

GAUR BRAHMAN DEGREE COLLEGE, ROHTAK

Subject Name: Diversity of Archigoniates (MAJOR)

Botany

Subject Code: 24BOTM401DS01

Sr.No	Unit	Lesson Plan: Bachelor of Life Science: 2025-26 (Semester-2 ND) Theory & Practical		Month
1	Unit-1	Bryophytes:	General characters; adaptations to land habit; classification upto classes (Smith,1935); range of thallus organization; alternation of generations; evolution of sporophytes; economic importance Morphology, anatomy and reproduction of Marchantia (Hepaticopsida), Anthoceros (Anthocerotopsida) and Funaria (Bryopsida)	January
2	Unit-2	Pteridophytes:	General characters; classification (upto classes); alternation of generations; heterospory and seed habit; apospory and apogamy; stelar evolution; economic importance. Morphology, anatomy and reproduction of Rhynia (Psilopsida), Selaginella (Lycopsida), Equisetum (Sphenopsida) and Pteris (Pteropsida).	February
3	Unit-3	Palaeobotany:	Palaeobotany- Fossils and Fossilization (Process involved, types of fossils and importance of fossils); Reconstruction of the fossil plants: Lyginopteris, Williamsonia, Cycadeoidea (Bennettites); origin and evolution of Gymnosperms; Geological Time Table scale	March
4	Unit-4	Gymnosperms:	General characters; Pilger and Melchior's (1954) system classification of Gymnosperms; Morphology and anatomy of root, stem, leaf/leaflet and reproductive parts including mode of reproduction, life-cycle and economic importance of Cycas, Pinus and Ephedra; economic importance	April

Dr. Kanupriya (Assistant Professor, Deptt. of Life Science)

Date: 19/12/2025

GAUR BRAHMAN DEGREE COLLEGE, ROHTAK

Subject Name: Plant Anatomy and Reproductive Biology (MAJOR)

Botany

Subject Code: 25BOTM404DS01

Sr.No	Unit	Lesson Plan: Bachelor of Life Science: 2025-26 (Semester-4 th) Theory & Practical		Month
1	Unit-1	Tissues -	meristematic and permanent (simple, complex and secretory); Tissue systems (Epidermal, ground and vascular) The Shoot system – Histological organizations of shoot apical meristem; Cambium - structure and functions; Secondary growth in dicot stem; Anomalous secondary growth (Dracaen, Boerhaavia, Achyranthus and Salvadora)	January
2	Unit-2	Leaf-	Anatomy of typical Monocot and Dicot leaf; cell inclusions in leaves; Stomatal apparatus and their morphological types, modifications of leaves and Secondary functions of leaves Root system- Histological organizations of root apical meristem; Secondary growth in dicot root; Functions of roots, Structural modifications in roots: Storage (Beta), Respiratory (Rhizophora), Epiphytic (Vanda)	February
3	Unit-3	Flower-	a modified shoot, Development of anther, Microsporogenesis, Microsporangium -structure and dehiscence mechanism. pollen grain and its structure (pollen wall), Pollen germination (microgametogenesis), Male gametophyte, Pollen-pistil interaction; self-incompatibility, Pollination: types and agencies. Evolutionary aspects of pollination.	March
4	Unit-4	Structure of Megasporangium (ovule) and its types;	Megasporogenesis and Megagametogenesis, Female gametophyte (mono, bi and tetrasporic), Double fertilization and its biological importance, Endosperm types. Embryogenesis in Dicot and Monocot; Polyembryony, Structure of Dicot and Monocot seed, Fruit types; Dispersal mechanisms in fruits and seeds.	April

Dr. Kanupriya (Assistant Professor, Deptt. of Life Science)

Date: 19/12/2025

GAUR BRAHMAN DEGREE COLLEGE, ROHTAK

Subject Name: Floriculture (SEC)

Botany

Subject Code: 24BOT402SE01

Sr.No	Unit	Lesson Plan: Bachelor of Life Science: 2025-26 (Semester-2 nd) Theory & Practical		Month
1	Unit-1	Introduction:	History of gardening; Importance and scope of floriculture and landscape gardening. Nursery Management and Routine Garden Operations: Sexual and vegetative methods of propagation; Soil sterilization; Seed sowing; Pricking; Planting and transplanting; Shading; Stopping or pinching; Defoliation;	January
2	Unit-2	Ornamental Plants:	Flowering annuals (Petunia, Chrysanthemum); perennials (Rose, China Rose); Divine vines (Money plant, Monstera); Shade and ornamental trees; Ornamental bulbous and foliage plants; Cacti and succulents; Palms and Cycads; Ferns and Selaginellas; Cultivation of plants in pots; Indoor gardening; Bonsai	February
3	Unit-3	Principles of Garden Design and landscaping ideas;	Features of a garden (Garden wall, Fencing, Steps, Hedge, Edging, Lawn, Flower beds, Shrubbery, Borders, Water garden.	March
4	Unit-4	Commercial Floriculture:	Factors affecting flower production; Production and packaging of cut flowers; Flower arrangements; Methods to prolong vase life; Cultivation of Important cut flowers (Carnation, Aster, Chrysanthemum, Dahlia, Gerbera, Gladiolous, Marigold, Rose, Lilium, Orchids).	April

Dr. Kanupriya (Assistant Professor, Deptt. of Life Science)

Date: 19/12/2025

GAUR BRAHMAN DEGREE COLLEGE, ROHTAK

Subject Name: Home Gardening (SEC)

Botany

Subject Code: 26BOT406SE01

Sr.No	Unit	Lesson Plan: Bachelor of Life Science: 2025-26 (Semester-4 th) Theory & Practical	Month
1	Unit-1	1. Practice of grafting, budding, cutting and layering, anatomical studies of rooting of cuttings and grafting union. 2. Planning and layout for home gardens. 3. Planning and layout for vertical home gardens 4. Identification and control of important diseases and insects of available fruits, vegetables and ornamental plants..	January
2	Unit-2	5. Soil and foliar application of fertilizers. 6. Study of deficiency symptoms of elements. 7. Practice of pruning and training. 8. Physical practices to induce flowering, use of bio-regulators,	February
3	Unit-3	9. Identification and botanical description (vegetative and floral features) of available fruits, vegetables and ornamental plants. 10. Cultivation of Crops under protected environment: Rose, Dahlia, Gerbera, Calendula, Marigold and chrysanthemum; Capsicum, Tomatoes, Onion etc. 11. Preparation of bonsai.	March
4	Unit-4	12. Methods of preparation of compost, vermi-compost, green manuring, preparation of neem products and application. 13. Experiments on growing of insect pest repellent plants in home gardens. 14. Preparation of project report on Home Gardening.	April

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Date: 19/12/2025

GAUR BRAHMAN DEGREE COLLEGE, ROHTAK

Subject Name: Biochemistry and Plant Biotechnology

Botany

Subject Code: BOT. 6.1(Paper 1)

Sr.No	Unit	Lesson Plan: Bachelor of Life Science: 2025-26 (Semester-4 th) Theory & Practical	Month
1	Unit-1	Basics of Enzymology: Discovery and nomenclature; characteristics of enzymes; concept of holoenzyme, apoenzyme, coenzyme and co-factors; regulation of enzyme activity; mechanism of action.	January
2	Unit-2	Respiration: ATP– the biological energy currency; aerobic and anaerobic respiration; Krebs cycle; electron transport mechanism (chemiosmotic theory); redox-potential; oxidative phosphorylation; pentose phosphate pathway.	February
3	Unit-3	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.	March
4	Unit-4	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.	April

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Date: 19/12/2025

GAUR BRAHMAN DEGREE COLLEGE, ROHTAK

Subject Name: II Economic Botany

Botany

Subject Code: BOT. 6.2(Paper 2)

Sr.No	Unit	Lesson Plan: Bachelor of Life Science: 2025-26 (Semester-4 th) Theory & Practical	Month
1	Unit-1	Vavilov's centres of origin of crop plants, Origin, distribution, botanical description, brief idea of cultivation and economic uses of the following: Food plants- cereals (rice, wheat and maize), pulses (gram, arhar and pea), vegetables (potato, tomato and onion).	January
2	Unit-2	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.	February
3	Unit-3	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.	March
4	Unit-4	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.	April

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