GOVERNMENT DEGREE COLLEGE MANDAPETA

B.Sc. MATHEMATICS -COURSE OUTCOMES

DIFFERENTIATION EQUATIONS

CO1: Able to solve first order differential equations

CO2: Able to perform step-by-step analysis to solve the differential equations using an appropriate method.

CO3: Create and analyze mathematical models using higher order differential equations to solve application problems such as harmonic oscillator and circuits.

CO4: Evaluate first order differential equations including separable, homogeneous, exact, and linear.

SOLID GEOMETRY

CO1: To understand the concepts & advance topics related to two & three dimensional geometry.

CO2: Geometry briefly is used in various daily life applications such as surveying, astronomy, navigation and building and much more.

CO3: Compare the 2D and 3D objects and able to find angles , areas, plane equations ,etc

CO4: Find family of spheres Passing through a circle , tangent planes and normal lines to a sphere.

ABSTRACT ALGEBRA

CO1: Present the relationships between abstract algebraic structures with familiar numbers systems such as the integers and real numbers.

CO2: Generate groups given specific conditions and knowledge of use various canonical types of groups

CO3: Analyze and demonstrate examples of subgroups, normal subgroups and quotient groups

CO4: Develop the ability to form and evaluate conjectures

REAL ANALYSIS

CO1: Use the definitions of convergence as they apply to sequences, series, and functions

CO2: Demonstrate an understanding of limits and how they are used in sequences, series, differentiation and integration.

CO3: Determine the continuity, differentiability, and integrability of functions defined on subsets of the real line

CO4: Illustrate the effect of uniform convergence on the limit function with respect to continuity, differentiability, and inerrability

ANALYTICAL SKILLS (FOUNDATION COURSE)

CO1: Making real-time decisions by rapidly assessing the facts and assumptions
CO2: Identifying logical errors, false conclusions and unsubstantiated assertion
CO3: Eliciting information from other using tactful and insightful questioning techniques
CO4: Detecting and taking definitive action to prevent potential problems

RING THEORY & VECTOR CALCULUS

CO1: Integrate functions of several variables over curves and surfaces
CO2: Present concepts and properties of various algebraic structures.
CO3: Discuss the importance of algebraic properties relative to working within various number systems
CO4: Calculate and interpret derivatives in up to three dimensions.

LINEAR ALGEBRA

CO1: Identify and construct linear transformations of a matrix.
CO2: Compute and use Eigen vectors and Eigen values
CO3: Determine the rank, determinant, Eigen values and eigenvectors, diagonalization, and different factorizations of a matrix
CO4: Characterize linear transformations as onto, one-to-one

LAPLACE TRANSFORMS

CO1: An understanding of Fourier series and Laplace Transform to solve real world problems.
CO2: Laplace transform is used for the analysis of linear time-invariant systems
CO3: Analyze and solve engineering problems using Laplace Series
CO4: Approach more advanced aspects of transform methods

NUMERICAL ANALYSIS

CO1: Understand the theoretical and practical aspects of the use of numerical analysis.
CO2: The course will also develop an understanding of the elements of error analysis for numerical methods and certain proofs.
CO3: Establish the limitations, advantages, and disadvantages of numerical analysis
CO4: Analyse and evaluate the accuracy of common numerical methods

NUMBER THEORY

CO-1: Understand the logic and methods behind the major proofs in Number Theory
CO-2: Construct mathematical proofs of statements and find counterexamples to false statements in Number Theory.
CO-3: Determine multiplicative inverses, modulo n and use to solve linear congruence
CO-4: Appropriately integrate technology into mathematical processes

GRAPH THEORY

CO-1: Explain graph theory in a coherent and technically accurate manner
CO-2: Demonstrate knowledge of the syllabus material
CO-3: Reason from definitions to construct mathematical proofs
CO-4: Define and relate basic notions in graph theory

INTEGRAL TRANSFORMS

CO-1: Able to know the use of Laplace transform in system modeling, digital Signal processing, process control, solving Boundary Value Problems

CO-2: Apply Fourier and Laplace transform in solving ODEs and PDEs

CO-3: To analyze properties of special functions by their integral representations and Symmetries.

CO-4: Students will gain a range of techniques employing the Laplace and Fourier Transforms in the solution of ordinary and partial differential equations.

SPECIAL FUNCTIONS

CO-1: Understand purpose and functions of the gamma and beta functions, Fourier series and Transformation

CO-2: Determine types of PDEs which may be solved by application of special functions.

CO-3: Analyze properties of special functions by their integral representations & symmetries.

CO-4: Evaluate different types of integral calculus problems and Fourier series to solve differential equations

ADVANCED NUMERICAL ANALYSIS

CO-1: Understand the theoretical and practical aspects of the use of numerical analysis

CO-2: Apply appropriate theories, principles and concepts relevant to Numerical Analysis

CO-3: Identify the suitable computational technique for a specific type of problems

CO-4: evaluate the literature within the field of Numerical Analysis, analyze and interpret information from a variety of sources relevant to Numerical Analysis

PRINCIPLES OF MECHANICS

CO-1: Develop an understanding of the principles of dynamics

CO-2: Apply Kepler's laws to solve the problems

CO-3: Analyze problems in a systematic and logical manner, including the ability to draw free-body diagrams of rigid body.

CO-4: An ability to calculate centroids and moments of inertia.

FLUID MECHANICS

CO-1: Understand stress-strain relationship in fluids, classify their behaviour .

CO-2: Apply Bernoulli principle and compute pressure drop in flow systems of different configurations

CO-3: Analyze the performance aspects of fluid machinery specifically for centrifugal pump and reciprocating pump

CO-4: Evaluate the pressure distribution for incompressible fluids

APPLIED GRAPH THEORY

CO-1: Explain about graph theory in a coherent and technically accurate manner.

CO-2: Demonstrate knowledge of the graph theory

CO-3: Validate and critically assess a mathematical proof

CO-4: Reason from definitions to construct mathematical proofs;