Programme Specific Outcomes (PSO)
Department of Mathematics

Name of Subject	Class	Outcome
Mathematics	First Year	• Students will acquire basic domain knowledge of different subjects such as Differential calculus, Calculus, Differential Equations • Students will be able to apply the concepts in solving the problems such as extreme values, electric circuit problems, and orthogonal trajectories. • Students will be able to identify and solve ordinary and partial differential equations.
Mathematics	Second Year	• Students will be to understand the concepts of Real Analysis and Algebra. • Student is equipped with mathematical analysis ability, problem solving skills, creative talent necessary for various kinds of employment. • Students will be able to acquire basic Practical skills and exposure to computer programming though practical courses like SCILAB.
Mathematics	Third Year	• Students will possess subject knowledge required for higher studies, professional and applied courses like M. Sc., Computer studies, Management Studies. • Introduction to various courses like group theory, ring theory, field theory, metric spaces, operation research. • Students will be able to acquire programming skills through C++ programming. • Students will become employable; they will be eligible for career opportunities in Industry, academia.

Course Ooutcomes (CO):

Faculty: B. Sc.
Name of the Department / Subject: Mathematics
Year: I (CBCS)

Paper Code (As per the syllabus of Shivaji University)	Name of the Paper	Outcome
DSC – 5A	Differential Calculus	• Student will be able toapply of De-Moiver's Theorem and properties of hyperbolic functions. • Student will be able to apply notion of successive derivatives and partial derivatives which arise in all applied sciences • Student will be able tosolve extreme value problems using Lagrange's method
DSC – 6A	Calculus	• Students will be acquainted with some basic concepts Calculus like Mean value theorems, limit and continuity of functions. • Students will learn to use of L – Hospital's rule. • Students will understand and learn the concept of differentiation of function of single variable.
DSC – 5B	Differential Equations	• Students will understand various types of ordinary differential equations of first order and first degree and methods to solve them. • Students will learn various types and methods to solve linear differential equations with constant coefficients. • Students will understand Cauchy – Euler differential equation, Legendre's linear differential equation and methods to solve them.

| DSC – 6B | Higher Order differential Equations and Partial differential Equations | Students will learn methods to solve second order differential equations, ordinary simultaneous differential equations and Total differential equations. Students will understand difference between ordinary and partial differential equations. Students will learn various types and methods to solve partial differential equation. Students will learn Lagrange's method, Chartpit's method. |

Course Outcomes (CO):

Faculty: B. Sc.
Name of the Department / Subject: Mathematics
Year: II (CBCS)

Paper Code (As per the syllabus of Shivaji University)	Name of the Paper	Outcome
DSC – 5C	Real Analysis - I	- Students will be able to understand types of functions and how to identify them. - Students will be able to use mathematical induction to prove various properties. - Students will be able to understand the basic ideas of Real Analysis. - Students will be able to prove and apply order properties of real numbers, completeness property and the Archimedean property.
DSC – 6C	Algebra - I	- Students will understand different types and properties of matrices. - Students will be able to solve homogeneous and non-homogeneous system of linear equations. - Students will be able to find Eigen values and Eigen vectors of a matrix. - Students will learn to classify the various types of groups, subgroups and their

		properties.
DSC – 5D	Real Analysis - II	• Students will understand sequence and its properties pertaining to convergence. • Students will understand The Bolzano-Weierstrass Theorem, Cauchy Convergence Criterion. • Students will understand convergence of series and able to solve the related problems • Students will be able to apply different tests of convergence of series.
DSC – 6D	Algebra - II	• Students will understand Lagrange's theorem and various properties of subgroups. • Students will learn modular arithmetic and be able to apply Fermat's and Euler's theorem • Students will understand properties of normal subgroups, factor group. • Students will understand homomorphism and isomorphism in groups and rings. • Students will be able to derive basic properties of rings and subrings.

Course Outcomes (CO):

Faculty: B. Sc.
Name of the Department / Subject: Mathematics
Year: III (SEM V)

Paper Code (As per the syllabus of Shivaji University)	Name of the Paper	Outcome
Paper IX	Real Analysis	Students will • understandthe convergence and divergence of sequence and series of real numbers. • understand the integration of bounded function on a closed and bounded interval. • understand some families of Riemann integrable functions and properties of integration. • be able to determine integrabilty of a function. • understand extension of Riemann integral to the improper integrals.
Paper X	Modern Algebra	Students will be able to • understand basic concepts of group theory and its different examples. • identify whether the given set with the compositions form Ring, Integral domain or field. • understand the difference between the concepts Group and Ring. • apply fundamental theorem, Isomorphism theorems of groups and Rings.
Paper XI	Partial Differential Equations	Students will be able to • form and solve linear partial differential equations. • solve nonlinear partial differential equation. • understand and solve linear homogeneous partial differential equation with

		constant coefficients.
Paper XII	Numerical Methods I	Students will be able to • find solution of nonlinear equations using different methods and compare the accuracy. • find solution linear equations using iterative and non-iterative numerical methods. • determine numerically Eigen values and Eigen vectors of a given matrix.

(SEM VI)

Paper Code (As per the syllabus of Shivaji University)	Name of the Paper	Outcome
Paper XIII	Metric Spaces	Students will be able to • understand the generalization of distance to metric notion with examples. • appreciate the process of abstraction of limits and continuity to metric spaces. • understand the interconnection within metric concept, open sets, closed sets and continuity. • understand the properties of connected sets, compact sets, complete sets and apply them to explore properties of continuous functions on compact sets and uniform continuity.

Paper XIV	Linear Algebra	Students will be able to • understand notion of vector space, subspace, basis. • understand concept of linear transformation and its application to real life situation. • work out algebra of linear transformations. • appreciate connection between linear transformation and matrices.
Paper XV	Complex Analysis	Students will be able to • understand basic concepts of functions of complex variable and analytic functions. • understand concept of complex integration and basic results thereof. • understand concept of sequence and series of complex variable. • apply concept of residues to evaluate certain real integrals.
Paper XVI	Numerical Methods II	Students will be able to • find solution of interpolation problem with equal interval and unequal interval. • find solution of a definite integration using different numerical methods for it. • find solution of ordinary differential equations using different numerical methods for it.