NATIONAL UNIVERSITY
OF LIFE AND ENVIRONMENTAL SCIENCES OF UKRAINE

Department of Statistics and Economic Analysis

"APPROVED"
Dean of the Economic faculty,

_____   A.D. Dibrova
"_____" _____ 2021

"APPROVED"
at the meeting of the Department
of Statistics and Economic Analysis
Protocol № 15 from "20" May 2021
Head of the Department
_____I. D. Lazaryshina

"CONSIDERED"
Guarantor of the educational program " Finance and Credit"
Guarantor of the educational program
_____ Y.V. Negoda

WORKING PROGRAM OF EDUCATIONAL DISCIPLINE

"Statistics"

specialty 072 Finance, Banking and Insurance
education programme "Finance and Credit"
Economic Faculty
Developers: Oksana Makarchuk, Associate Professor of the Department of Statistics and Economic Analysis, PhD in Economics

Kyiv – 2021

1. Description of the discipline
STATISTICS

Sphere of knowledge, specialty, educational programme, educational level	
Educational level	*bachelor* (Bachelor, Master)
Specialty	*072 Finance, Banking and Insurance* (code and name)
Education programme	*Finance and Credit* (name)

Characterization of educational discipline	
Type	Normative
Total number of hours	___180____
Number of ECTS credits	____6____
The number of structural modules	____4___
Course project (work) (if your curriculum)	_____Project_____ (name)
Form of control	Test, exam

Indicators of discipline for full-time and distance learning

	full-time form of education	part-time form of education
Year of training (Course)	_____1-2____	
Semester	_____2-3____	
Lectures	____75_ hours	
Practical, seminars classes	___75_ hours	
Laboratory classes	_____ hours	
Independent work	__30 hours	
Individual tasks	_____ hours	
The number of weekly hours for full-time study: classroom	6 hours (Semester 2) 4 hours (Semester 3)	

2. Purpose, tasks and competencies of the educational discipline

Purpose The main purpose of the study course "Statistics" is the formation in students theoretical knowledge's and practical skills in statistical analysis of mass socio- economic phenomena's and processes as a basis for developing and supporting management decisions that provide knowledge about method of collecting, processing and analysis, identification and assessment patterns

development and interaction inherently complex socio-economic phenomena's and processes.

Tasks: study the major categories, concepts, systems, tools and algorithms for statistics; acquirement practical skills solving specific statistical tasks; acquaintance with the scientific principles of fundamental laws of statistical techniques and methodologies; develop abilities of creative search the ways to improve production and business enterprises, socio-economic development with the use of key indicators, techniques and methods of statistics.

As a result of studying the discipline the student should ***know:*** patterns, principles and common methods of statistical studies; stages of statistical analysis of primary data and summarize the results; analysis mechanisms and synthesis of statistical data and statistic indicators; methods for studying relationships between phenomenon's occurring in the community and be able to describe the results of research; ways of transition from studying statistical methods to the elements of factor analysis to identify reserves of improvement of result indexes; methods for evaluating contemporary issues of social-economic development and production and business enterprises; statistical methodology for determining the effects of management decisions on the activity of enterprises; features of practical application of statistical methods for the study of mass phenomena and processes that occurring in agricultural production.

be able to: use appropriate methods to study the phenomena; use Microsoft Excel for data analysis; describe getting results; forecast researched phenomena of process.

Acquisition of competencies:

general competencies (GC):

GC 2. Ability to apply knowledge in practical situations;

GC 6. Ability to conduct research at the appropriate level;

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

GC 12. Ability to work autonomously.

professional (special) competencies (PC):

PC 1. Ability to study trends in economic development using the tools of macro- and microeconomic analysis, to assess current economic phenomena;

PC 3. Ability to diagnose the state of financial systems (public finances, including budget and tax systems, business finances, household finances, financial markets, banking system and insurance);

PC 4. Ability to apply economic and mathematical methods and models to solve financial problems;

PC 6. Ability to use modern information and software to obtain and process data in the field of finance, banking and insurance.

PC 7. Ability to compile and analyze financial statements.

3. Program and structure of educational discipline for:

- full-time form of education.

Names of modules and themes	Quantity of Hours												
	Full-time							Part-time					
	weeks	total	including					Total	including				
			L	P	Lab	Ind. w	Ind ep. w		L	P	Lab	Ind. w	Ind ep. w
1	2	3	4	5	6	7	8	9	10	11	12	13	14
Module 1 *Steps statistical observation and analysis techniques patterns of distribution*													
Theme 1. Methodological Principles of Statistics	1	3	2	1			-						
Theme 2. Statistical observation	1	5	3	2			-						
Theme 3. Compilation and grouping (bunching) of statistical data. Statistical tables	1	10	4	4			2						
Theme 4. Analysis of the forms of statistical series distribution and their graphical representation	1	10	4	4			2						
Theme 5. Generalizing statistical indicators	1	10	4	4			2						
Theme 6. Analysis of variation	1	10	4	4			2						
Theme 7. Forms of statistical distribution	1	10	4	4			2						

Total for the module 1	7	58	25	23			10					
Module 2 _Methods of statistical analysis_												
Theme 8. Sampling method	1	6	2	2			2					
Theme 9. Statistical methods for measuring correlation	2	14	6	6			2					
Theme 10. Time series and their analysis	1	10	4	4			2					
Theme 11. Analysis of trends and fluctuations	1	6	2	2			2					
Theme 12. Statistical tables and graphs	1	6	2	2			2					
Total for the module 2	6	42	16	16			10					
Module 3 _Statistics of Agriculture and Environment_												
Theme 13. Subject and method of agricultural statistics	1	6	2	2			2					
Theme 14. Index Analysis	2	8	4	4			-					
Theme 15. Crop statistics	1	6	2	2			2					
Theme 16. Livestock statistics	1	4	2	2			-					
Theme 17. Statistics of production resources and efficiency of agricultural production	3	14	6	6			2					
Total for the module 3	8	38	16	16			6					
Module 4 _Basic economic statistics_												
Theme 18. Statistics of agricultural products	2	8	4	4			-					
Theme 19. Statistics of market goods and services	2	8	4	4			-					
Theme 20. Finance statistics	2	10	4	4			2					
Theme 21. Price and inflation statistics	1	6	2	4			-					
Theme 22. Statistics of investments and securities	2	10	4	4			2					
Total for the module 4	9	42	18	20			4					
Total sum	30	180	60	60			30					
Course project from Statistics		15										
Total sum		195										

4. Themes of seminars

№	Name of Themes	Quantity of hours

5. Topics of practical classes

№	Name of Themes	Quantity of hours
1	Object of Statistics, its main category. Statistical methodology.	1
2	Statistical observation as method of information providing. Program-methodology questions of statistical observation. Organize questions of statistical observation. Forms, kinds and methods of observation.	2
3	Essence of statistical bunching, classification and grouping. Principles of forming groups. Statistical tables.	4
4	Analysis of the forms of statistical series distribution and their graphical representation	4
5	Essence and kind of statistical indexes. Absolute statistical value. Relative values. Average indexes. System of statistical indexes.	4
6	Distribution regularity. Variation characteristic. Characteristic of distribution forms.	4
7	Characteristic of distribution center. Kinds and interconnection of dispersion.	4
8	Sence of sampling method. Sampling values of average and share. Sampling kinds. Statistical verification of hypothesis.	2
9	Kinds of interconnections. Regression analysis. Value of tightness and verification of the essence of correlation connection. Rang correlation. Conformity value of attributive rows variation.	6
10	Essence and compound elements of dynamic row. Characteristics of dynamic intensity. Average absolute and relative speed development	4
11	Characteristics of main tendency of development. Value of fluctuation and dynamic constancy. Correlation of dynamic row.	2
12	Role and meaning of graphical method. Main elements of graphics. Rules of structure of statistical graphs. Kinds of statistical graphs.	2
13	Subject and method of agricultural statistics	2
14	Essence and functions of indexes. Methodological bases of bunching indexes structure. Aggregate form of indexes and average weighted indexes. Interconnection of indexes. Average indexes.	4
15	Object, tasks and system of statistics for crop production indexes. Statistics of area under crop. Statistics of gross yield of agrarian cultures. Statistics of perennial crops. Statistics of agro-technic. Modern organize of statistical crop production observation in Ukraine.	2
16	Object, tasks and system of statistics for animal husbandry. Statistics of quantity and structure of agrarian animals. Indexes of movement and reproduction of animals. Natural indexes of livestock production. Statistics of zootechnic measures. Modern organize of statistical observation of livestock in Ukraine. Main directions and methods of economic-statistical analysis about pattern and development of animal husbandry.	2
17	Statistics of production resources and efficiency of agricultural production	6
18	Statistics of agricultural products	4
19	Statistics of market goods and services	4
20	Finance statistics	4
21	Price and inflation statistics	4
22	Statistics of investments and securities	4
Total		75

6. Topics of lab classes

№	Name of Themes	Quantity of hours
-	-	-

7. Control questions, sets of tests to determine the level of knowledge acquisition by students

1. What is the subject of statistics?
2. Name the fundamental differences that are emphasized in the definition of the subject of statistics.
3. Why do statistics study only mass social phenomena and processes?
4. What is the essence of the law of large numbers?
5. What is called a statistical indicator?
6. Explain the concept of statistical regularity.
7. What is a statistical population, a unit of population?
8. What is called a sign of the totality? Name the types of signs.
9. Name examples of quantitative and attributive features for the statistical population of students.
10. What feature is called variable?
11. Classification of scales of signs.
12. Name the stages of statistical research.
13. What is the theoretical basis of statistics?
14. What methods of statistics do you know?
15. What is statistical observation, what is its essence?
16. Name the organizational forms of statistical observation.
17. What is the essence of reporting?
18. What is a specially organized statistical observation?
19. What types of specially organized statistical observations do you know?
20. What issues are included in the program-methodological and organizational part of the plan?
21. What is an object and a unit of observation?
22. What is a statistical observation program?
23. Name the types of statistical observation of the degree of coverage of population units.
24. Name the types of statistical observation of facts over time.
25. Methods of observation.
26. What are the errors of statistical observation? What types of errors do you know?
27. What is the logical and arithmetic control of observation materials.
28. What is a compilation of statistics? What types of reports do you know?
29. What is a statistical grouping?
30. Name the types of groupings, their essence.
31. Name examples of analytical grouping.
32. In what sequence is the grouping?
33. How to determine the number of groups in groups by attribute?
34. How to determine the number of groups in groups on a quantitative basis?
35. How to determine the step interval?
36. What are the intervals?
37. What is a secondary grouping?
38. In which cases use the secondary grouping?
39. What is a statistical table?

40. What are the elements of a statistical table?
41. What are the tables for the construction of the subject?
42. Name the rules for constructing tables.
43. What are the absolute values?
44. Name the units of absolute values?
45. What is a relative value?
46. Describe the types of relative quantities.
47. In what units are measured relative values?
48. What is the average value?
49. Name the types of averages.
50. Name the conditions for the use of averages.
51. In which cases the arithmetic mean is used, formulas for its calculation.
52. In which cases the harmonic mean is used, formulas for its calculation.
53. In which cases the geometric mean is used, formulas for its calculation.
54. In which cases the rms is used, the formulas for its calculation.
55. Name the mathematical properties of the arithmetic mean.
56. What is the essence of the method of moments?
57. What is a distribution series?
58. Name the types of distribution series.
59. Name the elements of the variational series of distribution.
60. What is the density of distribution?
61. What is a landfill, histogram?
62. In which cases use cumulate and ogive?
63. Name the characteristics of the center of the distribution series.
64. What are quartiles and deciles?
65. What indicators are used to measure variation?
66. What indicator is used to compare the variation of two or more features of one set, or variations of the same feature in different sets?
67. Name the mathematical properties of the variance.
68. What are the different types of variance?
69. What is the essence of the rule of adding variance?
70. What is the correlation?
71. What distributions are symmetric, asymmetric.
72. What indicators are used to determine the degree of asymmetry and sharpness?
73. What is concentration?
74. What characterizes the concentration ratio?
75. What is the value of the concentration factor with a uniform distribution?
76. What is the peculiarity of calculating the localization factor?
77. What is the value of the localization coefficient with a uniform distribution?
78. What is the similarity coefficient?
79. What indicators characterize the intensity of structural changes?
80. What is selective observation?
81. What are the schemes for selecting units in the sample?
82. What do you know the types of selection of units in the sample?
83. What is the sampling error?
84. Is there a difference in determining the average sampling error for re- and non-re-sampling?
85. What is the confidence factor?
86. How to determine the marginal sampling error for the mean and fraction?
87. What determines the sample size?
88. What connection is called functional?
89. What relationship is called correlation?
90. What is the essence of analytical grouping?

91. What characterizes the correlation?
92. Name the main tasks of correlation-regression analysis.
93. Name the prerequisites for the use of correlation-regression analysis.
94. What is the regression equation?
95. How to calculate the parameters of the linear regression equation?
96. What indicators are used to assess the tightness of the relationship in the correlation-regression model?
97. What are the coefficients of elasticity?
98. How to check the significance of regression coefficients?
99. How to check the significance of the relationship in the correlation-regression model?
100. In which cases are non-parametric methods of communication used?
101. What is the correlation coefficient of ranks? Methods of its calculation.
102. What is the Fechner coefficient?
103. In which cases use the coefficients of association and contingency?
104. What is called a series of speakers? What elements make up the time series?
105. Rules for constructing time series.
106. What types of time series do you know?
107. What methods do you know to calculate the indicators of time series?
108. How to calculate the absolute growth rate, growth rate, growth rate?
109. What characterizes the absolute value of 1% increase?
110. How to calculate the average level for the interval and moment series of time?
111. How to calculate the average absolute increase, the average growth rate?
112. Name the ways of equalization of time series, their essence.
113. How to align the time series by enlarging periods?
114. How to align the time series by moving average?
115. What is the essence of the method of analytical alignment of time series by the method of least squares?
116. What is interpolation and extrapolation of time series?
117. How to calculate the monthly seasonality indices, the average annual seasonality ratio?
118. What is a statistical index?
119. What are the types of indices?
120. What is an individual index? Give examples of individual indices.
121. What value is called indexed, commensurate?
122. Rules for constructing aggregate indices.
123. Give the formulas of the main types of general indices.
124. Show the relationship between indices of physical output, cost and total production costs.
125. What is the essence of the calculation of general indices through the averaging of individual indices?
126. The rule of constructing arithmetic mean indices.
127. The rule of construction of harmonic indices.
128. How to determine the indices of absolute indicators of change in the studied phenomena?
129. What is the index of variable composition?
130. What subindexes are decomposed indices of variable composition?
131. What characterizes the index of permanent composition?
132. What characterizes the index of structural changes?
133. Features of construction of territorial indices.
134. Construct a territorial price index of variable composition, fixed composition, structural changes.
135. What is a statistical graph?
136. Name the main elements of statistical graphs.
137. What does the graph scale reflect? Name the types of scales.
138. How do you know the types of graphs?

139. What are the types of diagrams?
140. How to build bar charts?
141. How to build bar charts and what they are used for?
142. What kind of diagrams are used to depict the structure of the phenomenon?
143. What is the method of sign figures?
144. What is a cartogram? What are the types of cartograms?
145. What is a chart diagram?

Question 1. Name the type of grouping that is used for studying the availability and direction of connection between signs, from which one is effective, and another - factor that affects the result: (answer-word).
Question 2. Intervals in which minimum and maximum values of a sign are known we call: **Choose one correct answer:**
1. equal   2. closed   3. unequal   4. open
Question 3. Statistical pattern as an important statistical category includes the following conformities: **Choose one or several correct answers:**
1.development of phenomena   2. structural shifts   3. change of phenomena in the past   4. division of elements of the aggregate   5. connection between the phenomena
Question 4. On 20 (n) plots of agricultural lands the average yield is 30 centners / ha ($\overline{y}$).   **n_1=10, n_2= 5, n_3=5, $\overline{y_1}$ =25, $\overline{y_2}$ =31). Calculate the average yield of third group.**
Question 5. Signs that do not have quantitative expression and are recorded as a text record belong to the attribute signs

Answer	1.Correct
	2. Incorrect

Question 6. To statistical rows of distribution we refer: **Choose one or several correct answers:**
1. ranged   2. variational   3. structural   4. attributive
Question 7. Choose the correct sequence during the construction of interval row of distribution:
1. determine the number of groups of studied aggregate   2. calculate the value of the interval   3. allocate variants in ranged row   4. determine the interval boundaries
Question 8. What is the sum of deviations of individual values of the sign from the arithmetic middling?
Question 9. According to the plan for the current year revenue from product sales was 255 thousands of UAH., actually - 258 thousands. Determine the relative index of executing planned task.

Question 10. Which of the following dispersion correlations do not match the rule of adding variances:

Choose one correct answer:

1. $\sigma^2_{\text{заг.}} = \sigma^2_{\text{мгр.}} + \sigma^2_{\text{внг.}}$
2. $\sigma^2_{\text{мгр.}} = \sigma^2_{\text{заг.}} - \sigma^2_{\text{внг.}}$
3. $\sigma^2_{\text{внг.}} = \sigma^2_{\text{заг.}} - \sigma^2_{\text{мгр.}}$
4. $\sigma^2_{\text{внг.}} = \sigma^2_{\text{мгр.}} + \sigma^2_{\text{заг.}}$

Question 11. Choose a formula for calculation limited sampling error

 Choose one or several correct answers:

1. $\Delta_{\bar{x}} = t \cdot m_x$

2. $\Delta_{\bar{x}} = t \cdot \sqrt{\dfrac{\sigma^2}{n}}$

3. $\Delta_{\bar{x}} = \sqrt{\dfrac{\sigma^2}{n}}$

Question 12. If all frequencies of the row of distribution increase or decrease in the constant number of times k, the arithmetic middling will increase or decrease in k times

Answer	1.Correct
	2.Incorrect

Question 13. Net profit during the first year increased on 10%, during the second - on 5%, third - 15%. On what percentage did the profit increase over three years?

Question 14. Choose the correct sequence of growth of different types of middling calculated for one and the same variation row (majorization):

1. geometric
2. quadratic
3. harmonic
4. arithmetic

Question 15. Determine compliance with calculation of individual indexes and their concrete species:

A. $i_q = \dfrac{q_1}{q_0}$	1. price index 2. index of physical size of goods 3. index of the commodity circulation
B. $i_p = \dfrac{p_1}{p_0}$	
C. $i_{qp} = \dfrac{p_1 q_1}{p_0 q_0}$	

Question 16. System of measures that turn to increase crop yield in agriculture is called (answer – in a word)

Question 17. Square of average error is directly proportional to the dispersion of the sign in the general aggregate and is inversely proportional to size of sampling

1. Yes
2. No

Question 18. Write linear form of regression:

Question 19. What is region of acceptability?
Choose one correct answer:

1. number of acceptability position of sample point in sample space that lead to acceptance of null hypothesis
2. sample space of sample variable
3. critical region
4. statistical criterion

Question 20. Match names of average values with the methods of their calculation:

A. $\bar{x} = \dfrac{\sum\limits_{1}^{n} x}{n}$	1. quadratic middling 2. arithmetic middling 3. harmonic middling 4. geometric middling
B. $\bar{x} = \sqrt{\dfrac{\sum x^2}{n}}$	
C. $\bar{x} = \dfrac{n}{\sum\limits_{j}^{m} \dfrac{1}{x}}$	
D. $\bar{x} = \sqrt[n]{x_1 x_2 x_3 \ldots x_n}$	

Question 21. Index of the commodity circulation increased on 10%, price index decrease on 10%. Find index of yielding:

Question 22. Errors which appears from imperfect research tools or methods are called
Choose one correct answer:
1. system
2. random
3. intentional

Question 23. What is region of acceptability?
Choose one correct answer:
1. number of acceptability position of sample point in sample space that lead to acceptance of null hypothesis
2. sample space of sample variable
3. critical region
4. statistical criterion

Question 24. Which areas are not include to spring productive area:
(Choose one or several correct answers)
1. reseeding
2. line spacing sowing on cultivated crops
3. sowing of closed soil
4. permanent grasses
5. green sowing

Question 25. What means statistical hypothesis? Choose one or several correct answers:
1. scientific assumption, that demands control, confirmation
2. scientific assumption about size of statistical characteristic
3. scientific assumption that needs to be controlled

Question 26. When use average indexes:
Choose one or several correct answers
1. when do not complete information about same indexes that are analyzed
2. when unknown data about price change per unit of product for the base period of time
3. when necessary doing an analysis of social-economic phenomenon for long period of time

Question 27. Sample, which quite accurately reflects the general aggregate is called:
Choose one correct answer:

1. unified
2. representative
3. identical

Question 28. Process of development, movement of social-economic phenomenon's in time is called dynamic

Answer	1. Right
	2. Wrong

Question 29. Value of varying sign which is in the middle of ranged distribution row
Choose one correct answer:

1. dispersion
2. mode
3. median
4. arithmetic

Question 30. Determine correspondence of interconnection between phenomenons:

A. particular significance of factor respons only one concrete significance of result	1.correlation relationship 2.function relationship
B. particular significance of factor respons multiple significance of result	

8. Methods of education

Student-centered and problem-oriented learning, technology of intensification and individualization of learning, technology of programmed learning, information technology, technology of developmental learning, credit-transfer system of learning organization, e-learning in Moodle, Cisco Wibex Meeting, self-learning, learning based research.

Teaching is carried out in the form of: lectures, multimedia lectures, discussion of problem situations in terms of topics; conducting practical classes in the following forms: seminars, discussions, practical classes in the form of business games, consideration of practical situations, cases, trainings; independent learning on the basis of textbooks and abstracts, consultations with teachers.

The main differences of interactive teaching methods from traditional ones are determined not only by teaching methods and techniques, but also by high efficiency of educational process, which is manifested in students 'motivation, consolidation of theoretical knowledge in practice, raising students' self-awareness, developing ability to make independent decisions. social integration, the acquisition of conflict resolution skills and the search for compromises.

In addition, the study of the discipline involves the preparation of materials for student participation in scientific and practical conferences.

Theoretical material on the discipline, tasks for practical and independent work, modular tests and final exam are presented on the platform Elearn NULES of Ukraine (Moodle).

9. Control forms

Types of control: current, thematic, periodic, final, self-control. The exam is conducted in accordance with the requirements of the "Regulations on exams and tests at the National University of Life and Environmental Sciences of Ukraine" (2020). NULES of Ukraine uses a rating form of control after the logically completed part of lectures and practical classes (module) in a particular discipline.

Its results are taken into account when issuing the final grade. Student assessment does not abolish the traditional assessment system, but exists alongside it. It makes the assessment system more flexible, objective and promotes systematic and active independent work of students throughout the period of study, ensures healthy competition between students in education, promotes the identification and development of creative abilities of students. Assessment of academic achievements is carried out on a 100-point (rating) ECTS scale (ECTS), national 4-point scale ("excellent", "good", "satisfactory", "unsatisfactory") and verbal ("passed", "not passed") systems. Written exams take place with an interview.

Current-module control is carried out and evaluated by two components: practical modular control and lecture (theoretical) modular control.

The grade for the practical component of the modular control is based on the results of the student's knowledge assessment during practical classes, performance of tasks for independent work, implementation of intermediate control (testing, theoretical and situational tasks) and exam.

Evaluation of tasks for independent work is performed according to the following criteria:

• quality of performance of tasks of independent work;

• the degree of independence of the task;

• completeness of solving the problem of independent work taking into account current or project changes in legislation;

• availability of conclusions based on the results of the study;

• quality of registration of research results.

Assessment of student knowledge based on the results of tasks for independent work is carried out on a 100-point scale.

Writing abstracts at scientific conferences (seminars) is an additional part of the student's independent work on the discipline, the purpose of which is to deepen the theoretical knowledge acquired by students in the study of the discipline, the ability to apply individual, creative and professional competencies acquired in the learning process.

Carrying out of current control works occurs in the context of themes of the module. This makes it possible to permanently assess the level of knowledge of students on theoretical issues of the discipline.

Lecture module control is carried out in writing on the appropriate variants. To summarize the work of students from the content module, the final grade for the current-module control is set, which takes into account the grades for practical module control and lecture module control.

10. Distribution of points that students receive

Assessment of student knowledge is on a 100-point scale and is translated into national assessments according to table 1 "Regulations on examinations and tests in NULES of Ukraine" (order of entry into force of 27.12.2019 № 1371).

GRADING SCALE OF STUDENTS

Rating of the applicant of higher education, points	The assessment on national scale for the results of examinations and tests	
	exams	tests
90-100	excellent	accepted
74-89	good	
60-73	satisfactorily	
0-59	not satisfactorily	not accepted

To determine the rating of the student for mastering the discipline $R_{discipline}$ (up to 100 points) the obtained rating of attestation (up to 30 points) is added to the rating of the student from academic work $R_{education\ work}$ (up to 70 points):

$$R_{discipline} = R_{education\ work} + R_{attestation.}$$

11. Methodological support

1. Regulations.
2. Complex teaching of the discipline
3. Methodological guidelines for independent study courses
- Statistics in the elearn system: https://elearn.nubip.edu.ua/course/view.php?id=1722;
- Correlation analysis: educational-methodical recommendations on statistics for independent work of students under teacher supervision. - K.: CP «Comprint», 2015. – 57 p.

- Methods for studying the interconnections of economic processes in agriculture Educational-methodical publication on Statistics for preparation students of Bachelor degree for the specialty "Economics", "Finance, Banking and Insurance" - K.: CP «Comprint», , 2017. – 65 p.
4. Methodological guidelines for writing a course project:

- Educational and methodical edition from the discipline "Statistics: guidance for writing a course project for students of Bachelor degree for the specialty "Economic Cybernetic"", 2018, 77 p.

12. Recommended literature
Main

Tutorials
1. Бек В.Л. Теорія статистики: Навч. посібник.-К.: ТОВ „Центр учбовоїлітератури", 2002.-288 с.
2. Гетало А.В., Борух В.О. Економічна статистика: Навч. посібник.-К.: ТОВ „УВПУ „Екс Об", 2002.-214 с
3. Головач А.В., Єріна А.М., Козирєв О.В. та ін. Статистика. Збірник задач: Навчальнийпосібник.-К.:Вища школа,1994.-448 с.
4. Горошанська О.О. Статистика: Практикум. / Харк. держ. університет харчування та торгівлі. – Харків, 2017.– 133 с.
5. Горкавий В.К. Статистика: Навч. посібник.-К.: Алерта, 2020.- 644 с.
6. Гончарук А.Г. Основи статистики: Навч. посібник.-К.: ТОВ „Центр учбової літератури", 2004.-148 с.
7. Гусаров В.М. Теория статистики: Учебное пособие.-М.: Аудит, ЮНИТИ, 1998.-247 с.
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37. Наказ Державного комітету статистики України "Про затвердження порядку підготовки та оприлюднення звіту про результати діяльності Держкомстату за рік та структури звіту про результати діяльності Держкомстату за 2008 рік" 11.02.2009 №47

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38. Інструкція щодо заповнення форм державних статистичних спостережень № 24 "Стан тваринництва за 200 _ рік" (річна) та № 24-сг "Стан тваринництва на «_»_____200_ року" (місячна) Зі змінами, затвердженими наказом Державного комітету статистики України 11.04.2011 № 87, зареєстрованим у Міністерстві юстиції України 29.04.2011 за № 538/19276

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3. Державний Комітет статистики України http://ukrstat.gov.ua/

4. Продовольча та сільськогосподарська організація ООН (ФАО) http://www.fao.org/

5. Світовий банк http://www.worldbank.org/

6. Євростат http://epp.eurostat.ec.europa.eu/portal/page/portal/eurostat/home