DEPARTMENT OF MATHEMATICS
LEARNING OUTCOMES

1	MATH/1/CC/111 Calculus	• Assimilate the concepts of a sequence's limit and its convergence. • Consider the point at which a function's continuity is tested. • Recognize the ramifications of various mean value theorems for differentiable functions. • Use Cartesian and polar coordinate systems to draw curves. • Derivative tests can be used to solve optimization problems in a wide range of fields, including social sciences, physical sciences, life sciences, and more.
2	MATH/2/CC/121 Algebra	• Recognize groups as mathematical objects. • Link the basic notions of groups and symmetries. • Explain cosets, normal subgroups, and factor groups. • Review Lagrange's theorem. • Learn about structure-preserving maps and their effects.
3	MATH/3/CC/231 Differential Equation	• Learn how ordinary differential equations originated. • Learn how to solve solvable first-order differential equations and higher-order linear differential equations using various strategies. • Obtain consecutive approximations of solutions of first order differential equations passing through a given point in the plane using Picard's approach and Power series method for higher order linear equations using Power series method. • Comprehend the general solution concept and discover how to acquire it. • Make use of ordinary differential equations to model complex physical, chemical, and biological systems and come up with hypotheses about potential solutions.
4	MATH/4/CC/241 Vector Calculus and Solid Geometry	• Acquire a working knowledge of three-dimensional geometry. • Find a particle's location in space. • Find the section of conics.

5	MATH/5/CC/351Computer Oriented Numerical Analysis	• To solve algebraic and transcendental equations numerically • Find numerical solutions to linear equations and check their accuracy. • Learn about interpolation and extrapolation. • Solve initial and boundary value problems in differential equations using numerical methods. • Apply various numerical methods in real life problems.
6	MATH/5/CC/352 Real Analysis	• Learn to define sequence in terms of functions from R to a subset of R. • Calculate the limit superior, inferior, and the limit of a limited sequence. • Use the ratio, root, alternating series, and limit comparison tests to check for absolute convergence of an infinite series of real numbers. • Learn about Riemann integrable functions and their applications.
7	MATH/5/CC/353 Complex Analysis	• Understand the importance of complex function differentiability and analyticity, which leads to the Cauchy Riemann equations. • Learn how to evaluate contour integrals using the Cauchy Goursat theorem and the Cauchy integral formula. • In the fundamental theorem of algebra, use Liouville's theorem. • Understand how a power series converges, integrates term by term, and differentiates. • Learn how to expand analytic functions in Taylor and Laurent series, how to categorise singularities, poles, and residues, and how to use the Cauchy Residue Theorem.
8	MATH/5/CC/354(C) Computer Programming in Fortran	• Have a thorough understanding of the FORTRAN programming language. • Determine whether scenarios would benefit from the use of computational methods and computers. • Identify and abstract the programming work involved in a computational challenge.

		• Based on the problem's needs, select the appropriate data representation formats.
	Practical	• Edit, compile, debug, correct, recompile, and run the programme on a computer.
9	MATH/6/CC/361: Modern Algebra	• Learn the fundamentals of group actions and how to use them. • Understand the notions of ideals, quotient rings, integral domains, and fields, which are all important ideas in ring theory. • Learn in detail to know about polynomial rings, finite field extensions, and finite field classification.
10	MATH/6/CC/362: Advanced Calculus	• As you progress from one variable to multiple variables in calculus, you'll notice some conceptual changes. • In order to solve optimization problems, use multivariable calculus. • Line integral, double integral, and triple integral formulations have interrelationships. • Multivariable calculus methods have applications in physics, economics, optimization, and understanding the architecture of curves and surfaces in plane and space, among other fields. • Recognize the significance of Green's, Gauss', and Stokes' theorems in other fields of mathematics.
11	MATH/6/CC/363: Mechanics	• Familiarize yourself with the subject matter, which has served as a nexus for mathematicians, physicists, astronomers, and engineers. • Learn the principles of virtual work for a system of coplanar forces operating on a rigid body, as well as the required conditions for the equilibrium of particles operated upon by multiple forces. • Determine the gravitational centre of different materialistic systems and consider the equilibrium of a uniform wire suspended freely under its own weight. • Take care of the kinematics and kinetics of a particle's rectilinear and planar motions, as well as limited oscillatory motions.

12	MATH/6/CC/364(C) Computer Programming in C	• Have a thorough understanding of the C programming language. • Determine whether scenarios would benefit from the use of computational methods and computers. • Identify and abstract the programming work involved in a computational challenge. • Based on the problem's needs, select the appropriate data representation formats.
	Practical	Edit, compile, debug, correct, recompile, and run the programme on a computer.

PROGRAMME OUTCOMES

Students should have understanding of mathematics, physics, and chemistry by the time they graduate from mathematics core. In addition, they should be familiar with basic scientific concepts, principles, and theories and their application in daily life. They should know how mathematics is used in many fields. This includes analysing data and drawing conclusions. They are required to be able to think creatively to explain facts and numbers or to solve difficulties. They should be able to continue their mathematics and computer courses. So they should have worked in various scientific institutions.

PROGRAMME SPECIFIC OUTCOMES

Students majoring in mathematics should comprehend the limit of functions, how to verify continuous function properties and derivatives, and Reimann integrability. They should know how to treat Rings like Euclidean domain and Principal ideal domain, and solve linear and nonlinear equations. They should be able to derive methods for numerous mathematical operations and activities such as interpolation, differentiation, and integration. They should be able to design experiments, analyse and evaluate data, and synthesise knowledge to produce valid conclusions.