KM231-STATISTICS AND DATA ANALYSIS

1. GENERAL

SCHOOL	School of Technology		
DEPARTMENT	Department of Forestry, Wood Sciences, and Design		
LEVEL	*Undergraduate*		
CODE	**KM231**	**STUDENT SEMESTER**	2nd
COURSE TITLE	Statistics and Data Analysis		

ACTIVITIES	WEEKLY HRS	ECTS
Lectures and Laboratory Sessions	3	5

TYPE OF COURSE	Scientific area
PREREQUISITES:	None
LANGUAGE TEACHING AND EXAMINATION:	Greek
THE COURSE OFFERED TO STUDENTS ERASMUS	No
WEBPAGES COURSE (URL)	https://eclass.uth.gr/courses/FWSD_U_109/

2. LEARNING OUTCOMES

Learning Outcomes

The aim of the course is to provide basic knowledge concerning Probability and Statistics as tools for data analysis, statistical inferencing and decision making.

At the end of the course students will be able to:

- Have an understanding of the basic Probability and Statistics concepts
- Transfer from a research question to suitable statistical hypotheses testing
- Apply statistical hypotheses testing and determine confidence intervals
- Construct basic statistical models, such as regression models, and assess relations between statistical variables
- Have an understanding of the conditions that are necessary to apply statistical methods and of the necessity to test the fulfilments of these conditions before applying the statistical methods
- Select among alternative methods based on specific suitability criteria
- Interpret the statistical significance of the results obtained
- Use sstatical software such as SPSS and R for carry out statistical analyses
- Have an understanding of the basic ethics related to data acquisition and use

General Skills

Upon successful completion of the course, the students will be able to develop and cultivate basic professional and social skills:

- Search, analysis and synthesis of data and information, using the necessary technologies
- Adaptation to new situations
- Decision making

- Autonomous work
- Teamwork
- Demonstration of social, professional and moral responsibility and sensitivity to gender issues
- Exercise criticism and self-criticism
- Promoting free, creative and inductive thinking

3. COURSE CONTENT

In the theoretic part the following topics are described:

Basic probability and statistics concepts. Collection and processing of data. Frequency tables and diagrams. Measures of variance, position and shape. Elements of probability. Probability distributions. Bayes rule. Standard Error. Biased and Unbiased estimators. Confidence intervals. Correlation and linear regression. Correlation and covariance coefficients. Prediction models. Data collection and analysis methofs. SPSS software and the R language. Data collection ethics.

The laboratory part is taught 1 hour every week and focuses on practical application of the theoretic concepts through targeted exercises, group sessions and targeted assignments.

The final semester assignment requires submission of the assignment materials as well as a 10 minute oral presentation at week 12. The semester assignment counts for 20% of the total course assessment and the remaining 80% is obtained through written examination.

4. TEACHING AND LEARNING METHODS - EVALUATION

DELIVERY METHOD	Face to face
USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES	Use of a course website on the e-class platform for posting (a) notes, (b) internet links, (c) announcements, search tools and social networks Furthermore, use of equipment such as as video projector, interactive board, and use of server and terminal stations at the laboratory room.

TEACHING ORGANISATION	Activity	Semester Workload
	Interactive Teaching – Lectures	26
	Laboratory exercises	13
	Semester assignments	35
	Self-study	51
	Course Total	*125*

STUDENT EVALUATION	
	Both intermediate and final evaluation is applied. The evaluation of the theoretical part is carried out by: 1. Optional intermediate written examination 2. Semester assignment 3. Final written exam The evaluation of the laboratory part is carried out by: 1. Two short written exams on 4th and 8th semester week which involve multiple choice questions

	2. Laboratory assignments delivered on a weekly basis 3. Final exam carried out on week 14

5. RECOMMENDED-BIBLIOGRAPHY

- Recommended literature:

- Norris, G., Qureshi, F., Howitt, D., and Cramer, D., Εισαγωγή στη Στατιστική με το SPSS για τις κοινωνικές επιστήμες, Εκδόσεις Κλειδάριθμος, 2019, Κωδ. Εύδοξου 68387827, ISBN: 978-960-461-747-0. (in Greek)

- Εμβαλωτής, Α. και Σαργιώτη Α., Εισαγωγή στην ανάλυση εμπειρικών δεδομένων εκπαιδευτικής έρευνας, Εκδόσεις Πεδίο Εκδοτική, 2019, Κωδ. Εύδοξου 86197192. (in Greek)

- Νικολάου Χ. Ανάλυση Δεδομένων με την R, Εκδόσεις Δίσιγμα, 2019, Κωδ. Εύδοξου 86192367, ISBN: 978-618-5242-56-5. (in Greek)

- Κούτρας, Μ. Β. και Ευαγγελάρας Χ., Ανάλυση Παλινδρόμησης-Θεωρία και Εφαρμογές, 3η Έκδοση, Εκδόσεις Τσότρας, 2018, Κωδ. Εύδοξου 77115860, ISBN: 978-618-5309-38-1. (in Greek)

- Δρόσος Γ., Στατιστική και Ανάλυση Δεδομένων, Εκδόσεις Copy City IKE, 2017. Κωδ. Εύδοξου 68402428, ISBN: 978-960-9551-27-4. (in Greek)

- Verzani, J., Εισαγωγή στη Στατιστική με την R. Εκδόσεις Κλειδάριθμος, 2016. (in Greek)

- Zar, J. H., Biostatistical Analysis, Prentice Hall, Fifth Edition, 2010. (in Greek)

- Χάλκος Ε.Γ., 2011, ΣΤΑΤΙΣΤΙΚΗ, Εκδόσεις: Γ. Δαρδανος - Κ. Δαρδανος Ο.Ε. (in Greek)

- Φιλιππάκης Μ., 2017, ΣΤΑΤΙΣΤΙΚΕΣ ΜΕΘΟΔΟΙ ΚΑΙ ΑΝΑΛΥΣΗ ΠΑΛΙΝΔΡΟΜΗΣΗΣ ΓΙΑ ΤΙΣ ΝΕΕΣ ΤΕΧΝΟΛΟΓΙΕΣ (2η έκδοση), Εκδόσεις: Τσότρας Αν. Αθανάσιος. (in Greek)

- Ζαφειρόπουλος Κ., Μυλωνάς Ν., 2017, ΣΤΑΤΙΣΤΙΚΗ ΜΕ SPSS, Εκδόσεις: Τζιόλα. (in Greek)