

COURSE OUTLINE

(1) GENERAL

SCHOOL	SCHOOL OF INFORMATION SCIENCES & TECHNOLOGY		
ACADEMIC UNIT	DEPARTMENT OF STATISTICS		
LEVEL OF STUDIES	1st Cycle (UNDERGRADUATE)		
COURSE CODE	6143	SEMESTER	4rth
COURSE TITLE	Mathematical Methods		
INDEPENDENT TEACHING ACTIVITIES		WEEKLY TEACHING HOURS	CREDITS
Lectures		4	7
Workshops		2	
Labs			
COURSE TYPE	Elective – Specific Background		
PREREQUISITE COURSES:	Calculus I and II, Linear Algebra I and II		
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	NO		
COURSE WEBSITE (URL)	https://www.dept.aueb.gr/en/stat/content/mathematical-methods-7-ects-0		

(2) LEARNING OUTCOMES

Learning outcomes
Upon successful completion of the course, the students will have a good working understanding of the mathematical techniques described in the syllabus.
General Competences
• Search, analysis and synthesis of data and information, using the necessary technologies • Adapt to new situations • Autonomous work

(3) SYLLABUS

Linear recurrence relations. Linear dynamical systems in discrete time and population models. First order differential equations. Solution techniques. Linear differential equations and differential systems with constant coefficients. The exponential matrix. Qualitative analysis of dynamical system behavior. Orthogonal

polynomials and probability distributions. Introduction to Convexity. Optimization under equality and inequality constraints in $\mathbb{R}^n$.

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY <i>Face-to-face, Distance learning, etc.</i>	Face-to-face	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY	YES, email, eclass	
TEACHING METHODS	Activity	Semester workload
	Lectures	52
	Tutorial	18
	Assignment	10
	Self Study	95
	Course Total	175
STUDENT PERFORMANCE EVALUATION	Written examination at the end of the semester Announced in class and at eclass.	

(5) ATTACHED BIBLIOGRAPHY

• LipschutzS., LipsonMarcLars, Γραμμική Άλγεβρα, 5η έκδοση, Εκδόσεις Τζιόλα, 2013. • Arrowsmith D. K. and Place C. M. Ordinary differential equations. Chapman and Hall. • Bellman, R. (1987). Matrix Analysis. Classics in Applied Mathematics, SIAM Publishing. • Strang, G. (1986). Introduction to Applied Mathematics. Wellesley-Cambdridge Press. • Logan, D.J. (2010). Εφαρμοσμένα Μαθηματικά. Πανεπιστημιακές Εκδόσεις Κρήτης.
--