



Curriculum
Subject: Biology (044)
Class: XI
Session: 2024-25

EVALUATION SCHEME		
Theory		
Units	Title	Marks
I	Diversity of Living Organisms	15
II	Structural Organization in Plants and Animals	10
III	Cell: Structure and Function	15
IV	Plant Physiology	12
V	Human Physiology	18
Total		70

Unit/ Month	Name of the Chapter	Practical and Competency Skill Based Activities/ Experiential Learning	Skills	Assessments
Unit I: (April-May)	<p>The Living World Biodiversity Learning Outcome: Students will be able to:</p> <p>Understand the Need for classification; three domains of life; taxonomy and systematics; explain the concept of species and taxonomical hierarchy; binomial nomenclature</p> <p>Biological Classification Students will be able to explain Five kingdom classification; Illustrate Salient features and classification of Monera, Protista and Fungi into major groups; Lichens, Viruses and Viroids</p> <p>Plant Kingdom Students will be able to Classify plants into major groups; give Salient and distinguishing features and a few examples of Algae, Bryophyta, Pteridophyta, Gymnospermae (Topics excluded – Angiosperms, Plant Life Cycle and Alternation of Generations</p> <p>Animal Kingdom Students will be able to discuss 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.)</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, Honey bee, Snail, Starfish, Shark, Rohu, Frog, Lizard, Pigeon and Rabbit</p> <p>Field trip to Great Himalayan National Park Banjar</p>	Knowledge, Understanding, Application, Analysis and Evaluation	Oral Test/ Class test/ Quizzes / Lab activity
Unit II (June-July)	<p>Morphology of Flowering Plants Students will be able to explain Morphology of different parts of flowering plants: root, stem, leaf, inflorescence, flower, fruit and seed, describe family Solanaceae</p> <p>Anatomy of Flowering Plants Students will be able to understand Anatomy and functions of tissue systems in dicots and monocots</p> <p>Structural Organisation in Animals Students will be able to discuss Morphology, Anatomy and functions of different systems (digestive, circulatory, respiratory, nervous and reproductive) of frog.</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>Different types of inflorescence (cymose and racemose</p> <p>Preparation and study of T.S. of dicot and monocot roots and stems (primary)</p> <p>Field trip to Agriculture Institute, Bajaura</p>	Knowledge, Understanding, Application, Analysis and Evaluation	Oral Test/ Class test/ Quizzes / Lab activity

<p>Unit III (Aug-Sep)</p>	<p>Cell: Structure and Function Cell-The Unit of Life Students will be able to understand 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; Draw and explain basic cell organelle's structure and function; endomembrane system, endoplasmic reticulum, golgi bodies, lysosomes, vacuoles, mitochondria, ribosomes, plastids, microbodies; cytoskeleton, cilia, flagella, centrioles (ultrastructure and function); nucleus.</p> <p>Biomolecules Students will be able to discuss Chemical constituents of living cells: biomolecules, structure and function of proteins, carbohydrates, lipids, nucleic acids; Describe 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)</p> <p>Cell Cycle and Cell Division Students will be able to explain the process of Cell cycle, mitosis, meiosis and their significance</p> <p>Photosynthesis in Higher Plants Students will be able to explain Photosynthesis as a means of autotrophic nutrition; site of photosynthesis, discuss pigments involved in photosynthesis (elementary idea); photochemical and biosynthetic phases of photosynthesis; cyclic and non-cyclic photophosphorylation; chemiosmotic hypothesis; photorespiration; C3 and C4 pathways; analyze factors affecting photosynthesis.</p>	<p>Parts of a compound microscope</p> <p>Mitosis in onion root tip cells and animals cells (grasshopper) from permanent slides.</p> <p>Study of osmosis by potato osmometer</p> <p>Study of plasmolysis in epidermal peels (e.g. Rhoeo/ Lily leaves or Fleshy scale leaves of onion bulb).</p> <p>Study of distribution of stomata on the upper and lower surfaces of leaves.</p>	<p>Knowledge, Understanding, Application, Analysis and Evaluation</p>	<p>Oral Test/ Class test/ Quizzes / Lab activity</p>
<p>Unit IV (Oct)</p>	<p>Respiration in Plants Students will be able to understand Exchange of gases in plants ; cellular respiration - glycolysis, fermentation (anaerobic), TCA cycle and electron transport system (aerobic); energy relations - number of ATP molecules generated; amphibolic pathways; discuss respiratory quotient</p> <p>Plant - Growth and Development Students will be able to explain Seed germination; phases of plant growth and plant growth rate; conditions of growth; define the terms differentiation, dedifferentiation and redifferentiation; discuss the sequence of developmental processes in a plant cell; give brief description about growth regulators - Auxin, Gibberellin, Cytokinin, Ethylene, ABA</p>	<p>Comparative study of the rates of transpiration in the upper and lower surfaces of leaves Separation of plant pigments through paper chromatography</p> <p>Test for the presence of sugar, starch, proteins and fats in suitable plant and animal materials.</p> <p>Study of the rate of respiration in flower buds/leaf tissue and germinating seeds.</p>	<p>Knowledge, Understanding, Application, Analysis and Evaluation</p>	<p>Oral Test/ Class test/ Quizzes / Lab activity</p>

PRACTICAL

Sr. No.	Evaluation Scheme	Marks	
1	One Major Experiment	5	
2	One Minor Experiment	4	
3	Slide Preparation	5	
4	Spotting	7	
5	Practical Record + Viva Voce	(Credit to the students' work over the academic session may be given)	4
6	Investigatory Project and its Project Record + Viva Voce		5
	Total	30	

Sr. No.	Book	Publisher
1	Text Book of Biology	NCERT
2	Lab Manual	Evergreen