



## Subject card

Subject name and code	DATA ANALYSIS - A TEAM PROJECT, PG_00060793						
Field of study	Economic Analytics						
Date of commencement of studies	October 2023	Academic year of realisation of subject			2023/2024		
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	Full-time studies	Mode of delivery			at the university		
Year of study	1	Language of instruction			English		
Semester of study	1	ECTS credits			5.0		
Learning profile	general academic profile	Assessment form			assessment		
Conducting unit	Katedra Statystyki i Ekonometrii -> Faculty of Management and Economics						
Name and surname of lecturer (lecturers)	Subject supervisor		dr inż. Karol Flisikowski				
	Teachers		dr inż. Karol Flisikowski				
Lesson types and methods of instruction	Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
	Number of study hours	15.0	0.0	45.0	0.0	0.0	60
	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	60	5.0		60.0	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 to complex and unstructured problems, taking into account the variability of the environment by synthesising information from many 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_U05] cooperates with other people in the implementation of teamwork, both as a leader and a team member, effectively achieving the assumed goals		performs analytical work demonstrating the ability to work in a team		[SU4] Assessment of ability to use methods and tools		
	[K7_W03] demonstrates in-depth preparation in the application of analytical methods and techniques for formulating and solving 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		

Subject contents	<p>Introduction to R, R-studio. Basic operations. Data import from various formats. Measuring scales vs data types in R (vector, dataframe, matrix, list, etc.)</p> <p>Functions, variables, operators, constants. Loops. Conditional expressions and their use in data analysis</p> <p>Basic commands - descriptive statistics</p> <p>Basic commands - mathematical statistics</p> <p>Reporting in R-Markdown</p> <p>Basic data processing (new variables, filters, combining frames: reshape, split, combine)</p> <p>Imputation methods for missing cross-sectional and temporal data</p> <p>Dirty data - missing observations; duplicates; outliers; format errors</p> <p>Data cleaning using Dplyr and Tidyr</p> <p>Data cleaning outliers</p> <p>Transformations and discretization of variables</p> <p>Data sources: downloading data from databases (sqlite); web scraping; downloading data to R (Yahoo Finance; Quandl; Google Trends, Eurostat etc.)</p> <p>Dimensional reduction using principal component analysis (PCA). Example applications</p> <p>Graphics in R basic and advanced graphical presentation of data (packages: ggplot2; Lattice; Grid)</p> <p>Publishing reports directly from R introduction to R-Markdown (notebook; presentations R and Powerpoint; HTML slides; PDF beamer etc.)</p> <p>Final project. Presentations</p>											
Prerequisites and co-requisites												
Assessment methods and criteria	<table border="1" data-bbox="451 595 1487 701"> <thead> <tr> <th data-bbox="451 595 794 633">Subject passing criteria</th> <th data-bbox="794 595 1137 633">Passing threshold</th> <th data-bbox="1137 595 1487 633">Percentage of the final grade</th> </tr> </thead> <tbody> <tr> <td data-bbox="451 633 794 663">Project</td> <td data-bbox="794 633 1137 663">60.0%</td> <td data-bbox="1137 633 1487 663">60.0%</td> </tr> <tr> <td data-bbox="451 663 794 701">Test</td> <td data-bbox="794 663 1137 701">60.0%</td> <td data-bbox="1137 663 1487 701">40.0%</td> </tr> </tbody> </table>			Subject passing criteria	Passing threshold	Percentage of the final grade	Project	60.0%	60.0%	Test	60.0%	40.0%
	Subject passing criteria	Passing threshold	Percentage of the final grade									
	Project	60.0%	60.0%									
Test	60.0%	40.0%										
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	<a href="https://cran.r-project.org/web/packages/IPSUR/vignettes/IPSUR.pdf">https://cran.r-project.org/web/packages/IPSUR/vignettes/IPSUR.pdf</a> - G. Jay Kerns, Introduction to Probability and Statistics using R, Third Edition, 2018										
	eResources addresses	Adresy na platformie eNauzanie: Data Analysis 2023/24 - Moodle ID: 31969 <a href="https://enauzanie.pg.edu.pl/moodle/course/view.php?id=31969">https://enauzanie.pg.edu.pl/moodle/course/view.php?id=31969</a>										
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											