



Problem Solving Using Open-Source Languages; R and Python,

3 ECTS

General information

Number of ECTS: 3

Language: English

Modality: Blended

Proposed period: Summer Semester

Number of Participants: 20

Prerequisites: none

Lecturer: **Prof Predrag Kojić, assistant professor, Faculty of Technology, University of Novi Sad**

Week 1: Introduction to R and Python (8-10 April 2024, from 8:30-15:30)

- Overview of R and Python
- Setting up the environment
- Basic syntax and data types
- Basic data manipulation and analysis

Week 2: Data Manipulation and Visualization (15-16 April 2024, from 8:30-15:30)

- Data input/output
- Data manipulation using dplyr in R and pandas in Python
- Data visualization using ggplot2 in R and matplotlib/seaborn in Python

Week 3: Statistical Analysis and Machine Learning (22-23 April 2024, from 8:30-15:30)

- Statistical analysis using R and Python
- Introduction to machine learning
- Supervised learning algorithms: linear regression, logistic regression, decision trees, and random forests

Weekend: Final Project, on-site (27 April 2024)

- Students will work on a final project using R and/or Python, where they will apply the skills and concepts learned throughout the course.

Learning outcomes

Upon completion of a course on Problem Solving Using Open-Source Languages R and Python, learners can expect to achieve the following learning outcomes:

- Proficiency in programming with both R and Python and the ability to solve problems in both languages.
- Ability to perform data manipulation and visualization tasks using the respective tools/packages of R and Python.
- Understanding of basic statistical concepts and ability to analyze data using statistical techniques in both R and Python.
- Familiarity with the principles of machine learning, its algorithms, and its application in both R and Python.
- Ability to think critically and creatively to solve real-world problems using R and/or Python.
- Ability to work collaboratively and communicate effectively in a team to complete a final project that applies concepts learned in the course.