

■ CC23 - Analytic Geometry

GENERAL

SCHOOL	EXACT SCIENCES		
DEPARTMENT	MATHEMATICS		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	CC23	SEMESTER	B
COURSE TITLE	ANALYTIC GEOMETRY		
INDEPENDENT TEACHING ACTIVITIES	WEEKLY TEACHING HOURS	ECTS	
Lectures	5	7	
COURSE TYPE	Scientific Field		
PREREQUISITE COURSES	Linear Algebra I		
LANGUAGE OF TEACHING AND EXAMINATIONS	Greek/English		
THE COURSE IS OFFERED TO ERASMUS STUDENTS	YES		
COURSE WEBSITE (URL)	http://eclass.uowm.gr/		

LEARNING OUTCOMES

Learning Outcomes
<p>After the successful completion of the course, the students:</p> <ul style="list-style-type: none"> • will be able to use basic vector algebra (inner product, outer product, mixed product) in order to solve problems in the plane and space, • will be able to find equations of lines and planes and to be able to comfortably manage the Cartesian coordinate system in solving basic geometric problems, • will be able to use transformations of coordinate systems in the plane and in space, • will be familiar with basic curves and surfaces defined by quadratic polynomials.

General Competencies

- Search, analysis and synthesis of data and information, using the necessary technologies.
- Adapting to new situations.
- Working in an interdisciplinary environment.
- Individual work.
- Team work.
- Generation of new research ideas.
- Promotion of free, creative and inductive thinking.

CONTENT OF THE COURSE

Vector Calculus: Vectors and operations, linear independence, bases, coordinates, inner, outer, mixed and double outer product. Geometric Interpretation of the products. Coordinate systems in the plane and in space (general, orthonormal and polar). Coordinate system transformations.

Analytic geometry in space: Lines and planes in space (parametric equations, vector equation, Cartesian plane equation). Distance of a point from a line and plane. Relative positions of lines and planes in space.

Quadratic curves and surfaces in space.

TEACHING AND LEARNING METHODS - EVALUATION

TEACHING METHOD	In the classroom.	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY	e-Lectures. Use of e-class. Communication through face-to-face discussions and e-mails.	
TEACHING ORGANIZATION	Activity	Semester Workload
	Lectures	65 hours
	Individual Study	110 hours
	Course Total (25 hours per ECTS)	175 hours
STUDENT	Written final examination 100%.	

EVALUATION	
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RECOMMENDED BIBLIOGRAPHY

1. S. Andreadakis, Analytic Geometry, Publications Symmetria. 1999 (Greek).
2. Th. Chrisakis, Linear Algebra and Analytic Geometry, Third Edition, Publications Tsotras, 2021 (Greek).
3. D. Georgiou, S. Iliadis, Analytic Geometry with elements of Linear Algebra, Publications Tziola, 2017 (Greek).
4. N. Kadianakis, S. Karanasios, Linear Algebra, Analytic Geometry and Applications, Publications Tsotras, 2017 (Greek).