

FACULTY of Chemistry

SUBJECT CARD**Name of subject in Polish – Eksploracja Danych****Name of subject in English – Data Mining****Main field of study (if applicable): Biosciences****Specialization (if applicable): Bioinformatics****Profile: academic****Level and form of studies: 2nd level, full-time****Kind of subject: obligatory****Subject code W03BSS-SM2009L****Group of courses NO**

	Lecture	Classes	Laboratory	Project	Seminar
Number of hours of organized classes in University (ZZU)			15		
Number of hours of total student workload (CNPS)			25		
Form of crediting (Examination / crediting with grade)			crediting with grade		
For group of courses mark (X) final course					
Number of ECTS points			1		
including number of ECTS points for practical classes (P)			1		
including number of ECTS points corresponding to classes that require direct participation of lecturers and other academics (BU)			0,7		

*delete as not necessary

PREREQUISITES RELATING TO KNOWLEDGE, SKILLS AND OTHER COMPETENCES

1. Computer skills
2. Knowledge of the programming basics

SUBJECT OBJECTIVES

C1 Understand the applications of data mining methods to biological data.

C2 Learn how to analyze the results of an experiment using learnt methods.

SUBJECT EDUCATIONAL EFFECTS

relating to skills:

PEU_U01 Proficiency in basic concepts of data exploration, data visualization, diverse data mining techniques, and the application of results in real-world contexts.

relating to social competences:

PEU_K01 Effective communication and the integration of data-driven insights into decision-making processes.

PROGRAMME CONTENT

Laboratory		Number of hours
La1	Introduction to Data Mining	1

La2	Data Preparation and Cleaning	2
La3	Data Exploration and Visualization	2
La4	Data Mining Techniques	2
La5	Classification Algorithms in Data Mining	2
La6	Clustering Algorithms in Data Mining	2
La7	Evaluation and Validation metrics	2
La8	Knowledge evaluation – end semester project	2
	Total hours	15

TEACHING TOOLS USED

N1. Computer Lab
N2. Presentation with elements of live coding
N3. Consultations
N4. Independent additional studies

EVALUATION OF SUBJECT LEARNING OUTCOMES ACHIEVEMENT

Evaluation (F – forming during semester), P – concluding (at semester end)	Learning outcomes code	Way of evaluating learning outcomes achievement
F	PEU_W01 PEU_W02 PEU_U01 PEU_K01	Grade based on the assessment of the final project completed during the laboratory.
P = F		

PRIMARY AND SECONDARY LITERATURE

PRIMARY LITERATURE:

- [1] [Python for data analysis (1st. ed.)], McKinney Wes. 2012., O'Reilly Media, Inc.
- [2] Introduction to Data Mining, Pang-Ning Tan, Michael Steinbach, Anuj Karpatne, Vipin Kumar, 2019, Pearson.
- [3] The StatQuest Illustrated Guide To Machine, Josh Starmer, 2022, StatQuest Publications

SECONDARY LITERATURE:

- [1] Internet resources

SUBJECT SUPERVISOR (NAME AND SURNAME, E-MAIL ADDRESS)

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