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

Department : Mathematics
Name/s of the Faculty : S Mercy Soruparani
Course Title : Differential Calculus
Course Code : 23MT/MC/DC14
Shift : I

COURSE OUTCOMES (COs)

On successful completion of the course, students will be able to

COs	Description	CL
CO1	define and recall the basic concepts of differential calculus	K1
CO2	interpret various techniques in finding derivatives	K2
CO3	identify appropriate methods to find the solution of problems on differential calculus	K3
CO4	analyze and examine the results of calculus through illustrations with examples.	K4
CO5	evaluate higher order derivatives and determine the properties of well-known curves	K5

Week	Unit No.	Content	C L	Teaching Hours	COs	Teaching Learning Methodology	Assessment Methods
Jun 24 – 26, 2024 (Day Order 4 - 6)	1	**Successive Differentiation** 1.1 The nth derivatives of some special functions	K1-K5	3	CO1-5	Presentation	Questioning
Jun 27 – July 4, 2024 (Day Order 1 - 6)	1	1.2 The nth derivatives of rational algebraic functions	K1-K5	5	CO1-5	Model Problems	Quiz
July 5 – 12, 2024 (Day Order 1 - 6)	1 2	1.3 Leibnitz's Theorem for the nth derivative of the product of two functions **Curvature** 2.1 Formulae for radius of curvature	K1-K5	4 1	CO1-5	Group Discussion	Test 25 Marks Unit1: 1.1-1.2
July 15 – 23, 2024 (Day Order 1 - 6)	2	2.2 A theorem on curvature 2.3 Curvature at the origin 2.4 Chord of curvature through the origin (pole)	K1-K5	5	CO1-5	Problem Solving	Presentation
July 24 – 31, 2024 (Day Order 1 - 6)	2	2.5 Centre of curvature 2.6 Property of the centre of curvature 2.7 Evolute and Involute	K1-K5	5	CO1-5	Simulation	Quiz
Aug 1 – 5, 2024 (Day Order 1 - 3)	2	2.8 Properties of the evolute	K1-K5	2	CO1-5	Model Problems	Questioning
Aug 6 – 10, 2024	**C.A. Test – I (Unit 1:1.3 & Unit 2)**						

Aug 12 – 14, 2024 (Day Order 4-6)	3	**Envelopes** 3.1 Definition of envelope	K1-K5	3	CO1-5	Lecture	Quiz
Aug 16 – 23, 2024 (Day Order 1-6)	3	3.2 Envelope of straight lines 3.3 Envelope of the curves	K1-K5	5	CO1-5	Group Discussion	Presentation
Aug 27 – Sep 3, 2024 (Day Order 1-6)	3	3.4 Envelope of a special family 3.5 Envelope of two-parameter family	K1-K5	5	CO1-5	Problem Solving	Test 25 Marks Unit 3:3.1-3.2
Sep 4 – 11, 2024 (Day Order 1-6)	3 4	3.5 Envelope of two-parameter family(cont.) **Extrema of functions of two variables** 4.1 Extrema with two variables	K1-K5	1 4	CO1-5	Simulation	Group Discussion
Sep 12 - 20, 2024 (Day Order 1-6)	4	4.2 Necessary conditions for maximum and minimum of extrema with two variables 4.3 Determination of maxima and minima of extrema with two variables	K1-K5	5	CO1-5	Case Study	Questioning
Sep 23 - 26, 2024 (Day Order 1-4)	4	4.3 Determination of maxima and minima of extrema with two variables (cont,)	K1-K5	3	CO1-5	Model Problems	Quiz
Sep 27 – Oct 3, 2024	**C.A. Test – II (Unit 3:3.3-3.5 & Unit 4)**						

Oct 4 – 5, 2024 (Day 5 & 6)	4 5	4.4 Lagrange's method of undetermined multipliers **Characteristics of some special curves** 5.1 Cycloid 5.2 Catenary	K1-K5	1 1	CO1-5	Presentation	Test
Oct 7 - 15, 2024 (Day Order 1 to 6)	5	5.3 Evolutes of parabola and ellipse 5.4 Logarithmic (or Equiangular) spiral 5.5 Spiral of Archimedes 5.6 Witch of Agnesi 5.7 Cardioid 5.8 Limacon 5.9 Lemniscate	K1-K5	5	CO1-5	Problem Solving	Group Presentation
Oct 16 - 22, 2024 (Day Order 1 to 6)	5	**Singular Points** 5.10 Double Points 5.11 Classification of Double Points	K1-K5	5	CO1-5	Group Discussion	Problem Solving
Oct 23, 2024 (Day Order 1)	5	5.12 Conditions for existence of double points on an algebraic curve	K1-K5	1	CO1-5	Case Study	Quiz
Oct 24, 2024 (Day Order 2)	**REVISION**						