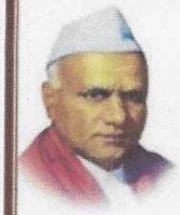

"Education for Knowledge, Science, and Culture"
- Shikshanmaharshi Dr. Bapuji Salunkhe

Shri Swami Vivekanand Shikshan Sanstha's

Vivekanand College, Kolhapur

(Empowered Autonomous)

KOLHAPUR

Department Of Mathematics

Course Outcomes (COs)

B.Sc. Part III Mathematics (Introduced in the year 2023-24)	
Semester V	
Real Analysis (DSC-1003E1)	
CO No.	**On completion of the course, student will be able to:**
CO1	Recognize bounded convergent , divergent, Cauchy and Monotonic sequences and to calculate their limit superior, limit inferior, and the limit of a bounded sequence.
CO2	Use the ratio, root, alternating series and limit comparison test for convergence and absolute convergence of infinite series of real numbers
CO3	Understand some of the families and properties of Riemann integrable functions, and the applications of the fundamental theorems of integration.
CO4	Solve Riemann integral and improper integral.
Modern Algebra (DSC-1003E1)	
CO No.	**On completion of the course, student will be able to:**
CO1	Recognize the mathematical objects that are groups, and classify them as abelian, cyclic and permutation groups, etc;
CO2	Explain the significance of the notion of cosets, normal subgroups, and factor groups
CO3	The fundamental concept of Rings, Fields, subrings, integral domains and the corresponding Homomorphisms.
CO4	Apply fundamental theorem, Isomorphism theorems of groups to prove these theorems for Ring.
Partial Differential Equation (DSC-1003E2)	
CO No.	**On completion of the course, student will be able to:**
CO1	Understand the concept of formation of partial differential equation.
CO2	Understand the classification of partial differential equations.
CO3	Understand the Geometrical meaning of partial differential equation and method of solutions.

CO4	Understand transformation equations and its applications.
Numerical Methods (DSC-1003E2)	
CO No.	**On completion of the course, student will be able to:**
CO1	Learn about various interpolating methods to find numerical solutions.
CO2	Demonstrate the use of interpolation methods to find intermediate values in given graphical and/or tabulated data
CO3	Use of numerical differentiation and integration
CO4	Learn to find the solution of ordinary differential equation by Euler, Taylor and Runge-Kutta methods
Semester VI	
Metric Spaces (DSC-1003F1)	
CO No.	**On completion of the course, student will be able to:**
CO1	Acquire the knowledge of notion of metric space, open sets and closed sets.
CO2	Demonstrate the properties of continuous functions on metric spaces
CO3	Apply the notion of metric space to continuous functions on metric spaces
CO4	Understand the basic concepts of connectedness, completeness and compactness of metric spaces
Linear Algebra (DSC-1003F1)	
CO No.	**On completion of the course, student will be able to:**
CO1	Understand concepts of vector space, subspace, bases, dimension and their properties.
CO2	Learn properties of inner product spaces and determine orthogonality in inner product spaces.
CO3	Learn basic concepts of linear transformation, dimension theorem, matrix representation of a linear transformation, and the change of coordinate matrix
CO4	Familiarize characteristic roots and characteristic vectors.
Complex Analysis (DSC-1003F2)	
CO No.	**On completion of the course, student will be able to:**
CO1	Understand the significance of differentiability of complex functions leading to the understanding of Cauchy- Riemann equations.
CO2	Understand the exponential function, Logarithmic function, Trigonometric function.
CO3	apply Cauchy integral formula to evaluate integrals.
CO4	Represent functions as Taylor, power and Laurent series, classify singularities and poles, find residues and evaluate complex integrals using the residue theorem.
Optimization Technique (DSC-1003F2)	
CO No.	**On completion of the course, student will be able to:**
CO1	Analyse and solve linear programming models of real-life situations.
CO2	Formulate and apply suitable methods to solve problems.

CO3	Identify and select procedures for various sequencing, assignment, transportation problems.
CO4	Model competitive real-world phenomena using concepts from game theory and analyse pure and mixed

(S. P. Thorat)
HEAD
Department of Mathematics
Vivekanand College, Kolhapur