GOVERNMENT DEGREE COLLEGE-CHINTURU;A.S.R DT

AFFILIATED TO ADIKAVINANNAYA UNIVERSITY, RAJAMAHENDRAVARAM.

COURSE OUTCOMES-MATHAMATICS

**PAPER-  I  DIFFERENTIAL EQUATIONS**

**CO1:**Identify the different types of first order and first degree differential equations and solve   
          the problems.

**CO2:** Solve the different methods in first order but not first degree differential equations.

**CO3:**Understand the higher order linear differential equations with constant coefficients and can   
          solve the different types of problems.

**CO4:**Apply the linear differential equation to solve the physical problems.

**CO5:**Apply the higher order differential equations in simple harmonic motion, simple pendulum   
          problems.

**CO6:**Solve the Cauchy-Euler’s differential equations.

**CO7:**Solve the differential equations by the method of variation of parameters.

**PAPER-  II Three dimensional analytical Solid Geometry**

**CO 1:**Understand the concept of plane and can solve the problems like angle between planes, orthogonal projection on a plane.

**CO2:** Solve the problems on the concept of line and coplanar lines, the condition that a given line may lie in a given plane etc.

**CO3:** Understand the concept of sphere and can solve the problems.

**CO4 :**Solve the problems on the concepts of cones and cylinders.

**CO5:** Apply the concepts of three dimensional concepts in solving the volume integrals and surface integrals in vector calculus.

**PAPER-  III Abstract Algebra**

**CO-1:**Define the group with important example and the elementary properties of groups, finite     
           groups ,composition table and the order of a group.

CO-2:Understand the conditions for subgroup of a group and examples of subgroups.

           Identify the applications of Lagrange’s theorem.

CO3:Understand the definition of Normal subgroups with examples and quotient group.

CO4: Define the homomorphisms and its elementary properties and the proof of first   
          homomorphism theorem.

CO5: Understand the definition of permutation and product of permutations, even and odd   
           permutations and the proof of Cayley’s theorem.

**PAPER-  IV Real Analysis**

**CO1:** Understand the concept of real numbers and the properties of real numbers and the   
         definitions of supremum and infimum.

**CO2:**Solve the problems in sequences, limit of a sequence.

**CO3:** Solve the problems on infinite series by using the tests like ratio test, nth root test etc.,

**CO4:**Solve the problems on the basic concepts of continuity, its elementary properties and   
          uniform continuity.

**CO5:**Understand the concepts of differentiation and the three mean value theorems can solve the   
           problems. Define the Riemann integration and solve the problems

**PAPER-  V  Ring Theory and Vector Calculus**

**CO-1:**Define ring with good number of examples and the basic definitions in ring theory.

**CO-2:**Understand the definitions of integral domain and the theorems on integral domains.

**CO-3:**Understand the definition of homomorphisms with examples and the concept of kernel,   
           the  important theorems on kernel.

**CO-4:**Prove the three isomorphic theorems. ¬ Solve the problems on vector differentiation,   
           gradient and its applications, divergence and curl of a vector point function.

**CO-5:** Solve the problems on the concepts of line, surface and volume integrals and on three   
           vector integral theorems.

**PAPER-  VI  Linear Algebra**

**CO-1:** Understand the concept of vector space and subspace with examples and their properties.

**CO-2:**Define the basis, basis extension, dimension of subspace, and solve the problems.

**CO-3:** Understand the linear transformation and its properties, theorems on null space and range   
           of the linear transformation.

**CO-4:** Solve the problems on rank of a matrix, Eigenvalues and Eigen vectors of a square matrix   
           and Cayley-Hamilton theorem.

**CO-5:** Solve the problems on inner-product space, Gram-Schmidt orthogonalisation and   
           Bessel’s inequality.

**PAPER-  VII  Numerical Analysis**

**CO-1:** Solve the problems on types of errors.

**CO-2:** Solve the algebraic and transcendental equations by using the numerical methods.

**CO-3:** Solve the problems on finite difference operators and the relations among the operators.

**CO-4:**Interpolate the polynomials by using Newton’s forward and backward,Gauss and Stirling’s interpolation formulae.

**CO-5:** Interpolate the polynomial with unequal intervals by using Lagrange’s interpolating polynomial, Newton’s divided difference formula

**PAPER-  VIII-A-Advanced   Numerical Analysis**

**CO-1:** Fit an approximate curve by the method of least squares.

**CO-2:** Solve the problems in numerical differentiation and apply to find the maximum and minimum values of the given tabulated data.

**CO-3:** Solve the problems in numerical integration by using the trapezoidal rule, Simpson’s 1/3 rule, Simpson’s 3/8th rule and the errors.

**CO-4:** Find the approximate solutions of linear system of equations.

**CO-5:** Solve the first order differential equations by using the numerical methods.

**PAPER-  VIII-B-Special Functions**

**CO-1:** Understand the concept of Hermite differential equations and its solution and the   
            properties.

**CO-2:** Solve the problems on Lagueree polynomials and the recurrence relations.

**CO-3:** Understand the concept of Legendre’s polynomial and can solve the problems.

**CO-4:** Solve the problems on Bessel’s differential equation its generating function and   
             properties.

**CO-5:** Apply the concept of Beta Gamma functions to solve some of the integrals.