



Subject card

Subject name and code	DATA ANALYSIS IN R, PG_00068700						
Field of study	Economic Analytics						
Date of commencement of studies	October 2025		Academic year of realisation of subject		2025/2026		
Education level	second-cycle 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 (on-line)		Mode of delivery		at the university		
Year of study	1		Language of instruction		Polish		
Semester of study	1		ECTS credits		5.0		
Learning profile	general academic profile		Assessment form		assessment		
Conducting unit	Department Of Statistics And Econometrics -> Faculty Of Management And Economics -> Wydział Politechniki Gdańskiej						
Name and surname of lecturer (lecturers)	Subject supervisor						
	Teachers						
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	8.0	0.0	24.0	0.0	0.0	32
	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	32		4.0		89.0	125
Subject objectives	Uses advanced tools for processing raw economic and social data, which are then used in in-depth statistical analysis, carrying out tasks in the form of a team project						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K7_U01] creates innovative solutions for complex and unstructured processes, considering unpredictable environmental conditions through the synthesis of information from various sources.		creates innovative solutions to complex problems, taking into account the influence of many factors on the studied phenomenon, synthesizing data from many sources		[SU3] Assessment of ability to use knowledge gained from the subject		
	[K7_W03] demonstrates in-depth knowledge of the applications of analytical methods and techniques for formulating and solving socio-economic problems.		correctly apply modern methods of pre-processing and raw data processing before applying advanced analytical methods, ensuring the reliability of the results		[SW1] Assessment of factual knowledge		
	[K7_U05] collaborates with others in team projects, effectively fulfilling both leadership and team member roles to achieve established goals.		performs analytical work demonstrating the ability to work in a team		[SU2] Assessment of ability to analyse information		

Subject contents	Introduction to R, R-studio. Basic operations. Data import from various formats. Measuring scales vs data types in R (vector, dataframe, matrix, list, etc.) Functions, variables, operators, constants. Loops. Conditional expressions and their use in data analysis Basic commands - descriptive statistics Basic commands - mathematical statistics Reporting in R-Markdown Basic data processing (new variables, filters, combining frames: reshape, split, combine) Imputation methods for missing cross-sectional and temporal data Dirty data - missing observations; duplicates; outliers; format errors Data cleaning using Dplyr and TidyR Data cleaning outliers Transformations and discretization of variables Data sources: downloading data from databases (sqlite); web scraping; downloading data to R (Yahoo Finance; Quandl; Google Trends, Eurostat etc.) Dimensional reduction using principal component analysis (PCA). Example applications Graphics in R basic and advanced graphical presentation of data (packages: ggplot2; Lattice; Grid) Publishing reports directly from R introduction to R-Markdown (notebook; presentations R and Powerpoint; HTML slides; PDF beamer etc.) Final project. Presentations		
Prerequisites and co-requisites			
Assessment methods and criteria	Subject passing criteria	Passing threshold	Percentage of the final grade
	Project	60.0%	60.0%
	Test	60.0%	40.0%
Recommended reading	Basic literature	Podstawy statystyki z przykładami w R, Tomasz Górecki, Wydawnictwo BTC, 2011 Przewodnik po pakiecie R, Przemysław Biecek, GIS, 2014	
	Supplementary literature	https://cran.r-project.org/web/packages/IPSUR/vignettes/IPSUR.pdf - G. Jay Kerns, Introduction to Probability and Statistics using R, Third Edition, 2018	
	eResources addresses	Adresy na platformie eNauczanie:	
Example issues/ example questions/ tasks being completed	Final project: preparation of a report and presentation in R-Markdown after data processing and analysis in R		
Work placement	Not applicable		

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