STELLA MARIS COLLEGE (AUTONOMOUS), CHENNAI

COURSE PLAN (June - November 2026)

Department : **Mathematics**

Name/s of the Faculty : **S Mercy Soruparani**

Course Title : **Integral Transforms**

Course Code : **23MT/MC/IT54**

Shift : **I**

COURSE OUTCOMES (COs)

COs	Description	CL
CO1	recall the suitable techniques of differential and integral calculus and Kl concepts of differential equations to solve Laplace, Fourier and Z-transforms	K1
CO2	understand the concepts involved in Laplace, Fourier and Z-transforms	K2
CO3	apply the concepts of the integral transforms under study, to solve problems of differential and difference equations	K3
CO4	analyze the problems based on Laplace, Fourier and Z-transforms	K4
CO5	evaluate Laplace, Fourier and Z-transforms of various functions using the appropriate methods	K5

Week	**Unit No.**	**Content**	**Cognitive Level**	**Teaching Hours**	**COs**	**Teaching Learning Methodology**	**Assessment Methods**
Jun 15 – 22, 2026 (Day Order 1- 6)	1	**Laplace Transform** 1.1 Definition of Laplace Transform 1.2 Laplace Transform of e^{at}, cos at, sin at and t", where n is a Positive Integer	K1-K5	5	CO1-5	Lecture	
Jun 23 – July 1, 2026 (Day Order 1- 6)	1	1.3 Laplace Transform of Periodic Functions 1.4 Some General Theorems 1.5 Evaluation of Integrals using Laplace Equations	K1-K5	5	CO1-5	Problem Solving	Test 25 Marks
July 2 – July 8, 2026 (Day Order 1- 6)	1 2	1.6 Inverse Laplace Transform **Application of Laplace Transform to Differential Equations** 2.1 Laplace Transform to Solve System of Differential Equations with Constant Coefficient	K1-K5	5	CO1-5	Discussion	
July 9 – 16, 2026 (Day Order 1- 6)	2	2.2 Laplace Transform to Solve Ordinary Differential Equations with Variable Coefficients 2.3 Laplace Transform to solve Differential Equations Involving Integrals	K1-K5	5	CO1-5	Derivation	
July 17 – 24, 2026 (Day Order 1- 6)	2	2.4 Laplace Transform to Evaluate Certain Integrals	K1-K5	5	CO1-5	Problem Solving	

July 25 – 28, 2026 (Day Order 1- 3)	3	**Fourier Transforms** 3.1 Definition of Fourier Transforms, Fourier Cosine Transform & Fourier Sine Transform	K1-K5	2	CO1-5	Discussion	
July 29 – Aug 3, 2026	**C.A. Test – I (Unit 1 & 2)**						
Aug 4 - 6, 2026 (Day Order 4 - 6)	3	3.2 Alternative Form of Fourier Complex Integral Formula	K1-K5	3	CO1-5	Lecture	Test 15 Marks
Aug 7 – 14, 2026 (Day Order 1- 6)	3	3.3 Relationship between Fourier Transform and Laplace Transform 3.4 Properties of Fourier Transforms	K1-K5	5	CO1-5	Problem Solving	
Aug 17 - 24, 2026 (Day Order 1- 6)	4	Z -Transforms 4.1 Definition of Z-Transforms	K1-K5	5	CO1-5	Derivation	
Aug 25 – Sep 2, 2026 (Day Order 1- 6)	4	4.2 Properties of Z-Transforms	K1-K5	5	CO1-5	Problem Solving	
Sep 3 – 11, 2026 (Day Order 1- 6)	4 5	4.3 Z-Transforms of Some Basic Functions **Inverse Z—Transforms** 5.1 Inverse Z—Transforms	K1-K5	5	CO1-5	Lecture	
Sep 15-17, 2026 (Day Order 1 - 3)	5	5.1 Inverse Z—Transforms (Continued)	K1-K5	2	CO1-5	Problem Solving	
Sep 18 –23, 2026	**C.A. Test – II (Unit 3 & 4)**						

Sep 24 - 28, 2026 (Day 4 – 6)	5	5.2 Evaluation of Inverse Z-Transforms using Expansion Method, Long Division Method -	K1-K5	3	CO1-5	Derivation	Assignment 10 Marks
Sep 29 – Oct 7, 2026 (Day Order 1 - 6)	5	5.2 Evaluation of Inverse Z-Partial Fractions Method - by Cauchy's Residue Theorem	K1-K5	5	CO1-5	Problem Solving	
Oct 8 - 14, 2026 (Day Order 1 - 6)	5	5.3 Formation of Difference equations and Use of Z- Transform to Solve them	K1-K5	5	CO1-5	Problem Solving	
Oct 15 - 21, 2026 (Day Order 1- 4)	**REVISION**						