

LESSON PLAN

Contact Hour (Cumulative)	Unit No	Topic	Teaching(*) Methodology	Remarks
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LESSON PLAN

Subject Code & Name: 20BST102, Differential Equations
Branch/Semester: CSD

A.Y: 2022-23

Faculty Name: Dr.R.Santhikumar

Hour (Cumulative)	Unit No	Topic	Teaching Methodology	Remarks
01	I	Introduction to 1 st order D.E, Linear Equations of First order	Class Room Black Board & PPT	
02	I	Problems on First order Linear Equations	CBB/ PSM	
03	I	Bernoulli's Equations	CBB	
04	I	Solution of Exact Differential equations	CBB	
05	I	Problems	CBB/ PSM	
06	I	Solution of Equations reducible to Exact Differential equations (I.F. Factors)	CBB	
07	I	Problems	CBB/ PSM	
08	I	Newton's Law of Cooling	CBB	
09	I	Law of Natural Growth and Decay	CBB	
10	I	Problems	CBB	
11	I	Orthogonal trajectories, Cartesian and Polar Forms	CBB	
12	I	Problems	CBB/ PSM	
13	II	Introduction to Higher order homogenous and non-homogenous linear differential equations with constant coefficients	CBB & PPT	
14	II	Solutions of Complementary functions	CBB	
15	II	Introduction to Particular Integral General solutions of $f(D).y = Q(x)$, P.I if $f(D)=D, D-a, D+a$	CBB	
16	II	P.I of Special Cases if $Q(x)=e^{ax}, \sin ax/\cos ax$	CBB	
17	II	Problems	CBB/ PSM	
18	II	If $Q(x)=x^m$ Where $m \in \mathbb{Z}^+$	CBB	
19	II	Problems	CBB	
20	II	If $Q(x) = e^{ax}V(x)$	CBB	

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21	II	Problems	CBB/ PSM	
22	II	Method of Variation of Parameters	CBB	
23	II	Problems	CBB/ PSM	
24	III	Determination of Fourier coefficients (without proof) – Fourier series expansion of standard functions	CBB & PPT	
25	III	Problem solving for $(0,2\pi)$, $(-\pi,\pi)$.	CBB/ PSM	
26	III	Fourier series expansion of even and odd functions	CBB	
27	III	Problem solving	CBB/ PSM	
28	III	Fourier series expansion in an arbitrary interval $(0,2c)$, $(-c,c)$	CBB	
29	III	Problem solving	CBB/ PSM	
30	III	Half-range Fourier sine and cosine series expansion	CBB	
31	III	Problem solving	CBB & PPT	
32	IV	Partial Differentiation of Functions of two or more variables-problems	CBB	
33	IV	Total Derivative- Taylor's and Maclaurin's Series (without proof) - problems	CBB	
34	IV	Problems of Taylors and Maclaurin's expansion for two variable functions.	CBB	
35	IV	Maxima, minima of functions without constraints	CBB	
36	IV	Problems of Maxima, minima of functions without	CBB	
37	IV	Maxima, minima of functions with constraints (Lagrange method of undetermined multipliers)- problems	CBB	
38	IV	Maxima, minima of functions with constraints (Lagrange method of undetermined multipliers)- problems	CBB	
39	V	Formation of partial differential equations (eliminating arbitrary constants)	CBB & PPT	
40	V	Formation of partial differential equations (eliminating arbitrary functions)	CBB	

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Contact Hour	Unit	Topic	Teaching(*) Methodology	Remarks
41	V	solutions of first order linear (Lagrange) equation	CBB	
42	V	Problems (grouping method)	CBB/ PSM	
43	V	Problems (grouping method)	CBB/ PSM	
44	V	Problems (multipliers method)	CBB/ PSM	
45	V	Problems (multipliers method)	CBB/ PSM	
46	V	Problems (multipliers method)	CBB/	
47	V	and non-linear (standard type-I) equations	CBB	
48	V	non-linear (standard type-I) equations	CBB	
49	V	non-linear (standard type-II) equations	CBB	
50	V	non-linear (standard type-III) equations	CBB	
51	V	non-linear (standard type-IV) equations	CBB	
52	VI	Solution of linear Partial differential equations with constant coefficients – Method of Separation of Variables-concept and problems	CBB & PPT	
53	VI	Solution of linear Partial differential equations with constant coefficients – Method of Separation of Variables-concept and problems	CBB	
54	VI	One dimensional Wave equation- Method of Separation of Variables-concept and problems	CBB	
55	VI	One dimensional Wave equation-problems	CBB/ PSM	
56	VI	One dimensional heat equation- Method of Separation of Variables-concept and problems	CBB	
57	VI	One dimensional Heat equation-problems	CBB	
58	VI	One dimensional Heat equation-problems	CBB/ PSM	

(i) Problem Solving Method is denoted as PSM, (ii) White Board Online- LM
 (iii) Tutorial Method is denoted by TM, (iv) Power point online presentation –PPT (v) Class Room Black Board