



East West University
Department of Computer Science and Engineering
Course Outline
Spring 2023 Semester

Course: CSE106 Discrete Mathematics (Section 6, 7)

Credits and Teaching Scheme

	Theory	Laboratory	Total
Credits	3	0	3
Contact Hours	3 Hours/Week for 13 Weeks + Final Exam in the 14 th Week		3 Hours/Week for 13 Weeks + Final Exam in the 14 th Week

Prerequisite

CSE103 Structured Programming

Instructor Information

Instructor: *Dr. Mohammad Salah Uddin*

*PhD in Robotics, Sapienza University of Roma,
Rome, Italy.*

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East West University, Dhaka, Bangladesh.

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Class Routine and Office Hour

Day	08:30 – 10:00	10:10 – 11:40	11:50 – 01:20	01:30 – 03:00	03:10 – 04:40	04:50 – 06:50
Sunday			CSE347 (5) FUB-601	Office hour		
Monday			CSE106 (7) 224	Office hour		
Tuesday	CSE106 (6) 359	Office hour	CSE347 (5) FUB-601	Office hour		
Wednesday	CSE347 Lab 630	Office hour	CSE106 (7) 224	Office hour	Office hour	CSE347 Lab 630
Thursday	CSE106 (6) 359					

Course Objective

This course builds up the students' ability to think and express logically and mathematically. The course will address mathematical reasoning, combinatorial analysis, algorithmic thinking, and discrete structures. Knowledge of this course will be needed as prerequisite knowledge for future courses such as CSE110 Objected Oriented Programming, CSE207 Data Structures, CSE246 Algorithms, CSE302 Database Systems, CSE366 Artificial Intelligence, CSE405 Computer Networks, and CSE471 Compiler Design.

Knowledge Profile

K2: Conceptually-based mathematics, numerical analysis, statistics, and formal aspects of computer and information science

K3: Theory-based engineering fundamentals

Learning Domains

Cognitive - C2: Understanding, C3: Applying

Psychomotor - P3: Precision

Affective - A2: Responding

Program Outcomes (POs)

PO1: Engineering Knowledge

Complex Engineering Problem Solution

EP1: Depth of knowledge required

EP2: Range of conflicting requirements

Complex Engineering Activities

None

Course Outcomes (COs) with Mappings

After completion of this course students will be able to:

CO	CO Description	PO	Learning Domains	Knowledge Profile	Complex Engineering Problem Solving/ Engineering Activities
CO1	Interpret and apply propositional logic, predicate logic, and theorem proving for mathematical reasoning.	PO1	C2, C3	K2	-
CO2	Interpret and apply counting principles for combinatorial analysis.	PO1	C2, C3	K2	-
CO3	Interpret and apply the growth of functions, complexity analysis of algorithms, and integer algorithms for algorithmic	PO1	C2, C3 P3 A2	K2, K3	EP1, EP2

	thinking; demonstrate this knowledge and write report for realistic problem solving.				
CO4	Interpret and apply discrete structures such as sets, functions, relations, graphs, and trees for modeling discrete objects; demonstrate this knowledge and write report for realistic problem solving.	PO1	C2, C3 P3 A2	K2, K3	EP1, EP2

Course Topics, Teaching-Learning Method, and Assessment Scheme

Course Topic	Teaching-Learning Method	CO	Mark of Cognitive Learning Levels		CO Mark	Exam (Mark)
			C2	C3		
Propositional Logic, Propositional Equivalences, Predicates and Quantifiers, Nested Quantifiers	Lectures and discussions inside and outside the class	CO1	8	8	16	Midterm Exam I (25)
Introduction to Proofs, Mathematical Induction	Do	CO1		9	9	
Sets, Set Operations, Functions, Recursive Functions, Relations and Their Properties	Do	CO4	8	8	16	Midterm Exam II (25)
The Basics of Counting, The Pigeonhole Principle	Do	CO2	3	6	9	
Algorithms, The Growth of Functions, Complexity of Algorithms, The Integers and Division, Primes, Greatest Common Divisor, Least Common Multiplier	Do	CO3	4	8	12	Final (25)
Graphs, Graph Terminologies and Special Types of Graphs, Representing Graphs, Introduction to Trees	Do	CO4	6	7	13	

Mini Projects

Mini Project	Teaching-Learning Method	CO	Mark of Cognitive Learning Level	Mark of Psycho-motor Learning Level	Mark of Affective Learning Level	CO Mark	Exam (Mark)
			C3	P3	A2		
Mini Project with reports and presentation	Group-based moderately complex programming projects with report writing and presentation	CO3	4	0.5	0.5	5	Mini Project (10)
		CO4	4	0.5	0.5	5	
		Total	8	1	1	10	

Overall Assessment Scheme

Assessment Area	CO				Other	PO Marks
	CO1	CO2	CO3	CO4		PO1
Class Participation					5	
Class Test/Quiz					10	
Midterm Exam - I	25	0	0	0		25
Midterm Exam -II	0	9	0	16		25
Final Exam	0	0	12	13		25
Mini Projects with report and presentation	0	0	5	5		10
Total Mark	25	9	17	34	15	85

Teaching Materials/Equipment

Text book:

Kenneth H. Rosen, *Discrete Mathematics and Its Applications with Combinatorics and Graph Theory*, 7th/8th Edition, Tata McGraw-Hill Publishing Company Limited, New Delhi, 2015.

Mini Projects:

Mini Project description will be provided.

Grading System

Marks (%)	Letter Grade	Grade Point	Marks (%)	Letter Grade	Grade Point
97-100	A+	4.00	73-76	C+	2.30
90-96	A	4.00	70-72	C	2.00
87-89	A-	3.70	67-69	C-	1.70
83-86	B+	3.30	63-66	D+	1.30
80-82	B	3.00	60-62	D	1.00
77-79	B-	2.70	Below 60	F	0.00

Exam Dates

Section	Term I	Term II	Final
6	07 March 2023	11 April 2023	16 May 2023
7	06 March 2023	05 April 2023	17 May 2023

Academic Code of Conduct

Academic Integrity:

Any form of cheating, plagiarism, personification, falsification of a document as well as any other form of dishonest behavior related to obtaining academic gain or the avoidance of evaluative exercises committed by a student is an academic offence under the Academic Code of Conduct and **may lead to severe penalties as decided by the Disciplinary Committee of the university.**

Special Instructions:

- Students are expected to attend all classes and examinations. A student **MUST** have at least 80% class attendance to sit for the final exam.
- Students will not be allowed to enter into the classroom after 20 minutes of the starting time.
- For plagiarism, the grade will automatically become zero for that exam/assignment.
- Normally there will be **NO make-up exam**. However, in case of **severe illness, death of any family member, any family emergency, or any humanitarian ground**, if a student miss any exam, the student **MUST** get approval of makeup exam by written application to the Chairperson through the Course Instructor **within 48hours** of the exam time. Proper supporting documents in favor of the reason of missing the exam have to be presented with the application.
- For **final exam**, there will be NO makeup exam. However, in case of **severe illness, death of any family member, any family emergency, or any humanitarian ground**, if a student miss the final exam, the student **MUST** get approval of **Incomplete Grade** by written application to the Chairperson through the Course Instructor **within 48 hours** of the final exam time. Proper supporting documents in favor of the reason of missing the final exam have to be presented with the application. **It is the responsibility of the student to arrange an Incomplete Exam within the deadline mentioned in the Academic Calendar in consultation with the Course Instructor.**
- All mobile phones **MUST** be turned to silent mode during class and exam period.
- There is **zero tolerance for cheating** in exam. Students caught with cheat sheets in their possession, whether used or not; writing on the palm of hand, back of calculators, chairs or

nearby walls; copying from cheat sheets or other cheat sources; copying from other examinee, etc. would be treated as cheating in the exam hall. The only penalty for cheating is **expulsion for several semesters as decided by the Disciplinary Committee of the university.**