Govt. College Chhilro

Lesson Plan (2023-2024)

Name of the Assistant/Associate Professor- Dr. Akhilesh Kumar Sem- IInd

Class- B.Sc. (M) Subject- Botany BOT-2.1

Month	Topics
12th Jan, 2024 to 31st Jan, 2024	Bryophyta- General characters, classification (upto classes), alternation of generations, evolution of sporophytes and economic importance
1st Feb, 2024 to 29th Feb, 20224	Bryophyta: Structure and reproduction (excluding development) of Marchantia (Hepaticopsida), Anthoceros (Anthocerotopsida) and Funaria (Bryopsida)
1st March, 2024 To 31 March, 2024	Pteridophyta- General characters, classification (upto classes), alternation of generations, heterospory, apospory, apogamy and economic importance; General account of stellar evolution
1st April, 2024 To 30 April, 2024	Pteridophyta: Structure and reproduction (excluding development) of Rhynia (Psilopsida), Selaginella (Lycopsida), Equisetum (Sphenopsida) and Pteris (Pteropsida

Govt. College Chhilro

Lesson Plan (2023-2024)

Name of the Assistant/Associate Professor- Dr. Akhilesh Kumar Sem- IInd

Class- B.Sc. (M) Subject- Botany -BOT-2.2

Month	Topics
12th Jan, 2024 to 31st Jan, 2024	Genetic Material: DNA - the genetic material, DNA structure and replication, DNA- Protein interaction, The Nucleosome Model, Genetic Code, Satellite and Repetitive DNA.
1st Feb, 2024 to 29th Feb, 20224	Genetic Inheritance: Mendelism: Laws of Segregation and Independent Assortment; Linkage Analysis; Allelic and non-allelic interactions.
1st March, 2024 To 31 March, 2024	Extra-nuclear Inheritance: Presence and function of Mitochondrial and Plastid DNA; Plasmids. Genetic Variations: Mutations - spontaneous and induced; transposable genetic elements; DNA damage and repair.
1st April, 2024 To 30 April, 2024	Gene Expression: Modern concept of gene; RNA; Ribosomes; Transfer of genetic information - transcription and translation; Structure of proteins; Regulation of gene expression in prokaryotes and eukaryotes

Govt. College Chhilro

Lesson Plan (2023-2024)

Name of the Assistant/Associate Professor- Dr. Akhilesh Kumar Sem- IVth

Class- B.Sc. (M) Subject- Botany-BOT-4.2

Month	Topics
12th Jan, 2024 to 31st Jan, 2024	Flower-a modified shoot, Microsporangium, its wall and dehiscence mechanism. Microsporogenesis, pollen grains and its structure (pollen wall).
1st Feb, 2024 to 29th Feb, 20224	Pollen germination (microgametogenesis), Male gametophyte, Pollen-pistil interaction; self incompatibility, Pollination: types and agencies
1st March, 2024 To 31 March, 2024	Structure of Megasporangium (ovule), its curvatures; Megasporogenesis and Megagametogenesis,Female gametophyte (mono, bi and tetrasporic), Double fertilization,Endosperm types and its biological importance.
1st April, 2024 To 30 April, 2024	Embryogenesis in Dicot and Monocot; Polyembryony, Structure of Dicot and Monocot seed, Fruit types; Dispersal mechanisms in fruits and seeds.

Govt. College Chhilro

Lesson Plan (2023-2024)

Name of the Assistant/Associate Professor- Dr. Akhilesh Kumar Sem- IVth

Class- B.Sc. (M) Subject- Botany-BOT-4.1

Month	Topics
12th Jan, 2024 to 31st Jan, 2024	Taxonomy and Systematics, fundamental components of taxonomy (identification, classification, description, nomenclature and phylogeny), Role of chemotaxonomy, cytotaxonomy and taximetrics in relation to taxonomy, Botanical Nomenclature, principles and rules, principle of priority, Keys to identification of plants.
1st Feb, 2024 to 29th Feb, 20224	Type concept, taxonomic ranks, Salient features of the systems of classification of angiosperms proposed by Bentham & Hooker and Engler & Prantl, Floral Terms and Types of Inflorescence
1st March, 2024 To 31 March, 2024	Diversity of Flowering Plants: Diagnostic features and economic importance of the following families: Ranunculaceae, Brassicaceae, Malvaceae, Euphorbiaceae, Rutaceae, Fabaceae, Cucurbitaceae
1st April, 2024 To 30 April, 2024	Diversity of Flowering Plants: Diagnostic features and economic importance of the families: Apiaceae, Asclepiadaceae, Lamiaceae, Solanaceae, Asteraceae, Liliaceae and Poaceae

Govt. College Chhilro

Lesson Plan (2023-2024)

Name of the Assistant/Associate Professor- Dr. Akhilesh Kumar Sem- VIth

Class- B.Sc. (M) Subject- Botany-BOT-6.1

Month	Topics
12th Jan, 2024 to 31st Jan, 2024	Basics of Enzymology: Discovery and nomenclature; characteristics of enzymes; concept of holoenzyme, apoenzyme, coenzyme and co-factors; regulation of enzyme activity; mechanism of action.
1st Feb, 2024 to 29th Feb, 20224	Respiration: ATP – the biological energy currency; aerobic and anaerobic respiration; Krebs cycle; electron transport mechanism (chemiosmotic theory); redox -potential; oxidative phosphorylation; pentose phosphate pathway.
1st March, 2024 To 31 March, 2024	Lipid metabolism: Structure and functions of lipids; fatty acid biosynthesis; β-oxidation; saturated and unsaturated fatty acids; storage and mobilization of fatty acids. Nitrogen metabolism: Biology of nitrogen fixation; importance of nitrate reductase and its regulation; ammonium assimilation.
1st April, 2024 To 30 April, 2024	Genetic engineering and Biotechnology: Tools and techniques of recombinant DNA technology; cloning vectors; genomic and cDNA library; transposable elements; aspects of plant tissue culture; cellular totipotency, differentiation and morphogenesis; biology of Agrobacterium; vectors for gene delivery and marker genes.

Govt. College Chhilro

Lesson Plan (2023-2024)

Name of the Assistant/Associate Professor- Dr. Akhilesh Kumar **Sem- VIth**

Class- B.Sc. (M) **Subject- Botany-BOT-6.2**

Month	Topics
12th Jan, 2024 to 31st Jan, 2024	Vavilov's centres of origin of crop plants, Origin, distribution, botanical description, brief idea of cultivation and economic uses of the following:
1st Feb, 2024 to 29th Feb, 20224	Food plants - cereals (rice, wheat and maize), pulses (gram, arhar and pea), vegetables (potato, tomatoand onion). Origin, distribution, botanical description, brief idea of cultivation and economic uses of the following: Fibers- cotton, jute and flax. Oils- groundnut, mustard, sunflower and coconut.
1st March, 2024 To 31 March, 2024	Morphological description, brief idea of cultivation and economic uses of the following: Spices- coriander, ferula, ginger, turmeric, cloves. Medicinal plants- Cinchona, Rauwolfia, Atropa, Opium, Cannabis, Azadirachta, Withania.
1st April, 2024 To 30 April, 2024	Botanical description, processing and uses of: Beverages- tea and coffee; Rubber - Hevea; Sugar- sugarcane General account and sources of timber; energy plantations and bio-fuels.