

(1) GENERAL

SCHOOL	SCHOOL OF INFORMATION SCIENCES & TECHNOLOGY		
ACADEMIC UNIT	DEPARTMENT OF STATISTICS		
LEVEL OF STUDIES	POSTGRADUATE		
COURSE CODE		TRIMESTER	1
COURSE TITLE	Data Analysis		
INDEPENDENT TEACHING ACTIVITIES		WEEKLY TEACHING HOURS	CREDITS
		3	5
		30	5
COURSE TYPE	Specialization		
PREREQUISITE COURSES:			
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	ENGLISH		
COURSE DELIVERY METHOD	Distance		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	NO		
COURSE WEBSITE (URL)	https://cloud.aueb.gr/index.php/s/C8WjF6tdmJzyLE2		

(2) LEARNING OUTCOMES

Learning outcomes
• Develop an understanding of basic statistical methods using R. • Ability to perform descriptive analysis and graphical representation of data. • Understand and apply random number simulations from theoretical distributions. • Applying confidence intervals and hypothesis tests for one or two samples (independent and paired). • Analysis of categorical data using contingency tables. • Introduction to simple and multiple linear regression for modeling relationships between variables. • Understanding and applying analysis of variance (ANOVA) for one and two factors. • Development of skills in analyzing real datasets from various scientific fields. • Become familiar with case studies and interpretation of statistical results in applied problems. • Understanding basic principles of writing reports and presenting data analyses in a scientific manner.
General Competences
• Searching, analyzing, and synthesizing data and information, including the use of necessary technologies. • Adaptability to new situations.

- Ability to work independently.
- Ability to work in an international environment.
- Ability to work in an interdisciplinary environment.
- Generation of new research ideas.
- Promotion of free, creative, and inductive thinking.

(3) SYLLABUS

Statistical methods are presented through simple problems using R: descriptive analysis, graphical representation, simulation of random numbers from theoretical distributions, confidence intervals, hypothesis tests for one and two independent samples, hypothesis tests for two paired samples, contingency tables, simple and multiple regression analysis, and analysis of variance (ANOVA) for one and two factors. Case studies and analysis of real datasets from various scientific fields (Economics, Marketing, Social Sciences, Sports, Medicine, Psychology, and others) are included. Basic principles of report writing and presenting data analyses are also covered.

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY <i>Face-to-face, Distance learning, etc.</i>	Distance	
METHOD AND FREQUENCY OF COMMUNICATING WITH THE STUDENTS	Remotely via email and through weekly office hours (and whenever necessary) via teleconferencing or in-person office visits.	
ENSURING COMMUNICATION AMONG STUDENTS	Teleconference, Chat via eclass and/ or TEAMS, and QA sessions	
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY	MS Teams, e-class, MS Outlook, R, Python, WayGround or Kahoot educational games and quizzes	
REQUIRED EQUIPMENT AND TECHNOLOGY KNOWLEDGE	Camera, mic, PC, MS Office, and TEAMS	
COURSE POLICY ON PLAGIARISM AND PLAGIARISM DETECTION TOOLS	Turnitin	
COURSE POLICY ON USE OF AI TOOLS	The use of Artificial Intelligence is permitted with explicit reference to the bibliography (2) for the verbal correction of assignments and as long as students have understood the basic principles and methods of the course.	
TEACHING METHODS	Activity	Semester workload
	Lectures	30
	Assignment writing	40
	Lab Exercise	20
	Self-Study hours	40
	Course total	130
STUDENT PERFORMANCE EVALUATION	Evaluation language is English. Evaluation methods include lab exercises, written assignments, and/or written examinations. Oral examinations of the assignments may be conducted if clarifications are needed or if there are suspicions of plagiarism or unauthorized use of Artificial Intelligence tools. Assessment criteria are provided on the course eClass platform and in the course materials.	

(5) RECOMMENDED BIBLIOGRAPHY

- Field, A., Miles, J., & Field, Z. (2012). Discovering Statistics using R. SAGE Publications Ltd.