

Academic Year: ( 2022 / 2023 )

Review date: 19-05-2022

Department assigned to the subject: Statistics Department

Coordinating teacher: MEILAN VILA, ANDREA

Type: Electives ECTS Credits : 6.0

Year : 4 Semester :

**REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)**

Probability and Data Analysis

**DESCRIPTION OF CONTENTS: PROGRAMME**

1. Introduction to Stochastic Processes
2. Discrete Markov Chains
3. Continuous time Markov Chains
4. Renewal Processes
5. Queuing theory
6. Random Graphs
7. Case studies:  
Monte Carlo Algorithm, PageRank Algorithm, Call centers, Social networks.

**LEARNING ACTIVITIES AND METHODOLOGY**

Theory (4 ECTS). Theory classes with additional material available on the Web.

Practical classes (2 ECTS) Problem solving classes. Problem based learning classes.

**ASSESSMENT SYSTEM**

Final exam (60% of the final grade). Partial exams, problem lessons and homeworks (40% of the final grade).

<b>% end-of-term-examination:</b>	60
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<b>% of continuous assessment (assignments, laboratory, practicals...):</b>	40
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**BASIC BIBLIOGRAPHY**

- R. Durrett Essentials of stochastic processes, Springer, 2012 (2nd ed.)

**ADDITIONAL BIBLIOGRAPHY**

- S.M. Ross Stochastic Processes, John Wiley & Sons, inc., 1996 (2nd. ed.)

**BASIC ELECTRONIC RESOURCES**

- R. Durrett . Essentials of Stochastic Processes: <http://www.math.duke.edu/~rtd/EOSP/EOSP2E.pdf>