ECONOMETRICS

Course code	*ECO105*
Course title	*Econometrics*
Type of course	*Compulsory*
Study level	*1st*
Department	*Bachelor studies*
Year of study	*3rd*
ECTS	*6: 24 hours of lectures, 24 hours of seminars, 112 hours of self-study, 2 hours of consultations*
Coordinating lecturer	*Dr. Julija Legeckė, Aleksandr Christenko*
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. Students learn how to conduct empirical studies, as well as how to analyze and interpret results from other empirical works. The emphasis is on gaining an intuitive understanding of the principles of econometric analysis and applying them to actual data. The main topics cover regression analysis including Ordinary Least Square, an introduction to panel data regression, dummy dependent variable model, introduction to time series, and simultaneous equations.

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 basic concepts of data analysis into econometrics: descriptive statistics, sampling, estimation and hypothesis testing.	Lectures, laboratory work assignments, independent work	Midterm test, laboratory assignment, final exam
SLO2.Analyze and evaluate linear regression models: build econometric models, and understand main assumptions of the model.	Lectures, laboratory work assignments, independent work	Midterm test, laboratory assignment, final exam
SLO3.Use linear regression models for economic analysis: use suitable software, interpret regression results, conduct hypothesis testing, and evaluate the model.	Lectures, laboratory work assignments, independent work	Midterm test, laboratory assignment, final exam
SLO4.Understand and apply probit/logit model for economic analysis.	Lectures, laboratory work assignments, independent work	Laboratory assignment, final exam
SLO5.Understand and apply time series regression for economic analysis.	Lectures, laboratory work assignments, independent work	Laboratory assignment, final exam
SLO6.Understand and apply panel data for economic analysis.	Lectures, laboratory work assignments, independent work	Laboratory assignment, final exam
SLO7.Understand and apply simultaneous equations for economic analysis.	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	Studenmund, Ch1, 15 Wooldridge, Appendix C
2	Ordinary Least Squares	2	2	Studenmund, Ch2
3	The classical assumptions	2	2	Studenmund, Ch4
4	Hypothesis testing	2	2	Studenmund, Ch5
5	Model specification and Ramsey's RESET test	2	2	Studenmund, Ch6, 7
6	Classical assumptions: violations and treatments	2	2	Studenmund, Ch8, 9
	MIDTERM TEST	2	2	
7	Dummy dependent variables – logit and probit regression	2	2	Studenmund, Ch12
8	Introduction to time series regressions	2	2	Studenmund, Ch11
9	Time series regression continued: stationarity and the Granger-causality test	2	2	Studenmund, Ch11, 14
10	Simultaneous Equations	2	2	Studenmund, Ch13
11	Regression with panel data – fixed and random effects models	2	2	Wooldridge, Ch13, 14
	FINAL EXAM			
Total hours		**24**	**24**	

Individual work and assessment

TYPE	TOPICS	TOTAL HOURS	EVALUATION, %
Midterm test	1-6	30	30
Laboratory assignment 1	1-6	26	20
Laboratory assignment 2	7-12	26	20
Final Exam	7-12	30	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*, 6th ed., Addison Wesley, Longman 2014

Optional readings

2. Wooldridge Jeffrey, M., Introductory Econometrics: A Modern Approach, 4th ed., Thompson/ South-Western, 2009.
3. Stock, James H. and Mark W. Watson, *Introduction to Econometrics*, Addison Wesley, Pearson, 2014.

Internet sources

4. Econometrics software that will be used in this course can be found at http://gretl.sourceforge.net/