GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Mathematical Analysis I, PG_00060215		
Field of study	Technical Physics		
Date of commencement of studies	October 2023	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	1	Language of instruction	Polish
Semester of study	1	ECTS credits	10.0
Learning profile	general academic profile	Assessment form	exam
Conducting unit	Zakład Fizyki Zderzeń Elektronowych -> Instytut Fizyki i Informatyki Stosowanej -> Faculty of Applied Physics and Mathematics		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. Paweł Możejko	
	Teachers	mgr inż. Natalia Tańska dr hab. Paweł Możejko dr hab. inż. Maciej Demianowicz	

Lesson types and methods of instruction	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	10.0	120.0	250

Subject objectives	Endowment of student to mathematical knowledge helping technical subjects

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_U01] Can learn independently, obtain information from literature, databases and other properly selected sources.	Student understands the importance of studying by himself. Student is practising by himself.	[SU2] Assessment of ability to analyse information
[K6_W03] Has systematized knowledge of higher mathematics, including algebra, analysis, probability theory and numerical methods, allowing for basic description, understanding and modelling of physical phenomena and some technical processes.	Student calculate limits of sequences of numbers and functions. Study monotonicity and extremas of a function. Student knows basic notions of differential calculus of functions of one variable. Can calculate indefinite integral using methods integration by parts and integration by substitution. Student understands mathematical theorems and it uses with they of solving exercises.	[SW1] Assessment of factual knowledge

Subject contents	Elements of logic and set theory. Functions and relationships Numerical sets Introduction to metric spaces Sequences and Series Metric spaces Limit and continuity of function Properties of continuous functions Derivative of a function of one variable Mean value theorems and their applications Derivatives of functions of many variables Function extremes The inverse function theorem and its applications Integrals
Prerequisites and co-requisites	Student knows basic mathematical notions

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Exercise	60.0%	50.0%
Examination	60.0%	50.0%

Recommended reading

Basic literature	R. Rudnicki "Wykłady z analizy matematycznej" PWN Warszawa 2020 D.A. McQuarrie "Matematyka dla przyrodników i inżynierów" Tom 1, PWN, Warszawa 2012 K.A. Stroud, D.J. Booth "Matematyka od zera dla inżyniera" Pętla 2021 W. Krysicki, L. Włodarski "Analiza matematyczna w zadaniach" Tom I, PWN Warszawa 2023
Supplementary literature	L. Górniewicz, R.S. Ingarden "Analiza matematyczna dla fizyków" Tom 1, PWN Warszawa 1981 K. Maurin "Analiza część 1" PWN Warszawa 2010 K. Jankowska, T. Jankowski, Zbiór zadań z matematyki. Wydawnictwo Politechniki Gdańskiej, 2009

	eResources addresses	Adresy na platformie eNauczanie: Analiza Matematyczna I 2023/2024 - Moodle ID: 33003 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=33003
Example issues/ example questions/ tasks being completed	Find extremum of given function f(x) Find the limit of given function f(x) Calculate the integral of given function f(x) Calculate the derivative of given function f(x) Expand of given function f(x) in series	
Work placement	Not applicable	