Curriculum Planner
(Department of Botany, Kalindi College)
Dr. Priyanka Verma (2026-2027)

Course: B.Sc.(H) Botany
Semester: II
Paper: Plant Systematics (Theory & Practical) DSC

Topic	Reference	Approximate (schedule)
Unit 1: **Introduction** Identification, Classification (types) and Nomenclature, Phylogeny; Major contributions - Parasara, Charaka, Theophrastus, Bauhin, Tournefort, Linnaeus, Adanson, de Candolle, Bessey, Hutchinson, Takhtajan, Bremer, MW Chase **Unit 2**: **Resources in Plant Identification** Literature (Floras, Manuals, Icones, Monographs, Revisions, Journals, e-resources – ***definitions and examples***); Herbaria and Botanical gardens **(*importance and examples*)** **Unit 3**: **Systematics - An Interdisciplinary Science** Relevance of palynology, cytology, phytochemistry ***(secondary metabolites - flavonoids, alkaloids, glucosinolates)*** and molecular data (*based on DNA)* (cite at least (streak, spread & pour), replica plating, serial dilution, - ***irrelevant to the topic)*** three examples from each with emphasis on application in resolving taxonomic problems - details of techniques to be excluded) **Unit 4**: **Botanical Nomenclature** Principles and rules (ICN); Ranks and names; Principle of priority and its limitations;	1. Simpson, M. G. (2019). Plant systematics. 3rd Edition, Academic press. 2. Singh, G. (2019). Plant Systematics-An Integrated Approach. 4th edition. CRC Press, Taylor and Francis Group. 3. Stuessy, T.F. (2009). Plant Taxonomy: The Systematic Evaluation of Comparative Data, 2nd edition, Columbia University Press. 4. Taylor, D.V., Hickey, L.J. (1997) Flowering Plants: Origin, Evolution and Phylogeny. 8 CBS Publishers & Distributers, New Delhi. 5. Pandey, A. K., Kasana, S. (2021). Plant Systematics. 2nd Edition. CRC Press Taylor and Francis Group 6.http://www.mobot.org/MOBOT/research/APweb/ 7. Maheshwari, J. K. (1963). The flora of Delhi. Council of Scientific & Industrial Research.	January 2026-April 2026

Concept of 'Type', Author citation, Valid publication, Rejection of names; Nomenclature of hybrids **Unit 5**: **Systems of Classification** Taxonomic hierarchy; Concept of species (morphological, biological and evolutionary); Classifications - Bentham and Hooker's (up to series), Engler and Prantl's (up to sub-class) ***(merits and demerits to be excluded for both)*** and Angiosperm Phylogeny Group (APG) classification (major clades) **Unit 6**: **Approaches in Systematics** Terms and concepts (primitive and advanced, homology and analogy, parallelism and convergence, monophyly, paraphyly, polyphyly, clades and grades). Phenetics - Principles, Methodology ***(in brief)***, Characters; Selection of OTUs, Character weighting and Coding; Cluster analysis ***(definition & concept, UPGMA method only)*****;** Phenogram. Cladistics - Principles, Methodology ***(in brief)***, Characters; Selection of EUs, Character weighting and Coding; Cluster analysis ***(definition & concept; Maximum Parsimony Method in brief)*****;** Cladogram **Unit 7**: **Evolution of Angiosperms** Concept of a primitive flower (Euanthial theory and Pseudanthial theory – ***basic concept and examples only***); Basal Living Angiosperms ***(ANA grade only)***; Herbaceous origin; Co-evolution of angiosperms with animals ***(concept and any two examples)***	8. Maheshwari, J. K. (1966). Illustrations to the Flora of Delhi. Council of Scientific & Industrial Research. 9. Harris, J. G., Harris, M. W. (2001). Plant Identification Terminology: An Illustrated Glossary. Spring Lake, Utah: Spring Lake Pub. Spring Lake, Utah. 10. Radford, A. E. (1974). Vascular plant systematics. Harper & Row Publishers, New York, London. 11. Judd, W.S., Campbell, L.S., Kellogg, E.A., Stevens, P.F., Donoghue, M.J. (2016) Plant Systematics: A Phylogenetic Approach. 4th edition. Sunderland, MA: Sinauer Associates	

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Practical component: 1. Field trip/ Visit to any herbaria/ Botanical Garden. 2. To prepare at least five herbarium specimens and identify them using available resources (Literature, herbaria, e-resources, taxonomic keys) and classify up to family level (according to Bentham and Hooker's classification and comapare it with APG IV System in the field note book). 3. 3. Description of taxa using semi-technical terms and identification of the families according to Bentham and Hooker's classification and compare the placement of family with APG IV System (Only placement of family according to APG IV system to be mentioned) 48 Hours Note: Any twelve families from the following list to be studied with at least two specimens (or one where limitations exist). List of Suggested Families (*mandatory) Acanthaceae, Amaranthacea, *Apiaceae, Apocynaceae, *Asteraceae, *Brassicaceae, *Euphorbiaceae, *Fabaceae, *Lamiaceae, Liliaceae, *Malvaceae, Moraceae, *Poaceae, *Ranunculaceae, *Solanaceae	1. Simpson, M. G. (2019). Plant systematics. 3rd Edition, Academic press. 2. Singh, G. (2019). Plant Systematics- An Integrated Approach. 4th edition. CRC Press, Taylor and Francis Group. 3. Bendre and Kumar. Practical botany. Part 2	January 2026-April 2026