



Syllabus Course Program



Econometrics

Specialty

073 – Management

Educational program

Management of organizations
and administration

Level of education

Bachelor's level

Semester

5

Institute

Institute of Education and Science in Economics,
Management and International Business

Department

Management (204)

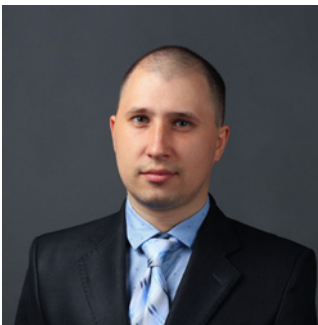
Course type

Elective

Language of instruction

English

Lecturers and course developers



Petro Foshchii

petro.foshchii@khpi.edu.ua

Ph.D. (C.Sc.) in Economic Sciences, associate professor of Management
department

Authored and co-authored over 30 scientific and methodological
publications.

Courses: Mathematical modeling in management, Electronic Business,
Information Technology in Management, Decision-making in the IT
business

[More about the lecturer on the department's website](#)

General information

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 and goals

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.

Format of classes

Lectures, workshops, self-study. Individual assignment. Final control in the form of a test (Differentiated grading).

Competencies

GC03. The ability for abstract thinking, analysis, synthesis.

GC08. The ability to use information and communication technology.

SC10. The ability to assess the performed works, to ensure their quality and to motivate personnel of an organization.

Learning outcomes

LO 06. To demonstrate the skills related to search, collection, and analysis of information, calculation of indicators for substantiation of managerial decisions.

Student workload

The total volume of the course is 150 hours (5 ECTS credits): lectures - 32 hours, workshops - 16 hours, self-study - 102 hours.

Course prerequisites

To successfully complete the course, it is necessary to have knowledge and practical skills from the following courses: "Enterprise Economics", "Economic Informatics", "Economic Statistics", "Fundamentals of Management"

Features of the course, teaching and learning methods, and technologies

Lectures are delivered interactively with the use of multimedia technologies. Practical workshops use a project-based learning approach and focus on the use of information technology in econometrics. Learning materials are available to students via OneNote Class Notebook, Google Classroom.

Program of the course

Topics of the lectures

Topic 1. Econometrics problems and methods

Description of random variables. Numerical characteristics of random variables.

Topic 2. Paired linear regression analysis methods

The main provisions of the regression analysis.

Topic 3. Nonlinear paired regression analysis methods

Non-linear regression equation. Types of nonlinear equations.

Topic 4. Multiple linear regression analysis methods

Specification of the multiple regression model. Detection and removal of multicollinearity. Validation of the significance and quality of the regression model. The use of dummy variables in seasonal analysis.

Topic 5. Systems of econometric equations

Components of the system of equations. Identification problem.

Topic 6. Time series.

Time series characteristics. Stationary time series models and their identification.

Topic 7. Models with discrete and constrained variables

Investigation of structural changes using the Chow test. Models with discrete dependent variables. Linear model of binary choice.

Topics of the workshops

Topic 1. The main types of econometric models.

Topic 2. Least squares method (LS)

Topic 3. Assessment of the statistical significance of nonlinear regression equations

Topic 4. Estimation of the classical regression model parameters using the NDT method

Topic 5. Model of labor productivity and capital productivity.

Topic 6. Forecasting based on the use of time series models.

Topic 7. Multiple choice models

Topics of the laboratory classes

No laboratory classes are included in the plan.

Self-study

The course involves learning additional materials regarding the topics of the lectures. Also, the course includes performing an individual assignment in the form of calculation task and practical problem-solving related to modeling. The result is presented in a written calculation task. Students are also recommended additional materials (videos, articles) for independent study and analysis.

Course materials and recommended reading

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.
5. Гур'янова, Л. С., Клебанова, Т. С. (2016) *Прикладна економетрика*. Харків: ХНЕУ ім. С. Кузнеця.
6. Замула, О. В., & Замула, О. О. (2019). *Основи роботи в Excel*. Харків. НТУ "ХПІ".

Assessment and grading

Criteria for assessment of student performance, and the final score structure

100% final grade is the result of the final assessment (60%) and continuous assessment (40%).

Final assessment: final test (30%); presentation of the individual assignment (30%)

Continuous assessment: mid-term test (30%); problem-solving during the workshops (10%)

Grading scale

Total points	National	ECTS
90–100	Excellent	A
82–89	Good	B
75–81	Good	C
64–74	Satisfactory	D
60–63	Satisfactory	E
35–59	Unsatisfactory (requires additional learning)	FX
1–34	Unsatisfactory (requires repetition of the course)	F

Norms of academic integrity and course policy

The student must adhere to the Code of Ethics of Academic Relations and Integrity of NTU "KhPI": to demonstrate discipline, good manners, kindness, honesty, and responsibility. Conflict situations should be openly discussed in academic groups with a lecturer, and if it is impossible to resolve the conflict, they should be brought to the attention of the Institute's management.

Regulatory and legal documents related to the implementation of the principles of academic integrity at NTU "KhPI" are available on the website: <http://blogs.kpi.kharkov.ua/v2/nv/akademichna-dobrochesnist/>

Approval

Approved by

Date, signature

Head of the department
Olena PROKHORENKO

Date, signature

Guarantor of the educational
program
Olena LINKOVA

