University of Gdańsk

Subject card

Subject name and code	Mathematics, PG_00053440		
Field of study	Environmental Protection		
Date of commencement of studies	October 2024	Academic year of realisation of subject	2024/2025
Education level	undergraduate 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 polish
Semester of study	1	ECTS credits	4.0
Learning profile	academic	Assessment form	
Conducting unit			
Name and surname of lecturer (lecturers)	Subject supervisor	dr Danuta Jaruszewska-Walczak	
	Teachers	dr hab. Ewa Tyszkowska dr Danuta Jaruszewska-Walczak	

Lesson types							
	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	45.0	0.0	0.0	0.0	45
	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	45	8.0	47.0	100

Subject objectives	Getting to know students with the elementary concepts of differential and integral calculus and linear algebra; developing the ability to solve basic tasks in this area in practice.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[OŚL3_U11] Uses statistical methods as well as algorithms and IT techniques, including application software packages to describe environmental experiments and analysis of typical data in socio-economic activities based on science and natural sciences.	The student is able to analyze problems and find solutions to them based on the theorems and methods learned	[SU4] test/exam - oral or written
[OŚL3_W03] Operates mathematical, statistical and IT methods and tools in the description and interpretation of phenomena and processes occurring in the environment.	The student has knowledge of higher mathematics techniques to the extent necessary for quantitative description, understanding and modeling of problems of medium complexity	[SW4] test/exam - oral or written
[OŚL3_K05] Identifies the level of her/his knowledge and skills, demonstrates the need to update knowledge about the environment and its protection, demonstrates the need for continuous professional training and personal development.	The student understands the need for lifelong learning	[SK1] oral statement/conversation/ discussion [SK8] observation of student's independent or team work
[OŚL3_W01] Discusses the basic concepts of mathematics, physics, chemistry and biology. Describes physical, chemical and biological phenomena occurring in nature as well as geological, geomorphological and climatic conditions of the functioning of nature.	The student has knowledge of higher mathematics techniques to the extent necessary for quantitative description, understanding and modeling of problems of medium complexity	[SW4] test/exam - oral or written

Subject contents

Introductory knowledge and elementary functions, finding zero places.
The concept of a sequence and its limit, the limit and continuity of functions.
Derivative and integral of functions of one variable with selected applications.
Operations on matrices and vectors, matrix determinant, solving linear systems of equations.
Complex numbers.
Basics of differential and integral calculus of multivariable functions.

Prerequisites and co-requisites

High school mathematics.

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
test	50.0%	100.0%
observation of student behavior	100.0%	0.0%

Recommended reading

Basic literature	G. Kwiecińska: Matematyka: kurs akademicki dla studentów nauk stosowanych. Cz. 1, Wybrane zagadnienia algebry liniowej, Wydaw. Uniwersytetu Gdańskiego, Gdańsk, 2003. G. Kwiecińska: Matematyka: kurs akademicki dla studentów nauk stosowanych. Cz. 2, Analiza funkcji jednej zmiennej, Wydaw. Uniwersytetu Gdańskiego, Gdańsk, 2001. G. Kwiecińska: Matematyka: kurs akademicki dla studentów nauk stosowanych. Cz. 3, Analiza funkcji wielu zmiennych, Wydaw. Uniwersytetu Gdańskiego, Gdańsk, 2001. M. Gewert, Z. Skoczylas: Analiza matematyczna 2: definicje, twierdzenia, wzory., Oficyna Wydawnicza GiS, Wrocław 2008. T. Jurlewicz, Z. Skoczylas: Algebra liniowa 2: definicje, twierdzenia, wzory, Oficyna Wydawnicza GiS, Wrocław 2007. M. Gewert, Z. Skoczylas: Analiza matematyczna 2 Przykłady i zadania, Oficyna Wydawnicza GiS, Wrocław 2000. T. Jurlewicz, Z. Skoczylas: Algebra liniowa 1 Przykłady i zadania, Oficyna Wydawnicza GiS, Wrocław 2000. W. Krysicki, L. Włodarski: Analiza matematyczna w zadaniach. 1 i 2
Supplementary literature	E. Steiner : Matematyka dla chemików, Warszawa, Wydaw. Naukowe PWN, 2001. H. Pidek-Łopuszańska: Matematyka dla chemików, Wiedza Powszechna, Warszawa 1974.
eResources addresses	Adresy na platformie eNauczanie:

Example issues/ example questions/ tasks being completed

Not required.

Work placement

Not applicable

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