University of Gdańsk

Subject card

Subject name and code	Mathematics, PG_00188256		
Field of study	Forensic Analytics		
Date of commencement of studies	October 2026	Academic year of realisation of subject	2026/2027
Education level	Bachelor's 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	2.0
Learning profile	academic	Assessment form	exam
Conducting unit			
Name and surname of lecturer (lecturers)	Subject supervisor	dr Elżbieta Mrożek	
	Teachers	dr Elżbieta Mrożek	

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	30.0	0.0	0.0	0.0	0.0	30

E-learning hours included: 0.0

eNauczanie source addresses:

Moodle ID: 13866 Matematyka_Analityka Kryminalistyczna_2026/2027
https://mdl.ug.edu.pl/course/view.php?id=13866

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	30	5.0	15.0	50

Subject objectives

The aim of the course is to familiarize the student with the basic concepts of higher mathematics.

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[AKRL3_W01] The graduate knows and understands, at an advanced level, the laws and theories in the field of chemistry, as well as the basics of biology, mathematics and law constituting general knowledge in the scientific disciplines forming the theoretical foundations relevant to the study program.	The student has knowledge of mathematics, including linear algebra with geometry, probability and statistics.	[SW4] test/exam - oral or written
	[AKRL3_U07] The graduate is able to communicate using specialist terminology in chemistry and forensic science while working in interdisciplinary teams.	The student is able to present the results of mathematical and statistical analyses in a form understandable to specialists in the fields of chemistry and forensics, using appropriate mathematical language and analytical terminology, and cooperate in a team in developing numerical data and interpreting results.	[SU4] test/exam - oral or written
	[AKRL3_K01] The graduate is prepared to critically evaluate their own knowledge and its relevance to solving cognitive, practical, and societal problems, as well as to responsibly make use of expert opinions.	The student is able to critically evaluate the results of his/her own calculations and mathematical analyses, recognize the limitations of the methods used, seek additional sources of knowledge and, in justified cases, consult with experts in order to correctly interpret the results.	[SK4] test/exam - oral or written

Subject contents	1. Introduction to Mathematics in Data Analysis -The importance of mathematical methods in forensic analysis. -Basic data types and their numerical representation. 2. Basics of Linear Algebra -The concepts of vectors and vector spaces. -Matrices: types, structure, and representation of multidimensional data. -Basic matrix operations: addition, multiplication, determinant, and inverse matrix. -Applications of Linear Algebra in Forensic Analysis 3. Systems of Linear Equations - Methods for solving systems of equations: substitution method, Gaussian elimination method, using matrices and matrix inverses. -Interpreting Systems of Equations in Phenomena Modeling 4. Probability Theory -Random Events and the Event Space -Principles of Calculating Probability Conditional -Probability and Independence of Events -Simple Probabilistic Models Applications in Forensic Science 5. Correlation and Regression -Correlation Coefficient: Interpretation, Range, and Limitations -Linear Relationships Between Variables -Linear Regression -Applications in Forensic Science
Prerequisites and co-requisites	

<table>
<tr><td>Assessment methods and criteria</td><td colspan="2"><table><tr><th>Subject passing criteria</th><th>Passing threshold</th><th>Percentage of the final grade</th></tr><tr><td>exam</td><td>51.0%</td><td>100.0%</td></tr></table></td></tr>
<tr><td rowspan="3">Recommended reading</td><td>Basic literature</td><td>1. Teresa Jurlewicz, Zbigniew Skoczylas: "Linear Algebra 1 Examples and Problems," GiS Publishing House, Wrocław 2000.

2. M. Gewert, Z. Skoczylas: "Introduction to Analysis and Algebra," GiS Publishing House 2011.

3. N. Józefacka, M. Kołek, A. Arciszewska-Leszczuk, Methodology and Statistics. A Guide for the Scientific Tourist, PWN Scientific Publishing House, Warsaw 2023.

4. J. Jakubowski, R. Sztencel, Introduction to Probability, SCRIPT, 2010.

5. H. Jasiulewicz, W., Probability Calculus and Mathematical Statistics, GiS Publishing House.</td></tr>
<tr><td>Supplementary literature</td><td>not aviable</td></tr>
<tr><td>eResources addresses</td><td></td></tr>
<tr><td>Example issues/ example questions/ tasks being completed</td><td colspan="2"></td></tr>
<tr><td>Work placement</td><td colspan="2">Not applicable</td></tr>
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