



Subject card

Subject name and code	Propedeutics of Mathematics, PG_00038084						
Field of study	Electrical Engineering						
Date of commencement of studies	October 2022		Academic year of realisation of subject		2022/2023		
Education level	first-cycle 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		
Semester of study	1		ECTS credits		4.0		
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 Anna Niewulis				
	Teachers		dr Anna Niewulis dr inż. Renata Zakrzewska				
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	30.0	0.0	0.0	0.0	60
	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	60		6.0		34.0	100
Subject objectives	The aim of the subject is to obtain the student,s competence in the range of using the basic methods of mathematical analysis and linear algebra. Furthermore, the student is able to use this knowledge to solve simple theoretical and practical problems that can be found in the field of engineering.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	K6_U01		Student is able to process the acquired information, analyze and interpret it, draw conclusions and reason opinions. Student understands the need of lifelong learning and improving their engineering knowledge.		[SU4] Assessment of ability to use methods and tools [SU2] Assessment of ability to analyse information		
	K6_K02		Student is able to work individually and in a group, knows how to estimate the time needed to carry out the task, and is able to implement the work schedule.		[SK1] Assessment of group work skills [SK3] Assessment of ability to organize work		
	K6_W01		Student knows basic properties of elementary functions. Student solves equations and inequalities with elementary functions. Student examines monotonicity and boundedness of sequences Student evaluates the limits of sequences. Student performs calculations on complex numbers. Student determines the real and complex roots of polynomial.		[SW1] Assessment of factual knowledge		

Subject contents	Functions of one variable and their properties: <ul style="list-style-type: none">absolute value function definition, solving equations and inequalities with absolute value, graphs of functions with absolute valuepower functions solving power and polynomial equations and inequalitiesrational functions solving rational equations and inequalitiesexponential function properties and graphs, solving exponential equations and inequalitieslogarithmic functions properties and graphs, solving logarithmic equations and inequalitiestrigonometric and cyclometric functions properties and graphs, solving trigonometric equations and inequalitieshyperbolic functions - properties and graphsComposite and inverse function Infinite sequences: <ul style="list-style-type: none">arithmetic and geometric sequencesfundamental definitions and theorems of limit of sequenceEulers number Complex numbers: <ul style="list-style-type: none">algebraic, trigonometric and exponential formpowers and roots of complex numbers Basic concepts of analytic geometry: <ul style="list-style-type: none">line, circle, ellipse, parabola, hyperbola		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Final colloquium	50.0%	50.0%
	Midterm colloquium	50.0%	50.0%
Recommended reading	Basic literature	B. Wiekł, Matematyka. Podstawy z elementami matematyki wyższej. Wydawnictwo PG, Gdańsk 2009 T. Jurliewicz, Z. Skoczylas, Algebra liniowa 1. Definicje. Twierdzenia. Wzory. Oficyna Wydawnicza GIS, Wrocław 2006 T. Jurliewicz, Z. Skoczylas, Algebra liniowa 1. Przykłady i zadania. Oficyna Wydawnicza K. K. Jankowska, T. Jankowski, Zadania z matematyki wyższej, Wydawnictwo PG, Gdańsk 2008	
	Supplementary literature	W. Leksiński, I. Nabiałek, W. Żakowski, Matematyka. Definicje, twierdzenia, przykłady, zadania. WNT, Warszawa 2006	
	eResources addresses	Adresy na platformie eNauczanie: WEiA - Et. - Propedeutyka Matematyki 2022/23 (A.Niewulis) - Moodle ID: 24015 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=24015	
Example issues/ example questions/ tasks being completed	<ol style="list-style-type: none">Solve the inequality $3 x-3 - 2x+2 < 2x$.Draw the graphs of $f(x) = x-2 -1$ and solve $f(x)>1$.Divide $(x^4-2x^3+4x^2+8):(x+1)$Find the inverse of $f(x)=2x-4$.Solve the inequality $2^{- x-1 } \geq 1/8$.Solve the equation $(x+3)/(x+2) - (x-3)/(x-2) = (2x^2-4)/(x^2-4)$Find the domain of $f(x)=\log_{3x-12}(x^2-9)$.Solve the inequality $\log_{0.5}(x-3) - \log_{0.5}(3+x)<2$.Find z and indicate their placement in the complex plane.		
Work placement	Not applicable		