University of Gdańsk

Subject card

Subject name and code	Mathematical Analysis, PG_00198488		
Field of study	Informatics		
Date of commencement of studies	October 2026	Academic year of realisation of subject	2026/2027
Education level	Bachelor's 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	Polish
Semester of study	1	ECTS credits	5.0
Learning profile	academic	Assessment form	exam
Conducting unit			
Name and surname of lecturer (lecturers)	Subject supervisor	dr inż. Magda Dettlaff	
	Teachers		

Lesson types

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	0.0	65.0	125

Subject objectives

Equipping the student with mathematical knowledge supporting technical subjects

Learning outcomes

Course outcome	Subject outcome	Method of verification
[INFOL3_U02] is able to use his/her knowledge of higher mathematics to model and solve complex problems	The student is able to select appropriate methods of mathematical analysis for a given optimization or decision-making problem. The student applies the methodology learned for constructing mathematical models using derivatives and integrals.	[SU4] test/exam - oral or written [SU5] implementation of a problem task
[INFOL3_W01] knows and understands advanced concepts of mathematical analysis and linear algebra with geometry and numerical methods	The student knows and understands the concepts and theorems in mathematical analysis discussed in the lecture. The student is able to calculate the limit of a numerical sequence and the limit of a single-variable function, examine its continuity and differentiability, calculate its integral, and interpret the results obtained.	[SW4] test/exam - oral or written [SW5] implementation of a problem task

Subject contents

Numerical sequences. Convergent (divergent) sequence. Functions of one variable. Limit of functions, continuous functions. Differential calculus of functions of one variable. Derivative of a function. Monotonic, convex (concave) function, function extrema, function asymptotes. d'Hospital's rule. Geometric and physical application of derivatives. Indefinite and definite integrals. Number sequences and their convergence. To familiarize students with the nomenclature in English.

Prerequisites and co-requisites

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	homeworks	51.0%	5.0%
	tests	51.0%	60.0%
	exam	51.0%	35.0%
Recommended reading	Basic literature	J. Topp, Matematyka, Funkcje jednej zmiennej. Wydawnictwo Uniwersytetu Gdańskiego, 2016 W. Krysicki, L. Włodarski, Analiza matematyczna w zadaniach. Część 1, Wydawnictwo Naukowe PWN, 2005 M.Gewert, Z.Skoczylas, Analiza matematyczna 1. Definicje, twierdzenia, wzory. Wrocław Oficyna Wydawnicza GiS, 2025 M.Gewert, Z.Skoczylas, Analiza matematyczna 1. Przykłady i zadania. Wrocław Oficyna Wydawnicza GiS, 2025	
	Supplementary literature	B. Wikieł, Matematyka. Podstawy z elementami matematyki wyższej, Wydawnictwo Politechniki Gdańskiej, 2015	
	eResources addresses		
Example issues/ example questions/ tasks being completed	Calculate the limit of the sequence. Test the monotonicity of a given function. Formulate Weierstrass's theorem. Give the definition of the derivative of the appropriate function at the point, then determine the derivative of the function f(x)=3x-5 from the definition		
Work placement	Not applicable		

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