B.Sc. MATHEMATICS

PROGRAMME SPECIFIC OUTCOME

PSO1. Attain a secure foundation in Mathematics and other relevant subjects to complement the core for their future courses.

PSO2. Understand a wide range of topics in almost all areas of Mathematics including Analysis, Graph Theory, Calculus, Geometry , Operations Research and Algebra

PSO3. Develop logical, analytical and problem-solving skills through activity based learning.

PSO4. Familiarize with additional relevant mathematical techniques using mathematical and statistical software.

COURSE OUTCOME

SJMTS1B01 : Basic Logic & Number Theory

SJMTS1B01.1   Understand Boolean expression, logical equivalences and proof methods

SJMTS1B01.2   Prove results involving divisibility, g.c.d, lcm and a few applications

SJMTS1B01.3   Understand the theory and method of solutions of LDE and the theory of congruence and a few applications

SJMTS1B01.4   Solve linear congruent equations and three classical theorems- Wilson's theorem, Fermat's Little theorem, Euler's Theorem and consequences

SJMTS2B02: Calculus of single variable 1

SJMTS2B02.1   Compute critical points of a function on an interval and identify the extrema of a function on an interval

SJMTS2B02.2   Understand the consequences of Rolle's theorem and mean value theorem

SJMTS2B02.3   Evaluate definite integral

SJMTS2B02.4   Apply basic optimization techniques

SJMTS2B02.5   Apply integration techniques to find area and volume

SJMTS3B03 : Calculus of single variable 2

SJMTS3B03.1   Understand transcendental functions

SJMTS3B03.2   Understand infinite sequences and series and their convergence

SJMTS3B03.3   Understand power series and calculus of parametric equations with few applications

SJMTS3B03.4   Learn about lines and planes in space and their properties

SJMTS4B04 : Linear Algebra

SJMTS4B04.1   Solve systems of linear equations and metrix operations

SJMTS4B04.2   Understand general vector spaces and its properties, applications

SJMTS4B04.3   Understand geometry of metrics operators , eigen values ,eigen vectors and diagonalization

SJMTS4B04.4   Understand inner product spaces, its properties and orthogonal diagonalization

SJMTS5B05 : Theory of Equations and Algebra

SJMTS5B05.1   Understand theory of equations

SJMTS5B05.2   Understand basic concepts of abstract algebra such as permutation, group, subgroup

SJMTS5B05.3   Understand group isomorphism, cyclic group and homomorphism

SJMTS5B05.4   Understand cosets, structure of groups and commutative rings

SJMTS5B06 : Basic Analysis

SJMTS5B06.1   To learn and deduce many properties of real number system by assuming a few fundamental facts about it as axioms. In particular, they will learn to prove Archimedean property, density theorem, existence of a positive square root for positive numbers and so on.

SJMTS5B06.2   To know about sequences, their limits, several basic and important theorems involving sequences and their applications

SJMTS5B06.3   To understand some basic topological properties of real number system.

SJMTS5B06.4   To get a rigorous introduction to algebraic, geometric and topological structures of complex number system, functions of complex variable, their limit and continuity

SJMTS5B07 : Numerical Analysis

SJMTS5B07.1   Understand several methods such as bisection method, fixed point iteration method, regula falsi method etc to find out the approximate numerical solutions of algebraic and transcendental equations with desired accuracy.

SJMTS5B07.2   Understand the concept of interpolation and also learn some interpolation techniques.

SJMTS5B07.3   Understand a few techniques for numerical differentiation and integration and also realize their merits and demerits.

SJMTS5B07.4   Find out numerical approximations to solutions of initial value problems and also understand the efficiency of various methods.

SJMTS5B08 : Linear Programming

SJMTS5B08.1   Understand method of solving LPP geometrically and its drawbacks

SJMTS5B08.2   Solve LPP using simplex algorithm

SJMTS5B08.3   Understand duality theory

SJMTS5B08.4   Understand game theory

SJMTS5B08.5   Solve transportation and assignment problem

SJMTS5B09 : Introduction to Geometry

SJMTS5B09.1   Understand basic facts about parabola, hyperbola and ellipse

SJMTS5B09.2   Understand fundamental theorem of affine geometry

SJMTS5B09.3   Understand the concept of projective geometry, cross ratio

SJMTS6B10 : Real Analysis

SJMTS6B10.1   Understand fundamental results of continuous functions on intervals

SJMTS6B10.2   Develop the notion of Riemann integrability

SJMTS6B10.3   Understand the difference between pointwise and uniform convergence of sequences and series of functions

SJMTS6B10.4   Understand the notion of improper integrals, their convergence and principal value

SJMTS5B11 : Complex Analysis

SJMTS6B11.1	Understand analyticity of a complex function, harmonic function, CR equations, exponential, logarithmic, trigonometric and hyperbolic
SJMTS6B11.2	Understand integration in complex plane
SJMTS6B11.3	Understand sequences and series of complex functions
SJMTS6B11.4	Find zeros, poles and residues

SJMTS5B12 : Multivariable Calculus

SJMTS6B12.1	Understand multivariable functions through the notion limit, continuity and differentiation.
SJMTS6B12.2	Real life applications of Langrange multiplier method in optimization problems
SJMTS6B12.3	Understand Green's theorem, Gauss's theorem and Stoke's theorem

SJMTS5B13 : Differential equation

SJMTS6B13.1	Understand the classification of differential equations, find the solutions, difference between linear and non linear differential equations
SJMTS6B13.2	Understand second order homogeneous and non homogeneous differential equations
SJMTS6B13.3	Understand the use of Laplace transform and Fourier convergence theorem

SJMTS5B14(E01) : Graph Theory

SJMTS6B14(E01).1	Understand theoretical concepts of graph theory
SJMTS6B14(E01).2	Develop analytical skill
SJMTS6B14(E01).3	Deal Real life applications
SJMTS6B14(E01).4	Develop foundation for graph theoretic notions

SJMTS5B14(E01) : Project

SJMTS6P15.1	Understand high level mathematics ideas
SJMTS6P15.2	Analyze the concept with application
SJMTS6P15.3	Develop research aptitude