

## ECONOMETRICS

<b>Course code</b>	<i>ECO105</i>
<b>Compulsory in the programmes</b>	<i>Economics and Analytics, Economics and Politics</i>
<b>Level of studies</b>	<i>Undergraduate</i>
<b>Number of credits</b>	<i>6 ECTS (48 in-class hours + 6 consultation hours + 2 exam hours, 104 individual work hours)</i>
<b>Course coordinator (title and name)</b>	<i>Julija Kosareva, Aleksandr Christenko</i>
<b>Prerequisites</b>	<i>Statistical Data Analysis</i>
<b>Language of instruction</b>	<i>English</i>

### THE AIM OF THE COURSE:

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

### MAPPING OF COURSE LEVEL LEARNING OUTCOMES (OBJECTIVES) WITH DEGREE LEVEL LEARNING OBJECTIVES (See Annex), ASSESMENT AND TEACHING METHODS

<b>Course level learning outcomes (objectives)</b>	<b>Learning objectives for BSc in Business Management</b>	<b>Learning objectives for BSc in Social Science</b>	<b>Assessment methods</b>	<b>Teaching methods</b>
CLO1. Understand and apply basic concepts of data analysis into econometrics: descriptive statistics, sampling, estimation and hypothesis testing.	BLO1.2. BLO3.2.	ELO1.2. ELO3.2.	Midterm test, laboratory assignment, final exam	Lectures, laboratory work assignments, independent work
CLO2. Analyze and evaluate linear regression models: build econometric models and understand main assumptions of the model.	BLO1.2. BLO3.2.	ELO1.2. ELO3.2.	Midterm test, laboratory assignment, final exam	Lectures, laboratory work assignments, independent work
CLO3. Use linear regression models for economic analysis: use suitable software, interpret regression results, conduct hypothesis testing, and evaluate the model.	BLO1.2. BLO3.2.	ELO1.2. ELO3.2.	Midterm test, laboratory assignment, final exam	Lectures, laboratory work assignments, independent work
CLO4. Understand and apply probit / logit model for economic analysis.	BLO1.2. BLO3.2.	ELO1.2. ELO3.2.	Laboratory assignment, final exam	Lectures, laboratory work assignments, independent work
CLO5. Understand and apply time series regression for economic analysis.	BLO1.2. BLO3.2.	ELO1.2. ELO3.2.	Laboratory assignment, final exam	Lectures, laboratory work assignments,

				independent work
CLO6. Understand and apply panel data for economic analysis.	BLO1.2. BLO3.2.	ELO1.2. ELO3.2.	Laboratory assignment, final exam	Lectures, laboratory work assignments, independent work
CLO7. Understand and apply simultaneous equations for economic analysis.	BLO1.2. BLO3.2.	ELO1.2. ELO3.2.	Laboratory assignment, final exam	Lectures, laboratory work assignments, independent work

### ACADEMIC HONESTY AND INTEGRITY

The ISM University of Management and Economics Code of Ethics, including cheating and plagiarism are fully applicable and will be strictly enforced in the course. Academic dishonesty, and cheating can and will lead to a report to the ISM Committee of Ethics. With regard to remote learning, ISM remind students that they are expected to adhere and maintain the same academic honesty and integrity that they would in a classroom setting.

### COURSE OUTLINE

Topic	In-class hours	Readings
1. Review of statistical principles and an overview of regression analysis	4	Studenmund, Ch1, 15 Wooldridge, Appendix C
2. Ordinary Least Squares	4	Studenmund, Ch2
3. The classical assumptions	4	Studenmund, Ch4
4. Hypothesis testing	4	Studenmund, Ch5
5. Model specification and Ramsey's RESET test	4	Studenmund, Ch6,7
6. Classical assumptions: violations and treatments	4	Studenmund, Ch8,9
<b>MIDTERM TEST</b>	4	
7. Dummy dependent variables – logit and probit regression	4	Studenmund, Ch12
8. Introduction to time series regressions	4	Studenmund, Ch11
9. Time series regression continued: stationarity and the Granger-causality test	4	Studenmund, Ch11,14
10. Simultaneous Equations	4	Studenmund, Ch13
11. Regression with panel data – fixed and random effects models	4	Wooldridge, Ch13, 14
	<b>Total: 48 hours</b>	
CONSULTATIONS	6	
FINAL EXAM	2	

## FINAL GRADE COMPOSITION

Type of assignment	%
<i>Group Components 60%</i>	
Midterm test	30
Final Exam	30
<i>Individual Components 40%</i>	
Laboratory assignment 1	20
Laboratory assignment 2	20
<b>Total:</b>	<b>100</b>

## DESCRIPTION AND GRADING CRITERIA OF EACH ASSIGNMENT

**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.

**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 *Bakalauru studijų reglamentas*).

**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%.

**Final grade.** 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.

## RETAKE POLICY

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.

## ADDITIONAL REMARKS

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

## REQUIRED READINGS

Studenmund, A. H., *Using Econometrics: a Practical Guide*, 6th ed., Addison Wesley, Longman 2014

## ADDITIONAL READINGS

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

## DEGREE LEVEL LEARNING OBJECTIVES

### Learning objectives for the Bachelor of Business Management

Programmes:

*International Business and Communication,  
Business Management and Marketing, Finance,  
Industrial Technology Management*

Learning Goals	Learning Objectives
Students will be critical thinkers	BLO1.1. Students will be able to understand core concepts and methods in the business disciplines
	BLO1.2. Students will be able to conduct a contextual analysis to identify a problem associated with their discipline, to generate managerial options and propose viable solutions
Students will be socially responsible in their related discipline	BLO2.1. Students will be knowledgeable about ethics and social responsibility
Students will be technology agile	BLO3.1. Students will demonstrate proficiency in common business software packages
	BLO3.2. Students will be able to make decisions using appropriate IT tools
Students will be effective communicators	BLO4.1. Students will be able to communicate reasonably in different settings according to target audience tasks and situations
	BLO4.2. Students will be able to convey their ideas effectively through an oral presentation
	BLO4.3. Students will be able to convey their ideas effectively in a written paper

### Learning objectives for the Bachelor of Social Science

Programmes:

*Economics and Data Analytics,  
Economics and Politics*

Learning Goals	Learning Objectives
Students will be critical thinkers	ELO1.1. Students will be able to understand core concepts and methods in the key economics disciplines
	ELO1.2. Students will be able to identify underlying assumptions and logical consistency of causal statements
Students will have skills to employ economic thought for the common good	ELO2.1. Students will have a keen sense of ethical criteria for practical problem-solving
Students will be technology agile	ELO3.1. Students will demonstrate proficiency in common business software packages
	ELO3.2. Students will be able to make decisions using appropriate IT tools
Students will be effective communicators	ELO4.1. Students will be able to communicate reasonably in different settings according to target audience tasks and situations
	ELO4.2. Students will be able to convey their ideas effectively through an oral presentation
	ELO4.3. Students will be able to convey their ideas effectively in a written paper