



UNIVERSITY OF IOANNINA
DEPARTMENT OF ECONOMICS

Course outline “Economic applications using software packages”

Purpose

This course presents and discusses economic applications using cross-sectional and time series economic data. The main objective of the course is to provide students with a basic understanding of how empirical economic research is conducted.

Syllabus

Topics to be covered include:

- An Introduction to Econometrics and Empirical Economic Analysis
- The structure of economic data: cross-sectional data, time series data, pooled cross sections, panel or longitudinal data
- Causality in Economics

Part A. Regression Analysis with Cross-Sectional Data

- Examples of cross-sectional economic data, summary statistics, frequency distribution, scatter diagram (scatterplot)
- The simple regression model
- Multiple linear regression: estimation and inference (interpretation of coefficients, statistical significance, hypothesis testing), coefficient of determination, forecasting
- Multiple regression with binary or dummy variables
- Heteroskedasticity

Part B. Time series tools and models to economic time series data

- Definition of a time series, time series plot, Examples of economic time series
- Deterministic trend models
- Stochastic time series models: stochastic process, stationary and nonstationary stochastic processes, autocorrelation coefficient - autocorrelation function (correlogram), white noise, iid, stochastic trend, random walk, random walk with drift
- Stationary time series models: autoregressive models AR, moving average models MA, ARMA models
- Non-stationary time series models: integration, differencing, ARIMA models
- Forecasting

The course also includes an introduction to the open-source econometric software gretl - GNU Regression, Econometrics and Time Series Library and its use in the econometric analysis of economic data (<http://gretl.sourceforge.net/>).

Learning Objectives

Upon completion of this course the students will be able to:

- Use modern software packages in economic applications, econometrics, applied economics and statistics.
- Apply econometric tools and models to economic cross-sectional and time series data.

Evaluation

Written exams at the end of the semester / weekly assignments. Language of evaluation: English.

European Credit Transfer and Accumulation System (ECTS)

6 credit units

Indicative Reading

Jeffrey M. Wooldridge. Introductory Econometrics. A Modern Approach, 5th Edition, South-Western, Cengage Learning

Lee C. Adkins. Using gretl for Principles of Econometrics, 5th Edition

Enders, W. Applied Econometric Time Series, 3rd Edition, Wiley

Instructor:

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