

B.sc. Degree programme
B.sc. Mathematics

Programme Outcomes

- 1. PO1 Disciplinary knowledge :**
capability of demonstrating comprehensive knowledge of mathematics and understanding of one or more disciplines which form a part of an undergraduate programme of study.
- 2. PO2 Communications skills :**
 - a. Ability to communicate various concepts of mathematics effectively using examples and their geometrical visualizations.
 - b. Ability to use mathematics as a precise language of communication in other branches of human knowledge.
 - c. Ability to show the importance of mathematics as precursor to various scientific developments since the beginning of the civilization.
- 3. PO3 Critical thinking :**
Ability to employ critical thinking in understanding the concepts in every area of mathematics.
- 4. PO4 Analytical reasoning :**
Ability to analyse the results and apply them in various problems appearing in different branches of mathematics.
- 5. PO5 Problem solving :**
 - a. Capability to solve problems using concepts of linear algebra.
 - b. Capability to solve various models such as growth and decay models, radioactive decay model, lcr circuits and population models using techniques of differential equations.
 - c. Ability to solve linear system of equations, linear programming problems and net- work flow problems.
 - d. Ability to provide new solutions using the domain knowledge of mathematics acquired during this programme.
- 6. PO6 Research-related skills :**
 - a. Capability for inquiring about appropriate questions relating to the concepts in various fields of mathematics.
 - b. To know about the advances in various branches of mathematics.
- 7. PO7 Information/digital literacy:**
capability to use appropriate software to solve system of equations and differential equations.
- 8. PO8 Self-directed learning :**
Ability to work independently and do in-depth study of various notions of mathematics.
- 9. PO9 Lifelong learning :**
Ability to think, acquire knowledge and skills through logical reasoning and to inculcate the habit of self-learning.
- 10. PO10 Application skills :**
Ability to apply the acquired knowledge in all aspects.
- 11. PO11 Experimental skills :**

12. PO12 Moral and ethical awareness/reasoning :

Ability to identify unethical behaviour such as fabrication, falsification or misrepresentation of data and adopting objective, unbiased and truthful actions in all aspects

Course outcomes

SEMESTER 1

MTS1B01 : BASIC LOGIC AND NUMBER THEORY

- Prove results involving divisibility, greatest common divisor, least common multiple and a few applications.
- Understand the theory and method of solutions of lde.
- Solve linear congruent equations.
- Learn three classical theorems viz. Wilson's theorem, fermat's little theorem and euler's theorem and a few important consequences.

SEMESTER II

MTS2B02 : CALCULUS OF SINGLE VARIABLE – 1

- To apply in the problem of sketching of curves and in the solution of some optimization problems of interest in real life.

SEMESTER – III

MTS3B03 : CALCULUS OF SINGLE VARIABLE–2

- To handle vectors in dealing with the problems involving geometry of lines, curves, planes and surfaces in space and have acquired the ability to sketch curves in plane and space given in vector valued form.

SEMESTER – IV

MTS4B04 : LINEAR ALGEBRA

- To learn the fundamentals of linear algebra by capturing the ideas geometrically, by justifying them algebraically and by preparing them to apply it in several different fields such as data communication, computer graphics, modelling etc.

SEMESTER – V

MTS5B05 : ABSTRACT ALGEBRA

- To understand the abstract notion of a group, learn several examples.
- To check whether an algebraic system forms a group or not and are introduced to some fundamental results of group theory.

SEMESTER – V

MTS5B06 : BASIC ANALYSIS

- To learn and deduce rigorously 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 and the learning will help them to appreciate the beauty of logical arguments and embolden them to apply it in similar and unknown problems.
- To know about sequences, their limits, several basic and important theorems involving sequences and their applications. For example, they will learn how monotone convergence theorem can be used in establishing the divergence of the harmonic series, how it helps in the calculation of square root of positive numbers and how it establishes the existence of the transcendental number e (euler constant).
- To understand some basic topological properties of real number system such as the concept of open and closed sets, their properties, their characterization and so on.
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