Program Specific Outcomes

Students will learn to think in a critical manner.

- Students will develop the proficiency in acquisition of data using variety of laboratory instruments and in the analysis and interpretation of such data.
- Students should learn how to design and conduct an experiments (or series of experiments) demonstrating their understanding of scientific method and process.
- Students are also expected to have an understanding of the analytical methods required to interpret and analyze results and draw conclusions as supported by their data.
- Students will learn the applications of numerical techniques for modeling physical systems for which analytical methods are inappropriate or of limited utility.
- Describe the methodology of science and relationship between theory and observation.
- Analyze physical problems and develop, correct solutions using natural laws.

DEPARTMENT OF MATHEMATICS

Program specific outcomes

- Students are expected to acquire knowledge in areas of mathematics such as algebra, trigonometry, differential equations, vector analysis and geometry, Real analysis ,Complex analysis, Linear algebra.
- Students are expected to develop critical thinking.
- Formulate and develop mathematical arguments in logical manner.
- Acquire good knowledge of subject and to use it in various problems arising in other disciplines.
- Able to recognize, learn and appreciate the importance of life long learning process.

Course outcomes

Paper -1: Calculus

After completing the course, students are expected to be able to use Leibnitz`s rule to evaluate derivatives of higher order, able to study the geometry of various types of functions, evaluate the area, volume using the techniques of integrations, able to identify the difference between scalar and vector, acquired knowledge on some the basic properties of vector functions.

Paper-2: Algebra- 1

The acquired knowledge will help students in simple mathematical modeling. They can study advance courses in mathematical modeling, computer science, statistics, physics, chemistry etc.

Paper-3: Real Analysis (Analysis-1)

On successful completion of this course, students will be able to handle fundamental properties of the real numbers that lead to the formal development of real analysis and understand limits and their use in sequences, series, differentiation and integration. Students will appreciate how abstract ideas and rigorous methods in mathematical analysis can be applied to important practical problems.

Paper-4: Differential Equations

A student completing the course is able to solve differential equations and is able to model problems in nature using Ordinary Differential Equations. This is also prerequisite for studying the course in Partial Differential Equations and models dealing with Partial Differential Equations.

Paper -5: Theory of Real Functions (Analysis-2)

On the completion of this course, students will have working knowledge on the concepts and theorems of the elementary calculus of functions of one real variable. They will work out problems involving derivatives of function and their applications. They can use derivatives to analyze and sketch the graph of a function of one variable, can also obtain absolute value and relative extrema of functions. This knowledge is basic and students can take all other analysis courses after learning this course.

Paper- 6: Group Theory -1

A student learning this course gets idea on concept and examples of groups and their properties. He understands cyclic groups, permutations groups, normal subgroups and related results. After this course he can opt for courses in ring theory, field theory, commutative algebras, linear classical groups etc. and can be apply this knowledge to problems in physics, computer science, economics and engineering.

Paper -7 : Partial Differential Equations And System Of Odes

After completing this course, a student will be able to take more courses on wave equation, heat equation, diffusion equation , gas dynamics, non linear equations etc. All these courses are important in engineering and industrial applications for solving boundary value problem.

Paper -8: Numerical Methods And Scientific Computing

Students can handle physical problems to find an approximated solution. After getting trained a student can opt for advance courses in Numerical analysis in higher mathematics. Use of good mathematical software will help in getting the accuracy one need from the computer and can assess the reliability of the numerical results, and determine the effect of round off error or loss of significance.

Paper -9 : Riemann Integration And Series Of Functions (Analysis- III)

On successful completion of the course students will learn to work with abstract topological spaces. This is a foundation course for all analysis courses in future.

Paper – 10 : Ring Theory And Linear Algebra – I (Algebra- III)

After completing this course , this will help students to continue more courses in advanced Ring theory modules, Galois groups.

Paper – 11 : (Calculus -II)

After reading this course a student will be able to calculate partial derivatives, directional derivatives, extremum values and can calculate double, triple and line integrals. He will have idea of basic vector calculus including green's theorem, divergence theorem and stokes theorem. He can take courses in calculus on manifolds, Differential geometry and can help in numerical computations involving several variables.

Paper -12 : Programming In C++ (Part-I)

The student will use this knowledge wherever he/she goes after undergraduate program. It has applications in computer science, finance mathematics, industrial mathematics, bio mathematics what not.

Paper -13 : Metric Spaces And Complex Analysis

Students will be able to handle certain integrals not evaluated earlier and will know a technique for counting the zeros of polynomials . This course is prerequisite to many other advance analysis courses.

Paper -14 : Linear Programming

The knowledge of automorphism helps to study more on field theory. Students learn on direct products, group actions, class equations and their applications with proof of all results. This course helps to opt for more advanced courses in algebra and linear classical groups.

Discipline specific Elective Paper -1 : Discrete Specific Mathematics

More knowledge on this topic in higher studies will help students to deal industrial models. This is also prerequisite for studying advanced courses in Nonlinear Programming Problems, Inventory Control Problem and Queuing Theory etc.

D.S.E. Paper -2 : Number Theory

Upon successful completion of this course students will able to know the basic definitions and theorems in number theory, to identify order of an integer, primitive roots , Euler's criterion, the Legendre symbol, Jacobi symbol and their properties ,to understand modular arithmetic number-theoretic functions and apply them to cryptography.

D. S. E. Paper – 3: Differential Geometry

After completing this course a student will learn on serret-Frenet formulae, relation between tangent, normal and binormals, first and second fundamental forms and ideas on various curvatures. He has scope to make more advanced courses in surface theory and geometry.

D. S. E. - 4 :Project

Doing the project report on a topic a student will collect so many materials for the purpose and will write the topic what he/she need. He/she will get an over all idea to prepare the thesis.