PVP SIDDHARTHA INSTITUTE OF TECHNOLOGY,Kanuru

2/4 B.Tech. THIRD SEMESTER

ME3T5	MATHEMATICS-III	Credits: 3
Lecture: 3 periods/week		Internal assessment: 30marks
Tutorial: 1 period/week		semester end examination: 70 marks

Course Objectives:

1. Apply the numerical methods to solve Algebraic & Transcendental equations.

2. Use interpolation techniques to find differentiation and integration.

3. Interpret ideas of random variables, population, sample, sampling distributions.

4. Demonstrate skills in test the hypothesis concerning mean, proportions, differences of mean & differences of proportions.

Course Outcomes:

1. Ability to determine approximate root of algebraic and transcendental equations
2. Get familiarity with interpolation and good exposure to numerical differentiation and integration.
3. Get knowledge in numerical solution of ordinary differential equations with initial Conditions.
4. Get the knowledge of principles of probability, random phenomenon , continuous and normal distributions
5. Understand the concept of sampling, able to find interior for population mean, proportion.
6. Able to perform test of hypothesis of single mean, proportion, test of hypothesis for variances

Mathematics III

UNIT – I SOLUTION OF ALGEBRAIC AND TRANSCENDENTAL EQUATIONS: Introduction – The Bisection Method – The Method of False Position – The Iteration Method – Newton-Raphson Method.

UNIT-II INTERPOLATION: Introduction- Errors in Polynomial Interpolation – Finite differences- Forward Differences- Backward differences –Central differences – Symbolic relations and separation of symbols-Differences of a polynomial-Newton's formulae for interpolation – Interpolation with unevenly spaced points - Lagrange's Interpolation formula.

UNIT – III NUMERICAL DIFFERENTIATION AND INTEGRATION: Differentiation using finite differences - Trapezoidal rule – Simpson's 1/3 Rule – Simpson's 3/8 Rule.

UNIT – VI NUMERICAL SOLUTION OF ORDINARY DIFFERENTIAL EQUATIONS: Solution by Taylor's series-Picard's Method of successive

Approximations-Euler's Method-Runge-Kutta Methods –Predictor-Corrector Methods-Milne's Method.

UNIT-V PROBABILITY: Sample space and events – Probability – The axioms of probability – SomeElementary theorems - Conditional probability – Baye's theorem. Random variables – Discrete and continuous distributions - Distribution function.

UNIT-VI Binomial, Poisson, normal distribution – related properties.

UNIT-VII POPULATION AND SAMPLES: Sampling distribution of mean (with known and unknown variance), proportion, variances. - Sampling distribution of sums and differences. Point and interval estimators for means, variances, proportions.

UNIT-VIII STATISTICAL HYPOTHESIS: Errors of Type I and Type II errors and calculation. One tail, two-tailtests. Testing hypothesis concerning means, proportions and their differences using z-test,t-test.

Learning resource Text Books:

1. A Textbook on Mathematical Methods by V. Ravindranath, PVijayalaxmi, Himalaya Publishers. 2. Higher Engineering Mathematics by B.S. Grewal ,Khanna Publishers.

3. Probability & Statistics for Engineers, by Miller and John E. Freund, Prentice Hall of India.

4. Probability & Statistics by D. K. Murugeson & P. Guru Swamy, Anuradha Publishers.

Reference Books:

1. Mathematical Methods by T.K.V. Iyengar and others, – S.Chand publications.

2. Numerical Methods by S. Armugam and others, scitech publications.

3. Probability and Statistics by Shahanaz Bathul, Ridge publications.