M.Sc. COURSE OUTCOME

Semester-1	
Course Code	**Course Outcomes**
MA 2101	1. Able to perform and model basic operations on real numbers.(PSO I, PSO II, PSO V) (PO I, PO IV, PO V, PO VIII) 2. Able to get basic knowledge of metric space. (PSO I, PSO II, PSO V) (PO I, PO IV, PO V, PO VII) 3. Able to understand basic concepts of limits and how they are used in sequence, series, differentiation and integration. (PSO I, PSO II, PSO V) (PO I, PO IV, PO V, PO VIII)
MA 2102	1. Able to understand different types of finite and infinite groups and their various properties and able to built the concept of cyclic group, normal subgroups. (PSO I, PSO II) (PO I, PO IV, PO V, PO VII) 2. Able to use isomorphism properties, *p* group, group products and their related theorems. (PSO I, PSO III) (PO I, PO IV, PO V, PO VII) 3. Able to understand rings, ideals, quotient ring, Unique factorization domain, Euclidean domain, Polynomial ring, irreducibility of a polynomial. (PSO I, PSO II, PSO V) (PO I, PO IV, PO V, PO VII)
MA 2103	1. Able to identify Differential equations of different orders and of different types and able to find their solutions using various methods and be able to communicate the underlying mathematics involved to help another person gain insight into the situation.(PSO I, PSO II)(PO I, PO III, PO V, PO VII) 2. Work with ODEs and systems of ODEs in various situations and use correct mathematical terminology, notation and symbolic processes in order to engage in work, study, and conversation on topics involving ODEs and systems of ODEs with colleagues in the field of mathematics. (PSO I, PSO II) PO I, PO III, PO V, PO VII) 3. Able to determine the uniqueness and existence of an ODE.(PSOI, PSO III)(PO I, PO III, PO V, PO VII)
MA2104	1. Able to use the ideas of matrices in solving problems involving system of linear equations and linear programming problems. (PSO II, PSO III) (PO I, PO IV) 2. Capable of representing geometric linear transformations by means of matrices. Also calculate eigen values and eigen vectors. (PSO II, PSO III) (PO I, PO VII) 3. Present basic concepts of vector space like linear dependence, basis, dimensions, orthogonality. (PSO I, PSO III) (PO I, PO III, PO IV)
MA2105	1. Able to define a surface and understands its properties using differential calculus. (PSO I, PSO III) (PO III) 2. Able to define different types of curvatures and understand their properties using differential and tensor calculus. (PSO II) (PO IV)
Semester-2	
MA2201	
MA2202	1. Able to determine continuity, differentiability of a function and find the derivative of a function. (PSO I, PSO V) (PO I, PO III)

	2. Able to evaluate contour integral using Cauchy's integral theorem, Cauchy's integral theorem and residue theorem. (PSO I, PSO II, PSO V) (PO I, PO IV, PO VII) 3. Able to determine the image of a part of the complex plane, the conformal mapping $w = f(z)$. (PSO I, PSO II, PSO V) (PO I, PO IV, PO VII)
MA2203	1. Able to understand the principles of continuity, momentum, and energy as applied to fluid motions. (PSO I, PSO II, PSO III) (POI, PO IV) 2. Able to familiarize with the Navier-Stokes equation and its solution for different flow problems. (PSO I, PSO II) (PO I, PO V).
MA2204	1. Able to define and illustrate the concept of topological spaces, closure and Kouratouski's axioms, subspace topology, continuous functions, homeomorphism. (PSO I, PSO II, PSO III) (PO I, PO V, PO VII) 2. Able to build the concept of product topology, quotient topology, metric topology and separation axioms. (PSO I, PSO III,) (PO I, PO IV, PO VII) 3. Able to understand spaces by topological invariants (connectedness and compactness). To build the concept of convergence vis nets and filters. (PSO I, PSO II, PSO V) (PO I, PO IV, PO V).
MA2205	1. Be aware of the use of numerical methods in modern scientific computing. (PSO I, PSO II, PSO III) (PO I, PO III, PO V) 2. Be familiar with numerical solution of ordinary differential equations. (PSO I, PSO III) (PO I, PO III, PO V) 3. Be familiar with calculation and interpretation of errors in numerical methods. (PSO I, PSO V) (PO IV, PO VII)
Semester-3	
MA2301	1. Able to identify Metric space, Norm linear space, Banach space and Hilbert space. (PSO I, PSO II, PSO III, PSO V) (PO I, PO V, PO VII) 2. Able to use linear and bounded linear operators in various spaces. (PSO I, PSO V) (PO I, PO V, PO VII) 3. Able to use orthogonality property of operators. (PSO I, PSO V) (PO I, PO V, PO VII)
MA2302	1. This will enable students to tackle problems associated with many random phenomena and find effective solutions. (PSO I, PSO III, PSO V) (PO I, PO IV, PO V, PO VII) 2. The topic on random vectors will help students to formulate the model and find solutions to many nondeterministic experiments. (PSO I, PSO III, PSO V) (PO I, PO IV, PO V, PO VII) 3. Sampling theory and inference theory are widely used in many applied areas as data mining and data analytics. (PSO I, PSO V) (PO I, PO V, PO VII)
MA2303	1. To provide students with a good understanding of some fundamental mathematical concepts and terminology. (PSO II, PSO V) (PO I, PO VII) 2. To understand how to use and analyse recursive definitions. (PSO V) (PO I, PO V, PO VII) 3. Understanding techniques for constructing clear, concise, and correct mathematical proofs, illustrated by discrete mathematics examples. (PSO I, PSO II, PSO V) (PO I, PO V, PO VII)

MA2305	1. Demonstrate knowledge of the syllabus material. (PSO I, PSO II, PSO V, PSO V) (PO I, PO V, PO VII) 2. Write precise and accurate mathematical definitions. (PSO I, PSO II, PSO V) (PO I, PO V, PO VII) 3. Use mathematical definitions to identify and construct examples and to distinguish examples from non-examples. (PSO I, PSO II, PSO V) (PO I, PO V, PO VII)
MA2306	1. Able to know two the GCD and LCM are related to the prime factorizations of two numbers. (PSO I, PSO III, PSO V) (PO I, PO V, PO VII) 2. Able to understand the basic arithmetic of the number system formed by taking the integers modulo of a fixed number *m*. (PSO I, PSO III, PSO V) (PO I, PO V, PO VII) 3. Able to know what a complete set of residues is and think of taking congruencies when investigating equations with integer coefficients. (PSO I, PSO III, PSO V) (PO I, PO V, PO VII) 4. Able to know the definitions of Euler's ϕ-function and its expression in terms of prime factors. (PSO I, PSO V) (PO I, PO V, PO VII)
Semester-4	
MA2401	1. To be able to formulate an LPP. (PSO I, PSO III, PSO V) (PO I, PO V, PO VII) 2. To be able to conceptualize the feasible region. (PSO I, PSO III, PSO V) (PO I, PO V, PO VII) 3. To be able to solve an LPP with two variables using graphical method. (PSO I, PSO III, PSO V) (PO I, PO V, PO VII)
MA2402	1. Poisson process has wide applications in Queuing theory and in Renewal processes (such as Life Insurance Claim Process). The student will have confidence in tackling these problems. (PSO I, PSO II, PSO III, PSO V) (PO I, PO IV, PO V, PO VII) 2. Markov process is widely applied in areas such as computer science for optimization of algorithms. (PSO I, PSO II, PSO III, PSO V) (PO I, PO IV, PO V, PO VII) 3. Random walk problem and ruin problem are though classical problems, but they find enormous application ion Mathematical theory of options, derivatives and in game theory. (PSEO I, PSO II, PSO III, PSO V) (PO I, PO IV, PO V, PO VII)