

# **A.D.B. First Grade College, Harapanahalli**

## **Course Outcomes (CO's)**

### **DEPARTMENT OF MATHEMATICS**

#### **B.Sc. I SEMESTER**

At the end of the course the student should be able to know

- To understand the concept of rank of a matrix and its relation to solution of linear system of equations ,learning the idea of Eigen values, Eigen vectors, Cayley-Hamilton theorem
- Recognize the algebraic equations representing geometric objects such as line, plane, sphere cylinder, cone, and analyse them.
- Learn the basic skills of successive differentiation, partial and total differentiation, calculation of Jacobians, recognise homogeneous functions leading to Euler's theorem.
- Compute integrals using reduction formulae and Leibnitz rule.
- To develop interest among students in various topics in mathematics like calculus and real number system. Improve the differentiation and integration skills.
- Students learn to generate plane curves by using parametric equations.
- Students learn the representation of objects in 2D and 3D in the form of matrices.

#### **B.Sc. II SEMESTER**

At the end of the course the student should be able to know

- Recognize the mathematical objects called groups.
- Explain the significance of the notions of cosets, normal subgroups and factor groups.
- Understand the concept of differentiation and fundamental theorems in differentiation and various rules.
- Organize to present the applications to the evaluation of simple line integrals
- Comprehend the important concepts of Normal subgroups, quotient group, Homomorphism of group.
- Ability to understand a large class of commutative rings by regarding them as quotients of polynomial rings by suitable ideas.
- Get the knowledge of Partial derivatives of a function of two or more variables, implicit and explicit functions, Homogeneous functions.

#### **B.Sc. III SEMESTER**

At the end of the course the student should be able to know

- Improving the knowledge of higher Linear algebra includes vector spaces and linear transformation
- To understand the concept of Homomorphism, Isomorphism and properties of Homomorphism.
- Get the knowledge of linear combination concepts of linearly independent and dependent subsets.
- Organise to present the properties of linear transformation, Matrix of linear transformation, change of basis, range and kernel of linear transformation, Rank-Nullity theorem

#### **B.Sc. IV SEMESTER**

At the end of the course the student should be able to know

- Understand the concept of Riemann Integration
- To study the fundamental theorems of calculus, the first and second mean value theorems of integral calculus

- Improving the knowledge of Analytic function, Cauchy-Riemann equations in Cartesian and polar form and harmonic function.
- Develop the concepts of some standard transformation: conformal and special conformal transformation and the complex line integral.
- To impart knowledge to the students about Cauchy integral theorem and Cauchy's integral formulae for the function and its derivatives.
- Organize to present the applications to the evaluation of simple line integrals.
- Learn different methods of solving special functions on differential equations: Legendre's, Bessel, Laguerre's differential equations and Hermite polynomials.

### **B.Sc. V SEMESTER**

At the end of the course the student should be able to know

- Expressing the functions as sine and cosine form. Solving the improper integral problems.
- To learn to apply the various numerical techniques for solving real life problems.
- To fit curve to the data by using 5 different methods of interpolation as well as extrapolation.
- To be able to solve first order first degree differential equations.
- To apply notion of derivatives in mean value theorem and also higher order derivatives which arrive in the applied science.

### **B.Sc. VI SEMESTER**

At the end of the course the student should be able to know

- To understand the concept of Laplace Transforms and its applications.
- Get the knowledge of Behaviour of the real and complex analysis, Get the basic things of algebra of integrable functions.
- Improving the knowledge of higher Linear algebra includes vector spaces and linear transformation.
- To inspire interest for the knowledge of concepts of Integral theorems.
- To enable the students to solve the Half range Cosine and Sine Fourier series.
- To get well equipped with mathematical modelling abilities.