



Subject card

Subject name and code	Descriptive statistics, PG_00045293						
Field of study	Data Engineering						
Date of commencement of studies	October 2022		Academic year of realisation of subject		2022/2023		
Education level	first-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	2		ECTS credits		3.0		
Learning profile	general academic profile		Assessment form		assessment		
Conducting unit	Department of Statistics and Econometrics -> 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	15.0	0.0	0.0	30
	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	30		4.0		41.0	75
Subject objectives	The main aim of the course is to acknowledge students with the statistical analysis based on the sample data using R & R-studio.						
Learning outcomes	Course outcome		Subject outcome		Method of verification		
	[K6_W09] has basic knowledge of the nature of economic sciences and ways of its description with IT tools		Student has a basic knowledge of descriptive statistics, methods of presenting data of various types and statistical modeling (for cross-sectional and time series data) and syntax of the R programming language.		[SW1] Assessment of factual knowledge		
	[K6_K05] understands the need for self-improvement through systematic acquisition of knowledge and skills.		The student is aware of the diversity of statistical variables and types of data in R & R-studio environment . The student consistently improves his programming skills.		[SK2] Assessment of progress of work [SK3] Assessment of ability to organize work		
	[K6_U11] is able to use mathematical and IT tools in economics.		Student selects the appropriate statistical methods to perform the analysis for the selected statistical variable using the R programming language.		[SU4] Assessment of ability to use methods and tools [SU1] Assessment of task fulfilment		

Subject contents	Part 1. Introduction to R & R-studio.		
	1. Types of data, basic programming skills (R)		
	2. Types of statistical variables, basic operations, graphs		
	3. Methods of raw data aggregating		
	Part 2. Describing univariate data		
	4. Measures of central tendency, dispersion, assymetry (skewness) and kurtosis, inequality & concentration		
	+ aggregating data (in respect to the type of variable) + graphs		
	Part 3. Describing bivariate data		
	5. Correlation analysis for pair of quantitative variables + graphs		
	6. Rank correlation		
	7. Two-way tables, correlation analysis of qualitative variables + graphs		
	Part 4. Regression analysis		
	8. OLS. Simple regression, multiple linear regression.		
Prerequisites and co-requisites	Mathematics, English (intermediate level), basic programming skills.		
	Assessment methods and criteria	Subject passing criteria	Passing threshold
Laboratory - final test and projects		60.0%	50.0%
Lecture (final exam)		60.0%	50.0%
Recommended reading	Basic literature	1. Statistics (The easier way) with R, Nicole M. Radziwill, 2016. 2. Discovering statistics using R, Andy Field, Jeremy Miles, Zoe Field, Sage, 2012.	
	Supplementary literature	1. Statistics for Business and Economics, McClave Benson Sincich, Pearson, 2008. 2. Using R for Introductory Statistics, John Verzani, Chapman and Hall, 2000.	
	eResources addresses	Adresy na platformie eNauczanie: Descriptive Statistics - summer 2023 - Moodle ID: 27804 https://enauczanie.pg.edu.pl/moodle/course/view.php?id=27804	
Example issues/ example questions/ tasks being completed	1. How can we recognize which model of time series decomposition we analyze - additive or multiplicative? Give one example for each of them. 2. Sketch the bimodal distribution of the discrete variable. 3. How can we deal with a large number of missing cases? List three methods.		

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