

SUBHARAM GOVERNMENT DEGREE COLLEGE, PUNGANUR-517247

CHITTOOR DIST.

DEPARTMENT OF MATHEMATICS

COURSE OBJECTIVES & COURSE OUTCOMES

SEMESTER	COURSE CODE & TITLE OF THE PAPER	OBJECTIVES	OUTCOMES
I	DIFFERENTIAL EQUATIONS 1-1-112-R20	To enable the students to – 1. The order of a differential equation. 2. Explain what is meant by a solution to a differential equation. 3. Distinguish between the general solution and a particular solution of a differential equation. 4. Identify an initial-value problem. 5. Identify whether a given function is a solution to a differential equation or an initial-value problem.	After successful completion of this course, the student will be able to; 1. Solve linear Differential Equations 2. Convert non exact homogeneous equations to exact differential equations by using Integrating factors. 3. Know the methods of finding solutions of differential equations of the first order but not the first degree. 4. Solve higher order linear differential equations both homogeneous and non-Homogeneous with constant coefficients.

			5. Understand the concept and apply appropriate methods for solving Differential Equations.
II	THREE-DIMENSIONAL ANALYTICAL SOLID GEOMETRY 1-2-112-R20	To enable the students to – 1. Describe the various forms of equation of a plane, straight line, Sphere, Cone and Cylinder. 2. Find the angle between planes, Bisector planes, Perpendicular distance from a point to a plane, Image of a line on a plane, Intersection of two lines. 3. Define and illustrate coplanar lines. 4. Compute the angle between a line and a plane, length of perpendicular from a point to a line. 5. Define skew lines and Calculate the Shortest distance between two skew lines.	After successful completion of this course, the student will be able to; 1. Get the knowledge of planes. 2. Basic ideas of line, sphere and cone. 3. Understand the properties of planes, lines, spheres and cones. 4. Express the problems geometrically and then get the solution.

III	ABSTRACT ALGEBRA 1-3-112-R20	Students will learn – 1. The abstract definition of a group, and be familiar with the basic types of examples, including numbers, symmetry groups and groups of permutations and matrices. 2. Description of algebraic techniques and basic elements of abstract algebra. 3. What subgroups are, and be familiar with the proof of Lagrange's Theorem. 4. The state axioms of groups, rings and fields. 5. The concept of cosets of a subgroup of a group and normal subgroups. 6. Symmetric groups, cyclic groups and their properties. 7. The concept of quotient groups. 8. The concept of group homomorphism and isomorphism.	After successful completion of this course, the student will be able to; 1. Acquire the basic knowledge and structure of groups, subgroups and cyclic groups. 2. Get the significance of the notation of a normal subgroup. 3. Get the behavior of permutations and operations on them. 4. Understand the ring theory concepts with the help of knowledge in group theory and to prove the theorems. 5. Understand the applications of ring theory in various fields
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IV	REAL ANALYSIS 1-4-112A-R20	To enable the students to – 1. Real Numbers and the Axiom of Completeness 2. Sequences and Limits of Sequences 3. The Monotone Convergence Theorem and the Bolzano-Weierstrass Theorem 4. Infinite Series 5. Open and Closed Sets of Real Numbers 6. Limits of Functions and Continuity 7. The Intermediate Value Theorem 8. Derivatives and the Mean Value Theorem 9. Sequences of Functions and Uniform Convergence 10. Power Series and Taylor Series 11. Riemann Integral	After successful completion of this course, the student will be able to; 1. Get clear idea about the real numbers and real valued functions. 2. Obtain the skills of analyzing the concepts and applying appropriate methods for testing convergence of a sequence/series. 3. Test the continuity and differentiability and Riemann integration of a function. 4. Know the geometrical interpretation of mean value theorems.
IV	LINEAR ALGEBRA 1-4-112B-R20	To enable the students to – 1. Use the basic concepts of vector and matrix algebra,	After successful completion of this course, the student will be able to;

		including linear dependence / independence, basis and dimension of a vector space, rank and nullity, for analysis of matrices and systems of linear equations. 2. Evaluate determinants and use them to discriminate between invertible and non-invertible matrices. 3. Solve systems of linear equations using multiple methods, including Gaussian elimination and matrix inversion. Carry out matrix operations, including inverses and determinants. 4. Demonstrate understanding of linear independence, span, and basis.	1. Understand the concepts of vector spaces, subspaces, basis, dimension and their properties. 2. Understand the concepts of linear transformations and their properties. 3. Apply Cayley-Hamilton theorem to problems for finding the inverse of a matrix and higher powers of matrices without using routine methods. 4. Learn the properties of inner product spaces and determine orthogonality.
V	RING THEORY AND VECTOR CALCULUS 1-5-125	To enable the students to – 1. To impart knowledge on Ring Theory and its applications. 2. To make awareness of the concepts of the transformation	After successful completion of this course, the student will be able to; 1. Acquire the knowledge of basic concepts of Rings and various types of Rings, the

		between curl Integration, Surface Integration and Volume integration. 3. To Introduce the concepts of geometrical meaning of Gradient, Divergence and Curl.	Characteristic of an integral domain and field. 2. Get the knowledge of Homomorphism and its properties, Fundamental theorem of Homomorphism. 3. Attain the skills to compute various integral curves with proper analysis. 4. Comprehend the application of Gauss, Stokes and Green's theorems.
V	LINEAR ALGEBRA 1-5-126	To enable the students to – 1. Use the basic concepts of vector and matrix algebra, including linear dependence / independence, basis and dimension of a vector space, rank and nullity, for analysis of matrices and systems of linear equations. 2. Evaluate determinants and use them to discriminate between invertible and non-invertible matrices.	After successful completion of this course, the student will be able to; 1. Understand the concepts of vector spaces, subspaces, basis, dimension and their properties. 2. Understand the concepts of linear transformations and their properties. 3. Apply Cayley-Hamilton theorem to problems for finding the inverse of a matrix and higher powers of matrices without using routine methods.

		3. Solve systems of linear equations using multiple methods, including Gaussian elimination and matrix inversion. Carry out matrix operations, including inverses and determinants. 4. Demonstrate understanding of linear independence, span, and basis.	4. Learn the properties of inner product spaces and determine orthogonality.
VI	LAPLACE TRANSFORMS 1-6-112	To enable the students to – 1. Understand the definition Laplace transform and its properties 2. Apply Laplace transform to solve the differential equations.	After successful completion of this course, the student will be able to; 1. Learn the Laplace transforms of a function by definition and use of a table. 2. Observe the inverse Laplace transform of a function. 3. Acquire the knowledge of convolution of two functions. 4. Solve the linear differential equations with constant coefficients.