

■ CE62 - Stochastic Processes

GENERAL

SCHOOL	EXACT SCIENCES		
DEPARTMENT	MATHEMATICS		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	CE62	SEMESTER	F
COURSE TITLE	STOCHASTIC PROCESSES		
INDEPENDENT TEACHING ACTIVITIES	WEEKLY TEACHING HOURS	ECTS	
Lectures	4	5	
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>With this course, the students:</p> <ul style="list-style-type: none"> • will be familiarized with the concept of stochastic processes, • will be able to recognize basic stochastic models, • will be able to model real problems by use of stochastic processes, • will be able to study the asymptotic behaviour of a Markov process.
General Competencies
<ul style="list-style-type: none"> • Search for, analysis and synthesis of data and information, with the use of the

necessary technology.

- Decision making.
- Production of free, creative and inductive thinking.

CONTENT OF THE COURSE

Introduction to Stochastic Processes, discrete-time Markov Chains, Chapman-Kolmogorov equations. Classification of states. Description of the evolution of a Markov Chain. Hitting time. Distributions of sojourn time. Asymptotic results, stationary distribution. Continuous-time Markov Chains. Poisson process and generalizations. Introduction to Queuing Theory.

TEACHING AND LEARNING METHODS - EVALUATION

TEACHING METHOD	In the classroom.	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY	Use of e-class. Communication through face-to-face discussions and e-mails.	
TEACHING ORGANIZATION	Activity	Semester Workload
	Lectures	52 hours
	Projects	26 hours
	Individual Study	47 hours
	Course Total (25 hours per ECTS)	125 hours
STUDENT EVALUATION	Projects 20%. Written final examination 100%.	

RECOMMENDED BIBLIOGRAPHY

1. Vassiliou P.-C., Stochastic Methods in Operations research, Publications Ziti, 2000 (Greek).
2. Fakinos D., Stochastic models in Operations research: Theory and applications, Symmetria, 2007 (Greek).
3. Daras T. and Sypsas P., Stochastic processes, Theory and applications, Publications Ziti, 2003 (Greek).
4. Loulakis M., Stochastic processes, Hellenic Academic EBooks-“Kallipos” repository, 2016 (Greek).

