Program : B.Sc. Mathematics
PO (Program Outcome)

The Mathematics program promotes mathematical skills and knowledge for their intrinsic beauty, effectiveness in developing proficiency in analytical reasoning, and utility in modeling and solving real world problems. To responsibly live within and participate in the transformation of a rapidly changing, complex, and interdependent society, students must develop and unceasingly exercise their analytical abilities. Students who have learned to logically question assertions, recognize patterns, and distinguish the essential and irrelevant aspects of problems can think deeply and precisely, nurture the products of their imagination to fruition in reality, and share their ideas and insights while seeking and benefiting from the knowledge and insights of others.

The main outcomes are as follows:

- Demonstrate basic manipulative skills in algebra, geometry, trigonometry, and beginning calculus

- Apply the underlying unifying structures of mathematics (i.e. sets, relations and functions, logical structure) and the relationships among them

- Demonstrate proficiency in writing proofs

- Communicate mathematical ideas both orally and in writing

- Investigate and apply mathematical problems and solutions in a variety of contexts related to science, technology, business and industry, and illustrate these solutions using symbolic, numeric, or graphical methods

- Investigate and solve unfamiliar math problems

Program : B.Sc. Mathematics
PSO (Program Specific Outcome)

• Students learn to think in a critical manner.

• Know when there is a need for information, to be able to identify, locate, evaluate, and effectively use that information for the issue or problem at hand.

• Formulate and develop mathematical arguments in a logical manner.

• Acquire good knowledge and understanding in advanced areas of mathematics and statistics, chosen by the student from the given courses.

• Understand, formulate and use quantitative models arising in social science, business and other contexts.

Program : B.Sc. Mathematics
CO (Course Outcome)

CC MAT-111

After successfully completion of the course, the student will be able to …

- Find the nth derivative of a function as well as the nth derivative of the product of two functions.
- Practice the applications of definite integrals for (a) summation of the series (b) find the surface area and volume.
- Know about gradient, divergent and curl.
- Relation between Polar, Spherical and cylinder coordinates and Geometrical importance of sphere, cone, cylinder and conicoids.

CC MAT-122

After successfully completion of the course, the student will be able to …

- Find the roots of a complex number, expansions of $\sin n\Theta$, $\cos n\Theta$ in terms of sine and cosine multiples of Θ.
- Applications of matrices.
- Practice the applications of differential equations in real life situations.

CC MAT-301

After successfully completion of the course, the student will be able to

- Understand the concept of limit and continuity and apply it to various types of problems.
- Understand the derivative of a variable and of implicit functions.
- Know about vector space, dimension and basis.
- Understand the concept of linear transformations.

CC MAT-302

After successfully completion of the course, the student will be able to

- Understand the concept of interpolation and extrapolation
- Understand the concept of numerical differential and apply to various problems
- Understand the concept of numerical differentiation and its applications

CC MAT-401

Learning Outcome:

After successfully completion of the course, the student will be able to …

- Understand the concept of curvature of curves and points of inflexion.
- Understand the several forms of beta and gamma functions.
- Know about multiple integrals.
- Understand the concept of linear transformations

CC MAT-402

Learning Outcome:

After successfully completion of the course, the student will be able to …

- Understand the concept of linear transformation applied to various problems.
- Understand the several forms of linear functional and duality.
- Know about inner product space.
- Understand the concept of eigen values and eigen vectors.

CC MAT-501

LEARNING OUTCOMES:

After successfully completion of the course, the student will be able to …

- Understand the concept of various algebraic structures.
- Develop an understanding of cycle groups and quotient groups
- Understand the concept of homomorphism and isomorphism of groups

CC MAT-502

LEARNING OUTCOMES:

After successfully completion of the course, the student will be able to …

- Understand the concept of number system.
- Develop an understanding of basic topology
- Gain knowledge about sequence and series

CC MAT-503

LEARNING OUTCOMES:

After successfully completion of the course, the student will be able to …
- Understand the concept of different types of differential equations.
- Develop an understanding of the various differential equations.

CC MAT-504

After successfully completion of the course, the student will be able to …
- Understand the concept of Relation, order sets, lattice as an algebraic structure, Hasse diagram.
- Develop an understanding of isomorphism and homomorphism.

ESMAT- 31

After successfully completion of the course, the student will be able to …
- Understand the concept of differential calculus and integral calculus.

PC MAT-501 to 504

Objectives:

After successfully completion of the course, the student will be able to …
- Understand the MATLAB Desktop, Command window and the Graph Window
- Be able to do simple and complex calculation using MATLAB
- Understand the graphics capabilities of MATLAB
- Be able to carry out mathematical computations using MATLAB Symbolic Toolbox

CC MAT-601

LEARNING OUTCOMES:

After successfully completion of the course, the student will be able to …

- Understand the concept of algebraic structures eg. rings.

- Develop an understanding of polynomials.

- Gain knowledge about the quotient rings and homomorphism

CC MAT-602

LEARNING OUTCOMES:

After successfully completion of the course, the student will be able to …

- Understand the concept of continuity, differentiability, and intgration .

- Develop an understanding of the convergence of various series and sequence of functions.

CC MAT-603(B)

After successfully completion of the course, the student will be able to …

- Understand the concept of divison algorithm, chainess remainder theorem and its applications.

- Develop an understanding of the congruence relations, Farmat's theorem, Lagrange's theorem and its applications.

CCMAT-604(A)

LEARNING OUTCOMES:

After successfully completion of the course, the student will be able to …

- Understand the concept of graph, path

- Develop an understanding of adjacency matrix of a graph

- Know about the applications of graph w.r.t colouring of graphs

ES MAT-32

LEARNING OUTCOMES:

- Develop an understanding of the logical statements

- Understand the concept of permutation and combinations

PC MAT-601 TO 604

Objectives:

After successfully completion of the course, the student will be able to …

- Ensure the student can competently use the MATLAB programming environment

- Understand the capabilities of MATLAB for solving complex mathematical problems
- Understand the tools that are essential in solving real-world problems applying appropriate Mathematical concept.