SYLLABUS 2021-2022

STANDARD: 12 **SUBJECT: BIO-BOTANY**

MONTH	Total No. Of Chapter	CHAPTER	CONTENT
January	2	**CHAPTER 4** Principles and Processes of Biotechnology	4.2 Methods of Biotechnology 4.2.1 Fermentation 4.2.2 Single cell Protein 4.3 Advancements in Modern Biotechnology 4.3.1 Genetic Engineering 4.4 Tools - Genetic Engineering 4.4.1 Restriction Endonuclease 4.4.2 DNA Ligase 4.4.3 Alkaline Phosphatase 4.4.4 Vectors 4.5 Methods of Gene Transfer 4.5.1 Direct or Vectorless Gene transfer 4.5.2 Indirect or vector-Mediated Gene transfer 4.6 Screening for Recombinants 4.6.1 Insertional Inactivation - Blue White Colony Method 4.6.2 Antibiotic resistant markers 4.6.4 Molecular Techniques - Isolation of Genetic Material and Gel Electrophoresis 4.6.5 Nucleic Acid Hybridization 4.6.6 Bioassay for Target Gene Effect 4.6.7 Genome Sequencing and Plant Genome Projects 4.6.8 Evolutionary pattern Assessed using DNA 4.6.10 RNA Interference (RNAi) 4.7.2 Herbicide tolerant – Basta 4.7.3 Insect Resistance – Bt Crop 4.7.7 Polyhydroxybutyrate – PHB 4.7.11 Bioremediation 4.7.13 Bioprospecting 4.8 Applications of Biotechnology

January	2	**CHAPTER 5** Plant Tissue Culture	5.1 Basic concepts of Tissue Culture 5.2 Plant Tissue Culture 5.2.2 Technique involved in PTC 5.2.3 Types of Plant Tissue Culture 5.4 Applications of Plant Tissue Culture 5.4.2 Artificial Seed 5.5.2 Cryopreservation 5.7 Future of Biotechnology
		PRACTICALS	5 Flow of energy – 10 % Law
			6 Quadrat method – Population density and frequency determintation
February	2	**CHAPTER 6** Principles of Ecology	6.1 Ecology 6.1.1 Definitions of ecology 6.1.2 Ecological hierarchy 6.1.4 Habitat and Niche 6.1.5 Ecological equivalents 6.2.1 Climatic Factors 6.2.b Temperature 6.2.c Water 6.2.2 Edaphic factors 6.2.3 Topographic factors 6.2.4 Biotic factors 6.3 Ecological adaptations: Hydrophytes, Xerophytes, Mesophytes

February	2	**CHAPTER 7** Ecosystem	7.2.1 Photosynthetically Active Radiation 7.2.3 Concepts of tropic level in an Ecosystem 7.2.4 Energy Flow 7.2.5 Food chain 7.2.6 Food web 7.2.7 Ecological pyramids 7.2.9 Biogeo Chemical cycle Carbon cycle & Phosphorous cycle 7.2.10 Types of ecosystem 7.3 Plant succession 7.3.1 Characteristics of Ecological succession 7.3.2 Types of succession 7.3.3 Classification of plant succession 7.3.4 Significance of plant succession
		PRACTICALS	7 Genetic linkage maps
			8 Study of Pollen germination on a slide