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	6057
A5. Title of the Course	STOCHASTIC PROCESSES II

Lecturers

Name	Rank	Specialization
KYRIAKIDIS EPAMEINONDAS	Professor	Applied Probability and Stochastic Operations Research
ZAZANIS MICHAEL	Professor	Applied Probability - Operations Research

B. TYPE OF COURSE

B1. Year of Study	4
B2. Semester	7th
B3. Level of Course (if applicable)	1st Cycle
B4. Type of course	Elective
B5. Field	Scientific Field
B6. ECTS credits allocated (ECTS)	8.00
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: Yes Tutorial: No 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	
C4. Scheduled Hours for Workshops per week	2.00
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	
C9. Scheduled Hours for Workshops per semester	26
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: Yes Project: Yes Public Presentation: No Laboratory exercises: No Practical exercises: No Exempt work: No

C14. Language of Instruction	Greek

D. PREREQUISITE COURSES

Στοχαστικές Διαδικασίες Ι

E. COURSE CONTENTS (Syllabus)

Discrete state continuous time Markov processes. Generators, forward and backward Kolmogorov equations, transition probabilities. Birth and death processes and applications. Discrete time continuous state Markov processes.

Martingales, Stochastic processes in continuous time and state space, Browning motion, stochastic integration and Ito processes, Simulation of stochastic processes. Applications in finance, economics, environment and modern technologies.

F. LEARNING OUTCOMES

Upon successful completion of the course, students should be able to obtain the fundamental concepts of the theory of stochastic processes (martinglaes, Markov processes in continuous time with discrete and continuous state space, birth and death processes, diffusion processes etc) and apply fundamental techniques in problem solving and modelling using stochastic processes (including simulation of stochastic processes) with applications in economics, finance, the environment and modern technologies.

G. LITERATURE

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