

St. Paul's School, Aya Nagar
Science Section Monthwise Syllabus
Class XI

English		
Month	Chapters and Topic Covered	Practical/Activities
April	1. RITING SKILLS <ul style="list-style-type: none"> Note Making Summary 2. HORNBILL- The Portrait of a Lady (Prose) 3. A Photograph (Poem) 4. SNAPSHOTS- The Tale of Melon City	
May	1. WRITING SKILLS <ul style="list-style-type: none"> Poster Making 2. HORNBILL- We're Not Afraid to Die.....if We Can be Together (Prose) 3. The Voice of the Rain (Poem) 4. GRAMMAR- Editing and Omission	<ul style="list-style-type: none"> Class Test Poster Making
July	1. HORNBILL- Discovering Tut- The Saga Continues 2. HORNBILL- The Laburnum Top (Poem) 3. SNAPSHOTS- The Address (Prose) 4. WRITING SKILLS- Classifieds	<p>Activity 1- Word Jumble Race</p> <p>This is a great game to encourage team work and bring a sense of competition to the classroom. No matter how old we are, we all love a good competition and this game works wonders with all age groups. It is perfect for practicing tenses, word order, reading & writing skills and grammar.</p> <p>HOW TO PLAY: Write out a number of sentences, using different colours for each sentence. 3-5 sentences for each team.</p> <ol style="list-style-type: none"> Cut up the sentences so you have a handful of words.

		<ol style="list-style-type: none"> Put each sentence into hats, cups or any objects you can find, keeping each separate. Split your class into teams of 2, 3, or 4. Teams must now put their sentences in the correct order. The winning team is the first team to have all sentences correctly ordered.
August	<ol style="list-style-type: none"> HORNBILL- The Adventure (Prose) HORNBILL- The Childhood (Poem) SNAPSHOTS- The Summer of the Beautiful White Horse (Prose) WRITING SKILLS- Debate based of Verbal/Visual Inputs GRAMMAR- Gap Filling (Tenses, Clauses) 	
September	<ol style="list-style-type: none"> HORNBILL- Silk Road (Prose) HORNBILL- Father to Son (Poem) SNAPSHOTS- Mother's Day (Play) GRAMMAR- Reordering/Transformation of Sentences Revision of the syllabus covered for Term - 1 exam 	ASSESSMENT OF SPEAKING SKILLS
October	<ol style="list-style-type: none"> SNAPSHOTS- Birth (Prose) WRITING SKILLS- Speech Writing Revision of the syllabus covered 	<p>Activity 2- Pictionary Pictionary can help students practice their vocabulary and it tests to see if they're remembering the words you've been teaching.</p> <p>HOW TO PLAY:</p> <ol style="list-style-type: none"> Before the class starts, prepare a bunch of words and put them in a bag. Split the class into teams of 2 and draw a

		<p>line down the middle of the board.</p> <ol style="list-style-type: none"> 3. Give one team member from each team a pen and ask them to choose a word from the bag. 4. Tell the students to draw the word as a picture on the board and encourage their team to guess the word. 5. The first team to shout the correct answer gets a point. 6. The student who has completed drawing should then nominate someone else to draw for their team. 7. Repeat this until all the words are gone - make sure you have enough words that each student gets to draw at least once!
November till First week	<ol style="list-style-type: none"> 1. Class tests 2. Revision of the 	Project Work

Physics		
Month	Chapters and Topic Covered	Practical/Activities
April	Chapter–2: Units and Measurements Need for measurement: Units of measurement;	1. To measure diameter of a given wire and thickness of a given sheet

	<p>systems of units; SI units, fundamental and derived units. significant figures. Dimensions of physical quantities, dimensional analysis and its applications.</p> <p>Chapter–3: Motion in a Straight Line Frame of reference, Motion in a straight line, Elementary concepts of differentiation and integration for describing motion, uniform and non-uniform motion, and instantaneous velocity, uniformly accelerated motion, velocity - time and position-time graphs. Relations for uniformly accelerated motion (graphical treatment).</p>	<p>using screw gauge.</p> <p>2. To determine volume of an irregular lamina using screw gauge.</p>
May	<p>Chapter–4: Motion in a Plane Scalar and vector quantities; position and displacement vectors, general vectors and their notations; equality of vectors, multiplication of vectors by a real number; addition and subtraction of vectors, Unit vector; resolution of a vector in a plane, rectangular components, Scalar and Vector product of vectors. Motion in a plane, cases of uniform velocity and uniform acceleration projectile motion, uniform circular motion.</p>	<p>To measure diameter of a small spherical/cylindrical body and to measure internal diameter and depth of a given beaker/calorimeter using Vernier Callipers and hence find its volume.</p>
July	<p>Chapter–5: Laws of Motion Intuitive concept of force, Inertia, Newton's first law of motion; momentum and Newton's second law of motion; impulse; Newton's third law of motion. Law of conservation of linear momentum and its applications. Equilibrium of concurrent forces, Static and kinetic friction, laws of friction, rolling friction, lubrication. Dynamics of uniform circular motion: Centripetal force, examples of circular motion (vehicle on a level circular road, vehicle on a banked road).</p> <p>Chapter–6: Work, Energy and Power Work done by a constant force and a variable force; kinetic energy, work energy theorem, power. Notion of potential energy, potential energy of a spring, conservative forces: non- conservative forces, motion in a vertical circle; elastic and inelastic collisions in one and two dimensions.</p>	<p>To determine the radius of curvature of a given spherical surface by a spherometer.</p>
August	<p>Chapter–7: System of Particles and Rotational Motion Centre of mass of a two-particle system, momentum conservation and Centre of mass motion. Centre of mass of a rigid body; centre of mass of a uniform rod. Moment of a force, torque, angular momentum, law of conservation of angular momentum and its</p>	<p>To find the weight of a given body using the parallelogram law of vectors.</p>

	<p>applications. Equilibrium of rigid bodies, rigid body rotation and equations of rotational motion, comparison of linear and rotational motions. Moment of inertia, radius of gyration, values of moments of inertia for simple geometrical objects (no derivation).</p> <p>Chapter–8: Gravitation Kepler's laws of planetary motion, universal law of gravitation. Acceleration due to gravity and its variation with altitude and depth. Gravitational potential energy and gravitational potential, escape velocity, orbital velocity of a satellite.</p>	
September	<p>Chapter–9: Mechanical Properties of Solids Elasticity, Stress-strain relationship, Hooke's law, Young's modulus, bulk modulus, shear modulus of rigidity (qualitative idea only), Poisson's ratio; elastic energy.</p> <p>Chapter–10: Mechanical Properties of Fluids Pressure due to a fluid column; Pascal's law and its applications (hydraulic lift and hydraulic brakes), effect of gravity on fluid pressure. Viscosity, Stokes' law, terminal velocity, streamline and turbulent flow, critical velocity, Bernoulli's theorem and its simple applications. Surface energy and surface tension, angle of contact, excess of pressure across a curved surface, application of surface tension ideas to drops, bubbles and capillary rise.</p>	Using a simple pendulum, plot its L-T^2 graph and use it to find the effective length of second's pendulum.
October	<p>Chapter–11: Thermal Properties of Matter Heat, temperature, thermal expansion; thermal expansion of solids, liquids and gases, anomalous expansion of water; specific heat capacity; C_p, C_v - calorimetry; change of state - latent heat capacity. Heat transfer-conduction, convection and radiation, thermal conductivity, qualitative ideas of Blackbody radiation, Wein's displacement Law, Stefan's law .</p> <p>Chapter–12: Thermodynamics Thermal equilibrium and definition of temperature zeroth law of thermodynamics, heat, work and internal energy. First law of thermodynamics, Second law of thermodynamics: gaseous state of matter, change of condition of gaseous state -isothermal, adiabatic, reversible, irreversible, and cyclic processes.</p>	To find the downward force, along an inclined plane, acting on a roller due to gravitational pull of the earth and study its relationship with the angle of inclination θ by plotting graph between force and $\sin\theta$.
November	<p>Chapter–13: Kinetic Theory Equation of state of a perfect gas, work done in</p>	To study the relation between the length of a given wire and tension

	<p>compressing a gas. Kinetic theory of gases - assumptions, concept of pressure. Kinetic interpretation of temperature; rms speed of gas molecules; degrees of freedom; law of equi-partition of energy (statement only) and application to specific heat capacities of gases; concept of mean free path, Avogadro's number.</p> <p>Chapter–14: Oscillations Periodic motion - time period, frequency, displacement as a function of time, periodic functions and their application. Simple harmonic motion (S.H.M) and its equations of motion; phase; oscillations of a loaded spring- restoring force and force constant; energy in S.H.M. Kinetic and potential energies; simple pendulum derivation of expression for its time period.</p>	for constant frequency using sonometer.
December	<p>Chapter–15: Waves Wave motion: Transverse and longitudinal waves, speed of travelling wave, displacement relation for a progressive wave, principle of superposition of waves, reflection of waves, standing waves in strings and organ pipes, fundamental mode and harmonics, Beats.</p>	

Chemistry		
Month	Chapters and Topic Covered	Practical/Activities
April	<p>Unit II: Structure of Atom Discovery of Electron, Proton and Neutron, atomic number, isotopes and isobars. Thomson's model and its limitations. Rutherford's model and its limitations, Bohr's model and its limitations, concept of shells and subshells, dual nature of matter and</p>	<p>1) Crystallization of an impure sample of any one of the following: copper sulphate, benzoic acid.</p>

	<p>light, de Broglie's relationship, Heisenberg uncertainty principle, concept of orbitals, quantum numbers, shapes of s, p and d orbitals, rules for filling electrons in orbitals - Aufbau principle, Pauli's exclusion principle and Hund's rule, electronic configuration of atoms, stability of half-filled and completely filled orbitals.</p>	
May	<p>Unit III: Classification of Elements and Periodicity in Properties Significance of classification, brief history of the development of periodic table, modern periodic law and the present form of periodic table, periodic trends in properties of elements -atomic radii, ionic radii, inert gas radii, Ionization enthalpy, electron gain enthalpy, electronegativity, valency. Nomenclature of elements with atomic number greater than 100.</p>	<p>B) Experiments based on pH</p> <ol style="list-style-type: none"> 1) Determination of pH of some solutions obtained from fruit juices, solutions of known and varied concentrations of acids, bases and salts using pH paper 2) Comparing the pH of solutions of strong and weak acids of same concentration.
July	<p>Unit IV: Chemical Bonding and Molecular Structure Valence electrons, ionic bond, covalent bond, bond parameters, Lewis structure, polar character of covalent bond, covalent character of ionic bond, valence bond theory, resonance, geometry of covalent molecules, VSEPR theory, concept of hybridization, involving s, p and d orbitals and shapes of some simple</p>	<p>C) Quantitative estimation</p> <ol style="list-style-type: none"> 1) Preparation of standard solution of oxalic acid. 2) Determination of molarity of a given solution of sodium hydroxide by titrating it against standard solution of oxalic acid.

	<p>molecules, molecular orbital theory of homonuclear diatomic molecules(qualitative idea only), Hydrogen bond.</p> <p>Unit VI: Chemical Thermodynamics</p> <p>Concepts of System and types of systems, surroundings, work, heat, energy, extensive and intensive properties, state functions.</p> <p>First law of thermodynamics -internal energy and enthalpy, heat capacity and specific heat, measurement of U and H, Hess's law of constant heat summation, enthalpy of bond dissociation, combustion, formation, atomization, sublimation, phase transition, ionization, solution and dilution. Second law of Thermodynamics (brief introduction) Introduction of entropy as a state function, Gibb's energy change for spontaneous and non- spontaneous processes, criteria for equilibrium.</p> <p>Third law of thermodynamics (brief introduction).</p>	
August	<p>Unit VIII: Redox Reactions</p> <p>Concept of oxidation and reduction, redox reactions, oxidation number, balancing redox reactions, in terms of loss and gain of electrons and change in oxidation number, applications of redox reactions.</p>	<p>D) Qualitative Analysis</p> <p>1)Determination of one anion and one cation in a given salt</p> <p>Cations - NH_4^+</p> <p>Anions – $(\text{CO}_3)^{2-}$, S^{2-}, $(\text{SO}_3)^{2-}$, Cl^-, CH_3COO^-</p> <p>(Note: insoluble salts excluded).</p>

	Unit XII: Organic Chemistry -Some Basic Principles and Techniques (Half) General introduction, methods of purification, qualitative and quantitative analysis, classification and IUPAC nomenclature of organic compounds. Electronic displacements in a covalent bond: inductive effect, electromeric effect, resonance and hyper conjugation.	
September	First term examination Unit XII: Organic Chemistry -Some Basic Principles and Techniques (Half) Homolytic and heterolytic fission of a covalent bond: free radicals, carbocations, carbanions, electrophiles and nucleophiles, types of organic reactions.	1) Detection of Nitrogen in the given organic compound. 2) Detection of Halogen in the given organic compound
October	Unit XIII:Hydrocarbons Classification of Hydrocarbons Aliphatic Hydrocarbons: Alkanes - Nomenclature, isomerism, conformation (ethane only), physical properties, chemical reactions including free radical mechanism of halogenation, combustion and pyrolysis. Alkenes - Nomenclature, structure of double bond (ethene), geometrical isomerism, physical properties, methods of preparation, chemical reactions: addition of hydrogen, halogen, water, hydrogen halides	1) Study the shift in equilibrium between $[\text{Co}(\text{H}_2\text{O})_6]^{2+}$ and chloride ions by changing the concentration of either of the ions.

	<p>(Markovnikov's addition and peroxide effect), ozonolysis, oxidation, mechanism of electrophilic addition. Alkynes - Nomenclature, structure of triple bond (ethyne), physical properties, methods of preparation, chemical reactions: acidic character of alkynes, addition reaction of - hydrogen, halogens, hydrogen halides and water.</p> <p>Aromatic Hydrocarbons: Introduction, IUPAC nomenclature, benzene: resonance, aromaticity, chemical properties: mechanism of electrophilic substitution. Nitration, sulphonation, halogenation, Friedel Craft's alkylation and acylation, directive influence of functional group in monosubstituted benzene. Carcinogenicity and toxicity.</p>	
November	<p>Unit VII: Equilibrium: Equilibrium in physical and chemical processes, dynamic nature of equilibrium, law of mass action, equilibrium constant, factors affecting equilibrium - Le Chatelier's principle, ionic equilibrium- ionization of acids and bases, strong and weak electrolytes, degree of ionization, ionization of poly basic acids, acid strength, concept of pH, hydrolysis of salts (elementary idea), buffer solution, Henderson</p>	<p>Chemical Equilibrium 1) Study the shift in equilibrium between ferric ions and thiocyanate ions by increasing/decreasing the concentration of either ions.</p>

	<p>Equation, solubility product, common ion effect (with illustrative examples).</p> <p>Unit I: Some Basic Concepts of Chemistry</p> <p>General Introduction: Importance and scope of Chemistry.</p> <p>Nature of matter, laws of chemical combination, Dalton's atomic theory: concept of elements, atoms and molecules.</p> <p>Atomic and molecular masses, mole concept and molar mass, percentage composition, empirical and molecular formula, chemical reactions, stoichiometry and calculations based on stoichiometry.</p>	
December	Revision	<p>Revision through presentation on different important topics .</p> <p>Assignment test.</p>

Mathematics		
Month	Chapters and Topic Covered	Practical/Activities
April	<ol style="list-style-type: none"> 1. Sets 2. Relations and functions 	<p>Assignment on Sets</p> <p>Activity 1 - To represent set theoretic operations using Venn diagrams.</p> <p>Activity 2 - To distinguish between a Relation and a Function.</p>

May	1. Trigonometric Functions	Common worksheet on Sets, Relations and functions and Trigonometric Functions during summer vacations. Activity 3 - To find the values of sine and cosine functions in second, third and fourth quadrants using their given values in first quadrant.
July	1. Complex numbers and quadratic equations 2. Linear Inequalities 3. Permutations and Combinations	Assignment on Complex numbers and quadratic equations and Linear inequalities. Activity 4 - To interpret geometrically the meaning of $i = -1$ and its integral powers.
August	Permutations and Combinations (continued) 1. Binomial theorem	Assignment on Permutations and Combinations Activity 5 - To construct a Pascal's Triangle and to write binomial expansion for a given positive integral exponent
September	Binomial theorem (continued)	Assignment on Binomial Theorem
October	1. Sequences and series 2. Straight Lines	Assignment on Sequences and series Assignment on Straight Lines Activity 6 - To demonstrate that the Arithmetic mean of two different positive numbers is always greater

		than the Geometric mean.
November	<ol style="list-style-type: none"> 1. Conic Sections 2. Introduction to three Dimensional Geometry 3. Limits and derivatives 	<p>Assignment on Conic Sections</p> <p>Activity 7 - To construct different types of conic sections.</p> <p>Activity 8 - To explain the concept of octants by three mutually perpendicular planes in space</p> <p>Assignment on Introduction to three Dimensional Geometry</p> <p>Assignment on Limits and derivatives</p> <p>Activity 9 - Verification of the geometrical significance of derivatives.</p>
December	<ol style="list-style-type: none"> 1. Statistics 2. Probability 	<p>Assignment on Statistics</p> <p>Assignment on Probability</p> <p>Activity 10 - To write the sample space, when a coin is tossed once, two times, three times, four times.</p>

Biology		
Month	Chapters and Topic Covered	Practical/Activities
April	<p>The Living World</p> <p>Biological Classification</p> <p>Plant Kingdom</p>	<p>Parts of a compound microscope.</p> <p>Study of distribution of stomata on the upper and lower surfaces of leaves.</p> <p>Study of osmosis by potato osmometer.</p>

<p>May</p>	<p>Animal Kingdom</p>	<p>Specimens/slides/models and identification with reasons – Bacteria, Oscillatoria, Spirogyra, Rhizopus, mushroom, yeast, liverwort, moss, fern, pine, one monocotyledonous plant, one dicotyledonous plant and one lichen.</p> <p>Virtual specimens/slides/models and identifying features of – Amoeba, Hydra, liverfluke, Ascaris, leech, earthworm, prawn, silkworm, honeybee, snail, starfish, shark, rohu, frog, lizard, pigeon and rabbit.</p>
<p>July</p>	<p>Morphology of Flowering Plants</p> <p>Anatomy of Flowering Plants</p>	<p>Study and describe locally available common flowering plants, from family Solanaceae (Poaceae, Asteraceae or Brassicaceae can be substituted in case of particular geographical location) including dissection and display of floral whorls, anther and ovary to show number of chambers (floral formulae and floral diagrams), type of root (tap and adventitious); type of stem (herbaceous and woody); leaf (arrangement, shape, venation, simple and compound).</p> <p>Activity on study of different flowers and identifying different features of flowers and study different conditions in placentation in vegetables</p> <p>Preparation and study of T.S. of dicot and monocot roots and stems (primary).</p>

August	Structural Organisation in Animals Cell: The Unit of Life	
September	Biomolecules	
October	Cell cycle and cell division Photosynthesis in Higher Plant Respiration in Plants	Mitosis in onion root tip cells and animals cells (grasshopper) from permanent slides. Separation of plant pigments through paper chromatography.
November	Plant-Growth and Development Breathing and Exchange of Gases Body Fluids and Circulation Excretory Products and their Elimination	Test for the presence of sugar, starch, proteins and fats in suitable plant and animal materials.
December	Locomotion and Movement Neural Control and Coordination Chemical Coordination and Integration	Human skeleton and different types of joints with the help of virtual images/models only.

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Computer Science		
Month	Chapters and Topic Covered	Practical/Activities
April	<p><u>Ch-1</u> Computer System Overview:- Basic computer organisation: Introduction to Computer System, hardware, software, input device, output device, CPU, memory (primary, cache and secondary), units of memory (bit, byte, KB, MB, GB, TB, PB) • Types of software: System software (Operating systems, system utilities, device drivers), programming tools and language translators (assembler, compiler, and interpreter), application software</p> <p><u>Ch-2</u> Data Representation:- Number System: Binary, Octal, Decimal and Hexadecimal number system; conversion between number systems • Encoding Schemes: ASCII, ISCII, and Unicode (UTF8, UTF32)</p>	<p>Class presentation</p> <p>Presentation based on number system</p>
May	<p><u>Ch-3</u> Boolean Logic:- Boolean logic: NOT, AND, OR, NAND, NOR, XOR,</p>	<p>Working model based on Logic Gates</p>

	<p>NOT, truth tables and De Morgan's laws, Logic circuits</p> <p><u>Ch-4</u> Introduction to problem solving:- Introduction to Problem-solving: Steps for Problem-solving (Analyzing the problem, developing an algorithm, coding, testing, and debugging), representation of algorithms using flowchart and pseudocode, decomposition</p>	<p>Creating algorithms based on real life examples</p>
July	<p><u>Ch-5</u> Getting started with Python :- Familiarization with the basics of Python programming: Introduction to Python, Features of Python, executing a simple "hello world" program, execution modes: interactive mode and script mode</p> <p><u>Ch-6</u> Python fundamentals:- Python character set, Python tokens(keyword, identifier, literal, operator, punctuator), variables, concept of l-value and r-value, use of comments Knowledge of data types: Number(integer, floating point,complex), boolean, sequence(string, list, tuple), None, Mapping(dictionary), mutable and immutable data types.</p>	<p>Practical programs to be completed as a class activity individually</p>
August	<p><u>Ch-7</u> Data Handling:-</p>	<p>Related practical programs to be completed</p>

	<p>Operators: arithmetic operators, relational operators, logical operators, assignment operators, augmented assignment operators, identity operators (is, is not), membership operators (in not in) •</p> <p>Expressions, statement, type conversion, and input/output: precedence of operators, expression, evaluation of an expression, type-conversion (explicit and implicit conversion), accepting data as input from the console and displaying output. •</p> <p>Errors- syntax errors, logical errors, and run-time errors</p>	
September	<p><u>Ch-8</u> Flow of control:- introduction, use of indentation, sequential flow, conditional and iterative flow •</p> <p>Conditional statements: if, if-else, if-elif-else, flowcharts, simple programs: e.g.: absolute value, sort 3 numbers and divisibility of a number. •</p> <p>Iterative Statement: for loop, range(), while loop, flowcharts, break and continue statements, nested loops, suggested programs: generating pattern, summation of series, finding the factorial of a positive number, etc</p> <p><u>Ch-9</u> String Manipulation:- introduction, string</p>	<p>Practical programs to create patterns</p> <p>Related practical</p>

	<p>operations (concatenation, repetition, membership and slicing), traversing a string using loops, built-in functions/methods–len(), capitalize(), title(), lower(), upper(), count(), find(), index(), endswith(), startswith(), isalnum(), isalpha(), isdigit(), islower(), isupper(), isspace(), lstrip(), rstrip(), strip(), replace(), join(), partition(), split()</p> <p><u>Ch-10</u> List Manipulation traversing a list using loops, built-in functions/methods–len(), list(), append(), extend(), insert(), count(), index(), remove(), pop(), reverse(), sort(), sorted(), min(), max(), sum(); nested lists, suggested programs: finding the maximum, minimum, mean of numeric values stored in a list; linear search on list of numbers and counting the frequency of elements in a list</p>	<p>programs to be completed</p> <p>Related practical programs to be completed</p>
October	<p><u>Ch - 11</u> Tuples introduction, indexing, tuple operations (concatenation, repetition, membership and slicing); built-in functions/methods – len(), tuple(), count(), index(), sorted(), min(), max(), sum(); tuple assignment, nested tuple; suggested programs: finding the minimum, maximum, mean of values stored in a tuple; linear</p>	<p>Related practical programs to be completed</p>

	<p>search on a tuple of numbers, counting the frequency of elements in a tuple.</p> <p><u>Ch - 12</u> Dictionary:- Introduction, accessing items in a dictionary using keys, mutability of a dictionary (adding a new term, modifying an existing item), traversing a dictionary, built-in functions/methods – len(), dict(), keys(), values(), items(), get(), update(), del(), del, clear(), fromkeys(), copy(), pop(), popitem(), setdefault(), max(), min(), sorted(); Suggested programs: count the number of times a character appears in a given string using a dictionary, create a dictionary with names of employees, their salary and access them. • Introduction to Python modules: Importing module using ‘import ’ and using from statement, importing math module (pi, e, sqrt(), ceil(), floor(), pow(), fabs(), sin(), cos(), tan()); random module (random(), randint(), randrange()), statistics module (mean(), median(), mode()).</p>	<p>Related practical programs to be completed</p>
November	<p><u>Ch-13</u> Cyber Safety Digital Footprints • Digital Society and Netizen: net etiquettes, communication etiquettes, social media etiquettes • Data</p>	<p>Class activity for Poster making and powerpoint presentations</p>

	Protection: Intellectual property rights (copyright, patent , trademark), violation of IPR(plagiarism, copyright infringement, trademark infringement), open source software and licensing (Creative Commons, GPL and Apache) • Cyber Crime: definition, hacking, eavesdropping, phishing and fraud emails, ransomware, cyber trolls, cyber bullying • Cyber safety: safely browsing the web, identity protection, confidentiality • Malware: viruses, trojans, adware • E-waste management: proper disposal of used electronic gadgets. • Information Technology Act (IT Act) • Technology and society: Gender and disability issues while teaching and using computers	
December	Project discussion	

Economics		
Month	Chapters and Topic Covered	Practical/Activities
April	Unit 1 of Micro CH 1: Introduction [Micro]	Topics will be discussed for Practical Project Students will be asked to collect information relevant to their topic and submit a

	Unit 1 of Statistics CH 1: Introduction	hard copy of the same
May	Unit 2 of Micro CH 2: Consumer's Equilibrium Unit 1 of Statistics CH 2: Meaning, Scope, Functions and Importance of Statistics	
July	Unit 2 of Micro CH 3: Demand CH 4: Elasticity of Demand Unit 2 of Statistics CH 3: Collection of Data CH 4: Organisation of Data	
August	Unit 3 of Micro CH 5: Cost Unit 2 of Statistics CH 5: Tabular Presentation CH 6: Diagrammatic Presentation CH 7: Graphic Presentation	

September	Unit 3 of Micro CH 6: Revenue Unit 3 of Statistics CH 8: Measures of Central Tendency- Arithmetic Mean	Format of the Project File will be discussed
October	Unit 3 of Micro CH 7: Producer's Equilibrium CH 8: Supply Unit 3 of Statistics CH 9: Measures of Central Tendency- Median and Mode	Review: Students will work on presentation part and make the file
November till First week	Unit 4 of Micro CH 9: Main Market Forms CH 10: Price Determination and Simple Applications Unit 3 of Statistics CH 10: Measures of Correlation CH 11: Index Numbers	AIL- PPT to be made based on the topic of the Project

Informatics Practices		
Month	Chapters and Topic	Practical/Activities

	Covered	
April	<p><u>Ch-1</u> Computer System Overview Introduction to computer and computing: evolution of computing devices, components of a computer system and their interconnections, Input/output devices. Computer Memory: Units of memory, types of memory – primary and secondary, data deletion, its recovery and related security concerns. Software: purpose and types – system and application software, generic and specific purpose software.</p> <p><u>Ch-2</u> Getting started with Python:- Basics of Python programming, Python interpreter - interactive and script mode</p> <p><u>Ch-3</u> Python fundamentals:- The structure of a program, indentation, identifiers, keywords, constants</p>	<p>Class presentation activity</p> <p>1) To find average and grade for given marks. 2) To find sale price of an item with given cost and discount (%).</p>
May	<p><u>Ch-3</u> Variables, types of operators, precedence of operators, data types, mutable and immutable data types</p> <p><u>Ch-4</u> Data Handling:- Statements, expressions,</p>	<p>1) To calculate perimeter/circumference and area of shapes such as triangle, rectangle, square and circle. 2) To calculate Simple and Compound interest. 3) To calculate profit-loss for given Cost and Sell Price.</p>

	evaluation and comments, input and output statements, data type conversion, debugging.	4) To calculate EMI for Amount, Period and Interest. 5) To calculate tax - GST / Income Tax.
July	<p><u>Ch-5</u> Flow of control:- Control Statements: if-else, if-elif-else, while loop, for loop</p> <p><u>Ch-6</u> List Manipulation:-: list operations - creating, initializing, traversing and manipulating lists, list methods and built-in functions – len(),list(),append(),insert(), count(),index(),remove(), pop(), reverse(), sort(), min(),max(),sum()</p>	<p>1) To find the largest and smallest numbers in a list. 2) To find the third largest/smallest number in a list. 10. To find the sum of squares of the first 100 natural numbers. 3) To print the first ‘n’ multiples of given number. 4) To count the number of vowels in user entered string. 5) To print the words starting with a alphabet in a user entered string. 6) To print number of occurrences of a given alphabet in each string.</p>
August	<p><u>Ch-7</u> Dictionaries:- concept of key-value pair, creating, initializing, traversing, updating and deleting elements, dictionary methods and built-in functions – dict(), len(), keys(), values(), items(), update(), del(), clear()</p> <p><u>Ch-8</u> Database concepts Database Concepts: Introduction to database concepts and its need, Database Management System. Relational data</p>	<p>1) Create a dictionary to store names of states and their capitals. 2) Create a dictionary of students to store names and marks obtained in 5 subjects. 3) To print the highest and lowest values in the dictionary.</p>

	model: Concept of domain, tuple, relation, candidate key, primary key, alternate key	
September	<u>Ch-9</u> Structured Query Language:- Advantages of using Structured Query Language, Data Definition Language, Data Query Language and Data Manipulation Language, Introduction to MySQL, creating a database using MySQL	1) To create a database 2) To create student table with the student id, class, section, gender, name, dob, and marks as attributes where the student id is the primary key. 3)To insert the details of at least 10 students in the above table. 4) To display the entire content of table. 5) To display Rno, Name and Marks of those students who are scoring marks more than 50. 6) To display Rno, Name, DOB of those students who are born between ‘2005-01-01’ and ‘2005-12-31’.
October	<u>Ch-9</u> Data Types Data Definition: CREATE DATABASE, CREATE TABLE, DROP, ALTER Data Query: SELECT, FROM, WHERE with relational operators, BETWEEN, logical operators, IS NULL, IS NOT NULL Data Manipulation: INSERT, DELETE, UPDATE <u>Ch-10</u> Emerging Trends:- Artificial Intelligence, Machine Learning, Natural Language Processing, Immersive experience (AR, VR), Robotics, Big data and its characteristics, Internet of Things (IoT), Sensors,	<p>Practical work would be completed according to the topics</p> <p>Making a toy robot and powerpoint presentation based on the topic</p>

	Smart cities, Cloud Computing and Cloud Services (SaaS, IaaS, PaaS); Grid Computing, Block chain technology	
November till First week	Discussion of group projects	Project work to be started

Psychology		
Month	Chapters and Topic Covered	Practical/Activities
April	Chapter -1 What is psychology?	
May	Chapter -2 Methods of enquiry in psychology	
July	Chapter -4 Human Development Chapter 5- Sensory,Attentional and perceptual processes	
August	Chapter -6 Learning	
September	Chapter -7 Human Memory	
October	Chapter -8 Thinking Chapter-9 Motivation and Emotion	
November till First week		Conduction of two practicals

Physical Education		
Month	Chapters and Topic Covered	Practical/Activities
April	CHAPTER-1 CHANGING	Topics will be discussed for

	TRENDS & CAREER IN PHYSICAL EDUCATION <ul style="list-style-type: none"> • Concept ,Aim & Objectives of physical education • Changing trends in sports - playing surface, wearable gears and sports equipment, technological advancements • Career options in physical education • Khelo india and fit india program 	Practical Project
May	CHAPTER-2 OLYMPISM <ul style="list-style-type: none"> • Ancient and modern olympics • Olympism- concept and olympics values • Olympics- symbol, motto, flag, oath, and anthem • Olympic movement structure- IOC, NOC,IFS, other members 	<ul style="list-style-type: none"> • Class Test
July	CHAPTER-3 YOGA <ul style="list-style-type: none"> • Meaning & importance of yoga • Introduction to ashtanga yoga • Introduction to yogic kriyas(shat karma) CHAPTER-4 PHYSICAL EDUCATION & SPORTS FOR CWSN <ul style="list-style-type: none"> • Concept of disability and disorder • Types of disability, its causes and nature • Aim & objective of adaptive physical education • Role of various professionals for children with special needs 	<ul style="list-style-type: none"> • Periodic Test 1
August	CHAPTER-5 PHYSICAL FITNESS, HEALTH AND WELLNESS <ul style="list-style-type: none"> • Meaning and importance of wellness, health and physical fitness 	

	<ul style="list-style-type: none"> • components/dimensions of wellness, health and physical fitness • Traditional sports & regional games for promoting wellness CHAPTER-6 TEST, MEASUREMENT & EVALUATION <ul style="list-style-type: none"> • Concept of test , measurement & evaluation in physical education & sports. • Classification of test in physical education and sports. • Test administration guidelines in physical education and sports. 	
September	CHAPTER-7 FUNDAMENTALS OF ANATOMY, PHYSIOLOGY IN SPORTS <ul style="list-style-type: none"> • Definition and importance of anatomy and physiology in exercise and sports • Functions of skeletal system, classification of bones and types of joints. • Function and structure of circulatory system and heart. • Function and structure of respiratory system 	
October	CHAPTER-8 FUNDAMENTALS OF KINESIOLOGY AND BIOMECHANICS IN SPORTS <ul style="list-style-type: none"> • Definition and importance of kinesiology and biomechanics in sports • Principles of biomechanics • Types of body movements • Axis and planes- concept and its application in body movements CHAPTER-9 PSYCHOLOGY & SPORTS <ul style="list-style-type: none"> • Definition & importance of psychology in physical 	

	<p>education & sports</p> <ul style="list-style-type: none"> ● Adolescent problems & their management ● Team cohesion and sports 	
<p>November till First week</p>	<p>CHAPTER-10 TRAINING AND DOPING IN SPORTS</p> <ul style="list-style-type: none"> ● Concept and principles of sports training ● Training load: over load, adaptation, and recovery ● Concept of doping and its disadvantages 	