COURSE OUTLINE

Ημερομηνία: 31 Οκτ 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	6001
A5. Title of the Course	PROBABILITY I

Lecturers

Name	Rank	Specialization
KYRIAKIDIS EPAMEINONDAS	Professor	Applied Probability and Stochastic Operations Research
VAKEROUDIS STAVROS	Assistant Professor	Probability, Stochastic Processes, Stochastic Analysis and Applications.
MAMALOUKAS CHRISTOS	EDIP	MATHEMATICS, APPLIED MATHEMATICS, COMPUTATIONAL MATHEMATICS, INFORMATICS

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	Scientific Field
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: Yes 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

-2-

C14. Language of Instruction	Greek

D. PREREQUISITE COURSES

E. COURSE CONTENTS (Syllabus)

Basic principles of counting. Elementary combinatorics. Permutations and combinations, selection problems with and without replacement. Basic concepts of discrete probability spaces. Independence, conditional probability, and the theorem of Bayes. Law of total probability. Discrete random variables, distribution functions, expectation and variance. The binomial, hypergeometric, Poisson, and negative binomial distributions. The inequalities of Cauchy-Schwarz and Chebychev. Poisson approximation to the binomial.

Continuous probability spaces. Cumulative distribution function and density function. Expectation, variance, and the moment generating function. The exponential and Gamma distributions. The Normal distribution. The fundamental role of the normal distribution.

F. LEARNING OUTCOMES

Upon successful completion of the course the students should be able то:

•Comprehend the different ways of assigning probability

•Solve problems by using the laws of probability

•Revise probabilities by using Bayes' rule

•Decide when to use the various probability models

G. LITERATURE

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