

SYLLABUS

Name: Data analysis and visualisation with R (25-BI-S2-E1-DAVR-AN)

Name in Polish: Analiza danych i ich wizualizacja w R

Name in English: Data analysis and visualisation with R

Information on course:

Course offered by department: Faculty of Biological Sciences

Course for department: Faculty of Biological Sciences

Default type of course examination report:

Grading

Language:

English

Short description:

Prerequisites regarding knowledge, skills, and social competences for the course/module

Basic knowledge of statistics and computer skills, critical thinking.

Student's own work:

- preparing for classes and homework assesement: 20h
- reading publications: 5h
- preparing raport: 10h
- preparing for test and exam: 5h

Description:

Educational aims:

The aim of this course is to equip students with the skills to analyse the data using chosen statistical methods, data visualisation on plots and maps in the R environment.

Course content:

- introduction to R and Rstudio;
- data types, R data structures, importing data;
- basic data wrangling (with dplyr);
- categorical data analysis;
- comparing groups (Wilcoxon's signed rank test, Kruskal-Wallis test, t-Student test);
- correlations;
- linear regression;
- creating plots: histograms, bar charts, box-plots, scatterplots, line-graphs;
- creating maps;
- online resources to learn R.

Bibliography:

Mandatory and recommended reading list:

Alex Douglas, Deon Roos, Francesca Mancini, Ana Couto & David Lusseau (2022).

An Introduction to R. (online book, chosen chapters) Rafael A. Irizarry (2022).

Introduction to Data Science. (online book, chosen chapters)

other online resources recommended by the teacher.

Learning outcomes:

Intended learning outcomes

Student:

K_W09

- knows data types and R data structures;

K_U01

- uses selected R functions to analyse biological data;

K_U05

- creates and interprets customised graphics and maps with R;

K_K05

- understands need for constant improving skills in data mining

Assessment methods and assessment criteria:

Assessment methods for the intended learning outcomes:

- homework assignments,
- semester written exam.

Credit requirements for individual components of the course/module:

- classes attendance,
- homework assignments,
- semester written assignment.

Course credits in various terms:

<without a specific program>

Type of credits	Number	First term	Last term
European Credit Transfer System (ECTS)	2	2023/24-Z	