



K.L.E. Society's
**BASAVAPRABHU KORE ARTS, SCIENCE AND COMMERCE
COLLEGE, CHIKODI – 591 201.**

(Accredited at 'A' with 3.26 CGPA in 3rd Cycle of A & A)

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DEPARTMENT OF MATHEMATICS

COURSE OUTCOMES

2018-19

Course I: Differential Calculus

- CO₁: Understand the concept of mean value theorems and its applications.
- CO₂: Able to find out the LUB and GLB of set.
- CO₃: Able to solve the examples based on absolute values and inequalities.
- CO₄: Able to define the limits and continuity and to solve examples based on it.
- CO₅: To understand the algebra of limits and continuity.
- CO₆: Able to state L-Hospital's rule and use it to compute limit of indeterminate forms
- CO₇: Understand the arithmetical properties and postulates of the real numbers.
- CO₈: Able to solve the inequalities.
- CO₉: Understand the relation between multiplication of two positive integers and any real number
- CO₁₀: Understand the concept of Leibnitz theorem and its applications

Course II: Algebra and Trigonometry

- CO₁: They will be able to formulate problems in the language of sets and perform set operations and will be able apply the fundamental principle of counting, multiplication principle.
- CO₂: Able to do partition of set and to write the equivalence class of set.
- CO₃: Understand the De-Morgan's laws and the concept of countable and uncountable sets.
- CO₄: Understand the De-Moivre's theorem and simplify the complex numbers using it.
- CO₅: Describe the summation of series and the concept of logarithm of complex numbers.

- CO₆: Develop skills in solving problems.
- CO₇: Understand the concept of Factor theorem and remainder theorem.
- CO₈: Able to use Factor theorem to solve the polynomials.
- CO₉: Students will understand the different types of matrices.
- CO₁₀: They understand the expansion of 4th order determinants and properties of symmetric and skew symmetric determinants.
- CO₁₁: Understand the meaning of rank of matrix and properties of rank of matrix.
- CO₁₂: Learn to describe the relationship between polynomial long division and synthetic division.
- CO₁₃: Evaluate polynomials using remainder theorem.
- CO₁₄: Able to find out the roots of cubic, biquadrate and quadratic equations.

Course III: Differential and Integral Calculus

- CO₁: Able to understand the concept of polar coordinates and polar curve.
- CO₂: Explain the concept of polar sub tangent and polar sub normal's.
- CO₃: Understand the concepts of curvature, radius of curvature in Cartesian and polar forms.
- CO₄: Improving skill of solve examples on limits and continuity of functions of two variable.
- CO₅: Explain the concept of Evolutes and Involutes.

Course IV: Algebra and Geometry

- CO₁: Understand the concept of division algorithm properties of prime and composite numbers.
- CO₂: Able to prove fundamental theorem of arithmetic, bracket function, Euler's function, Fermat and Wilson's theorem and solve examples on it.
- CO₃: Understand the concept of equation of sphere, section of sphere by a plane
- CO₄: Explain the concept of equation of cylinder, enveloping cylinder and right circular cylinder.
- CO₅: Understand the concept of cone and its applications.

Course V: Mathematical Logic and Real Analysis

- CO₁: Determine if a compound statement is negation, conjunction, disjunction, conditional or bi-conditional.
- CO₂: Understand the concept of inverse, converse and contra positive and construct

the truth tables for it.

CO₃: Determine if an argument is valid or invalid by using truth tables.

CO₄: Develop skills in constructing truth tables

CO₅: Derive rule for determining the general term of an arithmetic sequence.

CO₆: Able to solve problem on that involves arithmetic sequence.

CO₇: Derive rule for determining the sum of an arithmetic series.

CO₈: Understand the concept of Cauchy's first theorem and solve the examples on it.

CO₉: Understand an example of geometric sequence and solve problems that involves the geometric sequence

Course VI: Group theory, Integral Calculus and Differential Equations

CO₁: Understand the concept of group, semi group, subgroup, cyclic group and their properties.

CO₂: Determine whether a given set and binary operation form a group by checking group axioms.

CO₃: Identify the cyclic group and their generators.

CO₄: Explain groups and subgroups using Lagrange's theorem

CO₅: Able to find the length of arc, surface areas and volume of solids of revolution for standard curves whose equations are given in Cartesian, polar and parametric forms.

CO₆: Understand the first order first degree differential equations.

CO₇: Improving skill of solve homogeneous, non-homogeneous, linear, Bernoulli's and exact differential equations.

CO₈: Able to solve non exact differential equations by finding the suitable integrating factors.

CO₉: Improving skill of solve differential equation of first order higher degree.

CO₁₀: Understand the concept of Clairtau's equation.

Course VII: Vector Calculus and Infinite Series

CO₁: Derive rule for determining the sum of n terms of geometric series and solve problems on it.

CO₁: Generalize rule for determining the sum of infinite geometric series and solve problems that involves a geometric sequence and series.

CO₃: Able to explain why a geometric series is convergent and divergent.

CO₄: Define concepts of point and vector and explain differences and similarities between them.

CO₅: Memorize algebraic definitions and explain geometric meanings of dot and cross products.

CO₆: Calculate directional derivatives and gradients.

CO₇: Able to solve the examples based on double and triple product, gradient, divergence and curl of vectors.

Course VIII: Group Theory, Fourier Series and Differential Equation

CO₁: Able to define normal subgroups, quotient groups.

CO₂: Understand the concepts of homomorphism and isomorphism of groups.

CO₃: Develop the skills on solving the problems on Fourier transforms.

CO₄: Able to define Periodic functions, fourier series of odd and even functions.

CO₅: Develop the skills on solving the problems on linear differential equation of nth order.

CO₆: Understand the concepts of higher order exact differential equations and its applications.

Course IX: Real Analysis

CO₁: Understand the concept of beta and gamma functions and relation between them.

CO₂: Able to use beta and gamma functions to solve variety of problems.

CO₃: Understand the concept of recurrence formula and duplication formula.

CO₄: Understand the concept of double and triple integrals and develop the skills in solving the problems on it.

CO₅: Compute triple integrals in rectangular, cylindrical and spherical co-ordinates.

CO₆: Understand the Leibnitz's theorem and develop the skills in solving problems related to Leibnitz's theorem.

CO₇: Develop the skills on solving the problems on improper integrals.

Course X: Numerical Analysis

CO₁: Able to use Bisection method, iteration method Newton Raphson method to solve the examples.

CO₂: Understand the concepts of Gauss Seidal method and its applications.

CO₃: Able to define forward and backward formulae.

CO₄: Able to explain formation of first and second linear difference equation with

constant coefficients.

CO₅: Explain the concept of Eulers, Picard and Runge-Kutta method of order two.

Course XI: Dynamics and Calculus of Variation

CO₁: Able to understand the concept of dynamics and kinetics.

CO₂: Able to explain velocity and acceleration of particle along plane curve.

CO₃: Understand the concepts of tangential and normal components of velocity and acceleration.

CO₄: Explain the concept of Euler's equation- and its applications.

CO₅: Understand the concepts of Brachistochrone problem and isoperimetric problems.

Course XII: Differential Equations

CO₁: Develop the skills on solving the problems on simultaneous differential equation with two and three variables.

CO₂: Able to define concepts of Power series, ordinary and singular points.

CO₃: Understand the concepts of Frobenius method and its applications.

CO₄: Develop the skills on solving the problems on Charpits method

CO₅: Understand the concepts of Rodrigues formula and its applications.

Course XIII: Complex Analysis and Ring Theory

CO₁: Able to define analytic function, Cauchy-Reimann equations.

CO₂: Explain the Cauchy's theorem, Morera's theorem and its applications

CO₃: Explain the concepts of Residue theorem, Jordan's lemma and contour integration.

Course XIV: Topology and Laplace Transforms

CO₁: Able to define open set, closed set, closure of set and boundary points of set.

CO₂: Understand the concepts of base, sub-base, separation axioms.

CO₃: Develop the skills on solving the problems on Laplace transforms.

CO₄: Understand the concepts Dirac-delta function, unit step function and convolution theorem.

CO₅: Understand the concepts of convolution theorem and its applications.