**Subject: Mathematics**

 **Course objectives and Outcomes (COs):**

**Class: B.Sc. I semester**

 **Course name: DSC-1 (Calculus)**

**Course objectives:**

1. To learn the derivatives of the functions of one variable.
2. Tolearn the partial derivatives of the functions.
3. To learn applications of definite integral for quadrature,rectification and volume of solid of revolution

**Course Outcomes (COs):**

After completion of the course, students will be able to -

1. Find derivative of hyperbolic, inverse hyperbolic functions and *n*th derivatives of given functions.
2. Find the Maclaurin’s series expansion of functions.
3. Find the partial derivatives of functions.
4. Determine areas of plane regions, length of curves and volume of solid of revolution

**Course name: DSC-2 (Lab Course on DSC-1)**

**Course objectives:**

1. To learn the derivatives of the functions of one variable.
2. To learn the partial derivatives of the functions.
3. To learn applications of definite integral for quadrature,rectification and volume of solid of revolution

**Course Outcomes (COs):**

After completion of the course, students will be able to -

1. Find derivative of hyperbolic, inverse hyperbolic functions and nth derivative

 of given functions.

 ii)Find the Maclaurin’s series expansion of functions.

 iii)Find the partial derivatives of functions.

 iv) Determine areas of plane regions, length of curves and volume of solid of revolution

**Course name: SEC-1 (Combinatorial Mathematics)**

**Course objectives:**

1. Understanding of permutations and combinations
2. Learn the circular permutations.
3. Learn the division of different things divided into groups.
4. Learn pigeon hole principle and inclusion-exclusion principle

**Course Outcomes (COs):**

After completion of the course, students will be able to -

* 1. Apply permutations and combinations.
	2. Find the number of circular permutations.
	3. Find the number of ways of selection out of given things.

 iv)Apply pigeon hole principle and inclusion-exclusion principle.

**Course name: SEC-2 (Lab Course on SEC-1)**

**Course objectives:**

1. Under standing of permutations and combinations
2. Learn the circular permutations.
3. Learn the division of different things divided into groups.
4. Learn pigeonhole principle and inclusion-exclusion principle.

**Course Outcomes (COs):**

After completion of the course, students will be able to -

1. Apply permutations and combinations.
2. Find the number of circular permutations.
3. Find the number of ways of selection out of given things.

 iv)Apply pigeon hole principle and inclusion-exclusion principle.

**Course name: GE/OE-1 (Business Mathematics)**

**Course objectives:**

i) Learn the first order linear differential equations.

1. Identify and solve the exact differential equations.
2. Learn the general and short method of solution.
3. Learn linear homogeneous differential equations

**Course Outcomes (COs):**

 After completion of the course, students will be able to-

* 1. Apply knowledge of ratios and proportions.
	2. Apply currency and discounts to business.
	3. Identify the functions and linear functions.

 iv)Apply the identified functions to cost and profit

**Class: B.Sc. II semester**

 **Course name: DSC-3 (Differential Equations)**

**Course objectives:**

i) Learn the first order linear differential equations.

1. Identify and solve the exact differential equations.
2. Learn the general and short method of solution.
3. Learn linear homogeneous differential equations

**Course Outcomes (COs):**

 After completion of the course, students will be able to -

* 1. Determine the solution of first order linear differential equations.
	2. Determine the solution of exact differential equations.
	3. Determine the solution of linear equations with constant coefficient using general and short method.
	4. Determine the solution of linear homogeneous differential equations

**Course name: DSC-4 (Lab Course on DSC-3)**

**Course objectives:**

i) Learn the first order linear differential equations.

 ii)Identify and solve the exact differential equations.

 iii) Learn the general and short method of solution.

 iv) Learn linear homogeneous differential equations

**Course Outcomes (COs):**

After completion of the course, students will be able to -

* 1. Determine the solution of first order linear differential equations.
	2. Determine the solution of exact differential equations.
	3. Determine the solution of linear equations with constant coefficient using general and short method.

iv) Determine the solution of linear homogeneous differential equations

**Course name: VSC-1B (Basic Statistics)**

**Course objectives:**

1. Learn the basic concepts of statistics.
2. Learn and analyze the scattered diagram or dot diagram

**Course Outcomes (COs):**

 After completion of the course, students will be able to-

1. Determine the mean, mode, median and deviation for the given data.

 ii) Apply the concepts of probability

**Course name: VSC-2 (Lab Course on VSC-1B)**

**Course objectives:**

1. Learn the basic concepts of statistics.
2. Learn and analyze the scattered diagram or dot diagram.

**Course Outcomes (COs):**

 After completion of the course, students will be able to-

1. Determine the mean, mode, median and deviation for the given data.

 ii) Apply the concepts of probability

 **Course name: GE/OE-2 (Matrices)**

**Course objectives:**

1. Learn the fundamentals of matrices.
2. Determine the determinant of square matrix and minors of matrix.
3. Perform the operation on matrices and study its properties.
4. Identify the rank of matrix and solve the system of equations.

**Course Outcomes (COs):**

 After completion of the course, students will be able to-

1. Apply the operations of matrices.
2. Apply the properties of matrices.
3. Find the determinant of square matrix and minors.

 iv)Solve system of equations.