



Department of Statistics-Forecasts-Mathematics

Subject: Advanced Econometrics

Academic Year: 2026-2027

Doctoral Studies in Economics and Business Administration

SYLLABUS

Topic 1. Estimation theory and estimators

Probability distributions

Joint and conditional distributions. Measures of associations

Point estimation. Sample properties of estimators

Interval estimation and confidence intervals

Hypothesis testing. Types of error, power of the test, p-value

Examples of hypothesis testing; applications using SPSS, R, EViews, other software.

Topic 2. Introduction to bootstrap theory

Inference and confidence intervals

Finite versus asymptotic confidence intervals

The principles of bootstrap construction of confidence intervals

Theorems of asymptotic convergence in bootstrap theory.

Topic 3. Econometric modelling

From OLS regression to alternative estimation methods

Estimation methods for non-numerical data

Topic 4. Panel data

Unfeasibility of the estimation of the most general linear model on panel data

Assumptions on the coefficients and errors which characterize the *classical* linear panel data models (“seemingly unrelated regression”, “fixed effects”, “random effects” etc.)

Estimation and inference in the *classical* linear panel data models; applications using Gauss, EViews, Stata, other software.

Topic 5. Dynamic panel data

Estimation and inference in dynamic panel linear models: estimation by “GMM” (instrumental variables)

The estimation methods of “Liviatan”, “Anderson-Hsiao”, “Arellano-Bond”.

Topic 6. Partial least squares structural equation modeling (PLS-SEM)

Introduction to partial least squares structural equation modeling (PLS-SEM)

Specifying structural models

Assessing reflective and formative latent variables in PLS-SEM

Assessing structural models in PLS-SEM

Mediation in PLS-SEM

Moderation and multigroup analysis in PLS-SEM

References:

Field, A., Jeremy Miles, J. and Field, Z., *Discovering Statistics Using R*, Sage, 2012.

<http://martinschweinberger.de/docs/materials/Field%20Miles%20Field%202012%20Discovering%20Statistics%20with%20R.pdf>

Greene, W.H., *Econometric Analysis* (any edition) – a copy of the edition 2011 can be found in the informal library of the SFM department (SPM), offices 229/230/231, FSEGA/UBB building.

Hair, J.F., Binz-Astrachan, C., Moisescu O.I., Radomir, L., Sarstedt, M., Vaithilingam, S., Ringle, C.M. (2021) Executing and interpreting applications of PLS-SEM: Updates for family business researchers. *Journal of Family Business Strategy*, 12(3), 100392.

Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2021). A primer on partial least squares structural equation modeling (PLS-SEM). 3rd Edition. Sage publications.

Hair, J. F., Sarstedt, M., Ringle, C. M., & Gudergan, S. P. (2017) Advanced issues in partial least squares structural equation modeling. Sage publications.

Newbold, P., Carlson, W.L. and Thorne, B.M., *Statistics for Business and Economics*, Pearson.
[http://www.noahc.me/Statistics%20for%20Business%20and%20Economics%208th%20ed%20-%20Newbold,%20Carson,%20Thorne%20\(Pearson,%202013\).pdf](http://www.noahc.me/Statistics%20for%20Business%20and%20Economics%208th%20ed%20-%20Newbold,%20Carson,%20Thorne%20(Pearson,%202013).pdf)

Wooldridge, J.M. (2012), *Introductory Econometrics: A Modern Approach*. South Western.
http://economics.ut.ac.ir/documents/3030266/14100645/Jeffrey_M._Wooldridge_Introductory_Econometrics_A_Modern_Approach_2012.pdf

Eviews Guide:

<http://www.eviews.com/EViews8/EViews8/EViews%208%20Users%20Guide%20II.pdf>

Especially Pooled Time Series, Working with Panel Data, Panel Estimation.

Stata Guide:

<https://www.stata.com/manuals13/u.pdf>

<http://www.stata.com/links/resources-for-learning-stata/>

Lecture notes.

Head of Department

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Lecturers

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Prof. Cristian Marius LITAN

Prof. Ovidiu Moisescu

