Course Name: **Discrete Mathematics**		
Course Code: COMP 113	**Course Type (major)**	**Course Credits: 3**
Class Timings: **11:00-12:15 Sec A,** **12:30-1:45 Sec B,** **2:00-3:15 A sec C**	**Section: A, B and C**	**Student Meeting Hours/ Office Hours:** TR 8:00-9:00 R: 9:11
Instructor Name: Maria Tamoor		

A Note from the Instructor:

- All lectures and related material will be uploaded on Moodle and Google drive weekly.
- Assignments / home works will be uploaded on Moodle and students will submit them using same.
- All emails regarding the course should be sent through official FCC student email account and should have subject line starting as "COMP113 "

Instructor Contact Details
Email: mariatamoor@fccollege.edu.pk
Whatsapp group: Email will be sent
Guidelines for contacting instructor: you can appointment for some other day via email

Course Description:
This course covers mathematical foundations of computer science. An introduction to logic, sets, functions, and relations is made. Notion of complexity (time and space) is introduced and its use in the analysis of algorithms is discussed. An introduction is made to the basic Graph and Tree algorithms. Problems are formed mathematically and solved using available tools and techniques.

Main Mode of Instruction: in person, Moodle and Zoom
Technology Requirements *Check moodle on daily basis, internet is required to access material*
Considerations for Students with Limited Internet/Technology Access: you need to inform in prior about limited access to internet to instructor**.**

Textbook: Discrete Mathematics, Kenneth H. Rosen 7th Edition

Reference Books

- Concerete Mathematics, Graham, Knuth, Patashnik
- Discrete Mathematics with Applications by Susanna S. Epp

Course Content, Learning Material & Activities Schedule

Week	Session	Topics to be Covered	
1	01	Introduction, Basic Definitions, Mathematical Notations, Statements	
	02	Propositional Calculus, Propositions, Logical Connectives and Truth Tables	Home work 1 : Proposition and logic
2	03	Propositional Equivalences, Predicates and Quantifiers	
	04	Nested Quantifiers, Logic Programming (only introduction)	Quiz 1 : Logic and quantifiers
3	05	Rules of Inference,	
	06	Rules of Inference Examples	
4	07	Introduction to Proof techniques, Proof Methods (Direct proof, Indirect Proof by Contrapositions)	
	08	Proof by Contradiction, trivial, vacuous proof	Home work 2: Rules of inference, Proof methods
5	09	Set Theory, Functions, Sets, Set Operations, set	
	10	Relationships, Functions	
6	11	Cardinality and Countability (Cantors diagonalization theorem)	Quiz 2: Functions
	12	Algorithms, Integers and Growth functions, Algorithms and Growth Functions,	
7	13	Algorithms Examples	Home work 3: Complexity of functions
	14	Growth of Function Examples	
8	15	Complexity of Algorithms Examples	
	16	**MID-TERM EXAM**	
9	17	Mathematical Induction	
	18	Mathematical Induction Examples	
10	19	Recursion	Homework 4: Mathematical induction and Recursion
	20	Recursive Definitions	Quiz 3: Mathematical induction
11	21	Integers, prime, GCD,LCM using prime numbers, Euclidean Theorem	
	22	Divisibility and Modular Arithmetic	
12	23	Solving Congruence, Chinese Remainder theorem	Practice questions from CRT and Euclidean algorithm
	24	Basic Counting Techniques, Permutations	
13	25	Permutation and Combinations, Pigeon hole principle, Inclusion Exclusion	
	26	Relations and Functions, Binary and n-ary Relations, Representing Relations	Quiz 4: Permutation and combination
14	27	types of relations, Closure of Relations, Equivalence Relations, Applications	Homework 5: Relations

	28	Graphs, Introduction to Graphs and Trees, Graph Terminology, Representing Graphs, Graph Isomorphism, Warshall's algorithm	
FINAL-TERM EXAM			

'Out-of-class' Study Required:
Following are the best practices to succeed in this course:

- View video lectures before class time
- Check moodle and your course Whatsapp group regularly
- Atleast spend 3 hours at home for reading from book also.
- Do all assignments and homeworks yourself

The breakup is as follows:

Assignments:	15 %
Quizzes:	15 %
Midterm exam:	30 %
Final term exam:	40 %
TOTAL	**100%**

Missed Assignments/ Make-Ups/ Extra Credit

- Late assignments will be accepted with 50% deduction
- No retake of quiz or exam unless approved.

Grade Determination & Course Assessment as per FCC Policy:
Relative grading will be done so giving your solved assignments and homeworks to your friends can have negative impact on your grade

Changes to the Syllabus:
This syllabus was designed to convey course information and requirements as accurately as possible. It is important to note however that it **may** be subject to change during the course depending on the needs of the class and other situational factors. Such changes would be for your benefit, and you will be notified of them as soon as possible.

Student Support Services

Student Counseling Services.Students can contact the Campus Counseling Center at 0331-444-1518 or email ccc@fccollege.edu.pk.
Writing Center
Mercy Health Center

Other Useful FCCU Policy Documents:

Sexual Harassment Policy
Anti-Corruption Policy
Academic integrity
Plagiarism Policy
Academic Calendar