COURSE OUTLINE

(1) GENERAL

SCHOOL	SCHOOL OF INFORMATION SCIENCES & TECHNOLOGY		
ACADEMIC UNIT	DEPARTMENT OF STATISTICS		
LEVEL OF STUDIES	1st Cycle (UNDERGRADUATE)		
COURSE CODE	**6023**	**SEMESTER**	**5th**
COURSE TITLE	**DATA ANALYSIS**		

INDEPENDENT TEACHING ACTIVITIES	**WEEKLY TEACHING HOURS**	**CREDITS**
Lectures	4	8
Labs	2	

COURSE TYPE	Core - GENERAL BACKGROUND
PREREQUISITE COURSES:	6012 – ESTIMATION – HYPOTHESIS TESTING 6023 LINEAR MODELS
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK
IS THE COURSE OFFERED TO ERASMUS STUDENTS	NO
COURSE WEBSITE (URL)	https://www.dept.aueb.gr/en/stat/content/data-analysis-8-ects

(2) LEARNING OUTCOMES

Learning outcomes
Upon completion of the course, students will be able to: 1) To manipulate and analyze data in R 2) To perform basic hypothesis tests 3) To build and interpret regression models 4) To write statistical reports in a professional way.
General Competences
Search for, analysis and synthesis of data and information, with the use of the necessary technology Adapting to new situations Decision-making Working independently Working in an interdisciplinary environment Production of free, creative and inductive thinking

(3) SYLLABUS

Statistical methods in simple problems using statistical packages (emphasis on R and secondary on other statistical packages): Descriptive statistics, visualization, simulating random numbers from theoretical distributions, confidence intervals, hypothesis testing for one and two independent samples, hypothesis testing for two dependent samples, contingency tables, simple and multiple regression analysis, AnCoVa models and analysis for one and two factors (and one continuous explanatory). Case studies and analysis of real datasets from various scientific fields (economics, marketing, social sciences, sports, medicine, psychology etc.). Basic principles for writing professional and scientific reports and presenting data analysis.

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY	Face to Face
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY	YES
TEACHING METHODS	

Activity	*Semester workload*
Lectures	52
Laboratory exercises	30
study and analysis of bibliography	10
tutorials	20
project	88
Course total	***200***

STUDENT PERFORMANCE EVALUATION	WRITTEN EXAMINATION AT THE END OF THE SEMESTER: 50% ORAL EXAMINATION: 10% PROJECT: 40%

(5) ATTACHED BIBLIOGRAPHY

- Ντζούφρας Ι., Καρλής Δ., Εισαγωγή στον Προγραμματισμό και στη Στατιστική Ανάλυση με R, Εκδόσεις Ελληνικά Ακαδημαϊκά Ηλεκτρονικά Συγγράμματα και Βοηθήματα-Αποθετήριο "Κάλλιπος'', 2016.
- Φουσκάκης Δ. (2013). Ανάλυση Δεδομένων με Χρήση της R. Εκδόσεις Τσότρας. Αθήνα.
- Marques de Sa, Joaquim P., Applied Statistics Using SPSS, STATISTICA, MATLAB and R, Editions Springer-Verlag, 2008.
- Chatterjee S., Handcock M.S., Simonoff J.S. (1995). A Casebook for a First Course in Statistics and Data Analysis. John Wiley & Sons.

- Faraway J.J. (2002). Practical Regression and Anova using R. Free electronic book available at http://cran.r-project.org/doc/contrib/Faraway-PRA.pdf.
- Fox J. & Weisberg H.S. (2011). An R Companion to Applied Regression. 2nd edition. SAGE Publications Inc.