



Syllabus of Mathematics MAT 1101

Semester: I Calculus

Credits: 05 (4-1-0)

Unit: 1

Review of limits, continuity and differentiability of functions of one variable, Successive Differentiation, Leibnitz Theorem, Expansion of functions by Taylor's and Maclaurin's Theorem, Curvature and Radius of Curvature.

Unit: 2

Introduction to limits, continuity and differentiability of functions of several variables, Partial Differentiation, Euler's theorem, Maxima and minima of functions of two and three variables, Lagrange's method of undetermined multipliers, Differentiation under integral sign.

Unit: 3

Review of Integrals involving functions of one variable, Important Reduction formulae and their applications to quadrature and rectification.

Unit: 4

Multiple Integrals: Double & triple integrals, change of order of integration, Beta & Gamma functions, application to area & volume.

Unit: 5

Vector Calculus: Vector operator ∇ , directional derivative, gradient, divergence, curl, line integral, surface and volume integrals, Green's, Gauss's & Stoke's theorem and their applications.

REFERNECE BOOKS:

1. Advanced Engineering. Mathematics by Erwin Kreyszig (8th edition) – John Wiley & Sons.
2. Higher Engineering. Mathematics by B.S. Grewal (38th edition)-Khanna Publishers.
3. Applied mathematics for Engineers & Physicists by Louis A. Pipes – Mc Graw Hill.
4. Advanced Engineering Mathematics by R.K. Jain & S.R.K. Iyengar – Narosa Publishing House.