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

The mission of the mathematics Post Graduation program is to equip students with analytic and problem solving skills for careers and graduate work. Classes develop student abilities and aptitudes to apply mathematical methods and ideas not only to problems in mathematics and related fields such as the sciences, computer science, actuarial science, or statistics, but also to virtually any area of inquiry. Students learn to communicate ideas effectively and to digest new information and concepts independently. Students are encouraged to develop intellectually and to become involved with professional organizations.

- Program Outcomes describe what students are expected to know or be able to do by the time of graduation. The Program Outcomes of PG in Mathematics are:
- At the end of the program, the students will be able to:
- Apply knowledge of Mathematics, in all the fields of learning including higher research and its extensions.
- Innovate, invent and solve complex mathematical problems using the knowledge of pure and applied mathematics.
- To solve one dimensional Wave and Heat equations employing the methods in Partial Differential equations.
- Utilize Number Theory in the field of Cryptography that helps in hiding information and maintaining secrecy in Military information transmission, computer password and electronic commerce.
- Facilitate in the study of crystallographic groups in chemistry and Lie symmetry groups in physics.
- Demonstrate risk assessment in Financial markets, Disease spread in Biology and Punnett squares in Ecology.
- Identify Simulation of ground freezing and water evaporation, Heat transfer analysis due to solar radiation, Calculation of temperatures and heat flow under steady-state or transient boundary conditions.
- Explain the knowledge of contemporary issues in the field of Mathematics and applied sciences.
- Work effectively as an individual, and also as a member or leader in multi-linguistic and multi-disciplinary teams.
- Adjust themselves completely to the demands of the growing field of Mathematics by lifelong learning.
- Effectively communicate about their field of expertise on their activities, with their peer and society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations
- Crack lectureship and fellowship exams approved by UGC like CSIR – NET and SET.

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

On successful completion of this program, the student will be able to:
1. Demonstrate the ability to conduct research independently and pursue higher studies towards the Ph.D. degree in mathematics and computing.
2. Carry out development work as well as take up challenges in the emerging areas of Industry.
3. Demonstrate competence in using mathematical and computational skills to model, formulate and solve real life applications.
4. Acquire deep knowledge of different mathematical and computational disciplines so that they can qualify NET/ GATE examination.

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

SEM-I Maths
MTHP-1 Measure Theory

On successful completion of the course, students will be able to
Identify and formulate the basic□ concepts and theorems of sigma algebras, measure and abstract measure spaces

Synthesize techniques that have been developed in the course to solve particular problems and explain the basic concepts and main theorems of Lebesgue and different types of convergence theorems.

MTHP-2 ALGEBRA-I

On successful completion of the course, students should be able to
Differentiate between homomorphism, isomorphism and Automorphism.

Recognize and apply Sylow's theorem to characterize certain finite groups.

Determine whether a given set is solvable group or not.

MTHE A-2 TECHNIQUES OF DIFFERENTIAL EQUATIONS

On successful completion of the course, students will be able to
Distinguish between linear, non-linear, partial and ordinary differential equations.

Recognize and solve variable separable, homogeneous, exact, linear differential equation.

Find particular solution of initial value problem.

Solve basic application problem described by first order differential equation.

MCB-1 SPECIAL FUNCTIONS

On successful completion of the course, students will be able to
Apply and understand the application of Bessel's and Legendre's functions in coordinate system.
Solve differential equations using power series method.

SSB-1 INTRODUCTION TO MATLAB

SSB-2 PROGRAMMING IN MATLAB (PRACTICALS)

On successful completion of the course, students should be able to
Solve the mathematical problems efficiently using MATLAB.

Logical ability will be developed.

M.Sc. SEM-II Maths

MTHP-3 COMPLEX ANALYSIS

To provide knowledge of the theory of measurable sets, integration and differentiation of measurable functions.

MTHP-5 ADVANCED TOPOLY

Upon completion of this course, the student will be able to:

1) Understand to construct topological spaces from metric spaces and using general properties of neighborhoods, open sets, close sets, basis and sub-basis.

2) Apply the properties of open sets, close sets, interior points, accumulation points and derived sets in deriving the proofs of various theorems.

3) To understand the concepts of countable spaces and separable spaces.

4) Understand the concepts and properties of the compact and connected topological spaces.

MTHE A-3 NUMBER THEORY

Upon completion of this course, the student will be able to:

1) understand the properties of divisibility and prime numbers, compute the greatest common divisor and least common multiples and handle linear Diophantine equations.

2) understand the operations with congruences, linear and non-linear congruence equations

3) understand and use the theorems: Chinese Remainder Theorem, Lagrange theorem, Fermat's theorem, Wilson's theorem.

4) Use arithmetic functions in areas of mathematics.

5) Understand continue fractions and will be able to approximate reals by rationals,

6) understand the basics of RSA security and be able to break the simplest instances.

MCB-2 ADVANCED LINEAR ALGEBRA

On successful completion of the course, students will be able to
Analyze and evaluate the accuracy of common numerical methods.

Demonstrate understanding of common numerical methods and how they are used to obtain approximate solutions to otherwise intractable mathematical problems.

SSB-1 INTRODUCTION TO COMPUTER 'C' LANGUAGE

SSB-2 PROGRAMMING IN 'C' LANGUAGE AND APPLICATION (PRACTICAL)

On successful completion of the course, students should be able to
Solve the problems efficiently using C programming.

Logical ability will be developed.

MTHP-6 FUNCTIONAL ANALYSIS-I

To learn to recognize the fundamental properties of normed spaces and of the transformations between them. To be acquainted with the statement of the Hahn-Banach theorem and its corollaries. To understand the notions of dot product and Hilbert space. To Understand the statements and proofs of important theorems and be able to explain the key steps in proofs, sometimes with variation.

MTHE C-1 MATHEMATICAL MODELLING

Emphasis is placed on the formulation of problems, on the analytical and numerical techniques for a solution and the computation of useful results.

MTHE C-6 STATISTICAL METHODS

After completing this course the student will learn to perform the following:
How to calculate and apply measures of location and measures of dispersion to grouped and ungrouped data cases.

How to apply discrete and continuous probability distributions to various business problems.

Perform Test of Hypothesis as well as calculate confidence interval for a population parameter for single sample and two sample cases.

Learn non-parametric test such as the Chi-Square test for Independence as well as Goodness of Fit.

Compute and interpret the results of Bivariate and Multivariate Regression and Correlation Analysis, for forecasting and also perform ANOVA and F-test.

MCB-3 RESEARCH METHODOLOGY

After finishing the course, one can able….

• To understand of the basic framework of research process.

• To understand of various research designs and techniques.

• To identify various sources of information for literature review and data collection.

• To develop an understanding of the ethical dimensions of conducting applied research.

• Appreciate the components of scholarly writing and evaluate its quality.