



Subject card

Subject name and code	Introduction to Higher Mathematics, PG_00055108						
Field of study	Mechanical Engineering						
Date of commencement of studies	October 2021	Academic year of realisation of subject			2021/2022		
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	1	ECTS credits			3.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Mathematics Center -> Vice-Rector for Education						
Name and surname of lecturer (lecturers)	Subject supervisor		dr Leszek Ziemczonek				
	Teachers		dr Leszek Ziemczonek				
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	0.0	15.0	0.0	0.0	0.0	15
	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	15		5.0		55.0	75
Subject objectives	Students obtain competence in the range of using methods of mathematical analysis and linear algebra and knowledge how to solve simple problems that can be found in the field of engineering.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K6_U01] is able to acquire information from specialized literary sources, databases and other resources, essential for solving engineering tasks; is able to compile the obtained information pieces and to interpret them, additionally is able to form conclusions and present justified opinion		Student is able to process the acquired information, analyze and interpret it, draw conclusions and reason opinions.		[SU2] Assessment of ability to analyse information [SU3] Assessment of ability to use knowledge gained from the subject		
	[K6_W01] possesses mathematical knowledge within the range of linear algebra and mathematical analysis useful in characterising and interpreting mechanical systems, technological processes and operational properties of devices		Student uses methods of mathematical description of phenomena in the physical / mechanical / chemical processes.		[SW2] Assessment of knowledge contained in presentation [SW3] Assessment of knowledge contained in written work and projects		
Subject contents	<p>The absolute value function – definition, solving equations and inequalities with absolute value, graphs of functions with absolute value.</p> <p>Power functions – solving power and polynomial equations and inequalities.</p> <p>Polynomials and rational functions – solving polynomial and rational equations and inequalities.</p> <p>Exponential function – properties and graphs, solving exponential equations and inequalities.</p> <p>Logarithmic functions – properties and graphs, solving logarithmic equations and inequalities.</p> <p>Trigonometric and cyclometric functions – properties and graphs, solving trigonometric and cyclometric equations and inequalities.</p>						
Prerequisites and co-requisites	No requirements.						
Assessment methods and criteria	Subject passing criteria		Passing threshold		Percentage of the final grade		
	midterm colloquiums		50.0%		100.0%		

Recommended reading	Basic literature	<p>1) Matematyka. Podstawy z elementami matematyki wyższej, red. Wiekł B., Gdańsk, 2009.</p> <p>2) Jankowska K., Jankowski T., Zbiór zadań z matematyki, Gdańsk, 2009.</p>
	Supplementary literature	<p>1) Gewert M., Skoczylas Z., Analiza matematyczna 1. Przykłady i zadania, Wrocław, 2003.</p> <p>2) Gewert M., Skoczylas Z., Analiza matematyczna 1. Definicje, twierdzenia, wzory, Wrocław, 2003.</p> <p>3) Krywicki W., Włodarski L., Analiza matematyczna w zadaniach. Część I, Warszawa, 1997.</p>
	eResources addresses	
Example issues/ example questions/ tasks being completed	<p>1) Solve equation:</p> $2(\arcsin x)^2 - \pi \arcsin x + \pi^2/8 = 0$ <p>2) Solve inequality:</p> $\log_{0,5} (x^2 - 7x + 12) > -1$	
Work placement	Not applicable	