GDAŃSK UNIVERSITY OF TECHNOLOGY

Subject card

Subject name and code	Precalculus, PG_00045351		
Field of study	Data Engineering		
Date of commencement of studies	October 2024	Academic year of realisation of subject	2024/2025
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	English
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 Ewa Kozłowska-Walania	
	Teachers	dr Ewa Kozłowska-Walania	

Lesson types and methods of instruction

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	15.0	15.0	0.0	0.0	0.0	30

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	30	5.0	40.0	75

Subject objectives

Student obtains knowledge in elementary mathematics necessary to understand calculus

Learning outcomes

Course outcome	Subject outcome	Method of verification
[K6_W02] demonstrates advanced preparation in methods and techniques for formulating and solving problems	Student knows the main theorems, methods and tools presented during the lecture and knows how top use them.	[SW1] Assessment of factual knowledge
[K6_U04] formulates logical solutions to complex or unstructured problems	Student is able to analyze a problem and choose, from the methods presented during the class, the tools necessary for its correcxt solution.	[SU2] Assessment of ability to analyse information [SU1] Assessment of task fulfilment [SU5] Assessment of ability to present the results of task [SU4] Assessment of ability to use methods and tools [SU3] Assessment of ability to use knowledge gained from the subject

Subject contents

- Review of polynomials, rational and power functions.
- Exponential functions. Exponential equation and inequalities. Logarithmic function. Logarithms and their properties. Logarithmic equations and inequalities.
- Trigonometric functions of any angle. Graphs of trig functions. Trig identities. Trigonometric equations and inequalities. Inverse trig functions.
- Number sequences. Monotonicity, boundedness, limits. Properties of convergent sequences. Squeeze theorem.

Prerequisites and co-requisites

No requirements

Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Final comprehensive test	50.0%	90.0%
	Class participation	0.0%	10.0%
Recommended reading	Basic literature	• B.Sikora, E.Łobos, *A first course in calculus*, Wydawnictwo Politechniki Śląskiej, 2010 • K.Binmore, J.Davies, *Clculus*, Cambridge University Press, 2007 • Portal Mathematics, *https://cnm.pg.edu.pl/mathematics/precalculus*	
	Supplementary literature	• *Matematyka. Podstawy z elementami matematyki wyższej*, pod red. B.Wikieł, Wydawnictwo Politechniki Gdańskiej • K.Jankowska, T.Jankowski, *Zbiór zadań z matematyki*, Wydawnictwo PG, 2010 • W.Żakowski, *Algebra i analiza matematyczna dla licealistów i kandydatów na wyższe uczelnie,* WNT, Warszawa 1999 • M.Gewert, Z.Skoczylas, *Analiza matematyczna 1*, Oficyna wydawnicza GiS.	
	eResources addresses	Podstawowe https://enauczanie.pg.edu.pl/moodle/course/view.php?id=40447 - e-course for Precalculus Adresy na platformie eNauczanie:	
Example issues/ example questions/ tasks being completed	1. Solve the inequality (x4+x2-10x) / (1-sin 2 x)<0. 2. Solve the equations 9log3sin x - 41/2+\log2cos x - log2 0,5=0. 3. Find the domain and range of the function and sketch its graph f(x)=+1/2 arcsin(1-2x). Find the inverse function of f. 4. Evaluate tg(\arccos(2/3)+cos(arctg(2/3). 5. Let an=(3n)!/n3n . Find limn(an+1/an). 6. Use the squeeze theorem to find the limit of the sequence xn= 2/(n4+2)+4/(n4+4)+6/(n4+6)+... +2n/(n4+2n)		
Work placement	Not applicable		

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