

Program	Level		First cycle				
	Name of the program		All study programs				
COURSE							
Course title	Analytic Geometry						
Course code	Semester	Course status	ECTS	Contact (L+AE+LE)	hours		
PMAT 160	II	Mandatory course	6	2+2+0			
Lecturer							
Course Goals	Vector algebra and analytic geometry are mathematical disciplines that are very useful in different other mathematical disciplines, other natural sciences, all technical sciences, as well as economy. Many processes can be modelled using vectors or can be described using equations, that can be interpreted geometrically, using analytic geometry. The main goal of the course is to enable students to acquire high-quality knowledge in vector algebra and analytic geometry.						
Learning Outcomes	<p>After completing this course, students should demonstrate competency in the following skills:</p> <ul style="list-style-type: none"> - understand and be able to use different techniques in vector algebra; - understand the concept of straight line and plain in the space, as well as the concept of curves and surfaces in the space; - understand basic concepts of geometrical transforms in the plane; - be able to apply achieved knowledge to solve particular practical problems in different disciplines in mathematics and other sciences. 						
COURSE CONTENT							
<ul style="list-style-type: none"> - Definition of the vector and its basic properties. - Basic vector operations. - Linearly dependent and independent vectors. - Collinear and coplanar vectors. - Dot, cross. and triple product of vectors, their properties and applications. - Concept of line and surface equation. - Equations of a plane and a line in space. - Correlation between two lines, two planes, and plane and line in space. - Second-order surfaces. - Second-order curve identification. - Orthogonal and affine transforms. 							
LITERATURE							
<p>[1] S. Kurepa, Uvod u linearnu algebru, Školska knjiga, Zagreb, 1975. [2] Horvatić, Linearna algebra I, Matematički odjel PMF, Zagreb, 1999. [3] P. Miličić, M. Ušćumlić, Zbirka zadataka iz više matematike I, Nauka, Beograd, 1996. [4] B. Stojanović, Zbirka zadataka iz matematike, Sveltlost, Sarajevo, 1987. [5] M. M. Dizdarević, A. Odžak, L. Šćeta: Zbirka zadataka iz analitičke geometrije sa osnovama teorije, Univerzitet u Sarajevu, Sarajevo 2021. [6] A. Odžak, S. Odžak: Linearna algebra i analitička geometrija sa primjenama, Univerzitet u Sarajevu, Sarajevo, 2017. [7] J. T. Moore, Elements of Linear Algebra and Matrix Theory, Mc Graw-Hill, New York, 1969. [8] B. Mesihović, Š. Arslanagić: Zbirka riješenih zadataka i problema iz matematike sa osnovna teorije i ispitni zadaci, Svjetlost, Sarajevo, 1988.</p>							
STUDENT WORKLOAD (hours in a semester)							
Lectures	30	Exercises	30	Individual work	90	Total	150
GRADING				REMARKS			

Criterion	Maximum points	Minimum points	
Midterm exams			
Final exam			
T o t a l	100	55	