

COURSE OUTLINE: ECONOMETRICS I

GENERAL

SCHOOL	ECONOMICS AND BUSINESS		
ACADEMIC UNIT	ECONOMICS		
LEVEL OF STUDIES	UNDERGRADUATE		
COURSE CODE	ΜΠ401	ΕΞΑΜΗΝΟ ΣΠΟΥΔΩΝ	4th
COURSE TITLE	ECONOMETRICS I		
INSTRUCTOR(S)	Professor G. Halkos		
INDEPENDENT TEACHING ACTIVITIES		WEEKLY TEACHING HOURS	CREDITS
<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>			
		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	GENERAL BACKGROUND		
<i>general background,</i>			
<i>special background,</i>			
<i>specialized general knowledge, skills development</i>			
PREREQUISITE COURSES:	NO		
LANGUAGE OF INSTRUCTION and	GREEK		
EXAMINATIONS:			
IS THE COURSE OFFERED TO ERASMUS STUDENTS	YES		
COURSE WEBSITE (URL)	http://www.halkos.gr/el/content/88-oikonom%CE%B5%CF%84%CF%81%CE%B9%CE%B1-i		

LEARNING OUTCOMES

Learning outcomes
<i>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.</i>

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*

The course has the following learning objectives:

- (a) To present the basic econometric concepts.
- (b) To present the main problems that arise from violations of the assumptions of the classical linear model.
- (c) To enable students to understand and become familiar with diagnostic tests for locating these problems, with emphasis on solving them.

On successful completion of the course the student will be able to:

- (1) Perform diagnostic tests on models.
- (2) Identify any problems and correct them.
- (3) Test the validity of economic theories.
- (4) Make forecasts.
- (5) Use appropriate econometric analysis software.

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</i>
<i>Team work</i>	<i>sensitivity to gender issues</i>
<i>Working in an international environment</i>	<i>Criticism and self-criticism</i>
<i>Working in an interdisciplinary environment</i>	<i>Production of free, creative and inductive thinking</i>
<i>Production of new research ideas</i>	<i>.....</i>
	<i>Others...</i>
	<i>.....</i>

- *Search for, analysis and synthesis of data and information, with the use of the necessary technology*
- *Decision-making*
- *Working in an international environment*
- *Working in an interdisciplinary environment*

- *Production of new research ideas*

SYLLABUS

Week 1 Classical linear regression and basic assumptions. Ordinary Least Squares (OLS) method, properties of OLS estimators, statistical inference and model testing.

Week 2 Properties of estimators; tests of individual and overall statistical significance; tests of the model's predictive ability. Multivariate linear models: estimation and testing (OLS estimators, maximum likelihood estimators, BLUE estimators).

Week 3 Gauss–Markov theorem. Proof of properties.

Week 4 Autocorrelation I (nature of the problem, causes, consequences, detection of first- or higher-order autocorrelation and measurement). Durbin–Watson criterion, Durbin's h test, and Breusch–Godfrey test for autocorrelation.

Week 5 Autocorrelation II (estimation with known ρ , unknown ρ and first-order schemes; estimation when residuals follow higher-order autoregressive processes). Example solving autocorrelation using the two-step Durbin method on a computer.

Week 6 Heteroskedasticity (nature of the problem, causes, consequences; detection with plots; Goldfeld–Quandt, Gleiser, Park, Breusch and Pagan tests; measurement). Estimation using logarithmic transformations and weighted least squares.

Week 7 Multicollinearity (nature of the problem, consequences, causes, detection and measurement; variance inflation factor, tolerance; solutions such as model re-specification, increasing sample size, ridge regression, use of linear restrictions and external information).

Week 8 Computer applications (EViews, MINITAB, SPSS).

Week 9 Violations of stochastic assumptions: violations of normality and zero-mean assumptions. Normality tests using the Jarque–Bera statistic. Measurement errors in variables and specification error (consequences; instrumental variables method; reverse regression).

Week 10 Review of matrix algebra basics (operations, inverse and transpose, determinants, quadratic forms, solution of linear equation systems). Generalization of the classical linear model using matrix algebra I.

Weeks 11–13 Generalization of the classical linear model using matrix algebra II. Comprehensive revision and synthesis of the course's main concepts. Possible future extensions of the course.

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 to upload (a) lecture notes, (b) tutorial exercises, (c) announcements. • Use of specialized statistical software (e.g., Excel Analysis ToolPak, MINITAB) to perform descriptive and inferential statistical analysis.

TEACHING METHODS <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, project, 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>	<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>Seminars</td><td>15</td></tr> <tr> <td>Optional course exemption assessment</td><td>2</td></tr> <tr> <td>Final exam</td><td>2</td></tr> <tr> <td>Home study (theory & practice)</td><td>60</td></tr> <tr> <td>Homeworks</td><td>30</td></tr> <tr> <td>Study on the statistical software</td><td>32</td></tr> <tr> <td></td><td></td></tr> <tr> <td></td><td></td></tr> <tr> <td>Course total</td><td>180</td></tr> </tbody> </table>	Activity	Semester workload	Lectures	39	Seminars	15	Optional course exemption assessment	2	Final exam	2	Home study (theory & practice)	60	Homeworks	30	Study on the statistical software	32					Course total	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 done by a final exam or an exemption assessment; participation and completion of exercises in tutorial sessions are also taken into account.																						

ATTACHED BIBLIOGRAPHY

ΟΙΚΟΝΟΜΕΤΡΙΑ

Κωδικός Βιβλίου στον Εύδοξο: 86197963

Έκδοση: 2η έκδ./2019

Συγγραφείς: Χάλκος Γεώργιος

ISBN: 9789609495585

Τύπος: Σύγγραμμα

Διαθέτης (Εκδότης): ΕΚΔΟΣΕΙΣ ΔΙΣΙΓΜΑ ΙΚΕ