Program Outcomes (Pos)
&
Course Outcomes (COs)

Program Specific Outcomes (POs:

PSO 1 : To create a learning environment to transform the students with strong fundamentals in mathematics, analytics, computer programming and problem solving.

PSO 2 : To provide exposure to students to latest tools & methods in area of mathematics.

PSO 3 : There are brilliant job outlooks for Mathematics graduates in the recent scenario.

PSO 4 : Mathematics graduates are competent in academic, Research(TIFR, IISC), Industry, Government (DRDO), Private and Business organizations with the acquired programming skills.

PSO 5 : The software and IT companies are the major employers of Mathematics graduates as well.

1. **Course Outcomes (Cos):**
2.

Sl. No.	Semester	Course Name	Course Detail	Course Outcomes
1	SEM-1	CC-1	Calculus, Geometry & Vector Analysis	• To aquire knowledge on limits, differentiation, and integration, and also to develop the skill to solve problems in various fields, including physics, engineering, and economics. • To understand and apply fundamental geometric concepts, solve problems involving shapes,

				angles, and measurements, and demonstrate an understanding of geometric proofs and theorems. • To develop the ablity of applying the vector calculus techniques to solve problems in physics, engineering, and other fields.
2		**CC-2**	Algebra	• Discuss about the various types of mappings and handling mechanisms of classical and linear algebra
3	**SEM-2**	**CC-3**	Real Analysis	• To develop concept of structure of Real numbers system. • Explain the concepts of different properties of real valued functions.
4		**CC-4**	Group Theory-I	• Explain the concept of Abstract algebra. • Acquiring knowledge on groups theory

Sl. No.	Semester	Course Name	Course Detail	Course Outcomes
5	**SEM-3**	**CC-5**	Theory of Real Functions	• To understand and apply concepts like limits, continuity, differentiability, and integration, analyze various types of real functions, and use these tools to solve problems in mathematics and related fields.
6		**CC-6**	Ring Theory & Linear Algebra-I	• Explain the concept of Ring theory and also acquiring knowledge on linear algebra.
7		**CC-7**	Ordinary Differential Equation & Multivariate Calculus-I	• To acquire knowledge of solving the linear and nonlinear differential equations (ODE). • Acquiring knowledge of different ideas on functions of several variables.
8		SEC-A	i) C Programming Language ii) Object Oriented Programming in C++	• To develop knowledge on C programming language. • Describe the object-oriented programming approach in connection with C++.
9	**SEM-4**	**CC-8**	Riemann Integration & Series of Function	• To develop knowledge on Riemann Integration. • To acquire knowledge of finding the behavior of Series of Functions.
10		**CC-9**	Partial differential equation & Multivariate Calculus-II	• To acquire knowledge of solving the linear and nonlinear partial differential equations(PDE). • Illustrate the process of solving problems Multivariate Calculus in through vectors methods.
11		**CC-10**	Mechanics	• To acquire knowledge of solving the different real problems in statics and particle dynamics.
12		**SEC-B**	i) Mathematical Logic ii) Scientific computing with Sage Math/ R	• To acquire the basic knowledge of Mathematical logic. • Illustrate the scientific computing with the help of the programming languages sagemath and R.
13	**SEM-5**	**CC-11**	Probability & Statistics	• To acquire knowledge on Probability. • To develop the concept of computational mathematics, data analysis in the platform of Statistics.
14		**CC-12**	Group Theory-II & Linear Algebra-II	• To develop a strong understanding of group theory and linear algebra, and to develop the skill of applying these concepts to solve problems and construct proofs.

Sl. No.	Semester	Course Name	Course Detail	Course Outcomes
15	**SEM-5**	DSE-A(1)	i) Advanced Algebra ii) Bio Mathematics iii) Industrial Mathematics	• To develop the strong understanding of abstract algebraic structures like groups, rings, and fields, and also to develop the ability to solve problems and construct proofs. • Upon completing a Biomathematics course, students should be able to develop mathematical model, solve, and analyze problems in biological systems, implement computational approaches to the fields like epidemiology, conservation biology, or genomics. • A course in Industrial Mathematics helps students in developing the ablity to apply advanced mathematical concepts and techniques to solve industrial problems, develop mathematical models, analyze data.
16		DSE-B(1)	i) Discrete Mathematics ii) Linear Programming & Game Theory iii) Boolean Algebra & Automata Theory	• After completion of the course students are expected to be able to: ● Analyze logical propositions via truth tables. Prove mathematical theorems using mathematical induction. Understand sets and perform operations and algebra on sets. • Aquiring knowledge to formulate and solve linear programming problems, understand duality, and apply game theory concepts to model and analyze strategic situations, ultimately leading to the ability to make informed decisions in various contexts. • To understand and apply concepts in logic, and computational models, including designing and analyzing circuits, and recognizing languages using finite state machines.
17	**SEM-6**	CC-13	Metric Space & Complex Analysis	• To understand and apply fundamental concepts like distance, continuity, convergence, compactness, and connectedness within abstract spaces, and use them to solve problems in various mathematical contexts. • Develop knowledge to represent complex numbers, analyze functions of complex variables, understand Cauchy-Riemann equations, apply Cauchy's theorems, and evaluate complex integrals using techniques like residue calculus and conformal mappings.

Sl. No.	Semester	Course Name	Course Detail	Course Outcomes
18		CC-14	Numerical Methods	• To aquire knowledge to derive numerical methods for various mathematical operations and tasks, such as interpolation, differentiation, integration. • To develop skill of solving the linear and nonlinear equations, and the of differential equations. • To analyze and evaluate the accuracy of common numerical methods.
19		CC-14 Practical	Numerical Methods Lab	• To develop the skill of Practical problems on numerical analysis with the help of computer programming
20	**SEM-6**	DSE-A(2)	i) Differential Geometry ii) Mathematical Modelling iii) Fluid Statics & Elementary Fluid Dynamics	• To explain the concepts and language of differential geometry and its role in modern mathematics. To develop the skill of solving with differential geometry to diverse situations in physics, engineering or other mathematical contexts. • To analyze, and interpret models of real-world phenomena, using mathematical tools to understand and predict complex systems. • Understanding of basic physics of fluids. Gaining knowledge to calculate and design engineering applications involving fluid. Understanding of analyzing flow systems in terms of mass, momentum, and energy balance.
21		DSE-B(2)	i) Point Set Topology ii) Astronomy & Space Science iii) Advanced Mechanics	• To understand fundamental topological concepts, including topological spaces, continuity, compactness, connectedness, and separation axioms, and apply these concepts to analyze and understand various mathematical structures. • To aquire knowledge about fundamental principles, the universe, space technology, and the nature of celestial objects. • To aquire knowledge of solving the advanced practical problems related to the theory of elasticity, concepts of stress and strain, strain energy, and failure criteria.