

Subject card

Subject name and code	Statistics I, PG_00178080						
Field of study	Informatics and Econometrics						
Date of commencement of studies	October 2026	Academic year of realisation of subject				2026/2027	
Education level	Bachelor's studies	Subject group				Obligatory subject group in the field of study Subject group related to scientific research 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				7.0	
Learning profile	academic	Assessment form				exam	
Conducting unit	Department of Statistics -> Faculty of Management -> Rector						
Name and surname of lecturer (lecturers)	Subject supervisor		dr hab. Krzysztof Najman				
	Teachers						
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		4.0		96.0	175
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 selected social and economic problems. Possess the ability to explain the purpose of using individual methods and interpret the obtained results in relation to economic and social phenomena.						
Learning outcomes	Course outcome		Subject outcome			Method of verification	
	[[iIEL3_U01] The student can analyze and interpret social and economic processes and phenomena using knowledge and econometrics, informatics or statistics tools from management and quality sciences, economics and finance.		The student knows the practical applications of statistical methods in the analysis of socio-economic problems.			[SU2] presentation/project/paper/report	
	[[iIEL3_W05] To an advanced degree, the student knows and understands the methods, techniques and informatics or statistics tools used to acquire, collect, process and present data in decision-making processes.		The student knows the theory of statistics and basic tools for statistical data analysis.			[SW4] test/exam - oral or written [SW2] presentation/project/paper/report	
	[[iIEL3_U02] Students can select or construct econometrics, informatics or statistics tools and apply them to describe and solve economic and social problems.		The student is able to select and correctly apply statistical methods to analyze selected economic and social problems.			[SU2] presentation/project/paper/report	

Subject contents	<p>Introduction to statistics: data, information, knowledge. The essence of mass phenomena, the definition of statistics, the applications of statistics. The subject, entity and functions of statistics.</p> <p>Basic concepts of statistics: population, sample, statistical unit, constant and variable features, measurement scales.</p> <p>Sources of statistical data, types and stages of statistical research. The quality of statistical data. Public statistics institutions in Poland and around the world. Legal aspects of statistical research in Poland.</p> <p>Methods of presenting statistical data: series, tables and statistical graphs. The concept of empirical distribution, types and properties of distributions. Absolute and relative indicators.</p> <p>Analysis of the structure: 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.</p> <p>Correlation analysis: 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.</p> <p>Analysis of linear interdependence of quantitative features. 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. Essence of statistics. Principles of construction and interpretation of association and contingency coefficients. Apparent correlation.</p> <p>Regression analysis: The idea of cause-and-effect relationships between various social phenomena. The concept of regression of two variables. Regression functions - linear and curvilinear regression. Analytical methods of determining regression function parameters. Essence of the least squares method. Evaluation of the fit of regression function to empirical data. Applications of regression analysis to the study of selected social and economic phenomena. Apparent regression.</p> <p>Time series analysis: essence and types of time series. The concept of dynamics of simple and complex phenomena. Measures of dynamics. Analysis of dynamics of simple phenomena: increments and indices. Analysis of dynamics of complex phenomena: aggregate indices of absolute values. Averages in time series. Time series decomposition: mechanical and analytical methods of trend determination. Linear and curvilinear trend functions. Assessment of trend function fit from empirical data. Extrapolation of trend, forecasting of time series and assessment of forecast quality. Applications of trend analysis in the analysis of social phenomena.</p> <p>Seasonality analysis: concept and examples of seasonality in social research. Seasonal fluctuations and methods of their isolation. Additive and multiplicative seasonality indicators. Forecasting time series in the presence of trend and seasonal fluctuations. Assessment of forecast quality.</p> <p>Economic statistics: subject and methods of economic statistics. Basic directions of research in economic statistics. Public Statistics Information System. Statistical identification and classification. National Accounts System. Labor market statistics. Economic situation survey. Household budget survey. Price statistics.</p>														
Prerequisites and co-requisites															
Assessment methods and criteria	<table border="1"> <thead> <tr> <th>Subject passing criteria</th> <th>Passing threshold</th> <th>Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td>2 written colloquium</td> <td>51.0%</td> <td>30.0%</td> </tr> <tr> <td>written exam</td> <td>51.0%</td> <td>40.0%</td> </tr> <tr> <td>semester project</td> <td>51.0%</td> <td>30.0%</td> </tr> </tbody> </table>			Subject passing criteria	Passing threshold	Percentage of the final grade	2 written colloquium	51.0%	30.0%	written exam	51.0%	40.0%	semester project	51.0%	30.0%
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Recommended reading	Basic literature	<p>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.</p>													

	Supplementary literature	<ol style="list-style-type: none"> 1. Rosling H., Factfulness, Media Rodzina, 2018 2. Józwiak J., Podgórski J., Statystyka od podstaw, PWE, Warszawa, 2000; 3. Luszczewicz 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	
Example issues/ example questions/ tasks being completed		
Work placement	Not applicable	

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