SWARNANDHRA
COLLEGE OF ENGINEERING & TECHNOLOGY
(AUTONOMOUS)
Accredited by National Board of Accreditation, AICTE, New Delhi, Accredited by NAAC with "A" Grade – 3.32 CGPA, Recognized under 2(f) & 12(B) of UGC Act 1956, Approved by AICTE, New Delhi, Permanent Affiliation to JNTUK, Kakinada
Seetharampuram, W.G.DT., Narsapur-534280, (Andhra Pradesh)

DEPARTMENT OF S&H

TEACHING PLAN

Course Code	Course Title	Semester	Branches	Contact Periods /Week	Academic Year	Date of commencement of Semester
23BS3T04	NUMERICAL METHODS& TRANSFORM TECHNIQUES	III	MECHANICAL &ROBOTICS	60/6	2025-26	14 -07-2025

COURSE OUTCOMES: At the end of this course, the student will be able to

CO1	Evaluate the approximate roots of polynomial and transcendental equations by different algorithms. Apply Newton's forward & backward interpolation and Lagrange's formulae for equal and unequal intervals (K3)
CO2	Apply numerical integral and differential methods to different Engineering problems. (K3)
CO3	Apply the Laplace transform for solving differential equations (K3)
CO4	Compute the Fourier series of periodic signals (K3)
CO5	Apply integral expressions for the forwards and inverse Fourier transform to a range of non-periodic waveforms (K3)

UNIT	Out Comes / Bloom's Level	Topic No.	Topics/Activity	Text Book/ Reference	Contact Hour	Delivery Method
I	CO1 Students are able to evaluate the approximate roots of polynomial and transcendental equations by different algorithms. Apply Newton's forward & backward interpolation and Lagrange's formulae for equal and unequal intervals (K3)		Iterative Methods			Chalk & Talk, Active learning, PPT and Tutorial
		1.1	Introduction – Solutions of algebraic and transcendental equations: Bisection method	T_1&T_2	1	
				T_1&T_2	1	
		1.2	Secant method	T_1&T_2	1	
		1.3	Method of false position	T_1&T_2	1	
				T_1&T_2	1	
		1.4	Iteration method	T_1&T_2	1	
				T_1&T_2	1	
		1.5	Newton-Raphson method-One variable	T_1&T_2	1	
		1.6	Newton-Raphson method -simultaneous Equations	T_1&T_2	1	
		1.7	Newton's forward formulae for interpolation	T_1&T_2	1	

III	CO3 Students are able to apply the Laplace transform for solving differential equations (K3)	3.1	Definition of Laplace transform - Laplace transforms of standard functions	T_1&T_2	1	Chalk & Talk,Active learning ,PPT and Tutorial
				T_1&T_2	1	
		3.2	Properties of Laplace Transforms	T_1&T_2	1	
				T_1&T_2	1	
		3.3	Shifting theorems	T_1&T_2	1	
				T_1&T_2	1	
		3.4	Transforms of derivatives and integrals	T_1&T_2	1	
				T_1&T_2	1	
		3.5	Unit step function	T_1&T_2	1	
		3.6	Dirac's delta function	T_1&T_2	1	
		3.7	Inverse Laplace transforms – Convolution theorem (without proof).	T_1&T_2	1	
				T_1&T_2	1	
		3.8	Applications: Solving ordinary differential equations (initial value problems) and integro differential equations using Laplace transforms.	T_1&T_2	1	
				T_1&T_2	1	
					14	
IV	Fourier series:					
	CO4 Students are able to find or compute the Fourier series of periodic signals (K3)	4.1	Introduction	T_1&T_2	1	Chalk & Talk,Active learning ,PPT and Tutorial
		4.2	Periodic functions	T_1&T_2	1	
		4.3	Fourier series of periodic function	T_1&T_2	1	
				T_1&T_2	1	
		4.4	Dirichlet's conditions	T_1&T_2	1	
				T_1&T_2	1	
		4.5		T_1&T_2	1	

Reference Books:	
S.No.	**AUTHORS, BOOK TITLE, EDITION, PUBLISHER, YEAR OF PUBLICATION**
R1	Erwin Kreyszig,Advanced Engineering Mathematics,10th Edition, Wiley-India.
R2	Steven C. Chapra, Applied Numerical Methods with MATLAB for Engineering and Science,Tata Mc. Graw Hill Education.
R3	M. K. Jain, S.R.K. Iyengar and R.K. Jain, Numerical Methods for Scientific and Engineering Computation, New Age International Publications
R4	. Lawrence Turyn,Advanced Engineering Mathematics, CRC Press.
Web Details	
1	https://youtu.be/3j0c_FhOt5U
2	https://youtu.be/lhZYos3lL1E
3	https://youtu.be/KqokoYr_h1A
4	https://youtu.be/spUNpyF58BY

		Name	Signature with Date
i.	Faculty	Dr.E.M.Victoria	5/7/25
ii.	Course Coordinator	Dr.E.M.Victoria	5/7/25
iii.	Module Coordinator	Dr.P.Prem Delphy	5/7/25
iv.	Head of the Department	Dr. V.Swaminadham	

Principal