Syllabus of the educational discipline
« LOGIC AND FUNCTIONAL PROGRAMMING»

Cycle of Higher Education	*First cycle of higher education (Bachelor's degree)*
Field of Study	*12 Information Technologies*
Specialty	*123 Computer engineering*
Educational program	*Computer systems and networks*
Discipline status	*Compulsory*
Teaching language	*English*
Year of studies, semester	*3 year (6 semester)*
Number of credits ECTS	*4 credits*
Distribution by types of trainings and hours of study	*Lectures, Laboratory studies, Independent training*
Form of final assessment	*Test*
Teacher	*Mulesa O.Yu, Doctor of technical sciences, Professor of the department of computer systems and networks*
Teacher's contacts	*oksana.mulesa@uzhnu.edu.ua*
Course Schedule	*According to the timetable*

The purpose of the study discipline "Logic and functional programming" - the study of mathematical foundations, techniques and methods of logical and functional programming; practical mastery of the tools of functional and logical programming to solve practical and scientific problems. To master basic capabilities of logical and functional programming languages on the example of Prolog and Lisp.

As a result of studying the discipline the student must:

know:

- basic concepts of computer science, mathematics and programming;

- ability to search for necessary information to solve the received task in laboratory classes, to solve additional tasks, to analyze and evaluate it;

- basic methods and techniques used in functional and logical programming, tools to implement programs in high-level languages Lisp and Prolog.

be able to:

- create programs in logical and functional programming languages, use Prolog and Lisp functionalities to process recursive data structures, solve problems

Prerequisites for learning

Discrete Mathematics, Programming, Data Structures and Algorithms

Content of the educational discipline

Topic 1. Subject of the discipline and its main tasks, the relationship with other disciplines of the specialty
Topic 2. The basic elements of the Prolog language. Program Management
Topic 3. Recursive representation of data and programs
Topic 4. Operations with database
Topic 5. Technologies for building expert systems
Topic 6. Fundamentals of functional programming
Topic 7. Functional programming language Lisp. Basic concepts
Topic 8. Construction of recursive functions
Topic 9. List form of data representation in functional programming
Topic 10. The essence of the point form of expression representation
Topic 11. Principles of structured program construction and structured debugging
Topic 12. Additional features of the Lisp functional language

Course page on the Moodle platform (personal training	*Syllabus of the educational discipline, hyperlinks to electronic publications of the discipline, recommended literature, students' attendance, lecture materials, presentations, questions for self-*

system)	*control, methodical materials for laboratory works, tests, tasks for checking students' knowledge.* https://moodle.uzhnu.edu.ua

Recommended literature

1. Eduardo Costa. Visual Prolog 7.3 for Tyros. / Eduardo Costa. – New York: Springer-Verlag, 2010. – 270 p.
2. *William F. Clocksin Clause and Effect: Prolog Programming for the Working Programmer. - Springer, 1997. - 152p.*
3. *Ivan Bratko Prolog Programming for Artificial Intelligence. - Pearson Education Canada, 2011. - 696p.*

Assessment system of learning outcomes

The ECTS grade that a student receives after studying a credit module of a discipline is determined according to the student's rating. A student's credit module rating consists of the points the student receives during the semester for the following types of work:

1. Modular control work (MCW) duration of 2 acad. hours each. The maximum number of points for the MCW is 50 points.

2. Performance of laboratory works.

During the semester, students perform laboratory works(maximum number of points - 40)

Scores on individual and independent work of students are awarded for: preparation of essays, modernization of tasks, creative approach to task performance, performance of tasks to improve didactic materials on the discipline: 0-10 points for each module.

Each module is assessed a maximum of 100 points. At the end of the discipline a rating score is derived as the arithmetic average of the points from the two modules.

ECTS and national grading scale

Mark scale	ECTS	Exam	Test
90 - 100	A	Excellent	Satisfied
82 - 89	B	Good	
74 - 81	C		
64 - 73	D	Satisfactory	
60 - 63	E		
35 - 59	FX	“Unsatisfactory” with possibility to pass the exam again	“Not satisfied” with possibility to pass the exam again
1 - 34	F	“Unsatisfactory” with obligatory repeated study of the discipline	“Not satisfied” with obligatory repeated study of the discipline