**MA2501 Engineering Mathematics – II L-T-P-Cr: 3-0-0, Cr: 03**

**Unit 1 : Integral Calculus:**

Convergence of improper integrals - comparison test, beta and gamma functions (definition and related problems), differentiation under integral sign - Leibnitz rule. double and triple integrals, change of variables in double integrals, computation of surfaces and volumes, rectifications, Jacobians of transformations. **12 lectures**

**Unit 2 : Vector Calculus:**

Scalar and vector field, level surface, directional derivatives, concept of gradient, divergence and curl with examples, line integral, Green's theorem in plane, Gauss divergence and Stroke's theorems with applications. **10 lectures**

**Unit 3 : Complex Analysis:**

Function of complex variables - limit, continuity, differentiability and analyticity of functions, Cauchy-Riemann equalions, 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 and S.R.K. Iyenger, Narosa Publishing House

2. Advance Engineering Mathematics - E. Kreyszig, 8,h Edition, John Wiley and Sons, New-York.

3. Advance Engineering Mathematics - Wylie and Barrett - Tata McGraw Hill

4. Complex Variables and Applications - Churchill and Brown - McGraw Hill

5. Vector Analysis 2nd editions - Chatterjee, Prentice Hall of India

6. Introduction to Probability and Statistics for Engineers— S. M. Ross - John Wiley and Sons. New York

7. Grewal, B.S., 'Higher Engineering Mathematics'. 42ndedition, Khanna Publications.

8. Apostol, T.M. 'Calculus' Volume I & II Second Edition, John Wiley & Sons (Asia) 2005.