

Shri Shivaji Science and Arts College , Chikhali.
Department Of Mathematics
Program Outcome, Program Specific Outcome and Course Outcome

Program Outcomes

At the end of the program , graduates would be able to

PO 1	Enhance the knowledge of the student's in all basics sciences.
PO 2	Identify, formulate and develop solutions to computational challenges.
PO 3	Develop scientific temper and think in a critical manner.
PO 4	Build up progressive and successful career in academics, industry and society.
PO 5	Develop student's abilities and aptitudes to apply the mathematical ideas

Program Specific Outcomes

Upon completion of the program successfully, students would be able to

PSO 1	Understand major concepts in all disciplines of Mathematics.
PSO 2	Formulate and develop mathematical arguments in a logical manner.
PSO 3	Gain good knowledge and understanding in advanced Mathematics.
PSO 4	Create an awareness of the impact of Mathematics on the environment, society and development outside the scientific community.
PSO 5	Create sensitivity towards environmental concerns and contribute in the development of nation.

Course Outcomes B. Sc. Mathematics Semester - I	
Unit I	Evaluate the Characteristic equation, Eigen Value and corresponding Eigen Vector of a given matrix.
Unit II	Study applications of De Moivre's theorem
Unit III	Study of Limit and Continuity of function and its basic properties
Unit IV	Describe the applicability of mean value theorems.
SEM Skill Enhancement Module	CO1: Acquire the knowledge of geometrical shapes and their equations. CO2: Evaluate the problems on Time, Work and Wages. CO3: Apply the various trigonometric concepts in real life situations. CO4: Achieve skills of comparison through graphs and charts.
Math Practicals	After successful completion of this course students will able to: CO1: Evaluate the Characteristic equation, Eigen Values and corresponding Eigen Vectors of a given Matrix. CO2: Study applications of De Moivre's theorem. CO3: Define Limit and study the basic properties. CO4: Classify Continuity and Discontinuity of the functions. CO5: Describe the geometrical applications of mean value theorems.

Course Outcomes B. Sc. Mathematics Semester - II	
Unit I	Interpret the vectors, their products, differentiation and integration.
Unit II	Define and determine the curvature and torsion of a curve.
Unit III	Apply the concepts of divergence, curl which are useful in Physics
Unit IV	Study different forms of sphere.
SEM Skill Enhancement Module	CO1: Interpret the transportation models' solutions and infer solutions to the real-world problems. CO2: Finding initial basic feasible and optimal solution of the Transportation problems. CO3: Compute Game Theory Problems. CO4: Recognize and solve game theory and Assignment problems. CO5: Analyse pure and mixed strategy games. CO6: Determine the best strategy and value of the given game model.
Math	CO1: Interpret the vectors, their products, differentiation and integration.

Practicals	<p>CO2: Studies space curves and fundamental planes.</p> <p>CO3: Apply the concepts of divergence, curls which are useful in Physics.</p> <p>CO4: Study of sphere and its orthogonality CO2: Study applications of De Moivre's theorem.</p> <p>CO3: Define Limit and study the basic properties.</p> <p>CO4: Classify Continuity and Discontinuity of the functions.</p> <p>CO5: Describe the geometrical applications of mean value theorems.</p>
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Course Outcomes B. Sc. Mathematics Semester - III	
Trigonometric Series	Compute summation of trigonometric series.
Differentiability	Evaluate nth order differentiation of function
Partial Differentiation	Describe the applicability of Euler's theorem
Integration	Understand the concept of improper integral and Beta-Gamma function
Limit and Continuity	Get knowledge of basic principles of limit and continuity, Taylor's theorem
Maxima and Minima	Understand Lagrange's multipliers method and Jacobian.
sequence,	Learn the definition of sequence, bounded sequence and Cauchy sequence
Series	Apply various tests for convergence and divergence of series
Math Practical	<p>CO1: Evaluate the sum of trigonometric series.</p> <p>CO2: Study applications of Leibnitz's theorem and Euler's theorem.</p> <p>CO3: Find Maximum and minimum value of function by Lagrange's multiplier's method.</p> <p>CO4: Learn the definition of sequence, bounded sequence and Cauchy sequence.</p> <p>CO5: Apply various tests for convergence and divergence of series.</p>

Course Outcomes B. Sc. Mathematics Semister - IV	
Unit I	Solve first order differential equations using different techniques
Unit II	Solve higher order differential equations
Unit III	Calculate complementary function and particular integral of the second order differential equation
Unit IV	Describe the different methods to solve second order differential equations
Group	Learn the concept of Group, Subgroup and Cosets
Cosets and Normal subgroups	Explain the significance of the notations of Cosets, Normal subgroups and Quotient group
Homomorphism and Isomorphism:	Analyze different characterizations of normal subgroups Learn the concept of Homomorphism & Isomorphism and its Theorem
Ring	Study the properties of Ring and Ideals and Integral domain
Math Practicals	CO1. Solve first order differential equations using different techniques. CO2. Solve higher order differential equations. CO3. To find the orthogonal trajectories of the curve. CO4. Describe the different methods to solve second order differential equations. CO5. Define the Wronskian and explain its significance in the context of linear differential equations. CO6. Calculate the total number of permutations for a given finite set CO7. Apply group and Ring axioms to determine whether a set with a binary operation forms a group and ring. CO8. Apply the ordinary differential equation for solving various physical, chemical and daily life problems

Course Outcomes B. Sc. Mathematics
Semister - V

Unit I	To learn Analytic function and Harmonic function
Unit II	To understand Mobius transformation.
Unit III	To understand fundamental theorem of integral calculus.
Unit IV	To learn various tests of convergence of Improper Integral
Unit V	To understand metric space, open and closed sets.
Unit I	To learn Legendre's polynomials, recurrence formulae and Rodrigue's formula,
Unit II	To solve Bessel's equation and study Recurrence formulae
Unit III	To study Fourier sine and cosine series
Unit IV	To study Laplace transform and its properties
Unit V	To study Fourier transform and its properties.

**Course Outcomes B. Sc. Mathematics
Semister - VI**

Vector space	To learn the concept of Vector space, Subspace and Dimension
Linear transformations	To study Linear transformation and Rank nullity theorem
Dual Spaces	To learn Dual space, Bidual space, Eigen value and eigen vectors.
Inner Product Spaces:	To learn Cauchy- Schwarz inequality, Bessel's inequality and Gram Schmidt orthogonalization process.
Modules	To study Modules, homomorphism and isomorphism theorem..
Unit I	Familiar with Fundamental concepts of Number theory
Unit II	To apply Euclid's algorithm and backwards substitution.
Unit III	Add and subtract integers, modulo n, multiply integers and calculate powers
Unit IV	Determine multiplicative inverses, modulo n and use to solve linear congruences.
Unit V	To perform numerical computations with the Euler's phi function