

DEPARTMENT OF MATHEMATICS

POs	Programme Outcomes
PO1	Interpret the principles, classifications, concepts, theories and mechanisms.
PO2	Analyse hypothesis, procedures, properties, experimental facts and draw conclusions.
PO3	Apply techniques in solving problems, results, sample analysis and production.
PO4	Discuss the latest trends and applications pertinent to higher studies and employability.
PO5	Exhibit communicative competence and apply skills in computers

COURSE OUTCOMES

SEMESTER – 1

ESSENTIALS AND APPLICATIONS OF MATHEMATICAL, PHYSICAL AND CHEMICAL SCIENCES

- Apply critical thinking skills to solve complex problems involving complex numbers, trigonometric ratios, vectors, and statistical measures.
- Understand the interplay and connections between mathematics, physics, and chemistry in various applications. Recognize how mathematical models and physical and chemical principles can be used to explain and predict phenomena in different contexts.

SEMESTER – 1

ADVANCES IN MATHEMATICAL, PHYSICAL AND CHEMICAL SCIENCES

- Explore the applications of mathematics in various fields of physics and chemistry, to understand how mathematical concepts are used to model and solve real-world problems.
- Understand the interplay and connections between mathematics, physics, and chemistry in various advanced applications. Recognize how

mathematical models and physical and chemical principles can be used to explain and predict phenomena in different contexts.

SEMESTER-II

DIFFERENTIAL EQUATIONS

- Solve first order first degree linear differential equations.
- Convert a non-exact homogeneous equation to exact differential equation by using an integrating factor.
- Know the methods of finding solution of a differential equation of first order but not of first degree.
- Solve higher-order linear differential equations for both homogeneous and non-homogeneous, with constant coefficients.
- Understand and apply the appropriate methods for solving higher order differential equations.

SEMESTER-II

ANALYTICAL SOLID GEOMETRY

- Understand planes and system of planes
- Know the detailed idea of lines
- Understand spheres and their properties
- Know system of spheres and coaxial system of spheres
- Understand various types of cones

SEMESTER-II

DIFFERENTIAL EQUATIONS (MINOR)

- Solve first order first degree linear differential equations.
- Convert a non-exact homogeneous equation to exact differential equation by using an integrating factor.
- Know the methods of finding solution of a differential equation of first order but not of first degree.
- Solve higher-order linear differential equations for both homogeneous and non-homogeneous, with constant coefficients.

- Understand and apply the appropriate methods for solving higher order differential equations.

SEMESTER-III

GROUP THEORY

- Acquire the basic knowledge and structure of groups.
- Get the significance of the notation of a subgroup and Cosets.
- Understand the concept of normal subgroups and properties of normal subgroup.
- Study the homomorphisms and isomorphisms with applications.
- Understand the properties of permutation and cyclic groups.

SEMESTER-III

NUMERICAL METHODS

- Difference between the operators Δ , ∇ , E and the relation between them.
- Know about the Newton – Gregory Forward and backward interpolation.
- Know the Central Difference operators δ , μ , σ and relation between them
- Solve Algebraic and Transcendental equations.
- Understand the concept of curve fitting.

SEMESTER-III

LAPLACE TRANSFORMS

- Understand the definition and properties of Laplace transformations.
- Get an idea about first and second shifting theorems and change of scale property.
- Understand Laplace transforms of standard functions like Bessel, Error function etc.
- Know the reverse transformation of Laplace and properties.
- Get the knowledge of application of convolution theorem.

SEMESTER-III

SPECIAL FUNCTIONS

- Understand the Beta and Gamma functions, their properties and relation between these two functions, understand the orthogonal properties of Chebyshev polynomials and recurrence relations.
- Find power series solutions of ordinary differential equations.
- Solve Hermite equation and write the Hermite Polynomial of order (degree) n , also find the generating function for Hermite Polynomials, study the orthogonal properties of Hermite Polynomials and recurrence relations.
- Solve Legendre equation and write the Legendre equation of first kind, also find the generating function for Legendre Polynomials, understand the orthogonal properties of Legendre Polynomials.
- Solve Bessel equation and write the Bessel equation of first kind of order n , also find the generating function for Bessel function understand the orthogonal properties of Bessel function.

SEMESTER-III

GROUP THEORY (MINOR)

- Acquire the basic knowledge and structure of groups.
- Get the significance of the notation of a subgroup and cosets.
- Understand the concept of normal subgroups and properties of normal subgroup.
- Study the homomorphisms and isomorphisms with applications.
- Understand the properties of permutation and cyclic groups.

