STELLA MARIS COLLEGE (AUTONOMOUS), CHENNAI
COURSE PLAN (November 2024 – April 2025)

Department : Mathematics
Name/s of the Faculty : Dr. A. S. Shanthi & Dr. S. Chinthamani
Course Title : Mathematics For Physics II
Course Code : 23MT/AC/MP25
Shift : I

COURSE OUTCOMES (COs)

COs	Description	CL
CO1	recall basic mathematical concepts required for students pursuing Physics	K1
CO2	understand the concept of Laplace, improper integrals, numerical methods and statistics	K2
CO3	apply appropriate mathematical methods and techniques in solving problems	K3
CO4	analyze the applications of calculus, transforms, finite differences and correlation parameters	K4
CO5	evaluate the solution of improper integrals, differential equations using Laplace transforms, finite differences and correlation	K5

Week	Unit No.	Content	Cognitive Level	Teaching Hours	COs	Teaching Learning Methodology	Assessment Methods
Nov 18 – 25, 2024 (Day Order 1-6)	1& 3	1.1 Definition of Laplace Transform 1.2 Transforms of $f'(t)$ & $f''(t)$ 3.1 Definitions of Beta and Gamma Integrals	K1-K5	CM-2 Hrs AS-3 Hrs	CO1-CO5	Lecture & Problem Solving	Questioning
Nov 26- Dec 3, 2024 (Day Order 1 to 6)	1& 3	1.3 Transformation of Function e^{-at}, *cosat, sinat* and t^n, where *'n'* is a Positive Integer 3.2 Recurrence Formula for Gamma Functions	K1-K5	CM-2 Hrs AS-3 Hrs	CO1-CO5	Group discussion	Quiz
Dec 4-11, 2024 (Day Order 1 to 6)	1& 3	1.3 Transformation of Function e^{-at}, *cosat, sinat* and t^n, where *'n'* is a Positive Integer 3.3 Properties of Beta Functions	K1-K5	CM-2 Hrs AS-3 Hrs	CO1-CO5	Lecture & Problem Solving	Slip Test
Dec 12-19, 2024 (Day Order 1 to 6)	1& 3	1.3 Transformation of Function e^{-at}, *cosat, sinat* and t^n, where *'n'* is a Positive Integer 3.4 Relation between Beta and Gamma Functions	K1-K5	CM-2 Hrs AS-3 Hrs	CO1-CO5	Learning by Doing	Questioning
Dec 20, 2024 (Day Order 1)	1&4	1.4 First Shifting Theorem: Laplace Transforms of $e^{-at}cosbt$, $e^{-at}\sin bt$ and $e^{-at}t^n$ 4.1 Finite Differences	K1-K5	CM-1 Hr AS-1 Hr	CO1-CO5	Lecture & Problem Solving	Questioning
Jan 3 – 7, 2025	1&4	1.4 First Shifting Theorem: Laplace	K1-K5	CM-1 Hr AS-2 Hrs	CO1-CO5	Lecture & Problem Solving	**III Component Test I – Quiz (10**

(Day Order 3 to 6)		Transforms of $e^{-at}cosbt$, $e^{-at}sinbt$ and $e^{-at}t^n$ 4.2 Forward Difference Table					**marks) Portion: 4.1 & 4.2**
Jan 8 – 17, 2024 (Day Order 1 to 6)	1&4	1.4 First Shifting Theorem: Laplace Transforms of $e^{-at}cosbt$, $e^{-at}sin\,bt$ and $e^{-at}t^n$ 4.3 Interpolation Methods	K1-K5	CM-2 Hrs AS-3 Hrs	CO1-CO5	Lecture & Problem Solving	Questioning
Jan 18 - 23, 2025	**C.A. Test – I (Unit1:1.1-1.3 & Unit 3)**						
Jan 24 -31, 2025 (Day Order 1 to 6)	2&4	2.1 Inverse Laplace Transforms of Functions relating to $e^{-at}cosbt$, $e^{-at}sinbt$ and $e^{-at}t^n$ 4.4 Newton's Forward Formula 4.5 Newton's Backward Formula	K1-K5	CM-2 Hrs AS-3 Hrs	CO1-CO5	Learning by Doing	Questioning
Feb 3-8, 2025 (Day Order 1 to 6)	2&4	2.1 Inverse Laplace Transforms of Functions relating to $e^{-at}cosbt$, $e^{-at}sinbt$ and $e^{-at}t^n$ 4.6 Binomial Method	K1-K5	CM-2 Hrs AS-3 Hrs	CO1-CO5	Learning by Doing	Slip Test
Feb 10– 18, 2025 (Day Order 1 to 4)	2&4	2.1 Inverse Laplace Transforms of Functions relating to $e^{-at}cosbt$, $e^{-at}sinbt$ and $e^{-at}t^n$ 4.7 Lagrange's Formula	K1-K5	CM-1 Hr AS-1 Hrs	CO1-CO5	Group discussion	Questioning
Feb 19- 26, 2025 (Day Order 1-6)	2&5	2.1 Inverse Laplace Transforms of Functions relating to $e^{-at}cosbt$, $e^{-at}sinbt$ and $e^{-at}t^n$ 5.1 Correlation 5.2 Scatter Diagram and	K1-K5	CM-2 Hrs AS-3 Hrs	CO1-CO5	Lecture & Problem Solving	**III Component Test II – Problem Solving & slip test (20 marks) Portion: 4.3 - 4.7**

		its Uses					
Feb 27- Mar 6, 2025 (Day Order 1 to 6)	2&5	2.2 Applications to Solutions of Ordinary Differential Equations with constant coefficients 5.3 Karl Pearson's Coefficient of Correlation 5.4 Probable Error of Correlation Coefficient	K1-K5	CM-2 Hrs AS-3 Hrs	CO1-CO5	Learning by Doing	Questioning
Mar 7 – 11, 2025 (Day Order 1 to 3)	2&5	2.2 Applications to Solutions of Ordinary Differential Equations with constant coefficients 5.5 Spearman's Rank Correlation Coefficient	K1-K5	CM-1 Hr AS-2 Hrs	CO1-CO5	Learning by Doing	Quiz
Mar 12 –17, 2025	**C.A. Test – II (Unit1: 1.4, Unit2: 2.1 & Unit 5: 5.1-5.5)**						
Mar 18 – 20, 2025 (Day 4 to 6)	2&5	2.2 Applications to Solutions of Ordinary Differential Equations with constant coefficients 5.5 Spearman's Rank Correlation Coefficient	K1-K5	CM-1 Hr AS-1 Hr	CO1-CO5	Lecture & Problem Solving	**III Component Test III – Slip test (20 marks) Portion: Problem set on Unit 1 and 2.2**
Mar 21 - 28, 2025 (Day Order 1 to 6)	2&5	2.2 Applications to Solutions of Ordinary Differential Equations with constant coefficients 5.6 Merits and Demerits of Rank Correlation Coefficient	K1-K5	CM-2 Hrs AS-3 Hrs	CO1-CO5	Group discussion	Slip test
Mar 29- April 2, 2025 (Day Order 1 to 3)	**REVISION**						