

Government Degree College, Kanda, Bageshwar

Department of Mathematics

Programme Outcomes

The Programme of B.Sc.(Mathematics) aims :-

- ❖ To give in-depth knowledge of geometry, algebra, calculus, differential equations and several other branches of pure and applied mathematics which also leads to study the related areas such as computer science and other allied subjects.
- ❖ To gain the skills and knowledge helpful for modeling and solving of real life problems.
- ❖ To become employable in various government and private sector.
- ❖ To develop enhanced quantitative skills and to pursue higher mathematics and research as well.
- ❖ To enable the learner to use appropriate digital programmes and softwares to solve various mathematical problems.
- ❖ To make the student able to think in a critical manner and develop problem solving skills.
- ❖ To emphasize the learners to recall basic facts about mathematics and display knowledge of conventions such as notations, terminology etc.
- ❖ To encourage the students to formulate and develop mathematical arguments in a logical manner.
- ❖ To motivate and prepare the learner for research studies in mathematics and related fields.
- ❖ To develop the ability in students of applying their skills and knowledge in various fields of studies including, science, engineering, commerce and management etc.

B.A. / B.Sc. I (SEMESTER-I)

PAPER-I

Matrices, Trigonometry and Differential Calculus

Course outcomes

- ✚ The programme outcome is to give foundation knowledge for the students to understand basics of mathematics including applied aspect for developing enhanced quantitative skills and pursuing higher mathematics and research as well.
- ✚ By the time students complete the course they will have wide ranging application of the subject and have the knowledge of matrices and basics of differentiation.

- ✚ The student will be able to sum the trigonometric series of real and complex numbers and separate the trigonometric function in form of $A+iB$.
- ✚ The main objective of the course is to equip the student with necessary analytic and technical skills. By applying the principles of differentiation, he learns to solve a variety of practical problems in science and engineering.
- ✚ The student is equipped with standard concepts and tools at an intermediate to advance level that will serve him well towards taking more advance level course in mathematics.

B.A./ B.Sc. I (SEMESTER-I)

Paper-II

Practical

Course outcomes

- ✚ The main objective of the course is to familiar the student with different computer software such as Mathematica /MATLAB /Maple /Scilab/Maxima etc.
- ✚ The students will be able to compute various operations on matrices by using different computer software such as Mathematica /MATLAB /Maple /Scilab/Maxima etc.
- ✚ The students will also be able to compute nth derivative of various functions by using different computer software

B.A. / B.Sc. I (SEMESTER-II)

PAPER – I

Integral calculus and Vector Analysis

Course outcomes

- ✚ The Programme outcome is to give foundation knowledge for the students to understand basics of mathematics including applied aspect for developing enhanced quantitative skills and pursuing higher mathematics and research as well.
- ✚ By the time students complete the course they will have wide ranging application of the subject and have the knowledge of surface area and volume of shapes.
- ✚ The main objective of the course is to equip the student with necessary analytic and technical skills. By applying the principles of integral he learns to solve a variety of practical problems in science and engineering.
- ✚ The student is equipped with standard concepts and tools at an intermediate to advance level that will serve him well towards taking more advance level course in mathematics.

B.A./B.Sc. II (SEMESTER-III)
PAPER-I
Group Theory and Analytical Geometry

Course outcomes

- ✚ Group theory is one of the building blocks of modern algebra. Objective of this course is to introduce students to basic concepts of Group and their properties.
- ✚ This course will lead the student to basic course in advanced mathematics and geometry.
- ✚ The subjects learn and visualize the fundamental ideas about coordinate geometry and learn to describe some of the surface by using analytical geometry.
- ✚ On successful completion of the course students have gained knowledge about regular geometrical figures and their properties. They have the foundation for higher course in geometry.
- ✚ On successful completion of the course students should have knowledge about higher different mathematical methods and will help him in going for higher studies and research.

B.A./B.Sc. II (SEMESTER-IV)
PAPER-I
Ordinary Differential Equations and Ring Theory

Course outcomes

- ✚ The objective of this course is to familiarize the students with various methods of solving differential equations of first and second order and to have qualitative applications.
- ✚ A student doing this course is able to solve differential equations and is able to model problems in nature using ordinary differential equations. After completing this course, a student will be able to take more courses on wave equation, heat equation, diffusion equation, gas dynamics, nonlinear evolution equation etc.
- ✚ Ring theory is one of the building areas of modern algebra. Objective of this course is to introduce students to basic concepts of Ring, Integral domain and other structures with their properties. This course will lead the student to basic course in advanced mathematics and Algebra.

B.A./B.Sc. III (SEMESTER-V)

PAPER-I

Real Analysis, Functions of several variables and Partial Differential Equations

Course outcomes

- ✚ Students will be able to know the basic concepts and developments of real analysis which will prepare the students to take up further applications in the relevant fields.
- ✚ On successful completion of the course students should have knowledge about real analysis and will help him in going for higher studies and research.
- ✚ The main objective of the course is to equip the student with necessary analytic and technical skills.
- ✚ The course in partial differential equation intends to develop problem solving skills for solving various types of partial differential equation especially hyperbolic, parabolic and elliptic types of PDE.

B.A./B.Sc. III (SEMESTER-V)

PAPER-II

(i) Mathematical Methods and Graph Theory

Course outcomes

- ✚ The student will be able to find the integral transform, Laplace transform, inverse Laplace transform and Fourier transform. The course in mathematical methods basically develops a problem solving skill in the students.
- ✚ Upon successful completion, students will have the knowledge of various types of graphs, their terminology and applications.
- ✚ After Successful completion of this course students will be able to understand the isomorphism and homomorphism of graphs. This course covers the basic concepts of graphs used in computer science and other disciplines. The topics include path, circuits, adjacency matrix, tree, coloring. After successful completion of this course the student will have the knowledge graph coloring, color problem, vertex coloring

B.A./B.Sc. III (SEMESTER-V)

PAPER-II

(ii) Number Theory and Relativity

Course outcomes

- ✚ The student will be able to solve problems in elementary number theory and also apply elementary number theory to cryptography.
- ✚ Upon successful completion, students will be able to describe the basic concepts of the theory of relativity.

- ✚ After Successful completion of this course students will be able to discuss postulates of the special theory of relativity and their consequences.

B.A./B.Sc. III (SEMESTER-V)

PAPER-II

(iii) Numerical Analysis and Operations Research

Course outcomes

- ✚ After Successful completion of this course the student will be able to perform error analysis for arithmetic operations.
- ✚ Upon successful completion, students will be able to understand the use of interpolation and curve fitting and finite differences.
- ✚ After Successful completion of this course students will be able to use some solution methods for solving the linear programming problems.

B.A./B.Sc. III (SEMESTER-VI)

PAPER-I

Complex Analysis and Mechanics

Course outcomes

- ✚ The course is aimed at exposing the students to foundations of analysis which will be useful in understanding various physical phenomena and gives the student the foundation in mathematics.
- ✚ Upon successful completion, students will be able to understand the complex variables, analytic functions, complex integration and residues.
- ✚ The object of the paper is to give students knowledge of basic mechanics such as simple harmonic motion, motion under other laws and forces.
- ✚ The student, after completing the course can go for higher problems in mechanic such as hydrodynamics, this will be helpful in getting employment in industry.

Bharti

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