GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Mathematical Analysis, PG_00021019						
Field of study	Mathematics						
Date of commencement of studies	October 2026		Academic year of realisation of subject		2026/2027		
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	1		Language of instruction		Polish		
Semester of study	1		ECTS credits		9.0		
Learning profile	general academic profile		Assessment form		exam		
Conducting unit	Divison of Nonlinear Analysis -> Institute of Applied Mathematics -> Faculty of Applied Physics and Mathematics -> Faculties of Gdańsk University of Technology						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. Zdzisław Dzedzej				
	Teachers						

Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	60.0	60.0	0.0	0.0	0.0	120
	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	120	5.0	100.0	225

Subject objectives	To familiarize students with the basic tools of mathematical analysis.		

Learning outcomes	Course outcome	Subject outcome	Method of verification
	K6_W07	knowledge of derivatives and their properties, and integral calculus	[SW1] Assessment of factual knowledge
	K6_U02	simple deduction, verification of theorems and definitions on examples	[SU3] Assessment of ability to use knowledge gained from the subject
	K6_W02	knowledge of basic theorems and definitions	[SW1] Assessment of factual knowledge
	K6_U04	calculates limits of sequences and functions, verifies series for convergence	[SU4] Assessment of ability to use methods and tools
	K6_U06	calculates simplest integrals	[SU4] Assessment of ability to use methods and tools

Subject contents	Course content – lecture
	1. Real numbers.
	2. Theory of sequences of numbers.
	3. Theory of series.
	4. Limit of a function. Continuity of a function.
	5. Differentiability of a function.
	6. Appliications of differential calculus
	7. Sequences and series of functions.

Prerequisites and co-requisites	No requirements

Assessment methods and criteria			

Subject passing criteria	Passing threshold	Percentage of the final grade
Exam	30.0%	40.0%
Activity in the classes	0.0%	15.0%
Test no. 1	50.0%	15.0%
Test no 3	50.0%	15.0%
Test no. 2	50.0%	15.0%

Recommended reading	Basic literature	1. W. Kołodziej, Analiza matematyczna, Wydawnictwo Naukowe PWN, Warszawa, 2009
		2. W. Kryszewski, Wykład analizy matematycznej, cz. I, Funkcje jednej zmiennej, Wydawnictwo Naukowe UMK, Toruń, 2009
		3. M. Gewert, Z. Skoczylas, Analiza Matematyczna I, II, zeszyty, GiS dowolne wydania
	Supplementary literature	1. R. Rudnicki, Wykłady z analizy matematycznej, Wydawnictwo Naukowe PWN, Warszawa, 2006
		2. W. Rudin, Podstawy analizy matematycznej, Wydawnictwo Naukowe PWN, Warszawa, 2009
		3. K. Kuratowski, Rachunek różniczkowy i całkowy, PWN, Warszawa, 1964
		4. G.M. Fichtenholz, Rachunek różniczkowy i całkowy, Tom 1, Wydawnictwo Naukowe PWN 2007
		5. K. Maurin, Analiza, Tom 1, Wydawnictwo Naukowe PWN, Warszawa, 2010
		6 J. Jost, Postmodern Analysis, Universitext, Springer, Berlin, 2010
	eResources addresses	

Example issues/ example questions/ tasks being completed	• Calculate the limit of a sequence. • Calculate the limit of a function. • Check the continuity of a function. • Check the differentiability of a function. • Calculate the derivative of a function. • Investigate a functon and draw the graph • Examine the convergence of a series. • Calculate the sum of a series.
Practical activites within the subject	Not applicable

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