



COURSE SYLLABUS **«Econometrics»**

Level of higher education - Bachelor

Specialization 051 “Economics”

Education programme “International Economics”

Academic year 3, **semester** 5

Form of study full-time (full-time, extramural)

Number of ECTS credits 4

Language of instruction English (Ukrainian, English, German)

Course lecturer

Lecturer contact information (e-mail)

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Course page in eLearn

<https://elearn.nubip.edu.ua/course/view.php?id=1744>

COURSE DESCRIPTION

(up to 1000 printed characters)

Econometric models and methods are applied in the daily practice of virtually all disciplines in business and economics like finance, marketing, microeconomics, and macroeconomics. Decision making in business and economics is often supported by the use of quantitative information. Econometrics is concerned with summarizing relevant data information by means of a model. Such econometric models help to understand the relation between economic and business variables and to analyse the possible effects of decisions.

Econometrics is an interdisciplinary field. It uses insights from economics and business in selecting the relevant variables and models, it uses computerscience methods to collect the data and to solve econometric models, and it uses statistics and mathematics to develop econometric methods that are appropriate for the data and the problem at hand.

Competencies of the educational programme:

Integrated competencies (IC): The ability to solve complex specialized problems and practical problems in the economic sphere, which are characterized by the complexity and uncertainty of the conditions it implies application of theories and methods of economic science.

General competencies (GC):

GC 3. Ability to abstract thinking, analysis and synthesis

GC 4. Ability to apply knowledge in practical situations

GC 6. Ability to communicate in a foreign language.

GC 7. Information and communication skills technologies.

GC8. Ability to search, process and analyze information from various sources.

GC 11. Ability to make informed decisions.

Professional (special) competencies (PC):

PC 1. Ability to demonstrate knowledge and understanding of issues the subject area, the foundations of the functioning of the modern economy at the micro-, MSSO-, macro- international levels.

PC 4. Ability to explain economic and social processes and phenomena based on theoretical models, analyze and meaningfully interpret the obtained results.

PC 6. Ability to apply economic and mathematical methods and models for solving economic problems.

PC 7. Ability to use computer technologies and data processing software to solve economic tasks, information analysis and preparation analytical reports.

PC 8. Ability to analyze and solve tasks in the field economic and social-labour relations.

PC 9. Ability to predict based on standard theoretical and econometric models of socio-economic trends.

PC 12. The ability to identify problems independently is economical character when analyzing specific situations, to propose methods of solving them.

Program learning outcomes (PLO) of the educational programme:

PLO 3. Know and use economic terminology, explain the basic concepts of micro- and macroeconomics.

PLO 4. Understand the principles of economic science, features functioning of economic systems.

PLO 5. Apply analytical and methodical tools for the justification of proposals and acceptance of managerial ones decisions by various economic agents (individuals, households, enterprises and bodies state authorities).

PLO 7. Explain the models of socio-economic phenomena from the point of view fundamental principles and knowledge based on understanding the main directions of the development of economic science.

PLO 8. Apply appropriate economic and mathematical methods and models for solving economic problems.

PLO 12. Apply acquired theoretical knowledge for solving practical tasks and meaningfully interpret the received the results

PLO 13. Identify sources and understand methodology definitions and methods of obtaining socio-economic data, collect and analyse the necessary information, calculate economic and social indicators.

PLO 16. Be able to use data, provide arguments, critically evaluate logic and form scientific conclusions and analytical texts on economics.

PLO 21. Be able to think abstractly, apply analysis and synthesis to identify key characteristics of economic systems of different levels, as well as the characteristics of the behaviour of their subjects.

COURSE STRUCTURE

Topic	Hours (lectures/labs, practical classes, seminars)	Learning outcomes	Tasks	Assessment
Semester 5				
Module 1				
Topic 1. Subject, methods and objectives of discipline	2/2	Students should know: the role of econometric studies in economics. Object, subject, goals, tasks and structure of the course. Place and course importance among basic disciplines. General view of a linear econometric model, its structure and stages of construction. The concept of the	Students will enhance their understanding and acquire practical skills by working through the exercises, which are of three types. Theory exercises on	Execution and delivery of laboratory works - credited. Module: descriptive part 100;
Topic 2. Methods of the general linear model	2/2			
Topic 3. Multicollinearity and its	4/4			

impact on the estimation of the model parameters		main principles of the classical correlation econometric analysis. The concept of multicollinearity, methods and characteristics of its identification. The concept of heteroscedasticity and methods of its study. The impact of heteroscedasticity on the properties of parameter estimates.	derivations and model extensions. Simulation exercises illustrating statistical properties of econometric models and methods. Empirical exercises on applications with business and economic data sets to solve questions of practical interest.	test part 30 * 0.1; Independent work - according to the evaluation journal in eLearn.
Topic 4. Generalized least squares	4/4			
Topic 5. Econometric model of the dynamics	2/2			
Module 2				
Topic 6. Empirical methods of quantitative analysis based on statistical equations	2/2	Students should know: concept of autocorrelation. The nature and consequences of autocorrelation in econometric models. Check for autocorrelation. Durbin-Watson criterion. Causes of correlation appearance between explanatory variables and residues. Estimation of model parameters using instrumental variables. The concept of lag and lagged variables	Tasks of practical work. Writing tests, essays. Doing independent work (including in elearn) Problem solving, presentations etc.	Execution and delivery of laboratory works - credited. Module: descriptive part 100; test part 30 * 0.1; Independent work - according to the evaluation journal in eLearn.
Topic 7. Construction an econometric model with the autocollinearity remains operations	4/4			
Topic 8. Methods of instrumental variables	4/4			
Topic 9. Distributed lag models	2/2			
Topic 10. Econometric models on the basis of system structural equations	2/2			
Topic 11. Econometric modeling based on nonlinear regression	2/2			
Total for 5 Semester				70
Exam				30
Total for course				100

ASSESSMENT POLICY

<i>Policy regarding deadlines and resits:</i>	Assignments submitted after the deadline without valid reasons will be graded lower. Resitting of modules will be allowed with the permission from the lecturer and in the presence of valid reasons (e.g. medical reasons).
<i>Academic honesty policy:</i>	Cheating during tests and exams is strictly prohibited (including the use of mobile devices). Coursework and research papers must contain correct citations for all sources used.
<i>Attendance policy:</i>	Class attendance is mandatory. In case of objective reasons (such as illness or international internships), individual learning may be allowed (in online format by the approval of the dean of the faculty).

SCALE OF ASSESSMENT OF STUDENT KNOWLEDGE

Student rating, points	National grade based on exam results	
	exams	credits
90-100	excellent	passed
74-89	good	
60-73	satisfactory	
0-59	unsatisfactory	not passed

RECOMMENDED SOURCES OF INFORMATION

Main Tutorials

1. Econometric Analysis 8th edition by William H. Greene, Prentice Hall, 2017. 1176 pp.
2. Introduction to Econometrics. 4th edition by James H. Stock and Mark W. Watson, Addison-Wesley, 2018. 800 pp.
3. Introductory Econometrics: A Modern Approach. 7th edition by Jeffrey M. Wooldridge, South-Western College Publishers, 2018. 816 pp.
4. Волошин О. Р., Галайко Н. В. Економетрія. Ч. 1: навч. посібник. Львів: ЛДУВС, 2019. 192 с.
5. Диха М. В., Мороз В. С. Економетрія :навчальний посібник. Київ : Центр учбової літератури, 2019. 206 с.
6. Карімов Г. І. Моделювання та прогнозування в управлінні : навч. посіб. Кам'янське : ДДТУ, 2018. 163 с.

7. Козьменко О.В. Економіко-математичні методи та моделі (економетрика): навчальний посібник. Суми: Університетська книга, 2019. 406.
8. Кузьмичов А. І. Економетрія. Моделювання засобами MS Excel: навчальний посібник. К. : ЦУЛ, 2019. 214 с.
9. Лещинський О. Л., Рязанцева В. В., Юнькова О. О. Економетрія: навч. посібник для студ. вищ. навч. закладів. К.: МАУП, 2018. 205 с.
10. Назаренко А. М. Економетрика: навч. посібник. Суми: Вд-во СумГУ, 2020. 404 с.
11. Наконечний С. І., Терещенко Т. О., Романюк Т. П. Економетрія: підручник. К.: КНЕУ, 2018. 352с.
12. Присенко Г. В., Равікович Є.І. Прогнозування соціально-економічних процесів: навч. посібник. К.: КНЕУ, 2020. 378 с.
13. Руська Р. В. Економетрика: навч. посібник. Тернопіль: Тайп, 2021. 248 с.

Supplementary

14. Quirk T. Excel 2010 for Business Statistics. A Guide to Solving Practical. Business Problems, School of Business and Technology Webster University, 2018, 264 p.
15. Гур'янова С. Прикладна економетрика : навч. посіб. : у двох частинах. Частина1. Харків : ХНЕУ ім. С. Кузнеця, 2019. 235 с.

Information Resources

1. Верховна Рада України. URL: <http://zakon.rada.gov.ua/>
2. Кабінет Міністрів України. URL: <http://www.kmu.gov.ua/control/>
3. Державний Комітет статистики України. URL: <http://ukrstat.gov.ua/>
4. Продовольча та сільськогосподарська організація ООН (ФАО). URL: <http://www.fao.org/>
5. Світовий банк. URL: <http://www.worldbank.org/>
Євростат. URL: <http://epp.eurostat.ec.europa.eu/portal/page/portal/eurostat/home>