Syllabus
«Data analysis technologies in social networks»

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Expected learning outcomes
As a result of studying the discipline, the student
must know:
- data collection methods from the INTERNET, social networks, and data processing methods;
- methods of determining social groups based on data from social networks and classification of graph vertices;
- modern methods and algorithms used in the collection, analysis, and processing of data from the INTERNET and social networks;
- saving in graphs, their typification, classification, and normalization of data, bringing them to the desired form, algorithms for working with data analysis libraries, being able to work with tools for data visualization;
- mathematical formalization and features of the application of multi-criteria decision-making methods and approaches;

must be able to:
- perform all research procedures: starting with drawing up a research program, selecting analysis categories, collecting information, processing and interpreting research results;
- know and be able to apply methods of information analysis, their evaluation, and their use in analyzing the risks of spreading fake information in networks.
- data collection from social networks, methodology, methods, technique, and technology for conducting and organizing research using data analysis tools and libraries of modern programming languages;
- be able to work with data visualization tools.

The scope of the discipline: 4 ECTS credits (16 hours of lectures, 32 hours of practice).

Purpose: studying the discipline is the formation of students' knowledge and skills in the use of modern data analysis technologies and the improvement of students' theoretical knowledge and practical skills in decision-making in the field of information flow management and data analysis technologies for solving various problems.

They study methods of data collection from the INTERNET, social networks, data processing methods, methods of determining social groups based on data from social networks, and classification of graph vertices. The knowledge and skills acquired during the study of this discipline help students understand modern methods and algorithms that are used in the collection, analysis, and processing of data from the INTERNET, and social networks, storing them in graphs, pre-type data, and bringing them to the desired form, work with data analysis libraries, to be able to work with data visualization tools.

The content of the discipline

Topic 1. Massive data analysis systems from the INTERNET and social networks
Topic 2. Data monitoring and analysis systems from the INTERNET for commercial organizations
Topic 3. Data analysis systems from the INTERNET used in scientific research
Topic 4. Examples of experimental studies of social networks
Topic 5. Visual presentation of social network structures
Topic 6. Means of automatic placement when graphs are visualized
Topic 7. Finding relevant information on social networks
Topic 8. Extracting knowledge from information available on the INTERNET.
Topic 9. Personalization of information. Knowledge about consumers / Users.

Prerequisites
"Fuzzy Sets Theory and Fuzzy Logic", "Decision Making Theory", "Control Systems".

Consequences
The knowledge gained during the discipline can be used in the disciplines or areas of "Intelligent decision support systems", "Software intelligent control systems", and "Methods of computational intelligence".

Technical support
Practices in the discipline are carried out in computer classes using Microsoft Visual Studio, Java SE, Python, and C#.

Deadline policy
Works that are submitted in violation of deadlines without good reason are evaluated at a lower grade.

Academic Integrity Policy
Provides independent performance of practices. Write-off (including using mobile devices) is prohibited. The work is not credited in case of detection of plagiarism or write-off.

Evaluation criteria of laboratory works/practices / individual works/reports/projects

Maximum number of points – a student with high quality independently performs the entire scope of work, answers all questions related to the work performed, and makes additional calculations, for example, using the methods of determining social groups based on data from social networks and classification of graph vertices processing offered to him by the teacher. The teacher has no complaints about the software implementation and performance requirements.
Approximately 70%-99% of the maximum number of points – a student with sufficient quality independently completed all tasks, but in the process, he made some mistakes, which, after pointing to them by the teacher, corrected themselves. He answers some questions with a slight error. The additional calculations offered by the teacher come with some complexity. Not all work requirements are met.
Approximately 40%-69% of the maximum number of points – a student of average quality independently completed all tasks, but did not meet all the requirements for implementation. He answers the question with a slight error. The additional calculations offered by the teacher, for example, using methods of decision making make insignificant errors. Not all requirements for the design of the work are met.
Approximately 1%-39% of the maximum number of points – a student performed all the work independently, but the quality of implementation is insufficient (errors in calculations, not all work requirements are met). The answers to the questions about the work are not entirely clear. There are errors in the answers.
0 points – a student did not perform the entire amount of work, or performed with gross errors. He has problems with calculations by certain methods, does not know the theoretical material, and the software implementation does not meet the requirements.