GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	MATHEMATICS 2, PG_00066512		
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	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 mgr inż. Krystyna Dąbrowska	

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	6.0	87.0	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] Develops logical solutions to complex or unstructured problems in processes conducted 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
[K6_W02] Demonstrates advanced knowledge of methods and techniques related to the field of study in economic analytics to explain complex 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 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: WZiE - AG, ZI - Matematyka II online 2024/25 (S.Domachowski) - Moodle ID: 43962 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=43962
Example issues/ example questions/ tasks being completed	1. Find extreme values of the function f(x,y). 2. Discuss the existence of the solution for the given system of linear equations. 3. Find the rank of the matrix. 4. Find the total differential of the function f. 5. Find a particular solution of the differential equation ... satisfying the given initial conditions .	
Work placement	Not applicable	

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