

Sno	Course Code	Course Title	L-T-P	Credits	S NO	CO NO	Description of the Course Outcome
1	18SC1103	SINGLE VARIABLE CALCULUS AND MATRIX ALGEBRA	3-0-0	3	1	CO 1	Model the physical laws and relations mathematically as a first order differential equations, solve by analytical and numerical methods also interpret the solution.
					2	CO 2	Model physical laws and relations mathematically as a second/higher order differential equations, solve by analytical method and interpret the solution.
					3	CO 3	Obtain the Fourier series expansions of periodic functions and use the series to solve ordinary differential equations.
					4	CO 4	Model physical problems mathematically as a system of linear equations and solve them by analytical and numerical methods. Also, determine the nature of Quadratic form using Eigen values.
2	18SC1104	Foundations of Computational Mathematics	0-0-2	1	5	CO 1	Identify the quantities of Real world problems by using the concepts of arithmetic.
					6	CO 2	Computing the areas of regular and irregular solids of real world problems.
					7	CO 3	Identifying the numbers by successive division also finding the solution of equations.
					8	CO 4	Estimating the roots of an equations and find the unknown values from the data by numerical methods
3	18SC1105	LOGIC AND REASONING	0-0-2	1	9	CO 1	Understand how to use Venn diagrams to find the conclusion of statements, solve puzzles using binary logic.

					10	CO 2	Understand to solve problems on clocks, calendars and problems on Non verbal reasoning.
					11	CO 3	Understand the available models for Venn diagrams with given data, solve problems relating to cubes and number and letter series.
					12	CO 4	Understand the techniques used to solve problems puzzles using analytical reasoning on coding and decoding and blood relations
4	18MT200 1	Basic Mathematics	2-1-0	3	13	CO 1	Apply knowledge Mathematics , fundamentals in biological science problems
					14	CO 2	Identify the formulas, for solving complex engineering problems in sciences by using derivatives and integrals.
					15	CO 3	Understand Vector products and their interpretations
					16	CO 4	Understand different forms of line and circle equations
5	18MT120 1	Multivariate Calculus	3-0-2	4	17	CO 1	Determine extreme values for functions of several variables
					18	CO 2	Determine area, volume and moment of inertia through multiples integrals
					19	CO 3	Apply the concepts of vector calculus to calculate the gradient, directional derivative, arc length , areas of surfaces and volume of solids in practical problems
					20	CO 4	Obtain analytical and numerical solutions of Heat and wave equations

					21	CO5	Verify the solution of problems through MATLAB
6	17MT2005	Probability and Statistics	2-1-0	3	22	CO 1	Identify the types of random variables and also apply discrete distributions to analyze various real-world situations
					23	CO 2	Construct the probability distribution of a continuous random variable based on a real-world problems, and also predict the linear and non-linear relationship between the two variables
					24	CO 3	Apply statistical tests for large and small samples to test the hypothesis.
					25	CO 4	Testing the hypothesis to analyze the variance by applying suitable design.
7	18MT 2102	Theory of Differential Equations in Engineering and Mechanics	2-0-2	3	26	CO 1	Obtain the response of a mechanical system having single degree-of-freedom for free and forced vibrations through linear differential equations.
					27	CO 2	Model and solve free and forced vibrations of a two- degree-of-freedom system through system of linear differential equations.
					28	CO 3	Obtain canonical forms of linear second order PDEs. and Demonstrate the nature of the incompressible fluid flow using Euler and Bernoulli equations.
					29	CO4	Identify the heat and wave equations in different forms, obtain their responses and develop empirical relations.
					30	CO5	Determine the response of mechanical vibrating systems and heat equations which are modelled by ordinary or partial differential equations

							using MATLAB.
8	18MT210 4	Probability and Numerical Methods	3-1-0	4	31	CO1	Identify the types of random variables and also obtain the mean and variance using mathematical expectation
					32	CO2	Apply discrete and Continuous distributions to analyze various real-world situations
					33	CO3	Draw conclusion about the population based upon samples drawn from it
					34		Obtain the solutions of transcendental equations using numerical methods and also determine the future predictions using interpolation and different numerical techniques
9	17MT110 3	Bio-Statistics	2-2-0	3	35	CO-1	Interpret numerical data through various graphs and determination of various constants of the data
					36	CO-2	Measure and estimate the degree of linear relationship between two variables
					37	CO-3	Identify the suitable probability distribution to the given experimental data and calculation of various characteristics of the respective probability distributions
					38	CO-4	Draw the statistical inference of the given data through various tests of statistical hypothesis, viz., tests for means (single and two), analysis of variance
10	18MT 1102	Fundamental of Mathematics	3-0-2	4	39	CO 1	Solve problems of matrices, limits and differential equations
					40	CO 2	Formulate differential calculus, differentiation rules and identify a method for solving and

							interpreting the results.
					41	CO 3	Formulate physical laws and relations mathematically in the form of second/higher order differential equations and identify a method for solving and interpreting the results.
					42	CO 4	Verify the solution of problems through MATLAB.
11	17MT2105	Probability and Optimization Technique	3-1-0	4	43	CO 1	Identify the types of random variables and their applications in discrete probability distributions to the real world problems.
					44	CO 2	Apply Continuous distributions to analyze various real-world situations and also analyze bivariate data using correlation and regression analysis.
					45	CO 3	Formulate the given phenomena as a linear programming problem and solve it by graphical and simplex methods
					46	CO 4	Obtain the solutions of non-linear programming problems using Pivot, Wolfe's algorithms and separable programming technique
12	15MT2005	Probability and Stochastic Models	2-2-2	4	47	CO 1	Apply the conditional probability and discrete distributions to suitable real- world situations.
					48	CO 2	Apply continuous distributions to suitable real-world situations and also analyze bivariate data using correlation and regression analysis.
					49	CO 3	Apply queuing models for single and multi server s with finite and infinite queue capacity to suitable real world problems.

					50	CO 4	Apply Markov chains and simulation techniques for suitable real world problems.
13	17MT2009	Probability theory and Stochastic Process	2-1-0	3	51	CO 1	Apply the probability and joint and marginal probabilities to suitable real-world situations.
					52	CO 2	Apply probability distributions to suitable real-world situations and also analyze bivariate data using correlation and regression analysis.
					53	CO 3	Apply Markov chains and simulation techniques for suitable real world problems
					54	CO 4	Apply queuing models for single and multi servers with finite and infinite queue capacity to suitable real world problem
14	17MT2010	Complex Variable and Transform	3-0-0	2	55	CO 1	Apply Cauchy-Riemann equations to test the analyticity of function and Evaluate the complex integrals by using Cauchy theorem and Cauchy Integral formulae.
					56	CO 2	Represent analytic functions as a series and calculate contour integrals, definite integrals on the real line using the Residue theorem. Also to transform continuous-time system representations to discrete-time and vice versa by bilinear transformation.
					57	CO 3	Convert the differential equation into transfer function by using Laplace transform and solving by inverse Laplace transform.
					58	CO 4	Represent the function or signal from time (t-domain) to frequency (s-domain) and vice versa using Fourier transforms.
15	15MT1105	FUNDAMENTALS OF	3-0-2	4	59	CO 1	Solve problems of matrices, limits and differential equations

		MATHEMATICS			60	CO 2	Formulate differential calculus, differentiation rules and identify a method for solving and interpreting the results.
					61	CO 3	Formulate physical laws and relations mathematically in the form of second/higher order differential equations and identify a method for solving and interpreting the results.
					62	CO 4	Formulate partial differential equations and identify method for solving PDE's
16	18CM1103	Business Mathematics and statistics	3-2-0	4	63	CO 1	Interpret numerical data through various graphs and determination of various constants of the data and Measure and estimate the degree of linear relationship between two variables
					64	CO 2	Determination of Index numbers and forecasting unknown from values of time series data
					65	CO 3	Determine the types of matrices, addition, multiplication of matrices, transpose, determinant of a matrix, inverse of a matrix using it to solve simultaneous equations also identify the rank relation.
					66	CO 4	Describe the different types of simple and compound progression and interest, Equated monthly instalments and apply these concepts in physical phenomena of different financial problems
17	17PH106R M	Remedial Mathematics	2-1-0	3	67	CO 1	Determine the types of matrices, addition, multiplication of matrices, transpose, determinant of a matrix, of a matrix using it to solve simultaneous equations, Cayley Hamilton theorem, Application of Matrices in solving Pharmacokinetic equations
					68	CO 2	Understand the concept of different types of functions and also write the functions

							in terms of graphs, straight line, slopes, intersection points, Partial fraction, Application of Partial Fraction in Chemical Kinetics and Pharmacokinetics, Logarithms limit and continuity
					69	CO 3	Compute the derivatives of constants, Derivative of the sum or difference of two functions, Conditions for a function to be a maximum or a minimum at a point. Slope or gradient of a straight line
					70	CO 4	Compute the derivatives of different functions with single independent variable order, degree and solving the differential equations by using different methods finally apply it for real life problems Laplace Transform- Transforms of elementary functions, Inverse Laplace transforms, Laplace transform of derivatives
18	18BA12C3	Quantitative Aptitude and Reasoning (C SAT)-2	2-2-0	2	71	CO 1	Identify the quantities of Real world problems by using the concepts of Menstruation, Basic Algebra and Triangles, Polygons and Circle
					72	CO 2	Apply the fundamental principle of Permutations and Combinations formulae and applications, Probability formula and application
					73	CO 3	Understand the techniques used to solve problems on Analogies, Similarities and differences Judgment, Decision making, Visual memory, Discrimination, Observation E.T.C.
					74	CO 4	Understand the available models for Data sufficiency & redundancy and interpret it, when given, in tabular and graphical forms