Course Syllabus

Academic year: 2025/2026

I. General Information

Course name	Data analysis and visualisation
Programme	general university courses
Level of studies (BA, BSc, MA, MSc, long-cycle MA)	MA
Form of studies (full-time, part-time)	full-time
Discipline	
Language of instruction	English

Course coordinator	Ihor Korol

Type of class *(use only the types mentioned below)*	Number of teaching hours	Semester	ECTS Points
tutorial	30	II	2

Course pre-requisites	knowledge of English at the B2 level knowledge of mathematics at school level

II. Course Objectives

C1- perfecting communicative skills in a foreign language at an academic level, relating to the field of study
C2 - Discussion of the usage and processing of data using the R programming language
C3 - Demonstration of graphical data analysis methods and construction of regression models in R

III. Course learning outcomes with reference to The Polish Qualifications Framework

Symbol	Description of course learning outcome	Reference to The Polish Qualifications Framework
KNOWLEDGE		
Un_ZJO_W_01	understands foreign language utterances, including specialist terminology related to the field of study	P7S_WG1
SKILLS		
Un_ZJO_U_01	is capable of fluent oral and written communication in a foreign language, including the use of specialist terminology related to the field of study	P7S_UW3
Un_ZJO_U_02	actively participates in discussions in a foreign language on general topics and those related to the field of study, understands complex utterances and refers to presented arguments	P7S_UK1

Un_ZJO_U_03	uses a wide range of literature in a foreign language, including specialist literature relevant to the field of study	P7S_UW1
SOCIAL COMPETENCIES		
Un_ZJO_K_01	recognises the importance of knowledge and skills in a foreign language and the culture of the country whose language they are learning for their professional development and functioning in society	P7S_KK2

IV. Course Content

Introduction to the R language. Basics of working with the R programming environment and the RStudio integrated development environment. Data types and basic functions. Cycles, conditions, creation of own functions. Exporting, importing and processing data in R. Basic tools for data analysis and visualization in R. Data manipulation using the dplyr package. Data visualization using ggplot2. Graphical capabilities of R. Essentials of mathematical statistics in R. Essentials of regression analysis in R.

V. Didactic methods used and forms of assessment of learning outcomes

Symbol	Didactic methods *(choose from the list)*	Forms of assessment *(choose from the list)*	Documentation type *(choose from the list)*
KNOWLEDGE			
Un_ZJO_W_01	Conversation lecture	Graded credit / Colloquium	Written test / Completed and graded colloquium
SKILLS			
Un_ZJO_U_01	Conversation lecture design thinking	Graded credit / Colloquium	Written test / Completed and graded colloquium
Un_ZJO_U_02	Conversation lecture design thinking	Graded credit / Colloquium	Written test / Completed and graded colloquium
Un_ZJO_U_03	Conversation lecture design thinking	Graded credit / Colloquium	Written test / Completed and graded colloquium
SOCIAL COMPETENCIES			
Un_ZJO_K_01	Conversation lecture	Graded credit / Colloquium	Written test / Completed and graded colloquium

VI. Grading criteria, weighting factors.....

The course concludes with a graded pass mark. A condition for the successful completion of the course is the student's attendance at lectures and the writing of a final colloquium.

VII. Student workload

Form of activity	Number of hours
Number of contact hours (with the teacher)	**30**
Number of hours of individual student work	**30**

VIII. Literature

Basic literature
H. Wickham, G. Grolemund, „R for Data Science" (2e), O'Reilly, 2023, http://r4ds.hadley.nz Robert I. Kabacoff „R in Action: data analysis and graphics with R and Tidyverse", (Third Edition), 2022 J.D. Long, P. Teetor R „Cookbook Proven Recipes for Data Analysis, Statistics & Graphics", Second Edition, O'Reilly, 2019 J.Lander, „R for Everyone", 3rd Edition, Addison-Wesley, 2023 Marek Gągolewski, „Programowanie w języku R. Analiza danych, obliczenia, symulacje", PWN, 2014 Dylan Z. Childs, Bethan J. Hindle and Philip H. Warren, „Introductory Biostatistics with R", 2022 K. Healy „Data Visualization: A Practical Introduction", Princeton University Press, 2019 Documentation of statistical packages used in the course https://mran.microsoft.com/ https://cran.r-project.org/ https://www.datamentor.io/r-programming/ https://education.rstudio.com/learn/
Additional literature
M.Kuhn, J.Silge, „Tidy Modeling with R" (2022) David Dalpiaz, „Applied Statistics with R", 2019 https://www.tidymodels.org/books/tmwr/