SYLLABUS

Subject	Science Category	Faculty	Department
Advanced Econometric Theory and Practice	Economics S 004	Faculty of Economics and Business Administration	Center for Economic Expertise

Number of ECTS credits allocated	Student's workload (total)	Contact hours	Individual work
10	270	48	222

Annotation
The aim of this course is to introduce students to modern econometric techniques that constitute an essential toolkit for an applied economist. A broad overview about various econometrics concepts and methods is presented. The abilities to define research questions properly and apply a variety of advanced econometric methods using the R programming language are developed.

The course consists of four parts:
Part I: Statistical Theory and General Econometrics
Part II: Micro-econometrics
Part III: Macro-econometrics
Part IV: Panel Models

Part I: Statistical Theory and General Econometrics (12 contact hours)

Outline:
1. Basics Concepts in Statistics and Their Properties
2. General Econometrics
    a. OLS and Gauss-Markov Theorem
    b. Causality and Regression

Part II: Micro-econometrics (12 contact hours)

Outline:
1. Treatment effect
2. Structure of Micro-economic Datasets
3. Survey Designs and Regressions

Part III: Macro-econometrics (12 contact hours)

Outline:
1. Time Series Data, Autoregressive Models, and Granger Causality
2. Stationarity of Time-Series and Forecasting
3. Dynamic Causal Effects
4. Vector Autoregression

Part IV: Panel Models (12 contact hours)

Outline:
1. Advantages of Panel Data

2. The Static Linear Model
3. Model selection criteria
4. Dynamic Panel Models

Learning outcomes: Student will be able to demonstrate the systematic approach to economic processes and describe them using econometric models, to create econometric model for modelling the economic indicators, to estimate econometric model using R and other special software and interpret the results, and to use the scientific literature and various information sources in the analysis of economic problems.

Evaluation:

Final Grade = Grade of Part I * 0.25 + Grade of Part II * 0.25 + Grade of Part III * 0.25 + Grade of Part IV * 0.25

<mark>Grade of each part</mark>

Required reading
Min, Ch. K. Applied econometrics: a practical guide. London: Routledge. 2019

Racine, J. S. Reproducible econometrics using R. New York: Oxford University Press. 2019

Sul, D. Panel data econometrics: common factor analysis for empirical researchers. London: Routledge. 2019

Stachurski, John: A Primer in Econometric Theory, The MIT Press, 2016.
Stock, J. H., & Watson, M. W. Introduction to Econometrics. Boston: Pearson/Addison Wesley. 2007

Cameron, A. C., & Trivedi, P. K. Microeconometrics: methods and applications. Cambridge university press. 2005

Fuleky, P. (Ed.). Macroeconomic forecasting in the era of big data : theory and practice. Cham: Springer International Publishing, 2020.

Tsionas, M. (Ed.). Panel data econometrics: theory. London : Elsevier, 2019.

Angrist, J., & Steffen-Pischke, J. Mastering Metrics, 2015.
Additional references and suggested readings will be specified during the course.

Consulting Professors	Degree	Key publications during the last 5 years
Swapnil Singh	Dr.	Jakučionytė, E., & Singh, S. (2023). Emergence of subprime lending in minority neighborhoods. *Real Estate Economics.* Jakučionytė, E., & Singh, S. (2022). Bowling alone, buying alone: The decline of co-borrowers in the US mortgage market. *Journal of Housing Economics*, 58, 101876.

		Stoltenberg, C. A., & Singh, S. (2020). Consumption insurance with advance information. *Quantitative Economics*, 11(2), 671-711.
Soroosh Soofi Siavash	Dr.	Moench, E., & Soofi-Siavash, S. (2022). What moves treasury yields?. *Journal of Financial Economics*, *146*(3), 1016-1043.
Alina Stundžienė	Dr.	Stundziene, A., Pilinkiene, V., Bruneckiene, J., Grybauskas, A., & Lukauskas, M. (2023). Nowcasting Economic Activity Using Electricity Market Data: The Case of Lithuania. *Economies*, 11(5), 134. Grybauskas, A., Pilinkienė, V., Lukauskas, M., Stundžienė, A., & Bruneckienė, J. (2023). Nowcasting Unemployment Using Neural Networks and Multi-Dimensional Google Trends Data. *Economies*, 11(5), 130. Stundziene, A., & Giziene, V. (2023). Determinants of Young People with Secondary Education Being Employed. *Economies*, *11*(2), 40. Stundziene, A., Pilinkiene, V., Bruneckiene, J., Grybauskas, A., Lukauskas, M., & Pekarskiene, I. (2023). Future directions in nowcasting economic activity: A systematic literature review. *Journal of Economic Surveys*. Stundziene, A., & Baliute, A. (2022). Personnel Costs and Labour Productivity: The Case of European Manufacturing Industry. *Economies*, *10*(2), 31.

Approved: