

BUNIN YELETS STATE UNIVERSITY

WORKING PROGRAM OF THE DISCIPLINE
B1.C.04.05 Economic Statistics

Training area: *38.03.02 Management*

Orientation (profile): *Organization management and logistics*

Qualification (degree): *Bachelor's degree*

Form of study: *full-time*

Institute of Economics, Management and Service Technologies

Department of Economics and Management named after N. G. Nechaev

	full-time form	full-shape	time correspondence
Course	1,2		
Semester/ trimester	2,3		
Lectures	90		
Laboratory classes			
Practical (seminar) classes	108		
including practical training Form			
Форма(s) of intermediate certification	Exam-0,6		
Control	18		
Other forms of work			
Independent work	323,44		

Total hours: 540

Labor intensity: 15 зачетныхcredits.

Developer of the work program:

кCandidate of Economic Sciences, Associate professor _YIU.L.. Esina

I.ORGANIZATIONAL AND METHODOLOGICAL SECTION

The purpose of studying the discipline: is to develop students ' competencies that allow them to gain knowledge of the theoretical foundations and organization of statistics, training in statistical methods for studying socio-economic processes and phenomena, calculating statistical indicators, generalizing and interpreting the results obtained, and making optimal management decisions based on them.

Objectives of studying the discipline:

- study of the main categories of economic theory of statistics;
- familiarization with methods and models of statistical research of socio-economic processes;
- formation of students ' skills in the practical use of the obtained theoretical knowledge in the course of solving specific statistical problems.

Place of the discipline in the structure of the OPOP: implemented as part of the mandatory part of the block B1. Disciplines (modules).

Planned results of training in the discipline:

Code and name of the competence	Indicators of achievement of the competence	Planned results of training in the discipline
UC-1	Know: <ul style="list-style-type: none"> – methods of searching for information and working with it; – consistency of a systematic approach. 	Knows: <ul style="list-style-type: none"> - methods of searching for information and working with it when conducting statistical research; - the essence and mechanism of a systematic approach to conducting statistical research.
	Will have: <ul style="list-style-type: none"> – analyze the problem, identify the stages of its solution, perform actions to solve it; – find various options for solving the problem, evaluate their advantages and risks. 	Can do: <ul style="list-style-type: none"> - analyze the task of statistical research, identify the stages of its solution, carry out actions to solve it; - find various options for solving the task of statistical research, evaluate their advantages and risks.
	Own: <ul style="list-style-type: none"> – skills of assessing the practical consequences of possible solutions to the problem; – skills of competent, logical, reasoned formulation of their own judgments and assessments. 	Owns: <ul style="list-style-type: none"> - skills in choosing tools for processing statistical data and assessing the practical consequences of possible solutions to the problem; - skills of competent, logical, well-reasoned formulation of their own judgments and assessments when conducting statistical research
of the Military Industrial Com-	To know: <ul style="list-style-type: none"> - methods of processing and statistical analysis of data; - methods of processing the collected information using information technologies 	Knows: <ul style="list-style-type: none"> - methods of processing and statistical analysis of data; - methods of processing the collected statistical information using infor-

plex -2	and various financial and accounting programs.	mation technologies and various application programs
	To be able to: - collect and process data to solve the tasks set; - correlate the collection of information at a certain date and use various methods of statistical processing when analyzing data.	Cando: – collect and process statistical data to solve the tasks set; – analyze statistical indicators to substantiate the conclusions obtained.
	Own: - skills of statistical analysis of data necessary for solving economic tasks; - techniques for analyzing complex socio-economic indicators	Has: – skills statistical analysis skills analysis of economic processes and interpretation of the results obtained; – methods of statistical analysis of complex socio-economic indicators.

II. CONTENT AND SCOPE OF THE DISCIPLINE

with an indication of the number of hours allocated for students ' contact work
with a teacher (by type of training sessions) and for independent work

Full-time education

n /	a Name of sections and	topics Total	Classroom classes			Sam. rab.
			LK	PZ	LB	
	Section 1. Theory of statistics	242,7,7	54	54		134,7,7
1.	Topic 1. Theoretical and organizational foundations of statistics	34	6	6		22
2.	Topic 2. Types and forms of expression of statistical indicators	38	8	8		22
3.	Topic 3. Indicators of variation	38	8	8		22
4	Topic 4. Economic indices	38	8	8		22
5	Topic 5. Dynamics series	42	10	10		22
6	Topic 6. Statistical study of the relationship and dynamics of socio-economic phenomena and processes	52,7	14	14		24,7,7
	<i>including practical training</i>					
	<i>Exam</i>	0,3				
	<i>Control</i>	9				
	<i>Total for the 2nd semester</i>	252	54	54		134,7,7
	Section 2. Экономическая статистика	278,7	36	54		188,7,7
7.	Topic 7. Statistics of production and sales of products	58	8	12		38

8.	Topic 8. Labor and wage statistics	58	8	12		38
9.	Topic 9. Statistics of fixed assets	52	6	10		36
10.	Working capital statistics	52	6	10		36
11.	Statistics of key financial results	58.7	8	10		40.7
	<i>including practical training</i>					
	<i>Exam</i>	0.3				
	<i>Other forms of work</i>					
	<i>Control</i>	9				
	<i>Total for 3 ce placesmecmp</i>	<i>months 288</i>	36	54		188.7,7
	TOTAL:	540	90	108		323,4

Full-time and part-time education (not implemented)

Part-time education (not implemented)

III. EVALUATION MATERIALS FOR THE CURRENT AND FUTURE EVALUATION OF THE PROJECT. INTERMEDIATE CERTIFICATION OF STUDENTS IN THE DISCIPLINE

Current certification is carried out in the form of control work, tests, and essays.

Standard version of the control work

1. The initial stage of statistical research is:

- a) grouping of statistical data;
- b) calculation of primary absolute indicators;
- c) statistical observation;
- d) calculation of average level indicators.

2. The list of questions (or signs) to be registered in the course of observation is called:

- a) a statistical form;
- b) the monitoring program;
- c) monitoring tools;
- d) there is no correct answer.

3. The critical moment of time during observation is:

- a) the moment of time as of which registration is performed;
- b) the period of observation;
- c) the period of observation;
- d) time of filling out the reporting form.

4. During the population census, information is obtained using the following methods:

- a) direct observation;
- b) a survey.

- c) documentary;
- d) personal data.

5. Representativeness errors are characteristic of:

- a) continuous observation;
- b) discontinuous observation;
- c) one-time monitoring;
- d) the survey.

6. A dimension is called:

- a) formation of statistical aggregates characterized by generalized indicators;
- b) division of aggregate units into groups based on significant varying characteristics;
- c) identification of quantitative and qualitative indicators that characterize the aggregate;
- d) simply feeding the total population into groups.

7. The relationship between the number of groups (n) and the number of population units (N) is expressed in the Sturges formula:

- a) $1 + 2,322 \lg N$;
- b) $2 + 1,422 \lg N$;
- c) $1 + 3,322 \lg N$;
- d) $1 + 3,322 \lg N$.

8. Types of statistical groupings include:

- a) typological information;
- b) combined;
- c) structural;
- d) analytical information.

9. The number of groups when grouped by quantity depends on:

- a) from the volume of the aggregate;
- b) from the tightness of the relationship between the factorial and effective signs;
- c) depending on the research objectives;
- d) from the direction of the relationship between the attributes.

10. What graphical methods can be used to represent variational series:

- a) polygon and histogram;
- b) structural diagrams.
- c) bar charts and cumulative data;
- d) polygon, histogram of cumulative and ogiva.

11. The turnover of the trading company in January amounted to 14.0 million rubles, in February it is planned to increase the volume of trade to 16.0 million rubles. The actual turnover in February was 18 million rubles. The relative rate of implementation of the plan will be equal to:

- a) 112.5%;
- b) 128.6%;
- c) 114.3%;
- d) 88.9%.

12. Absolute indicators are measured by:

- a) in natural, monetary or labor units of measurement;
- b) in natural, conditional-natural, relative or labor units of measurement;
- c) in natural, labor, cost or average units;
- d) in relative, average, natural or conditional natural units.

13. Relative intensity values are measured:

- a) in named units.
- b) in ppm;
- c) as a percentage;
- d) in shares or percentages.

14. The relative size of the structure characterizes:

- a) comparison of the phenomenon levels of different aggregates;
- b) the intensity of development of the phenomenon;
- c) the composition of the population under study;
- d) the dynamics of the development of the phenomenon.

15. What relative indicators can be expressed in named numbers?

- a) structures;
- b) speakers.
- c) implementation of the plan;
- d) the intensity and level of economic development.

16. Formulas for determining the arithmetic mean:

a) $\bar{X} = \frac{\sum X}{n}$; $\bar{X} = \frac{\sum xf}{\sum f}$;

b) $\bar{X} = \frac{\sum x}{n}$; $\bar{X} = \frac{n}{\sum \frac{1}{x}}$;

c) $\bar{X} = \sqrt{\frac{\sum x^2}{n}}$; $\bar{X} = \frac{\sum x * f}{\sum f}$;

d) $\bar{X} = \frac{\sum w}{\sum \frac{1}{x} * w}$. $\bar{X} = \frac{n}{\sum \frac{1}{x}}$.

17. The arithmetic mean simple is used:

- a) in cases where the calculation is based on grouped data;
- b) in cases where the calculation is based on non-grouped data, when there are no weights or they are very difficult to determine;
- c) when data is grouped, but no weights are available.
- d) when the population is grouped and the specific weights are different.

18. Each card is increased by 5 times. The average value in this case is:

- a) it will decrease by 5 times.
- b) it will increase by 5 times.
- c) remains unchanged.

d) increase by 2.5 times.

19. The median is:

a) the value of the feature that is most often found in the aggregate;

b) the value of the feature that divides the distribution series in half;

c) the value of the attribute, which falls on the value of the ranked population;дину ранжированной совокупности;

d) a group located in the middle of the ranked population.

20. Which of the indicators of variation characterizes the absolute size of the trait fluctuation around the average value?

a) the variance;

b) the range of variation.

c) the average square deviation;

d) empirical correlation relation.

24. The coefficient of variation characterizes:

a) the degree of variation of the trait;

b) the tightness of the relationship between the attributes;

c) the limits of the attribute's fluctuation;

d) the average value of the feature.

21. At what values of the coefficient of variation (v) is the set of values of a feature considered homogeneous, and its average value is considered reliable?

a) $v > 100\%$;

b) $v > 60\%$;

c) $v > 40\%$;

d) $v > 30\%$.

22. In the theory of statistics, depending on the degree of coverage of population units, indexes are distinguished:

a) individual;

b) chain and basicones;

c) territorialdivisions;

d) summary (general)data.

23. The multiple correlation coefficient can take the following values:

a) from (0) to (+1);

b) from (-1) to (0).

c) from (-1) to (+1).

d) any positiveresults.

24. The tightness of the relationship between two alternative attributes can be measured using the coefficient:

a) Fechner signs;

b) Spearman rank correlations;

c) concordations

d) associations.

25. Methods for identifying the main trend of dynamics:

a) moving average, interval enlargement, linear dependence;

b) enlargement of intervals, linear dependence and parabolic;

- c) moving average, interval enlargement, analytical alignment;
- d) analytical alignment in a straight line.

Approximate topics of research papers

1. History and stages of development of economic statistics as a science.
2. Classification, grouping, and nomenclature of objects in a statistical study.
3. Indicators of products and stages of their readiness at the enterprise.
4. Forms of accounting for products at the enterprise.
5. Labor statistics at enterprises.
6. Statistical indicators for evaluating product quality.
7. Statistics on the quality of the company's work.
8. Volumes and composition of the salary fund.
9. Statistical methods for measuring the level and dynamics of labor productivity.
10. Statistics of labor conflicts.
11. Statistics of production funds.
12. Indicators of the availability, composition and movement of equipment at the enterprise.
13. Statistical indicators of production costs.
14. Key indicators of financial results.
15. Investment statistics.
16. Innovation activity statistics
17. Statistical methods of forecasting economic activity.
18. Statistical study of economic efficiency

Intermediate certification of students is carried out in the form of an exam (in the traditional form), using the following assessment materials.

Questions to the EC for men (2 semester full-time study)

1. The concept of statistics. Subject and method of statistics.
2. Basic concepts and categories of economic statistics.
3. Tasks and principles of organizing state statistics in the Russian Federation.
4. The concept of statistical information and statistical observation.
5. Program, object, and unit of statistical observation.
6. Organizational forms of statistical observation.
7. Types, methods, and errors of statistical observation.

8. Statistical indicator and its types.
9. Statistical summary, its tasks and types.
10. The grouping method and its place in the system of statistical methods. Types of dimensions.
11. Selecting a grouping attribute, determining the number of groups, and setting grouping intervals.
12. Distribution series. Classifications.
13. Statistical tables, their types and construction rules.
14. Statistical graphs and charts.
15. Absolute statistical values, their units of measurement and types.
16. Relative statistical values.
17. Forms and types of average values.
18. Arithmetic mean and its properties.
19. Structural averages: mode and median.
20. The concept of variation. Absolute and relative indicators of variation.
21. Indicators of the structure and form of distribution.
22. Types of variances and the rule of their addition.
23. The essence, meaning, and classification of indexes. Individual and general indexes.
24. Average forms of summary indexes.
25. Index analysis of the impact of structural changes.
26. Chain and basis indexes.
27. Use of the index method in the analysis of the interrelation of economic phenomena, in territorial comparisons.
28. Concept and types of dynamics series. Indicators of a number of dynamics.
29. Average characteristics of a series of dynamics.
30. Characteristics of the main trend in the dynamics series and ways to identify it.
31. Analytical alignment of time series levels. Building a forecast based on the trend equation.
32. The concept of distribution patterns and their types.
33. The law of normal distribution.
34. Distribution moments
35. Asymmetric distributions.
36. Kurtosis
37. Correlations
38. Regression
39. The essence, stages and factors of correlation analysis
40. Measurement of tightness and direction of correlation.
41. Determination of the tightness of the relationship between two qualitative features: association coefficients and contingencies.
42. Nonparametric methods for assessing the tightness of the relationship between qualitative features: Spearman and Kendall coefficients.

Questions for the exam (3 semester full-time study)

1. System of cost indicators of industrial enterprise output.
2. Indicators of the dynamics and implementation of the plan for the volume of production of an industrial enterprise.
3. Performance indicators of the product range plan.

4. Composition of employees, types and indicators of the number of employees of the enterprise.
5. Statistical assessment of compliance of employees' qualifications with the nature and complexity of the work performed.
6. Statistical study of the movement of the number of employees in an enterprise.
7. Statistical study of working hours.
8. Statistical indicators of the use of labor resources.
9. Volumes and composition of the salary fund.
10. Statistical indicators of the average wage level and their interrelation.
11. Statistical assessment of the ratio of labor productivity growth and its remuneration.
12. Statistical indicators of the cost of fixed assets.
13. Statistical indicators of the state and movement of fixed assets.
14. Statistical indicators of the use of fixed assets.
15. Indicators of the use of production areas and stock-to-work ratio of employees.
16. Statistical indicators of the availability, composition, condition, and movement of equipment.
17. Statistical indicators of equipment capacity.
18. Statistical indicators of the availability and composition of working capital.
19. Working capital utilization indicator system.
20. Statistical study of the composition of production costs.
21. Statistical indicators of the dynamics of the production cost and deviations of its actual value from the planned value.
22. Study of the cost price using the cost indicator for 1 ruble of marketable products.
23. Statistical indicators of profit.
24. Statistical study of profitability.
25. Statistical study of economic efficiency. *русское изучение экономической эффективности.*

IV. LIST OF LITERATURE REQUIRED FOR MASTERING DISCIPLINES

4.1. Basic literature

1. Долгова *Dolgova* V. N. Teoriya statistiki : uchebnik i praktikum dlya vuzov [Theory of Statistics: textbook and practice for universities]. Medvedeva. - 2nd ed., reprint. and add-ons. - Moscow: Yurayt Publishing House, 2023. - 278 p — - (Higher education). — ISBN 978-5-534-16052-9. - Text : electronic // Educational platform Yurayt [website]. — URL: <https://www.urait.ru/bcode/530351>
2. Бычкова, С. Г. Bychkova S. G., Parshintseva L. S. Sotsial'no-ekonomicheskaya statistika : uchebnik i praktikum dlya vuzov [Socio-economic statistics: textbook and practice for universities]. - Moscow: Yurayt Publishing House, 2023. - 488 p — - (Higher education). — ISBN 978-5-534-14952-4. - Text : electronic // Educational platform Yurayt [website]. — URL: <https://www.urait.ru/bcode/519922>

4.2. Additional literature

1. *Dudin M. N., Lyasnikov N. V., Lezina M. L. Sotsial'no-ekonomicheskaya statistika : uchebnik i praktikum dlya vuzov* [Socio-economic statistics: textbook and practice for

universities]. - Moscow: Yurayt Publishing House, 2023. - 233 p — - (Higher education). — ISBN 978-5-534-04447-8. - Text : electronic // Educational platform Yurayt [website]. — URL: <https://www.urait.ru/bcode/515088>

V.. LIST OF RESOURCES OF THE INFORMATION AND TELECOMMUNICATION NETWORK "INTERNET" REQUIRED FOR MASTERING THE discipline

№ Item No	. Link to the information resource	Name of the development in electronic form	Availability
1.	http://www.minfin.ruminfin.ru	Ministry of Finance of the Russian Federation	Free access
2.	http://edu.ru/	Russian Education: Federal Portal. Includes links to portals and websites of educational institutions; state educational standards; regulatory documents; a catalog of excursions and training programs.	Free access

VI. MODERN PROFESSIONAL DATABASES AND INFORMATION AND REFERENCE SYSTEMS

1	http://www.biblioclub.ru.biblioclub.ru	Electronic Library System (EBS) University Library online	Registration via any university computer. In the future, unlimited individual access is provided from any point where there is access to the Internet
2	..garant.ru	www.garant.ru Legal information Portal	Free access
3	www.elibrary.ru	Russian information portal in the field of science, technology, medicine and education	Free access
4	www.consultant.ru	Russian Computer Reference and legal system	Free access
5	https://data.gov.ru/	Open Data Portal of the Russian Federation	Free access
6	https://www.gks.ru/	https://www.gks.ru/ Федеральная State Statistics Service	Free access

VII. LICENSED AND FREELY DISTRIBUTED SOFTWARE

When implementing an academic discipline, the following licensed and freely distributed software is used:

- Microsoft Windows;
- Microsoft Office;
- LibreOffice, etc..

VIII. EQUIPMENT AND TECHNICAL MEANS OF TRAINING REQUIRED FOR THE IMPLEMENTATION OF THE EDUCATIONAL PROCESS IN THE DISCIPLINE, НЕОБХОДИМЫЕ ДЛЯ ОСУЩЕСТВЛЕНИЯ ОБРАЗОВАТЕЛЬНОГО ПРОЦЕССА ПО ДИСЦИПЛИНЕ

Training sessions are held in classrooms equipped with specialized furniture, including stationary or portable teaching equipment (projector, screen, computer / laptop).

Independent work is carried out in classrooms equipped with computer equipment with the ability to connect to the Internet and provide access to the electronic information and educational environment of the university.