Curriculum Plan: Generic IV, (Semester IV), Numerical Methods (With Practical) 2021-22

Teacher Profile:
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Marks Distribution	**Theory**	75 Marks	
	Practical	50 Marks	
	Internal Assessment	25 Marks	
Classes Assigned	**Lectures**	4 per week	
	Practical Groups (per week per Student)	1 per week	

Reference	**[1]**	Chapra, Steven C. (2018). *Applied 'umerical Methods with* MATLAB *for Engineers and* Scientists (4th ed.). McGraw-Hill Education.
	[2]	Fausett, Laurene V. (2009). *Applied 'umerical Analysis Using* MATLAB. Pearson. India.
	[3]	Jain, M. K., Iyengar, S. R. K., & Jain R. K. (2012). *'umerical Methods for Scientific and Engineering Computation* (6th ed.). New Age International Publishers. Delhi.

Section	**Week**	**Topics**	
Session 1	**Beginning /1st week** January 1- 8, 2022	Floating point representation and computer arithmetic.	
	2nd week January 10-15, 2022	Significant digits; Errors**:** Roundoff error.	
Session 2	**3rd week** January 17-22, 2022	Local truncation error, Global truncation error, Order of a method.	
	4th week January 24-29, 2022	Convergence and terminal conditions, Bisection method.	
	5th week January 31- February 5, 2022	Secant method, Regula−Falsi method, Newton−Raphson method	
	6th week February 7-12, 2022	Gaussian elimination method (with row pivoting).	

Session 3	**7th week** February 14-19, 2022	Gauss−Jordan method; Iterative methods**:** Jacobi method.	
	8th week February 21-26,2022	Gauss−Seidel method; Interpolation**,** Lagrange form, Newton form	
	9th week February 28- March 5, 2022	Finite difference operators, Gregory−Newton forward and backward difference interpolations.	
	10th week March 7-12, 2022	Piecewise polynomial interpolation (linear and quadratic).	
Session 4	**11th week** March 21- 26, 2022	Numerical differentiation**:** First and second order derivatives.	
	12th week March 28- April 02, 2022	Richardson extrapolation method.	
	13th week April 4-9, 2022	Numerical integration**:** Trapezoidal rule.	
	14th week April 11-16, 2022	Simpson's rule; Ordinary differential equation**:** Euler's method.	
	15th week April 18-27, 2021	Modified Euler's methods **(**Heun's and midpoint).	
		Dispersal of classes, preparation leave and practical examination begin April 28, 2022	