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

Department : Mathematics
Name/s of the Faculty : Dr. A. S. Shanthi
Course Title : Mathematics For Physics I
Course Code : 23MT/AC/MP15
Shift : I

COURSE OUTCOMES (COs)

COs	Description	CL
CO1	Recall basic mathematical concepts required for students pursuing Physics	K1
CO2	Understand basic mathematical tools used for computations	K2
CO3	Apply various techniques of calculus, matrices, differential equations, Fourier series and operation research to formulate and solve problems that are applied in physics	K3
CO4	Analyze appropriate areas of applying mathematical tools in real life situations	K4
CO5	Assess the techniques in Fourier Series, differential equations, calculus, matrices and Linear Programming for solving real life problems	K5

Week	Unit No.	Content	Cognitive Level	Teaching Hours	Cos	Teaching Learning Methodology	Assessment Methods
Jun 24 – 26, 2024 (Day Order 4 - 6)	1	1.1 Eigenvalues and Eigenvectors	K1-K5	2	CO1-CO5	Lecture & Problem Solving	Questioning
Jun 27 – July 4, 2024 (Day Order 1 - 6)	1	1.2 Cayley Hamilton theorem 1.3 Similar matrices	K1-K5	5	CO1-CO5	Group discussion	Quiz
July 5 – 12, 2024 (Day Order 1 - 6)	1	1.4 Diagonalization of matrices possessing distinct Eigenvalues 1.5 Eigenvalues for symmetric matrices	K1-K5	5	CO1-CO5	Learning by Doing	Slip test
July 15 – 23, 2024 (Day Order 1 - 6)	2	2.1 Higher Derivatives - nth derivative – Standard Results 2.2 Trigonometric transformations 2.3 Formation of equations involving derivatives	K1-K5	5	CO1-CO5	Lecture & Problem Solving	Questioning
July 24 – 31, 2024 (Day Order 1 - 6)	2	2.4 Liebnitz's formula for nth derivative - Problems involving Liebnitz's formula 2.5 Methods of Integration of functions of the following types: $\frac{1}{(x+p)\sqrt{ax^2+bx+c}}$; $\sqrt{(x-a)(b-x)}$	K1-K5	5	CO1-CO5	Group discussion	**III Component Test I –Quiz (15 marks) Portion: 2.1**

Aug 1 – 5, 2024 (Day Order 1 - 3)	2	2.5 Methods of Integration of functions of the following types: $\frac{1}{\sqrt{(x-a)(b-x)}}$; $\sqrt{\frac{(x-a)}{(b-x)}}$	K1-K5	3	CO1-CO5	Learning by Doing	Slip test
Aug 6 – 10, 2024	**C.A. Test – I (Unit 1 & 2.1-2.4)**						
Aug 12 – 14, 2024 (Day Order 4-6)	3	3.1 Partial Differential Equation 3.2 Formation of Equations by Elimination of Constants	K1-K5	2	CO1-CO5	Lecture & Problem Solving	Questioning
Aug 16 – 23, 2024 (Day Order 1-6)	3	3.2 Formation of Equations by Elimination an Arbitrary Function 3.3 Definition of General, Particular, Complete and Singular Integral	K1-K5	5	CO1-CO5	Group discussion	Quiz
Aug 27 – Sep 3, 2024 (Day Order 1-6)	3	3.4 Solutions of First Order Equations in their Standard Forms 3.5 Lagrange's Method of Solving of Linear Equations $Pp + Qq = R$	K1-K5	5	CO1-CO5	Learning by Doing	**III Component Test II – Assignment Problems (15 marks) Portion: 2.5**
Sep 4 – 11, 2024 (Day Order 1-6)	4	4.1 Definition of Fourier Series 4.2 Finding Fourier Coefficients for a given Periodic Function with Period 2π	K1-K5	5	CO1-CO5	Lecture & Problem Solving	Questioning

Sep 12 - 20, 2024 (Day Order 1-6)	4	4.3 Odd and Even Functions 4.4 Half - Range Series	K1-K5	5	CO1-CO5	Group discussion	Slip test
Sep 23 - 26, 2024 (Day Order 1-4)	4	4.5 Development in sine and cosine series	K1-K5	3	CO1-CO5	Learning by Doing	Assignment
Sep 27 – Oct 3, 2024	**C.A. Test – II (Unit 3 & 4.1-4.3)**						
Oct 4 – 5, 2024 (Day 5 & 6)	5	5.1 Formulation of LPP	K1-K5	2	CO1-CO5	Lecture & Problem Solving	Questioning
Oct 7 - 15, 2024 (Day Order 1 to 6)	5	5.2 Graphical Method	K1-K5	5	CO1-CO5	Group discussion	**III Component Test III – Problem Solving & slip test (20 marks) Portion: 4.4, 4.5, 5.1**
Oct 16 - 22, 2024 (Day Order 1 to 6)	5	5.3 Simplex Method	K1-K5	5	CO1-CO5	Learning by Doing	Quiz
Oct 23 - 24, 2024 (Day Order 1 to 2)	**REVISION**						