University of Gdańsk

Subject card

Subject name and code	Statistics I, PG_00178692		
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	part-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	16.0	16.0	8.0	0.0	0.0	40

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	40	2.0	133.0	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] 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_U02] 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
[IiEL3_W05] 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

Subject contents	**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. **Basic concepts of statistics**: population, sample, statistical unit, constant and variable features, measurement scales. 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. **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**: 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. **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. 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. **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. **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. **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. **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.
Prerequisites and co-requisites	

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
written exam	51.0%	40.0%
2 written colloquium	51.0%	30.0%
semester project	51.0%	30.0%

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. Jóźwiak J., Podgórski J., Statystyka od podstaw, PWE, Warszawa, 2000; 3. Luszniewicz 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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