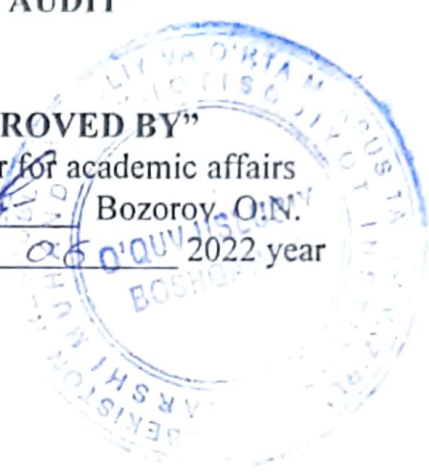MINISTRY OF HIGHER AND SECONDARY SPECIAL EDUCATION
OF THE REPUBLIC OF UZBEKISTAN

KARSHI ENGINEERING-ECONOMICS INSTITUTE

THE FACULTY OF ECONOMICS

THE CHAIR OF "ACCOUNTING AND AUDIT"

"APPROVED BY"
Vice rector for academic affairs
Bozorov. O.N.
"28" _____ 2022 year

CURRICULUM OF
"S T A T I S T I C S"
SCIENCE

Field of knowledge:	400000	-	Business, management and law
Field of study:	410000	-	Business and management
Direction of study:	60410500	-	Banking and audit

Karshi-2022

Science (module) code STAT1108	Academic year 2022-2023	Semester III/IV	ECTS credits 8 4/4	
Science (module) type Mandatory	**Language of education** Uzbek		**Weekly class hours** 4/4	

1.	The name of the science	Semester	Classroom lessons (hour)	Independent study (hour)	Total load (hour)
	Statistics	3-semester	60	60	120
		4-semester	60	60	120

2.	

I. Fanning mazmuni

In this subject object, methods, purpose and functions of "Statistics" were revised and also there were in detail abbreviated – with the help of statistical methodology learning tasks of valuable concepts, cathegories, definitions of market economy, cause-effect relationship between market events and processes , their evolution laws in harmony with occurring and deciding of market relitions in our country.

"Statistics" belongs to main specialty science complex and it is taught in the III – IV semesters.

In order to carry out the program , having enough knowledge and skills in company with planned general methodology subjects (teaching methodology of special subjects, information systems) are demanded.

The purpose of teaching the subject is forming professional knowledge about methods and practise of statistics and needed study skills .

The functions of the subject include getting deep knowledge and imagination about object ,methods and importance of statistics; broadly learning theoretical, methodical and practical issues of statistics; knowing about establishing of Uzbekistan State Statistics , its functions and rights according to the law of "About The State Statistics"; studying essence, types and methodical – organizational issues of statistical observation; summarizing and grouping information and expressing in tables the resuls of statistical observation ; getting skills of forming and analyzing distribution lines; having deep imaginations about statistical indicators, their types and forms,ways of comparing them, having imagination about micro and macro economical indicators; knowing essence, practical and theorical issues of selectical observation, marking ways of representativeness, getting skills of statistical checking and solutions of scientic and experimental hypothesis; applying correlation-regression analysis for expaning cause-effect relationship among market events ; knowing skills of forming and analyzing dynamic rows; providing imagination about accounting of economic indicators which are used in practical statsitics and skills of making overview according to them .

There are demands for students on knowledge, experience and qualification about this subject. A student:

- must have imagery about specific features of object and methods of statistics; mass incident, its important characters; statistical method; statistic research and its stages; current Uzbekistan State statistics and international statistics; essence and importance of statistical observation; principes of organizing statistical observations;

- must know and be able to use practically accounting of variation indicators; asymmetry coefficient and determinating it; distrubiton excess, quantitative marking its degree and essence; selective observation, its meaning causes and advantages of applying; styles for providing representativeness of selection ; styles of correlation-regression analysis;

- must have skills of accounting economical indicators in statistics practice; utilizating deflators and aggregate indices of GDP; forming index of consumption rate; using

main economic statistic style – national accounting system (NAS); identifying essence, importance and functions of NAS, analyzing main categories and conceptions of NAS; accounting and applying practically main calculations of NAS.

II. Basic theoretical part (lectures)
II.I. The subject includes the following topics:
1-module. General theory of statistics
Topic 1. Introduction to the science of statistics

Understanding statistics. The subject of statistics and its features. Scientific and practical discussions on statistics. Basic elements, categories and concepts of statistical science: statistical set, set of units, variation, variable, attribute, ordered and quantitative sign, statistical indicator, statistical regularity. Data types. Methods and methodology of statistics. Stratification of Statistical Science and Activities. The challenges of statistics in the context of economic development and liberalization. Organization of statistics and obtaining statistical information.

Topic 2. Theory and practice of collecting statistical data

Statistical observation is the first stage of statistical research. The concept, essence and meaning of statistical observation. Basic principles of statistical observation. Program-methodical and organizational issues of the statistical plan of observation: object and unit of observation, observation program, form and instructions for observation, organ, place of observation, time and duration of observation. Forms, types, methods of statistical observation and their features. Statistical reports, registers and specially organized statistical checks. Mass and partial surveillance, continuous (ongoing) and intermittent surveillance, regular and one-way surveillance. Direct and documentary observation, inspection. The tasks of organizing statistical observation in the Republic of Uzbekistan and its components. Statistical observation error and its types. Methods for obtaining and checking statistical data.

Topic 3. Statistical summary and grouping

Statistical summary is the second stage of statistical research. The essence and purpose of summary and grouping in statistics. The method of statistical grouping, its importance in the study of socio-economic events and processes. Types of groupings: simple and complex (multidimensional) groupings, typological, structural and analytical groupings. Principles (rules) of group formation. Grouping icon. Number and distance between groups. The tasks are solved by the grouping method. The essence, components and types of distribution of the series. Attributive variational, discrete, and spaced lines. The problem of creating variation series.

Topic 4. Displaying statistical data in tables and graphs

The essence and significance of statistical tables. Rules of formation. Types of statistical tables. Simple, group and combination tables. Methods for reading and analyzing statistical tables. Concept, types, meaning and rules for constructing statistical graphs. Understand statistical charts. Graph components: scale, scale and coordinate system. Graphical presentation of quality data. Bar chart, pie chart, Pareto chart. Graphical presentation of quantitative data. Scatter plot, busy and leaf graph, bar graph. Graphical representation interconnection. Types of graphs describing the variation series: polygon, histogram, cumulative, ogive. Distortion of truth in descriptive statistics.

Topic 5. Vizual statistical indicators

The essence and significance of statistical indicators. Attributes of statistical indicators: qualitative, quantitative, strictly limited in space and time. Classifications and types of statistical indicators. Absolute, relative and average values. Volume and quality indicators. Indicators of moments and intervals. Forms of expression of statistical indicators. Types of

relative values: assignment of a plan (contract), implementation of a plan, dynamics; the relative amounts of structure, coordination, comparison, and intensity. The relationship between the types of relative indicators. The need to combine absolute and relative indicators in the statistical study of socio-economic events.

Topic 6. Average values

Average values and their classification. Analytical means types: arithmetic, harmonic, geometric, quadratic, cubic means. Problems of using average values in socio-economic processes. Arithmetic mean properties. Calculate the arithmetic mean by the "conditional moment" method. Types of structural means and their use in statistical research. The essence of the median and the order of its calculation in the distribution series. Calculation of modes and median interval in the variation series. Quantitative measurements of relative position: quartile; quintile; decyl; percentile.

Topic 7. Methods for estimating variation in statistics and the basics of analysis of dispersion

A variant of the meaning of the character in the set. Qualitative accuracy and characteristics of mass events and processes. Quantitative measures of variation: width of dispersion, total dispersion and standard deviation, sample dispersion and standard deviation, coefficients of variation. Interpreting the standard deviation: Chebyshev's rule, a rule of thumb. Asymmetry indicators. Optimal limits of variation.

Topic 8. Dispersion. Types of dispersion

Dispersion and standard deviation properties and their uses. The procedure for calculating dispersion and standard deviation in the "conditional moment" and "sum" methods. Alternative variation of signs. The concept of boundaries. Boundary methods: rectangular charts and levels. Intragroup and intergroup deviations. The rule for adding dispersiones and its application in the study of the relationship of socio-economic phenomena. Empirical correlation. Determination coefficient.

Topic 9. Application of selective observation in statistical research

The essence of selective observation, the reasons and benefits of its use. Determination and assessment of target parameters. Get almost complete and accurate information about the training package. Save time and money. Broader and more complete study of the object of observation. Determination and assessment of target parameters. Representativeness of selection and the selection methods that provide it.

Topic 10. Selective observations error, ways of determining the required observation size and distribution of observation results

Selective tracking types and errors. Small sample and its features Ways of dissemination of the results of selective observation among the general population. Mean Confidence Interval: Normal Statistics. Confidence interval for the mean of the total set: Student's t statistics. Determine the required number of sample bags. Application of selective monitoring in a market economy.

Topic 11. Statistical study of interactions

Necessity and methods of statistical research of the relationship of socio-economic events

and processes. Grouping, comparison of parallel rows, display, dispersion and correlation regression methods. Terms of use of correlation-regression analysis. The concept of interactions and their types: functional and correlation. Functional relationship depending on a number of factors. In correlation analysis, the density of connections between events.

Topic 12. Methods for studying the density of interactions

A pair of correlation and regression equations. Direct and curvilinear correlation and regression. Correlation coefficient and its calculation. Determination of the parameters of the double regression equation by the small squares method. Nonparametric methods of statistical research of correlations. Single and multivariate regression models. Methods for investigating the density of dependencies. Fechner and Spearman correlation coefficients.

Topic 13. Methods of statistical research of dynamics

Indicators of analytical analysis of time series: absolute change, rate of change, rate of additional change, absolute value of one percent of additional change, point of change (percentage). Methods for calculating the level of averages in time series. Chronological average, simple and weighted arithmetic average. Average rate of change and rate of additional changes.

Topic 14. Economic indices

Concept, essence, value of economic indicators. Classification of economic indicators. Individual and general indicators. Aggregate indicators and the problem of choosing a weight when constructing them. Laspeyres and Paasche indices. Arithmetic average and harmonic average indices. Fisher's index.

Topic 15. Areas of application of economic indices in statistical practice

The problem of regional indices and weight choice in their construction. Base and chain aggregates. Aggregated indicators of constant and variable weight. Interregional comparative indices and issues of their formation. Index analysis of the influence of factors on the average dynamics. Indexes with variable and fixed content. Assess the impact of structural changes. Index of structural changes. Use of the index of structural breaks in explaining "statistical paradoxes". Index analysis of multivariate structural breaks and their effects. Shifts in the assortment and analysis of their impact by the index method. Index analysis of the role of factors influencing the absolute growth of the final indicator. Important economic indicators and their relationship.

2- module. Socio-economic statistics

Topic 16. Population statistics

History of population statistics. Population statistics study object. The main tasks of population statistics. Population and composition statistics. Methods for determining the average population. Distribution by total population and important characteristics. Population categories: permanent and existing population, temporary residents and temporary non-residents. The relationship between the permanent and the existing population. Population age pyramid.

Topic 17. Population movement statistics

Vital indicators: general, specific and special indicators. Absolute and relative indicators of population movement. Indicators of mechanical population displacement. Indicators of the demographic load of the population. Forecasting the future of the population. Calculation of the future population using global and age methods. Forecasting the dynamics and prospects of the world population.

Topic 18. Labor market statistics

Objectives of labor market statistics in a market economy and the socio-economic significance of its statistical research. Definition of the concept of labor resources and their quantity. Workforce balance and its importance. The concept of the economically active and inactive population and their composition. Employment and unemployment statistics. Classification of the population by employment status. Indicators of the size and composition of the employed population. Forms, types and levels of unemployment. Statistical study of the dynamics of unemployment.

Topic 19. Balance of labor resources

Personnel statistics. Labor force efficiency indicators. Funds of working time and the coefficients of their use. Remains of labor resources and working time. The concept of labor productivity and the importance of its statistical study. Indicators for determining the level and dynamics of labor productivity. Forms and systems of remuneration. Payroll and composition indicators. Social payments statistics.

Topic 20. The system of national accounts and the system of macroeconomic indicators

The concept of a national accounting system and the history of its origin. Differences and similarities between the balance of the national economy (balance of the national economy) and the system of national accounts (NAS). The need to maintain a system of national accounts. structure of the system of accounts of the system of national accounts, general rules for their formation. Institutional sectors and the system of national accounts. Using the system of national accounts in macroeconomic analysis.

Topic 21. Methods of calculating gross domestic product

GDP is a key macroeconomic indicator of a country. Restriction of production in the system of national accounts. Principles (rules) for determining the volume of production and types of assessment: factorial, basic, production and consumer. Methods for calculating GDP. The calculation of GDP by the production method. Calculation of GDP by the income distribution method.

Topic 22. National income statistics

General concepts of income and indicators of income in the system of national accounts. J. Hicks' Income Doctrine. The new system of national accounts is based on the teachings of J. Hicks. Nominal and real income. Statistics of distribution, redistribution and final use of national income. Statistics on gross national income, net national disposable income, gross national fund, net national fund indicators. International comparison of macroeconomic indicators.

Topic 23. The statistics of national wealth

The concept of national wealth in the context of economic modernization and the socio-economic significance of its study and the tasks of statistics. Balances of assets and liabilities of the system of national accounts. Business reputation and marketing assets, mineral resources, energy minerals. Financial assets, produced and non-produced non-financial assets, property of the population.

Topic 24. Fixed and working capital statistics

The concept of fixed assets, their composition and types of valuation (by initial, residual and replacement cost). Depreciation of fixed assets and methods for calculating depreciation. Remains of fixed assets. Condition, movement and use of fixed assets. Statistical study of the statistics of working capital, their composition, assessment, turnover rate and the duration of one cycle.

Topic 25. Financial market statistics

Higher financial estimates and rough estimates: higher interest rates; compound interest; discount finance rent or annuity. Socio-economic significance and importance of statistical research of financial markets. Government finance statistics. The main tasks of state budget statistics. Statistical study of state budget revenues and expenditures, budget deficit (surplus).

Topic 26. Money circulation and credit statistics

Socio-economic significance of money circulation and the function of statistics. Methodological Foundations of Monetary Statistics (International Standard). Monetary base. Credit and loans. The main indicators of the statistics of money circulation. Methods for calculating and analyzing banking statistics.

Topic 27. Statistical research of the insurance market

Subject and tasks of statistics of the insurance market. Statistical research of the insurance and insurance market. The system of indicators of statistics of the insurance market. Property insurance statistics indicators. Statistics of rates of insurance rates. Personal insurance statistics. Social security and social insurance statistics.

Topic 28. Foreign economic activity statistics

Foreign economic activity, its history and main directions, as well as its role in the development of the country's economy. Methodology of statistics of foreign economic activity and its tasks. Indicators of foreign economic activity. Coverage of foreign economic relations in macroeconomic statistics. Types of import and export. Prices used in import and export accounts. Index method in foreign trade statistics. Foreign economic activity statistics in the system of national accounts.

Topic 29. Payment balance

Balance of payments concept. Basic concepts of the balance of payments and the importance of its statistical study. Balance of payments classification and international investment approach. Balance of payments concept. Use the principles of comparison of indicators of developed countries and the system of national accounts and balance of payments rules. The principle of accounting for balance of payments transactions. Payment balance.

Topic 30. Population living standard statistics

The concept of the standard of living. The system of indicators characterizing the standard of living of the population. Qualitative indicators of the standard of living. Socio-economic indicators are the average and the degree of median change. Areas of statistical research of the standard of living. Synthetic and value indicators of the standard of living of the population, physical indicators, relative indicators of the distribution and composition of wealth. Human Development Index.

III. Methodical instructions and recommendations for practical training
(Laboratory and term papers are not planned)

The following topics are recommended for practical training:
1   Introduction to the science of statistics
2   Theory and practice of collecting statistical data
3   Statistical summary and grouping.
4   Displaying statistical data in tables and graphs
5   Vizual statistical indicators
6   Average values
7   Methods for estimating variation in statistics and the basics of analysis of dispersion
8   Dispersion. Types of dispersion
9   Application of selective observation in statistical research
10 Selective observations error, ways of determining the required observation size and distribution of observation results
11 Statistical study of interactions
12 Methods for studying the density of interactions
13 Methods of statistical research of dynamics
14 Methods of statistical research of dynamics.
15 Economic indices. Areas of application of economic indices in statistical practice
16 Population statistics
17 Population movement statistics
18 Labor market statistics
19 Balance of labor resources
20 The system of national accounts and the system of macroeconomic indicators
21 Methods of calculating gross domestic product
22 National income statistics
23 The statistics of national wealth
24 Fixed and working capital statistics
25 Financial market statistics
26 Money circulation and credit statistics
27 Statistical research of the insurance market
28 Foreign economic activity statistics
29 Payment balance
30 Population living standard statistics

Practical classes are in an auditorium equipped with multimedia devices should be conducted by one teacher per group. It is advisable to conduct classes using active and interactive methods, using appropriate pedagogical and information technologies.

IV. Independent education and work.
Recommended topics for independent study:
1   Introduction to the science of statistics
2   Theory and practice of collecting statistical data

	3 Statistical summary and grouping. 4 Displaying statistical data in tables and graphs 5 Vizual statistical indicators 6 Average values 7 Methods for estimating variation in statistics and the basics of analysis of dispersion 8 Dispersion. Types of dispersion 9 Application of selective observation in statistical research 10 Selective observations error, ways of determining the required observation size and distribution of observation results 11 Statistical study of interactions 12 Methods for studying the density of interactions 13 Methods of statistical research of dynamics 14 Methods of statistical research of dynamics. 15 Economic indices. Areas of application of economic indices in statistical practice 16 Population statistics 17 Population movement statistics 18 Labor market statistics 19 Balance of labor resources 20 The system of national accounts and the system of macroeconomic indicators 21 Methods of calculating gross domestic product 22 National income statistics 23 The statistics of national wealth 24 Fixed and working capital statistics 25 Financial market statistics 26 Money circulation and credit statistics 27 Statistical research of the insurance market 28 Foreign economic activity statistics 29 Payment balance 30 Population living standard statistics It is highly recommended that students prepare and represents prepare essays on independently mastered topics.

3.	## V. Educational results / professional competences
	The student should know:
	    - - organization of statistical monitoring of the solution of statistical problems;
	    - - compiling understandable statistical tables and graphs;
	    - - have an idea about the types of grouping, statistical classification and interpretation of its features;
	    - - preparation of basic calculations of SNA and determination of their indicators;
	    - - knowledge of absolute and relative indicators;
	    - - to study the average values and indicators of variation;
	    - - calculation of the size of national wealth and its index;
	    - - calculation of gross domestic product;
	    - - distribution of national income;
	    - - analysis of indicators reflecting the level of participation of the country in the international distribution of labor;
	    - - analysis of the execution of the state budget;
	    - - must have the skills to determine the essence of indicators that reflect the standard of living of the population in the system of national accounts;

	- - mastering the method of interconnection between economic phenomena; - determine the series and types of dynamics; - - assessment, analysis and interpretation of statistical indicators in a market economy; - - calculation of economic indicators used in statistical practice; - - use of the deflator of the gross domestic product and aggregated indices; - - to determine the features of the system of statistical indicators of monetary circulation; - - must have the skills to analyze socio-economic indicators that reflect the standard of living of the population.
4.	**VI. Educational technologies and methods.** - lectures; - performing practical work based on a real situation; - writing abstracts, abstracts and articles; - case solving; - process-oriented education; - participation in discussions; - work in small groups; - execution of design works; - performance of independent work; - preparing a presentation; - solving tests of different levels; - conducting surveys; - participation in population censuses.
5.	**VII. Students to receive credit:** Theoretical materials on science are provided through lectures, participation in lectures and consolidation of lectures through a credit-modular platform, as well as answers to the identified test questions. The development and acquisition of practical skills in practical and laboratory exercises is controlled through full participation in learning and completing assignments through a modular platform.
6.	**Basic and additional educational literature and information sources.** **Basic literature:** 1. James T. McClave, Terry Sincich. Statistics.—12th ed. 2013. – 814 p. 2. Shodiev X., Khabibullaev I. Statistics: textbook. - T .:"ECONOMY-FINANCE", 2019.-454 p. 3. H. Shadiev, I. Khabibullaev. Workshop on statistics. Textbook. - T.: ECONOMY-FINANCE 2015 .-- 334 p. 4. Soatov N. Statistics. Textbook. - T .: Abu Ali ibn Sino, 2013. - 743 pages. **Additional literature:** 5. Decree of the President of the Republic of Uzbekistan Sh. Mirziyoyev "On the Strategy of actions for further development of the Republic of Uzbekistan" Uzbekistan 07.02.2017 6. The Constitution of the Republic of Uzbekistan - T .: Uzbekistan, 2014. - 46 p. 7. Статистика. Учебник. /Под ред. И.И. Елисеевой. – М.: Проспект, 2010. – 448 стр. 8. Statistical Mohammed A.Shayib Applied Statistics 2nd edition 2013 year

9. Robert Jonsson Exercises in Statistical Inference with detailed solutions 1 st edition 2014 year.

10. Juha M. Alho and Bruce D. Spencer Demography and Forecasting 2005

11. Улитина Е.В. и др. Статистика. Учебное пособие. – М.: Маркет ДС, 2010. – 312 стр.

12. Теория статистики. Учебник. Под ред. Р.А.Шмойловой. – М.: Финансы и статистика, 2005. – 655 стр.

13. Ayubjanov AH, Mamatkulov BH, Sayfullaev SN. Textbook for practical training in statistics. - T .: TDIU, 2012. - 186 pages.

14. Statistika. Practicum. Uchebnoe posobie. / Pod red. V.N. Salina. - M .: KNORUS, 2009. - 496 стр.

15. Statistika. Practicum. Uchebnoe posobie. / Pod red. V.N. Salina. - M .: KNORUS, 2009. - 496 стр.

Websites

16. www.stat.uz - the official site of the State Statistics Committee of the Republic of Uzbekistan.

17. www.mf.uz - Website of the Ministry of Finance of the Republic of Uzbekistan.

18. www.lex.uz - National Database of Legislation of the Republic of Uzbekistan.

19. www.mineconomu.uz - Website of the Ministry of Economy of the Republic of Uzbekistan.

20. www.mehnat.uz - Website of the Ministry of Labor of the Republic of Uzbekistan.

7.	The curriculum of science was reviewed by the Methodical Council of the Karshi engineering-economics institute of and recommended for use in the educational process (report number " 11" dated "27" 06 , 2022).
8.	**Fan/modul uchun mas'ul (lar):** Sh.A.Turobov - Senior teacher of the department "Accounting and audit"
9.	**Taqrizchilar:** A. Raximov - head of the "Business and innovation management" department of Karshi engineering-economics institute, associate professor, candidate of economic sciences. Sh. Yakubova - head of the "Tourism and Marketing" department of Karshi state university, associate professor, candidate of economic sciences.