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| *Name of course* | DXE\_EMTR Econometrics |
| *Lecturer* | Prof. Dr. Peter Hackl |
| *Assistant* | Ing. Daniel Němec, Ph.D. |
| *ECTS* | 12 credits |
| *Extent and Intensity* | 24 teaching hours, 45 minutes each (6 lectures á 4 hours) |
| *Schedule* | 4. 10., 11. 10., 18. 10., 25. 10., 1. 11., 8. 11.; 10:00–16:00 |
| *Course objectives* | The course introduces students to common used econometric tools and techniques. Students shall gain sufficient knowledge and experience for his/her independent and qualified work with empirical data. The student should be able to formulate correctly, to identify economic models and to interpret the results accordingly. |
| *Prerequisites* | Participants should be familiar with the following topics:• Linear algebra – linear equations, matrices, vectors (basic operations and properties).• Descriptive statistics – measures of central tendency, measures of dispersion, measures of association, histogram, frequency tables, scatterplot, quantiles• Theory of probability – probability and its properties, random variables and distribution functions in one and several dimensions, moments, convergence of random variables, limit theorems, law of large numbers.• Mathematical statistics – point estimation, confidence intervals for parameters of normal distribution, hypothesis testing, p-value, significance level. • These topics correspond to the appendices of Verbeek’s book, in particular, to the sections: A1, A2, A3, A4, A6, A8, B1, B2, B3 (excluding Jensen's inequality), B4, B5, B6 and B7 (excluding some properties of the chi-squared distribution and the F-distribution) |
| *Syllabus* | 1. Introduction to linear regression model (Verbeek, Ch. 2)* normal linear regression model
* least squares method
* properties of OLS estimators

2. Introduction to linear regression model (Verbeek, Ch. 2)* goodness of fit
* hypotheses testing
* multicollinearity

3. Interpreting and comparing regression models (Verbeek, Ch.3)* interpretation of the fitted model
* selection of regressors
* testing the functional form

4. Heteroskedascity and autocorrelation (Verbeek, Ch. 4)* causes, consequences, testing, alternatives for inference

5. Endogeneity, instrumental variables and GMM (Verbeek, Ch. 5)* the instrumental variables estimator
* the generalized instrumental variables estimator
* the Generalized Method of Moments (principles and examples of use)

6. The practice of econometric modeling |
| *Literature* | VERBEEK, Marno. A guide to modern econometrics. 4th ed. Chichester: John Wiley & Sons, 2012. xv, 497. ISBN 9781119951674.KENNEDY, Peter. A guide to econometrics. 6th ed. Malden: Blackwell, 2008. xii, 585. ISBN 9781405182584. |
| *Teaching methods* | Class discussion, homework including computer exercises using Gretl, and presentation of homework by participants; course language is English. |
| *Assessment methods* | For grading, written homework, presentation of homework in class and a final written exam will be of relevance. The weights are as follows: homework with 40%, final exam (consisting of theoretical and practical part) with 60%. The presentation of homework in class means that students must be prepared to be called at random. Minimal requirements to pass final exam are as follows: 60%. |