UNITED INTERNATIONAL UNIVERSITY

Department of Computer Science and Engineering (CSE)

Course Syllabus

1	**Course Title**	Discrete Mathematics
2	**Course Code**	CSE 2213
3	**Trimester and Year**	Fall, 2023
4	**Pre-requisites**	None
5	**Credit Hours**	3.00
6	**Section**	R
7	**Class Hours**	**Sun-Wed**: 12:30 PM – 1:50 PM
8	**Class Room**	309
9	**Instructor's Name**	Md. Mohaiminul Islam
10	**Email**	mohaiminul@cse.uiu.ac.bd
11	**Office**	636(C)
12	**Counseling Hours**	On lms
13	**Text Book**	1. Discrete Mathematics and Its Applications by Kenneth H. Rosen
14	**Reference**	N/A
15	**Course Contents (approved by UGC)**	Discrete mathematics course is required for the students to be able to learn discrete structures and techniques needed to solve different computer science related as well as real life problems. To achieve these goals, this course stresses mathematical reasoning and the different ways problems are solved.
16	**Course Outcomes (COs)**	

COs	**Description**
CO1	Represent logical sentences in terms of propositions, predicates, quantifiers and logical connectives.
CO2	Produce convincing arguments for basic mathematical proofs using propositions and proof techniques.
CO3	Understand different properties and basic operations of sets and functions.
CO4	Apply simple and advanced counting techniques to solve mathematical and real-life problems.
CO5	Solve problems using different properties and basic algorithms of graphs and trees.

17	**Teaching Methods**	Lecture, Case Studies, Project Developments.
18	**CO with Assessment Methods**	

CO	Assessment Method	(%)
	Attendance	5
	Assignments	5
	Class Tests	20
1, 2, 3	Midterm exam	30
4, 5	Final exam	40

19 Mapping of COs and Program outcomes

COs	Program Outcomes(POs)											
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1	C											
CO2		C										
CO3	C											
CO4		C										
CO5		C										

20 Lecture Outline

Class	Topics/Assignments	COs	Reading Reference	Lecture Outcomes/Activities
1	Introduction, Propositional Logic	1	1	Lecture
2	Propositional Logic	1, 2	1	Lecture
3	Propositional Logic	1, 2	1	Lecture
4	Predicates and Quantifiers	1	1	Lecture, Assignment
5	Nested Quantifiers	1	1	Lecture
6	Basic Proof Techniques	2	1	Lecture, Assignment
7	Basic Proof Techniques	2	1	Lecture, Test
8	Introduction to Sets	3	1	Lecture
9	Set Operations	3	1	Lecture
10	Functions	3	1	Lecture, Assignment
11	Mathematical Induction	2	1	Lecture, Test

12	Review of Mid-term Exam Syllabus	-	1	Lecture
	MIDTERM EXAM	-	1	-
13	The Basics of Counting	4	1	Lecture
14	The Pigeonhole Principle	4	1	Lecture
15	Permutations and Combinations	4	1	Lecture, Assignment
16	Discrete Probability principles of inclusion and exclusion	4	1	Lecture, Assignment
17	Recurrence Relations	4	1	Lecture, Test
18	Graphs and Graph Models	5	1	Lecture
19	Different types of graphs	5	1	Lecture
20	Representation of Graphs and Isomorphism	5	1	Lecture, Assignment
21	Paths and Graph Connectivity	5	1	Lecture
22	Trees and its properties	5	1	Lecture
23	Binary Search Trees and Tree Traversal	5	1	Lecture, Assignment
24	Applications of Trees	5	1	Lecture, Test

Appendix 1: Assessment Methods

Assessment Types	**Marks**
Attendance	5%
Assignments	5%
Class Tests	20%
Mid Term	30%
Final Exam	40%

Appendix 2: Grading Policy

Letter Grade	**Marks %**	**Grade Point**	**Letter Grade**	**Marks%**	**Grade Point**
A (Plain)	90-100	4.00	C+ (Plus)	70-73	2.33
A- (Minus)	86-89	3.67	C (Plain)	66-69	2.00
B+ (Plus)	82-85	3.33	C- (Minus)	62-65	1.67
B (Plain)	78-81	3.00	D+ (Plus)	58-61	1.33
B- (Minus)	74-77	2.67	D (Plain)	55-57	1.00
			F (Fail)	<55	0.00

Appendix-3: Program outcomes

POs	Program Outcomes
PO1	An ability to apply knowledge of mathematics, science, and engineering
PO2	An ability to identify, formulate, and solve engineering problems
PO3	An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
PO4	An ability to design and conduct experiments, as well as to analyze and interpret data
PO5	An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice
PO6	The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
PO7	A knowledge of contemporary issues
PO8	An understanding of professional and ethical responsibility
PO9	An ability to function on multidisciplinary teams
PO10	An ability to communicate effectively
PO11	Project Management and Finance
PO12	A recognition of the need for, and an ability to engage in life-long learning