

■ CC12 - Linear Algebra I

GENERAL

SCHOOL	SCIENCES		
DEPARTMENT	MATHEMATICS		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	CC12	SEMESTER	A
COURSE TITLE	LINEAR ALGEBRA I		
INDEPENDENT TEACHING ACTIVITIES	WEEKLY TEACHING HOURS	ECTS	
Lectures	4	7	
COURSE TYPE	Scientific Field		
PREREQUISITE COURSES	-		
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 know the calculus of matrices, will be able to calculate the determinant of a square matrix and the rank of a matrix, • will be able to solve linear systems, • will understand and use notions of a vector space and its base/dimension,

- will be able to recognize if a mapping is linear and to find its basic characteristics (kernel, image, representation matrix).

General Competencies

- Connecting prior knowledge to Linear Algebra concepts.
- Promotion of inductive thinking.

CONTENT OF THE COURSE

Matrices. Special types of matrices. Operations with matrices. Calculation of the determinant of a square matrix, properties of determinants. The rank of matrix. Inverse matrix.

Linear systems of equations.

Vector spaces, subspaces, linear span. Linear Independence and Dependence. Bases and dimension.

Linear transformations. Kernel, image, matrix and rank of a linear mapping. The isomorphism between vector spaces. Similar matrices.

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	52 hours
	Projects	43 hours
	Individual Study	80 hours
	Course Total (25 hours per ECTS)	175 hours

STUDENT EVALUATION	Optional projects during the whole semester, with presentations. (bonus to the final grading) Written final examination 100%.
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RECOMMENDED BIBLIOGRAPHY

1. Linear Algebra, Theochari-Apostolidi Theodora, Charalambous Chara, Vavatsoulas Charilaos, Publications Tziola & Sons S.A. (2017). (Greek)
2. An Introduction to Linear Algebra, Varsos Dimitris, Deriziotis Dimitris, Emmanouil Giannis, Maliakas Michalis, Melas Antonis, Talelli Olympia, Publications Sophia (2012). (Greek)
3. Linear algebra with Applications, Holt Jeffrey, Publications Gutenberg (2023). (Greek)
4. Linear Algebra and Applications, Gilbert Strang, Publications University Publications of Crete (2021). (Greek)
5. Introduction to Linear Algebra, Papistas Athanasios, Publications Tziola & Sons S.A. (2019). (Greek)