MA102 Mathematics – II

L-T-P-Cr: 3-1-0-4

Objective: Pre Requisites: 10+2 Mathematics and Mathematics - I

Syllabus: Unit 1. Integral Calculus: Convergence of improper integrals – comparison test, Beta & Gamma functions (definition & related problems), differentiation under integral sign – Leibnitz rule. Double & Triple integrals, Change of Variables in double integrals, Computation of surfaces & volumes, Rectifications, Jacobians of Transformations. 12 lectures

Unit 2. Vector Calculus: Scalar & Vector field, level surface, directional derivatives, concept of gradient, divergence & curl with examples, line integral, Green’s theorem in plane, Gauss & Stroke’s theorem with applications. 10 lectures

Unit 3. Complex Analysis: Function of complex variables – limit, continuity, differentiability and analyticity of functions, Cauchy-Riemann equations, Laplace’s equation, harmonic function, Cauchy’s integral theorem, Cauchy’s integral formula, Taylor’s and Laurent series, Residues and its applications to evaluating real integrals. 12 lectures

Unit 4. Probability and Statistics: Random Variable – cumulative distribution function, probability mass function, probability density function, mathematical expectation, mean, variance. 8 lectures

Suggested Readings: 1. Advance Engineering Mathematics – R. K. Jain & S.R.K. Iyenger, Narosa Publishing House 2. Advance Engineering Mathematics - E. Kreyszig, 8th Edition, John Wiley & Sons, New York Reference Books: 1. Advance Engineering Mathematics – Wylie & Barrett – Tata McGraw Hill 2. Complex Variables and Applications – Churchill & Brown - McGraw Hill 3. Vector Analysis 2nd editions – Chatterjee, Prentice Hall of India 4. Introduction to Probability & Statistics for Engineers – S. M. Ross – John Wiley and Sons, New York