PRASAD V POTLURI SIDDHARTHA INSTITUTE OF TECHNOLOGY
(AUTONOMOUS)
Regulation- PVP12
Common to all branches
I B. Tech / II Semester
Engineering Mathematics – II
Course Code(s): CE2T2, ME2T1, CS2T1, IT2T3, EE2T1,EC2T1,EM2T2,AE2T1

Credits: 4

Lecture: 4 periods/week   Internal assessment: 30 marks
Tutorial: 1 periods/week   Semester end examination: 70

Course Objective :

        The Course will enable students in handling linear systems using matrices.
Understand different solution techniques and use tools like Fourier transforms , Fourier series, Z
– transforms , Beta and Gamma functions in problem solving .

Course outcomes:

At the end of the course student will be able to

1. Solve linear system of equations by direct, iterative methods and determine eigen values and
eigen vectors of given square matrix also compute power,   inverse of   the matrix using Cayley-
Hamilton theorem.
2. Write given function in terms of sine and cosine terms in Fourier series and also to get
knowledge in Fourier transforms.
3. Solve finite difference equations using Z-transforms.
4. Solve improper integrals using beta, gamma functions.
5. Apply method of least squares to find the curve of best fit for the given data.
6. Solve partial differential equations of first order

UNIT – I
Linear systems of equations: Rank-Echelon form, Normal form – Solution of Linear Systems –
Direct Methods- Gauss Elimination - Gauss Jordon and Gauss Seidal Methods.

UNIT – II
Eigen values - Eigen vectors – Properties – Cayley-Hamilton Theorem - Inverse and powers of a
matrix by using Cayley-Hamilton theorem.

UNIT – III
Fourier Series: Determination of Fourier coefficients – Fourier series – even and odd functions –
Fourier series in an arbitrary interval– Half-range sine and cosine series.

UNIT – IV

Fourier integral theorem (only statement) – Fourier sine and cosine integrals - Fourier transform – sine and cosine transforms – properties – inverse transforms – Finite Fourier transforms.

UNIT – V

Z-transform – properties – Damping rule – Shifting rule – Initial and final value theorems - Inverse z-transform -Convolution theorem – Solution of difference equation by z-transforms.

UNIT – VI

Gamma and Beta Functions – Properties – Evaluation of improper integrals.

UNIT – VII

Curve fitting: Fitting a straight line –Second degree curve-exponential curve-power curve by method of least squares.

UNIT – VIII

Formation of partial differential equations by elimination of arbitrary constants and arbitrary functions –solutions of first order linear (Lagrange) equation and nonlinear (standard type) equations.

Text Books
1. Erwin Kreszig, ''Advanced Engineering Mathematics'', 8 Ed Wiley Student Edition.
2. Higher Engineering mathematics by B.S. Grewal
3. Iyengar,T.K.V, Krishna Gandhi, et.al Engineering Mathematics Vol-II, S.Chand Co. New Delhi.