Course Code	Course Title	C	H	I	E	T
17U3MSA1	**Ancillary Skill Based Elective : Laplace Transforms**	2	2	25	75	100

Learning Objectives

- To enable the students to study the Laplace Transforms, properties of Laplace Transform, inverse Laplace Transform and some applications to solve the differential equations and integral equations.

Learning Outcomes

After successfully completing this course, students will be able to

- Find the Laplace transform of a function and Inverse Laplace transform of a function using definition.
- Find the Laplace transform of derivatives, integrals and periodic functions.
- Use the Method of Laplace transforms to solve initial-value problems for linear differential equations with constant coefficients.

Unit I Laplace Transforms

Definition – Laplace Transform of some standard functions – Properties of Laplace transforms – Problems based on these properties – Some theorems on Laplace transforms – Problems based on these theorems.

Unit II Inverse Laplace transforms

Definition – Some theorems on Inverse Laplace transforms (without proof) – Simple problems – Method of finding Laplace transforms by partial fraction method – First shifting theorems – Problems.

Unit III Inverse Laplace transforms (Continued)

Finding inverse Laplace transforms of the types Log (F(s)), s F(s), F(s)/s, $\tan^{-1}(F(s))$, $\cot^{-1}(F(s))$, - Problems based on these types – Laplace transforms of derivatives.

Unit IV Application of Laplace transforms

Solving first order differential equations with constant coefficients- Solving second order differential equations with constant coefficients.

Unit V Application of Laplace transforms (continued)

Solving integral equations using the method of Laplace transforms – Evaluation of definite integrals using Laplace transforms - Finding Laplace transform of periodic functions.

Text Book:

1. P. Kandasamy and K. Thilagavathy, Allied Mathematics Paper – II (Second semester), Reprint 2013, S. Chand & Company private Ltd.

Chapter: 1 (Laplace Transforms).

Reference Books:

1. S. Arumugam, A.ThangapandiIssac and A. Somasundaram, Higher Engineering Mathematics Vol. II , Edition 2010, Scitech Publications.
2. T. K. ManikkavachagamPillai and S. Narayanan, Calculus Vol. III, Edition 2002, S. Viswanathan (Printers & Publishers) Pvt. Ltd.