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

Department : Mathematics
Name/s of the Faculty : Dr. Chinthamani. S
Course Title : Algebra and Trigonometry
Course Code : 23MT/MC/AT13
Shift : I

COURSE OUTCOMES (COs)

COs	Description	CL
CO1	Recall the fundamental notions of Algebra, Trigonometry and the various series expansions	K1
CO2	Interpret the acquired knowledge and use it for expressing algebraic equations, categorizing trigonometric problems and to estimate the roots of the equations	K2
CO3	Apply the concepts of equations, series categorization and the relation between trigonometric functions to solve relevant problems	K3
CO4	Analyze the types of Eigenvectors and its applications, to estimate the sum of infinite series and to illustrate the occurrence of roots and approximation of limits	K4
CO5	Evaluate higher order equations to predict their roots and to experiment on similar matrices for the diagonalization process, validate the trigonometric formulas using suitable examples	K5

Week	Unit No.	Content	Cognitive Level	Teaching Hours	COs	Teaching Learning Methodology	Assessment Methods
Jun 24 – 26, 2024 (Day Order 4 - 6)	1	**Theory of Equations** 1.1 Relations between the Roots and Coefficients of Equations involving cubic and higher order – Introduction and Problems	K1-K5	2	CO1-5	Lecture on Presentation and Problem Solving	Group Discussion
Jun 27 – July 4, 2024 (Day Order 1 - 6)	1	**Theory of Equations** 1.2 Symmetric Function of Roots 1.3 Transformation of Equations	K1-K5	4	CO1-5	Lecture, Problem solving	Oral Test
July 5 – 12, 2024 (Day Order 1 - 6)	1	**Theory of Equations** 1.4 Increase or Decrease the Roots of a Given Equation by a Given Quantity 1.5 Removal of terms	K1-K5	4	CO1-5	Lecture, Problem solving	Debate
July 15 – 23, 2024 (Day Order 1 - 6)	1 & 2	**Theory of Equations** 1.6 To Form an Equation where Roots are any Power of the Roots of a Given Equation **Series Expansions** 2.1 Exponential series	K1-K5	4	CO1-5	Lecture, Problem solving and Summary using LUMI	Quiz using LUMI
July 24 – 31, 2024 (Day Order 1 - 6)	2	**Series Expansions** 2.2 Logarithmic series	K1-K5	4	CO1-5	Lecture, Problem solving	Slip test

Aug 1 – 5, 2024 (Day Order 1 - 3)	2	**Series Expansions** 2.3 Application of exponential and logarithmic series to limits and approximations	K1-K5	2		Lecture, Problem solving	Games using Mindmap
Aug 6 – 10, 2024	**C.A. Test – I [Unit 1 & Unit 2 - Sec 2.1]**						
Aug 12 – 14, 2024 (Day Order 4-6)	3	**Properties of Matrices** 3.1 Eigenvalues and Eigenvectors	K1-K5	2	CO1-5	Lecture, Problem solving	III Component: Assignment (20m) (Sec 2.2 & 2.3)
Aug 16 – 23, 2024 (Day Order 1-6)	3	**Properties of Matrices** 3.2 Cayley - Hamilton Theorem 3.3 Similar Matrices	K1-K5	4	CO1-5	Lecture using Online tool and Problem solving	Class Discussion on ICT tool related to Matirces
Aug 27 – Sep 3, 2024 (Day Order 1-6)	3	**Properties of Matrices** 3.4 Diagonalization of a Matrix	K1-K5	4	CO1-5	Lecture, Problem solving	Slip Test
Sep 4 – 11, 2024 (Day Order 1-6)	4	**Trigonometry** 4.1 Expansions of $cosn\theta$, $sinn\theta$ and $tann\theta$ 4.2 Expansions of $cos^n\theta$and , $sin^n\theta$ in a Series of Sines and Cosines of Multiples of θ	K1-K5	4	CO1-5	Lecture, Problem solving	Debate related to a scenario

Sep 12 - 20, 2024 (Day Order 1-6)	4	**Trigonometry** 4.2 Expansions of $cos^n\theta$and , $sin^n\theta$ in a Series of Sines and Cosines of Multiples of θ - Contd	K1-K5	4	CO1-5	Lecture, Problem solving	Group Discussion of an application scenario
Sep 23 - 26, 2024 (Day Order 1-4)	4	**Trigonometry** 4.3 Expansions of $cos\theta$ and $sin\theta$ in Powers of θ	K1-K5	3	CO1-5	Lecture, Problem solving	Summary
Sep 27 – Oct 3, 2024	**C.A. Test – II [Unit 3, Unit 4 - Sec 4.1 & 4.2)**						
Oct 4 – 5, 2024 (Day 5 & 6)	5	**Trigonometry (contd.)** 5.1 Euler's Formula for $e^{i\theta}$	K1-K5	1	CO1-5	Lecture, Problem solving	Problem set
Oct 7 - 15, 2024 (Day Order 1 to 6)	5	**Trigonometry (contd.)** 5.2 Hyperbolic Functions 5.3 Relations between Circular and Hyperbolic Functions	K1-K5	4	CO1-5	Lecture, Problem solving	III Component: Problem set Test (30m) (Portion: Sec 4.3, 5.2 & 5.3)
Oct 16 - 22, 2024 (Day Order 1 to 6)	5	**Trigonometry (contd.)** 5.4 Inverse Hyperbolic Functions in Terms of Logarithmic Functions	K1-K5	4	CO1-5	Lecture, Problem solving	Discussion & Presentation
Oct 23 - 24, 2024 (Day Order 1 to 2)	**REVISION**						