

Subject card

Subject name and code	Statistics I, PG_00156741						
Field of study	Information Science and Econometrics						
Date of commencement of studies	October 2024		Academic year of realisation of subject		2024/2025		
Education level	undergraduate studies		Subject group		Obligatory subject group in the field of study		
Mode of study	full-time studies		Mode of delivery		at the university		
Year of study	1		Language of instruction		Polish		
Semester of study	1		ECTS credits		8.0		
Learning profile	academic		Assessment form				
Conducting unit	Katedra Statystyki -> Faculty of Management						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. Krzysztof Najman				
	Teachers		dr hab. Krzysztof Najman mgr Katarzyna Raca mgr Teresa Plenikowska-Ślusarz				
Lesson types	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	30.0	30.0	15.0	0.0	0.0	75
	E-learning hours included: 0.0						
Learning activity and number of study hours	Learning activity	Participation in didactic classes included in study plan		Participation in consultation hours		Self-study	SUM
	Number of study hours	75		30.0		95.0	200
Subject objectives	The student should understand the essence of statistical methods and master statistical nomenclature fluently. Should be able to freely use selected statistical methods in solving simple problems. Possess the ability to explain the purpose of using methods and interpret the obtained results in relation to economic and social phenomena.						

Learning outcomes	Course outcome	Subject outcome	Method of verification
	[liEL3_K01] The student understands the need to constantly supplement and deepen acquired knowledge; is open to new ideas and teaching methods.	The student understands the need to constantly update his/her knowledge of statistical methods and is open to new methods of data analysis.	[SK1] oral statement/conversation/discussion
	[liEL3_U07] The student can build formal models of complex economic phenomena and processes, estimate them, carry out their verification, and apply them to modelling, forecasting and optimization of the resources of low-complexity economic institutions, their structure and the course of processes in them.	The student is able to build and verify selected linear regression models. Is able to use regression models to build and evaluate forecasts of selected social phenomena.	[SU2] presentation/project/paper/report [SU4] test/exam - oral or written
	[liEL3_U05] The student can make a statistical description of advanced economic categories, formulate and verify simple hypotheses on their formation.	The student is able to conduct a statistical analysis of selected social phenomena and verify basic hypotheses concerning their properties.	[SU1] oral statement/conversation/discussion [SU2] presentation/project/paper/report [SU4] test/exam - oral or written
	[liEL3_W04] The student has advanced knowledge of mathematical, statistical, econometric and computer methods of obtaining, processing and analysing data depicting the functioning and development of the national economy and its elements, as well as the phenomena and processes occurring in their environment.	The student knows the theory of statistical description used to analyze social phenomena.	[SW4] test/exam - oral or written [SW1] oral statement/conversation/discussion
	[liEL3_W05] The student has advanced knowledge of the sources of socio-economic data, their databases and ways of creating them.	The student knows the sources and methods of searching for secondary data used in social research.	[SW1] oral statement/conversation/discussion [SW2] presentation/project/paper/report
	[liEL3_K02] The student can communicate with the public on computer science and econometrics topics in and outside the workplace, communicate his knowledge and share his skills through various media.	The student is able to use statistical nomenclature and explain statistical phenomena.	[SK1] oral statement/conversation/discussion [SK2] presentation/project/paper/report [SK8] observation of student's independent or team work
	[liEL3_U01] The student can comprehensibly, orally and in writing, present and justify advanced economic theories and apply them to explain the functioning of the national economy and its elements. Understands and can explain the content of communications of economic institutions, articles published in the economic press and scientific journals.	Based on literature, the student is able to prepare a presentation, report or oral statement explaining selected economic problems.	[SU1] oral statement/conversation/discussion [SU2] presentation/project/paper/report
	[liEL3_U02] The student is able to acquire basic information about economic processes and phenomena by direct observation, planned experiment or database queries, and collect and process it using modern information technology tools.	The student is able to collect statistical data from primary and secondary sources for the purposes of social research.	[SU2] presentation/project/paper/report [SU8] observation of student's independent or team work

Subject contents	Introduction to statistics: data, information, knowledge. The essence of mass phenomena, definition of statistics, applications of statistics. Subject and functions of statistics. Basic concepts of statistics: population, sample, statistical unit, constant and variable features, measurement scales. Sources of statistical data, types and stages of statistical research. Quality of statistical data. Public statistics institutions in Poland and around the world. Legal aspects of statistical research in Poland. Methods of presenting statistical data: series, tables and statistical graphs. The concept of empirical distribution, types and properties of distributions. Absolute and relative indicators. Analysis of the structure of the population: the concept and methods of measurement: central tendency, dispersion, asymmetry and concentration. Assumptions and principles of constructing classical and positional measures. Central and ordinary moments. Assessment of similarity of structures. Analysis of interdependence: Analysis of correlation: the essence, significance and areas of application of interdependence analysis. The concept of stochastic dependence and correlation of quantitative phenomena. Construction and interpretation of a correlation diagram. Analysis of linear interdependence of quantitative features. The essence, conditions of application and interpretation of coefficients: Pearson's linear correlation, Spearman's rank correlation. Analysis of interdependence of qualitative features. Construction of association and contingency tables. Principles of constructing and interpreting association and contingency coefficients. Apparent correlation. Regression analysis: the idea of cause-effect relationships between different social phenomena. The concept of regression of two variables. Regression functions - linear and curvilinear regression. Analytical methods for determining regression function parameters. The essence of the least squares method. Assessment of the fit of the regression function to empirical data. Applications of regression analysis to the study of selected social and economic phenomena. Spurious regression. Time series analysis: the essence and types of time series. The concept of dynamics of simple and complex phenomena. Measures of dynamics. Analysis of the dynamics of simple phenomena: increments and indices. Analysis of the dynamics of complex phenomena: aggregate indices of absolute values. Averages in time series. Time series decomposition: mechanical and analytical methods for determining the trend. Linear and curvilinear trend functions. Assessment of the fit of the trend function from empirical data. Trend extrapolation, time series forecasting and assessment of the quality of forecasts. Applications of trend analysis in the analysis of social phenomena. Seasonality analysis: the concept and examples of the occurrence of the seasonal phenomenon in social research. Seasonal fluctuations and methods of their isolation. Additive and multiplicative seasonality indicators. Forecasting time series in the presence of a trend and seasonal fluctuations. Assessment of the quality of forecasts. Economic statistics: the subject and methods of economic statistics. Basic directions of economic statistics research. Public Statistics Information System. Statistical identification and classification. National Accounts System. Labor market statistics. Economic situation research. Household budget research. Price statistics.														
Prerequisites and co-requisites															
Assessment methods and criteria	<table><tr><td>Subject passing criteria</td><td>Passing threshold</td><td>Percentage of the final grade</td></tr><tr><td>three written tests</td><td>51.0%</td><td>30.0%</td></tr><tr><td>written exam</td><td>51.0%</td><td>50.0%</td></tr><tr><td>final project</td><td>51.0%</td><td>20.0%</td></tr></table>			Subject passing criteria	Passing threshold	Percentage of the final grade	three written tests	51.0%	30.0%	written exam	51.0%	50.0%	final project	51.0%	20.0%
Subject passing criteria	Passing threshold	Percentage of the final grade													
three written tests	51.0%	30.0%													
written exam	51.0%	50.0%													
final project	51.0%	20.0%													

Recommended reading	Basic literature	Aczel A.D., Statystyka w zarządzaniu, PWN, Warszawa, 2000; Makać W., Urbanek-Krzysztofiak D., Metody opisu statystycznego, UG, Gdańsk, 2000; Ostasiewicz S., Rusnak Z., Siedlecka U., Statystyka. Elementy teorii i zadania, AE, Wrocław, 1995.
	Supplementary literature	1. Rosling H., Factfulness, Media Rodzina, 2018 2. Józwiak J., Podgórski J., Statystyka od podstaw, PWE, Warszawa, 2000; 3. Luszniwicz A, Słaby T., Statystyka stosowana, PWE, Warszawa, 1996; 4. Kassyk-Rokicka H. (red.), Statystyka. Zbiór zadań, PWE, Warszawa, 1999; 5. Sobczyk M., Statystyka. PWN, Warszawa, 2000; 6. Makać W., Statystyczne metody analizy bezrobocia. Krajowy Urząd Pracy, Warszawa, 1996; 7. Wycinka E, Szreder M. (red.), Zastosowania metod ilościowych w ubezpieczeniach, Wyd. UG; Gdańsk 2020; 8. Kot. S, Jakubowski J., Sokołowski A., Statystyka, Wyd. Difin, Warszawa 2011.
	eResources addresses	Adresy na platformie eNauczanie:
Example issues/ example questions/ tasks being completed		
Work placement	Not applicable	

Document generated electronically. Does not require a seal or signature.