

## § GDAŃSK UNIVERSITY § OF TECHNOLOGY

## Subject card

Subject name and code	MATHEMATICS 1, PG_00058542								
Field of study	Economic Analytics								
Date of commencement of studies	October 2024		Academic year of realisation of subject			2024/2025			
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	1		ECTS credits			5.0			
Learning profile	general academic profile		Assessment form			exam			
Conducting unit	Mathematics Center -> Vice-Rector for Education								
Name and surname	Subject supervisor		dr Stanisław Domachowski						
of lecturer (lecturers)	Teachers								
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Projec	t	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 classes includ 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_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			[SW2] Assessment of knowledge contained in presentation [SW1] Assessment of factual knowledge			
	[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			[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			

Inequalities with absolute value, graphs of functions with absolute value. Power functions solving power and polynomial equations and inequalities. Rational functions solving rational equations and inequalities. Logarithmic Exponential function properties and graphs, solving exponential equations and inequalities. Logarithmic functions properties and graphs, solving bigenometric equations and inequalities. Logarithmic functions properties and graphs, solving bigenometric equations and inequalities. Linits and optionetric functions properties and graphs, solving bigenometric equations and inequalities. Linits and continuity: Infinite sequences. Fundamental definitions of limit of sequence, convergence and divergence, limit theorems. Applications to solving equations. Differential calculus of functions with one variable and applications of differential calculus of functions with one variable. Theorem. Asymptotes. Applying differential calculus to studying the properties of functions with one variable. Integral calculus of functions with one variable antiderivatives: The process of finding antiderivatives and integration formulas the substitution method of integration and integration by parts.           Prerequisites and correquisites and correquisites and correquisites and correquisites and correquisites and correquisites.         Subject passing orienia 20.0% 2	Subject contents	Functions of one variable and their properties: The absolute value function definition, solving equations and						
polynomial equations and inequalities. Rational functions solving rational equations and inequalities.           Exponential function properties and graphs, solving exponential equations and inequalities. Legarithmic functions properties and graphs, solving togarithmic equations and inequalities. Limits and continuity: Infinite sequences. Fundamental definitions of limit of sequence, convergence and divergence, limit theorems. Applications to solving equations - Differential calculus of functions with one variable and applications of differential calculus of functions with one variable. Higher derivatives and differentials. Monotonicity and local extrema. Convexity. concavity and inflexion points of a function. De Hospitals Theorem. Asymptotes. Applying differential calculus to studying the properties of functions with one variable. Integral calculus of functions with one variable antiderivatives. The process of finding antiderivatives and integration formulas the substitution method of integration and integration by parts.           Prerequisities         Knowledge of high school level mathematics.           Assessment methods and criteria         Subject passing criteria         Passing threshold         Percentage of the final grade integration by parts.           Recommended reading         Basic literature         Converts, 1. Converts, 2. Only 2. 0.0%.         20.0%.           Resources addresses         Subject passing criteria         Passing threshold         Percentage of the final grade inversive.           Preventing of the diversive of Subject passing threshold Percentage of the final grade inversive. The speces of conversion of the sequence.         Subject passing criteria         Subject passing criteria								
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applications of differential calculus of functions with one variable. Higher derivatives and differentials.         Monotonicity and local extrema. Convexity, concavity and inflexion points of a function. De Hospitals         Theorem. Asymptotes. Applying differential calculus to studying the properties of functions with one variable.         Integral calculus of functions with one variable antiderivatives: The process of finding antiderivatives and integration formulas the substitution method of Integration and integration by parts.         Prerequisites       Knowledge of high school level mathematics.         and correquisites       Subject passing criteria       Passing threshold       Percentage of the final grade         Assessment methods       Subject passing criteria       20.0%       20.0%         Activity       50.0%       20.0%       20.0%         Recommended reading       Basic literature       Wikel, B. (2009). Maternatyka, Podstawy z elementarii maternatyki wytawnictwo PG         Unrawiczy, T. Gewert, M. Algebra Dationa, K. Landowski, T. Zbior zadani z maternatyki Gdański: Wydawnictwo PG       Zasoby dydaktyczne pair         Supplementary literature       Gewert, M. Skoczylas, Z. Wstep do analizy i algebry. Wirozkaw: Wytawnictwo PG         Zasoby dydaktyczne pair       Dirine, twierazenia         Wytawnictwo PG       Zasoby dydaktyczne pair         Barsis, Prodistawy maternatyki di a kierunktwi ekonomicznych. Warszawa: Wytawnictwa PG         Supplementary literature </th <th></th> <th colspan="7">continuity: Infinite sequences. Fundamental definitions of limit of sequence, convergence and divergence,</th>		continuity: Infinite sequences. Fundamental definitions of limit of sequence, convergence and divergence,						
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Exam         50.0%         60.0%           Recommended reading         Basic literature         Wikieł, B. (2009). Matematyka, Podstawy z elementami matematyki wyższej. Gdańsk: Wydawnictwo PG Jurlewicz, T, Gewert, M. Algebra liniowa 1, Definicje, twierdzenia wzory. Wrocław: Wydawnictwo GiS Jankowski, K. Jankowski, T. Zbiór zadań z matematyki, Gdańsk: Wydawnictwo PG           Supplementary literature         Gewert, M., Skoczylas, Z. Wstęp do analizy i algebry. Wrocław: Wydawnictwo DG           Wydawnictwo PG         Supplementary literature         Gewert, M., Skoczylas, Z. Wstęp do analizy i algebry. Wrocław: Wydawnictwo DG           Supplementary literature         Gewert, M., Skoczylas, Z. Wstęp do analizy i algebry. Wrocław: Wydawnictwo DG         Wydawnictwo DG           Batóg, B., i in. Matematyki dla kierunków ekonomicznych. Warszawa: Wydawnictwo Dfin         Banas J., Podstawy matematyki dla ekonomistów. Warszawa: Wydawnictwo Dfin           Banas J., Podstawy matematyki dla ekonomistów. Warszawa: aktowo-Tecchniczne         Dymkowska J., Beger D., Rachunek różniczkowy w zadaniach. Gdańsk: Wydawnictwo PG           zasoby dydaktyczne na platformie moodle.         eResources addresses         Adresy na platformie eNauczanie:           Example issues/         Find the derivatives of the following functions         Find local extremes and intervals of monotonicity of the following function f(x)=           sketch the graph of the function f(x)         Identify any local extrema and points of inflection         Determine indefinite integrals of the following functions using methods of integration by parts or	and criteria	Tests	50.0%	20.0%				
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