Course outcomes of Mathematics
First year semester-I Paper I

Course Title: **Differential equations:**

CO1 To Understand how to differentiate linear and non-linear differential equations and solving differentiate types of exact differential equations.

CO2 To apply differentiate methods for solving differential equations of first order but not of first Degree

CO3 To find the solution of higher order linear differential equations with constant coefficients.

CO4 To find the solution of the non-homogeneous linear differential equations with constsnt coeeficients.

CO5 To find the solution of higher order linear differential equations with variable coefficients by using methods of variation of parameters and solving Cauchy-Euler equation.

I year Semester II paper II
Course title – Solid Geometry

CO1 To understand the different types of equation of the plane , Bisectors of angles between the planes and combined equations of the planes.

CO2 To recognize the different types of equations of a line to find the shortest distance between the Lines

CO3 To able to analyse equation of the sphere equation of circle, sphere the circle a given circle, intersection of sphere and a line.

CO4 To find the ange of intersection of line spheres and conditions for two spheres to be orthogonal, able to recognize the equations of the cone with a given vertex enveloping cone.

CO5 To understand how to find equation of a right circular cone and right circular cylinder.

II year semester III – Paper III
Course title – abstract Algebera

CO1 To understand the properties of a definitions of a group, binary operation, composition table.

CO2 To understand the concept of subgroup, union & intersection of subgroups, cosets and Lagrangies theorem

CO3 To be able to analyse demonstrate examples of normal subgroups and quotient groups

CO4 To be able to use the concepts of homomorphism, Isomorphism, Auto morphism and kernel of a Homomorphism

CO5 To find the inverse of a permutation, cyclic permutations, even and odd permutation, elementary properties of cyclic groups and classification of cyclic groups.

II year semester IV – Paper IV
Course title – Real Analysis

CO1 To understand the concepts of sequence and their limits, convergent sequence, divergent sequence, N & S conditions for convergence of monotone sequence, subsequences

CO2 To apply the P-test, cauchy's nth root test, Ratio test, Leibnitz for convergence of series

CO3 To understand the concepts of limits, continuity discontinuity and uniform continuity.

CO4 To apply the mean value theorems, to problems of real analysis

CO5 To recognize the condition for Riemann integral, u(p,f),L(p,f) and integral as the limit of a sum.

III year semester V – Paper V
Course title – Ring Theory and Vector Calculus

CO1 To understand the concepts of rings, Boolean rings, integral domains, fields, division ring, subring and ideals.

CO2 To recognize the Homomorphism, Homomorphic image, Kernal of a Homomorphism, Fundamental theorem of Homomorphism, Maximal ideals of rings

CO3 To be able to compute and analyse the differential ideals of divergence, curl operators gradient on vectors.

CO4 To acquire the knowledge to compute and analyse the integral ideals of the vectors defined line integrals, surface and volume integrals

CO5 To apply vector integrations applications by gauss, stokes and greens therum for the vector functions

III year semester V – Paper VI
Course title – Linear Algebra

CO1 To recognize the concepts of vector spaces, null space, vector subspace, linear combination of vectors, linear space, Linear dependence and linear independence of vectors.

CO2 To be able to compute basic & dimension of a vector space, quotient space, basis & dimension Theorems

CO3 To recognize the concepts of Linear transformation , range, null space and compute rank and nullity of linear transformation

CO4 To be able to compute inverse of a matrix, rank of matrix, solving linear equations, eigen values and eigen vectors of a matrix.

CO5 To determine inner product space, norm of a vector, orthonormal set, orthogonality and apply gram- Schmidt orthogonalisation process.

III year semester VI – Paper VII-A (elective VII-A)
Course title – Laplace transformations

CO1 To find the laplace transformation of a function by definition and by using fundamental Formulae

CO2 To be able to find laplace transform of a t_n., by using first shifting theorm, second shifting theorm & change of a scale property and Laplace transform of derivatives.

CO3 To find the laplace transform of integrals, multiplications by t^n , division by t.

CO4 To find the inverse laplace transform of a t_n by first and second shifting theorems, change of scale property & by using partial fractions.

CO5 To find the inverse laplace transform of integrals, multiplication by powers of "P" division by powers of "P". Convolution theorm and Heavisides expansion theorems application.

III year semester VI – Paper VII-B (elective)
Course title – Numerical Analysis

CO1 To analyse and detect different form of errors and their accuracy

CO2 To solve algebraic & transcendental equations

CO3 To analyse the errors in polynomial interpolation, finite differences, forward differences & backward differences

CO4 To be able to compute interpolation with equal intervals by different methods

CO5 To be able to compute interpolation with (unequal intervals by) unevenly spaced prints by lagrange's and newtons general interpolation formula.

III year semester VI – Cluster elective VIII-A
Course title – Integral transforms

CO1 Application of laplace transform to solutions of differential equations

CO2 Application of laplace transform to solutions of simultaneous ordinary differential equations and partial differential equations.

CO3 To apply the Laplace transform to integral equations

CO4 To recognize the concepts of Fourier transform, Fourier sine & cosine transform

CO5 Application of convolution theorem for Fourier transform, parseval's identity, finite fourier sine & cosine transforms.