LAPLACE TRANSFORM

Course No: **MM24209DCE**   Total Credits: **02**

Semester: **MA/M.Sc. 2nd Semester**   Total marks: **50**

Continuous Assessment Marks: **10**, Theory Marks: **40**   Time Duration: **1½ hrs**

Course Objectives: To study Laplace transforms and their properties for their applications in other disciplines including solution of differential equations, image processing, signal noise estimation etc.

Course Outcomes: After the completion of the course, students shall be able to use the techniques of Laplace transform in real life problems.

UNIT-I

Definition of Integral Transforms, Laplace transform of elementary functions, Properties of Laplace transforms viz Linearity, translation, Change of Scale property etc. Laplace transform of periodic functions, Dirac-Delta function, Inverse Laplace transform, Laplace transform of derivatives and integrals; Properties of inverse Laplace transform.

UNIT - II

Convolution theorem and Complex inversion formula, Solution of ordinary differential equation with constant and variable coefficients by Laplace transform, Solution of ordinary differential equation with constant and variable coefficients and the solution of simple boundary value problems by Laplace transform. Applications of Laplace transform to solve partial differential equations

Recommended Books:
1. Daniel Lesisch, A Student's Guide to Laplace Transforms, Cambridge University Press, New Edition, 2022.
2. Davies, Brian, Integral Transforms and Their Applications, Springer
3. Erwin, Kreysigz, Advanced Engineering Mathematics, Willey Eastern Pub.,
4. A. N. Das, Differential Equations with Introduction to Laplace Transform, New Central Book Agency; First Edition, 2012.
5. K.S. Rao, Introduction to Partial Differential Equations, K.S. Rao, PHI, India.