

Dr. B.B HEGDE FIRST GRADE COLLEGE KUNDAPURA

Department of Mathematics 2023-24

Course Outcome as per National Educational Policy

Code	Course Name:	Course Outcome
MATDSCT1.1	Mathematics Number Theory-I, Algebra-I and Calculus-I	<ul style="list-style-type: none"><li>• This course will enable the students to Understand the elementary concepts of Number Theory.</li><li>• Solve the system of homogeneous and non-homogeneous linear equations in a variables.</li><li>• Sketch curves in Cartesian and polar co-ordinates.</li><li>• Identify and apply intermediate value theorem, mean value theorems and L'Hospital rule.</li></ul>
MATDSCT 2.1	Number Theory-II, Algebra-II and Calculus-II	<ul style="list-style-type: none"><li>• Understand the Euler's <math>\phi</math>-function and finite continued fractions</li><li>• Recognize the mathematical objects called Groups</li><li>• Identify cyclic and non-cyclic groups</li><li>• Link the fundamental concepts of groups and symmetries of geometrical objects.</li><li>• Understand the concept of partial derivatives of functions of several variables.</li><li>• Find the Taylor's and Maclaurin's series of functions of two variables.</li><li>• Find the extreme values of functions of two variables.</li><li>• Understand the concepts of line integrals, multiple integrals and their applications</li></ul>

MATDSCT3.1	Ordinary Differential Equations and Real Analysis-I	<ul style="list-style-type: none"> <li>• Solve first-order non-linear differential equations and linear differential equations.</li> <li>• To model problems in nature using Ordinary Differential Equations. Formulare differential equations for various mathematical models</li> <li>• Apply these techniques to solve and analyze various musthematical models.</li> <li>• Understand the fundamental properties of the real numbers that lead to define sequence and series, the formal development of real analysis</li> <li>• Learn the concept of Convergence and Divergence of a sequence. Able to handle and understand limits and their use in sequences, series, differentiation, and</li> <li>• integration Apply the ratio, root, alternating series, and limit comparison tests for convergence and absolute convergence of an infinite series.</li> </ul>
MATDSCT 4.1	Partial Differential Equations and Integral Transforms	<ul style="list-style-type: none"> <li>• Solve the Partial Differential Equations of the first order and second order Formulate, classify and transform partial differential equations into canonical form</li> <li>• Solve linear and non-linear partial differential equations using various methods; and apply these methods to solving some physical problems.</li> <li>• Able to take more courses on wave equation, heat equation, and Laplace equation</li> <li>• Solve PDE by Laplace Transforms and Fourier Transforms</li> </ul>

MATDSCT 6.2	Inorganic and Physical Chemistry	<ul style="list-style-type: none"> <li>• Know the Kinetics of complex formation and also the electronic spectra of complexes which will help them in selecting the methods of synthesis and identification of complex compounds.</li> <li>• Understand the theories of bonding in complex compounds.</li> <li>• Understand the principle of steam distillation and separation of components of binary mixtures.</li> <li>• Get introduced to thermal methods of analysis.</li> <li>• Understand the concept of galvanic cells and potentiometric methods of quantitative analysis.</li> </ul>
MATDSCT 6.1	Linear Algebra	<ul style="list-style-type: none"> <li>• Understand the concepts of Vector spaces, subspaces, bases dimension and their properties.</li> <li>• Find a basis and compute the dimension of a given finite dimensional vector space. 3. Use matrix representation of linear transformations in various computations.</li> <li>• Become familiar with the concepts Eigen values and Eigen vectors, minimal polynomials,</li> <li>• linear transformations etc.</li> <li>• Learn properties of inner product spaces and determine orthogonality in inner product spaces.</li> <li>• Prove various statements in the context of vectors spaces.</li> <li>• Realize importance of adjoint of a linear transformation and its canonical form.</li> <li>• Apply the techniques of diagonalization in solving various problems related to matrices</li> </ul>

MATDSCT 5.1	Real Analysis II and Complex Analysis	<ul style="list-style-type: none"> <li>• Understand the concepts of Vector spaces, subspaces, bases dimension and their properties.</li> <li>• Find a basis and compute the dimension of a given finite dimensional vector space.</li> <li>• Use matrix representation of linear transformations in various computations.</li> <li>• Become familiar with the concepts Eigen values and Eigen vectors, minimal polynomials,</li> </ul>
MATDSCT5.2:	Algebra and Graph Theory	<ul style="list-style-type: none"> <li>• Understand the concepts of Vector spaces, subspaces, bases dimension and their properties.</li> <li>• Find a basis and compute the dimension of a given finite dimensional vector space.</li> <li>• Use matrix representation of linear transformations in various computations.</li> <li>• Become familiar with the concepts Eigen values and Eigen vectors, minimal polynomials, linear transformations etc.</li> <li>• Learn properties of inner product spaces and determine orthogonality in inner product spaces.</li> <li>• Prove various statements in the context of vectors spaces.</li> <li>• Realize importance of adjoint of a linear transformation and its canonical form.</li> <li>• Apply the techniques of diagonalization in solving various problems related to matrices</li> </ul>

MATDSCT 6.2

Numerical Analysis

- Compute approximate roots of algebraic and transcendental equations using iterations 2. Describe various operators arising in numerical analysis such as difference operators, shift operators and so on.
- Articulate the rationale behind various techniques of numerical analysis such as in finding roots, integrals and derivatives
- Reproduce the existing algorithms for various tasks as mentioned previously in numerical analysis,
- Apply the rules of calculus and other areas of mathematics in justifying the techniques of numerical analysis.
- Solve problems using suitable numerical technique
- Obtain approximate solutions to initial value problems using various numerical techniques



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