COURSE UNIT (MODULE) DESCRIPTION

Course unit (module) title	Code
ECONOMETRICS	

Academic staff	Core academic unit(s)
Coordinating: Practitioner Lecturer Greta Makūnaitė	Kaunas Faculty Institute of Languages, Literature and Translation Studies ☐ Institute of Social Sciences and Applied Informatics ☒

Study cycle	Type of the course unit
First ☒ Second ☐	Compulsory Course ☒ Optional Couse ☐ Course Unit (Module) of the General University Studies ☐ Course Unit (Module) of Individual Studies ☒ Interdisciplinary Studies Course Unit (Module) ☐

Mode of delivery	Semester or period when it is delivered	Language of instruction
Face to face	4th semester	English

Requisites	
Prerequisites:	**Co-requisites (if relevant):**

Number of ECTS credits allocated	Student's workload (total)	Contact hours	Individual work
5	130	48	82

Purpose of the course unit		
To introduce students to the main econometric methods and models and to develop their ability to apply them in the analysis of economic data, assessment of relationships between economic variables, and substantiation of economic decisions using information technologies.		
Learning outcomes of the course unit	**Teaching and learning methods**	**Assessment methods**
Students acquire basic knowledge of classical econometric methods and models, is able to identify types of econometric calculations and select appropriate models for solving problems in microeconomics and management.	Active learning methods, problem-based teaching, and the use of information technologies (MS Excel and its add-ins).	Examination (a test comprising open-ended and closed-ended questions); assessment of practical assignments.
The student is able to collect, systematise and analyse information from various sources using information technologies in order to substantiate the assessment of economic phenomena and apply appropriate analytical methods.		

The student is able to apply econometric methods and models in practice and use information technologies and tools to solve econometric problems, applying basic and specialised MS Excel functions and add-ins.		

Content	Contact hours							Individual work: time and assignments	
	Lectures	Tutorials	Seminars	Workshops	Laboratory work	Internship	**Contact hours, total**	**Individual work**	**Tasks for individual work**
1. Introduction to Econometrics The relationship between econometrics, statistics and numerical modelling is discussed. The main types of econometric models and data and their application in economic decision-making and forecasting are examined. Deterministic and stochastic models and the application of marginal analysis to economic problems are introduced.	2			2			**4**	**8**	Study of academic literature and information search. Core reading: 1, 2, 3, 5, 6.
2. Linear Programming Problems Linear programming problems, model optimisation principles, objective functions and constraints are examined. Optimal solutions and model sensitivity analysis in economic decision-making are analysed.	2			4			**6**	**8**	Study of academic literature and information search. Core reading: 1, 2, 3.
3. Regression Analysis Methods of single-variable and multiple-variable regression analysis, linear and nonlinear regression models, and their application to solving economic problems are examined. The principles of econometric model construction, modelling fundamentals and the application of numerical methods are discussed.	4			8			**10**	**10**	Study of academic literature and information search. Core reading: 2, 3, 4, 5, 6. Presentation of practical assignments.
4. Simultaneous Equation Systems and Optimisation Problems Simultaneous equation systems, endogenous and exogenous variables, and the fundamentals of multi-criteria analysis are examined. Particular attention is paid to optimisation problems and their practical application in solving economic problems using digital tools.	2			4			**6**	**8**	Study of academic literature and information search. Core reading: 3.
5. Econometric Data Analysis Types of econometric data and methods of data collection, preparation and processing are examined. The concepts of experimental and panel data and the handling of incomplete data are discussed. Heteroscedasticity and multicollinearity problems and the main	2			4			**6**	**8**	Study of academic literature and information search. Core reading: 2, 3, 5, 6.

methods for identifying and addressing them are also analysed.									
6. Microeconometric and Macroeconometric Models Microeconometric and macroeconometric models, decision-making problems and the decision tree method are examined. The principles of econometric evaluation and computerised management of economic-situation modelling scenarios are also discussed.	2			4			**6**	**8**	Study of academic literature and information search. Core reading: 2, 3, 5, 6.
7. Financial Econometrics Methods of financial econometrics and their application to risk assessment, financial market modelling and forecasting, and financial asset valuation are examined. An overview of computer software and its functions used in econometrics is also provided.	2			4			**6**	**8**	Study of academic literature and information search. Core reading: 3, 4, 6.
8. Overview of Econometric Calculation Methods The main econometric calculation methods, their potential applications and their practical use in solving economic problems are summarised.				2			**2**	**4**	Study of literature to master theoretical methods. Presentation of practical assignments.
Independent review of course material and preparation for the exam.							**2**	**20**	Independent study, literature review. Exam preparation and taking the exam.
Total	**16**			**32**			**48**	**82**	
Note: Up to 4 contact hours may be replaced by guest lectures given by social partners or educational visits to social partner organisations.									

Assessment strategy	Weight %	Deadline	Assessment criteria
Practical assignments (1)	25	During the semester	Individual / group work (practical assignments and tasks). Assessment criteria: 10 points – all practical assignments are completed accurately, thoroughly and independently, with the acquired knowledge and methods applied correctly. There are no errors or shortcomings. 9 points – all practical assignments are completed properly and the acquired knowledge is applied correctly, with only minor inaccuracies or shortcomings. 7–8 points – practical assignments are generally completed correctly, but contain some errors, inaccuracies or insufficiently substantiated solutions. 5–6 points – practical assignments are only partially completed or contain major shortcomings; at least half of the assignments have not been completed or have been completed inadequately. 0–4 points – practical assignments have not been completed or have been completed inadequately, without demonstrating an understanding of their essence or the ability to apply acquired knowledge in practice. The number of points scored by the student is multiplied by 25 %.

Practical assignments (2)	25	During the semester	Individual / group work (practical assignments and tasks). Assessment criteria: 10 points – all practical assignments are completed accurately, thoroughly and independently, with the acquired knowledge and methods applied correctly. There are no errors or shortcomings. 9 points – all practical assignments are completed properly and the acquired knowledge is applied correctly, with only minor inaccuracies or shortcomings. 7–8 points – practical assignments are generally completed correctly, but contain some errors, inaccuracies or insufficiently substantiated solutions. 5–6 points – practical assignments are only partially completed or contain major shortcomings; at least half of the assignments have not been completed or have been completed inadequately. 0–4 points – practical assignments have not been completed or have been completed inadequately, without demonstrating an understanding of their essence or the ability to apply acquired knowledge in practice. The number of points scored by the student is multiplied by 25 %.
Exam	50	Exam date	The examination consists of 15–20 open-ended and/or closed-ended questions and/or 2 tasks of varying levels of difficulty, covering cognitive skills from understanding to evaluation. Each question and/or task is assigned a corresponding number of points. 10 points – excellent knowledge and abilities. Evaluation level. 95–100% correct answers. 9 points – very good knowledge and abilities; minor errors may occur. Synthesis level. 85–94% correct answers. 8 points – average knowledge and abilities; some errors are present. Analysis level. 75–84% correct answers. 7 points – knowledge and abilities are below average; there are substantial errors. Application level. 65–74% correct answers. 6 points – knowledge and abilities meet the minimum requirements, but many errors are present. Application level. 55–64% correct answers. 5 points – knowledge and abilities meet the minimum requirements, but many errors are present. Description level. 45–54% correct answers. 0–4 points – minimum requirements are not met. Less than 45% correct answers. The examination is conducted using a closed-book assessment strategy. The number of points scored by the student is multiplied by 50 %.

REGARDING THE EXTERNAL EXAMINATION OF THE COURSE UNIT

Mark ☒					**If permitted, please provide the conditions**
Not permitted	☒	**Permitted**	☐		

REGARDING THE USE OF GENERATIVE ARTIFICIAL INTELLIGENCE (GenAI) TOOLS (SUCH AS "CHATGPT", ETC.) WHEN STUDYING THE COURSE UNIT

Mark ☒				**If permitted, please provide the conditions**
Not permitted	☒	**Permitted**	☐	

REGARDING ACADEMIC PROGRESS

A student who (1) **throughout the semester consistently** fails to demonstrate **progress in achieving the expected learning outcomes of a subject (module)** during the practical classes (seminars, exercises, laboratory work, etc.) and (2) fails to complete all interim assessment requirements and tasks within the time specified in the course description, is not allowed to participate in the examination session.

The student's knowledge and skills are assessed with grades from 1 to 10. The course has been passed if:

- The results of all tasks, interim settlements, and midterm exam are at least 5.
- The examination grade is at least 5.

Author (-s)	Publishing year	Title	Issue of a periodical or volume of a publication	Publishing house or web link
Required reading				
1. Račkauskas A.	2003	Ekonometrijos įvadas		http://www.statistika.mif.vu.lt/wp-content/uploads/2014/05/Ek-apz-t.pdf
2. Karpuškienė V. ir kt.	2010	Ekonometrijos virtuvė		http://web.vu.lt/ef/v.karpuskiene/files/2017/02/EKONVIRT_V1.pdf
3. Boguslauskas V.	2021	Ekonometrikos pagrindai: mokomoji knyga		Kaunas: Technologija
4. Balabonienė I. ir kt.	2013	Ekonometrija. Praktinis regresijos ir laiko eilučių modelių taikymas		Kaunas: Technologija
Recommended reading				
5. David M. Kaplan	2021	Introductory Econometrics: Description, Prediction, and Causality		https://kaplandm.github.io/Kaplan_Intro_Econometrics_text.pdf
6. Jeffrey M. Wooldridge	2009	Introductory Econometrics		https://commecsinstitute.edu.pk/wp-content/uploads/2024/08/IntroductoryEconometrics_AModernApproach_FourthEdition_Jeffrey_Wooldridge.pdf