LAPLACE TRANSFORM

PROF. INDRAVA ROY

Department of Mathematics

Institute of Mathematical Sciences

PRE-REQUISITES : Differential and integral calculus

INTENDED AUDIENCE : 2nd year BE/BSc onwards

COURSE OUTLINE :

Laplace transform is a fundamental tool in integral calculus. It is used to solve various types of differential equations, difference equations, integral equations etc., which arise naturally in engineering and basic sciences. Laplace transform techniques are therefore very useful for applications in science and technology.

ABOUT INSTRUCTOR :

Prof. Indrava Roy is an Assistant Professor of Mathematics at the Institute of Mathematical Sciences, Chennai.

COURSE PLAN :

Week 1: Introduction and basic definitions, with brief review of limits and Riemann integration, with special emphasis on improper Riemann integrals

Week 2: Functions of exponential order and existence theorem for Laplace transforms- with lots of examples and some non-examples; Properties of Laplace transforms with applications in computing them for various functions

Week 3: Inverse Laplace transforms, criteria for uniqueness, computation of inverse Laplace transform via various examples

Week 4: Applications of Laplace transform techniques for solving integrals, differential equations, difference equations, integral equations and integro differential equations