

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

**Department** : MATHEMATICS  
**Name/s of the Faculty** : DR. ARUL ROSELET MERYLINE S  
**Course Title** : DIFFERENTIAL EQUATIONS  
**Course Code** : 23MT/MC/DE/34  
**Shift** : II

**COURSE OUTCOMES (COs)**

<b>COs</b>	<b>Description</b>	<b>CL</b>
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	<b>Second Order Differential Equations</b> 1.1 Second Order Differential Equations with Constant Coefficients 1.2 Particular Integral 1.3 Special Methods of Finding Particular Integral	K1-K5	5	CO1-5	Lecture and Group Discussion Learning by Doing Problems	Assignments
Jun 27 – July 4, 2024 (Day Order 1 - 6)	1	<b>Second Order Differential Equations</b> 1.4 Particular Integral of the Form $e^{ax}$ , $\sin ax$ , $\cos ax$ , $x^m$	K1-K5	5	CO1-5	Lecture and Group Discussion Learning by Doing Problems	Quiz
July 5 – 12, 2024 (Day Order 1 - 6)	1	<b>Second Order Differential Equations</b> 1.5 Second Order Differential Equations with Constant Coefficients, Particular Integral of the Form $e^{ax}V$ where $V$ is a Function of $x$	K1-K5	5	CO1-5	Lecture and Group Discussion Learning by Doing Problems	Problem Solving

July 15 – 23, 2024 (Day Order 1 - 6)	2	<b>Second Order Differential Equations with Variable Coefficients</b> 2.1 Linear Equations with Variable Coefficients 2.2 Equations Reducible to the Linear Homogeneous Equation	K1-K5	5	CO1-5	Lecture and Group Discussion Learning by Doing Problems	Questioning
July 24 – 31, 2024 (Day Order 1 - 6)	2	<b>Second Order Differential Equations with Variable Coefficients</b> 2.3 Variation of Parameters <b>Simultaneous Differential Equations</b> 2.4 Simultaneous Equations of the First Order and First Degree	K1-K5	5	CO1-5	Lecture and Group Discussion Learning by Doing Problems	III Component I - Problem Assignment Test from Unit 2 - 2.3 (15 Marks)
Aug 1 – 5, 2024 (Day Order 1 - 3)	2	<b>Simultaneous Differential Equations</b> 2.5 Simultaneous Linear Differential Equations with Constant Coefficients	K1-K5	3	CO1-5	Lecture and Group Discussion Learning by Doing Problems	Quiz
Aug 6 – 10, 2024	<b>C.A. Test – I</b> (Unit 1(fully) and Unit 2 (2.1 – 2.3))						

Aug 12 – 14, 2024 (Day Order 4-6)	3	<b>Partial Differential Equations of the First Order</b> 3.1 Introduction 3.2 Formulation of Partial Differential Equation by Eliminating Arbitrary Constants and Arbitrary Functions	K1-K5	2	CO1-5	Lecture and Group Discussion Learning by Doing Problems	Problem solving
Aug 16 – 23, 2024 (Day Order 1-6)	3	<b>Partial Differential Equations of the First Order</b> 3.2 Formulation of Partial Differential Equation by Eliminating Arbitrary Constants and Arbitrary Functions 3.3 Classification of Integrals	K1-K5	5	CO1-5	Lecture, Group Discussion and Presentations Learning by Doing Problems	Assignments
Aug 27 – Sep 3, 2024 (Day Order 1-6)	3	<b>Partial Differential Equations of the First Order</b> 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 and Group Discussion Learning by Doing Problems	Questioning and Quiz

Sep 4 – 11, 2024 (Day Order 1-6)	3, 4	<b>Partial Differential Equations of the First Order</b> 3.5 Linear Partial Differential Equation of Order One - Lagrange's Method  <b>Partial Differential Equations of Higher Order with Constant Coefficients</b> 4.1 Homogeneous Linear Partial Differential Equations with Constant Coefficients 4.2 Solutions of Partial Differential Equations	K1-K5	5	CO1-5	Lecture and Group Discussion Learning by Doing Problems	Presentations
Sep 12 - 20, 2024 (Day Order 1-6)	4	<b>Partial Differential Equations of Higher Order with Constant Coefficients (Contd.)</b> 4.3 Complementary Function 4.4 Particular Integral of the form $e^{ax+by}$ , $x^r$ , $y^s$	K1-K5	5	CO1-5	Lecture and Group Discussion Learning by Doing Problems	III Component Problem Assignment Test from Unit 3 - 3.4 (25 Marks)
Sep 23 - 26, 2024 (Day Order 1-4)	4	<b>Partial Differential Equations of Higher Order with Constant Coefficients (Contd.)</b> 4.4 Particular Integral of the form $e^{ax+by}$ , $x^r$ , $y^s$	K1-K5	4	CO1-5	Lecture and Group Discussion Learning by Doing Problems	Problem Solving
Sep 27 – Oct 3, 2024	<b>C.A. Test – II (Units 3, 4)</b>						

Oct 4 – 5, 2024 (Day 5 & 6)	5	<b>Applications of Second Order Linear Differential equations</b> 5.1 Spring Problems	K1-K5	1	CO1-5	Lecture, Group discussion and Presentations Learning by Doing Problems	Quiz
Oct 7 - 15, 2024 (Day Order 1 to 6)	5	<b>Applications of Second Order Linear Differential (Contd.)</b> 5.2 Electrical Circuit Problems	K1-K5	5	CO1-5	Lecture and Group Discussion Learning by Doing Problems	III Component Group Presentations- Unit 5 - 5.1, 5.2 (10 Marks)
Oct 16 - 22, 2024 (Day Order 1 to 6)	5	5.3 Related Problem	K1-K5	5	CO1-5	Lecture and Group Discussion Learning by Doing Problems	Problem Solving
Oct 23 - 24, 2024 (Day Order 1 to 2)	<b>REVISION</b>						