PG & RESEARCH DEPARTMENT OF MATHEMATICS

COURSE OUTCOME:

- Develop and maintain problem-solving skills
- Use mathematical ideas to model real-world problems
- Be able to communicate MATHEMATICAL ideas with others
- Have experience using technology to address mathematical ideas
- Students will demonstrate the ability to solve financial maths problems
- Students will demonstrate understanding of the mathematical basis of common algorithms, and the ability to calculate accurately and efficiently.
- Students will demonstrate the ability to solve exponential growth and decay problems
- Students will demonstrate the ability to solve problems, including applications outside of mathematics, by means of intuition, creativity, guessing and the experience gained through…
- Ability to solve basic problems in probability and statistics
- Able to recognize and learn the importance of life-long learning.

PROGRAM OUTCOMES:

- Inculcate critical thinking to carry out scientific investigation objectively
- without being biased with preconceived notions.
- Equip the student with skills to analyze problems, formulate an hypothesis, evaluate and validate results, and draw reasonable conclusions thereof.
- Prepare students for pursuing research or careers in industry in mathematical sciences and allied fields
- Able to apply the knowledge of mathematical science to solve real life problems.
- Able to design the methodology suitable to the problem encountered.
- Able to analyse and interpret outputs and generate new ideas based on the outputs.
- Able to utilize, gather and generate information.
- Able to lead, work in team and give priority to the success of team.
- Able to recognize and learn the importance of life-long learning.

PROGRAM SPECIFIC OUTCOME:

- Communicate effectively by oral, written, computing and graphical means.

- ➤ Recognize the need to engage in lifelong learning through continuing education and research
- ➤ Apply the knowledge of mathematical concepts in interdisciplinary fields.Provide advanced knowledge on topics in pure mathematics, empowering the
- ➤ students to pursue higher degrees at reputed academic institutions
- ➤ Create a hypothesis and appreciate how it relates to broader theories.
- ➤ Evaluate hypotheses, theories, methods and evidence within their proper contexts.
- ➤ Understand the nature of abstract mathematics and explore the concepts in further details.
- ➤ Continue to acquire relevant knowledge and skills appropriate to professional activities and demonstrate highest standards of ethical issues in mathematical sciences.
- ➤ Create awareness to become an enlightened citizen with commitment to deliver one's responsibilities within the scope of bestowed rights and privileges.
- ➤ Critically interpret data, write reports and apply the basics of rules of evidence.
- ➤ Select, interpret and critically evaluate information from a range of sources that include books, scientific reports, journals, case studies and the internet.

COURSE OUTCOME :

S NO	SEMESTER	COURSE NAME	LEARNING OUTCOME
1	I	ALGEBRA	• To develop a strong foundation in algebra that provide a basic for advanced studies not only in mathematics. • But also in other branches like engineering, physics and computers, etc. Particular attention is given to canonical forms of linear transformations, diagonalizations of linear transformations, matrices and determinants.
2	I	REAL ANALYSIS	• To develop a deeper and more rigorous understanding of calculus including defining terms and proving theorems about functions, sequences, series, limits, continuity and derivatives.

			• The course will develop specialized techniques in problem solving.
3	I	MECHANICS	• The objective of this course is to understand the Lagrangian and Hamiltonian equations for dynamical systems.
4	I	ODRINARY DIFFERENTIAL EQUATION	• This course is to equip the students with knowledge of some advanced concepts related to ordinary differential equations • To understand the concepts related to the solution of ordinary differential equations.
5	I	NUMERICAL ANALYSIS	• To make the students familiarize with the ways of solving complicated mathematical problems numerically. • To provide numerical methods for solving the non-linear equations, interpolation, differentiation, integration, ordinary and partial differential equations. • Describing and understanding error analysis in numerical methods.
6	II	ADVANCED ALGEBRA	• To introduce the basic ideas of counting principle, Sylow subgroups, finite abelian groups, field theory. • Galois Theory and to see its application to the solvability of polynomial equations by radicals.
7	II	ADVANCED REAL ANALYSIS	• To develop a deeper and more rigorous understanding of calculus including defining terms and proving theorems. • About sequence and series of functions, integration, special functions and multivariable calculus. • The course will develop specialized techniques in problem solving.
8	II	PARTIAL DIFFERENTIAL EQUATION	• The objective of this course is to enable the students to understand the concepts related to the solution of partial differential equations arising in various fields.
9	II	HUMAN RIGHTS	• understand the historical growth of the idea of human rights

			• demonstrate an awareness of the international context of human rights
10	II	EDC	• Learn how to start an enterprise and design business plans those are suitable for funding by considering all dimensions of business. • Understand entrepreneurial process by way of studying different case studies and find exceptions to the process model of entrepreneurship • Run a small enterprise with small capital for a short period and experience the science and art of doing business .
11	II	DISCRETE MATHS	• To understand the basic ideas of logic, proof methods and strategy, the growth of functions, counting techniques, pigeonhole principle, recurrence relations. • Solving recurrences using generating functions, Boolean functions, apply Boolean algebra to circuits and gatting networks, use finite state-machines to model computer operations.
12	III	COMPLEX ANALYSIS	• To learn the various intrinsic concepts and the theory of Complex Analysis. • To study the concept of Analyticity, Complex Integration and Infinite Products in depth.
13	III	TOPOLOGY	• To study the concepts concerned with properties that are preserved under continuous deformations of objects. • To train the students to develop analytical thinking and the study of continuity and connectivity.
14	III	MEASURE THEORY	• To generalize the concept of integration using measures. • To develop the concept of analysis in abstract situations

15	III	CALCULUS OF VARIATION AND INTEGRAL EQUATION	• To introduce the concept of calculus of variations and integral equations and their applications. • To study solution of Fredholm & Volterra integral equations through different methods.
16	III	PROGRAMMING WITH C++	• The objective of this course is to introduce the basic knowledge of one of the programming language of C++.
17	IV	FUNCTIONAL ANALYSIS	• To study the three structure theorems of Functional Analysis viz., Hahn- Banach theorem, Open mapping theorem and Uniform boundedness principle. • To introduce Hilbert spaces and operator theory leading to the spectral theory of operators on a Hilbert space.
18	IV	PROBABLITY THEORY	• To understand the concepts and results related to probability, random events. • To understand various distributions and applications. • To know the standard results related to probability &distribution.
19	IV	GRAPH THEORY	• To give a rigorous study of the basic concepts of Graph Theory. • To study the applications of Graph Theory in other disciplines.
20	IV	LAB- C++ PROGRAMMING	• Area computation using derived class.
21	IV	PROJECT	• Prepare students for pursuing research or careers in industry in mathematical sciences and allied fields • Imbibe effective scientific and/or technical communication in both oral and writing