



Subject card

Subject name and code	Analytic geometry, PG_00021022						
Field of study	Mathematics						
Date of commencement of studies	October 2026	Academic year of realisation of subject				2026/2027	
Education level	first-cycle studies	Subject group				Obligatory subject group in the field of study Subject group related to scientific research 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	Divison of Differential Equations and Applications of Mathematics -> Institute of Applied Mathematics -> Faculty of Applied Physics and Mathematics -> Faculties of Gdańsk University of Technology						
Name and surname of lecturer (lecturers)	Subject supervisor	dr Agnieszka Bartłomiejczyk					
	Teachers						
Lesson types	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		5.0		35.0	100
Subject objectives	Student knows calculus of vectors, certain geometrical objects in Euclidean space, relations between objects, relations between algebraical and geometrical description of transformations, gives competition of analyze and synteze mentioned problems.						
Learning outcomes	Course outcome	Subject outcome			Method of verification		
	K6_U08	Student is able to properly use the concepts they met, can formulate definitions and theorems concerning them, uses the proper record. Student identifies certain geometrical objects in Euclidean space, analyzes relations between objects.			[SU4] Assessment of ability to use methods and tools [SU2] Assessment of ability to analyse information [SU1] Assessment of task fulfilment		
	K6_W07	Student knows the concepts of scalar, vector and mixed products and the distance between points in a plane.			[SW1] Assessment of factual knowledge		
	K6_W04	Student knows the theorems in the range the given subject.			[SW1] Assessment of factual knowledge		
	K6_U01	Student can formulate and solve the problems of vector calculus.			[SU4] Assessment of ability to use methods and tools		
Subject contents	<p>Course content – lecture</p> <ol style="list-style-type: none"> Vectors without a coordinate system (vectors and operations on vectors, scalar product, vector product, mixed product of vectors, vector identities, collinear vectors, co-planar vectors, linearly dependent vectors). Vectors in the coordinate system (addition of vectors and multiplication of a vector by a number, scalar product, vector product, mixed product). Plane analytic geometry (distance from point to plane, rotation of the coordinate system, second-order curves, polar coordinates). Three dimensional analytic geometry (position of points relative to a plane, second-order surfaces). 						
Prerequisites and co-requisites							
Assessment methods and criteria	Subject passing criteria		Passing threshold		Percentage of the final grade		
	2 tests		50.0%		100.0%		

Recommended reading	Basic literature	<ol style="list-style-type: none"> 1. F. Leja, <i>Geometria analityczna</i>, PWN (różne wydania). 2. M. Stark, <i>Geometria analityczna</i>, PWN, 1974. 3. R. Leitner, <i>Zarys matematyki wyższej, cz. II</i>, WNT (różne wydania). 4. B. Gdowski, E. Pluciński, <i>Zbiór zadań z rachunku wektorowego i geometrii analitycznej</i>, Oficyna Wydawnicza Politechniki Warszawskiej, 2000.
	Supplementary literature	<ol style="list-style-type: none"> 1. T. Jurlewicz, Z. Skoczylas, <i>Algebra i geometria analityczna</i>, Oficyna Wydawnicza GiS, 2009. 2. E. Kącki, D. Sadowska, L. Siewierski, <i>Geometria analityczna w zadaniach</i>, PWN Warszawa, 1975. 3. E. Mieloszyk (praca zbiorowa), <i>Matematyka. Materiały pomocnicze do ćwiczeń</i>. Wydział FTiMS Politechniki Gdańskiej, Gdańsk, 2005. 4. T. Trajdos, <i>Matematyka, cz. III</i>. WNT (różne wydania).
	eResources addresses	
Example issues/ example questions/ tasks being completed	<p>Definition of scalar product.</p> <p>Definition of vector product.</p> <p>General equation of a plane.</p> <p>Determine the equation of the plane passing through points $A(1,2,3)$, $B(3,-6,4)$ and $C(2,3,0)$.</p>	
Practical activities within the subject	Not applicable	

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