GOVERNMENT DEGREE COLLEGE,

RAYACHOTY, ANNAMAYYA DISTRICT, A.P.516269

(Accredited with C grade by NAAC)

Department of Mathematics

COURSE OUTCOMES

B.Sc. MATHEMATICS

UNDER CBCS FRAMEWORK

WITH EFFECT FROM 2015-16

Title of the Course: Differential Equations Students after successful completion of the course will be able to:	
CO-1	Solve Linear Differential Equations
CO-2	Convert Non-Exact homogeneous equations to exact differential equations by using integrating factors
CO-3	Know the Methods of finding solutions differential equations of the first order but not of first degree
CO-4	Solve higher order linear differential equations, both homogeneous and non-homogenous equations with constant coefficients
CO-5	Understand the concept and apply appropriate methods for solving differential equations

Title of the Course: **Three Dimensional Analytical Solid Geometry** Students after successful completion of the course will be able to:	
CO-1	Get the knowledge of Planes
CO-2	Basic idea of lines, Sphere and Cone
CO-3	Understand the properties of planes, lines, spheres and cones
CO-4	Express the problems geometrically and then to get the solution
CO-5	Using geometric software or physical models to visualize and manipulate cones, aiding in deeper understanding.

Title of the Course: Abstract Algebra Students after successful completion of the course will be able to:	
CO-1	Acquire the basic knowledge and structure of groups, subgroups and cyclic groups
CO-2	Get the significance of the notation of a normal subgroups
CO-3	Get the behaviour of permutations and operations on them
CO-4	Study the homomorphisms and Isomorphisms with applications
CO-5	Understand the ring theory concepts with the help of knowledge in group theory and to prove the theorems

Title of the Course: Real Analysis Students after successful completion of the course will be able to:	
CO-1	Get clear idea about the real numbers and real value functions
CO-2	Obtain the skills of analyzing the concepts and applying appropriate methods for testing convergence of a sequence/ series.
CO-3	Test the continuity and differentiability and Riemann Integration of a function.
CO-4	Know the geometrical interpretation of mean value theorems.
CO-5	Understanding and application of the Fundamental Theorem of Calculus, including both parts (evaluation of definite integrals and differentiation of integrals).

Title of the Course: Linear Algebra Students after successful completion of the course will be able to:	
CO-1	Understand the concepts of vector spaces, subspaces, basis, dimension and their properties.
CO-2	Understand the concepts of linear transformations and their properties
CO-3	Apply Cayley- Hamilton theorem to problems for finding the inverse of a matrix and higher powers of matrices without using routine methods
CO-4	Learn the properties of inner product spaces and determine orthogonality in inner product spaces.
CO-5	Familiarity with constructing orthonormal bases using the Gram-Schmidt orthogonalization process and its applications.

Title of the Course: Ring Theory & Vector Calculus Students after successful completion of the course will be able to:	
CO-1	Understand the concepts of Rings, Boolean Rings, Commutative and Non-commutative rings, ZeroDivisors, Integral domains, Division Rings, Fields and Characteristic of a Ring ant their properties.
CO-2	Understand the concepts of subrings, Ideals, Principal ideals, Prime Ideals, Maximal ideals and their properties.
CO-3	Understand the concepts of Vector Differentiation, Differential Operators, Gradient, Divergent, Curl and their Properties.
CO-4	Understand the concepts of Vector Integration, Line, Surface and Volume Integrals.
CO-5	Understand the concepts of Gauss Divergence Theorem, Green's Theorem in a Plane, Stoke's Theorem and their Applications.

Title of the Course: Integral Transforms Students after successful completion of the course will be able to:	
CO-1	Understand the concepts of Application of Laplace Transforms to Solutions Differential Equations with Constant Coefficients.
CO-2	Understand the concepts of Application of Laplace Transforms to Solutions Differential Equations with Variable Coefficients.
CO-3	Understand the concepts of Application of Laplace Transforms to Solutions Differential Equations with Partial Differential Equations.
CO-4	Understand the concepts of Application of Laplace Transforms to Integral Equations.
CO-5	Developing problem-solving skills and critical thinking through solving complex problems and applications involving integral transforms.

B.Mallikarjuna Reddy
Lecturer in Mathematics

Ch.Ramanjaneyulu
Lecturer in Mathematics

Dr.P.Harshalatha
Principal,GDC Rayachoti

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COURSE OUTCOMES

B.Sc. MATHEMATICS

UNDER REVISED CBCS FRAMEWORK

WITH EFFECT FROM 2020-21

Title of the Course: Differential Equations Students after successful completion of the course will be able to:	
CO-1	Solve Linear Differential Equations
CO-2	Convert Non-Exact homogeneous equations to exact differential equations by using integrating factors
CO-3	Know the Methods of finding solutions differential equations of the first order but not of first degree
CO-4	Solve higher order linear differential equations, both homogeneous and non-homogenous equations with constant coefficients
CO-5	Understand the concept and apply appropriate methods for solving differential equations

Title of the Course: Three Dimensional Analytical Solid Geometry Students after successful completion of the course will be able to:	
CO-1	Get the knowledge of Planes
CO-2	Basic idea of lines, Sphere and Cone
CO-3	Understand the properties of planes, lines, spheres and cones
CO-4	Express the problems geometrically and then to get the solution
CO-5	Using geometric software or physical models to visualize and manipulate cones, aiding in deeper understanding.

Title of the Course: Abstract Algebra Students after successful completion of the course will be able to:	
CO-1	Acquire the basic knowledge and structure of groups, subgroups and cyclic groups
CO-2	Get the significance of the notation of a normal subgroups
CO-3	Get the behaviour of permutations and operations on them
CO-4	Study the homomorphisms and Isomorphisms with applications
CO-5	Understand the ring theory concepts with the help of knowledge in group theory and to prove the theorems

Title of the Course: Real Analysis Students after successful completion of the course will be able to:	
CO-1	Get clear idea about the real numbers and real value functions
CO-2	Obtain the skills of analyzing the concepts and applying appropriate methods for testing convergence of a sequence/ series.
CO-3	Test the continuity and differentiability and Riemann Integration of a function.
CO-4	Know the geometrical interpretation of mean value theorems.
CO-5	Understanding and application of the Fundamental Theorem of Calculus, including both parts (evaluation of definite integrals and differentiation of integrals).

Title of the Course: Linear Algebra Students after successful completion of the course will be able to:	
CO-1	Understand the concepts of vector spaces, subspaces, basis, dimension and their properties.
CO-2	Understand the concepts of linear transformations and their properties
CO-3	Apply Cayley- Hamilton theorem to problems for finding the inverse of a matrix and higher powers of matrices without using routine methods
CO-4	Learn the properties of inner product spaces and determine orthogonality in inner product spaces.
CO-5	Familiarity with constructing orthonormal bases using the Gram-Schmidt orthogonalization process and its applications.

Title of the Course: Multiple Integrals and Applications of Vector Calculus Students after successful completion of the course will be able to:	
CO-1	Learn multiple integrals as a natural extension of definite integral to a function of two variables in the case of double integral / three variables in the case of triple integral.
CO-2	Learn applications in terms of finding surface area by double integral and volume by triple integral.
CO-3	Determine the gradient, divergence and curl of a vector and vector identities.
CO-4	Evaluate line, surface and volume integrals.
CO-5	Understand relation between surface and volume integrals (Gauss divergence theorem), relation between line integral and volume integral (Green's theorem), relation between line and surface integral (Stokes theorem)

Title of the Course: Integral Transforms with Applications Students after successful completion of the course will be able to:	
CO-1	Evaluate Laplace transforms of certain functions, find Laplace transforms of derivatives and of integrals.
CO-2	Determine properties of Laplace transform which may be solved by application of special functions namely Dirac delta function, error function, Bessel function and periodic function.
CO-3	Understand properties of inverse Laplace transforms, find inverse Laplace transforms of derivatives and of integrals.
CO-4	Solve ordinary differential equations with constant/ variable coefficients by using Laplace transform method.
CO-5	Comprehend the properties of Fourier transforms and solve problems related to finite Fourier transforms

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Department of Mathematics

COURSE OUTCOMES

B.Sc. HONOURS MATHEMATICS (MINOR)

4-YEARS UG HONOURS PROGRAM WITH SINGLE MAJOR AND ONE MINOR

WITH EFFECT FROM 2023-24

Title of the Course: Differential Equations Students after successful completion of the course will be able to:	
CO-1	Solve Linear Differential Equations
CO-2	Convert Non-Exact homogeneous equations to exact differential equations by using integrating factors
CO-3	Know the Methods of finding solutions differential equations of the first order but not of first degree
CO-4	Solve higher order linear differential equations, both homogeneous and non-homogenous equations with constant coefficients
CO-5	Understand the concept and apply appropriate methods for solving differential equations

Title of the Course: GROUP THEORY Students after successful completion of the course will be able to:	
CO-1	acquire the basic knowledge and structure of groups
CO-2	get the significance of the notation of a subgroup and cosets.
CO-3	understand the concept of normal subgroups and properties of normal subgroup
CO-4	study the homomorphisms and isomorphisms with applications.
CO-5	understand the properties of permutation and cyclic groups

Title of the Course: RING THEORY Students after successful completion of the course will be able to:	
CO-1	acquire the basic knowledge of rings, fields and integral domains
CO-2	get the knowledge of subrings and ideals
CO-3	construct composition tables for finite quotient rings
CO-4	study the homomorphisms and isomorphisms with applications.
CO-5	get the idea of division algorithm of polynomials over a field.

Title of the Course: INTRODUCTION TO REAL ANALYSIS Students after successful completion of the course will be able to:	
CO-1	get clearideaaboutherealnumbersandrealvaluedfunctions.
CO-2	obtaintheskillsofanalysingtheconceptsandapplyingappropriatemethodsfortesting convergence of a sequence/ series.
CO-3	testthecontinuityand differentiabilityandRiemannintegrationofafunction.
CO-4	knowthegeometricalinterpretationofmeanvalue theorems.
CO-5	know about the fundamental theorem of integral calculus

Title of the Course: LINEAR ALGEBRA Students after successful completion of the course will be able to:	
CO-1	understand the concepts of vector spaces, subspaces
CO-2	understand the concepts of basis, dimension and their properties
CO-3	understand the concept of linear transformation and its properties
CO-4	apply Cayley- Hamilton theorem to problems for finding the inverse of a matrix and higher powers of matrices without using routine methods
CO-5	learn the properties of inner product spaces and determine orthogonality in inner product spaces.

Title of the Course: VECTOR CALCULUS Students after successful completion of the course will be able to:	
CO-1	Learn multiple integrals as a natural extension of definite integral to a function of two variables in the case of double integral/three variables in the case of triple integral.
CO-2	Learnapplicationsintermsoffindingsurfaceareabydoubleintegralandvolumebytripleintegral
CO-3	Determinethegradient,divergenceandcurlofavectorandvectoridentities.
CO-4	Evaluate line, surface and volume integrals.
CO-5	understand relation between surface and volume integrals (Gauss divergence theorem),relationbetweenlineintegralandvolumeintegral(Green'stheorem),relationbetween line and surface integral(Stokes theorem)

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