BS-MS Major in Mathematics

Semester VII						
Sr No	**Course Code**	**Course Name**	**L**	**T**	**P**	**C**
1	MA 404	Numerical Analysis	2	1	0	6
2		Program Elective-IV				6
3		Program Elective-V				3
4		Institute Elective – I	2	1	0	6
5		HSS Elective-II	3	0	0	6
		Total Credits				**27**

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1	Title of the course (L-T-P-C)	**Numerical Analysis** **(2-1-0-6)**
2	Pre-requisite courses(s)	Calculus 1 and 2, Linear Algebra, DE 1, Ordinary Differential Equations or Instructor's consent
3	Course content	Linear Systems of Equation, LU decomposition, Classical iterative techniques and ill conditioned systems Matrix eigenvalue problems, Power iteration, Jacobi and QR methods Approximation theory, interpolation (Lagrange, Hermite and piecewise interpolation) and best approximations in inner product spaces Nonlinear Equations and their iterative solution Numerical Integration, interpolatory quadratures, Gauss quadrature, quadrature of periodic functions and Romberg integration Finite Difference methods, convergence, stability and consistency, Lax equivalence theorem
4	Texts/References	Rainer Kress, Numerical Analysis, 1st Edition, Springer-Verlag New York, 1998 J. Stoer and R. Bulirsch, Introduction to Numerical Analysis, 3rd Edition, Springer-Verlag New York, 2002K.Atkinson and Weimin Han, Theoretical Numerical Analysis, A functional Analysis framework, 3rd Edition, Springer-Verlag New York, 2001P. Deuflhard and A Hohmann, Numerical Analysis in modern scientific computing, An introduction, 2nd Edition, Springer-Verlag New York, 2003