UBBFSEGA
Universitatea Babeș-Bolyai | Facultatea de Științe Economice și Gestiunea Afacerilor
UNIVERSITATEA BABEȘ-BOLYAI
TRADIȚIE ȘI EXCELENȚĂ
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DETAILED SYLLABUS
Econometrics

1. Information about the study program

1.1 University	Babeș-Bolyai University
1.2 Faculty	Faculty of Economics and Business Administration
1.3 Department	Statistics, Forecasting, Mathematics
1.4 Field of study	Accounting
1.5 Program level (bachelor or master)	Master
1.6 Study program / Qualification	Accounting and Organizations

2. Information about the subject

2.1 Subject title	EME0090 Econometrics						
2.2 Course activities professor	Assoc. Prof. Cristian Marius LITAN						
2.3 Seminar activities professor	Assoc. Prof. Cristian Marius LITAN						
2.4 Year of study	II	2.5 Semester	3	2.6 Type of assessment	SE	2.7 Subject regime	CO

3. Total estimated time (teaching hours per semester)

3.1 Number of hours per week	4	out of which: 3.2 course	2	3.3 seminar/laboratory	2
3.4 Total number of hours in the curriculum	56	out of which: 3.5 course	28	3.6 seminar/laboratory	28

Time distribution	Hours
Study based on textbook, course support, references and notes	54
Additional documentation in the library, through specialized databases and field activities	36
Preparing seminars/laboratories, essays, portfolios and reports	65
Tutoring	10
Assessment (examinations)	4
Others activities	-

3.7 Total hours for individual study	169
3.8 Total hours per semester	225
3.9 Number of credits	9

4. Preconditions **(if necessary)**

4.1 Curriculum	-
4.2 Skills	-

5. Conditions (if necessary)

5.1. For course development	-
5.2. For seminar / laboratory development	Computers, statistic software

6. Acquired specific competences

Professional competences	• Capacity for analysis, using quantitative methods; • Ability to use econometric modeling for understanding and solving problems that require a quantitative approach, for the development of micro and macro-level forecasts; • Skills to use statistical software for theoretical and empirical analysis; • Develop the abilities for scientific research, and to elaborate research reports.
Transversal competences	• Ability to participate at solving complex problems in interdisciplinary teams, to communicate and to assume a coordinating role; • Interest in training and improving professional performance; • Openness towards innovation and and participation in research projects.

7. Subject objectives (arising from the acquired specific competences)

7.1 Subject's general objective	The course focuses on learning econometric methods useful in modeling dependencies from economics, and their application mainly in empirical micro- and macroeconomics research.
7.2 Specific objectives	Learning of specific knowledge from econometrics; Application of econometric techniques for empirical testing of hypotheses formulated in micro- and macroeconomics; Identify appropriate methods according to the type of variables and data available; Interpretation of results from processing, and incorporating them in the decision process; Acquiring the skills to use software Stata, R, EViews.

8. Contents

8.1 Course	Teaching methods	Observations
Data structures in econometrics Conditional expectations: properties Linear projections	Lecture+Discussion	1 lecture
Asymptotic theory: convergence in probability/ in distribution Law of large numbers, central limit theorem	Lecture+Discussion	1 lecture
Asymptotic properties of estimators	Lecture+Discussion	1 lecture
The single equation linear model. Ordinary least squares estimation (OLS): assumptions. Asymptotic properties and inference using OLS	Lecture+Discussion	1 lecture
Instrumental variables estimation: motivation, solutions	Lecture+Discussion	1 lecture
Two-stage least squares estimator Solutions to omitted variables problem	Lecture+Discussion	1 lecture
Specification tests in linear model: testing linear restrictions on coefficients, Wald statistic, LM tests	Lecture+Discussion	1 lecture
Testing functional form. Hausman test for endogeneity. Tests for heteroskedasticity	Lecture+Discussion	1 lecture
Nonlinear econometric models: M-estimation methods, assumptions, properties Maximum likelihood estimation	Lecture+Discussion	1 lecture
Generalized linear models	Lecture+Discussion	1 lecture
Duration models	Lecture+Discussion	1 lecture
Panel data econometrics-introduction Assumptions for pooled OLS	Lecture+Discussion	1 lecture
Linear unobserved effects models Random/ Fixed effects methods.	Lecture+Discussion	2 lectures
References: Wooldridge, J.M., Econometric Analysis of Cross Section and Panel Data, MIT Press, 2010. Gujarati, D.N. and Porter, D.C., Basic Econometrics, McGraw-Hill, 2009. Davidson, R. and MacKinnon, J.G., Econometric Theory and Methods, Oxford University Press, 2004		

8.2 Seminar/laboratory	Teaching methods	Observations
Random variable, vector of random variables	Problems+ Discussion	1 seminar
Conditional expectations: partial effect, elasticities	Problems+ Discussion	1 seminar
Introduction to econometric software: Stata, Eviews	Lecture+Discussion	1 seminar
Introduction to econometric software: R	Lecture+Discussion	1 seminar
Estimation of the linear model: OLS. Examples	Debate+Problems in software	1 seminar
Estimation of the linear model: two-stage least squares estimator. Examples	Debate+Problems in software	1 seminar
Testing linear restrictions on coefficients: Wald statistic, LM tests, LR test. Examples	Debate+Problems in software	1 seminar
Specification tests: testul Ramsey's Reset test, Hausman test for endogeneity. Examples	Debate+Problems in software	1 seminar
Tests for heteroskedasticity. Examples	Debate+Problems in software	1 seminar
Discrete/ Counts response models. Examples	Debate+Problems in software	1 seminar
Generalized linear models: specification, estimation, diagnostic tests. Examples	Debate+Problems in software	1 seminar
Survival analysis: duration variable, hazard function, Cox-proportional hazard model. Examples	Debate+Problems in software	1 seminar
Estimation and statistical tests for panel data: pooled OLS. Examples	Debate+Problems in software	1 seminar
Random/ Fixed effects model, Hausman test. Examples.	Debate+Problems in software	1 seminar
References: Wooldridge, J.M., Econometric Analysis of Cross Section and Panel Data, MIT Press, 2010. Kleiber, C. and Zeileis, A. Applied Econometrics with R, Springer, 2008. Baum, C.F., An Introduction to Modern Econometrics Using Stata, Stata Press, 2006.		

9. Corroboration / validation of the subject's content in relation to the expectations coming from representatives of the epistemic community, of the professional associations and of the representative employers in the program's field.

- The course covers typical topics taught in econometrics at similar study programs from the country and abroad;
- It is adapted to current knowledge in the field;
- The subjects taught are useful for professionals and researchers applying quantitative methods in microeconomics, macroeconomics or finance.

10. Assessment (examination)

Type of activity	10.1 Assessment criteria	10.2 Assessment methods	10.3 Weight in the final grade
10.4 Course	Acquiring the basic concepts and being able to apply them properly, in solving theoretical and empirical problems.	Written exam	30%
10.5 Seminar/laboratory	The student applies econometric techniques for modeling dependencies from economy, and testing of theories from microeconomics and macroeconomics using real data.	Written exam+Projects	35% Written exam 35% Projects
	The ability to correctly interpret the results of empirical studies, and use the results in the decision process.		
	The use of econometric software		
10.6 Minimum performance standard			

- It is necessary to obtain a minimum grade of 5 (five) in order to pass this subject;
- The grades being granted are between 1 (one) and 10 (ten);
- The exam is written and takes approximately 120 minutes;
- The exam focuses on the proper application of concepts and methods.