COURSE OUTLINE

GENERAL

SCHOOL	School of Science		
ACADEMIC UNIT	Department of Mathematics		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	MAE733	**SEMESTER**	7th
COURSE TITLE	**Regression and Analysis of Variance**		

INDEPENDENT TEACHING ACTIVITIES *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*		**WEEKLY TEACHING HOURS**	**CREDITS**
	Lectures	3	6
Add rows if necessary. The organisation of teaching and the teaching methods used are described in detail at (d).			
COURSE TYPE *general background, special background, specialised general knowledge, skills development*	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)	http://www.math.uoi.gr/~kzograf/SyllabousRegressionEnglish.pdf		

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 the course is the presentation, study and application of simple and multiple linear regression and analysis of variance of one or more factors. The general linear model is presented to unify the above regression and analysis of variance models. This course is aimed at understanding the theory of linear models and their applications in modelling statistical data. It focuses on regression and analysis of variance models, which are consolidated within the general linear model. At the end of the course, students will understand the aforementioned issues of the theory of linear models and it is expected that

they will be able to apply linear models for the analysis of statistical data.

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?

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

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

SYLLABUS

Theory of linear models. Simple linear regression. Multiple linear regression. One-and multi-way analysis of variance. Multiple comparisons. Applications.

TEACHING and LEARNING METHODS - EVALUATION

DELIVERY *Face-to-face, Distance learning, etc.*	Classroom (face-to-face)		
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY *Use of ICT in teaching, laboratory education, communication with students*	*Use of ICT in communication with students*		
TEACHING METHODS *The manner and methods of 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.* *The student's study hours for each learning activity are given as well as the hours of non-directed study*	**Activity**	**Semester workload**	
	Lectures	39	
	Working independently	78	
	Exercises-Homework	33	
	Course total	*150*	

according to the principles of the ECTS	
STUDENT PERFORMANCE EVALUATION *Description of the evaluation procedure* *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* *Specifically-defined evaluation criteria are given, and if and where they are accessible to students.*	Final written exam in Greek (in case of Erasmus students in English) which includes resolving application problems.

ATTACHED BIBLIOGRAPHY

- Suggested bibliography:
Books in English:
Kutner, M. H., Nachtsheim, Ch., Neter, J. and Li. W. (2004). Applied Linear Statistical Models. 5th Edition, McGraw-Hill.
Montgomery, D. C., Peck, E. A. και Vining, G. G. (2006). Introduction to linear regression analysis. 4th Edition, Wiley.
Rencher, A. C. (2000). Linear models in statistics. Wiley.
Sahai, H. and Ageel, M. (2000). The Analysis of Variance. Birkhauser.

Books in Greek:
Draper, N. και Smith, H. (1997). Εφαρμοσμένη Ανάλυση Παλινδρόμησης. 2η Αγγλική Έκδοση. Μετάφραση-Επιμέλεια: Ε. Χατζηκωνσταντινίδης, Α. Καλαματιανού. Εκδόσεις Παπαζήση.
Καρακώστας, Κ. (2002). Γραμμικά Μοντέλα: Παλινδρόμηση και Ανάλυση Διακύμανσης. Πανεπιστήμιο Ιωαννίνων.
Κούτρας, Μ. και Ευαγγελάρας, Χ. (2011). Ανάλυση Παλινδρόμησης. Εκδόσεις Αθ. Σταμούλης
Οικονόμου, Π. και Καρώνη, Χ. (2010). Στατιστικά Μοντέλα Παλινδρόμησης, Εκδόσεις Συμεών