

COURSE OUTLINE

GENERAL

SCHOOL	School of Science		
ACADEMIC UNIT	Department of Mathematics		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	MAE832	SEMESTER	8th
COURSE TITLE	Statistical data analysis		
INDEPENDENT TEACHING ACTIVITIES <i>if credits are awarded for separate components of the course, e.g. lectures, laboratory exercises, etc. If the credits are awarded for the whole of the course, give the weekly teaching hours and the total credits</i>		WEEKLY TEACHING HOURS	CREDITS
Lectures-Laboratory		3	6
<i>Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).</i>			
COURSE TYPE <i>general background, special background, specialised general knowledge, skills development</i>	Specialised general knowledge		
PREREQUISITE COURSES:			
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	Greek		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	Yes (in English, reading Course)		
COURSE WEBSITE (URL)	www.math.uoi.gr/~abatsidis/832.html		

LEARNING OUTCOMES

Learning outcomes

The course learning outcomes, specific knowledge, skills and competences of an appropriate level, which the students will acquire with the successful completion of the course are described.

Consult Appendix A

- *Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area*
- *Descriptors for Levels 6, 7 & 8 of the European Qualifications Framework for Lifelong Learning and Appendix B*
- *Guidelines for writing Learning Outcomes*

The aim of this course is the implementation of the statistical theory which was developed in "633-Statistical Inference" and "733-Regression and Analysis of Variance" in analyzing (statistical) data by using statistical packages (for instance

JMP, SPSS, S-Plus).

At the end of the course the student should be able to:

- enter data on the computer
- conduct descriptive statistical analysis that summarizes the available data
- perform basic data analysis (testing for outliers and normality, basic hypothesis testing with dependent and independent samples, one way anova)
- adjust linear models, mainly simple regression, controlling on whether the assumptions of the model are violated or not
- present and interpret the results of the above analysis.

General Competences

Taking into consideration the general competences that the degree-holder must acquire (as these appear in the Diploma Supplement and appear below), at which of the following does the course aim?

<i>Search for, analysis and synthesis of data and information, with the use of the necessary technology</i>	<i>Project planning and management</i>
<i>Adapting to new situations</i>	<i>Respect for difference and multiculturalism</i>
<i>Decision-making</i>	<i>Respect for the natural environment</i>
<i>Working independently</i>	<i>Showing social, professional and ethical responsibility and sensitivity to gender issues</i>
<i>Team work</i>	<i>Criticism and self-criticism</i>
<i>Working in an international environment</i>	<i>Production of free, creative and inductive thinking</i>
<i>Working in an interdisciplinary environment</i>	<i>Others</i>
<i>Production of new research ideas</i>	

Working independently
Decision-making
Production of free, creative and inductive thinking
Criticism and self-criticism

SYLLABUS

The implementation of the statistical theory which was developed in "633-Statistical Inference" and "733-Regression and Analysis of Variance" in analyzing data using statistical packages (for instance JMP, SPSS, S-Plus) is the main aim of the course. In particular, the following subjects are discussed: testing hypotheses, simple and multiple linear regression analysis, one way and two way Anova (with and without interaction). The course is laboratorial.

TEACHING and LEARNING METHODS - EVALUATION

DELIVERY <i>Face-to-face, Distance learning, etc.</i>	Classroom (face-to-face)	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY <i>Use of ICT in teaching, laboratory education, communication with students</i>	<i>Use of ICT in communication with students</i>	
TEACHING METHODS <i>The manner and methods of</i>	Activity	Semester workload
	Lectures	39

<i>teaching are described in detail. Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, project, essay writing, artistic creativity, etc.</i> <i>The student's study hours for each learning activity are given as well as the hours of non-directed study according to the principles of the ECTS</i>	Working independently	78
	Exercises-Homework	33
	Course total	150
STUDENT PERFORMANCE EVALUATION <i>Description of the evaluation procedure</i> <i>Language of evaluation, methods of evaluation, summative or conclusive, multiple choice questionnaires, short-answer questions, open-ended questions, problem solving, written work, essay/report, oral examination, public presentation, laboratory work, clinical examination of patient, art interpretation, other</i> <i>Specifically-defined evaluation criteria are given, and if and where they are accessible to students.</i>	Final written exam in Greek (in case of Erasmus students in English) which includes analysis of real data sets.	

ATTACHED BIBLIOGRAPHY

- <i>Suggested bibliography:</i> <i>Books in English:</i> Carver and Nash (2006). Doing data analysis with SPSS version 14. Field A. (2005). Discovering Statistics using SPSS. Sage Publications. Marques de Sa (2007). Applied Statistics using SPSS, Statistica, Matlab and R. Springer. Coakes and Steed (1999). SPSS: Analysis Without Anguish <i>Books in Greek:</i> Απόστολος Μπατσίδης (2014). Στατιστική Ανάλυση Δεδομένων με το S.P.S.S. (διαθέσιμες στην ιστοσελίδα του μαθήματος καθώς και διδακτικό υλικό) English
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