

**Course Syllabus**  
**Lecturer: Ass.Prof. Andriy Stavytskyy**

Course unit title	Econometric Analysis
ECTS credits	6
Auditorial hours	28
Prerequisites	Calculus; Linear algebra; Statistics; Econometrics; Applied Econometrics
Language of instruction	English
Objective of the course	To further develop the understanding of econometrics as a tool in economic analysis.
Description	This course is a further investigation into econometric methods and techniques. It is particularly useful for students intending to undertake empirical analysis in their master thesis or research projects, for those who consider entering into employment involving numerical analysis.
Learning outcomes	<ol style="list-style-type: none"> <li>1. Students will know the modern models for analysing financial, macroeconomic, microeconomic data</li> <li>2. Students will be able to apply models for real data, providing their economic analysis</li> <li>3. Students will be able to choose models that suit best of all the real economic data</li> </ol>
Course unit content	<ol style="list-style-type: none"> <li>1. <u>Introduction to Econometric Analysis</u> <ol style="list-style-type: none"> <li>1.1. Econometric review</li> <li>1.2. Examples of non-linear models</li> <li>1.3. Estimation of Non-Linear Regression</li> </ol> </li> <li>2. <u>Distributed Lag Models</u> <ol style="list-style-type: none"> <li>2.1. Lagged variables</li> <li>2.2. ARDL Models</li> <li>2.3. Estimation with Exogenous Regressors</li> <li>2.4. Forms of lags</li> <li>2.5. Koyck transformation</li> <li>2.6. Estimation of Distributed Lag Models</li> </ol> </li> <li>3. <u>GARCH-models</u> <ol style="list-style-type: none"> <li>3.1. Non-linear models</li> <li>3.2. Autoregressive Conditionally Heteroscedastic Models</li> <li>3.3. Different modifications of GARCH-models</li> <li>3.4. Application of GARCH Models in stock markets</li> <li>3.5. Application of GARCH Models for investment decisions</li> <li>3.6. Application of GARCH Model to forecast the Gold Futures Prices</li> </ol> </li> <li>4. <u>Binary-Valued Dependent Variables</u> <ol style="list-style-type: none"> <li>4.1. Binary-Valued Dependent Variables</li> <li>4.2. Probit/Logit Models</li> </ol> </li> </ol>

	<p>4.3. Estimating a Probit/Logit Model</p> <p>4.4. Deriving Probit/Logit</p> <p>5. <u>Panel Data Analysis</u></p> <p>5.1. Panel Data</p> <p>5.2. Panel Data DGP's</p> <p>5.3. Fixed Effects</p> <p>5.4. Random Effects</p> <p>5.5. The Hausman Test</p> <p>6. <u>Quantile Regression</u></p> <p>6.1. Motivation of Quantile Regression</p> <p>6.2. Quantile regression Estimation</p> <p>6.3. Properties of the Estimator</p> <p>6.4. Example of Quantile regression</p>
Reading list	<ol style="list-style-type: none"> <li>1. Andersen, Borgan, Gill and Keiding (1993). Statistical Models Based on Counting Processes. Springer-Verlag, New York.</li> <li>2. Baltagi B. H. (2008), Econometric Analysis of Panel Data, 4th ed., John Wiley, New York.</li> <li>3. Bollerslev, T.P. (1986), Generalized Autoregressive Conditional Heteroscedasticity, Journal of Econometrics.</li> <li>4. Buchinsky M. (1998), "Recent Advances in Quantile Regression Models", Journal of Human Resources, Vo. 33, Pps. 88-126.</li> <li>5. Cox D.R. and D. Oakes (1984). Analysis of Survival Data. Chapman and Hall.</li> <li>6. Enders, W. (2003). Applied Econometric Time Series, second edition. Wiley</li> <li>7. Engle, R. F. (2001), GARCH 101: The Use of ARCH/GARCH Models in Applied Econometrics, Journal of Economic Perspectives.</li> <li>8. Engle, R.F. (1982), Autoregressive Conditional Heteroskedasticity with Estimates of the Variance of U.K, Econometrica.</li> <li>9. Greene W. H. (2011), Econometric Analysis, 7th ed., Prentice Hall.</li> <li>10. Hamilton, J. (1994). Time Series Analysis, Princeton University Press</li> <li>11. Hayashi, F. (2001). Econometrics, Princeton University Press</li> <li>12. Hsiao, C. (2003) Analysis of Panel Data, 2nd ed., Cambridge University Press.</li> <li>13. Klein, J. P. and Moeschberger, M. L. (1997), Survival Analysis: Techniques for Censored and Truncated Data,</li> </ol>

	<p>New York: Springer-Verlag.</p> <p>14. Kleinbaum D.G. (1996). Survival Analysis: A Self-Learning Text. Springer, New York.</p> <p>15. Koenker R. (2005) “Introduction to Quantile Regression”, Econometric Society Monograph Series, Cambridge University Press.</p> <p>16. Lee E.T. (1980). Statistical Methods for Survival Data Analysis. Lifetime Learning Publications, Belmont, California.</p> <p>17. Miller R.G. (1981). Survival Analysis. Wiley, New York.</p> <p>18. Murray M. P. (2005) Econometrics: A Modern Introduction. Prentice Hall.</p> <p>19. Stock James H., Mark W. Watson (2010) Introduction to Econometrics (3rd Edition)</p> <p>20. Tsay, R. (2002). Analysis of Financial Time Series, Wiley</p> <p>21. Wooldridge J. M. (2002), Econometric Analysis of Cross Section and Panel Data, The MIT Press.</p>
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### Teaching Methods

Activity	Number	Hours
Lectures (2 hours each)	7	14
Seminars (2 hours each)	7	14
Individual project	1	Self-fulfilling at home
Exam (theoretical part)	1	1
Exam (practical part)	1	1

Lectures provide the overall structure of the course and the main medium for transferring of the central ideas. Seminars provide computer tasks, related to lecture topics. Individual project develops analytical and research skills of students.

### Assessment Methods

Description	Per cent of assessment
Seminar's activity, including fulfilling special self-tasks	20%
Individual project	40%
Written exam (theoretical part)	20%
Written exam (practical part)	20%