Subject card

Subject name and code	Mathematics 2, PG_00067349
Field of study	Engineering Management

Date of commencement of studies	October 2025	Academic year of realisation of subject	2025/2026
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	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	
	Teachers	

Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	45.0	0.0	0.0	0.0	75
	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	75	5.0	70.0	150

Subject objectives	Uses the apparatus of linear algebra and mathematical analysis to solve theoretical and practical problems occurring in social sciences

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[K6_W02] possesses advanced knowledge of methods and techniques that enable precise formulation and effective problem solving.	uses a mathematical apparatus to solve management problems, combining knowledge of mathematics with knowledge of social sciences	[SW1] Assessment of factual knowledge
	[K6_U04] develops logical solutions to complex or unstructured problems, even under conditions of uncertainty.	integrates the information obtained from solving complex problems, interpreting them, drawing conclusions and formulating and justifying opinions	[SU4] Assessment of ability to use methods and tools

Subject contents	Linear geometry of 3-dimentional space. Vectors. Conics and quadrics Complex numbers Vector spaces and subspaces. Linear independence. Basis and dimension. Linear maps. Quadratic forms. Eigenvectors and eigenvalues. Sylvester's criterion. LSM The process of finding antiderivatives and integration formulas the methods of substitution and integration by parts. Integration of basic families of functions Fundamental Theorem of Calculus. Methods of evaluations of definite integrals. Integration formulas, the methods of substitution and integration by parts for definite integrals. Improper integrals. Selected applications of definite integrals Multivariable functions: Partial derivatives. Total differential. Maxima and minima of a function of several variables Number series Differenial and difference linear equations Constrained extrema
Prerequisites and co-requisites	

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Exam	50.0%	60.0%
	Activity	50.0%	20.0%
	Tests	50.0%	20.0%

Recommended reading	Basic literature	Jankowska, K., Jankowski, T. Zbiór zadań z matematyki. Gdańsk: Wydawnictwo PG Jankowska, K., Jankowski, T., Funkcje wielu zmiennych - Całki wielokrotne - Geometria analityczna. Gdańsk: Wydawnictwo PG Dymkowska, J., Beger, D. (2015). Rachunek całkowy w zadaniach, Gdańsk: Wydawnictwo PG Gurgul, H., Suder, M. Matematyka dla kierunków ekonomicznych, Warszawa: Oficyna a Wolters Kluwer business
	Supplementary literature	Banaś, J., Podstawy matematyki dla ekonomistów. Warszawa: Wydawnictwa Naukowo-Techniczne Gewert, M., Skoczylas, Z. Analiza matematyczna 1, Przykłady i zadania. Wrocław: Wydawnictwo GiS Gewert, M., Skoczylas, Z. Analiza matematyczna 2, Definicje, twierdzenia wzory. Wrocław: Wydawnictwo GiS Gewert, M., Skoczylas, Z. Analiza matematyczna 2, Przykłady i zadania. Wrocław: Wydawnictwo GiS Sozański, B., Dziedzic, I. Algebra i analiza w zagadnieniach ekonomicznych. Rzeszów: Wydawnictwo Bila
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed	Show the series convergence ... and find its sum Check the linear dependence of a given system of vectors Find the integral of the rational function ... Find the improper integral ... or demonstrate its divergence Find the local extremes of the function f (x, y) = ... Solve the differential equation using the constant variation method Find the general solution of the third order differential equation ... using the prediction	
Work placement	Not applicable	

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