

Ministry of Education and Science of Ukraine
Sumy National Agrarian University
Faculty of Economics and Management
Department of Marketing and Logistics

Working program (syllabus) of the educational component

Statistics (MC 19)
(name and status (mandatory))

Specialty **073 "Management"**
Educational program **Management** (2024 intake)
Level of higher education **first (bachelor's)**

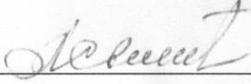
Sumy 2025

Developer:  Iryna ONOPRIENKO, Candidate of
Economic Sciences, Associate Professor

Reviewed, approved and ratified at a meeting of the Department of Marketing and Logistics	Protocol at 16.06. 2025p. № 18
	Head of the Department <u></u> Natalia MAKARENKO

Agree:

Guarantor of the educational program  Nataliya STOYANETS

Dean of the faculty where the educational
program is implemented  Svitlana LUKASH

Review of the work program (attached) provided by:  Viktoriia TKACHEUKO

Methodologist of the Department of Educational Quality,
Licensing and Accreditation  (Nataliya MAKARENKO)

 V. Baranik
Registered in the electronic database: date: 06.07. 2025

1. GENERAL INFORMATION ABOUT THE EDUCATIONAL COMPONENT				
1.	Name OK	Statistics		
2.	Faculty/Department	Faculty of Economics and Management. Department of Marketing and Logistics		
3.	Status EK	Mandatory		
4.	Program/Specialty(s) that include EK	OPP Management of the first level of education in the specialty 073 "Management" Fields of knowledge 07 Management and administration Qualification: Bachelor of Management		
5.	Level NPK	6 level		
6.	Semester and duration of study	1-15 weeks, full-time -3 semesters		
7.	Number of ECTS credits	5		
8.	Total hours and their distribution	Contact work (classes) Full-time/part-time		Independent work
		Lectures 46	classes 30	74
9.	Language of instruction:	Ukrainian		
10.	Teacher/Coordinator of the OC	Candidate of Economic Sciences, Associate Professor Onoprienko I.M.		
11.	Contact information	Onoprienko I.M. room 214e . Iryna.onopriienko@snaeu.edu.ua		
12.	General description of the educational component	Teaching the course "Statistics" involves familiarizing students with the general theory of statistics, the methodology for calculating basic statistical indicators and methods of processing statistical information for the study of social phenomena. The content of the program is aimed at students acquiring knowledge and skills in organizing statistical observation. The purpose of the course is to study socio-economic phenomena and processes, their quantitative and qualitative aspects.		
13.	The purpose of the educational component	Study of the Discipline is to form in students knowledge of the basics of statistics and acquire the appropriate skills and abilities for processing statistical information.		
14.	Prerequisites for studying OK, connection with other educational components of the OP	1. The educational component is based on the study of OK: microeconomics, macroeconomics 2. The educational component is the basis for studying OK: Finance, money and credit, analysis of economic activity		
15.	Academic Integrity Policy	Students must strictly adhere to the requirements of the "Regulations on Academic Integrity of SNAU". Plagiarism is not allowed during tests and exams. When using information resources, a reference must be made to the source used. All completed independent work (abstracts, individual assignments) are checked for plagiarism and are allowed to be defended if		

		the requirements for references are met (no more than 40% of text borrowings are allowed). Responding in accordance with the regulatory documents of SNAU on the academic integrity of participants in the educational process. https://snau.edu.ua/viddil-zabezpechennya-yakosti-osviti/zabezpechennya-yakosti-osviti/akademichna-dobrochesnist/
16.	Keywords	Statistics, analysis, data collection, numbers, tables, graphs
17.	Link to the course on the learning platform Moodle	https://cdn.snau.edu.ua/moodle/course/view.php?id=316

2. LEARNING OUTCOMES BY EDUCATIONAL COMPONENT AND THEIR RELATIONSHIP WITH PROGRAM LEARNING OUTCOMES

Learning outcomes for EK: After studying the educational component, the student is expected to be able to...»	Program learning outcomes that the OC aims to achieve (indicate the number according to the numbering given in the EK)		How is PLO assessed
	PLO 6. Demonstrate skills in searching, collecting and analyzing information, calculating indicators to justify management decisions.	PLO 18. Analyze indicators of development of management objects in the conditions of implementation of sustainable development programs.	
LOEC 1. Collect the necessary statistical information, economic and management indicators, based on the use of the necessary analytical and methodological statistical tools.	*	*	Testing, written assessment Solving situational problems. Presentation and defense of research results
LOEC 2. Analyze market phenomena and processes based on the application of fundamental principles, theoretical knowledge and applied skills in carrying out economic activities, forming data banks in the field of management based on the use of statistical indicators and methods.	*	*	
LOEC 3. Identify dependencies and interactions between subjects of economic relations based on the use of statistical methods to substantiate management decisions.		*	

3. CONTENT OF THE EDUCATIONAL COMPONENT (COURSE PROGRAM)

Topic. List of issues to be considered within the topic	Distribution within the total time budget. Full-time/part-time		Recommended reading
	Classroom work	Independent	

			ent work	
	lc	Cl		
<p>Topic 1. Subject, method, basic concepts of statistics. General idea of statistics and information from its history. Features of statistics. Subject of statistics. Statistical categories. Statistical population. Statistical characteristics and their classification. general concepts of statistical methodology. Organization and tasks of statistics</p>	4	2	8	Main sources:1-4 Other sources:1-7 Methodological support:1-3
<p>Topic 2. Statistical observation. The concept of statistical observation and its components. Classification of statistical observation according to various characteristics. Program and methodological issues of statistical observation. Organizational issues of statistical observation, forms of statistical observation in the economy. Types and methods of observation. Observation errors and methods of their correction.</p>	4	2	8	Main sources:1-4 Other sources:1-7 Methodological support:1-3
<p>Topic 3. Summary and grouping of statistical data. The concept of statistical summary. Types of summary. Statistical grouping. Types of grouping. Basic issues of the methodology of statistical groupings in the field of economics and accounting. Methodology for conducting analytical grouping. Distribution series. Statistical tables, their significance in statistics, types of tables, requirements for constructing tables. Graphical methods of displaying statistical data. Types of graphs.</p>	4	2	8	Main sources:1-4 Other sources:1-7 Methodological support:1-3
<p>Topic 4. Absolute and relative quantities. Absolute quantities, concepts and types. Relative quantities, concepts, their essence and forms of expression. Types of relative quantities and methods of their calculation.</p>	4	2	8	Main sources:1-4 Other sources:1-7 Methodological support:1-3
<p>Topic 5. Averages and Variation Indicators. The concept of averages and their significance in statistics. Types of averages and methods of their calculation. Simple and weighted arithmetic mean, its mathematical properties. Harmonic mean and conditions for its application. The concept of variation and variation indicators. Statistical characteristics of variation. Types of dispersions.</p>	6	4	8	Main sources:1-4 Other sources:1-7 Methodological support:1-3
<p>Topic 6. Sample observation. Sample observation, reasons and conditions for its application. Methods and ways of selecting units. Calculation of average and marginal errors and the required sample size.</p>	4	4	8	Main sources:1-4 Other sources:1-7 Methodological support:1-3
<p>Topic 7. Dynamics series.</p>	6	4	8	Main sources:1-

The concept of dynamics series, their elements and rules of construction. Indicators of dynamics series. Average values of dynamics series. Basic techniques for analyzing dynamics series in the field of economics. Alignment of dynamics series. Mechanical and analytical alignment of dynamics series. Closing of dynamics series. Extrapolation and interpolation in statistics. Statistical study of seasonal fluctuations.				4 Other sources:1-7 Methodological support:1-3
Topic 8. Indices. The concept of statistical indices and the tasks of the index method of analysis, their classification according to various characteristics. Forms of indices and methods of their calculation in the field of accounting and taxation. Methodological foundations of the construction of individual and general indices. Aggregate indices. Weighted average indices. Indices of average values. System of interdependent indices and determination of the influence of individual factors. indices with constant and variable weights. Territorial indices. Average level indices.	6	4	8	Main sources:1-4 Other sources:1-7 Methodological support:1-3
Topic 9. Statistical methods of measuring relationships. Types of relationships between phenomena in the field of accounting and taxation. Correlation analysis. Paired (simple) correlation and its characteristics. Curvilinear correlation and its types. Multiple correlation and its characteristics. Analysis of variance. Nonparametric methods of identifying and measuring relationships.	8	6	8	Main sources:1-4 Other sources:1-7 Methodological support:1-3
Total	46	30	74	

4. TEACHING AND LEARNING METHODS

Learning Outcomes for the Educational Component	Teaching methods (work that will be carried out by the teacher during classroom lessons, consultations)	Learning methods (what types of learning activities the student must perform independently)
LOEC 1.	Verbal methods: lecture, explanation, educational discussion Visual methods: demonstration Practical methods: exercises, practical work Tutoring method *	Method of ready knowledge Method of forming skills and abilities Research method Methods of testing and assessing knowledge, skills and abilities
LOEC 2.	Verbal methods: lecture, explanation, educational discussion Visual methods: demonstration Practical methods: exercises, practical work Tutoring method	Method of ready knowledge Method of forming skills and abilities Research method Methods of testing and assessing knowledge, skills and abilities

LOEC 3.	Verbal methods: lecture, explanation, educational discussion Visual methods: demonstration Practical methods: exercises, practical work Tutoring method	Method of ready knowledge Method of forming skills and abilities Research method Methods of testing and assessing knowledge, skills and abilities
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5. ASSESSMENT BY EDUCATIONAL COMPONENT

5.1. Diagnostic assessment (indicated as necessary)

5.2. Summative assessment

5.2.1. For the assessment of expected learning outcomes, the following is provided

№	Summative assessment methods	Points / Weight in overall score	Due date
1.	Summative testing by topic	20 points/20%	By the end of 8; 15 weeks
2.	Completing tasks in a workbook during practical classes	50 points/50%	By the end of 8,15 weeks
3.	Exam	30 points/30%	According to the submission schedule

5.1.1. Evaluation criteria

Component	Unsatisfactory	Satisfactory	Good	Excellent
Summative testing by topic	<12 points	12-15	15-18 points	20 points
	Task requirements not met	Most requirements are met, but individual components are missing or insufficiently disclosed, there is no analysis of other approaches to the issue	All task requirements met	All task requirements were met, creativity and thoughtfulness were demonstrated, and an original solution to the problem was proposed.
Completing tasks in a workbook during practical classes	<10 points	11-24	25-39 points	40-50 points
	Task requirements not met	Most requirements are met, but individual components are missing or insufficiently disclosed, there is no analysis of other approaches to the issue	All task requirements met	All task requirements were met, creativity and thoughtfulness were demonstrated, and an original solution to the problem was proposed.

	<10 points	10-15	16-24 points	25-30 points
Exam	Task requirements not met	Most requirements are met, but individual components are missing or insufficiently disclosed, there is no analysis of other approaches to the issue	All task requirements met	All task requirements were met, creativity and thoughtfulness were demonstrated, and an original solution to the problem was proposed.

5.2. Formative assessment:

To assess current progress in learning and understand areas for further improvement,

№	Elements of formative assessment	Date
1.	Written survey after studying the topics	After each topic and at the end of the module
2.	Written feedback	At the end of the module
3.	Oral feedback from the teacher while working on the project during classes	According to the submission schedule (at the end of the module)
4.	Oral feedback from the teacher and students after the presentation of the project	According to the submission schedule (at the end of the module)

6. LEARNING RESOURCES (LITERATURE)

6.1. Main sources

1. Bek V.L., Kaplenko G.V. Practical course on the theory of statistics. L.: Novyi svit.2020.- 288p. URL: <https://mybook.biz.ua/statistika/praktikum-z-teorii-statistiki-88316/>
2. Gorkavyi V. K. Statistics: Textbook. Third ed., revised and supplemented. Kyiv: Alerta, 2020. 644 p. URL: https://dakor.kiev.ua/wp-content/uploads/gorkaviy_statistika_zmist.pdf
3. Gorodyanska L.V., Sizov A.I. Statistics for economists: a textbook. Kyiv. National University named after T. Shevchenko, Military Institute, Department of Financial Support of the Armed Forces. –K.: Kyiv. National University named after T.Shevchenko, 2019. 350p. URL: <https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=>
4. Dorogan-Pisarenko L. O., Yegorova O. V., Rudych A. I. Statistics: textbook. Poltava: RVV PDAU. 2021. 300 p. URL: <http://dspace.pdaa.edu.ua:8080/bitstream/123456789/10351/1/>

6.2. Other sources

1. Borukh V. O. Economic statistics: textbook. K.: Lira-K, 2006. 318p. URL: <https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=>
2. Pedchenko G. P. Statistics: Textbook. Melitopol: Color Print, 2018. 266p. URL: <https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=>

3. Statistics: Fundamentals of Theory: Textbook. O.O. Goroshanska, O.V. Prokopova. LLC "Fort Publishing House". Kharkiv, 2014. 249p. URL: https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwjI5rSzp774AhUnm_0HHejdAZUQFnoECBIQAQ&url=https%3A%2F%2Fwww.scribd.com
 4. Barbara Illowsky. Susan Dean. Introductory Statistics. Rice University, 2018. URL: <https://commons.erau.edu/oer-textbook/6/>
 5. S. Boslaugh, P.A. Watters. Statistics in a Nutshell Sebastopol: O'Reilly, 2018. URL: <https://www.google.com/url?>
 6. Themes in Economic Analysis .Theory, policy and measurement. Edited By Subrata Guha, Rajendra Prasad Kundu, S. Subramanian. Copyright Year 2016. URL: <https://www.google.com/url?>
 7. A. Rice. Mathematical Statistics and Data Analysis Brooks/Cole, Belmont 2017, 3rd edition URL <https://epdf.pub/mathematical-statistics-and-data-analysis65096.html>
 8. Average values. Mean and average quadratic deviation.- http://intranet.tdmu.edu.ua/data/kafedra/internal/distance/classes_stud/English/1course/Medical%20statistics/06.%20Average%20values.
 9. Relative values. URL: [http://intranet.tdmu.edu.ua/data/kafedra/internal/socmedic/lectures_stud/en/nurse/bsn\(4yearprogram\)/elementarystatistics/2/03](http://intranet.tdmu.edu.ua/data/kafedra/internal/socmedic/lectures_stud/en/nurse/bsn(4yearprogram)/elementarystatistics/2/03).
 10. Organization of statistical research. Composition of the plan and program of observation.URL: http://intranet.tdmu.edu.ua/data/kafedra/internal/distance/classes_stud/English/1course/Medical%20statistics/03.%20Organization%20of%20statistical%20research.htm
 - 11.Time Series Analysis. URL: <http://www.abs.gov.au/websitedbs/D3310114.nsf/home/Time+Series+Analysis:+The+Basics>. - <http://www.statsoft.com/Textbook/Time-Series-Analysis>
 12. Karpenko L. M. Statistics: a textbook. / L. M. Karpenko. – Odesa: ORIDU NAPU, 2019. – 184 p. URL: <https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8>
 13. Onoprienko I.M. Statistical methods in marketing audit and control of an agricultural enterprise. Economy and society. 2022. No. 43. URL: <https://economyandsociety.in.ua/index.php/journal/article/view/17108>
 14. Onoprienko I.M., Selezen O.M. Insurance market in Ukraine: financial and analytical review. Eastern Europe: Economy, business, management. Issue 1(46) 2025.P.27-33. DOI: <https://doi.org/10.32782/easterneurope.46-4> URL: <http://www.easterneurope-ebm.in.ua|20-2019-ukr>
- 6.3. Methodological support**
1. Onoprienko I.M. Statistics. Lecture notes for students of the specialties OIO, EP, MAR, FSB, PTB, MN. Sumy, 2022. - 136 p.
 2. Onoprienko I.M. Statistics. Workbook for 2nd year students of full-time and part-time study of the specialties 073 "Management" 071 "Accounting and Taxation", 051

"Economics" 072 "Finance, Banking and Insurance", 075 Marketing, 076 "Entrepreneurship, Trade and Stock Exchange Activities. Sumy, 2021, 57 p.

3. Onoprienko I.M. Statistics. Methodological instructions for performing independent work for 2nd year students of full-time and part-time study in the specialties of OIO, EP, MAR, FSB, PTB, MN. Sumy, 2022. - 45 p.

4. Course "Statistics" in the Moodle system. /Author Onoprienko I.M. URL: <https://cdn.snau.edu.ua/moodle/course/view.php?id=316>

6.4.Information resources

1. Official website of the State Statistics Service of Ukraine <http://www.ukrstat.gov.ua/>

2. Official website of the Statistical Service of the European Union.<https://ec.europa.eu/eurostat/data/database>

6.5. Software

1. Course "Statistics" in the Moodle system. /Author Onoprienko I.M. URL: <https://cdn.snau.edu.ua/moodle/>