LAPLACE TRANSFORM

PROF. INDRAVA ROY
Department of Mathematics
Institute of Mathematical Sciences

TYPE OF COURSE : Rerun | Elective | UG
COURSE DURATION : 4 weeks (26 Jul’ 21 - 20 Aug’ 21)
EXAM DATE : 26 Sep 2021

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