BIOLOGY-GRADE-SSC-I

Unit-wise Heading, Sub-heading, SLO & Teaching-Method Plan | Based on National Curriculum of Pakistan 2022-23 (NBF Model Textbook)

Unit no	CONTENT (Heading / Sub-heading)	SLO#	METHOD (How to Teach)	RESPONSE
Unit 1 INTRODUCTION OF BIOLOGY	1.1 What Is Biology? (definition and scope)	01	Lecture method	
	1.2 Branches of Biology	02	Discussion method	
	1.2.1 Botany and Zoology	03	Compare & contrast method	
	1.2.2 Specialized Branches (genetics, ecology, biotechnology, microbiology, etc.)	04	Discussion method	
	1.3 Biology and Its Relationship with Other Sciences	05	Discussion method	
	1.4 Levels of Biological Organization	06	Lecture with diagram method	
	1.5 Basic Biological Themes (unity in diversity, evolution, homeostasis)	07	Discussion method	
	1.6 Scientific Method / Biological Method of Inquiry	08	Demonstration method	
	1.7 Career Prospects in Biology	09	Storytelling method	
Unit 2 BIODIVERSITY	2.1 What Is Biodiversity?	01	Lecture method	
	2.2 Need for Classification	02	Discussion method	
	2.3 Basis of Classification (structural, functional, genetic similarities)	03	Discussion method	
	2.4 Taxonomic Categories / Hierarchy	04	Lecture method	
	2.5 Binomial Nomenclature	05	Question answer method	
	2.6 The Five/Three-Domain Kingdom System of Classification	06	Compare & contrast method	
	2.6.1 Kingdom Monera and Protista	07	Discussion method	
	2.6.2 Kingdom Fungi	08	Discussion method	
	2.6.3 Kingdom Plantae	09	Discussion method	
	2.6.4 Kingdom Animalia	10	Discussion method	
	2.7 Importance and Conservation of Biodiversity	11	Debate method	
	2.8 Threats to Biodiversity (habitat loss, pollution, extinction)	12	Case study method	
Unit 3 THE CELL	3.1 Discovery of the Cell and Cell Theory	01	Storytelling method	
	3.2 Cell as the Basic Unit of Life	02	Lecture method	
	3.3 Prokaryotic and Eukaryotic Cells	03	Compare & contrast method	
	3.4 Plant Cell and Animal Cell (similarities and differences)	04	Compare & contrast method	
	3.5 Cell Membrane (structure and function)	05	Demonstration with diagram method	

Unit no	CONTENT (Heading / Sub-heading)	SLO#	METHOD (How to Teach)	RESPONSE
	3.6 Cell Wall	06	Lecture method	
	3.7 Cytoplasm and Cell Organelles	07	Demonstration with diagram method	
	3.7.1 Nucleus	08	Demonstration with diagram method	
	3.7.2 Mitochondria and Chloroplast	09	Demonstration with diagram method	
	3.7.3 Endoplasmic Reticulum, Golgi Apparatus, Ribosomes	10	Lecture with diagram method	
	3.7.4 Vacuoles and Lysosomes	11	Lecture with diagram method	
	3.8 Movement of Substances Across the Cell Membrane	12	Hands-on/Practical method	
	3.8.1 Diffusion	13	Demonstration method	
	3.8.2 Osmosis	14	Hands-on/Practical method	
	3.8.3 Active Transport	15	Discussion method	
Unit 4 CELL CYCLE	4.1 What Is the Cell Cycle?	01	Lecture method	
	4.2 Interphase (G1, S, G2 phases)	02	Discussion method	
	4.3 Mitosis	03	Demonstration with diagram method	
	4.3.1 Phases of Mitosis (prophase, metaphase, anaphase, telophase)	04	Demonstration with diagram method	
	4.3.2 Significance of Mitosis	05	Discussion method	
	4.4 Meiosis	06	Demonstration with diagram method	
	4.4.1 Phases of Meiosis I and Meiosis II	07	Demonstration with diagram method	
	4.4.2 Significance of Meiosis	08	Discussion method	
	4.5 Comparison of Mitosis and Meiosis	09	Compare & contrast method	
	4.6 Cancer as Uncontrolled Cell Division	10	Case study method	
Unit 5 TISSUES, ORGAN AND ORGAN SYSTEM	5.1 What Is a Tissue?	01	Lecture method	
	5.2 Plant Tissues	02	Discussion method	
	5.2.1 Meristematic Tissue	03	Demonstration with diagram method	
	5.2.2 Permanent Tissue (simple and complex)	04	Demonstration with diagram method	
	5.3 Animal Tissues	05	Discussion method	

Unit no	CONTENT (Heading / Sub-heading)	SLO#	METHOD (How to Teach)	RESPONSE
	5.3.1 Epithelial Tissue	06	Demonstration with diagram method	
	5.3.2 Connective Tissue	07	Demonstration with diagram method	
	5.3.3 Muscular Tissue	08	Demonstration with diagram method	
	5.3.4 Nervous Tissue	09	Demonstration with diagram method	
	5.4 Organs and Organ Systems (concept and examples)	10	Lecture method	
	5.5 Levels of Organization from Cell to Organism	11	Discussion method	
Unit 6 MOLECULAR BIOLOGY	6.1 Biomolecules (introduction)	01	Lecture method	
	6.2 Carbohydrates (structure, types, functions)	02	Discussion method	
	6.3 Lipids (structure, types, functions)	03	Discussion method	
	6.4 Proteins (structure, types, functions)	04	Discussion method	
	6.5 Nucleic Acids	05	Lecture with diagram method	
	6.5.1 Structure of DNA	06	Demonstration with diagram method	
	6.5.2 Structure and Types of RNA	07	Demonstration with diagram method	
	6.6 DNA Replication (basic concept)	08	Demonstration with diagram method	
	6.7 Genes and Their Role in Heredity (introductory concept)	09	Discussion method	
Unit 7 ENZYMES	7.1 What Are Enzymes? (biocatalysts)	01	Lecture method	
	7.2 Properties of Enzymes	02	Discussion method	
	7.3 Mechanism of Enzyme Action (lock-and-key, induced fit models)	03	Demonstration with diagram method	
	7.4 Factors Affecting Enzyme Activity	04	Hands-on/Practical method	
	7.4.1 Temperature	05	Hands-on/Practical method	
	7.4.2 pH	06	Hands-on/Practical method	
	7.4.3 Substrate and Enzyme Concentration	07	Problem solving method	
	7.5 Enzyme Inhibition	08	Discussion method	
	7.6 Importance of Enzymes in Daily Life and Industry	09	Discussion method	
Unit 8 BIOENERGETICS	8.1 What Is Bioenergetics? (flow of energy in living systems)	01	Lecture method	
	8.2 ATP as the Energy Currency of the Cell	02	Lecture with diagram method	

Unit no	CONTENT (Heading / Sub-heading)	SLO#	METHOD (How to Teach)	RESPONSE
	8.3 Photosynthesis	03	Demonstration with diagram method	
	8.3.1 Light Reactions	04	Lecture with diagram method	
	8.3.2 Dark Reactions (Calvin Cycle)	05	Lecture with diagram method	
	8.3.3 Factors Affecting Photosynthesis	06	Hands-on/Practical method	
	8.4 Respiration	07	Demonstration with diagram method	
	8.4.1 Aerobic Respiration	08	Lecture with diagram method	
	8.4.2 Anaerobic Respiration / Fermentation	09	Discussion method	
	8.5 Comparison of Photosynthesis and Respiration	10	Compare & contrast method	
Unit 9 PLANT PHYSIOLOGY	9.1 Transport in Plants (overview)	01	Lecture method	
	9.2 Uptake and Transport of Water and Minerals	02	Demonstration method	
	9.3 Transpiration and Its Significance	03	Hands-on/Practical method	
	9.4 Translocation of Food (phloem transport)	04	Lecture with diagram method	
	9.5 Plant Hormones (auxins, gibberellins, cytokinins - basic roles)	05	Discussion method	
	9.6 Tropisms (phototropism, geotropism, hydrotropism)	06	Demonstration method	
	9.7 Photoperiodism (basic concept)	07	Discussion method	
Unit 10 EVOLUTION	10.1 Concept of Evolution and Natural Selection	01	Lecture with discussion method	
	10.2 Darwin's Theory of Evolution by Natural Selection	02	Discussion method	
	10.3 Variation and Its Role in Evolution	03	Activity based method	
	10.4 Adaptation and Survival of Organisms	04	Case study method	
	10.5 Speciation and Formation of New Species	05	Problem solving method	
	10.6 Evidence for Evolution and Common Ancestry	06	Demonstration with diagram method	
	10.7 Evolutionary Relationships and Biodiversity	07	Compare & contrast method	