ज्ञान,विज्ञान आणि सुसंस्कार यांसाठी शिक्षण प्रसार"

--- शिक्षणमहर्षी डॉ. बापूजी साळुंखे

Shri Swami Vivekanand Shikshan Sanstha , Kolhapur's

Dattajirao kadam Arts, Science and Commerce college,Ichalkaranji

Department of Mathematics

Course Outcomes Of B.Sc. II

Course Code: DSC -5C

Title of Course: Real Analysis -I

Course Objectives: Upon successful completion of this course,the student will be able to:

1) Use mathematical induction to prove various properties.

2) Understand types of functions and how to identify them.

3) Understand the basic ideas of Real Analysis.

Course Code: DSC -6C

Title of Course: Algebra -I

Course Objectives: Upon successful completion of this course ,the student will be able to:

1) Understand properties of matrices.

2) Find Eigen values and Eigen vectors.

3) Solve system of linear homogeneous equations and linear non-homogeneous equations.

4) Classify the various types of groups and subgroups.

Course Code: DSC -5D

Title of Course: Real Analysis -II

Course Objectives: Upon successful completion of this course, the student will be able to:

1) Understand Sequence and subsequence.

2) Derive Cauchy Convergence Criterion.

3) Find Convergence of series

4) Apply Leibnitz Test.

Course Code: DSC -6D

Title of Course: Algebra -II

Course Objectives: Upon successful completion of this course, the student will be able to:

1) Prove Lagrange's theorem.

2) Understands properties of normal subgroups, factor group.

3) Drive Fermat's theorem.

4) Define homomorphism and isomorphism's in group and rings.

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Course Outcomes Of B.Sc. I

Course Code: DSC -5A

Title of Course: Differential calculus.

Course Objectives: Upon successful completion of this course,the student will be able to:

1) Define hyperbolic function and Properties of hyperbolic functions.

2) De-Moivre's Theorem and expand $\sin n\theta$, $\cos n\theta$, $\tan n\theta$ $by\ using$ De-Moivre's

   Theorem.

3) Find maxima & minima of a function of two variables.

4) Find circle , radius & center of the curvature.

Course Code: DSC -6A

Title of Course: Calculus.

Course Objectives: Upon successful completion of this course ,the student will be able to:

1) Roll's Theorem & Geometrical Interpretation of Roll's theorem

2) LMVT & Geometrical Interpretation Of LMVT.

3) CMVT & Examples.

4) Continuous & Discontinuous function & examples.

Course Code: DSC -5B

Title of Course: Differential Equations.

Course Objectives: Upon successful completion of this course, the student will be able to:

1)Exact the solution of Differential equation of the 1st order & 1st degree by variable separable, homogeneous & Non –homogeneous methods .

2)Find the solution of Differential equation of the 1st order & of the degree higher than the 1st by using the methods of solvable for p, x & y .

3)Compute all the solution of 2nd & higher order linear differential equation with constant coefficient .

4) Solve simultaneous linear equation with constant coefficient & total differential equation.

Course Code: DSC -6B

Title of Course: Higher Order Ordinary Differential Equations & Partial Differential Equations

Course Objectives: Upon successful completion of this course,the student will be able to:

1)Necessary condition for Integrability of differential equation.

2)Formation of Partial Differential Equations by the elimination of arbitrary constant & arbitrary functions.

3) Charpit's method & related examples.

4)Clairaut's equations & examples.

5)Form Partial differential equation.

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Program Specific Outcome

After completion of program student will able to:

1) Maintain a core mathematical and technical knowledge that is adoptable to changing

   technologies and provides a solid foundation for future learning.

2) Apply critical thinking and communication skills to solve applied problems.

3) Apply mathematical concepts and principles to perform computation.

4) Develop and maintain problem solving skills.

5) Perform computation in higher mathematics.

6) Write and understand basic proofs.

7) Communicate mathematical Ideas with others.

8) Use mathematical Ideas to model real word problems.

9) Demonstrate an understanding of the foundations and History of mathematics.

10) Create use and analyze graphical representation of mathematical relationship.

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Course Outcomes Of B.Sc. III

Title of Course: Real Analysis -I

Course Outcome of Sequence and Series Students will able to

 • Define different types of sequence.

• Discuss the behaviour of the geometric sequence.

• Prove properties of convergent and divergent sequence.

 • Verify the given sequence in convergent and divergent by using behaviour of Monotonic sequence.

 • Prove Cauchy's theorem.

• Explain subsequences and upper and lower limits of a sequence.

 • Give examples for convergence, divergence series.

 • Prove theorems on different test of convergence and divergence of a series of positive terms.

 • Verify the given series is convergent or divergent by using different test.

Title of Course: Modern Algebra

Course Outcome of Modern Algebra Students will able to

• Define subgroup, center, Normalizer of a subgroup.

• Find cycles and transpositions of a given permutations.

• Prove Lagrange's theorem ,Euler's theorem and Fermats theorem

• Define cyclic groups .

• Prove a group has no proper subgroup if it is cyclic group of prime order.

• Define normal subgroups , quotient groups and index of a subgroup.

• Define homomorphism ,kernel ofa homomorphism,isomorphism.

• Prove Cayley's theorem , the fundamental theorem of homomorphism for groups

• Define rings , zero divisors of a ring , integral domain , field and prove theorems

Title of Course: Partial Differential Equations

Course Outcome of Differential equations and its applications Students will able to

• Extract the solution of differential equations of the first order and of the first degree by variables separable, Homogeneous and Non-Homogeneous methods.

• Find a solution of differential equations of the first order and of a degree higher than the first by using methods of solvable for p, x and y.

• Compute all the solutions of second and higher order linear differential equations with constant coefficients, linear equations with variable coefficients.

• Solve simultaneous linear equations with constant coefficients and total differential equations.

• Form partial differential equations.

• Find the solution of First order partial differential equations for some standard types.

Title of Course: Numerical Analysis I

Course Outcome of Numerical Analysis Students will able to

• Define Basic concepts of operators Δ, E, ∇

• Find the difference of polynomial

• Solve problems using Newton forward formula and Newton backward formula.

• Derive Gauss's formula and Stirling formula using Newton forward formula and Newton backward formula.

• Find maxima and minima for differencial difference equation

• Derive Simpson's 1/3 ,3/8 rules using trapezoidal rule

• Find the solution of the first order and second order equation with constant coefficient

• Find the solution of ordinary differential equation of first by Euler,Taylor and Runge-Kutta method

Title of Course: Metric Spaces

Students will able to

• Define and recognize the concept of metric spaces, open sets, closed sets, limit points, interior point.

• Define and Illustrate the concept of completeness

• Determine the continuity of a function at a point and on a set.

• Differentiate the concept of continuity and uniform continuity

• Define connectedness

• Describe the connected subset of R.

• Define compactness

Title of Course: Linear Algebra

Course Outcome of Linear Algebra Students will able to

• Define Vector Space, Quotient space Direct sum, linear span and linear independence, basis and inner product.

 • Discuss the linear transformations, rank, nullity.

• Find the characteristic equation, eigen values and eigen vectors of a matrix.

 • Prove Cayley- Hamilton theorem, Schwartz inequality, Gramschmidt orthogonalisation process.

 • Solve the system of simultaneous linear equations

Title of Course: Complex Analysis

 Students will able to

• Compute sums, products, quotients, conjugate, modulus, and argument of complex numbers.

 • Calculate exponentials and integral powers of complex numbers.

 • Write equation of straight line, circle in complex form

• Understand the significance of differentiability for complex functions and be familiar with the Cauchy-Riemann equations.

• Determine whether a given function is analytic.

• Use Cauchy's integral theorem and formula to compute line integrals.

 • Represent functions as Taylor, power and Laurent series.

• Classify singularities and poles.

 • Find residues and evaluate complex integrals, real integrals using the residue theorem.

Title of Course: Numerical Analysis II

Course Outcome of Numerical Analysis Students will able to

• Bisection Method

• Solve problems using Newton forward formula and Newton backward formula.

• Derive Gauss's formula and Stirling formula using Newton forward formula and Newton backward formula.

• Jacobis iteration scheme.

• Power Method

• Gauss Elimination method & Gauss Jorden Method.