

Rajaram College, Kolhapur

Department of Mathematics B.Sc. Undergraduate

Programme Specific Outcome (PSO)

After successfully completing B.Sc. Mathematics Programme students will be able to:

PSO1: Ability to analyze a problem, identify and define the computing requirements, which may be appropriate to its solution.

PSO2: Enhancing students' overall development and to equip them with mathematical modeling abilities, problem solving skills, creative talent and power of communication necessary for various kinds of employment.

PSO3: Ability to pursue advanced studies and research in pure and applied mathematical science.

PSO4: Formulate and develop mathematical arguments in a logical manner. To develop the logical approach to take decision in complicated decision.

PSO5: Pursue as higher studies in mathematics in reputed institute of our country like IITs, IESER and central university and to appear in several competitive examination like CGPSC, UPSC, MAT, Railways, SSC

PSO6: To explain the core ideas and the techniques of mathematics at the college and school.

Course Outcome (CO) - F. Y. B. Sc.

Course Title: - DSC – 5A - Differential Calculus

Upon Completion of this course the students will be able to:

CO1: Assimilate the notions of function, limit and continuity of real numbers.

CO2: Understand the notion of derivative and calculate the derivative of hyperbolic and inverse hyperbolic functions.

CO3: Assimilate the notions successive differentiation and its applications.

CO4: Learn Partial differential equations for homogeneous functions, total differentials, composite and implicit functions.

Course Title: - DSC – 6A Calculus

Upon Completion of this course the students will be able to:

CO1: Understand the consequences of various mean value theorems for differentiable functions.

CO2: Understand the geometrical interpretation of integrals.

CO3: Learn the concepts of continuity, limits, representation of curves.

CO4: Became capable to understand graph of functions.

Course Title: - DSC – 5B Differential Equations

Upon Completion of this course the students will be able to:

CO1: Understand the ordinary differential equations .

CO2: Describe various techniques of getting exact solutions of first order differential equations and linear differential equations with constant coefficients as well as variable coefficients.

CO3: Understand how to find Complementary function and Particular Integral.

CO4: Grasp the concept of partial differential equation and learn some method of finding general solution of it.

Course Title: - DSC – 6B (HIGHER ORDER ORDINARY DIFFERENTIAL EQUATIONS AND PARTIAL DIFFERENTIAL EQUATIONS)

Upon Completion of this course the students will be able to:

CO1: Understand the higher order partial differential equations .

CO2: Assimilate Lagrange's partial differential equation and its applications.

CO3: Understand solution of non-linear partial differential equation using special types, Charpit's Method.

CO4: Learn to solve homogeneous and non-homogeneous partial differential equation, Monge's Method and Method of transformations(Canonical forms).

Course Outcome (CO) - S. Y. B. Sc.

Course Title: - DSC – 5C – Real Analysis-I

Upon Completion of this course the students will be able to:

CO1: Understand types of functions and how to identify them.

CO2: Use mathematical induction to prove various properties.

CO3: Understand the basic ideas of Real Analysis.

CO4: Prove order properties of real numbers, completeness property and the Archimedean property.

Course Title: DSC – 6C Algebra – I

Upon Completion of this course the students will be able to:

CO1: understand properties of matrices

CO2: solve System of linear homogeneous equations and linear non-homogeneous equations.

CO3: find Eigen values and Eigen vectors.

Construct permutation group and relate it to other groups.

CO4: classify the various types of groups and subgroups.

Course Title: - DSC – 5D – Real Analysis-II

Upon Completion of this course the students will be able to:

CO1: understand sequence and subsequence, prove The Bolzano-Weierstrass Theorem.

CO2: derive Cauchy Convergence Criterion.

CO3: find convergence of series.

CO4: apply Leibnitz Test.

Course Title: DSC – 6D Algebra – II

Upon Completion of this course the students will be able to:

CO1: Prove Lagrange's theorem, derive Fermat's theorem.

CO2: understand properties of normal subgroups, factor group.

CO3: define homomorphism and isomorphism's in group and rings.

CO4: derive basic properties of rings and subrings.

Course Outcome (CO) - T. Y. B. Sc.

Course Title: - DSE E9- Mathematical Analysis

Upon Completion of this course the students will be able to:

CO1: To learn series and their convergence, various test of convergent, Implicit function, Fourier series etc.

CO2: To learn Reimman integration, mean value theorem, Integral as a function of parameter etc.

CO3: Learn some of the properties of Riemann integrable functions, and the applications of the fundamental theorems of integration.

CO4: Application of Fourier series and its applications in Physics and Electronics.

Course Title: - DSE E10- Abstract Algebra

Upon Completion of this course the students will be able to:

CO1: Understand the concept of set relation, equivalence relation by applying different examples to the definition.

CO2: Learn binary operation on the given set gives a group structure by applying the axioms.

CO3: Understand group and ring and their properties.

CO4: Applying the properties of group, subgroup, Normal subgroup, cyclic group, ring, and ideals to prove Theorems.

Course Title: - DSE E11- Optimization Techniques

Upon Completion of this course the students will be able to:

CO1: The course aims at building capabilities in the students for analyzing different situations in the industrial/ business scenario involving limited resources and finding the optimal solution within constraints.

CO2 Optimization also involves comparing and narrowing down potential options.

CO3: Operations research is often concerned with determining the extreme values of some real-world objective: the maximum or minimum

CO4: Assimilate cost, quality, delivery, and flexibility of different problems

Course Title: - DSE E12- Integral Transforms

Upon Completion of this course the students will be able to:

CO1: Have understanding regarding different kind of integral transforms.

CO2: Have deep understanding of Laplace Transformation and its real life application.

CO3: Solve initial value problem and boundary value problem using Laplace Transform.

CO4: Understand Fourier transform and its properties and will be able to solve the examples based on it.

CO5: Derive Fourier series representation of Periodic functions.

Course Title: - DSE F9 – Metric Space

Upon Completion of this course the students will be able to:

CO1 To learn metric spaces, Quasi metric space, Contraction principle, Complete metric

space, various types of spaces, viz separable, countable etc.

CO2 To learn sequential compactness, Connectedness etc.

CO3: To learn functions continuous on a metric space, Open Sets, Closed Sets, More about open sets.

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Course Title: - DSE F10- Linear Algebra

Upon Completion of this course the students will be able to:

CO1: To learn Vector spaces its property, Idea of dimension, dimension of sums of subspace.

CO2: To learn Linear transformation with their matrix representation, Rank and nullity, diagonalization, bilinear quadratic Hamiltons forms etc.

CO3: To understand Inner product space, Orthogonal vectors, Gram Schmidthorthogonalization process etc.

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Course Title: - DSE F11- Complex Analysis

Upon Completion of this course the students will be able to:

CO1. Learn basic concepts of functions of complex variable.

CO2. Be introduced to concept of analytic functions

CO3. Learn concept of complex integration and basic results thereof.

CO4. Be introduced to concept of sequence and series of complex variable.

CO5. Learn to apply concept of residues to evaluate certain real integrals.

Course Title: DSE F12 –Discrete Mathematics

Upon Completion of this course the students will be able to:

CO1: To understand the concept of directed graphs, connected and strongly connected graphs etc.

CO2: To understand various graphs. Eulerian and Hamiltonian graph with special importance.

CO3; To understand finite state machine and their application.

CO4: To learn discrete numeric function its use in recurrence relation and generating function.

CO5: Application of Boolean algebra in switching circuits.