

DEPARTMENT OF MATHEMATICS

Semester : IV

Integrated M.Sc. Mathematics Subject: 060090403 CC10 Numerical Analysis

Academic Year : 2017-18

Teaching Schedule

Course Objectives:

- To expose the student to the various numerical methods available for different kinds of • problems.
- To develop appreciation of the applicability of numerical methods. •

Unit 1: Curve Fitting[10]1.11Introduction to curve fitting.Ch#51.21Fitting a straight lineNumerical Method1.34Non-linear curve fittingfor Scientists and1.41Curve fitting by sum of exponentialsEngineers, K.1.52Weighted least square approximationSankara Rao1.61Continuous FunctionCh#7Unit 2: Numerical Differentiation: IntroductionCh#72.22Differentiation using Difference00peratorsFor Scientists and2.32Differentiation using Interpolation2.42Cubic Spline Method2.51Numerical Integration22.612.71Frapezoidal Rule22.611Chalk &	ra 2 Talk 1				
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2.5 1 Numerical Integration 2 2.6 1 Trapezoidal Rule 2.7 1 Simmerical 1/2 Public					
2 2.6 1 Trapezoidal Rule Chalk & 2.7 1 Simmary's 1 (2 Puls)					
	2 Talk				
2.7 1 Simpson's 1/3 Rule					
2.8 1 Simpson's 3/8 Rule					
2.9 1 Boole's and Weddle's Rule					
2.10 1 Use of Cubic Spline					
2.11 1 Romberg's Integration					
2.12 1 Newton-Cotes Integration Formulae					
Unit 3: Numerical solution of Ordinary Differential Equation-Initial Value[17]	1				
Problem					
3.1 1 Introduction Ch#8					
3.2 2 First order differential equation Numerical Method					
3.3 2 Solution by Taylor's Series for Scientists and					
3.42Picard's methodEngineers, K.					
3.5 2 Euler's Method Sankara Rao Challe &	. Tallz				
3.6 2 Runge-Kutta Method	laik				
3.7 Predictor Corrector Methods- Adam-					
² Moulton Method					
3.8 2 Milne's method					
3.9 2 Cubic-Spline Method					
Unit 4: Numerical solution of Ordinary Differential Equation-Boundary Value [10					
Problem					
4 4.1 1 Introduction Ch#12					



Maliba Campus, Gopal Vidyanagar, Bardoli-Mahuva Road-394350



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	4.2	2	Finite difference method	Numerical Method		
	4.3	2	Finite element Methods	for Scientists and	Chalk & Talk	
	4.4	1	Relaxation Method	Engineers, K.		
	4.5	1	Shooting methods	Sankara Rao		
	4.6	2	Weighted Residual Methods			
	4.7	1	Cubic-Spline Method			

Text books:

1. Numerical Method for Scientists and Engineers, K. Sankara Rao , PHI Learning Private Limited.

Reference books:

- 1. Numerical Methods, S.S Sastry, PHI Learning Private Limited,
- 2. Numerical Method s, Principles, Analyses and Algorithms. Srimata Pal, Oxford University Press.

