

RRDS Government Degree College

Department of Mathematics

Program Outcomes (POs)

PO1. Critical Thinking: Apply critical thinking and enhance learning in the three major subjects of their choice with scientific reasoning and analytical skills.

PO2. Problem solving: Think logically and organize task into a structured form for problem solving by applying the knowledge of basic science.

PO3. Effective communication: To develop the ability of effective communication of scientific information in written and oral format.

PO4. Individual and team work: Function effectively as an individual and as a member or leader in diverse teams and in multi-disciplinary settings.

PO5. Ethics: Apply ethical, moral and social values in personal and professional life leading to holistic development of the individual.

PO6. Environment and sustainability: Develop interdisciplinary approach to provide better solution and innovative ideas for sustainable development and conservation of natural resources.

PO7. Self-directed and lifelong learning: Recognize the need for and have the ability to engage in independent, lifelong learning and adapt to technological changes to be globally competent.

Program Specific Outcomes (PSOs)

PSO1. Gain knowledge and understanding of definitions, concepts, theorems in Algebra, Analysis, Differential Equations and Linear Algebra.

PSO2. Use Mathematical software leading to professional development.

PSO3. Acquire logical and analytical skills to apply the concepts to model and solve real life problems in related areas.

PSO4. Attain sound knowledge in the areas of Mechanics, Thermal Physics, Optics, Electromagnetism, Quantum Physics, Solid state Physics for pursuing higher education and research.

PSO5. Demonstrate basic knowledge of Physics in developing logical tools and models to draw valid solutions.

PSO6. Analyze and solve problems using reasoning skills based on concepts of Physics.

PSO7. Design and develop computer programs/computer-based systems in the areas related to algorithms, networking, web design, cloud computing, IoT and data analytics of varying complexity.

PSO8. Engage in professional development in the fields of Information Technology and Computer Science.

PSO9. Know about computing principles and business practices employed as software solutions in industries.

Course Outcomes (COs)

Course – 1 DIFFERENTIAL EQUATIONS

- Solve linear differential equations
- Convert non exact homogeneous equations to exact differential equations by using integrating factors
- Know the methods of finding solutions of differential equations of the first order but not of the first Degree.
- Solve higher-order linear differential equations, both homogeneous and non homogeneous, with constant coefficients.
- Understand the concept and apply appropriate methods for solving differential equations

Course – 2 THREE DIMENSIONAL ANALYTICAL SOLID GEOMETRY

1. get the knowledge of planes.
2. basic idea of lines, sphere and cones.
3. understand the properties of planes, lines, spheres and cones.
4. express the problems geometrically and then to get the solution.

Course – 3 ABSTRACT ALGEBRA

- acquire the basic knowledge and structure of groups, subgroups and cyclic groups.
- get the significance of the notation of a normal subgroups.
- get the behavior of permutations and operations on them.
- study the homomorphisms and isomorphisms with applications.
- Understand the ring theory concepts with the help of knowledge in group theory and to prove the theorems.
- Understand the applications of ring theory in various fields.

Course – 4 MATHEMATICS REAL ANALYSIS

- get clear idea about the real numbers and real valued functions.
- obtain the skills of analyzing the concepts and applying appropriate methods for testing convergence of a sequence/ series.
- Test the continuity and differentiability and Riemann integration of a function.
- Know the geometrical interpretation of mean value theorems.

Course – 5 LINEAR ALGEBRA

- understand the concepts of vector spaces, subspaces, bases, dimension and their properties.
- understand the concepts of linear transformations and their properties
- apply Cayley- Hamilton theorem to problems for finding the inverse of a matrix and higher powers of matrices without using routine methods
- Learn the properties of inner product spaces and determine orthogonality in inner product spaces

Course – 6 Numerical Methods

1. understand the subject of various numerical methods that are used to obtain approximate solutions
2. Understand various finite difference concepts and interpolation methods.
3. Work out numerical differentiation and integration whenever and wherever routine methods are not applicable.
4. Find numerical solutions of ordinary differential equations by using various numerical methods.
5. Analyze and evaluate the accuracy of numerical methods.

Course – 7 Mathematical Special Functions

1. Understand the Beta and Gamma functions, their properties and relation between these two functions, understand the orthogonal properties of Chebyshev polynomials and recurrence relations.

2. Find power series solutions of ordinary differential equations.

3. 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.

4. 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.

5. 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.