ECONOMETRICS

Course code	*ECO105*
Course title	*Econometrics*
Type of course	*Compulsory*
Study level	*1st*
Department	*Bachelor studies*
Year of study	*2nd*
ECTS	*6: 24 hours of lectures, 24 hours of seminars, 112 hours of self-study, 2 hours of consultations*
Coordinating lecturer	*Dr. Anh Dinh Minh Nguyen; Gabrielė Šalnaitė*
Study form	*Full-time*
Course prerequisites	*Statistical Data Analysis*
Language of instruction	*English*

Annotation

This is an introductory course to econometrics with emphasis on its applications. During the lectures and practical exercises the main focus will be on helping students to learn modern methods of empirical analysis and their practical application using an appropriate software (mainly GRETL) to the real world data sets. The main topics cover regression analysis including an introduction to panel data regression (fixed effects model), binary response models (linear probability, logit, and probit models), introduction to time series, and simultaneous equations. Students are taught how to build a suitable econometric model, understand the strengths and limitations of empirical methods, correctly interpret results and draw valid conclusions.

Aim of the Course

Aim of the course is to introduce main empirical methods of economic data analysis and their theoretical foundations.

Subject learning outcomes (SLO)	Study methods	Assessment methods
SLO1. Understand and apply fundamental econometric methods, basic concepts of data analysis: descriptive statistics, hypothesis testing, confidence intervals;	Lectures, laboratory work assignments, independent work	Midterm test, laboratory assignment, final exam
SLO2. Analyze and evaluate linear regression model: main assumptions, features and applications, develop abilities to choose suitable analytical tools;	Lectures, laboratory work assignments, independent work	Midterm test, laboratory assignment, final exam
SLO3. Understand the concept of non-linear analysis: main assumptions and features and be able to use suitable software, interpret regression results, build econometric models;	Lectures, laboratory work assignments, independent work	Midterm test, laboratory assignment, final exam
SLO4. Understand and apply linear probability model, logit model, probit model and its applications, be able to interpret regression results, build econometric models;	Lectures, laboratory work assignments, independent work	Laboratory assignment, final exam
SLO5. Understand and apply time series regression: main models, basic assumptions of modeling and their violations, be able to interpret regression results, build econometric models;	Lectures, laboratory work assignments, independent work	Laboratory assignment, final exam
SLO6. Understand the concept of panel data analysis, be able to interpret regression results, build econometric models;	Lectures, laboratory work assignments, independent work	Laboratory assignment, final exam
SLO7. Understand and apply simultaneous equations: main assumptions, features, use data analysis results to make and to found sound economic or managerial decisions.	Lectures, laboratory work assignments, independent work	Laboratory assignment, final exam

Quality issues

The lecturer assures a variety of teaching methods (including e-learning) and knowledge assessment. More difficult concepts are better explained using interactive graphs and modeling exercises. Analytical feedback during study process is encouraged. A regular discussion of student reports and problem solutions is the necessary condition to assure effective feedback.

Cheating prevention

Variety of individual assignments, data sets and possible solutions requires individual efforts and makes it easier to detect cheating. This should deter cheating from happening in the first place. All occurrences of cheating will be dealt with according to the ISM regulation on academic ethics (see *ISM Bakalauro studijų reglamentas*).

Topics

Week	TOPIC	IN CLASS-HOURS		READINGS
		Lectures	Workshops	
1	Review of statistical principles and an overview of regression analysis	2	2 [tutorial]	Studenmund, Ch1, Ch2
2	Ordinary Least Squares	2	2 [tutorial]	Studenmund, Ch1, Ch2
3	The classical model	2	2 [assignment]	Studenmund, Ch4 *(Ch9-10)*
4	Hypothesis testing	2	2 [tutorial]	Studenmund, Ch5
5	Model specification..	2	2 [tutorial]	Studenmund, Ch6
6	Classical Assumptions: Violations and Treatments	2	2 [assignment]	Studenmund, Ch7
	MIDTERM TEST	2	2 [tutorial]	
7	Dummy dependent variables	2	2 [tutorial]	Studenmund, Ch12
8	Time series regression 1	2	2 [assignment]	Studenmund, Ch11
9	Time series regression 2	2	2 [tutorial]	Studenmund, Ch11, 14
10	Simultaneous Equations	2	2 [assignment]	Studenmund, Ch13
11	Regression with panel data. Fixed effects, random effects.	2	2 [tutorial]	Stock&Watson, Ch10
	FINAL EXAM			
	Total hours	24	24	

Individual work and assessment

TYPE	TOPICS	TOTAL HOURS	EVALUATION, %
Midterm test	1-6	28	30
Laboratory assignment 1	1-6	28	20
Laboratory assignment 2	7-12	28	20
Final Exam	7-12	28	30
Consultations	1-12	2	
Total:		**114**	**100**

Course requirements

1. **Midterm test.** It will be held in week 7 of the term, during the lecture. It counts towards 30% of the final grade. The midterm test will be based on topics 1-6. Calculators may be used, provided they cannot store text.
2. **Laboratory assignments.** Laboratory assignments have to be performed according to the announced schedule. The content of each assignment will be similar to computer exercises performed during tutorial a week earlier. Each student has to prepare his (her) report of performed analysis and answer the questions according to the framework provided by the instructor.
   Laboratory assignments make 40% of the final grade. There will be 2 assignments, each worth 20%.
3. **Final exam.** The exam counts towards 30% of the final grade. It is a closed-book test which includes multiple choice questions and open questions. It tests conceptual, analytical, and numerical skills. The exam will be based on topics 7-12. Calculators may be used, provided they cannot store text. The final written examination takes place during the session of examinations. It consists of theoretical questions and practical problems. The examination is conducted strictly according to the Regulation of Bachelor Studies (see *Bakalauro studijų reglamentas*).

The final grade is cumulative and is based only on satisfactory scores (5 and higher in the scale of 10) of mid-term test, laboratory assignments and the final examination. In case of a negative final grade, students are allowed a re-sit exam. It covers all theoretical part of the subject (60%). The grades for laboratory assignments (if positive) are also counted into final grade.

Literature:

Required textbook

1. Studenmund, A. H., *Using Econometrics: a Practical Guide*, 5th ed., Addison Wesley, Longman 2006.

Optional readings

2. Stock, James H. and Mark W. Watson, *Introduction to Econometrics*, 2nd ed., Addison Wesley, Pearson, 2007.
3. Wooldridge Jeffrey, M., *Introductory Econometrics: A modern Approach*, 2nd ed., Thompson/ South-Western, 2006.

Internet sources

4. A list of internet resources can be found at http://www.oswego.edu/~kane/econometrics/
5. Econometrics software that will be used in this course can be found at http://gretl.sourceforge.net/