



## Subject card

Subject name and code	MATHEMATICS 2, PG_00058549						
Field of study	Economic Analytics						
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	Part-time studies (on-line)	Mode of delivery			blended-learning		
Year of study	1	Language of instruction			Polish		
Semester of study	2	ECTS credits			5.0		
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	16.0	16.0	0.0	0.0	0.0	32
	E-learning hours included: 24.0						
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	32		10.0		83.0	125
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_U04] formulates logical solutions to complex or unstructured problems		integrates the information obtained from solving complex problems, interpreting them, drawing conclusions and formulating and justifying opinions			[SU2] Assessment of ability to analyse information [SU3] Assessment of ability to use knowledge gained from the subject [SU4] Assessment of ability to use methods and tools	
	[K6_W02] demonstrates comprehensive preparation in the field of methods, techniques for formulating and solving problems		uses a mathematical apparatus to solve economic problems, combining knowledge of mathematics with knowledge of social sciences			[SW1] Assessment of factual knowledge	
Subject contents	Integral calculus of one variable functions antiderivatives, Definite integrals. Complex numbers - basic informations. Elements of linear algebra: Matrices, their properties and operations on matrices. Determinants. Inverse of a square non-singular matrix. Systems of linear equations and inequalities. Eigenvectors and eigenvalues. Functions of two variables: Partial derivatives. Total differential. Maxima and minima of a function of several variables. Ordinary differential equations: First order differential equations. General and particular solution. Second order linear differential equations with constant coefficients. Fundamental set of solution of the homogeneous linear differential equation.						
Prerequisites and co-requisites	Knowledge of the subject: Mathematics 1.						
Assessment methods and criteria	Subject passing criteria		Passing threshold			Percentage of the final grade	
	Activity		50.0%			20.0%	
	Exam		50.0%			60.0%	
	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 całkowity w zadaniach, Gdańsk: Wydawnictwo PG Gurgul, H., Suder, M. Matematyka dla kierunków ekonomicznych, Warszawa: Oficyna a Wolters Kluwer business.				

	Supplementary literature	<p>Banaś, J., Podstawy matematyki dla ekonomistów. Warszawa: Wydawnictwa Naukowo-Techniczne</p> <p>Gewert, M., Skoczylas, Z. Analiza matematyczna 1, Przykłady i zadania. Wrocław: Wydawnictwo GiS.</p> <p>Gewert, M., Skoczylas, Z. Analiza matematyczna 2, Definicje, twierdzenia wzory. Wrocław: Wydawnictwo GiS.</p> <p>Gewert, M., Skoczylas, Z. Analiza matematyczna 2, Przykłady i zadania. Wrocław: Wydawnictwo GiS.</p> <p>Sozański, B., Dziedzic, I. Algebra i analiza w zagadnieniach ekonomicznych. Rzeszów: Wydawnictwo Bila.</p>
	eResources addresses	<p>Adresy na platformie eNauczanie:</p> <p>WZiE - AG, ZI - Matematyka II online 2023/24 (S.Domachowski) - Moodle ID: 36787</p> <p><a href="https://enauczanie.pg.edu.pl/moodle/course/view.php?id=36787">https://enauczanie.pg.edu.pl/moodle/course/view.php?id=36787</a></p>
Example issues/ example questions/ tasks being completed	<ol style="list-style-type: none"> <li>1. Find extreme values of the function <math>f(x,y)</math>.</li> <li>2. Discuss the existence of the solution for the given system of linear equations.</li> <li>3. Find the rank of the matrix.</li> <li>4. Find the total differential of the function <math>f</math>.</li> <li>5. Find a particular solution of the differential equation ... satisfying the given initial conditions .</li> </ol>	
Work placement	Not applicable	