Prak Shastri – First Year (Class 11th)

Subject- Mathematics

First Semester

Text Book: - NCERT (NATIONAL COUNCIL OF EDUCATIONAL RESEARCH AND TRAINING)

S. No	Unit Name	Unit Topics	Periods (64)	Credits (1)
1.	Sets	Sets and their representation, The Empty set, Finite and Infinite sets, Equal sets, Subsets, Power set, Universal set, Venn Diagrams, Operations on sets, Difference of sets, Complement of sets, Practical Problems on Union and Intersection of Two Sets	08	
	Relations And Functions	Ordered pairs, Cartesian product of sets, Number of elements in the Cartesian product of two finite sets. Definition of relation, Domain, co-domain, Range of relation. Definition of Function, Domain, co-Domain, and Range of a function. Real valued Function, Constant, Identity, polynomial, Rational, Modulus Signum and Greatest Integer Functions and their graph.	08	1
2.	Trigonometry	Positive and Negative Angles, Measuring angles in Radians and in Degrees and their conversions. Trigonometry Functions, Trigonometry Functions of Sum and Difference of Two Angles, Trigonometry Equations.	10	
	Principles Of Mathematical Induction	Process of the proof by induction, The principle of mathematical induction and simple applications.	06	1
3.	Complex Numbers	Introduction of Complex Numbers, Operations on Complex Numbers, The Modulus and Conjugate of a complex Numbers, Argand Plane and Polar Representation, Quadratic Equations.	08	
	Linear Inequalities	Introduction of Inequalities, Algebraic Solutions of Linear Inequalities in One Variables and their Graphical, Representations, Algebraic and Graphical Solutions of Linear Inequalities in Two Variables	08	1
4.	Permutations And Combinations	Introduction Fundamental Principle of Counting, Factorial, Permutations and Combinations formulas and their Applications.	08	
	Binomial Theorem	Introduction, Binomial Theorem for Positive integral indices, Pascal's Triangle, General and Middle terms in binomial expansion,	08	1

Course Designer

Sh. Kuldeep Singh

(TGT, Mathematics)

Shri Mata Vaishno Devi Gurukul

Katra, Jammu and Kashmir

Prak Shastri – First Year (Class 11th)

Subject- Mathematics

2nd Semester

Text Book: - NCERT (NATIONAL COUNCIL OF EDUCATIONAL RESEARCH AND TRAINING)

S. No	Unit Name	Unit Topics	Periods (64)	Credits (4)
1.	Sequences and Series	Introduction of Sequences and Series, Arithmetic Progression (A.P), Arithmetic Mean (A.M), Geometric Progression (G.P), and Geometric Mean (G.M), Relationship between A.M and G.M, Sum to n, terms of the special series.	16	1
2.	Straight Lines	Introduction, Slope of a Line, Various forms of the Equations of a Line, General Equations of a Line, Distance of a point from a line.	10	1
	Conics Sections	Introduction, Sections of a cone, Circles, Parabola, Ellipse, Hyperbola.	06	
3.	Introduction to Three Dimensional Geometry	Introduction, Coordinates Axes and Coordinate Planes in Three Dimensional Space, Coordinates of a point in space, Distance Between Two Points, Section formula.	06	1
	Limits and Derivatives	Introduction, Intuitive Idea of Derivatives, Limits, Limits of Trigonometry Functions, Derivatives.	10	
4.	Statistics	Introductions, Measures of Dispersion, Range, Mean Deviation, Variance and Standard Deviations of ungrouped/grouped data.	08	1
	Probability	Introductions, Random Experiments, Event, Axiomatic Approach to Probability, Probability of an event, probability of 'not', 'and' & 'or' events.	08	

Course Disigner

Sh. Kuldeep Singh

(TGT, Mathematics)

Shri Mata Vaishno Devi Gurukul

Katra, Jammu and Kashmir

Prak Shastri – First Year (Class 12th)

Subject- Mathematics

3rd Semester

Text Book: - NCERT (NATIONAL COUNCIL OF EDUCATIONAL RESEARCH AND TRAINING)

S. No	Unit Name	Unit Topics	Periods (64)	Credits (4)
1.	Relations and Functions Inverse Trigonometry Functions	Introduction, Type of Relations, Type of Functions, Composition of Functions and Invertible Functions. Introductions, Basic Concepts, Properties of Trigonometry Functions	08 08	1
2.	Matrices Determinants	Introduction, Matrix, Type of Matrices, Operations on Matrices, Transpose of Matrix, Symmetric and Skew Symmetric Matrices, Elementary Operation (Transformation) of a Matrix, Invertible Matrices. Introduction, Determinants, Properties of Determinants, Area of Triangle, Minors and Cofactors, Adjoint and Inverse of a Matrix. Applications of Determinants and Matrices.	08 08	1
3.	Continuity and Differentiability	Introduction, Continuity Differentiability, Exponential and Logarithmic Functions, Logarithmic Differentiation, Derivatives of Functions in Parametric Forms, Second Order Derivative, Mean Value Theorem.	16	1
4.	Application of Derivatives	Introductions, Rate of Change of Quantities, Increasing and Decreasing Functions, Tangents and Normals, Maxima and Minima.	16	1

Course Designer

Sh. Kuldeep Singh

(TGT, Mathematics)

Shri Mata Vaishno Devi Gurukul

Katra, Jammu and Kashmir

Prak Shastri – First Year (Class 12th)

Subject- Mathematics

4rd Semester

Text Book: - NCERT (NATIONAL COUNCIL OF EDUCATIONAL RESEARCH AND TRAINING)

S. No	Unit Name	Unit Topics	Periods (64)	Credits (4)
1.	Integrals	Introduction, Integration as an Inverse Process of Differentiation, Method of Integration, Integrals of some Particular Functions, Integration by Partial Functions, Integration by Parts, Definite Integral, Fundamental Theorem of Calculus, Evaluation of Definite Integral by Substitution, Some Properties of Definite Integrals.	12	1
	Application of Integrals	Introduction, Area under Curves, Area between Two Curves.	04	
2.	Differential Equations	Introduction, Basic Concepts, General and Particular Solutions of a Differential Equation, Formation of a Differential Equation whose General Solution is given, Methods of Solution First order, First Degree Differential.	16	1
3.	Vectors Algebra	Introduction, Some Basic Concept, Type of Vectors, Addition of Vectors, Multiplication of a Vectors by a scalar, Product of Two Vectors.	08	1
	Three Dimensional Geometry	Introduction, Direction Ratios of a Line, Equation of a Line in Space, Angle between Two Lines, Shortest Distance between Two Lines Planes, Angle between a Line and a plane. Planes, Co planarity of Two Lines, Angle between Two Planes, Distance of a Point from a plane, Angle between a Line and a Plane.	08	
4.	Linear Programming	Introductions, Linear Programming Programming Problems and its Mathematical Formulation, Different Types of Linear Programming Problems.	16	1
	Probability	Introduction, Conditional Probability, Multiplication Theorem on Probability, Independent Events, Byes ' Theorem, Random Variables and its Probability Distributions, Bernoulli Trials and Binomials Distribution.		

Course Designer

Sh. Kuldeep Singh

(TGT, Mathematics)

Shri Mata Vaishno Devi Gurukul

Katra, Jammu and Kashmir