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

Department : Mathematics
Name/s of the Faculty : Dr. V Jude Annie Cynthia
Course Title : Differential Equations
Course Code : 23MT/MC/DE34
Shift : 1

COURSE OUTCOMES (COs)

COs	Description	CL
CO1	Recall the basic types of ordinary, partial differential equations and system of differential equations	K1
CO2	Understand and illustrate the methods used for solving the problems	K2
CO3	Apply differential equations to model and solve the real-world problems	K3
CO4	Classify and analyze various methods used in solving differential equations	K4
CO5	Evaluate general solutions of ordinary and partial differential equations	K5

Week	Unit No.	Content	Cognitive Level	Teaching Hours	Cos	Teaching Learning Methodology	Assessment Methods
Jun 19 – 26, 2024 (Day Order 1 – 6)	1 & 3	**Second Order Differential Equations** 1.1 Second Order Differential Equations with Constant Coefficients **Partial Differential Equations of the First Order** 3.1 Introduction 3.2 Formulation of Partial Differential Equations by Eliminating Arbitrary Constants and Arbitrary Functions	K1-K5	5	CO1-5	Revision of Fundamentals, Lecture	Slip Test
Jun 27 – July 4, 2024 (Day Order 1 - 6)	1 & 3	**Second Order Differential Equations** 1.2 Particular Integral 1.3 Special Methods of Finding Particular Integral **Partial Differential Equations of the First Order** 3.2 Formulation of Partial Differential Equations by Eliminating Arbitrary Constants and Arbitrary Functions	K1-K5	5	CO1-5	Lecture, Problem Solving	Questioning

July 5 – 12, 2024 (Day Order 1 - 6)	1 & 3	**Second Order Differential Equations** 1.3 Special Methods of Finding Particular Integral 1.4 Particular Integral of the form $e^{ax}, \sin ax, \cos ax, x^m$ **Partial Differential Equations of the First Order** 3.3 Classification of Integrals	K1-K5	5	CO1-5	Lecture, Problem Solving	**III Component 1: Assignment** – Applications of Differential Equations in real Life (**10 Marks**)
July 15 – 23, 2024 (Day Order 1 - 6)	1 & 3	**Second Order Differential Equations** 1.4 Particular Integral of the form $e^{ax}, \sin ax, \cos ax, x^m$ **Partial Differential Equations of the First Order** 3.4 Some Particular Methods $f(p,q) = 0, z = px + qy + f(p,q), f(z,p,q) = 0, f(x,p) = F(y,q)$	K1-K5	5	CO1-5	Lecture, Problem Solving	Questioning
July 24 – 31, 2024 (Day Order 1 - 6)	1 & 3	**Second Order Differential Equations** 1.4 Particular Integral of the form $e^{ax}, \sin ax, \cos ax, x^m$ **Partial Differential Equations of the First Order** 3.4 Some Particular Method - $f(p,q) = 0, z = px + qy + f(p,q), f(z,p,q) = 0, f(x,p) = F(y,q)$	K1-K5	5	CO1-5	Lecture, Problem Solving	Slip Test on Problems

Aug 1 – 5, 2024 (Day Order 1 - 3)	1 & 3	**Second Order Differential Equations** 1.5 Second Order Differential Equations with Constant Coefficients, Particular Integral of the Form $e^{ax}V$, where V is a Function of x **Partial Differential Equations of the First Order** 3.5 Linear Partial Differential Equation of Order One – Lagrange's Method	K1-K5	2	CO1-5	Lecture, Problem Solving	Questioning
Aug 6 – 10, 2024	**C.A. Test – I** (Part of Units 1 & 3)						
Aug 12 – 14, 2024 (Day Order 4-6)	1 & 3	**Second Order Differential Equations** 1.5 Second Order Differential Equations with Constant Coefficients, Particular Integral of the Form $e^{ax}V$, where V is a Function of x **Partial Differential Equations of the First Order** 3.5 Linear Partial Differential Equation of Order One – Lagrange's Method	K1-K5	3	CO1-5	Lecture, Problem Solving	Questioning

Aug 16 – 23, 2024 (Day Order 1-6)	1 & 4	**Second Order Differential Equations** 1.5 Second Order Differential Equations with Constant Coefficients, Particular Integral of the Form $e^{ax}V$, where V is a Function of x **Partial Differential Equations of Higher Order with Constant Coefficients** 4.1 Homogeneous Linear Partial Differential Equations with Constant Coefficients	K1-K5	5	CO1-5	Lecture, Problem Solving	Group work on Problem Solving
Aug 27 – Sep 3, 2024 (Day Order 1-6)	2 & 4	**Second Order Differential Equations with Variable Coefficients** 2.1 Linear Equations with Variable Coefficients Homogeneous Equation **Partial Differential Equations of Higher Order with Constant Coefficients** 4.2 Solutions of Partial Differential Equations	K1-K5	5	CO1-5	Lecture, Problem Solving	**III Component 2**: Test – Part of Unit 2 (**20 Marks**)

Sep 4 – 11, 2024 (Day Order 1-6)	2 & 4	**Second Order Differential Equations with Variable Coefficients** 2.2 Equations Reducible to the Linear **Partial Differential Equations of Higher Order with Constant Coefficients** 4.3 Complementary Functions	K1-K5	5	CO1-5	Lecture, Problem Solving	Questioning
Sep 12 - 20, 2024 (Day Order 1-6)	2 & 4	**Second Order Differential Equations with Variable Coefficients** 2.3 Variation of Parameters **Partial Differential Equations of Higher Order with Constant Coefficients** 4.4 Particular Integral of the form e^{ax+by}, x^r, y^s	K1-K5	5	CO1-5	Lecture, Problem Solving	Group work on Problem Solving
Sep 23 - 26, 2024 (Day Order 1-4)	2 & 4	**Simultaneous Differential Equations** 2.4 Simultaneous Equations of the First Order and First Degree **Partial Differential Equations of Higher Order with Constant Coefficients** 4.4 Particular Integral of the form e^{ax+by}, x^r, y^s	K1-K5	3	CO1-5	Lecture, Problem Solving	Questioning

Sep 27 – Oct 3, 2024	**C.A. Test – II** (Part of Unit 2 and Unit 4)						
Oct 4 – 5, 2024 (Day 5 & 6)	2 & 5	**Simultaneous Differential Equations** 2.5 Simultaneous Linear Differential Equations with Constant Coefficients **Applications of Second Order Linear Differential Equations** 5.1 Spring Problems	K1-K5	2	CO1-5	Lecture, Problem Solving	Slip Test
Oct 7 - 15, 2024 (Day Order 1 to 6)	2 & 5	**Simultaneous Differential Equations** 2.5 Simultaneous Linear Differential Equations with Constant Coefficients **Applications of Second Order Linear Differential Equations** 5.2 Electrical Circuit Problems	K1-K5	5	CO1-5	Lecture, Group Discussion	**III Component 3**: Test – Part of Unit 5 (**20 Marks**)
Oct 16 - 22, 2024 (Day Order 1 to 6)	5	**Applications of Second Order Linear Differential Equations** 5.3 Related Problems	K1-K5	5	CO1-5	Lecture, Group Discussion	Questioning
Oct 23 - 24, 2024 (Day Order 1 to 2)	**REVISION**						