply it to physics and technology.	[SW1] Assessment of factual knowledge
	K6_U02	The student is able to solve scientific and technical problems requiring the ability to solve (mainly analyticaly) differential equations	[SU4] Assessment of ability to use methods and tools [SU2] Assessment of ability to analyse information
	K6_W02	The student has a deep and structured knowledge in the field of the theory of differential equations and knows how to apply it to physics and technology.	[SW1] Assessment of factual knowledge

Subject contents	1. First-order ordinary differential equations. 2. Second-order ordinary linear differential equations. 3. Systems of first-order ordinary linear differential equations.
Prerequisites and co-requisites	Good knowledge of mathematical analysis.

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Grade	50.0%	100.0%

Recommended reading	Basic literature	1. N. M. Matwiejew, Metody całkowania równań różniczkowych zwyczajnych, PWN, Warszawa, 1970
		2. W. W. Stiepanow, Równania różniczkowe, PWN, Warszawa, 1956
	Supplementary literature	None.
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed	1. Present properties of the Wronskian of solutions of the second-order linear differential equations.	
	2. Present the method of generalized power series.	
Work placement	Not applicable	