1.	**Field of study**	**Computer Science**
2.	Faculty	Faculty of Science and Technology
3.	Academic year of entry	2022/2023 (summer term), 2023/2024 (winter term), 2023/2024 (summer term), 2024/2025 (winter term), 2024/2025 (summer term)
4.	Level of qualifications/degree	second-cycle studies
5.	Degree profile	general academic
6.	Mode of study	part-time

Module: cluster analysis algorithms in applications

Module code: W4-IN-N2-20-F-AASwP

1. Number of the ECTS credits: 4

2. Learning outcomes of the module

code	description	learning outcomes of the programme	level of competence (scale 1-5)
M_001	Is aware of the advantages of grouping algorithms and their impact on learning the analyzed data and their fields.	K_K02	1
M_002	Has knowledge of the basics of data mining, including data types, measures of similarity, methods for determining cluster representatives	K_W01 K_W02 K_W04 K_W09	2 2 2 3
M_003	Has knowledge of partitioning grouping algorithms, including k-means and k-medoids	K_W04 K_W09	2 3
M_004	Has knowledge of hierarchical grouping algorithms including AHC	K_W04 K_W09	2 3
M_005	Can determine the similarity / distance of objects relative to each other in multidimensional space	K_U01 K_U03 K_U08 K_U09	2 2 2 3
M_006	Is able to implement or use ready-made libraries / packages that allow the use of a split algorithm for any real data set	K_U01 K_U03 K_U08 K_U09	1 2 2 3

M_007	Is able to appoint a representative of a group of objects in multidimensional space	K_U01 K_U03 K_U08 K_U09	2 3 2 4
M_008	Can visualize the received structure of groups and interpret it correctly	K_U01 K_U03 K_U08 K_U09	1 2 1 3

3. Module description	
Description	The goal is to introduce the listener to cluster analysis algorithms, both division, hierarchical, density and new cluster analysis algorithms. Their practical use in medicine will be considered.
Prerequisites	

4. Assessment of the learning outcomes of the module

code	type	description	learning outcomes of the module
W_001	exam (test)	Knowledge verification based on the content presented in the lecture. The exam consists of both open and closed theory questions.	M_001, M_002, M_003, M_004, M_005, M_006, M_007, M_008
W_002	Projects and reports	Developing projects with reports for them within a specified period as a verification of the skills acquired in solving problems.	M_001, M_005, M_006, M_007, M_008

5. Forms of teaching

code	form of teaching			required hours of student's own work		assessment of the learning outcomes of the module
	type	description (including teaching methods)	number of hours	description	number of hours	
Z_001	lecture	Transferring the content of education in verbal form using audiovisual means and other written teaching aids.	15	Preparation for the exam.	15	W_001
Z_002	laboratory classes	Detailed preparation of students to solve tasks with an indication of the methodology of the procedure, an indication of the order of performed activities.	30	Preparation for the laboratory. Student's independent solution of tasks assigned to the laboratory, preparation of reports	60	W_002