Code	Subject Title	Cr. Hrs	Semester
MATH-421	**Computer Applications**	**3**	**VIII**
Year	Discipline		
4	**Mathematics**		

Objectives:

Flow Chart, Algorithm and Programming of the following Numerical Methods

- System of linear equations Jacobi's iterative method, Gauss-Seidel method
- Solutions of non-linear equations
- Bisection method, Newton-Raphson method, Secant method, Regula Falsi method
- Interpolation Langrage interpolation, Newton's divided and forward difference interpolation
- Numerical integration:
- Rectangular rule, Trapezoidal rule, Si mpson's rule, Booles rule, Weddles rule
- Differential equations:
  Euler's method, Runge- Kutta methods, predictor-corrector methods
- Mathematica
- Introduction of mathematica, num erical calculations, algebraic calculations, symbolic and numerical mathematics, numbers, mathemati cal functions, algebraic manipulations, manipulating equations, series, limits and residues, linear algebra, graphs

Recommended Books:

- Michel Metcalf, John Reid and Malcolm Cohen, Fortran 95/2003 Explained, (Oxford University Press, 2004)
- Stephen Wolfram, The Mathematica, 3rd edition, (Cambridge University Press 1996)
- V. Rajaraman, Computer Programming in Fortran 90 and 95, (Prentice Hall of India, New Delhi, 1999)
- Roman E. Maeder, Computer Science with Mathematics, (Cambridge University Press, 2000)
- Martha L. Abell, James P. Braselton, The Mathematica Handbook , (Academic Press Inc., 1992)