

Satyug Darshan Institute of Engineering and Technology

Lesson Plan / Teaching Plan / Lecture Plan with Progress: BCA(DS) – 3rd Semester: 2025-26

Teacher Centric Approaches => TC-1 (Chalk and Talk); TC-2 (PPT); TC-3 (Video Lectures) Learner (Student) Centric Approaches => LC-1 (Assignment); LC-2 (Mini Project); LC-3 (Quiz); LC-4 (Seminar on recent trends); LC-5 (Group Task); Any other

Course Name (Code): Algebra and Calculus (MTU-209-V)

Faculty Name-Dr. S.S Mudgal

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	Explain Matrix with examples	TC-1	R1	
2	2	Types of matrices with examples	TC-1	R2	
3	3	Matrix addition and subtraction with examples	TC-1	R1	
4	4	Matrix Multiplication of matrices order 1,2,3 And transpose of a matrix.	TC1	R1	
5	5	Explain adjoint of a matrix with example	TC1	R3	
6	6	Explain determinant of a matrix with example, singular and non- singular matrix	TC1	R4	
7	7	Explain inverse of a matrix with example of order 1, 2, 3	TC1	R3	
8	8	Explain system of linear equations with example (Consistence and inconsistency)	TC1	R5	
9	9	Explain Cramer's Rule with problems	TC-1	R3	
10	10	Explain orthogonal and unitary matrices with examples	TC-1	R2	
11	11	Explain rank of matrix with examples	TC-1	R1	
12	12	Explain characteristic equations of a matrix	TC1	R5	
13	13	Solve problems of Eigen values and vectors	TC1	R2	
14	14	Explain differentiation of a function with examples	TC1	R7	
15	15	Derivative of Sum, difference of two and more functions	TC1	R2	
16	16	Explain product and quotient rule of differentiation	TC1	R3	
17	17	Derivatives of polynomial, trigonometric functions	TC-1	R4	
18	18	Derivatives of exponential, logarithmic	TC-1	R3	
19	19	Inverse trigonometric and implicit functions	TC-1	R5	
20	20	Explain Logarithmic Differentiation	TC1	R3	
21	21	Chain Rule of differentiation	TC1	R6	
22	22	Differentiation by substitution.	TC1	R1	
23	23	Solve some problems of Chain Rule	TC1	R6	

24	24	Rank of 4 order matrix with examples	TC1	R2	
25	25	Explain consistent and inconsistent solution of linear equations	TC-1	R4	
26	26	Derivative of implicit functions with examples	TC-1	R1	
27	27	Solve problems of Inverse and implicit functions.	TC-1	R3	
28	28	Explain reduction formula for simple functions	TC1	R4	
29	29	Take test	TC1	R3	
30	30	Problems of Reduction Formula for simple and Trigonometric Functions	TC1	R5	
31	31	Solve some problems Reduction Formula	TC1	R3	
32	32	Definite Integral as Limit of Sum	TC1	R2	
33	33	Understand the Fundamental Theorem of Integral Calculus	TC-1	R4	
34	34	Question of Fundamental Theorem of Integral Calculus	TC-1	R1	
35	35	Evaluation of definite integrals by substitution	TC-1	R3	
36	36	Solve some examples Evaluation of definite integrals by substitution	TC1	R1	
37	37	Explain properties of definite Integral with examples	TC1	R5	
38	38	Properties of definite integral	TC1	R3	
39	39	Explain Sequence with examples	TC1	R4	
40	40	Explain series with examples and Convergence, divergent of sequence and series.	TC1	R3	
41	41	Solve some problems of Convergent and divergent	TC-1	R5	
42	42	P-Series test with examples and statement of Comparison test.	TC-1	R3	
43	43	Solve examples of comparison test	TC-1	R7	
44	44	Explain Ratio test with example of series	TC1	R1	
45	45	Solve problem of ratio test	TC1	R5	
46	46	Alternating series and Leibnitz test	TC1	R2	
47	47	Questions of Leibnitz test	TC1	R2	
48	48	Explain absolute and conditional convergence	TC1	R3	
49	49	Explain Taylor series with examples	TC-1	R3	
50	50	Explain Binomial series with examples	TC-1	R6	
51	51	Series representation of exponential	TC-1	R3	
52	52	Series logarithmic functions	TC1	R5	
53	53	Series trigonometric functions	TC1	R3	
54	54	Solve some question of the function	TC1	R7	
55	55	Revision	TC1		
56	56	Revision	TC1		

Study Material / Books / Web-resources / Online Courses Links etc.

S. No.	Description
1	H. Anton, I. Biven, S. Davis, "Calculus", Wiley, 10th edition, 2015.
2	Erwin Kreyszig, Advanced Engineering Mathematics, 10th Edition, John Wiley & Sons, 2016
3	J. Stewart, Essential Calculus, Cengage, 2nd edition, 2017
4	G.B. Thomas and R.L. Finney, Calculus and Analytic geometry, 9th Edition, Pearson, Reprint, 2002.
5	Peter V. O'Neil, Advanced Engineering Mathematics, Cengage, 7th Edition, 2012
6	Veera Rajan T., Engineering Mathematics for first year, Tata McGraw-Hill, New Delhi, 2008
7	B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, 36 Edition