COURSE OUTLINE

(1) GENERAL

SCHOOL	SCHOOL OF INFORMATION SCIENCES & TECHNOLOGY		
ACADEMIC UNIT	DEPARTMENT OF STATISTICS		
LEVEL OF STUDIES	1st Cycle (UNDERGRADUATE)		
COURSE CODE	**6106**	**SEMESTER**	**3rd**
COURSE TITLE	**Bayesian Statistics**		

INDEPENDENT TEACHING ACTIVITIES	**WEEKLY TEACHING HOURS**	**CREDITS**
Lectures	4	7
Workshops		
Labs	1	

COURSE TYPE	Elective
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK
IS THE COURSE OFFERED TO ERASMUS STUDENTS	YES
COURSE WEBSITE (URL)	https://www.dept.aueb.gr/en/stat/content/bayesian-stat-7-ects

(2) LEARNING OUTCOMES

Learning outcomes
After successful completion of the course, students will be able to handle issues regarding: objective and subjective probability, features in the Bayes approach, the likelihood principle, a-priori distribution and how to choose one (conjugate, non-informative, improper, Jeffreys, a-priori mixtures), Sufficiency and sequential updating, Multivariate Bayesian statistics, Statistical inference: (decision theory, Bayes risk, Bayes rule, MINIMAX rule, point estimate, interval estimation, hypothesis testing), predictive distribution.
General Competences

(3) SYLLABUS

The aim of this course is to introduce students to the Bayesian approach to statistics and to compare the Bayesian with the classic (frequentist) approach to statistics. During this course are taught: objective and subjective probability,

features in the Bayes approach, the likelihood principle. A-priori distribution and how to choose one (conjugate, non-informative, improper, Jeffreys, a-priori mixtures). Sufficiency and sequential updating. Multivariate Bayesian statistics. Statistical inference: decision theory, Bayes risk, Bayes rule and MINIMAX. Point estimate, interval estimation, hypothesis testing. Predictive Distribution. Asymptotic theory.

(4) TEACHING and LEARNING METHODS - EVALUATION

<table>
<tr><td>DELIVERY
Face-to-face, Distance learning, etc.</td><td>Face-to-face</td></tr>
<tr><td>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY</td><td>YES</td></tr>
<tr><td>TEACHING METHODS</td><td>
<table>
<tr><th>Activity</th><th>Semester workload</th></tr>
<tr><td>Lectures</td><td>60</td></tr>
<tr><td>Studying and Analyzing Bibliography</td><td>30</td></tr>
<tr><td>Assignment</td><td>30</td></tr>
<tr><td>Self Study</td><td>55</td></tr>
<tr><td>Course total</td><td>175</td></tr>
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<tr><td>STUDENT PERFORMANCE EVALUATION
.</td><td>Written examination at the end of the semester

Information is available at eclass</td></tr>
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(5) ATTACHED BIBLIOGRAPHY

- Δελλαπόρτας Π & Τσιαμυρτζής Π (2012) "Στατιστική κατά Bayes". Πανεπιστημιακές Σημειώσεις:
- Bernardo J. M. & Smith A. F. M., (1994). Bayesian Theory, Wiley, London.
- Carlin B.P. & Louis T.A. (2000). Bayes and Empirical Bayes Methods for Data Analysis, Chapman and Hall/CRC.
- O' Hagan A. and Forster J. (2004). Kendall's advanced Theory of Statistics, Volume 2b: Bayesian Inference, Edward Arnold, London.