Sarva Vidyalaya Kelvani Mandal, Kadi Sanchalit
PRAMUKH SWAMI SCIENCE & H.D.PATEL ARTS COLLEGE, KADI
Re-Accredited with Grade 'A' by NAAC Third Cycle (CGPA 3.25)
"College with Potential for Excellence" Phase I & II (2010-2019) by UGC,
AAA Rank-1 by Govt. of Gujarat

PRAMUKH SWAMI SCIECNE & H D PATEL ARTS COLLEGE, KADI

Affiliated with

HEMCHANDRACHARYA NORTH GUJARAT UNIVERSITY, PATAN

SCIENCE FACULTY

Department of Mathematics

PSO & CO

P.S.Science and H.D.Patel Arts College,Kadi

Mathematics Department

Programme: B.Sc. Mathematics

Programme Specific Outcomes (PSOs) **for B.Sc. Mathematics**

Sr.No.	On completing B.Sc. Mathematics , the student will be able to:
PSO 1	Students learn to think in a critical manner.
PSO 2	Know when there is a need for information, to be able to identify, locate, evaluate, and effectively use that information for the issue or problem at hand.
PSO 3	Formulate and develop mathematical arguments in a logical manner
PSO 4	Acquire good knowledge and understanding in advanced areas of mathematics and statistics, chosen by the student from the given courses
PSO 5	Understand, formulate and use quantitative models arising in social science, business and other contexts

Course Outcomes (COs): B.Sc. Mathematics

Semester: I

Course Title: Calculus and Vector Analysis

Course Code: SC23MJDSCMAT101

Sr. No.	On completing the course, the student will be able to:	PSOs addressed	Cognitive levels
1	Develop skills in successive differentiation, including using Leibnitz's Theorem to find higher-order derivatives, and applying it to solve Problems and real-world applications.	1, 2,	U, R, Ap,
2	Understand the geometrical concept of Cauchy Mean Value theorem, to expand functions in power series using Taylor's & Maclaurin's Theorem, evaluate limits using L'Hospitals Rules.	1, 4, 5	U, An, E,
3	Understand the fundamental concepts of vector algebra, including scalar product and vector multiplication, co-planar vectors, and reciprocal vectors set.	1, 2, 4	R, Ap, An,
4	Learn the concept of partial derivatives and vector analysis, including Understanding the properties of gradient, divergence, and curl, and Using them to solve problems.	1, 4, 5	An, E, C

Course Outcomes (COs): B.Sc. Mathematics

Semester: II

Course Title: Advance Mathematics

Course Code: SC23MJDSCMAT201

Sr. No.	On completing the course, the student will be able to:	PSOs addressed	Cognitive levels
1	**Understand the properties of matrices, row and column dependence, rank and inverse of a matrix. By applying matrix operations solve the systems of linear equations.**	1, 3	U, R, C
2	**Analyze the concepts of integral calculus and its applications in various fields.**	1, 4,	U, Ap, An,
3	**Understand the concepts of applications of integration.**	4, 5	E, C
4	**Develop the skill of solving linear and homogeneous differential equations by using various methods.**	1, 2, 3	U, E, C

Course Outcomes (COs): B.Sc. Mathematics

Semester: III

Course Title: Calculus and Linear Algebra

Course Code: SC23MJDSCMAT301

Sr. No.	On completing the course, the student will be able to:	PSOs addressed	Cognitive levels
1	Able to verify the existence of limits and calculate the limit, if exists, of single variablefunction and utilize the concept of limit to verify the continuity of single variablefunction. Moreover, compute the higher order derivatives of given functions.	1, 3	U, R, Ap,
2	To understand the applications of Euler's theorem, Lagrange's method and Taylor's expansion	1, 2	U, Ap, An
3	Understand vector spaces over a field and subspaces with their properties. Also, able to understand linear independence, dependence, Basis and Dimension.	1, 2, 3	U, R, Ap,
4	Understand the basics of linear transformation and define its characterization and classify various types of linear transformation and define its relation with matrices.	1, 4, 5	U, E, C

Course Title: Numerical Analysis

Course Code: SC23MJDSCMAT301 A

Sr. No.	On completing the course, the student will be able to:	PSOs addressed	Cognitive levels
1	To identify the solution of problems using Numerical Methods.	1, 2, 3	U, Ap, An
2	Able to find numerical solutions of system of linear equations and to check the accuracy of the solutions.	2, 3, 5	Ap, An, E, C
3	To learn about various interpolating and extrapolating methods to find numerical solutions.	1, 4, 5	An, E, C
4	To solve initial and boundary value problems in differential equations using numerical Methods.	1, 4, 5	Ap, An, C

Course Outcomes (COs): B.Sc. Mathematics

Semester: IV

Course Title: Advanced Calculus

Course Code: SC23MJDSCMAT401

Sr. No.	On completing the course, the student will be able to:	PSOs addressed	Cognitive levels
1	To get introduced to the concept of a regular parameterized curve in R^2. Also able to find the curvature, singular and multiple points for curve.	1, 3, 5	U, Ap, E,
2	Understand the concept of Beta and Gamma functions with their applications.	4, 5	E, C
3	To understand the concept of multiple integrals and its applications in terms of Area and Volume.	3, 4, 5	U, Ap, An,
4	To study of vector differentiation and integration in two & three dimensional spaces as it is prerequisite in various fields of science and engineering.	1, 3, 5	U, An, C

Course Title: Linear Algebra

Course Code: SC23MJDSCMAT401 A

Sr. No.	On completing the course, the student will be able to:	PSOs addressed	Cognitive levels
1	Relate matrices and linear transformations, compute eigen values and eigen vectors of linear transformations.	1, 2	U, Ap, E,
2	To understand the concept of inner product space and its applications and its properties.	1, 2, 3,	U, R, An,
3	Able to use the concept of linear operator using linear functional.	1, 3	U, R, An
4	Understand the concept of eigen values and eigen vector of linear transformation.	4, 5	Ap, An, E, C

Course Outcomes (COs): B.Sc. Mathematics
Semester: V

Course Title: Group Theory
Course Code: CC-MAT-501

Sr. No.	On completing the course, the student will be able to:	PSOs addressed	Cognitive levels
1	Understand the concept of various algebraic structures.	1, 2, 3,	U, R, Ap
2	Develop an understanding of cycle groups and quotient groups.	1, 2,	U, R, Ap, An
3	Understand the concept of homomorphism and isomorphism of groups	3, 4, 5	Ap, An, E, C

Course Title: Mathematical Analysis-I
Course Code: CC-MAT-502

Sr. No.	On completing the course, the student will be able to:	PSOs addressed	Cognitive levels
1	Understand the concept of number system.	1, 2, 3,	U, R, Ap, An
2	Develop an understanding of basic topology	1, 3, 5	U, R, Ap, An,
3	Gain knowledge about sequence and series	2, 4, 5	U, R, Ap, An,

Course Title: DIFFERENTIAL EQUATIONS
Course Code: CC-MAT-503-A

Sr. No.	On completing the course, the student will be able to:	PSOs addressed	Cognitive levels
1	Understand the concept of different types of differential equations.	1, 3,	U, R, Ap
2	Develop an understanding of the various differential equations.	3, 4, 5	U, R, Ap, An, E, C

Course Title: Optimization Techniques
Course Code: CC MAT-504-B

Sr. No.	On completing the course, the student will be able to:	PSOs addressed	Cognitive levels
1	Understand the concept of linear programmining formulation and Its solutions by graphical method & simplex method .	1, 3, 5	U, Ap, An, E,
2	Understand the concept of duality theory and its primal-dual relationship..	1, 2, 3	R, An, E,
3	Understand the concept of integer solution by Gomory's Cutting Plane Algorithm.	2, 3	Ap, An, E, C

Course Outcomes (COs): B.Sc. Mathematics

Semester: VI

Course Title: Abstract Algebra
Course Code: CC- MAT-601

Sr. No.	On completing the course, the student will be able to:	PSOs addressed	Cognitive levels
1	Understand the concept of algebraic structures e.g. rings.	1, 4, 5	U, An, E
2	Develop an understanding of polynomials.	1, 2,	U, R, An,
3	Gain knowledge about the quotient rings and homomorphism	3, 4, 5	An, E, C

Course Title: Mathematical Analysis-II
Course Code: CC-MAT-602

Sr. No.	On completing the course, the student will be able to:	PSOs addressed	Cognitive levels
1	Understand the concept of continuity, differentiability, and integration	1, 3, 4	U, R, Ap, An,
2	Develop an understanding of the convergence of various series and sequence of functions.	1, 3, 4	Ap, E, C

Course Title: Number Theory
Course Code: CC-MAT-603 B

Sr. No.	On completing the course, the student will be able to:	PSOs addressed	Cognitive levels
1	Understand the concept of division algorithm, chinese remainder theorem (CRT) and its applications.	1, 5	Ap, An, C
2	Develop an understanding of the congruence relations, Fermat's theorem, Lagrange's theorem and its applications.	1, 4, 5	Ap, An, E, C

Course Title: Operations Research
Course Code: CC-MAT-604 B

Sr. No.	On completing the course, the student will be able to:	PSOs addressed	Cognitive levels
1	Understand the concept of Network by NWCN ,Least cost method, VAM method.	1, 3, 4	Ap, An, E, C
2	Understand the concept of Sequencing Problem by Johnson's Algorithm for two & three machine problem.	3, 4, 5	Ap, E
3	. Understand the concept of method of two-person zero game, saddle point theorem ,mixed strategies ,solution of game using dominance Problem.	1, 2, 3	U, R, Ap, An,