



RAM KRISHNA DHARMARTH FOUNDATION UNIVERSITY, BHOPAL

Airport Bypass Road, Gandhi Nagar, Bhopal - 462033

Semester – 6		
BRANCH	Subject	Subject Code
B.Sc. (Maths) –DSE1	Integral Transform	MADSE1-161

Course Learning Outcomes (CLO):- The course will enable the students:

1. Understanding about Laplace transform and its properties.
2. Solve ordinary differential equations using Laplace transform.
3. Familiaris with Fourier transform of functions, relation between Laplace and Fourier transform.
4. Explain Parseval's identity and applications of Fourier transform to boundary value problems,
5. Apply the concepts of the course in real life problems.

Unit - I

Laplace Transform:

- 1.1 Linearity property
- 1.2 Existence theorem
- 1.3 Shifting theorem
- 1.4 Change of scale property
- 1.5 Laplace transforms of derivatives and integrals
- 1.6 Differentiation and integration of the laplace transforms
- 1.7 Multiplication and division by 't'
- 1.8 Periodic function

Unit – II

Inverse Laplace Transform:

- 2.1 Linearity property
- 2.2 Shifting theorem
- 2.3 Change of scale property
- 2.4 Inverse Laplace transforms of derivatives and integrals
- 2.5 Multiplication and division by powers of p
- 2.6 Convolution theorem
- 2.7 Heaviside expansion theorem

Unit – III

Application of Laplace Transform:

- 3.1 Solution of ordinary differential equations with constant coefficients
- 3.2 Solution of ordinary differential equations with variable coefficients

Unit – IV

Fourier Transform:

- 4.1 Linearity property
- 4.2 Shifting theorem
- 4.3 Change of scale property
- 4.4 Modulation
- 4.5 Convolution theorem
- 4.6 Fourier transform of derivatives
- 4.7 Relations between Fourier transform and Laplace transform



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4.8 Parseval's identity for Fourier transforms

4.9 Solution of differential equations using Fourier transform

Test Books:-

1. Lokenath Debnath, Dambaru Bhatta ; Integral Transforms and their Applications .
2. Sreenadh S., Ranganatham S., Prasad M. V. S. S. N. & Babu, Ramesh V.; Fourier Series & Integral Transforms.
3. A. N. Srivastava: Fourier Series & Integral Transforms.