



COURSE UNIT (MODULE) DESCRIPTION

Course unit (module) title	Code
Panel data econometrics	

Lecturer(s)	Department(s) where the course unit (module) is delivered
Coordinator: Assoc.Prof. Dr. Gediminas Murauskas Other(s): Vaidotas Zemlys	Faculty of Mathematics and Informatics, Department of Statistical Analysis

Study cycle	Type of the course unit (module)
Second	Selective

Mode of delivery	Period when the course unit (module) is delivered	Language(s) of instruction
Face-to-face	First (autum) semester	English

Requirements for students	
Prerequisites: basic econometrics and/or statistics (min 12 ECTS credits)	Additional requirements (if any): basic skills in statistical computing is required.

Course (module) volume in credits	Total student's workload	Contact hours	Self-study hours
5	125	42	83

Purpose of the course unit (module): programme competences to be developed
The course presents an overview of the essentials of econometric methods used in panel data analysis and develops the students' skills necessary for applied analysis of panel data.

Learning outcomes of the course unit (module)	Teaching and learning methods	Assessment methods
Knowledge and understanding of basic notions of panel data regression and its applications.	Traditional <i>lectures</i> to explain the models of panel data regressions <i>Recitation classes</i> to solve problems that help understand the concepts and methods presented. <i>Individual and group work:</i> Solving	Labs, midterm exam, written exam

	complementary problems and studying the literature.	
Knowledge and understanding of estimation methods of panel data regression models.		Labs, midterm exam, written exam
To decide whether the given problem can be solved using panel data models. To specify, estimate and interpret results of the appropriate panel data regression model for a given econometric problem.		Labs, midterm exam, written exam

Content: breakdown of the topics	Contact hours							Self-study work: time and assignments	
	Lectures	Tutorials	Seminars	Exercises	Laboratory work	Internship/work placement	Contact hours	Self-study hours	Assignments
1. Panel data, the definition, advantages and disadvantages of using panel data.	2				4		6	13	Read chapter 1 [1]. Read chapter 1 [2]. Self-study of additional literature. Work with R program (RStudio environment).
2. The estimation of systems of equations.	4				4		8	14	Read chapter 7 [1]. Work with R program (RStudio environment). Preparing for 1 laboratory work.
3. Random and fixed effects panel data regressions.	4				4		8	14	Read chapter 10 [1]. Read chapter 2 [2]. Work with R program (RStudio environment). Preparing for 2 laboratory work.
4. Application of General method of moments to panel data regression estimation	4				4		8	14	Read chapter 8 [1]. Work with R program (RStudio environment). Preparing for 3 laboratory work.
5. Dynamic panel data regression	4				4		8	14	Read chapter 8 [2]. Work with R program (RStudio environment). Preparing for 4 laboratory work.

6. General approaches to nonlinear estimation.	2				2		4	14	Read chapter 12 [1].
Total	20				22		42	83	

Assessment strategy	Weight, %	Deadline	Assessment criteria
Labs	20%	During semester	Laboratory work. The maximum number of points is awarded for timely and perfectly presented laboratory work. Laboratory work consists of 2 parts: the student's written program and a description of results. Assessment: 5 points are awarded for the correctly functioning, meeting all requirements, program (the student can explain and modify it), 0 - inoperative, malfunctioning program. A detailed and reasoned description of the results is also evaluated by 5 points, 0 – when there is no description of the results or they are incorrect. Points are summed up.
<i>Midterm exam</i>	30%	During semester	The midterm exam tests the knowledge of students from first 3 themes. Exam includes 5-7 problems of different complexity. The maximum sum of points from the exam is 30. The passing grade is 10 points. The points are scaled to the 10 points scale for final grade, where 20 midterm exam points = 10 midterm exam grade points. The final grade is rounded.
<i>Article Analysis</i>	10%	During semester	Students will be asked to read articles (panel data methods). The focus of these article analyses will focus on identifying and critiquing research methodology. Grade (in 10 points scale) is based on evidence of having read and analysed the article as well as presentation.
<i>Written exam</i>	40%	January	The exam tests the knowledge of students from themes 4-6. Exam includes 5-7 problems of different complexity. The maximum sum of points from the exam is 30. The passing grade is 10 points. The points are scaled to the 10 points scale for final grade, where 20 exam points = 10 exam grade points. The final grade is rounded.

Author	Year of publication	Title	Issue of a periodical or volume of a publication	Publishing place and house or web link
Compulsory reading				
1. Wooldridge, J.M	2010	Econometric Analysis of Cross Section and Panel data (Second ed.)		The MIT Press, Cambridge, Massachusetts
2. Baltagi B. H.	2008	Econometric Analysis of Panel Data (Fourth ed.)		John Wiley & Sons, Ltd, Chichester
Optional reading				
Hsiao, Cheng	2003	<i>Analysis of Panel Data</i> (Second ed.).		New York: Cambridge University Press.