



## Subject card

Subject name and code	Analytic geometry, PG_00021022						
Field of study	Mathematics						
Date of commencement of studies	October 2023	Academic year of realisation of subject			2023/2024		
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	Department of Differential Equations and Mathematical Applications -> Faculty of Applied Physics and Mathematics						
Name and surname of lecturer (lecturers)	Subject supervisor	dr Agnieszka Bartłomiejczyk					
	Teachers	mgr inż. Urszula Goławska dr Agnieszka Bartłomiejczyk					
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	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_U01	Student can formulate and solve the problems of vector calculus.			[SU4] Assessment of ability to use methods and tools		
	K6_W07	Student can calculate the vector and mixed products and the distance between points.			[SW1] Assessment of factual knowledge		
	K6_W04	Student knows the basic theorems in the range the given subject.			[SW1] Assessment of factual knowledge		
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.			[SU1] Assessment of task fulfilment [SU2] Assessment of ability to analyse information [SU4] Assessment of ability to use methods and tools			
Subject contents	1. 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). 2. Vectors in the coordinate system (addition of vectors and multiplication of a vector by a number, scalar product, vector product, mixed product). 3. Plane analytic geometry (distance from point to plane, rotation of the coordinate system, second-order curves, polar coordinates). 4. 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		
	tests	50.0%			100.0%		

Recommended reading	Basic literature	<ol style="list-style-type: none"> <li>1. F. Leja, <i>Geometria analityczna</i>, PWN (różne wydania).</li> <li>2. M. Stark, <i>Geometria analityczna</i>, PWN, 1974.</li> <li>3. R. Leitner, <i>Zarys matematyki wyższej, cz. II</i>, WNT (różne wydania).</li> <li>4. B. Gdowski, E. Pluciński, <i>Zbiór zadań z rachunku wektorowego i geometrii analitycznej</i>, Oficyna Wydawnicza Politechniki Warszawskiej, 2000.</li> </ol>
	Supplementary literature	<ol style="list-style-type: none"> <li>1. T. Jurlawicz, Z. Skoczylas, <i>Algebra i geometria analityczna</i>, Oficyna Wydawnicza GiS, 2009.</li> <li>2. E. Kącki, D. Sadowska, L. Siewierski, <i>Geometria analityczna w zadaniach</i>, PWN Warszawa, 1975.</li> <li>3. E. Mieloszyk (praca zbiorowa), <i>Matematyka. Materiały pomocnicze do ćwiczeń</i>. Wydział FTiMS Politechniki Gdańskiej, Gdańsk, 2005.</li> <li>4. T. Trajdos, <i>Matematyka, cz. III</i>. WNT (różne wydania).</li> </ol>
	eResources addresses	<p>Adresy na platformie eNauczenie:</p> <p>Geometria analityczna - wykład 2023/2024 - Moodle ID: 32779  <a href="https://enauczenie.pg.edu.pl/moodle/course/view.php?id=32779">https://enauczenie.pg.edu.pl/moodle/course/view.php?id=32779</a></p> <p>Geometria analityczna - wykład 2023/2024 - Moodle ID: 32779  <a href="https://enauczenie.pg.edu.pl/moodle/course/view.php?id=32779">https://enauczenie.pg.edu.pl/moodle/course/view.php?id=32779</a></p>
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>	
Work placement	Not applicable	