DISCRETE MATHEMATICS

COURSE SYLLABUS ABSTRACT
of higher education institution

Speciality 1-28 01 02 – Digital Marketing

	STUDY MODE	
	full-time	part-time
Year	1	2
Semester	2	4
Lectures, hours	16	4
Practical classes (seminars), hours	34	6
In-class test (semester, hours)	-	-
Exam, semester	-	-
Pass/fail, semester	2	4
Contact hours	50	10
Independent study, hours	58	98
Total course duration in hours / credit units	108 / 3	108 / 3

1. Course outline**:** Mathematical logic. Equivalent transformations of formulas and normal forms of Boolean algebra. Elements of the logic of statements. Elements of predicate logic. Graphs: connectivity, rounds, shortest paths. Graphs: isomorphism, cycles, sections. Graphs: independence and coverage. Graphs: coloring and planarity. Boolean functions. Decomposition, functional completeness. Minimization of Boolean functions (in the DNF class). Minimizes the number of full machine states. Minimizes the number of states of a partial machine. Coding of synchronous machine states.

2. Course learning outcomes. Upon completion of the course, students will be expected to
– know: basic methods of set theory and combinatorics; logical operations; elements of speech logic; elements of predicate logic; basic concepts and results of graph theory; Boolean functions; elements of the theory of formal grammars and languages; fundamentals of algorithm theory; coding theory elements;
– be able to: solve basic combinatorial problems; apply logical operations, logical formulas and functions, calculate formula values; Translate proposals into the formal language of expression logic; Apply predicate logic operations apply the theory of graphs and its applications; investigate for completeness of Boolean function system; determine the separability of the code, build the optimal code;
– possess: the formal language of the logic of statements; concepts of alphabetical and uniform coding; methods for determining the complexity of the algorithm and calculations; mathematical toolkit of educational discipline in solving problems of professional activity.

3. **Competencies formed**: have the skills of creative and analytical thinking (SC-12); formalize and solve applied problems in the field of information and communication technologies using discrete mathematics methods (BPC-3).

4. Requirements and forms of midcourse evaluation and summative assessment
Modular rating system is used. Intermediate certification: control works. Current evaluation: offset.