

## COURSE OUTLINE

### (1) GENERAL

<b>SCHOL</b>	Economics and Public Administration		
<b>ACADEMIC UNIT</b>	Economic and Regional Development		
<b>LEVEL OF STUDIES</b>	Postgraduate		
<b>COURSE CODE</b>	8012	<b>SEMESTER</b>	B'
<b>COURSE TITLE</b>	STATISTICS II		
<b>INDEPENDENT TEACHING ACTIVITIES</b> <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 course, give the weekly teaching hours and the total credits.</i>		<b>WEEKLY TEACHING HOURS</b>	<b>CREDITS</b>
		4	6
<i>Add rows if necessary. The teaching organisation and methods used are described in detail at (d).</i>			
<b>COURSE TYPE</b> <i>general background, special background, specialised general knowledge, skills development</i>	General background, general knowledge, skills development		
<b>PREREQUISITE COURSES:</b>	Statistics I, Quantitative methods		
<b>LANGUAGE OF INSTRUCTION and EXAMINATIONS :</b>	Greek		
<b>IS THE COURSE OFFERED TO ERASMUS STUDENTS</b>	No		
<b>COURSE WEBSITE (URL)</b>	<a href="https://openeclass.panteion.gr/courses/TMI183/">https://openeclass.panteion.gr/courses/TMI183/</a>		

### (2) LEARNING OUTCOMES

<p><b>Learning outcomes</b></p> <p><i>The course learning outcomes, specific knowledge, skills and competencies of an appropriate level, which the students will acquire with the successful completion of the course, are described.</i></p> <p><i>Consult Appendix A</i></p> <ul style="list-style-type: none"> <li>• Description of the level of learning outcomes for each qualifications cycle, according to the Qualifications Framework of the European Higher Education Area</li> <li>• Descriptors for Levels 6, 7 &amp; 8 of the European Qualifications Framework for Lifelong Learning and Appendix B</li> <li>• Guidelines for Writing Learning Outcomes</li> </ul>
<p>The purpose of the course is to utilize the tools and technical methods of statistics in the collection, processing and analysis of numerical data as well as the creation of experiments using real data.</p> <p>Upon completion of the course, students will be able to:</p> <ul style="list-style-type: none"> <li>• To understand the use of statistics in the activities and individual functions of businesses</li> <li>• Collect and visualize business data, draw conclusions from the data, make reliable predictions about the results of business activities,</li> <li>• To improve business processes, solve problems and make decisions based on data processing.</li> <li>• To know the meaning and type of statistical errors</li> <li>• To understand the process of formulating statistical hypotheses, to check and draw conclusions from the testing of hypotheses (t-test, z-test, F, <math>\chi^2</math>)</li> </ul>

- Conduct hypothesis tests for population, for two independent samples, for dependent samples and independence tests.
- To become familiar with applications and programs useful in statistical analysis, data analysis and decision-making.

#### **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?*

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

- Search, analysis and synthesis of data and information, using the necessary technologies
- Work in an interdisciplinary environment
- Autonomous work
- Promotion of free, creative and inductive thinking

### **(3) SYLLABUS**

The main modules of the course are the following:

- Analysis of variance: by one factor, factorial design, randomized block design
- Parametric and non-parametric test criteria: tests for differences between two or more percentages,  $\chi^2$  independence test, Wilcoxon Rank Sum test, Kruskal-Wallis test
- Simple and multiple linear regression: measures of variability, significance tests, autocorrelation tests, residual analysis, 2nd degree polynomial model.
- Time series forecasting: forecasting for businesses, time series smoothing methods, criteria for selecting the most appropriate model, forecasting with seasonal data.
- Estimation of models with the methods of least squares and maximum likelihood

#### (4) TEACHING and LEARNING METHODS - EVALUATION

<b>DELIVERY</b> <i>Face-to-face, Distance learning, etc.</i>	Face-to-face  Distance learning in case of emergency	
<b>USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY</b> <i>Use of ICT in teaching, laboratory education, and communication with students</i>	<ul style="list-style-type: none"> <li>• Use of presentation and spreadsheet software</li> <li>• Email communication with students</li> <li>• Support of the learning process using the eclass electronic platform.</li> </ul>	
<b>TEACHING METHODS</b> <i>The manner and methods of teaching are described in detail.</i> <i>Lectures, seminars, laboratory practice, fieldwork, study and analysis of bibliography, tutorials, placements, clinical practice, art workshop, interactive teaching, educational visits, projects, essay writing, artistic creativity, etc.</i>  <i>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>	<b>Activity</b>	<b>Semester Workload</b>
	Lectures	40
	Study and analysis of bibliography	40
	Data Collection and Elaboration	30
	Exams	10
	<b>Course Total (25 hours per ECTS)</b>	<b>120</b>
<b>STUDENT PERFORMANCE EVALUATION</b> <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>	<ul style="list-style-type: none"> <li>• The evaluation of students is done through written exams in the Greek language (which in exceptional circumstances is carried out electronically). The written exams are held at the end of the semester during the examination period and represent 100% of the final grade.</li> </ul>	

#### (5) ATTACHED BIBLIOGRAPHY

<p>- Suggested bibliography:</p> <ul style="list-style-type: none"> <li>• Berenson L. Mark, Levine M. David, Szabat A. Kathryn (2018) Βασικές Αρχές Στατιστικής για Επιχειρήσεις-Έννοιες και Εφαρμογές</li> <li>• Healey, J. (2006) The Essentials of Statistics: A Tool for Social Research. Wadsworth.</li> </ul>
---