

。 GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	MATHEMATICS 2, PG_00058398									
Field of study	Economics									
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			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 Lech Kujawski									
	Teachers		Nikodem Mrożek							
	dr Lech Kujawski									
Lesson types and methods	Lesson type	Lecture	Tutorial	Laboratory	Project		Seminar	SUM		
of instruction	Number of study hours	30.0	30.0	0.0	0.0		0.0	60		
	E-learning hours inclu	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		15.0		75.0		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_U04] formulates logical solutions to complex or unstructured problems.		integrates the information obtained from solving complex problems, interpreting them, as well as drawing conclusions and formulating and justifying opinions			[SU4] Assessment of ability to use methods and tools [SU1] Assessment of task fulfilment				
	[K6_W02] demonstrates comprehensive preparation in methods and techniques for formulating and solving problems.		uses mathematical apparatus to solve economic problems, combining knowledge of mathematics with knowledge of social sciences			[SW2] Assessment of knowledge contained in presentation [SW1] Assessment of factual knowledge				
Subject contents	Matrix algebra. Geometry of n-space, vectors, length and angle. Vector spaces, subspaces and spanning sets. Linear independence, basis and dimension. Eigenvalues and eigenvectors. Quadratic forms. Integral calculus of one variable functions - antiderivatives. Fundamental rules of integration, substitution method, integration by parts. Integration of rational, trigonometric and irrational functions. Riemann definite integral, Newton-Leibniz theorem. Fundamental methods of definite integration. Improper integrals. Number and power series. Extrema of functions of two and several variables, constrained extrema. Differential linear equations.									
Prerequisites and co-requisites										

Assessment methods	Subject passing criteria	Passing threshold	Percentage of the final grade			
and criteria	Midterm colloquium	50.0%	60.0%			
	Oral exam	50.0%	20.0%			
	Written exam	50.0%	20.0%			
Recommended reading	Basic literature	Batóg B., Bieszk-Stolorz B., Foryś I., Guzowska M., Heberlein K., (2016). Matematyka dla kierunków ekonomicznych, Teoria, przykłady, zadania, Warszawa: Wydawnictwo Difin OZE - Open AGH e-podręczniki, (2021). Matematyka, Kraków: Wydawnictwo: AGH Jankowska K., Jankowski T., (2008). Zbiór zadań z matematyki, Gdańsk: Wydawnictwo PG				
	Supplementary literature	Fragmentarily: Jankowska K., Jankowski T., (2008) Gdańsk: Wydawnictwo PG). Zadania z matematyki wyższej,			
		Jurlewicz T., Skoczylas Z., (2013). Algebra liniowa 1, 2, Definicje, twierdzenia wzory, Wrocław: Wydawnictwo GiS, Jurlewicz T., Skoczylas Z., (2014) Algebra i geometria analityczna, Wrocław: Wydawnictwo GiS, Gewert M., Skoczylas Z., (2015) Analiza matematyczna 1, 2, Przykłady, zadania, Wrocław: Wydawnictwo GiS, Dymkowska J., Beger D., (2018) Rachunek całkowy w zadaniach, Gdańsk: Wydawnictwo PG				
	eResources addresses	ddresses Uzupełniające Adresy na platformie eNauczanie:				
Example issues/ example questions/ tasks being completed	Discuss the relation between the line I and the plane S. Check linear depedence of given system of vectors. Find eigenvalues and eigenvectors of symmetric matrix A. Solve the overdetermined system applying the least square method. Determine definiteintess of quadratic form Q(x). Evaluate the indefinite integral of the given rational function. Find the area between the two curves y= and y= from x= to x=. Calculate definite integrals of the following functions using methods of integration by parts or by substitution. Identify any local extremes of function f(x,y) on the compact set D. Check whether the given series is convergent using the ratio test, the root test, the comparison test or the integral test. Determine radius and domain of convergence of a power series. Determine global extrema of functions of two / three variables on a convex set D. Solve the initial problem for linear differential equation of second order.					
Work placement	Not applicable					

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