



# C. U. SHAH UNIVERSITY Wadhwan City

**FACULTY OF:-** Computer Science

**DEPARTMENT OF:-** Master of Computer Applications

**SEMESTER:-** -I

**CODE:-** - 5CS01MMT1

**NAME:-** -MATHEMATICS FOR COMPUTER SCIENCE

## Teaching and Evaluation Scheme

Subject Code	Name of the Subject	Teaching Scheme (Hours)				Credits	Evaluation Scheme							
		Th	Tu	Pr	Total		Theory				Practical (Marks)			Total
							Sessional Exam		University Exam		Internal		University	
							Marks	Hrs	Marks	Hrs	Pr/Viva	TW	Pr	
5CS01MMT1	MATHEMATICS FOR COMPUTER SCIENCE	4	-	-	4	4	30	1.5	70	3	---	---	---	100

### Objectives:-

- The objective of this course is to present the foundations of many basic computer related concepts and provide a coherent development to the students for the courses.
- This course will enhance the student's ability to think logically and mathematically.

### Prerequisites:-

Knowledge of basic concepts on Sets, different operations on sets, binary operations, functions.

### Course outline:-

Sr. No.	Course Contents	Number of Hours
1	<b>Introduction</b> Importance & Purpose of Discrete Mathematical Structures; Applications; Set Theory, Functions, Relations, etc.	6
2	<b>Mathematical Logic:</b> Introduction, Connectives, statement formulas, principle of substitution, validity of arguments, Quantifiers, Proof techniques.	8



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3	<b>Lattices:</b> Relation and ordering, partially ordered sets, Lattices as poset, properties of lattices, Lattices as algebraic systems, sub-lattices, direct product and homomorphism, complete lattices, bounds of lattices, distributive lattice, complemented lattices.	8
4	<b>Boolean Algebra:</b> Introduction, definition and important properties of Boolean Algebra, Sub Boolean algebra, direct product and homomorphism, join-irreducible, meet-irreducible, atoms, anti atoms	8
5	<b>Applications of Boolean Algebra:</b> Boolean expressions and their equivalence, Minterms and Maxterms, Free Boolean algebra, Values of Boolean expression, canonical forms, Boolean functions, representation of Boolean function, Karnaugh maps, minimization of Boolean function, Quine-Mccluskey algorithm, Application to Relational Database.	12
6	<b>Graph Theory:</b> Basic concepts of Graph theory, paths, reachability and connectedness, matrix representation of graph, trees.	10
<b>Total hours</b>		<b>52</b>

**Learning Outcomes: -**

- The student will be able to apply concepts to RDBMS, perform minimization of Boolean functions, shall learn the fundamentals representations methods of graphs and trees.
- They shall be able to use different logical reasoning to prove theorems.

**Books Recommended:-**

1. Discrete Mathematical Structures with Applications to Computer Science, **J. P. Tremblay and R. Manohar**, Publisher-Tata McGraw-Hill
2. Discrete Mathematical Structure, **D. S. Malik, M. K. Sen**, Publisher-Cengage Learning