



Subject card

Subject name and code	Mathematics II, PG_00055702						
Field of study	Architecture						
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		
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			3.0		
Learning profile	general academic profile	Assessment form			exam		
Conducting unit	Mathematics Center -> Vice-Rector for Education						
Name and surname of lecturer (lecturers)	Subject supervisor	mgr Katarzyna Kujawska					
	Teachers	mgr Katarzyna Kujawska mgr Dorota Garbowska					
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	30.0	0.0	0.0	0.0	45
	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	45	6.0		24.0	75	
Subject objectives	Students obtain competence in the range of using methods of mathematical analysis and knowledge how to solve simple problems that can be found in the field of engineering.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	[K6_U04] is able to use analytical methods to formulate and solve project tasks	Student defines the basic concepts of differential calculus of one variable function Student uses the first and second derivatives of a function to analyze its properties. Student applies the basic rules and techniques of integration to calculate indefinite integrals Student uses definite integral to solve geometrical problems Student calculates partial derivatives of a function of two variables Students calculates double integrals, and explains the method of substitution in the double integral Student applies double integrals in solving geometrical problems			[SU4] Assessment of ability to use methods and tools [SU3] Assessment of ability to use knowledge gained from the subject [SU2] Assessment of ability to analyse information		
	[K6_W01] knows and understands construction problems, building and engineering issues related to building design; principles, solutions, constructions and building materials used in simple engineering tasks in the field of architectural and urban design	Student recognizes the importance of skillful use of basic mathematical apparatus in terms of study in the future.			[SW1] Assessment of factual knowledge		

Subject contents	<p>Derivatives of the first order. Differentiation of elementary functions. Tangent to a curve at the point. Differentiation of composite functions. Indeterminate forms and de l'Hospital's Rule. Asymptotes. Extrema of a function. Points of inflexion .</p> <p>Indefinite integrals, Formula for the integration by parts. Formula for the integration by substitution. Definite integrals. Geometric application of definite integrals. The integral as an area. The length of an arc. The volume and surface area of a solid of revolution.</p> <p>Partial derivatives. Double integral over a rectangle . Double integral over the normal domain. Change of variables in a double integral. Applications of the double integral.</p>		
Prerequisites and co-requisites	No requirements		
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Exam	50.0%	75.0%
	Midterm tests	50.0%	25.0%
Recommended reading	Basic literature	<p>Praca zbiorowa pod redakcją B. Wikiel, Matematyka - Podstawy z elementami matematyki wyższej, PG, Gdańsk 2007</p> <p>K. Jankowska, T. Jankowski, Zbiór zadań z matematyki, PG, Gdańsk 1997</p> <p>K. Jankowska, T. Jankowski, Funkcje wielu zmiennych, geometria analityczna, całki wielokrotne, PG, Gdańsk 1997</p>	
	Supplementary literature	<p>Praca zbiorowa pod red. E. Mieloszyka, Matematyka Materiały pomocnicze do ćwiczeń, PG, Gdańsk 2004 R. Leitner, Zarys matematyki wyższej I i II, Wydawnictwo Naukowo-Techniczne, Warszawa 2001 R. Leitner, W. Matuszewski, Z. Rojek, Zadania z matematyki wyższej I i II, Wydawnictwo Naukowo-Techniczne, Warszawa 1999 M. Gewert, Z. Skoczylas, Analiza matematyczna 1 Definicje, twierdzenia, wzory, Oficyna Wydawnicza GiS, Wrocław 2001 M. Gewert, Z. Skoczylas, Analiza matematyczna 1 Przykłady i zadania, Oficyna Wydawnicza GiS, Wrocław 2001 W. Krywicki, L. Włodarski, Analiza matematyczna w zadaniach I i II, Wydawnictwo Naukowe PWN, Warszawa 1998</p>	
	eResources addresses	<p>Adresy na platformie eNauczanie:</p> <p>WA -A-Matematyka II 2022/23 (K.Kujawska) - Moodle ID: 28426 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=28426</p>	
Example issues/ example questions/ tasks being completed	<ol style="list-style-type: none"> 1. Find local extremes and intervals of monotonicity of the function $f(x)=$. 2. Determine indefinite integrals of the following functions using the known methods ... 3. Find the area of the region bounded by $y=$, $y=$, $x=$ and $x=$ 4. Compute the second order partial derivatives of the given function $f(x,y)$ 5. Compute the double integral of the given function $f(x,y)$ over the region D. 		
Work placement	Not applicable		