MA 201: MATHEMATICS-III (version-II) (3-0-0 : 3)

Multivariable Calculus:

Differential calculus of several variables: Real valued functions of two/three variables; a brief idea of limit and continuity; partial differentiation; Euler's theorem for homogeneous functions; Taylor's and Maclaurin's series for function of two variables; extreme values of functions of two variables; Lagrange's method of undetermined multipliers.

Integral Calculus of several variables: Multiple integrals; double and triple integrals; evaluation techniques; change in the order of integration; change of variables in double and triple integrals; applications of double and triple integrals.

Vector Calculus

Gradient of a scalar point function; divergence and curl of a vector field; line and surface integrals; Green's theorem; Gauss' theorem; Stoke's theorem.

Partial Differential Equations: Introduction to partial differential equation; seperation of variable method; solution of second order partial differential equations in mathematical physics (heat, wave and Laplace equations) with standard boundary conditions using Fourier series/Fourier transform.

Complex Function Theory: Basic mathematical concept; analytic functions; Cauchy-Riemann equations; complex exponential, trigonometric, hyperbolic and logarithmic functions; Line integrals in complex plane; Cauchy's integral theorem; Cauchy's integral formula; Liouville's theorem, linear and bilinear transformations, conformal mapping.

Text Book:

1. E. Kreyszig, Advanced Engineering. Mathematics, John Wiley & Sons

Reference Book:

1. Jain and Iyengar, Engineering Mathematics, Narosa Publishing House.
2. B. S. Grewal, Higher Engineering Mathematics, Khanna Publications.