GUJARAT TECHNOLOGICAL UNIVERSITY

PDDC Semester: 1

Electrical Engineering

Subject Name MATHEMATICS-1

Sr.No	Course content
1.	**Matrices :** A. Rank of a matrix (1) by row echelon form (2) by determinant method B. Method to solve system of linear equations by (1) Gaussian elimination (row echelon form) (2) Gauss-Jordan method (reduced row echelon form) C. Inverse of matrices by Gauss Jordan-method D. Eigen values and eigen vectors
2.	**Partial differentiation :** A. Functions of several variables B. Partial derivatives of first and higher orders C. Homogenous functions D. Euler's theorem on homogenous functions E. Jacobians F. Errors and approximations G. Maxima and minima of functions of two variables
3.	**Differential equations of first order and first degree :** A Methods for solving differential equation by (1) Variable separable (2) Homogenous differential equation (3) Linear differential equation (4) Bernoulli's differential equation (5) Exact differential equation
4.	**Modeling of differential equations :** A. Orthogonal trajectories B. Electrical circuits
5.	**Tracing of curves :** A. Tracing of Cartesian curves B. Tracing of polar curves
6.	**Multiple integrals :** A. Double integrals, triple integrals B. Change of order of integration. C. Change of variable from Cartesian to polar coordinates. D. Evaluation of area and volume.

7.	**Vector calculus :** A. Scalar and vector Fields B. Gradient of a scalar field. C. Curl and Divergence of vector field. D. Vector integration E. Line integral F. Green's theorem in the plane.

Reference Books:

1. Higher Engineering Mathematics by Dr. B.S. Grewal,
   Khanna Publishers, New Delhi.
2. Elementary Engineering Mathematics by Dr. B.S. Grewal,
   Khanna Publishers, New Delhi.
3. A Textbook of Engineering Mathematics by N.P. Bali, Ashok Saxena & Iyengar,
   Laxmi Publications (P) Ltd., New Delhi.
4. Advanced Engineering Mathematics by H.K. Dass
   S. Chand & Co. (Pvt.) Ltd., New Delhi.