

DAV PUBLIC SCHOOL, SRESHTHA VIHAR

Class 11

Subject: Biology (044) (2023-24)

Learning Objectives:

1. Understanding the fundamental concepts of biology: The first learning objective is to ensure students have a strong foundation in the basic principles and concepts of biology. This includes topics such as cell structure and functions, genetics, evolution, and ecological systems.
2. Developing knowledge of human anatomy and physiology: Another important objective is to help students gain a comprehensive understanding of the human body, its organs, systems, and their functions. This includes studying the various body systems like the circulatory, respiratory, digestive, and nervous systems.
3. Exploring the diversity of life: Students should be able to explore and appreciate the diversity of living organisms on Earth. This involves studying different forms of life, from microorganisms to plants and animals, and understanding their classification, characteristics, and evolutionary relationships.
4. Understanding ecological concepts and environmental issues: Students should develop an understanding of ecological concepts, such as ecosystems, food chains, and energy flow. Additionally, they should be aware of the environmental issues facing our planet, such as pollution, deforestation, climate change, and their impact on biodiversity.
5. Developing scientific skills and inquiry-based learning: Lastly, a key learning objective is to foster scientific inquiry and critical thinking skills. Students should be encouraged to conduct experiments, analyze data, and draw conclusions based on evidence. They should also learn to communicate scientific ideas effectively through written reports and presentations.

The prescribed syllabus is expected to:

- promote understanding of basic principles of Biology.
- encourage learning of emerging knowledge and its relevance to individual and society.
- promote rational/scientific attitude towards issues related to population, environment and development.
- enhance awareness about environmental issues, problems and their appropriate solutions.
- create awareness amongst the learners about diversity in the living organisms and developing respect for other living beings.
- appreciate that the most complex biological phenomena are built on essentially simple processes. It is expected that the students would get an exposure to various branches of Biology in the curriculum in a more contextual and systematic manner as they study its various units.

Curriculum Planner:

Periodic Test 1:

Chapter-1: The Living World Biodiversity; Need for classification; three domains of life; taxonomy and systematics; concept of species and taxonomical hierarchy; binomial nomenclature.

Chapter-2: Biological Classification Five kingdom classification; Salient features and classification of Monera, Protista and Fungi into major groups; Lichens, Viruses and Viroids.

Chapter-3: Plant Kingdom Classification of plants into major groups; Salient and distinguishing features and a few examples of Algae, Bryophyta, Pteridophyta, Gymnospermae (Topics excluded – Angiosperms, Plant Life Cycle and Alternation of Generations)

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Chapter-4: Animal Kingdom Salient features and classification of animals, non-chordates up to phyla level and chordates up to class level (salient features and at a few examples of each category). (No live animals or specimen should be displayed.)

Chapter-5: Morphology of Flowering Plants Morphology of different parts of flowering plants: root, stem, leaf, inflorescence, flower, fruit and seed. Description of family Solanaceae.

Chapter-6: Anatomy of Flowering Plants Anatomy and functions of tissue systems in dicots and monocots.

Chapter-7: Structural Organization in Animals Morphology, anatomy and functions of different systems (digestive, circulatory, respiratory, nervous and reproductive) of frog.

Chapter-8: Cell-The Unit of Life Cell theory and cell as the basic unit of life, structure of prokaryotic and eukaryotic cells; Plant cell and animal cell; cell envelope; cell membrane, cell wall; cell organelles - structure and function; endomembrane system, endoplasmic

reticulum, golgi bodies, lysosomes, vacuoles, mitochondria, ribosomes, plastids, microbodies; cytoskeleton, cilia, flagella, centrioles (ultrastructure and function); nucleus.

Periodic Test 2:

Chapter-9: Biomolecules Chemical constituents of living cells: biomolecules, structure and function of proteins, carbohydrates, lipids, and nucleic acids; Enzyme - types, properties, enzyme action. (Topics excluded: Nature of Bond Linking Monomers in a Polymer, Dynamic State of Body Constituents – Concept of Metabolism, Metabolic Basis of Living, The Living State)

Chapter-10: Cell Cycle and Cell Division Cell cycle, mitosis, meiosis and their significance.

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Chapter-13: Photosynthesis in Higher Plants Photosynthesis as a means of autotrophic nutrition; site of photosynthesis, pigments involved in photosynthesis (elementary idea); photochemical and biosynthetic phases of photosynthesis; cyclic and non-cyclic photophosphorylation; chemiosmotic hypothesis; photorespiration; C₃ and C₄ pathways; factors affecting photosynthesis.

Chapter-14: Respiration in Plants Exchange of gases; cellular respiration - glycolysis, fermentation (anaerobic), TCA cycle and electron transport system (aerobic); energy relations - number of ATP molecules generated; amphibolic pathways; respiratory quotient.

Chapter-15: Plant - Growth and Development Seed germination; phases of plant growth and plant growth rate; conditions of growth; differentiation, dedifferentiation and redifferentiation; sequence of developmental processes in a plant cell; plant growth regulators - auxin, gibberellin, cytokinin, ethylene, ABA.

Chapter-17: Breathing and Exchange of Gases Respiratory organs in animals (recall only); Respiratory system in humans; mechanism of breathing and its regulation in humans - exchange of gases, transport of gases and regulation of respiration, respiratory volume; disorders related to respiration - asthma, emphysema, occupational respiratory disorders.

Chapter-18: Body Fluids and Circulation Composition of blood, blood groups, coagulation of blood; composition of lymph and its function; human circulatory system - Structure of human heart and blood vessels; cardiac cycle, cardiac output, ECG; double circulation;

regulation of cardiac activity; disorders of circulatory system - hypertension, coronary artery disease, angina pectoris, heart failure. 4

Chapter-19: Excretory Products and their Elimination Modes of excretion - ammonotelism, ureotelism, uricotelism; human excretory system – structure and function; urine formation, osmoregulation; regulation of kidney function - renin - angiotensin, atrial natriuretic factor, ADH and diabetes insipidus; role of other organs in excretion; disorders - uremia, renal failure, renal calculi, nephritis; dialysis and artificial kidney, kidney transplant.

Chapter-20: Locomotion and Movement Types of movement - ciliary, flagellar, muscular; skeletal muscle, contractile proteins and muscle contraction; skeletal system and its functions; joints; disorders of muscular and skeletal systems - myasthenia gravis, tetany, muscular dystrophy, arthritis, osteoporosis, gout.

Chapter-21: Neural Control and Coordination Neuron and nerves; Nervous system in humans - central nervous system; peripheral nervous system and visceral nervous system; generation and conduction of nerve impulse

Chapter-22: Chemical Coordination and Integration Endocrine glands and hormones; human endocrine system - hypothalamus, pituitary, pineal, thyroid, parathyroid, adrenal, pancreas, gonads; mechanism of hormone action (elementary idea); role of hormones as messengers and regulators, hypo - and hyperactivity and related disorders; dwarfism, acromegaly, cretinism, goiter, exophthalmic goitre, diabetes, Addison's disease. Note: Diseases related to all the human physiological systems to be taught in brief.

Final Term:

All chapters mentioned above.