COURSE OUTLINE

Ημερομηνία: 3 Νοε 2022

A. INFORMATION FOR THE COURSE

A1. School	School of Science and Technology of Information
A2. Department	Department of Statistics
A3. Master Programme	
A4. Course Code	6051
A5. Title of the Course	LINEAR ALGEBRA I

Lecturers

Name	Rank	Specialization
IOANNIDIS EVANGELOS	Assistant Professor	Statistics
Aretaki Aikaterini	University Scholar	

B. TYPE OF COURSE

B1. Year of Study	1
B2. Semester	1st
B3. Level of Course (if applicable)	1st Cycle
B4. Type of course	Core
B5. Field	Background
B6. ECTS credits allocated (ECTS)	7.50
B7. Is the Course in the Syllabus?	Yes
B8. If yes, which is the reference Page?	29-68
B9. Is there a site for the course?	Yes https://www.dept.aueb.gr/el/stat-courses

C. INSTRUCTION

C1. Lectures Include:	Classroom lectures: Yes Distance learning lectures: No Seminars: No Laboratory exercises: No Field training exercise: No Literary analysis: No Tutorial: Yes Interactive teaching: No Educational visits: No Project: No Essays/reports: No Independent study: Yes Lectures given by scientists: No Internship: No
C2. Scheduled Hours for Lectures per week	4.00
C3. Scheduled Hours for Tutorials per week	2.00
C4. Scheduled Hours for Workshops per week	0.00
C5. Scheduled Hours for Case Studies per week	
C6. Scheduled Hours for Other Activities per week	
C7. Scheduled Hours for Lectures per semester	52
C8. Scheduled Hours for Tutorials per semester	26
C9. Scheduled Hours for Workshops per semester	0
C10. Scheduled Hours for Case Studies per semester	
C11. Scheduled Hours for Other Activities per semester	
C12. Mode of Delivery	Face to Face
C13. Student’s Evaluation	Written examination at the end of the semester: Yes Oral examination: No Midterm exam: No Homework: No Project: No Public Presentation: No Laboratory exercises: No Practical exercises: No Exempt work: No

C14. Language of Instruction	Greek

D. PREREQUISITE COURSES

E. COURSE CONTENTS (Syllabus)

Elements and calculus in , lines and planes in . Matrices and matrix multiplication, Elementary matrices. Linear systems: The Gauss algorithm and the factorization PA=LDU. Inverse and transposed matrices, the algorithm Gauss-Jordan. Symmetric matrices and the Cholesky factorization. Vector spaces and subspaces. Linear systems: the solution of m equations with n unknowns and the rank of a matrix. Linear independence, bases and dimension. The 4 fundamental subspaces of a matrix. The fundamental theorem of Linear Algebra. Linear transformations of and matrices. Orthogonal subspaces, and orthogonal complement of a subspace. Projections.

F. LEARNING OUTCOMES

In depth understanding of the concepts introduced in the course, in order to respond to questions concerning this knowledge. Acquiring a geometrical feeling of concepts such as the projection. Finally the capability of applying this knowledge in solving exercises, such as the decomposition of a matrix in an appropriate product, the inversion of a matrix and the calculation of a projection matrix.

G. LITERATURE

G1. Use of Multiple Literature	Yes
G2. Recommended or required reading	Yes