

HONOURS ELECTIVE

PME3D001 APPLIED MATHEMATICS (L/T: 4/0, Credit: 4)

Module-I (15 Hours)

Probability:

Probability, Random variables, Probability distributions, Mean and variance of distribution, Binomial, Poisson, and Hyper-geometric distributions, Normal and exponential distribution, Distribution of several random variables.

Statistics:

Random sampling, Estimation of Parameters, Confidence Intervals, Testing of hypothesis, Acceptance sampling, Regression Analysis, Fitting Straight Lines, Correlation analysis

Module-II (15 Hours)

Partial Differential Equation:

Partial differential equation of first order, Linear partial differential equation, Non-linear partial differential equation, Homogenous and non-homogeneous partial differential equation with constant co-efficient, Cauchy type, Monge's method, Second order partial differential equation

The vibrating string, the wave equation and its solution, the heat equation and its solution, Two dimensional wave equation and its solution, Laplace equation in polar, cylindrical and spherical coordinates.

Module-III (08 Hours)

Complex Analysis:

Analytic function, Cauchy-Riemann equations, Laplace equation, Conformal mapping, Complex integration: Line integral in the complex plane, Cauchy's integral theorem, Cauchy's integral formula, Derivatives of analytic functions

Module-IV (06 hours)

Power Series, Taylor's series, Laurent's series, Singularities and zeros, Residue integration method, evaluation of real integrals.

Text books:

1. E. Kreyszig, "Advanced Engineering Mathematics", Eighth Edition, Wiley India
2. B.V. Ramana, "Higher Engineering Mathematics", Tata McGraw Hill

Reference books:

1. E.B. Saff, A.D. Snider, "Fundamental of Complex Analysis", Third Edition, Pearson
2. Jay L. Devore, "Probability and Statistics for Engineering and Sciences", Seventh Edition, Thomson/CENGAGE Learning India Pvt. Ltd
3. P. V.O'Neil, "Advanced Engineering Mathematics", CENGAGE Learning, New Delhi
4. Mathematical Methods by Potter Goldberg Publisher: PHI