



Subject card

Subject name and code	Maths II, PG_00050274						
Field of study	Mechanical Engineering						
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		
Mode of study	Full-time studies	Mode of delivery			at the university		
Year of study	1	Language of instruction			English		
Semester of study	2	ECTS credits			6.0		
Learning profile	general academic profile	Assessment form			exam		
Conducting unit	Mathematics Center -> Vice-Rector for Education						
Name and surname of lecturer (lecturers)	Subject supervisor		dr Stanisław Domachowski				
	Teachers		dr Stanisław Domachowski				
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		8.0		82.0	150
Subject objectives	The aim of the subject is to obtain the student's competence in the use of the basic apparatus of mathematical analysis and linear algebra and the application of the acquired knowledge to solve simple theoretical and practical problems occurring in engineering fields.						
Learning outcomes	Course outcome		Subject outcome			Method of verification	
	K6_W01		Student wymienia zastosowania geometryczne całek oznaczonych. Student lists geometrical applications of definite integrals. Student analyses analytical geometry problems. Student examines functions of several variables, using the concept of a limit, continuity and derivatives. Student calculates double and triple integrals and explains the method of substitution in these integrals. Student uses double and triple integrals in geometrical problems.			[SW1] Assessment of factual knowledge	
	K6_U01		Student combines knowledge of mathematics with knowledge from other fields.			[SU2] Assessment of ability to analyse information	
Subject contents	Indefinite integrals. Formula for the integration by parts, formula for the integration by substitution. Integration of rational functions. Integration of irrational functions of second degree. Integration of trigonometric functions. Geometric application of definite integrals. Improper integrals. Complex numbers. Matrices, system of linear equations. Vectors in three-dimensional space. The dot, and the cross product of vectors, their properties and applications. The scalar triple product of vectors, and its applications. Equations of a line and a plane in a space. Distance from a point to a plane. Angles between planes and lines. Limits and continuity of a function of several variables, partial derivatives, total differentia, extrema of functions of several variables, implicit functions.						
Prerequisites and co-requisites							
Assessment methods and criteria	Subject passing criteria		Passing threshold		Percentage of the final grade		
	Final exam 90 minutes, 3 tests, active participation during classes		50.0%		100.0%		

Recommended reading	Basic literature	M.Lial, J.Hornsby, D.Schneider College Algebra. F.Ayres, E.Mendelson Calculus, T.Jankowski Linear Algebra. https://openstax.org/subjectshttps://cnm.pg.edu.pl/mathematics/welcome
	Supplementary literature	Kazimierz Kuratowski, Introduction to calculus W. Kaplan, Advanced calculus
	eResources addresses	Adresy na platformie eNauzanie: WIMiO - DaPE - Maths II 2023/24 (S.Domachowski) - Moodle ID: 36782 https://enauzanie.pg.edu.pl/moodle/course/view.php?id=36782
Example issues/ example questions/ tasks being completed	<ol style="list-style-type: none"> 1. Determine indefinite integrals of the following functions using the method of integration by parts or the method of substitution. 2. Find the area of the region bounded by $y=...$, $y=...$, $x=...$ and $x=...$. 3. Find the local extreme values of the function $f(x,y)=x/(y+1)+8/x-y-1$. 4. Find the equation of the plane tangent to the surface S at the point P. 5. Show that the points A, B, C, D do not lie on the plane. 6. Discuss the relative position of the line l and the plane S. 	
Work placement	Not applicable	