

**WEEKLY SPLIT-UP SYLLABUS- 2023-24**

**CLASS - 11      SUBJECT -Biology**

Month	Week	Chapter	Topics	Practicals	Learning outcomes
June 2023	1st, 2nd & 3rd	1. The Living World	Ernst Mayr and Introduction 1.2 Diversity in the Living World 1.3 Taxonomic Categories 1.3.1 Species 1.3.2 Genus 1.3.3 Family 1.3.4 Order 1.3.5 Class 1.3.6 Pylum 1.3.7 Kingdom Summary and Exercise	1. Study parts of a compound microscope. 2. Study of the specimens and identification with reasons – Bacteria, Oscillatoria, Spirogyra, Rhizopus, mushroom. Yeast, liverwort, moss, fern, Pinus, one monocotyledon and one dicotyledon and one lichen. 3. Study of specimens and identification with reasons – Amoeba, Hydra, Liverfluke, Ascaris, leech, earthworm, prawn, silk worm, honeybee, snail, star fish, shark, rohu, frog, lizard, pigeon and rabbit.	1. Learner differentiates Organisms, phenomena and processes based on certain characteristics and salient features, such as Prokaryotes and Eukaryotes, Plant Cell and Animal Cell, Difussion and Osmosis, Diploblastic and Triploblastic organization.  2. Learner classifies organisms, phenomena and processes based on certain characteristics/salient features systematically in more scientific and organized manner such as Five Kingdom Classification System of Organisms under various heirarchical structural organizations etc.  3. Learner describes contribution of Scientists/Researchers from all over the world in Classification systems of Living organisms such as Aristotle who was the first and then Linnaeus proposed Two Kingdom Classification and later R.H.Whittaker proposed Five Kingdom Classification etc.  4. Learner applies sceintific terminology for organisms, processes and phenomena based on Internationally accepted conventions, such as, taxonomic study of plants and animals, Binomial nomenclature of organisms, Coelom, Bisymmetric body etc., Bisexual and Unisexual Organism.
June 2023	4th (5 days)	2. Biological Classification	Introduction 2.1 Kingdom Monera 2.1.1 Archaeobacteria 2.1.2 Eubacteria 2.2 Kingdom Protista 2.2.1 Chrysophytes 2.2.2 Dinoflagellates 2.2.3 Euglenoids 2.2.4 Slime Moulds 2.2.5 Protozoans 2.3 Kingdom Fungi 2.3.1 Phycomycetes 2.3.2 Ascomycetes 2.3.3 Basidiomycetes 2.3.4 Deuteromycetes 2.4 Kingdom Plantae 2.5 Kingdom Animalia 2.6 Viruses, Viroids, Prions and Lichens Summary and Revision		5. Learner appreciates technological applications and processes in biology towards the improvement in the quality of life and sustainale development such as Uses of Algae as commercially like Algin (Brown Algae), Carrageen (Red algae), Agar, Chlrorella uses as food supplements in space.
June 2023	5th (3 days)	3. Plant Kingdom	"Introduction 3.1 Algae 3.1.1 Chlorophyceae 3.1.2 Phaeophyceae 3.1.3 Rhodophyceae 3.2 Bryophytes 3.2.1 Liverworts 3.2.2 Mosses 3.3 Pteridophytes 3.4 Gymonsperm		
July	1st (1 day)		Summary and Exercise"		

July	2nd (6 days)	4. Animal Kingdom	<p>Introduction</p> <p>4.1 Basis of Classification</p> <p>4.1.1 Levels of Organisation</p> <p>4.1.2 Symmetry</p> <p>4.1.3 Diploblastic and Triploblastic organisation</p> <p>4.1.4 Coelom</p> <p>4.1.5 Segmentation</p> <p>4.1.6 Notochord</p> <p>4.2 Classification of Animals</p> <p>4.2.1 Phylum- Porifera</p> <p>4.2.2 Phylum - Coelenterata (Cnidaria)</p> <p>4.2.3 Phylum- Ctenophora</p> <p>4.2.4 Phylum - Platyhelminthes</p> <p>4.2.5 Phylum- Aschelminthes</p>		
July	3rd (5 days)	4. Animal Kingdom	<p>4.2.6 Phylum - Annelida</p> <p>4.2.7 Phylum- Arthropoda</p> <p>4.2.8 Phylum - Mollusca</p> <p>4.2.9 Phylum- Echinodermata</p> <p>4.2.10 Phylum- Hemichordata</p> <p>4.2.11 Phylum- Chordata</p> <p>4.2.11.1 Class- Cyclostomata</p> <p>4.2.11.2 Class-Chondrichthyes</p> <p>4.2.11.3 Class-Osteichthyes</p> <p>4.2.11.4 Class- Amphibia</p> <p>4.2.11.5 Class- Reptilia</p> <p>4.2.11.6 Class-Aves</p> <p>4.2.11.7 Class-Mammalia</p> <p>Summary and Exercise</p>		
July	4th (6 days)	5. Morphology of Flowering Plants	<p>Katherine Esau and Introduction</p> <p>5.1 The Root</p> <p>5.1.1 Regions of the Root</p> <p>5.2 The Stem</p> <p>5.3 The Leaf</p> <p>5.3.1 Venation</p> <p>5.3.2 Types of Leaves</p> <p>5.3.3 Phyllotaxy</p> <p>5.4 The Inflorescence</p> <p>5.5 The Flower</p> <p>5.5.1 Parts of a Flower</p> <p>5.5.1.1 Calyx</p> <p>5.5.1.2 Corolla</p> <p>5.5.1.3 Androecium</p> <p>5.5.1.4 Gynoecium</p>	7. Study and identify different types of inflorescences.	<p>"1. Learner applies scientific terminology for organisms, processes and phenomena based on Internationally accepted conventions, such as, Systematic Technical Description of Flowers, Taxonomical Study of Plants, Actinomorphic and Zygomorphic flowers, Aestivations, Placentations.</p> <p>2. Learner draws labelled diagrams, flow charts, concept maps and floral diagrams, such as, floral diagrams of a given flower, various parts of a flower, modified roots etc.</p>
July	5th (5 days)	5. Morphology of Flowering Plants	<p>5.6 The Fruit</p> <p>5.7 The Seed</p> <p>5.7.1 Structure of Dicotyledonous Seed</p> <p>5.7.2 Structure of Monocotyledonous Seed</p> <p>5.8 Semi-Technical Description of a typical flowering plant</p> <p>5.9 Description of Some Important Families</p> <p>5.9.2 Solanaceae</p> <p>Summary and Exercise</p>	8. Study and describe three common flowering plants (Solanaceae).	<p>3. Learner writes Floral formulae in technical language based on Floral Diagrams of different flowers such as Flowers of Datura, Pea, Hibiscus etc.</p> <p>4. Learner plans and conducts investigations and experiments to arrive at and verify the facts, principles, phenomena or to seek answers to queries on their own such as What is the pattern and Structure of Organisms in Nature?, Does Pisum sativum carry Bisexual and Zygomorphic flowers.</p>

August	1st (5 days)	6. Anatomy of Flowering Plants	<p>Introduction          6.2 The Tissue System          6.2.1 Epidermal Tissue System          6.2.2 The Ground Tissue System          6.2.3 The Vascular Tissue System          6.3 Anatomy of Dicotyledonous and Monocotyledonous Plants          6.3.1 Dicotyledonous Root          6.3.2 Monocotyledonous Root          6.3.3 Dicotyledonous Stem          6.3.4 Monocotyledonous Stem          6.3.5 Dorsiventral Dicotyledonous Leaf          6.3.6 Isobilateral (Monocotyledonous) Leaf          Summary and Exercise</p>	<p>4. Study of tissues, and diversity in shapes and sizes of plant and animal cells (e.g. palisade cells, guard cells, parenchyma, collenchyma, sclerenchyma, xylem, phloem, squamous epithelium, muscle fibres and mammalian blood smear) through temporary/permanent slides.</p> <p>9. Preparation and study of t.s dicot and monocot roots and stems (normal).</p>	<p>"1. Learner will be able to understand the role of a cell in the from of various tissues leading to formation of specific organs, representing Division of Labour, ultimately resulting into the formation of specific system to support Life Processes.</p> <p>2. Learner applies scientific terminology for Organisms, Processes and phenomena based on Internationally accepted conventions such as Taxonomical Study of Animals, Physiological processes.</p> <p>3. Learner explains efficiently systems, relationships, Processes and Phenomena such as Organ systems in Frog, Cockroach and Earthworm.</p> <p>4. Learner draws labelled diagrams, flow charts, concept maps such as External features of Earthworm, Cockroach and Frog.</p>
August	2nd (5 days)	7. Structural Organisation in Animals	<p>Introduction          7.2 Organ and Organ System          7.5 Frogs          7.5.1 Morphology          7.5.2 Anatomy          Summary and Exercise</p>	<p>10. Study external morphology of frog through models.</p>	<p>5. Learner prepares slides for study the structural intricacies of life forms and structural organisations, such as, Transverse sections of Root, Stem and Leaves.</p> <p>6. Learner relate processes and phenomena with causes and effects such as tissues with their functions.</p> <p>7. Learner handles laboratory tools and apparatuses, instruments and devices properly for performing activities/experiments/investigations such as use of foldscope/Microscope for observing internal structure of Transverse section of Root, Stem and Leaves.</p> <p>8. Learner applies scientific concepts of Biology in daily life and solving problems such as determining of the age of a fallen tree by counting the concentric rings present on the transverse cut of tree trunk. 9. Learner exhibits creativity in designing models using ecofriendly resources/preparing charts/paintings/sketching on different topics such as Structure of Cockroach."</p>

August	3 <sup>rd</sup> (4 days)	8. Cell: The Unit of Life	G N Ramchandran and Introduction 8.1 What is a Cell? 8.1 Cell Theory 8.3 An overview of Cell 8.4 Prokaryotic cells 8.4.1 Cell Envelope and its Modifications 8.4.2 Ribosomes and Inclusion Bodies 8.5 Eukaryotic cells 8.5.1 Cell Membrane 8.5.2 Cell Wall		1. Differentiate organisms on the basis of Prokaryotic and Eukaryotic cells. 2. Understanding process of Osmosis and Diffusion. 3. Differentiation of chromosomes on the basis of Location of Centromere present in the chromosomes. 4. Students will be able to relate various processes and phenomena with causes and their effects such as characteristics of living with cell as basic unit of life. 5. Learner describes contribution of Scientists /Researchers from all over the world such as Anton Von Leeuwenhoek described a Live Cell and later on, Robert Brown discovered the Nucleus.
August	4 <sup>th</sup> (5 days)	8. Cell: The Unit of Life	8.5.3 Endomembrane System 8.5.3.1 The Endoplasmic Reticulum 8.5.3.2 Golgi Apparatus 8.5.3.3 Lysosomes 8.5.3.4 Vacuoles 8.5.4 Mitochondria 8.5.5 Plastids 8.5.6 Ribosomes 8.5.7 Cytoskeleton 8.5.8 Cilia and Flagella 8.5.9 Centrosome and Centriole 8.5.10 Nucleus 8.5.11 Microbodies Summary and Revision		6. Learner makes linkages at the interface of Biology with other disciplines by relating various interdisciplinary concepts such as Secondary metabolites, Structure of Genetic Materials (DNA and RNA), and other Biomolecules (Carbohydrate, Protein and Fats) etc. 7. Learner relate processes and phenomena with causes and effects such as characteristics of living with cell as basic unit of life. 8. Learner explains efficiently systems, relationships, Processes and Phenomena such as Structures and function of Cell Organelles.
August	5 <sup>th</sup> (3 days)	9. Biomolecules	Introduction 9.1 How to analyse chemical composition? 9.2 Primary and Secondary Metabolites 9.3 Biomacromolecules 9.4 Proteins 9.5 Polysaccharides	16. Test for the presence of sugar, starch, proteins and fats. Detect them in suitable plant and animal materials.	9. Learner analyses and interprets graphs and figures such as Enzyme Activity-Temperature, PH and Substrate concentration graph.
September	1 <sup>st</sup> (2 days)	9. Biomolecules	9.6 Nucleic Acids 9.7 Structure of Proteins 9.12 Enzymes 9.12.1 Chemical Reactions 9.12.2 How do Enzymes bring about such High Rates of chemical conversions?		
September	2 <sup>nd</sup> (5 days)	9. Biomolecules	9.12.3 Nature of Enzyme Action 9.12.4 Factors affecting Enzyme activity 9.12.5 Classification and Nomenclature of Enzymes 9.12.6 Co-Factors Summary and Exercise		

September	3rd (5 days)	10. Cell Cycle and Cell Division	Introduction 10.1 Cell Cycle 10.1.1 Phases of Cell cycle 10.2 M Phase 10.2.1 Prophase 10.2.2 Metaphase 10.2.3 Anaphase 10.2.4 Telophase 10.2.5 Cytokinesis 10.3 Significance of Mitosis	5. Study of mitosis in onion root tip cells and animal cells (grasshopper)(permanent slides).	1.Students use to draw labelled diagrams, charts, concept maps such as various steps of Mitosis and Meiosis. This helps in understanding the basic concepts regarding the cause of variation among various organisms (even belonging to the same species.)  2. Learner prepares slides for study the structural intricacies of Mitosis and Meiosis.
September	4th (4 days)	10. Cell Cycle and Cell Division	10.4 Meiosis 10.4.1 Meiosis I 10.4.2 Meiosis II 10.5 Significance of Meiosis & Summary		
September	5th (3 days)	11. Photosynthesis in Higher Plants	Introduction What do we know? Early Experiments Where does Photosynthesis take place? How many types of pigments are involved in Photosynthesis?	17. Separate plant pigments through paper chromatography.	1. Learner makes linkages at the interface of Biology with other disciplines by relating various interdisciplinary concepts such as Absorption and Transfer of light energy in Photosynthesis. 2. Learner draws labelled diagrams, flow charts, concept maps such as Z-Scheme of Light Reaction, Calvin Cycle, Hatch-Slack Cycle, Photorespiration etc.
October	1st (4 days)	11. Photosynthesis in Higher Plants	What is Light Reaction? The Electron Transport Splitting of Water Cyclic and Non Cyclic Photophosphorylation Chemiosmotic hypothesis		3. Learner explains efficiently systems, relationships, Processes and Phenomena such as Photosynthesis and Respiration. 4. Learner handles laboratory tools and apparatuses, instruments and devices properly for performing activities/experiments/investigations such as intricacies of Chloroplasts, Stomata etc, digital balance/scale for weighing chemicals, pipette for drawing liquid etc.
October	2nd (6 days)	11. Photosynthesis in Higher Plants	Where are the ATP and NADPH used? The Primary Acceptor of CO <sub>2</sub> The Calvin Cycle The C <sub>4</sub> Pathway Photorespiration Factors Affecting Photosynthesis Light Carbon dioxide concentration Temperature Water Summary and Exercise		
October	3rd (4 days)	12. Respiration in Plants	Introduction Do plants breathe? Glycolysis Fermentation Aerobic Respiration Tricarboxylic Acid Cycle	18. Study rate of respiration in flower buds/leaf tissue and germinating seeds. 19. Observation and comments on the experimental set up on: (a) Anaerobic respiration.	1. Students use to draw labelled diagrams, flow charts, concept maps such as glycolysis, aerobic and anaerobic respiration etc. 2. Students will be able to establish linkages at the interface of Biology with other disciplines by relating various

October	4th (3 days)	12. Respiration in Plants	Electron Transport System (ETS) and Oxidative phosphorylation The Respiratory balance sheet Amphibolic pathway Respiratory Quotient Summary and Exercise		interdisciplinary related to Physical Sciences such as Respiratory Quotient (RQ), ETS, Oxidative Phosphorylation etc. 3. Learner uses scientific conventions, symbols and equations to represent various quantities, elements, and units such as SI Units, Symbols of elements, Formulae of simple compounds, pathways of Aerobic and Anaerobic respiration, Organic compounds in living Organisms.
October	5th(2 days)	13. Plant Growth and Development	Introduction Growth Plant Growth Generally is Indeterminate Growth is measurable Phases of Growth Growth rates Conditions for Growth Differentiation, Dedifferentiation and Redifferentiation		1. Learner makes linkages at the interface of Biology with other disciplines by relating various interdisciplinary concepts such as mathematical models on arithmetic and geometric growth rates in plants/organisms. 2. Learner plans and conducts investigations and experiments to arrive at and verify the facts, principles, phenomena or to seek answers to queries on their own such as How do Plants grow in length?
November	1st & 2nd (5 days)	13. Plant Growth and Development	Development Plant Growth Regulators Characteristics The Discovery of Plant Growth Regulators Physiological Effects of Plant Growth Regulators Auxins Gibberellins Cytokinins Etylene Abscisic Acid Summary and Exercise	19. Observation and comments on the experimental set up on (b) Phototropism. (c) Apical bud removal.	3. Learner analyses and interprets graphs and figures such as Growth vs Time Graph. 4. Learner communicates the finding and conclusions effectively such as those derived from experiments/activities and projects both in oral and written form using appropriate figures, tables, graphs and digital forms, takes part in discussion, argumentations etc. 5. Learner applies scientific concepts of Biology in daily life and solving problems such as mowing the grass of a lawn assuming that due to lateral meristem grass will regrow.
November	3rd & 4th (6 days)	14. Breathing And Exchange of Gases	Introduction Respiratory Organs Human Respiratory System Mechanism of Breathing Respiratory Volumes and Capacities Exchange of Gases Transport of Gases Transport of oxygen Transport of Carbon Dioxide Regulation of Respiration Disorders of Respiratory System & Summary		1. Students acquires the concepts related to Physical Sciences such as Transport and Exchange of Gases, Concept of Partial Pressure, Surface area, PH etc. 2. Further when they use to draw labelled diagrams of various systems such as Digestive System, Circulatory System and others they also learn to integrate the various life process with each other they came to know that all the systems function in a coordinated manner, as a unit, rather than working in independent and separate units / life processes.
November	5th (3 days)	15. Body Fluids and Circulation	Introduction Blood Plasma Formed Elements Blood Groups ABO grouping Rh grouping Coagulation of Blood Lymph (Tissue fluid) Circulatory Pathways		3. Learner relate processes and phenomena with causes and effects such as Pumping of heart with circulation of blood, Hormones with various physiological functions, Digestive enzymes, Electrocardiograph (ECG) and Heart diseases, smoking and lung diseases etc. 4. Learner applies scientific terminology for organisms processes

December	1st (2 days)	15. Body Fluids and Circulation	Human Circulatory System Cardiac Cycle Electrocardiograph (ECG) Double Circulation Regulation of Cardiac Activity Disorders of Circulatory System & Summary	22. To detect the presence of sugar in urine/blood sample.	terminology for organisms, processes and phenomena based on Internationally accepted conventions, such as, physiological processes, Cardiac cycle, Organ structures, SA Node, AV Node. 5. Learner explains efficiently Systems, Relationships, Processes and phenomena such as Respiration, Mechanism of contraction of Skeletal Muscles. 6. Learner plans and conducts investigations and experiments to arrive at and verify the facts, principles, phenomena or to seek answers to queries on their own such as What does (mainly which gas) our breath contains?, What happens to cooked rice when we chew, when we do not chew? etc. 7. Learner analyses and interprets graphs and figures such as Oxygen Dissociation Curve. 8. Learner draws conclusion on the basis of data collected in activities/experiments and investigatory projects conducted by theme such as deficiency of Protein in diet causes Protein-Energy Malnutrition (PEM). 9. Learner applies scientific concepts of Biology in daily life and solving problems such as drinking less/more water changes the concentration and volume of urine. 10. Learner appreciates technological applications and processes in biology towards the improvement in the quality of life and sustainable development such as Dialysis for Kidney failure patients, Uses for artificial limb etc.
December	2nd (6 days)	16. Excretory Products and Their Elimination	Introduction Human Excretory System Urine Formation Function of the Tubules Mechanism of Concentration of The Filtrate Regulation of Kidney Function Micturition Role of Other Organs in Excretion Disorders of Excretory System Summary, Revision and Exercise	21. To test the presence of urea in urine. 23. To detect the presence of albumin in urine. 24. To detect the presence of bile salts in urine.	
December	3rd (5 days)	17. Locomotion and Movement	Introduction Types of Movement Muscle Structure of Contractile Proteins Mechanism of Muscle Contraction Skeletal System Joints Disorders of Muscular and Skeletal System & Summary Summary, Revision and Exercise	25. To study human skeleton and different types of joints.	
December	4th (6 days)	18. Neural Control and Coordination	Introduction Neural System Human Neural System Neuron and Structural and Functional Unit of Neural System Generation and Conduction of Nerve Impulse Transmission of Impulses Central Nervous System Forebrain Midbrain Hindbrain Summary, Revision and Exercise		
January	1st	19. Chemical Control and Integration	Introduction Endocrine Glands and Hormones Human Endocrine System The Hypothalamus The Pituitary Gland The Pineal Gland Thyroid Gland Parathyroid Gland		

January	2nd	20. Chemical Control and Integration	Thymus Adrenal Gland Pancreas Testis Ovary Hormones of Heart, Kidney and Gastrointestinal Tract Mechanism of Hormone Action & Summary Summary, Revision and Exercise		
January, February till board examination		Revision			