GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Mathematics, PG_00046325
Field of study	Electronics and Telecommunications, Informatics, Automatic Control, Cybernetics and Robotics

Date of commencement of studies	October 2025	Academic year of realisation of subject	2025/2026
Education level	second-cycle studies	Subject group	Obligatory subject group in the field of study
Mode of study	Full-time studies	Mode of delivery	at the university
Year of study	1	Language of instruction	English
Semester of study	1	ECTS credits	6.0
Learning profile	general academic profile	Assessment form	exam

Conducting unit	Mathematics Center -> Vice-Rector For Education

Name and surname of lecturer (lecturers)	Subject supervisor	dr Magdalena Musielak
	Teachers	dr Magdalena Musielak

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	20.0	70.0	150

Subject objectives	Students obtain competence in using methods of mathematical analysis (calculus) necessary to begin their graduate studies.

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[K7_W01] knows and understands, to an increased extent, mathematics to the extent necessary to formulate and solve complex issues related to the field of study	Student defines the basic concepts of differential and integral calculus of one variable and multivariable function. Student applies the basic rules to calculate ordinary and partial derivatives. Student applies basic techniques to evaluate single, double and triple integrals. Student uses definite integral to solve geometrical problems. Student uses the differential calculus to analyze properties of one variable and multivariable functions. Student gives the definitions of basic notions of probability theory, elements of field theory, line ans surface integrals, number and function series, and the Fourier series . Student demonstrates different methods of solving ordinary differential equations, also using Laplace transform.	[SW1] Assessment of factual knowledge
	[K7_U01] can apply mathematical knowledge to formulate and solve complex and non-typical problems related to the field of study by: - appropriate selection of source information and its critical analysis, synthesis, creative interpretation and presentation, - application of appropriate methods and tools	Student recognizes the importance of skillful use of basic mathematical apparatus in terms of study in the future. Student uses the basic methods of mathematical analysis to formulate and solve engineering problems.	[SU2] Assessment of ability to analyse information [SU4] Assessment of ability to use methods and tools

Subject contents	• Differential and integral calculus of function of one variable.
	• Ordinary differential equations.
	• Differential and integral calculus of function of several variable.
	• Elements of field theor.
	• Number sequences and series.
	• Power series. The Fourier series.
	• Elements of probability theory.

Prerequisites and co-requisites	

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Final exam	50.0%	50.0%
	Tests	50.0%	50.0%

Recommended reading	Basic literature	1. Sherman K. Stein, Calculus and analytic geometry, McGraw-Hill Book Company, 4th edition, 1987,
		2. George B. Thomas,Jr., Ross L.Finney, Calculus and Analytic Geometry, Addison-Wesley Publishing Company, 7th edition, 1988
		3. John E.Hanke, Arthur G.Reitsch, "Understanding Business Statistics", IRWIN, 1991
		4. M.Bednarczyk, A.Dąbrowicz - Tlałka, "Elementy rachunku prawdopodobieństwa w zadaniach",Wydawnictwo PG, 2012
	Supplementary literature	1. K.T. Jankowscy, Zbiór zadań z matematyki, cz.1, PG Gdańsk
		2. K.T. Jankowscy, "Funkcje wielu zmiennych. Całki wielokrotne. Geometria analityczna", Wydawnictwo PG, 2005
		3. K.T. Jankowscy "Zadania z matematyki wyższej", Wydawnictwo PG, 2001
	eResources addresses	Adresy na platformie eNauczanie:

Example issues/ example questions/ tasks being completed	1. Find the general solution of the differential equation…..
	2. Find the local extreme values of the function f(x,y).
	3. Find the volume of a solid bounded by the surfaces.
	4. Determine convergence of the series.

Work placement	Not applicable

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