

Department of Mathematics

B.Sc. Mathematics

Programme outcomes

PO1: Scientific temper will be developed in Students.

PO2: Students will acquire basic Practical skills & Technical knowledge along with domain knowledge of different subjects in the science stream.

PO3: Students will become employable; they will be eligible for career opportunities in Industry, or will be able to opt for entrepreneurship.

PO4: Students will possess basic subject knowledge required for higher studies, professional and applied courses like Management Studies, Law etc.

PO5: Students will be aware of and able to develop solution oriented approach towards various Social and Environmental issues.

Programme specific outcomes

PSO1: A student should be able to recall basic facts about mathematics and should be able to display knowledge of conventions such as notations, terminology.

PSO2: A student should get adequate exposure to global and local concerns that explore them many aspects of mathematical sciences.

PSO3 : Student is equipped with mathematical modeling ability, problem solving skills, creative talent and power of communication necessary for various kinds of employment.

PSO4: Student should be able to apply their skills and knowledge that is translate information presented verbally into mathematical form, select and use appropriate mathematical formulae or techniques in order to process the information and draw the relevant conclusion.

PSO5: Enabling students to develop a positive attitude towards mathematics as an interesting and valuable subject of study.

Course outcomes

F. Y. BSc. (2019 pattern)

Semester 1

Mathematics Paper 1: Algebra

CO1: Student gets the knowledge about fundamental concepts of Mathematics such as set theory and number theory

CO2: Student will learn applications basic number theory

CO3: Computational skills are enhanced

CO4: Student will learn basic complex analysis.

Mathematics paper 2: Calculus 1

CO1. By studying this course students are able to develop a positive attitude towards mathematics as an interesting and valuable subject of study.

CO2. By studying this course a student can able to learn all the properties of real numbers and all the basic mathematical concepts about the real number set like continuity , differentiability

CO3. By studying the basic concepts and geometrical interpretation of the theorems in calculus students will be able to relate the graphs and theoretical concepts in calculus very efficiently.

CO4. By studying all basic about real numbers, the students can able to apply those concepts in higher mathematics.

CO5. By studying this course the student will be able to supply their skills and knowledge that is translate information presented verbally into mathematical form, select and use appropriate mathematical formulae or techniques in order to process the information and draw the relevant conclusion.

Semester 2

Mathematics paper 1: Analytical geometry

CO1: Student will learn geometry of two dimensions and three dimensions

CO2: Student will be able to reduce general equation of second degree to its standard form

CO3: Student will learn geometry of line, plane and sphere and their equations in various forms in detail.

CO4: Analytical skills will get enhanced

Mathematics paper 2: Calculus II

CO1. By studying this course the students can develop the theoretical as well as applied, computational skills and gains the confidence in proving theorems and solving problems.

CO2. By studying this course, students will be familiar with all the basic concepts of differential equations and how to use all these basic concepts for the

higher study in differential equations.

CO3. By studying the basic concepts and geometrical interpretation of the theorems in differentiability students will be able to relate the graphs and theoretical concepts in calculus very efficiently.

CO4. By studying the different techniques of solving the differential equations, students can form differential equations and solve them efficiently and also they will become familiar with applications of those differential equations.

CO5. This course will be useful to create confidence in students for equipping themselves with that part of Mathematics which is needed for various branches of Science or Humanities in which they have aptitude for higher studies and original work.

S. Y. BSc. (2013 pattern)

Course: MT211 Multivariable Calculus I

CO1: To study functions and several variables.

CO2: To study the notion of Continuity and Differentiability of multivariate functions. CO3: To find extreme values of multivariable functions using derivatives. CO4: To learn evaluation of double and triple integration and its application to area and volume.

Course: MT212(B) Laplace Transform and Fourier series

CO1: To learn the evaluation of Laplace transform of different types of functions, their derivatives and integrations.

CO2: To learn the evaluation of Inverse Laplace transform of functions, their derivatives and integrations, and to learn application of Convolution theorem.

CO3: To learn to apply Laplace Transform to solve Ordinary Differential equations with constant coefficients.

CO4: To learn to evaluate the Fourier series of various even and odd functions.

Course: MT221 Linear Algebra

CO1: To learn the importance of linear transformation in Physics, Engineering, Social sciences and various branches of Mathematics.

CO2: To learn to find Eigen values and Eigen vectors of a matrix which is used in the study of vibrations, chemical reactions and geometry.

CO3: To learn Inner Product spaces and Gram-Schmidt process of orthogonalization. CO4: To get well equipped with Mathematical Modelling abilities.

Course: MT222(B) Numerical Analysis

CO1: To learn to apply the various numerical techniques for solving real life problems.

CO2: The problems which cannot be solved by usual formulae and methods can be solved approximately by using numerical techniques.

CO3: To fit curve to the data by using 5 different methods of interpolation as well as extrapolation.

CO4: To find approximate solutions to difficult differential equations occurring in engineering sciences.

Course: MT223 Mathematics Practical

CO1: Problem solving skills of students are enhanced.

CO2: Theoretical concepts are strengthened by solving maximum no. of problems CO3:

Due to one to one interaction with the teacher doubts of the students get cleared if any.

CO4: Students learn how to apply mathematical concepts to practical and real life problems. CO5: Interdisciplinary approach is developed.

T. Y. BSc. (2013 pattern)

Course: MT331 Metric Spaces

CO1: To equip students with basic mathematical tools such as open & close sets, continuity, connectedness, compactness which can be used to study general topology and real & complex analysis.

CO2: To enhance abstract thinking and visualization of students.

CO3: To generalize the notion of distance, convergent sequence and continuity of functions.

CO4: To increase problem solving ability by solving examples and counter-examples of various concepts involved.

Course: MT332 Real Analysis I

CO1: To learn basic techniques and examples in analysis to be well prepared for courses like Topology, Measure theory and Functional analysis.

CO2: To study various types of sets and relations, and concept of countable and uncountable..

CO3: To study concept of sequence and series and hence find sum of infinite terms with different methods.

CO4 To study notion of lub and glb which helps to learn integrations which helps to find area under any functions.:

Course : MT334 Group Theory

CO1: To learn fundamental properties and mathematical tools such as closure, identity, inverse and generators.

CO2: To study algebraic structure 'Groups' in detail which is useful in study of Rings, Modules, Algebraic topology, Analysis

CO3: To enhance abstract thinking of students.

CO4: To learn to compare two different algebraic structures and study transfer of properties in between these structures through homomorphism and isomorphism

Course : MT335 Ordinary Differential Equations

CO1: To learn methods to solve linear differential equation with constant coefficients. CO2: To learn methods for solving non-homogenous differential equation. CO3: To learn power series solution method using ordinary and singular points. CO4: To solve system of first order differential equations.

Course : MT337F Number Theory

CO1: In this course, students learn the properties of the set of integers in detail.

CO2: Students can find integer solutions to the system of equations which arises in real life problems.

CO3: Students study various theorems on primes and also learn congruence which are used in cryptography.

Course : MT337A Operations Research

CO1: Students learn conversion of real life problems into mathematical models which enhance their problem solving and decision making abilities.

CO2: Students learn to calculate optimal solution of models through graphical and iterative methods.

CO3: Students study transportation and assignment models and methods to solve them.

CO4: This helps them to get optimum solutions within the given constraints to problems arising in industry.

Course : MT341 Complex Analysis

CO1: To learn basic algebraic properties of complex numbers and limit and continuity of Complex functions.

CO2: To learn analytic functions and the C-R equations as its necessary and sufficient conditions.

CO3: To learn tools which are useful in finding integration of Complex valued functions. CO4: To learn sequences and series of Complex valued functions.

CO5: To learn applications of residues and poles in integrals of complex functions.

Course : MT342 Real Analysis II

CO1: To learn Riemann Integral and its properties in detail, leading to fundamental theorem of calculus and Mean value theorems.

CO2: To study different tests for solving improper integrals of first and second kind.

CO3: To study pointwise and uniform convergence of sequences and series of functions.

Course : MT344 Ring Theory

CO1: To study the algebraic structure Ring in detail through various examples. CO2: To learn the construction of field of quotients of an integral domain. CO3: To study the Rings of polynomials and its factorization over a field. CO4: To study the notion of ideals and factor rings with examples.

CO5: To study Unique Factorization domain, Euclidean Domain and related results

Course : MT345 Partial Differential Equations

CO1: To understand the concept of Ordinary differential Equations in more than two variables.

CO2: To learn the application of Ordinary differential Equations through method to find Orthogonal Trajectories.

CO3: Introduction of first order Partial Differential Equations.

CO4: Learn methods to solve first order Partial Differential Equations

Course : MT347D Graph theory

CO1: To introduce the concept of Graphs, which is an important tool for Mathematical Modelling

CO2: To study different types of graphs and operations on graphs

CO3: To study the concept of trees in detail and algorithms to find special spanning trees CO4: To study Directed Graphs and its applications

Course : MT347F Computational Geometry

CO1: Students learn the representation of objects in 2D and 3D in the form of matrices

CO2: To study the transformations like reflection, rotation, scaling, shearing, translation of objects in 2D and 3D and their geometrical significance.

CO3: Students learn to generate plane curves by using parametric equation CO4: All the concepts help students to learn graphic display of objects on computer.
