

Tárgytematika / Course Description

Data Analysis

GKNM_MSTA025**Tárgyfelelős neve /****Teacher's name:** dr. Harmati István Árpád**Félév / Semester:** 2026/27/1**Beszámolási forma /****Assesment:** Vizsga**Tárgy heti óraszám /****Teaching hours(week):** 4/0/0**Tárgy féléves óraszám /****Teaching hours(sem.):**

OKTATÁS CÉLJA / AIM OF THE COURSE

Aim of the course: introduction to data analysis, data visualization and basic data modelling using real-life datasets and Python programming language.

TANTÁRGY TARTALMA / DESCRIPTION

1. Introduction to Jupyter Notebook, Data science concepts, motivational examples
2. Programming concepts, simple data types, collections, conversion
3. Standard streams, control structures, Comprehensions, sorting, file handling
4. Pandas 1
5. Data visualization: matplotlib
6. Basics of Probability
7. Random Variables, Correlation and linear regression
8. Pandas 2
9. Multivariate linear regression

10. Logistic Regression, classification

11. Data visualization: Seaborn

12. Data visualization: Plotly

13. Example project

14. Summary, overview

SZÁMONKÉRÉSI ÉS ÉRTÉKELÉSI RENDSZERE / ASSESMENT'S METHOD

Attending lectures: not obligatory, absence has no negative consequences.

Signature at the end of the semester: no criteria.

Offered grade:

Based on the teamwork (project) and the individual project.

Teamwork: the teacher will define the teams and assign problems to teams by the end of the 5th week of the semester (we wait for the international students to arrive).

Individual work: the student chooses a dataset (related to his/her field of interest) and performs data analysis. The teacher's approval is required.

Exam: if no grade is offered, then the student takes a written exam (data analysis using Python).

Grades vs. percentage:

0-59 1 (fail)

60-69 2 (pass, satisfactory)

70-79 3 (fair, average)

80-89 4 (good)

90-100 5 (excellent)

KÖTELEZŐ IRODALOM / OBLIGATORY MATERIAL

<https://www.python.org/>

<https://pandas.pydata.org/>

<https://seaborn.pydata.org/>

<https://plotly.com/python/>

AJÁNLOTT IRODALOM / RECOMMENDED MATERIAL