

COURSE OUTLINE: STATISTICS II

GENERAL

SCHOOL	ECONOMICS AND BUSINESS		
ACADEMIC UNIT	ECONOMICS		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	ΜΠ302	ΕΞΑΜΗΝΟ ΣΠΟΥΔΩΝ	3rd
COURSE TITLE	STATISTICS II		
INSTRUCTOR(S)	Professor G. Halkos		
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>		ΕΒΔΟΜΑΔΙΑΙΕΣ ΩΡΕΣ ΔΙΔΑΣΚΑΛΙΑΣ	ΠΙΣΤΩΤΙΚ ΕΣ ΜΟΝΑΔΕ Σ
		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, specialized general knowledge, skills development</i>	GENERAL BACKGROUND		
PREREQUISITE COURSES:	NO		
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK		
IS THE COURSE OFFERED TO ERASMUS STUDENTS	YES		
COURSE WEBSITE (URL)	http://www.halkos.gr/el/content/87-%CF%83%CF%84%CE%B1%CF%84%CE%B9%CF%83%CF%84%CE%B9%CE%BA%CE%B7-%CE%B9%CE%B9		

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

This course is a continuation of Statistics I and an introduction to the field of Econometrics. Its learning objectives are:

- (a) To present fundamental statistical concepts and enable students to understand and extend their knowledge of business statistics;
 - (b) To apply statistical methods within an organized environment;
 - (c) To promote the use of statistical software for analysis;
 - (d) To enable students to recognize the differences between parametric and nonparametric procedures in decision-making processes;
 - (e) To relate two or more variables using regression modeling.
- Upon successful completion of the course the student will be able to:
- (1) Compare two or more samples, understanding the appropriateness of parametric and nonparametric procedures;
 - (2) Construct confidence intervals for population means, variances and proportions;
 - (3) Test goodness-of-fit, independence and homogeneity for categorical data presented as frequencies;
 - (4) Conduct hypothesis tests;
 - (5) Model two or more variables, initially using scatterplots and correlation coefficients and subsequently using regression analysis and residual diagnostics.

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

Adapting to new situations

Decision-making

Working independently

Team work

Working in an international environment

Working in an interdisciplinary environment

Production of new research ideas

Project planning and management

Respect for difference and multiculturalism

Respect for the natural environment

Showing social, professional and ethical responsibility and

sensitivity to gender issues

Criticism and self-criticism

Production of free, creative and inductive thinking

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Others...

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- *Search for, analysis and synthesis of data and information, with the use of the necessary technology*
- *Decision-making*
- *Working independently*
- *Team work*
- *Working in an international environment*
- *Working in an interdisciplinary environment*
- *Production of new research ideas*

SYLLABUS

1. Revision of the basic concepts of Inferential Statistics (sampling, sampling distributions; the Central Limit Theorem and its significance in Statistics; Parameters estimation: confidence intervals for the population mean and for the population variance; hypothesis testing.

2. Applications of Inferential Statistics (methods for quality control, warning and action limits, mean and range charts and their interpretation)
3. Comparing two samples (confidence intervals and hypothesis testing for two samples: independent and paired samples)
4. Comparing three and more samples (One-way analysis of variance; Computer applications)
5. Non-parametric methods (sign test, Wilcoxon signed rank, Mann-Whitney, Kruskal-Wallis). Chi-square tests of goodness of fit and independence. Computer applications
6. Introduction to regression analysis and correlation (linear correlation, multiple and partial correlation, linear regression, scatter diagrams, regression analysis)
7. Inferences concern the regression coefficients. Checking the statistical significance of the variables and the model.
8. Multiple regression. Testing the overall significance of the model. Problems of regression (non-linear cases and some possible transformations). Regression problems (non-linearity and some possible transformations)
9. Use of Statistical Programs to find the regression line. Discussion of computers' outputs.

TEACHING and LEARNING METHODS - EVALUATION

DELIVERY <i>Face-to-face, Distance learning, etc.</i>	Face-to-face																						
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY <i>Use of ICT in teaching, laboratory education, communication with students</i>	• Use of the e-class electronic platform for posting: (a) lecture materials, (b) announcements, (c) tutorial exercises. • Use of specialized statistical software (e.g., the Excel Analysis ToolPak, MINITAB) to perform descriptive and inferential statistical analysis.																						
TEACHING METHODS <i>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 according to the principles of the ECTS</i>	<table border="1"> <thead> <tr> <th>Activity</th><th>Semester workload</th></tr> </thead> <tbody> <tr> <td>Lectures</td><td>39</td></tr> <tr> <td>Laboratory practice</td><td>15</td></tr> <tr> <td>Study of literature:</td><td>2</td></tr> <tr> <td>Semester test</td><td>2</td></tr> <tr> <td>Final semester examination</td><td>2</td></tr> <tr> <td>Course total</td><td>30</td></tr> <tr> <td>Software practice</td><td>32</td></tr> <tr> <td></td><td></td></tr> <tr> <td></td><td></td></tr> <tr> <td></td><td>180</td></tr> </tbody> </table>	Activity	Semester workload	Lectures	39	Laboratory practice	15	Study of literature:	2	Semester test	2	Final semester examination	2	Course total	30	Software practice	32						180
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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>	Course grading is by final exam or exemption assessment, with participation and problem-solving in tutorial sessions also taken into account.
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ATTACHED BIBLIOGRAPHY

ΣΤΑΤΙΣΤΙΚΗ (5η έκδοση) Κωδικός Βιβλίου στον Εύδοξο: 133040090 Έκδοση: 5/2024 Συγγραφείς: ΧΑΛΚΟΣ ΕΜΜ. ΓΕΩΡΓΙΟΣ ISBN: 9786182022320 Τύπος: Σύγγραμμα Διαθέτης (Εκδότης): ΕΚΔΟΣΕΙΣ ΔΙΣΙΓΜΑ ΙΚΕ
