



Subject card

Subject name and code	Mathematical analysis II, PG_00037260						
Field of study	Technical Physics						
Date of commencement of studies	October 2022	Academic year of realisation of subject			2022/2023		
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	2	ECTS credits			6.0		
Learning profile	general academic profile	Assessment form			exam		
Conducting unit	Department of Probability Theory and Biomathematics -> Faculty of Applied Physics and Mathematics						
Name and surname of lecturer (lecturers)	Subject supervisor	dr Joanna Cyman					
	Teachers	dr Joanna Cyman dr Maryna Shcholokova					
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	10.0		80.0		150
Subject objectives	To equip students with the knowledge that supports technical items						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	K6_W03	Student understands mathematical theorems and it uses with they of solving exercises. Can calculate integrals and knows applications of integrals. Study infinite series of numbers and series of functions. Student can make differential and integral calculus of multivariate function like partial derivatives, multiple integration.			[SW1] Assessment of factual knowledge		
	K6_U01	Student understands the importance of studying by himself. Student is practising by himself.			[SU2] Assessment of ability to analyse information		

Subject contents	<p>Differential and integral calculus of multivariate function - Partial derivatives, Multiple integration.</p> <p>Integral calculus of function of one variable. Indefinite integral and methods of its calculation. The Riemann definite integral and its geometrical and physical applications. Basic theorems of integral calculus. Improper integrals.</p> <p>An infinite series of numbers. Criteria of convergence of numerical series. Power series. Expanding functions in Taylor power series.</p> <p>Differential calculus of function of many variables. Partial derivatives. Directional derivative. Multiple integration. Geometric and physical application of multiple integrals.</p>																	
Prerequisites and co-requisites	Student knows basics of differential calculus of the function of one variable.																	
Assessment methods and criteria	<table border="1"> <thead> <tr> <th data-bbox="456 725 794 748">Subject passing criteria</th> <th data-bbox="799 725 1137 748">Passing threshold</th> <th data-bbox="1142 725 1481 748">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td data-bbox="456 754 794 777">Colloquium 1</td> <td data-bbox="799 754 1137 777">0.0%</td> <td data-bbox="1142 754 1481 777">27.0%</td> </tr> <tr> <td data-bbox="456 784 794 806">Colloquium 2</td> <td data-bbox="799 784 1137 806">0.0%</td> <td data-bbox="1142 784 1481 806">27.0%</td> </tr> <tr> <td data-bbox="456 813 794 835">Activity</td> <td data-bbox="799 813 1137 835">0.0%</td> <td data-bbox="1142 813 1481 835">6.0%</td> </tr> <tr> <td data-bbox="456 842 794 864">Exam</td> <td data-bbox="799 842 1137 864">50.0%</td> <td data-bbox="1142 842 1481 864">40.0%</td> </tr> </tbody> </table>			Subject passing criteria	Passing threshold	Percentage of the final grade	Colloquium 1	0.0%	27.0%	Colloquium 2	0.0%	27.0%	Activity	0.0%	6.0%	Exam	50.0%	40.0%
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Exam	50.0%	40.0%																
Recommended reading	Basic literature	<ol style="list-style-type: none"> 1. M. Gewert, Z. Skoczylas, Analiza matematyczna 1 i 2. Definicje, twierdzenia, wzory. Wrocław, Oficyna Wydawnicza GiS 2014. 2. M. Gewert, Z. Skoczylas, Analiza matematyczna 1 i 2. Przykłady i zadania. Wrocław, Oficyna Wydawnicza GiS 2014. 3. W. Krysicki, L. Włodarski, Analiza matematyczna w zadaniach 1 i 2. Warszawa, PWN 2015. 4. J. Dymkowska, D. Beger, Rachunek całkowy w zadaniach, Gdańsk, Wydawnictwo Politechniki Gdańskiej 2017. 																
	Supplementary literature	<ol style="list-style-type: none"> 1. J. Topp, Matematyka. Funkcje jednej zmiennej. Gdańsk, Wydawnictwo UG 2016. 2. G. M. Fichtenholz, Rachunek różniczkowy i całkowy. T 1 i 2. Warszawa, PWN 1994. 																
	eResources addresses	Adresy na platformie eNauczanie: Analiza matematyczna II 2023 - Moodle ID: 29361 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=29361																
Example issues/ example questions/ tasks being completed	Calculate the double integral Definition of Partial derivatives																	
Work placement	Not applicable																	