EC/EE-201	TRANSFORMATION TECHNIQUES	L	T	P	C
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COURSE OBJECTIVES:

1. To provide knowledge on Fourier series.
2. To provide knowledge on Fourier integrals.
3. To provide knowledge on Fourier transforms.
4. To make the student to learn Laplace and inverse transforms of a function.
5. To solve differential equation using Laplace transforms.

COURSE OUTCOMES:

After successful completion of the course, the students are able to

1. demonstrate knowledge on fourier series , fourier transform, lapalce and inverse laplace transform.
2. apply Laplace and fourier transform techniques for solving linear ordinary differential equations up to second order.
3. analyze the spectral characteristics of signals using Fourier series , fourier transform and laplace transform.
4. apply transform techniques to analyze continuous-time and discrete-time signals.
5. Evaluate discontinous using fourier series and continous functions using fourier transform.

UNIT I **(12)**

Fourier series :

Introduction-Euler's formulae-conditions for a Fourier expansion - Functions having points of discontinuity - Change of interval.

Even and odd functions, Half range series.

UNIT II **(12)**

Parseval's formula, Practical harmonic analysis.

Fourier Transforms : Introduction-Fourier integral theorem (without proof)-Fourier sine and cosine integrals-Complex form of Fourier integral.

UNIT III **(12)**

Fourier transform - Fourier Sine and Cosine transforms.

Properties of Fourier transform (without proofs) - Linear-Change of scale - Shifting Convolution theorem - Parseval's identity for Fourier transforms.

UNIT IV **(12)**

Laplace Transforms :

Introduction-Transforms of elementary functions - Properties of Laplace transforms - Transforms of derivatives and integrals - Multiplication by tn and division by t.

Laplace transform of periodic function. Evaluation of integrals by Laplace transforms.

UNIT V **(12)**

Inverse transforms - Convolution theorem (without proof).

Applications of Laplace transforms for solving linear ordinary differential equations up to second order with constant coefficients only.

LEARNING RESOURCES:

TEXT BOOK(s):

B.S.Grewal - Higher Engineering Mathematics, Khanna publishers, 40th edition, 2007.

REFERENCE BOOK(s):

Erwin Kreyszig - Advanced Engineering Mathematics, 8th edition, New Age International (P) Ltd., 2007.

WEB RESOURCES:

http://nptel.iitm.ac.in/courses/