

Vivekanand College Kolhapur (An Empowered Autonomous Institute)

M.Sc. (Mathematics) Entrance April 2025

Syllabus

Syllabus	Contents
B.Sc. III	<p>Modern Algebra: Groups, subgroups, normal subgroups, homomorphisms, rings, homomorphism in rings.</p> <p>Real Analysis: Sequences of real numbers, series of real numbers</p> <p>Numerical Methods: Numerical interpolation for equal and unequal intervals, numerical differentiation and integration, solution of first order ordinary differential equations.</p> <p>Linear Algebra: Vector spaces, inner product spaces, linear transformation, eigen values and eigen vector.</p> <p>Metric Space: Limit and metric space, continuous function on metric space, connectedness and completeness, compactness,</p> <p>Complex Analysis: Analytic function, elementary function, Contour integral, Integral series.</p> <p>Optimization Technique: Linear programming problem, transportation problem, assignment problem, theory of games.</p>
B.Sc. II	<p>Discrete mathematics and integral transform: Graph theory Laplace transform, inverse Laplace transform, fourier transform</p> <p>Number theory: Divisibility theory in the integers, prime and their distribution, theory of congruences, Number theoretic function.</p> <p>Integral Calculus: Beta and gamma functions, multiple integral.</p>
B.Sc. I	<p>Calculus: Limit continuity, Cauchy's Mean Value theorem, Lagrange mean value theorem, successive differentiation, Leibnitz theorem, Radius of Curvature.</p> <p>Algebra And Geometry: De'Moivres theorem, relation, function, rank of matrix, determinants, Caley Hamilton theorem.</p> <p>Multivariable Calculus: Jacobians, Taylor's and Maclaurin's theorem, Vector fields, divergence, curl, gradient and identities.</p> <p>Ordinary Differential Equations: Differential equation of first order and first degree, Clairaut's form,</p>