

Applied Econometrics

Course Outline

Academic Semester: 2025/26

1. General

School	School of Finance and Statistics		
Academic Unit	Department of Banking and Financial Management		
Level of Studies	Undergraduate		
Course Code	XPEΦ001		
Semester	5th or 7th		
Course Title	Applied Econometrics		
Independent Teaching Activities	Weekly Teaching Hours	Credits	
Lectures	4	7,5	
Course Type	Special background		
Prerequisite Courses			
Language of Instruction and Examinations	Greek		
Is the course offered to Erasmus Students?	Yes		
Url (Eclass)	https://eclass.unipi.gr/modules/auth/courses.php?fc=64		

2. Learning Outcomes

Learning Outcomes

- Students will learn how to properly specify an econometric model and estimate its parameters in order to generate accurate forecasts, which in turn, will improve decision making and will ensure efficient economic policy making.
- We demonstrate how econometric data analysis can be used in conjunction with economic theory in order to enhance the explanatory power of various economic models.
- Students will become familiar, through many examples and empirical applications, with the use of econometric analysis to validate economic theories and hypotheses, as well as to modify economic theoretical models so they become consistent with economic data.
- The students will learn how to use the programming language R.
- The emphasis is given to the implementation of misspecification tests, which will ensure that the model parameters are accurately estimated and the statistical inference is reliable.
- The lectures focus on the parameter estimation of a linear regression model under the presence of endogeneity.
- We also show how to specify and estimate linear panel data models.

General Competences

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

3. Syllabus

- The linear regression model: introduction to multivariate regression analysis. In particular, we demonstrate the form of a multivariate linear regression model, how we interpret the estimated parameter coefficients of the model, its underlying basic assumptions, alongside with the estimation of the model parameters via the least-squares method.
- Collection and analysis of data for the development of an econometric model.
- Hypothesis testing within the regression analysis framework: t tests, F-tests.
- Multicollinearity: methods to identify whether colinearity exists among the explanatory variables of a model and how we deal with this problem.
- Testing for autocorrelation and how we deal with this problem.
- Testing for the presence of heteroskedasticity in the residuals of a regression model and how we deal with this problem.
- Methods for variable selection: choosing the best subset of explanatory variables to ensure that the regression model has enhanced predictive power.
- Structural stability of the model parameter coefficients: identifying whether the parameter coefficients of a regression model are stable and methods to deal with the problem of parameter instability.
- Endogeneity and instrumental variables: introduction to the notion of endogeneity and the method of two stage least squares.
- Panel Data models: identification and estimation of regression models which combine both time series and cross-sectional data. The lectures cover different areas of the panel data analysis literature (pooled regression, first-difference, fixed effects, random effects, common correlated effects).

4. Teaching and Learning Methods - Evaluation

Delivery	Face-to-face	
Use of Information and Communications Technology	Laboratory education	
Teaching Methods	Activity	Semester Workload
	Lectures	30
	Laboratory practice	135,5
	Study and analysis of bibliography	22
	Course Total	187,5
Student Performance Evaluation	The evaluation procedure will involve a written exam which will include short-answer questions, laboratory work, and problem solving.	

5. Attached Bibliography

Suggested Bibliography

Ηλίας Τζαβαλής, 2008. Οικονομετρία. Εκδόσεις ΟΠΑ.

JackJohnston, JohnDinardo. Οικονομετρικές μέθοδοι. Εκδόσεις Κλειδάριθμος.

JamesD. Hamilton. Time Series Analysis. Princeton University Press.

Related Academic Journals