Tools based on Artificial Intelligence

Volume: 4 ECTS credits

Semester: 4th spring

Days, Time, Place: according to the schedule

Information about the teacher

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Workplace	Department of Information Technology, Physical, Mathematical and Economic Sciences (aud. 326, educational building № 2)
Hours of consultations	Wed.15.00-16.00

Course description

The theoretical part of the course is based on knowledge of the concepts of artificial intelligence, machine learning, generative artificial intelligence, and attention is paid to issues of generative artificial intelligence and academic integrity. The practical part is devoted to the study of artificial intelligence software tools for generating ideas, creating visual and multimedia content.

Considerable attention will be paid to practical skills. As a result of studying the academic discipline, the student will:

- know and understand the concepts of artificial intelligence, machine learning;
- know software tools of generative artificial intelligence;
- be able to use AI tools to create text, visual, multimedia content;
- have the skills and abilities to form prompts;
- to be able to analyze the obtained result, critically interpret and evaluate it, apply it to solving problems.

Requires basic computer skills and online services. Requires basic programming.

The purpose of training

After successfully completing the course, students will be able to:

- learn and master modern knowledge;
- to use and configure the means of generative artificial intelligence for quick and efficient performance of tasks in one or another field.
- generate new ideas (creativity);
- work in a team;
- evaluate and ensure the quality of performed works.

Forms and methods of teaching

The course will be presented in the form of lectures (20 hours), laboratory classes (20 hours), organization of independent work of students in libraries and computer networks (80 hours). The teacher will use problem-based and interactive teaching methods, consultations.

The educational process is fully supported on the course page in the educational environment of the university http://vle.ndu.edu.ua/.

Organization of training

Lecture topics

№	Topics	Hours
1.	Introduction to artificial intelligence. Concept of artificial intelligence.	2
2.	Machine learning, learning with a teacher, without a teacher, learning with reinforcement. Neural networks.	2
3.	Generative Artificial Intelligence (GAI). Large language patterns.	2
4.	Prompt engineering, components of prompts.	2
5.	GAI software for training and research.	2
6.	Possibilities of using GAI for education and research.	2
7.	Generative artificial intelligence for creating visual content.	2
8.	Generative artificial intelligence for creating multimedia content.	2
9.	Generative artificial intelligence for creating multimedia content.	2
10.	Ethics of artificial intelligence. Generative artificial intelligence and academic integrity.	2
	Total	*20*

Topics of practice works

№	Topics	Hours
1.	Artificial Intelligence Tools for Text Generation.	2
2.	Features of Prompt Composition.	2
3.	Opportunities for Using AI for Education and Research.	2
4.	Generative Artificial Intelligence for Visual Content Creation.	2
5.	Generative Artificial Intelligence for Multimedia Content Creation.	4
6.	Project Preparation, Execution, and Defense	2
	Total	*20*

Independent work

№	Topics	Hours
1.	Introduction to artificial intelligence. Concept of artificial intelligence.	6
2.	Machine learning, learning with a teacher, without a teacher, learning with reinforcement. Neural networks.	8
3.	Generative Artificial Intelligence (GAI). Large language patterns.	8
4.	Prompt engineering, components of prompts.	8
5.	GAI software for training and research.	10
6.	Possibilities of using GAI for education and research.	10
7.	Generative artificial intelligence for creating visual content.	10
8.	Generative artificial intelligence for creating multimedia content.	12
10.	Generative artificial intelligence for creating multimedia content.	8
	Total	*80*

Grade

The final grade of the course would be calculated using the following components:

Marks	Assessing learning outcome
10	Lab 1
10	Lab 2
10	Lab 3
10	Lab 4
10	Lab 5
10	Lab 6
20	Project work
20	Final test
100	**Total**

Course policy

Attendance and / or participation is an important component of the learning process. However, if the student wishes to study remotely, all learning activities, including performance and submission for assessment of tasks, can be done remotely on the course page in the educational environment of the university http://vle.ndu.edu.ua/.

Delay. Protection of laboratory results takes place during the next laboratory classes, but not later than three days before the credit. Deadline for submission of control and settlement work - three days before the credit. Tasks are not accepted after the specified dates.

Reassessment of tasks is possible within a week after receiving the assessment on the basis of an application addressed to the head of the department in writing. After receiving the application, the head of the department within a week will create a revaluation commission, which after analyzing the student's work will inform him of his decision.

Reassignment is carried out in accordance with the current regulations on the organization of the educational process at the university.

Academic integrity and plagiarism. Students perform all the planned work independently. In case of detection of non-independent performance of the task, the result is annulled, and the work is returned to the student for revision in compliance with the rules of academic integrity. Information about plagiarism will be reported to the dean / director and curator.

When performing joint tasks, the contribution of each participant should be indicated.

Mobile devices are used in the classroom only when absolutely necessary and with the permission of the teacher. The use of mobile devices for non-educational purposes is punishable by warning or removing the student from the classroom.

Behavior in the audience. The behavior of students is determined by safety rules and generally accepted norms of behavior, which are determined in accordance with the regulations of the

university.