LESSON PLAN

Name of the Subject: ENGINEERING MATHEMATICS(14BT1BS03)
Class & Semester: I - B.Tech year wise

S. No.	Topic	No. of periods	Book(s) followed	Topics for self study
UNIT – I: DIFFERENTIAL EQUATIONS- APPLICATIONS				
1	Ordinary Differential Equations of first order and first degree – introduction	1	T1	Differential equations of first order and first degree, variable separable Homogeneous type. Non-homogeneous type differential equations. Applications of differential equations to Law of natural growth and decay, deflection of beams
2	Linear differential equations	1	T1	
3	Bernoulli type differential equations	1	T1	
4	Exact equations	1	T1	
5	Equations reducible to exact.	3	T1	
6	Orthogonal trajectories	1	T1	
7	Newton's Law of cooling.	1	T1	
8	Law of natural growth and decay	1		
9	Non-homogeneous linear DE & complimentary functions	1	T1	
10	Particular integrals for $Q(x) = e^{ax}$	1	T1	
11	Particular integrals for $Q(x) = \sin ax \& \cos ax$,	1	T1	
12	Particular integrals for $Q(x) = x^n$	1	T1	
13	Particular integrals for $Q(x) = e^{ax} V(x)$	1	T1	
14	Particular integrals for $Q(x) = x\, V(x)$.	1	T1	
15	Method of variation of parameters	2	T1	
16	Applications to L-R-C circuits	2	T1	
Total periods required:		**20**		
UNIT – II: PARTIAL DIFFERENTIATION & APPLICATIONS OF DERIVATIVES				
17	Functions of two or more variables	2	T1	Taylors and Mac-laurin series for functions of one and two variables. Evolute and envelop of a given family of curves
	Homogeneous functions	1	T1	
18	Total derivatives	2	T1	
19	Derivatives of implicit function and Jacobian	2	T1	
20	Maxima and minima of functions of two variables with and without constraints	3	T1	
21	Lagrange's method of undetermined multipliers.	2	T1	
22	Radius, centre and circle of curvature	4	T1	
23	Curve tracing – Cartesian form	2	T1	
24	Curve tracing – parametric form	2	T1	

25	Curve tracing – polar form.	2	T1	
Total periods required:		**22**		
UNIT -III: APPLICATIONS OF INTEGRATION				
26	Applications of integration – length of curves	2	T1	
27	Area of surfaces of revolution	2	T1	
28	Volume of solids of revolution	2	T1	
29	Double integrals	2	T1	
30	Change of variables	3	T1	
31	Change of order of integration.	3	T1	
32	Evaluation of Triple integrals	2	T1	
33	Volume as double integral.	2	T1	
Total periods required:		**18**		
UNIT – IV: LAPLACE TRANSFORMS- APPLICATIONS				
34	Laplace transforms of standard functions.	3	T1	Heaviside partial fraction expansions for Laplace transforms
35	Properties of Laplace transforms.	2	T1	
36	First and second shifting Theorems	1	T1	
37	Laplace transforms of derivatives and integrals.	4	T1	
38	Laplace transforms of periodic functions.	1	T1	
39	Unit step function. Dirac delta function.	1	T1	
40	Inverse transforms.	3	T1	
41	Convolution theorem.	2	T1	
42	Applications of Laplace transforms to linear differential equations with constant coefficients.	3	T1	
Total periods required:		**20**		
UNIT – V: VECTOR CALCULUS				
43	Vector differentiation	1	T1	Equations for tangent, normal, bi- tangent and bi - normal at a given point on the curve
44	Gradient	1	T1	
45	Divergence	1	T1	
46	Curl	1	T1	
47	Vector identities and Laplacian Operator.	3	T1	
48	Line integrals	1	T1	
49	Independent of path – work done	1	T1	
50	Conservative field	1	T1	
51	Scalar potential functions	1	T1	
52	Surface integrals, Flux	2	T1	
53	Volume integrals	1	T1	
54	Verifications and applications of Greens theorem	2	T1	
55	Verifications and applications of Stokes theorem	2	T1	
56	Verifications and applications of Gauss divergence theorem	2	T1	
Total periods required:		**20**		

Grand total periods required:	100

TEXT BOOKS:

T1: T.K.V. Iyengar, B. Krishna Gandhi,S. Ranganatham and M.V.S.S.N. Prasad, **Engineering Mathematics**, Vol. 1, S. Chand & Company, 12/e ,2013.

REFERENCE BOOKS:

R1: Grewal, B.S., **Higher Engineering Mathematics**, Khanna Publishers, Delhi, 42/e,2012.
R2: Kreyszig , E., **Advanced Engineering Mathematics**, John Wiley and Sons, Inc., 8/e.2006

Signature of the faculty Member **Signature of the HOD**