

Satyug Darshan Institute of Engineering and Technology	
Lesson Plan / Teaching Plan / Lecture Plan with Progress : BCA (Gen & DS) – 1st Semester : 2025-26	
Course Name (Code): Mathematics Foundation to Computer Science-I (BCG-101-V1)	Faculty: Ms. Bhavya Batra
Topics / lectures are arranged in sequence - same - as to be taught in the class. Maintain data related to "Date" in its hard copy.	

S. No .	Lecture No	Topic Description	Teaching Pedagogy	Reference Material	Remarks, if any
1	1	Definition of set and Representation of sets	Board	R1, R2	
2	2	Types of sets	Board	R1, R2	
3	3	Operation on sets, Laws of sets	Board	R1, R2	
4	4	Venn Diagram (Applications of Set Theory)	Board	R5	
5	5	Questions based on Venn Diagram	Board	R5	
6	6	Cartesian Product, Relation and Inverse Relation	Board	R1, R2, R3	
7	7	Representation of relations and its properties	Board	R1, R2, R3	
8	8	Types of relation	Board	R1, R2, R3	
9	9	Equivalence Relation and Partial Order Relation	Board	R1, R2, R3	
10	10	Practice Questions	Board	R1, R2, R3	
11	11	Partition of a set, Closures of Relation, Warshall's Algorithm	Board	R3	
12	12	Function and its properties	Board	R1, R2, R3	
13	13	Types of functions – Injective, Surjective and Bijective	Board	R1, R2, R3	
14	14	Composition of function and Inverse function	Board	R1, R2, R3	
15	15	Exponential and Logarithmic functions	Board	R1, R2, R3	
16	16	Polynomial function, Ceiling and Floor Function	Board	R1, R2, R3	
17	17	Revision	Board		
18	43	Basics of Counting	Board	R3	
19	44	Pigeon Hole Principle	Board	R3	
20	45	Permutations	Board	R3, R5	
21	46	Combinations	Board	R3, R5	
22	47	Binomial Coefficient and Binomial Theorem	Board	R5	
23	48	Questions on Binomial Theorem	Board	R5	
24	49	Recurrence Relation	Board	R1	
25	50	Modelling recurrence relation with examples – Fibonacci numbers	Board	R1	
26	51	The tower of Hanoi problem	Board	R1	
27	52	Solving linear recurrence relation with constant coefficients using characteristic equation roots method.	Board	R1	
28	53	Practice Questions	Board	R1	
29	54	Revision	Board		
30	33	Basic terminologies of graphs	Board	R3, R6	
31	34	Connected and Disconnected graphs, subgraph	Board	R3, R6	
32	35	Paths and Cycles	Board	R3, R6	
33	36	Complete graphs, Digraphs, Weighted graphs	Board	R3, R6	

34	37	Euler Graphs	Board	R3, R6	
35	38	Hamiltonian graphs	Board	R3, R6	
36	39	Trees and its properties	Board	R3, R6	
37	40	Concept of spanning tree.	Board	R3, R6	
38	41	Planar graphs	Board	R3, R6	
39	42	Revision	Board		
40	18	Matrices and its Types	Board	R5	
41	19	Algebra of matrices – addition, subtraction and Scalar Multiplication	Board	R5	
42	20	Multiplication of matrices	Board	R5	
43	21	Transpose, Symmetric and Skew Symmetric Matrix	Board	R5	
44	22	Orthogonal matrix	Board	R4	
45	23	Determinant of a matrix	Board	R5	
46	24	Inverse of a matrix	Board	R4	
47	25	Practice Questions	Board	R4	
48	26	Rank of a Matrix	Board	R4	
49	27	Applications of matrices to solve system of linear equations	Board	R4	
50	28	Practice Questions	Board	R4	
51	29	Eigen values and Eigen vectors	Board	R4	
52	30	Caley-Hamilton theorem.	Board	R4	
53	31	Practice Questions	Board	R4	
54	32	Revision	Board		

Reference Books

Sr.No.	Description
1	Rosen Kenneth H. and Krithi Vasan Kamala, “Discrete Mathematics and its Applications”, McGraw Hill, India, 2019 and Susanna S. Epp, Discrete mathematics with applications, Wadsworth publishing.
2	Seymour Lipschutz, Discrete Mathematics, Schaum Outlines
3	SP Gupta, “Discrete Mathematics and Structures”, Khanna Publishing.
4	N.P Bali, “Engineering Mathematics”.
5	Dr. Yogesh Kumar Goyal, “Business Mathematics”, JBS Publishers Faridabad.
6	JP Trembley, Discrete Mathematics structure and its applications, Tata McGraw Hill