GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	MATHEMATICS 2, PG_00061390		
Field of study	Engineering Management		
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	Mode of delivery	at the university
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: 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	32	7.0	86.0	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 advanced preparation in the methods and techniques of formulating and solving problems	uses a mathematical apparatus to solve management problems, combining knowledge of mathematics with knowledge of social sciences	[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

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 niestacjonarne - Matematyka II 2023/24 (S.Domachowski) - Moodle ID: 36786 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=36786
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	