



**Telangana Social Welfare Residential Degree College
for Women, Nirmal, Dist.: Nirmal – 504106.**



Sri E. Venkateshwarlu,
MA, B. Ed, M. Phil,
Principal.

Mobile: +91-7995660879,
E-Mail: prl-rdcw-nrml-swrs@telangana.gov.in.

DEPARTMENT OF MATHEMATICS

PROGRAMME & COURSE OUTCOMES OF

B.SC MATHEMATICS UNDER CBCS

PROGRAMME OUTCOMES:

Upon completing the B. SC degree in the field of Mathematics, students have/capable of:

PO1: A solid understanding of graduate level Differential and Integral Calculus, Differential Equations, Algebra, Real Analysis, Linear Algebra and Numerical Analysis.

PO2: Using their mathematical knowledge to analyze certain problems in day to day life.

PO3: Identifying unsolved yet relevant problems in a specific field.

PO4: Undertaking original research on a particular topic.

PO5: Communicate mathematics accurately and effectively in both written and oral form.

COURSE OUTCOMES FOR MATHEMATICS

SEMESTER I

DIFFERENTIAL AND INTEGRAL CALCULAS

Course Outcomes: Upon the successful completion of the course students will:

CO1: Interpret equations and graphs of the basic classes of functions

CO2: Interpret the mean value theorem

CO3: Analyse inverse functions

CO4: Examine exponential, logarithmic, and hyperbolic functions

CO5: Interpret the mean value theorem

CO6: Calculate the areas of curved regions by using integration methods

CO7: Find the volume of a solid of revolution using various methods

CO8: Apply the differentiation rules to determine a derivative

SEMESTER II
DIFFERENTIAL EQUATIONS

Course Outcomes: Upon the successful completion of the course students will:

- CO1: Classifies the differential equations with respect to their order and linearity
- CO2: Solves exact differential equations.
- CO3: Converts separable and homogeneous equations to exact differential equations by Integrating factors.
- CO4: Solves Bernoulli and Ricatti differential equations.
- CO5: Will be able to find solution of higher-order linear differential equations.
- CO6: Will be able to solve systems of linear differential equations
- CO7: Will be able to use the Laplace transform in finding the solution of linear differential equations.
- CO8: Expresses the inverse Laplace transform. Finds Laplace transforms solution of linear differential equation with constant coefficients.

SEMESTER III
REAL ANALYSIS

Course Outcomes: Upon the successful completion of the course students will:

- CO1: Students will be able to demonstrate competence with the algebraic and order properties of real numbers.
- CO2: Students will be able to demonstrate competence with properties of real numbers by finding supremum and infimum of sets and using the completeness property of real numbers.
- CO3: Students will be able to demonstrate competence with elementary properties of sequences by finding limits and proving results involving sum/difference/product/quotients of sequences.
- CO4: Students will be able to apply the monotone convergence theorem to prove convergence of bounded monotone sequences.
- CO5: Students will be able to demonstrate ability to use Taylor Theorem, the Mean Value Theorem, and use L-Hospital's Rule to compute limits of functions learn the topology of the real line

SEMESTER IV

ALGEBRA

Course Outcomes: Upon the successful completion of the course students will:

CO1: Polar representation of complex numbers, n th roots of unity, De Moiré's theorem for rational indices and its applications. Direct and inverse circular form of trigonometric and hyperbolic functions.

CO2: Well-ordering property of positive integers, division algorithm, divisibility and Euclidean algorithm. Congruence relation between integers.

CO3: Equivalence relations and partitions. Functions, composition of functions, Invertible functions, one to one correspondence and cardinality of a set.

CO4: Permutations, cycle notation for permutations, even and odd permutations.

CO5: Definition and elementary properties of groups. Symmetries of a square, dihedral groups, quaternion groups (through matrices). Permutation group, alternating group, finite groups. The group of integers under addition modulo n and the group of units under multiplication modulo n .

CO6: Order of an element, order of a group, simple properties. Understand the fundamentals of Graphs

SEMESTER V

LINEAR ALGEBRA

Course Outcomes: Upon the successful completion of the course students will:

CO1: Be able to gain proficiency in solving systems of Linear equations using matrices and demonstrate a working knowledge of algebraic properties of matrices.

CO2: Be able to understand Euclidean Vector spaces, their inherent and algebraic structure and the accompanying geometry.

CO3: Be able to prove Cayley- Hamilton theorem, Schwartz inequality, Gram Schmidt orthogonalization process

CO4: Be able to define Linear Transformations and find the domain, range, kernel, rank, and nullity of a linear transformation.

CO5: Be able to apply vectors, inner products, and linear transformations to real world situations.

CO6: Use computational techniques and algebraic skills essential for the study of systems of Linear equations, matrix algebra, vector spaces, eigenvalues and eigenvectors, Orthogonality and Diagonalization

SEMESTER VI
NUMERICAL ANALYSIS

Course Outcomes: Upon the successful completion of the course students will:

CO1: Some numerical methods to find the zeroes of nonlinear functions of a single variable and solution of a system of linear equations, up to a certain given level of precision.

CO2: Interpolation techniques to compute the values for a tabulated function at points not in the table.

CO3: Applications of numerical differentiation and integration to convert differential equations into difference equations for numerical solutions.

CO4: Learn various methods of numerical differentiation and integration.

CO5: Choose appropriate numerical methods and determine the solutions to ordinary differential equations.