

Curriculum
Session – 2022-23
Subject- Applied Mathematics
Class –XI
Subject Code : 241

	May/June	July	August	September
CONCEPTS	Ch.1 Sets Ch.2 Relations Ch.3 Sequence and Series	Ch.4 Permutation and Combination Ch.5 Probability	Ch.6 Data Interpretation	Ch.7 Financial Mathematics
Learning Outcomes	Students will be able <ul style="list-style-type: none"> ● Define set as a well-defined collection of objects. ● Represent a set in Roster form and Set builder form. ● Identify different types of sets on the basis of number of elements in the set ● Differentiate between equal set and equivalence set. ● Define and enlist subsets, power set of a set ● Express subset of real numbers as intervals. ● Apply the concept of Venn diagrams to understand the relationship between sets. ● Explain the significance of specific arrangement of elements in a pair ● Write Cartesian product of two sets 	Students will be able <ul style="list-style-type: none"> ● Define factorial of a number and its calculation ● Fundamental Principle of Counting. ● Define permutation ● Apply the concept of permutation to solve simple problems ● Define combination. ● Differentiate between permutation and combination ● Apply the formula of combination to solve the related problems. ● Define random experiment and sample space with suitable examples. ● Define an event ● Recognize and differentiate different types of events and find their probabilities. ● Define the concept of conditional probability ● Apply reasoning skills to solve problems based on conditional probability. ● State Bayes' theorem and solve practical problems based on Bayes' Theorem. 	Students will be able <ul style="list-style-type: none"> ● Understand meaning of dispersion in a data set ● Differentiate between range, quartile deviation, mean deviation and standard deviation ● Calculate range, quartile deviation, mean deviation and standard deviation for ungrouped and grouped data set. ● Choose appropriate measure of dispersion to calculate spread of data ● Define Skewness and Kurtosis using graphical representation of a data set ● Interpret Skewness and Kurtosis of a frequency distribution by plotting the graph. ● Calculate coefficient of Skewness and interpret the results. ● Define Percentile rank and Quartile rank. ● Calculate and interpret Percentile and Quartile rank of scores in a given data set. ● Define correlation in values of two data sets ● Calculate Product moment correlation for ungrouped and grouped data ● Calculate Karl Pearson's coefficient of correlation 	Students will be able <ul style="list-style-type: none"> ● Define the concept of Interest Rates ● Compare the difference between Nominal Interest Rate, Effective Rate and Real Interest Rate ● Interpret the concept of simple and compound interest ● Calculate Simple Interest and Compound Interest ● Explain the meaning, nature and concept of equivalency ● Analyze various examples for understanding annual equivalent rate ● Define with examples the concept of effective rate of interest. ● Interpret the concept of compounding and discounting along with practical applications ● Compute net present value and apply net present value in capital budgeting decisions. ● Explain the concept of Immediate Annuity, Annuity due and Deferred Annuity ● Calculate General Annuity. ● Calculate the future value of regular annuity, annuity due ● Apply the concept of Annuity in real life situations.

	<ul style="list-style-type: none"> ● Find the number of elements in a Cartesian product of two sets. ● Express relation as a subset of Cartesian product ● Find domain and range of a relation ● Differentiate between sequence and series. ● Identify Arithmetic Progression (AP) ● Establish the formulae of finding n^{th} term and sum of n terms ● Solve application problems based on AP ● Find arithmetic mean (AM) of two positive numbers ● Identify Geometric Progression (GP) ● Derive the n^{th} term and sum of n terms of a given GP ● Solve problems based on applications of GP ● Find geometric mean (GM) of two positive numbers ● Solve problems based on relation between AM and GM ● Apply appropriate formulas of AP and GP to solve application problems 		<ul style="list-style-type: none"> ● Calculate Spearman's rank correlation ● Interpret the coefficient of correlation 	<ul style="list-style-type: none"> ● Explain fundamentals of taxation ● Differentiate between Direct and indirect tax ● Define and explain GST ● Calculate GST and Explain rules under State Goods and Services Tax (SGST) Central Goods and Services Tax (CGST) and Union Territory Goods and Services Tax (UTGST) ● Describe the meaning of bills and its various types ● Analyze the meaning and rules determining tariff rates ● Explain the concept of fixed charge ● To interpret and analyze electricity bills, water bills and other supply bills ● Evaluate how to calculate units consumed under electricity bills/water bill
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Activities			Competency-skills based activity/Experiential Learning: 1. Prepare a report card using scores of the last four exams and compare the performance 2. Calculating average, interest (simple and compound)	Competency-skills based activity/Experiential Learning: Create a budget of income and spending
SKILLS	Skills: Understanding/ Application/Critical thinking/ Problem solving	Skills: Understanding/ Application/Critical thinking/ Problem solving	Skills: Understanding/ Application/Critical thinking/ Problem solving	Skills: Understanding/ Application/Critical thinking/ Problem solving/Analysis
ASSESSMENT	<ul style="list-style-type: none"> ● Project work and record ● Year-end Presentation/ Viva of the Project ● Main Book: 'Applied Mathematics' 			

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	October	November	December	January/February
CONCEPTS	<p>Ch.9 Coordinate Geometry</p> <p>Ch.10 Calculus</p>	<p>Ch.10 Calculus(Contd.)</p>	<p>Ch.11 Numbers & Quantification</p> <p>Ch.14 Numerical Applications</p>	<p>Ch.15 Logical Reasoning</p> <p>Revision of complete syllabus with HOTS</p>
Learning Outcomes	<p>Students will be able</p> <ul style="list-style-type: none"> ● Find the slope and equation of the line in various forms. ● Find angle between the two lines ● Find the perpendicular from a given point on a line ● Find the distance between two parallel lines ● Define a circle ● Find different form of equations of a circle ● Solve problems based on applications of circle ● Define parabola and related terms ● Define eccentricity of a parabola ● Derive the equation of parabola ● Identify dependent and independent variables ● Define a function using dependent and independent variable 	<p>Students will be able</p> <ul style="list-style-type: none"> ● Define domain, range and codomain of a given function ● Define various types of functions ● Identify domain, co-domain and range of the function. ● Representation of function graphically ● Define limit of a function ● Solve problems based on the algebra of limits ● Define continuity of a function ● Define instantaneous rate of change ● Find the derivative of the functions ● Find the derivative of function of a function 	<p>Students will be able</p> <ul style="list-style-type: none"> ● Express decimal numbers in binary system ● Express binary numbers in the decimal system. ● Relate indices and logarithm /antilogarithm ● Find logarithm and antilogarithms of given number ● Enlist the laws and properties of logarithms ● Apply laws of logarithm ● Use logarithm in different applications ● Determine average for a given data Evaluate the angular value of a minute. ● Calculate the angle formed between two hands of clock at given time ● Calculate the time for which hands of clock meet ● Determine Odd days in a month/ year/ century ● Decode the day for the given date ● Establish the relationship between work and time ● Compare the work done by the individual / group w.r.t. time ● Calculate the time taken/ distance covered/ Work done from the given data Solve problems based on surface area and volume of 2D and 3D shapes ● Calculate the volume/ surface area for solid formed using two or more shapes ● Create suitable seating plan/ draft as per given conditions (Linear/circular) ● Locate the position of a person in a seating arrangement 	<p>Students will be able</p> <ul style="list-style-type: none"> ● Solve logical problems involving odd man out, syllogism, blood relation and coding decoding

	Competency-skills based activity/Experiential Learning : Plot the graph of functions on excel and study the nature of function at various points.	Competency-skills based activity/Experiential Learning: Plot the graph of functions on excel and study the nature of Tangents at various points, on a line		
SKILLS	Skills: Understanding/ Application/Critical thinking/ Problem solving/Analysis	Skills: Understanding/ Application/Critical thinking/ Problem solving	Skills: Understanding/ Application/Critical thinking/ Problem solving	Skills: Understanding/ Application/Critical thinking/ Problem solving
ASSESSMENT	<ul style="list-style-type: none"> ● Project work and record ● Year-end Presentation/ Viva of the Project ● Main Book: 'Applied Mathematics' 			