PMA4E001   APPLIED MATHEMATICS - III

Module-I
Complex Analysis:
Analytic function, Cauchy-Riemann equations, Complex integration: Line integral in the complex plane, Cauchy's integral theorem, Cauchy's integral formula, Derivatives of analytic functions, Taylor's series, Maclaurin's series, Laurent's series, Singularities and zeros.

Module-II
ComplexAnalysis:

Residue integration method, evaluation of real integrals
Numerical Methods:
Errors of numerical results, error propagation,., Lagrange Interpolation, Newton divided
difference interpolation, Newton's forward and backward interpolation, Spline interpolation.

Module-III
Numerical Methods:
Numerical integration: The trapezoidal rule, The Simpson's rules, Gauss Integration formulas. Solution of ordinary differential equation: Euler's method, Improvement of Euler's method, Runge-Kutta methods, multi step methods, Methods for system and higher order ordinary differential equations.

Module-IV
Probability Theory and Its Applications: Probability, Random variables, Probability distributions, Mean and variance; Features of Probability Distribution: Binomial, Poisson, Uniform and Normal distribution, Distribution of several random variables.

Statistical Techniques and Its Applications: Scope of Statistics, Random sampling, Sampling Distribution,Correlation analysis, Regression Analysis,Fitting Straight Lines, Estimation of Parameters, Statistical Hypothesis.

Text books:
1. E. Kreyszig," Advanced Engineering Mathematics:,Tenth Edition, Wiley India
2. S.Pal and S.C. Bhunia, "Engineering Mathematics" Oxford University Press
3. Jay L. Devore, "Probability and Statistics for Engineering and Sciences", Seventh Edition, Thomson/CENGAGE Learning India Pvt. Ltd

Reference books:
1. E.B. Saff, A.D.Snider, "Fundamental of Complex Analysis", Third Edition, Pearson Education, New Delhi
2. P. V. O'Neil, "Advanced Engineering Mathematics", CENGAGE Learning, New Delhi