**Study programme(s): Applied Mathematics (MAP)**

**Course title: DATA ANALYTICS PROJECT (P604)**

**Lecturer(s): Dušan Jakovetić**

**Course status: compulsory on module: Data Analytics and Statistics**

**ECTS points: 5**

**Requirements:**

**Learning Objectives**

Acquiring experience and skills in an independently performed complete analysis of a given problem in the field of *data science*, in relation to all the most relevant stages of data processing, analysis and visualization. Fostering students' communication skills and team-work capabilities.

**Learning Outcomes**

Acquiring a solid knowledge of all relevant phases of a data analytics project, including data collection and data quality assurance, exploratory analysis, data visualization, statistical modeling, machine learning modeling, explanatory visualization of results. Students will gain necessary skills in a complete software implementation of the project, effective communication of the obtained results in both oral and written form.

**Syllabus**

*Theoretical instructions*

Students will learn how to perform a complete analysis from data collection through testing to data interpretation and visualization. The project should have the following mandatory phases/elements: data collection and data quality assurance, exploratory analysis, statistical modeling and visualization, oral presentation, written report in the form of a scientific-technical report, written report in the form of exposition for a broad range of readers, project development in a team.

*Practical instructions*

Students will gain the ability and experience in analyzing natural and social phenomena through processing several relevant data sets, implementation of statistical methods and machine learning methods in a relevant software package, conclusion making about the outcomes of the research. Report writing and effective oral communication.

**Literature**

Selected references; auxiliary literature in form of the following references:


1. Francois Chollet, **Deep Learning with Python**, Manning Publications, 2017.
2. Samir Madhavan, **Mastering Python for Data Science,** Packt Publishing, 2015.
3. Hadley Wickham- Garrett Grolemund, **R for Data Science**, O'Reilly Media, 2017.


| **Number of active classes** | **Lectures: 2** | **Exercises: 2** |
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**Teaching methods**

Plenary lectures on a given topic followed by independent research work by students with interactive guidance of teachers; workshop form (problem-solving sessions, student teamwork) on the selected real problem. Presentation of student papers followed by discussion.

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| **Grading (maximum number of points 100)** | | | |
| **Pre-exam obligations** | Points | **Final exam** | Points |
| independent research work | **70** | project presentation | **30** |