

National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute"



Department of Economics and Entrepreneurship

STATISTICS

Work program of the discipline (Syllabus)

Details of the discipline				
Cycle of Higher Education	First (bachelor's)			
Field of knowledge	05 Social and behavioral sciences			
Specialty	051 Economy			
Educational program	Economics of business enterprise International Economics, Economic Cybernetics Personnel management and labor economics, Business analytics			
Type of course	mandatory, cycle of professional training			
Mode of study	full-time / part-time (External form of education)			
Year of preparation, semester	3rd year, spring semester			
ECTS workload	ECTS 5 credits / 150 hours			
Semester control / control measures	Exam / modular test / individual semester tasks in the form of calculation work			
Course schedule	http://rozklad.kpi.ua/			
Language of Instruction	Ukrainian			
Course Instructors	Lecturer: Phd, Associate Professor, Nataliia Kuzminska, kuzminska_nl@ukr.net Practical classes: Phd, Associate Professor, Nataliia Kuzminska			
Access to the course	<u>https://ecampus.kpi.ua/</u> Telegram			

Outline of the Course

1. Course description, goals, objectives, and learning outcomes

The purpose of the discipline is to form in students a number of general competencies:

GC 3 - Ability to abstract thinking, analysis and synthesis.

GC 4 - Ability to apply knowledge in practical situations.

GC 8 - Ability to search, process and analyze information from various sources.

The study of the discipline will form the following program learning outcomes: PRN 6 - Use professional arguments to convey information, ideas, problems and ways to solve them to specialists and non-specialists in the field of economic activity.

POS 8 - Apply appropriate economic and mathematical methods and models to solve economic problems.

POS 13 - Identify sources and understand the methodology for determining and methods of obtaining socio-economic data, collect and analyze the necessary information, calculate economic and social indicators.

POS 16 - Be able to use data, provide arguments, critically evaluate logic and draw conclusions from scientific and analytical texts on economics.

POS 19 - Use information and communication technologies to solve socio-economic problems, prepare and present analytical reports

POS 23 - Show skills of independent work, demonstrate critical, creative, self-critical thinking.

2. Prerequisites and post-requisites of the course

It is based on the fundamental knowledge formed during the study of the disciplines "Mathematics for Economists", "Computer Science" and provides further training in professionally oriented economic disciplines "Cost Management", "Labor Economics and Social Relations" and others.

3. Content of the course

Section I. Theory of Statistics: Topic 1.2. Statistics: concept, subject, method, organization. Topic 1.2. Statistical observation. Compilation and grouping of statistics. Statistical distribution series. Topic 1.3. System of statistical indicators: absolute and relative values, average values, indicators of variation. Topic 1.4. Selective observation. Topic 1.5. Statistical study of the dynamics of socio-economic phenomena. Topic 1.6. Statistical study of the relationship between socio-economic phenomena. Topic 1.7. Index method in statistical research.

Section II. Socio-economic statistics: Topic 2.1. Methodological bases of economic and social statistics. System of national accounts. Topic 2.2. Statistics of national wealth. Topic 2.3. Product statistics. Topic 2.4. Statistics of production costs and prices. Topic 2.5. Labor statistics. Topic 2.6. Population statistics and living standards.

4. Coursebooks and teaching resources

Basic:

1. Statistics: Lecture notes [Electronic resource]: textbook. way. For students. specialty 051 "Economics" / KPI. Igor Sikorsky; structure. N.L. Kuzminskaya. - Electronic text data (1 file: 1326 Kb). - K .: KPI them. Igor Sikorsky, 2018. - 162 p.

2. Statistics: Computer workshops [Electronic resource]: textbook. way. for students. specialty 051 "Economics" / KPI. Igor Sikorsky; structure. N.L. Kuzminskaya. - Electronic text data (1 file: 1267 Kb). - K .: KPI them. Igor Sikorsky, 2018. - 60 p.

3. Statistics: Calculation work [Electronic resource]: textbook. way. for students. specialty 051 "Economics" / KPI. Igor Sikorsky; structure. N.L. Kuzminskaya. - Electronic text data (1 file: 1486 Kb). - K .: KPI them. Igor Sikorsky, 2018. - 81 p.

4. Vashkiv PG Theory of Statistics: Textbook / P.G. Vashkiv, P.I. Pasteur, V.P. Storozhuk, Ye.I. Weaver. - К.: Либідь, 2001. - 320 с.

5. Erina AM Theory of statistics: a workshop / A.M. Yerina, ZO Palyan - K .: LLC "Knowledge", 2006. - 255 p.

6. Kazmier L.J. Theory and Problems of Business Statistics. NY, McGraw-Hill, 2004. - 404 p.

7. Luginin OE Statistics. Textbook / OE Luginin. 2nd view. break and additional - Kyiv: Center for Educational Literature, 2007. - 608 p.

8. Statistics: Textbook / SS Gerasimenko, AV Golovach, AM Erina and others. ; for science. ed. SS Gerasimenko. - 2nd ed., Revised. and ext. - K.: KHey, 2000. - 467 c.

9. Udotova LS Social Statistics: Textbook / L.S. Udotova - K .: KNEU, 2002. - 376 p.

10. Umanets TV Economic statistics: Textbook / T.V. Umanets - K .: LLC "Knowledge", 2006. - 429 p. Supplementary:

1. Marmoza AT Theory of Statistics: Textbook / A.T. Marmose - 2nd type. break and additional - Kyiv: Center for Educational Literature, 2013. - 592 p.

2. Акулич M.B. Statistics in tables, formulas and schemes / MV Shark. - СПб. : Питер, 2009. - 128 с.

3. Golub, L.A. Socio-economic statistics: a textbook for universities / L.A. Dove. - М .: Гуманит. ed. Vlados Center, 2010. - 466 p.

4. Gusarov VM Statistics: Textbook. manual for universities / VM Гусаров. - М .: УНИТИ ДАНА, 2003. - 463 с.

5. Course of socio-economic statistics: Textbook / ed. M.G. Nazarova. - Moscow: Finance and Statistics, 2007. - 342 p.

6. Shmoilova RA Practicum on the theory of statistics: A textbook for universities / RA Шмойлова, B.Г. Minashin, N.A. Sadovnikov. - Moscow: Finance and Statistics, 2004. - 478 p.

7. http://campus.kpi.ua

8. http://www.ukrstat.gov.ua

Course Overview

5. Methodology

N⁰	Lecture topic and list of main issues		
	STATISTICS: CONCEPT, SUBJECT, METHOD, ORGANIZATION.		
	STATISTICAL SURVEY		
1	History of the origin and development of statistical science. The main categories and concepts		
1	of statistics. Statistical research. The main aspects of the organization of statistics in Ukraine.		
	International statistical organizations. Statistical research.		
	Basic: [1, p. 5-15; 2, c. 6-10]. Supplementary: [1, p. 14-45, 7, 8]		
	STATISTICAL OBSERVATION		
	The concept of statistical observation. Software-methodological and organizational support of		
2	statistical observation. Program-methodological issues of statistical observation. Signs of		
	statistical observation. Organizational issues of statistical observation. Forms, types and methods		
	Basic: [1, c, 16-22: 2, c, 11-17]. Supplementary: [1, c, 51-71, 7, 8]		
COLLECTION AND GROUPING OF STATISTICAL DATA.			
	STATISTICAL DISTRIBUTION SERIES		
	Compilation of statistical data. Grouping of statistical data. Classification of groupings. Type of		
3	grouping - classification. Selection of grouping features. Determining the number of groups and		
	the size of the grouping interval. Secondary grouping. Statistical distribution series. Statistical		
	tables.		
	Basic: [1, c. 23-32; 2, c. 18-26; 7 c.]. Supplementary: [1, c. 78-119, 7, 8]		
	SYSTEM OF STATISTICAL INDICATORS:		
	ABSOLUTE AND RELATIVE VALUES		
4	The concept of statistical indicators and their systems. Absolute values in statistics. Relative values		
	in statistics. Types and relationships of relative quantities.		
	Basic: [1, c. 33-38; 2, c. 27-30]. Supplementary: [1, c. 120-131, 7, 8]		
	SYSTEM OF STATISTICAL INDICATORS:		
	AVERAGE VALUES		
	The concept of averages and the principles of their application. Types of medium values. Properties		
5	of the arithmetic mean. The procedure for choosing the type of average value of a qualitative		
	feature. Use of an indicator when choosing an average value. Rule of majority majority. Calculation		
	of the average through the indicators of the structure. Calculation of averages based on grouping		
	results. Structural averages.		
	Basic: [1, c. 39-44; 2, c. 31-34]. Supplementary: [1, c. 141-170, 7, 8]		
6,7	SYSTEM OF STATISTICAL INDICATORS: INDICATORS OF VARIATION		

	The concept of variation. Indicators of variation. Dispersion properties. The variance of the				
	alternative feature. Types and relationships of variances.				
	Basic: [1, c. 45-48; 2, c. 35-38]. Supplementary: [1, c. 177-203, 7, 8]				
	SELECTIVE OBSERVATION				
	The concept of sample observation. Methods of forming a sample. Characteristics of mechanical,				
	stratified and serial selection. Methods of random selection. Methods of selection of units in the				
8	sample. Sampling errors. Mean and marginal sampling errors. Calculation of average (standard)				
	sampling errors. Sampling margin of error. Determining the sample size. Dissemination of sample				
	estimates to the general population. Complex types of samples.				
	Basic: [1, c. 49-56; 2, c. 39-41]. Supplementary: [1, c. 211-235, 7, 8]				
	STATISTICAL STUDY OF DYNAMICS				
	SOCIO-ECONOMIC PHENOMENA: ANALYSIS OF INTENSITY				
	The concept and classification of time series. Rules for constructing time series. Characteristics of				
9	periodization methods. Indicators of the analysis of time series. The system of average dynamics.				
	Analysis of interrelated time series.				
	Basic: [1, c. 57-61; 2, c. 42-44]. Supplementary: [1, c. 300-326, 7, 8]				
	STATISTICAL STUDY OF DYNAMICS				
	SOCIO-ECONOMIC PHENOMENA: ANALYSIS OF DEVELOPMENT TRENDS				
	The structure of a number of dynamics. Checking for trends. Method of trend allocation. Types of				
10	dependencies used in analytical alignment. Interpolation and extrapolation of time series. Analysis				
	of seasonal fluctuations.				
	Basic: [1, c. 62-66; 2, c. 45-46]. Supplementary: [1, c. 409-469, 7, 8]				
	INDEX METHOD IN STATISTICAL SURVEYS				
	The concept of indices. Individual indices. General indices. Indices of average values. Use of				
11	individual indices in economic analysis. General indices, which are defined as aggregate.				
11	Calculation of some aggregate indices. General indices, which are defined as averages of				
	individual indices. Indices of average values. Territorial indices.				
	Basic: [1, c. 67-79; 2, c. 47-49]. Supplementary: [1, c. 481-421, 7, 8]				
	STATISTICAL STUDY OF COMMUNICATION				
	SOCIO-ECONOMIC PHENOMENA				
	Stages of studying relationships. Factor and performance characteristics. Classification of				
	connection types. Methods of studying relationships. Methods of correlation-regression analysis.				
12	Characteristics of methods for estimating the tightness of communication. Choice of connection				
	form in correlation-regression analysis. Analytical expression of the relationship between traits.				
	Pair correlation. Paired linear regression. Multiple linear regression. Nonlinear regression.				
	Multiple correlation. Assess the significance of the relationship parameters.				
	Basic: [1, c. 80-88; 2, c. 50-52]. Supplementary: [1, c. 333-396, 7, 8].				
	METHODOLOGICAL FUNDAMENTALS OF ECONOMIC AND SOCIAL STATISTICS.				
	NATIONAL ACCOUNTS SYSTEM				
	The purpose, objectives and subject of economic and social statistics and the system of their				
	indicators. Categories of economic statistics. Basic classifications in economic statistics. Current				
13	state and prospects of development of socio-economic statistics in Ukraine. The emergence of the				
	system of national accounts (SNA) and its comparison with other economic models. General				
	principles of SNA construction and its classification. The main macroeconomic indicators of the				
	SNA.				
	Basic: [1, c. 89-98]. Supplementary: [1, c. 69-70, 7, 8].				
14	PRODUCT STATISTICS				

	Types, types and forms of products. Methods of measurement and performance of industrial				
enterprises. Statistics of agricultural products. Statistics of products of other branches. Source					
	information on industrial and agricultural products.				
	Basic: [1, c. 110-119; 2, c. 53-54]. Supplementary: [1, c. 69-70, 7, 8].				
	STATISTICS OF PRODUCTION COSTS AND PRICES				
15	Basic concepts of production cost statistics. Index analysis of production costs. Statistics of prices				
	and tariffs: types of prices and tariffs, measurement of price dynamics by index method.				
	Basic: [1, c. 120-130; 2, c. 55-58]. Supplementary: [1, c. 69-70, 7, 8].				
	LABOR STATISTICS				
16	The composition of the labor force at the enterprise, its indicators of number and movement.				
	Working time and its use. Labor efficiency, its indicators and methods of measurement. Statistical				
	study of wages. Sources of information on the number of staff, the use of working time and wages.				
	Basic: [1, c. 131-143; 2, c. 59-62]. Supplementary: [1, c. 69-70, 7, 8]				
	POPULATION STATISTICS AND LIVING STANDARDS				
	Population categories and their characteristics. Statistical indicators of natural and mechanical				
17	movement of the population. Employment and unemployment statistics. Sources of information				
17, 18	about the population, its number and employment. A set of living standards indicators and their				
	indicators. Macroeconomic indicators of living standards. Indicators of material security of the				
	population and households. Social and demographic indicators of living standards.				
	Basic: [1, c. 144-161]. Supplementary: [1, c. 69-70, 7, 8].				

N⁰	The topic of the computer workshop	
з/п		
1	Statistics: concept, subject, method, organization. Statistical research. Graphic representation of	
f	statistical information	
2	Statistical observation	
3	Statistical observation Compilation and grouping of statistical data. Statistical distribution series	
4	System of statistical indicators: absolute and relative values	
5	Average values	
6, 7	Statistical study of variation	
8	Selective observation	
9	Statistical study of the dynamics of socio-economic phenomena: intensity analysis	
10	Statistical study of the dynamics of socio-economic phenomena: analysis of development trends	
11	Index method in statistical research	
12	Statistical study of the relationship between socio-economic phenomena	
13	System of national accounts. Index analysis in product statistics	
14	Statistics of production costs and prices	
15	Labor statistics	
16,	Population statistics and living standards	
17		

6. Self-study

There are no topics that can be studied by students without lectures and computer workshops. Types of independent work of students: preparation for testing on the material of lectures, preparation for computer workshops.

7. Attendance policy

Attending classes

Attendance at lectures, practical classes, as well as absence from them, is not evaluated. However, students are encouraged to attend classes, as they teach educational (theoretical and practical) material and develop skills defined by the purpose of the discipline. The assessment system is focused on obtaining points for student activity, as well as performing tasks that can develop practical skills. Failure to perform the tasks defined by the discipline entails the impossibility of successful passing the test.

Control measures missed

Thematic task, as well as abstract (essay), modular test, which is submitted for verification in violation of the deadline, are evaluated taking into account the penalty points.

Policy of deadlines and rearrangements

The student has the right to complete all simplified types of thematic tasks and other forms of activities defined by this syllabus no later than 3 days before the intermediate certification, ie the period in which they were to be credited. Tasks submitted for testing in violation of this rule are evaluated in "0" points.

Features of the organization of work with students studying for a double degree or for certain other reasons are not able to attend classes (full-time / distance)

Students studying for an exchange, a double degree program or due to illness, etc., but unable to attend classes must notify the teacher within the first two weeks of the semester. Such students will work according to an individual schedule agreed with the teacher. The schedule must be agreed with the dean's office of the faculty. Control measures (intermediate and semester) are also taken according to the agreed individual schedule.

Procedure for appealing the results of evaluation measures

Students have the opportunity to raise any issue related to the control procedure and expect it to be addressed in accordance with predefined procedures.

Students have the right to challenge the results of control measures, but it is necessary to argue, explaining which criterion they do not agree with according to the evaluation letter and / or comments.

Calendar control

Intermediate attestation of students (hereinafter - attestation) is a calendar boundary control. The purpose of the certification is to improve the quality of student learning and monitor the implementation of the schedule of the educational process by students.

The policy and principles of academic integrity are defined in section 3 of the Code of Honour of the National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute" (https://kpi.ua/code).

The norms of ethical behaviour of students and employees are defined in section 2 of the Code of Honour of the National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute" (https://kpi.ua/code).

8. Monitoring and grading policy

The student's rating consists of the points he receives for: testing in lectures; implementation and protection of computer workshops (17 workshops); performance of modular control work; performance of settlement work.

Types of control:

Current control: testing, protection of computer workshops, MCR, RR.

According to the results of the lecture material, 2 tests per semester are conducted, which are evaluated in 3 points each (only 2 for 3 points = 6 points), according to the following criteria:

- correctly performed test - 3 points;

- the test is performed by 60% - 1.8 points;

- failed test - 0 points.

Computer workshops are evaluated in 2 points each according to the following criteria:

- for quality performance without errors - 2 points;

- for quality performance, but with shortcomings - 1 point;

- for late delivery, but subject to quality performance without errors - 1 point.

Modular test is evaluated at 10 points according to the following criteria:

- "excellent" - complete answer (not less than 90% of the required information) - 10..9 points;

- "good" - a fairly complete answer (at least 75% of the required information) or complete

answer with minor inaccuracies - 8..7 points;

- "satisfactory" - incomplete answer (at least 60% of the required information) and insignificant errors - 6..5 points;

- "unsatisfactory" - the answer does not meet the requirements for "satisfactory" - 5..0 points.

The result of the control measure for a student who did not show up for it is evaluated with zero point.

Estimated work is evaluated at 10 points according to the following criteria:

- creative approach to solving problems - 10..9 points;

- the work was performed with minor inaccuracies - 8..7 points;

- the work was performed with certain shortcomings - 6..5 points;

- the work is not credited (the task is not completed or there are gross errors) - 4..0 points.

For each day of delay with the submission of settlement work for the inspection is charged a penalty - 1 point (total not more - 5 points)

Calendar control: conducted twice a semester in the form of certification as a monitoring of the current state of compliance with the requirements of the syllabus. The condition of the first certification is to obtain at least 20 points. The condition of the second certification is to receive at least 35 points.

Conditions of admission to the semester control: the condition of admission is to obtain at least 40 points.

Semester control: exam.

The examination ticket contains three tasks, which are evaluated in 40 points: 1 theoretical question (10 points) and 2 practical tasks (15 points each). The list of questions is given in the Recommendations for mastering the credit module.

Criteria for evaluating the theoretical question:

- "excellent" - the student gave a complete meaningful answer (at least 90% of the required information) - 10..9 points;

- "good" - the student gave a complete answer, but allowed some inaccuracies (at least 75% of the required information) - 8.5..7.5 points;

- "satisfactory" - the student gave an incomplete answer or made mistakes (at least 60% of the required information) - 7..6 points;

- "unsatisfactory" - the student made significant mistakes or did not disclose the question (the work does not meet the requirements "enough" and the question disclosed less than 60% of the required information or not disclosed at all) - 6..0 points.

Task evaluation criteria:

- "excellent" - the student gave a complete meaningful answer (at least 90% of the required information) - 15..13.5 points;

- "good" - the student gave a complete answer, but allowed some inaccuracies (at least 75% of the required information) - 13..11.5 points;

- "satisfactory" - the student gave an incomplete answer or made mistakes (at least 60% of the required information) - 11..9 points;

- "unsatisfactory" - the student made significant mistakes or did not disclose the question (the work does not meet the requirements "enough" and the question disclosed less than 60% of the required information or not disclosed at all) - 8.5..0 points.

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Score	Grade description
10095	Excellent
9485	Very good
8475	Good
7465	Satisfactory
6460	Sufficient
Менше 60	Fail
Starting rating is less than 40	
points and / or not submitted	Not Graded
essay	

The sum of the starting points and the points for exam will give you the final grade:

Syllabus of the course:

is designed by Phd, Associate Professor, Nataliia Kuzminska

adopted by Department of Economics and Entrepreneurship (Minutes № 17 of 02.06.2021)

approved by the University Methodical Council (Minutes № 10 of 15.06.2021)