STELLA MARIS COLLEGE (AUTONOMOUS), CHENNAI
COURSE PLAN June - November 2024

Department : : Mathematics
Name/s of the Faculty : Dr. A. Josephine Lissie
Course Title : Ordinary Differential Equation
Course Code : 23MT_PC_OD14
Shift : I

COURSE OUTCOMES (COs)

COs	Description	CL
CO1	Recognize the physical phenomena modeled by differential equations and dynamical systems	K1
CO2	Understand and establish solution for all ODE using analytical and numerical approaches	K2
CO3	Apply theoretical ideas to find the solution to all linear homogeneous and non-homogeneous differential equations	K3
CO4	Analyze the obtained solutions. qualitative behavior of solutions of differential equations and systems of differential equations	K4
CO5	Compare and compile potential solution for IVPs and BVPs using appropriate methods.	K5

Week	Unit No.	Content	Cognitive Level	Teaching Hours	COs	Teaching Learning Methodology	Assessment Methods
Jun 24 – 26, 2024 (Day 4 - 6) 3 hours	Unit 1	**Higher Order Linear Differential Equations** 1.1 Higher order equations	K1- K3	2	3	Lecturing	Problem Solving
Jun 27 – July 4, 2024 (Day1 - 6) 5 hours	Unit 1	**Higher Order Linear Differential Equations** 1.2 Mathematical model 1.3 Linear Dependence 1.4 Wronskian	K1- K3	5	3	Lecturing	Problem Solving
July 5 – 12, 2024 (Day 1 - 6) 5 hours	Unit 1 Unit 2	1.5 Basic theory of linear equations **System of Linear Differential Equation** 2.1 Existence and Uniqueness	K4-K5	5	5	Lecturing	**III Comp Test -1:** Quiz test Unit 1 (15marks)
July 15 – 23, 2024 (Day 1 - 6) 5 hours	Unit 1	2.2 Fundamental matrix	K1- K3	5	3	Lecturing and Problem solving	Problem Assignment
July 24 – 31, 2024 (Day 1 - 6) 5 hours	Unit 2	2.3 Non Homogenous Linear systems	K4-K5	5	5	Lecturing	Slip Test
Aug 1 – 5, 2024 (Day 1 - 3) 2 hours	Unit 2	2.4 Linear systems with Constant coefficients	K5	2	5	Lecturing and Problem solving	Discussion
Aug 6 – 10, 2024	**C.A. Test – I** **UNIT: I, II - Sec 2.1- 2.3**						

Aug 12 – 14, 2024 (Day 4-6) 3 hours	Unit 2 Unit 3	2.5 Linear systems with Periodic coefficients **Solutions in Power series** 3.1 Second order linear equations with ordinary points	K1- K5	5	5	Lecturing and Problem solving	Group Discussion
Aug 16 – 23, 2024 (Day 1-6) 5 hours	Unit 3	**Solutions in Power series** 3.2 Legendre Equation and polynomial	K1- K5	5	5	Lecturing and Problem solving	Group Discussion
Aug 27 – Sep 3, 2024 (Day 1-6) 5 hours	Unit 3	**Solutions in Power series** 3.2 Legendre Equation and polynomial	K1- K5	5	5	Lecturing and Problem solving	Problem Solving
Sep 4 – 11, 2024 (Day 1-6) 5 hours	Unit 3	3.3 Second order linear equations with Regular points 3.4 Bessel's Equations	K1- K5	5	5	Lecturing and Problem solving	Problem Solving
Sep 12 - 20, 2024 (Day 1-6) 5 hours	Unit 3 Unit 4	3.4 Bessel's function **Existence and Uniqueness of solutions** 4.1 Piccard's successive approximation method	K1- K5	3 2	5	Lecturing and Problem solving	**III Comp Test -I1:** Seminar Problems of Unit 3 (15)
Sep 23 - 26, 2024 (Day 1-4) 3 hours	Unit 4	4.2 Piccard's theorem and problems	K1- K5	3	5	Problem solving	Discussion
Sep 27 – Oct 3, 2024	**C.A. Test – II** **UNIT: III, IV - Sec 4.1- 4.2**						

Oct 4 – 5, 2024 (Day 5-6) 2 hours	Unit 4:	4.3 Continuation & dependence of Initial conditions 4.4 Existence and uniqueness for systems	K1- K5	5	5	Lecturing and Problem solving	Problem Solving
Oct 7 - 15, 2024 (Day 1- 6) 5 hours	Unit 5	**Boundary Value problems** 5.1 Strum-Liouville problem 5.2 Green's Functions and problems	K1-K3	5	3	Lecturing and Problem solving	**III Comp Test -II1:** open book test - Unit 5 (20)
Oct 16 - 22, 2024 (Day 1- 6) 5 hours	Unit 5	5.3 Application of BVP	K5	5	5	Lecturing	Problem Solving
Oct 23 - 24, 2024 (Day 1 - 2) 2 hours	**REVISION**						