ECONOMETRICS
COURSE SYLLABUS

Code and name of specialty	073 – Management	**Institute**	**Institute of Education and Science in Economics, Management and International Business**
Program name	**Management of Organizations and Administration** **Business Administration**	**Department**	**Management and taxation**
Type of program	**Educational and Professional**	**Language of instruction**	**English / Ukrainian**

LECTURER

Petro Foshchii, *petro.foshchii@khpi.edu.ua*
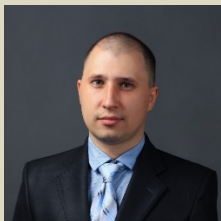
Ph.D. (C.Sc.) in Economic Science, Senior lecturer of the Management and taxation department (NTU "KhPI"). Authored and co-authored over 10 scientific publications.
Courses: Economic and mathematical methods in taxation, Econometrics

GENERAL DESCRIPTION OF THE COURSE

Summary	The course covers the theoretical and practical application of methods for modeling economic processes and systems at the macro and micro levels. Students will consider various approaches to the interpretation and verification of constructed econometric models and learn to use modern statistical analysis software packages. The course is based on lectures and practical activities. Lectures will consist of theory exploration, examples and class discussion. Homework assignments will focus on putting the lecture material into practice.
Course objectives	- to form a general idea of assessment, forecasting and simulation methods of economic and socio-economic indicators that characterize the state and development of economic systems; - to form practical skills of econometric methods application for solving applied problems in management; - teach students to use modern information technologies to solve problems.
Types of classes and control	Lectures, workshops, consultations. Individual assignment (no exam).
Term	5

Student workload (credits) / Type of course	5 / ELECTIVE	Lectures (hours)	16	Workshops (hours)	32	Self-study (hours)	102

Program competences	GC03. The ability to abstract thinking, analysis, synthesis. GC04. The ability to apply knowledge in practical situations. SC02. The ability to analyze the results of organization activity, to compare them with the factors of the external and internal environment. SC07. The ability to choose and to use modern tools of management. SC08. The ability to plan the organization activity and to manage the time. SC10. The ability to assess the performed works, to ensure their quality, and to motivate the staff of the organization. SC2.3. Understand the principles of professional activity of a manager in the IT field

Learning outcomes	Teaching and learning methods	Forms of assessment (continuous assessment CAS, final assessment FAS)
LO 04. To show skills of identification of problems and justification of management decisions.	Interactive lectures with presentations, practical classes, problem solving, research methods, work with databases using Excel spreadsheet	Written individuak assignment (FAS), practical assessment (CAS)
LO 06. To show skills of search, collecting, and analysis of information, calculation of indicators to substantiate management decisions.	Interactive lectures with presentations, practical classes, problem solving, research methods, work with databases using Excel spreadsheet	Written individuak assignment (FAS), practical assessment (CAS)
LO 10. To have the skills to substantiate effective tools for motivating the staff of the organization.	Interactive lectures with presentations, practical classes, problem solving, research methods, work with databases using Excel spreadsheet	Written individuak assignment (FAS), practical assessment (CAS)

ASSESSMENT AND GRADING

Ranges of points corresponding to grades	core (points) for all types of learning activities	ECTS grading scale	The national grading scale	Allocation of grade points	100% Final assessment as a result of Individual assignment (40%) and Continuous assessment (60%). 40% Individual assignment: written assignment (theory + problem solving) and its oral presentation. 60% Continuous assessment: practical tasks.
	90-100	A	excellent		
	82-89	B	good		
	74-81	C	good		
	64-73	D	satisfactory		
	60-63	E	satisfactory		
	35-59	FX	Unsatisfactory (with the exam retake option)		
	0-34	F	Unsatisfactory (with mandatory repetition of the course)		

Course policy	Students are expected to attend classes regularly, to get to class on time and stay for the duration of the class. In the case of absence, students will be required to submit all assignments to make up for the missed classes. Students are also expected to come to class having read all the required material and being ready to productively participate in the class discussions. Written assignments should be submitted before the specified deadlines.

COURSE STRUCTURE AND CONTENT

Lecture 1	Econometrics problems and methods	Workshop 1-2	The main types of econometric models. Description of random variables. Numerical characteristics of random	Self-	Reading suggested literature, making calculations. Comparative analysis of computer programs.

			variables.	s	
Lecture 2	Paired linear regression analysis methods	**Workshop 3-4**	Least squares method (LS). The main provisions of the regression analysis.	t u d y	Reading suggested literature, making calculations. Gauss-Markov theorem.
Lecture 3	Nonlinear paired regression analysis methods	**Workshop 5-6**	Non-linear regression equation. Types of nonlinear equations. Assessment of the statistical significance of nonlinear regression equations		Reading suggested literature, making calculations. Elasticity coefficient
Lecture 4-5	Multiple linear regression analysis methods	**Workshop 7-10**	Specification of the multiple regression model. Detection and removal of multicollinearity. Validation of the significance and quality of the regression model. Estimation of the classical regression model parameters using the NDT method. The use of dummy variables in seasonal analysis.		Reading suggested literature, making calculations. ANCOVA models.
Lecture 6	Systems of econometric equations	**Workshop 11-12**	Components of the system of equations. Identification problem. Model of labor productivity and capital productivity.		Reading suggested literature, making calculations
Lecture 7	Time series	**Workshop 13-14**	Time series characteristics. Stationary time series models and their identification. Non-stationary time series		Reading suggested literature, making calculations

			models. Forecasting based on the use of time series models.	
Lecture 8	Models with discrete and constrained variables	**Workshop 15-16**	Investigation of structural changes using the Chow test. Models with discrete dependent variables. Linear model of binary choice. Multiple choice models	Reading suggested literature, making calculations. Logit model and probit model.

RECOMMENDED READING

Compulsory

1. Hansen, Br. E. (2021). *Econometrics*. University of Wisconsin. Princeton University Press.
2. Greene, W. H. (2008). *Econometric analysis*. N.J. Prentice Hall.
3. Gujarati, D. (2008). *Basic Econometrics (4th ed)*. Irwin. McGraw-Hill
4. Wooldridge, J. M. (2001). *Econometric analysis of cross section and panel data.* London. The MIT press.

Recommended

1. Гур'янова, Л. С., Клебанова, Т. С. & Прокопович С. В. (2016) *Прикладна економетрика*. Харків: ХНЕУ ім. С. Кузнеця.
2. Замула, О. В., & Замула, О. О. (2019). *Основи роботи в Excel*. Харків. НТУ "ХПІ".
3. Лугінін, О. Є. (2008). *Економетрія*. Київ: Центр учбової літератури.
4. Доля, В.Т. (2010). *Економетрія*. Харків: ХНАМГ.
5. Hansen, Br. E. (2021). *Probability and Statistics for Economists*. University of Wisconsin. Princeton University Press.

Academic integrity

Graduate students are expected to adhere to the Code of Ethics of Academic Relations and Integrity" of NTU "KhPI".

The content of this syllabus is consistent with the course program.