Course Syllabus

I. General Information

Course name	Discrete mathematics
Programme	Mathematics
Level of studies (BA, BSc, MA, MSc, long-cycle MA)	BA
Form of studies (full-time, part-time)	full-time
Discipline	informatics, mathematics
Language of instruction	English

Course coordinator/person responsible	dr Armen Grigoryan

Type of class *(use only the types mentioned below)*	Number of teaching hours	Semester	ECTS Points
lecture	30	IV and VI	5
tutorial			
classes	30	IV and VI	
laboratory classes			
workshops			
seminar			
introductory seminar			
foreign language classes			
practical placement			
field work			
diploma laboratory			
translation classes			
study visit			

Course pre-requisites	Introduction to computer science Logics

II. Course Objectives

Presentation of main concepts and basic methods of discrete mathematics.
Developing the ability to create and use discrete models.
Development of algorithmic thinking.

III. Course learning outcomes with reference to programme learning outcomes

Symbol	Description of course learning outcome	Reference to programme learning outcome
KNOWLEDGE		
W_01	The student is familiar with basic concepts of discrete mathematics.	K_W01, K_W04
W_02	The student is familiar with basic methods and algorithms in graph theory.	K_W01, K_W04
SKILLS		
U_01	The student can use methods and algorithms of discrete mathematics in order to solve problems in computer science	K_U38
U_02	The student can use acquired methods and algorithms of discrete mathematics in order to describe processes, create models and algorithms in computer science.	K_U38
SOCIAL COMPETENCIES		
K_01	The student is aware of the level of their knowledge and skills and understand the need of further training and improving both professional and personal competence	K_K02, K_K05

IV. Course Content

Mathematical induction. Recursions. Relations. Combinatorics. Introduction to the graph theory: the basic notions, trees, cycles (in particular Eulerian and Hamiltonian), the mninmal spanning tree (the algorithms of Kruskal and Prim), bipartite graphs, networks, flows, Ford-Fulkerson's algorithm, graph coloring. Planar graphs. Basic concepts of the coding theory.

V. Didactic methods used and forms of assessment of learning outcomes

Symbol	Didactic methods *(choose from the list)*	Forms of assessment *(choose from the list)*	Documentation type *(choose from the list)*
KNOWLEDGE			
W_01	Conventional lecture	Exam	Protocol
W_02	Conventional lecture	Exam	Protocol
SKILLS			
U_01	Practical classes	Test	Protocol
U_02	Practical classes	Test	Protocol
SOCIAL COMPETENCIES			
K_01	Practical classes	Test	Protocol

VI. Grading criteria, weighting factors.....

Pass of classes: based on a test result:
91 – 100% - 5,
81 – 90% - 4.5,
71 – 80% - 4.0,
61 – 70% - 3.5,
51 – 60% - 3.0,
0 - 50% -2.0

Examination (a test for those who have completed the classes):
91 – 100% - 5,
81 – 90% - 4.5,
71 – 80% - 4.0,
61 – 70% - 3.5,
51 – 60% - 3.0,
0 - 50% -2.0

Detailed assessment rules are given to students with each subject edition.

VII. Student workload

Form of activity	Number of hours
Number of contact hours (with the teacher)	Lecture 30 Classes 30 Consultations 30
Number of hours of individual student work	60

VIII. Literature

Basic literature
1. R. Johnsonbaugh, Discrete mathematics, Prentice Hall, 2001. 2. S. Lipschutz, M. L. Lipson, Theory and Problems of Discrete Mathematics, Third Edition, McGraw-Hill, New York, 2007
Additional literature
1. K. Rosen, Discrete mathematics and its applications, McGraw-Hill, New York 1995.