Subject card

Subject name and code	Mathematics 2, PG_00067770						
Field of study	Economic Analytics						
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 economic 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 [SU3] Assessment of ability to use knowledge gained from the subject [SU2] Assessment of ability to analyse information

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. Functions of two variables: 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	Knowledge of the subject: Mathematics 1.

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