



**FACULTY: *Economic and Social Sciences***  
**COURSE: *Economics***  
**LEVEL OF EDUCATION: *first-level studies (bachelor)***  
**FORM OF EDUCATION: *full-time***  
**PROFILE: *practical***

## SUBJECT CARD (Syllabus)

Subject Name: <b>Descriptive Statistics</b>					<b>ECTS credits: 6</b>	
Lecturer: <b>according to the list of lecturers and the schedule of classes</b>						
Year: <b>1</b>	Lectures	Seminars	Laboratory exercises	Exercise	BUNA*	Form of credit*
Semester: <b>2</b>	<b>24</b>	<b>0</b>		<b>24</b>	<b>12</b>	<b>E/ZO</b>
* E – exam; Z – credit; ZO – passing with a grade, BUNA – without the participation of an academic teacher						
<b>The aim of the course:</b> <i>to acquire knowledge in the field of descriptive statistics and practical skills of obtaining, analyzing, presenting and interpreting statistical data</i>						
<b>Didactic methods:</b> <i>lecture with the use of audiovisual means, seminars, term paper – a project made in a group of 2-3 people.</i>						
<b>Prerequisites:</b> <i>master in economic and mathematical terminology and skills in mathematical and statistical methods as well as the use of spreadsheets.</i>						
<b>No</b>	<b>Subject matter of the classes</b>					
<b>I</b>	<b>LECTURE:</b> Subject, functions and tasks of statistics - statistical data and norms, mass processes. Statistical surveys - types of research, the process of statistical survey, tabular and graphical presentation of statistical data, the use of the results of statistical surveys. Structure analysis based on classical and positional parameters - average measures, dispersion, asymmetry and concentration, comprehensive structure analysis. Interdependence analysis - correlation and regression of quantitative variables, correlation of qualitative features. Dynamic analysis - index methods, time series decomposition					
<b>II</b>	<b>SEMINARS:</b> The concept and methods of statistics, the application of statistics, basic concepts and definitions (population, sample, characteristics a), statistical survey (classification, stages, essence of sample surveys, drawing schemes). Data processing: organizing and grouping. Data presentation: series, arrays, charts. Analysis of distribution: classical and positional parameters of position, dispersion and asymmetry, uneven distribution of values. Linear correlation coefficient. Rank correlation coefficients.					
<b>III</b>	<b>LABORATORY EXERCISES:</b> Correlation of quality characteristics (selected coefficients of ace and contingency). Linear regression function (estimation and interpretation of function parameters, evaluation of function matching). Selected nonlinear regression functions (exponential, power, hyperbolic parameter estimation and function matching evaluation). The essence and types of time series, graphic presentation. Analysis of dynamics: individual indicators, average rate of change, average level of phenomenon in time series. Aggregate indices of absolute values. Decomposition of time series: estimation and interpretation of linear parameters and selected nonlinear trend functions, assessment of match. Forecasting phenomena. Isolating seasonal fluctuations					
<b>IV</b>	<b>EXERCISES:</b> do not apply					
<b>V</b>	<b>BUNA:</b> Processing of raw data; the analysis and interpretation of empirical data.					
<b>Learning outcomes</b>						
<b>Directional effects – symbol and specification</b>				<b>Objective effects – specification</b>		
<b>in the field of <u>KNOWLEDGE</u>:</b>						



P6U_W	P6S_WG	<b>E1_W01</b> Has a comprehensive knowledge of the place of economics in the system of sciences, its nature, methodology and related to other scientific disciplines, knows and understands the basic terminology of economic sciences along with the application of this practical knowledge in business activities.	<p>Describes the application of statistics in economics. Has knowledge of standard conduct and in the field of statistical methods and tools (including techniques). Knows the methods of statistical description of a one-dimensional empirical distribution</p> <p>Describes the principles of obtaining data from primary and secondary sources, allowing them to be properly analyzed and interpreted, describing phenomena, processes, entities, structures and activities.</p> <p>Knows research approaches and typical statistical methods and tools. It describes the principles of using statistical data to obtain knowledge about man as an entity creating economic structures. Knows the methods of descriptive statistics used in the study of economic phenomena and management. Has knowledge of the use of computer packages in statistical data analysis.</p> <p>Knows the advanced statistical apparatus and understands its usefulness. Understands selected facts, objects and phenomena used in descriptive statistics. Student is able to choose a statistical method for a specific research problem and solve it.</p> <p>Has knowledge of the use of computer packages in statistical data analysis. Has the ability to independently analyze and interpret quantitative phenomena and processes in various areas of economic and social life using modern information technologies.</p>
P6U_W	P6S_WG P6S_WK	<b>E1_W02</b> Knows and understands economic conditions, forms and standards, as well as phenomena and processes related to the market. He has knowledge of economic structures and institutions, as well as their elements, characteristics and development.	
P6U_W	P6S_WG	<b>E1_W04</b> Knows and understands at an advanced level the application of selected mathematical, statistical methods and IT tools for the collection, analysis and presentation of economic and social data and their practical application in professional activities.	
P6U_W	P6S_WG	<b>E1_W06</b> Knows and understands to an advanced degree the ways of applying and analyzing the results of selected quantitative tools in the description of facts, objects and phenomena concerning various areas of economic functioning and complex dependencies, as well as forecasting future scenarios of economic and social activity.	
P6U_W	P6S_WG	<b>E1_W12</b> Has advanced knowledge of modern information and information systems and techniques and the possibilities of their use in accordance with the studied direction in practice.	
<b>in terms of <u>SKILLS</u>:</b>			



P6U_U	P6S_UW	<b>E1_U01</b> Is able to correctly observe and interpret economic phenomena and economic processes in the context of legal, technological, political and cultural changes.	<p>Is able to observe the environment, using appropriate methods and computational techniques characteristic of the statistical area. Uses statistical tools.</p> <p>Has the ability to describe the phenomena taking place as well as to predict their future course, indicating the consequences and the risk of their occurrence. Formulates practical conclusions, solves economic problems using statistical tools.</p> <p>Analyzes, documents the symptoms, course and causes of specific phenomena using statistical tools. Presents statistical data.</p>
P6U_U	P6S_UW	<b>E1_U02</b> Is able to use his theoretical knowledge and effectively and effectively obtain reliable data from primary and secondary sources to analyze specific economic processes and phenomena in the field of economic disciplines.	
P6U_U	P6S_UW P6S_UO	<b>E1_U10</b> Independently identifies, diagnoses and resolves problems and applies various variants of solutions in business practice, in connection with the studied specialty.	
<b>in the field of <u>SOCIAL COMPETENCES:</u></b>			<p>Independently complements and improves knowledge and skills in the field of descriptive statistics. Is aware of further learning and improving his professional qualifications. Is able to improve and supplement his existing competences.</p> <p>Actively cooperates in task forces. Realising specific research tasks takes on different roles. Takes responsibility for specific results of team cooperation and individual work.</p> <p>Adapts to new situations using statistical data. Is ready to solve complex problems that require the use of statistical analysis.</p>
P6U_K	P6S_KR P6S_KK	<b>E1_K01</b> Is ready to critically assess the level of their knowledge; recognizes the importance of knowledge in solving cognitive and practical problems and seeks the opinion of experts in case of difficulty in solving the problem on their own.	
P6U_K	P6S_KO P6S_KR	<b>E1_K02</b> Is able to actively cooperate in teams, including international ones, and take on various roles with respect for social, cultural and legal norms, and perform responsible roles in the team, being aware of the decisions he makes, and also takes responsibility for the results of his work and the whole team.	
P6U_K	P6S_KR	<b>E1_K03</b> Is ready to recognize the importance of knowledge in solving problems related to the development, implementation, analysis and evaluation of economic processes in various types of organizations and to consult experts in this regard in case of difficulties in solving them on their own.	

**Ways to verify the outcome of this learning (*KNOWLEDGE, SKILLS, SOCIAL COMPETENCES*)**



Effects(symbol)	Written exam	Oral exam	Colloquium	Essay/Paper	Homework	Individual presentation	Group presentation	Activity in class	Participation in the discussion	Individual project	Group project
E_W01, E_W02, E_W04, E_W06, E_W12	X		X		X			X	X		X
E1_U01, E1_U02, E1_U10	X		X					X			X
E1_K01, E1_K02, E1_K03	X		X		X			X			X

**Form and conditions of passing the subject:** passing the exercises in the form of a test, open/closed/mixed questions, additionally an entrance colloquia of 5-7 minutes, an exam in written form – issues of a closed and open interpretative nature.

**N student work required to achieve learning outcomes in hours and ECTS credits**

Contact hours with an academic teacher	
Types of classes	Number of hours
Participation in lectures	24
Participation in seminars	24
Participation in exercises	
Participation in laboratory classes	
Consultations (2 hours for the lecture, 1 hour for one training group, conv., sem.)	
<b>Sum of</b>	<b>48</b>
Student's own work divided into time ( examples of student work forms)	
Form of student work	Number of hours
Preparing for classes	30
Writing a paper/project/essay	15
Gathering materials and preparing presentations	15
Self-reading	32
Preparing for colloquia/tests	12
Preparing for the written/oral exam in a subject	14
Preparation for written/oral credit in a subject	14
<b>Sum of</b>	<b>132</b>
<b>Total (contact hours + student's own work)</b>	<b>180</b>
	<b>6 ECTS</b>
1.including the number of ECTS credits for contact hours with the direct participation of an academic teacher	<b>1 ECTS</b>
2.including the number of ECTS credits for hours carried out in the form of independent work	<b>5 ECTS</b>
Classes with a practical profile	
Types of classes	Number of hours
Participation in laboratory exercises	12
Preparing for practical credit	33
<b>Sum of</b>	<b>45</b>
Number of ECTS credits for practical classes	<b>1.5 ECTS</b>

**Basic literature:** (up to 3 items)

1. R. L. Ott, M. Longnecker, Introduction to Statistical Methods and Data Analysis, Cengage, [b.m.] 2021.
2. M. L. Berenson, D. M. Levine, K. A. Szabat, D. F. Stephan, Basic Business Statistics, Global Ediction, PEARSON Education Limited, Harlow 2019.

**Supplementary literature:** (up to 5 items)

1. D. S. Moore, G. P. McCabe, B. A. Craig, Introduction to the Practice of Statistics, Macmillan Learning, London 2021.



2. C. Jeffrey, Statistics for Business and Economics, Cengage Learning EMEA, [b.m.] 2024.

**Acceptance of the Vice-Rector:**