Kalindi College

DEPARTMENT OF BOTANY

Curriculum/Teaching Plan (2025-26)

(ODD Semesters : I, III, V)

Dr. Pratibha Thakur

Course : B.Sc. (Prog.) Life Sciences 1st year, Sem. I [1st August 2025 – 27th Nov. 2025]
Paper : Plant Diversity and Systematics – THEORY (NEP) ALL
UPC : 2162521101
DSC – 01

Name of Paper : Plant Diversity and Systematics	**Allocation of Lectures**	**Month wise schedule**	**References**
Unit 1: Diversity of Life Classifying the diversity of life: Domains of Life –Eubacteria, Archaea and Eukaryotes.	Week 0.5	August 2025	**Suggested readings:** Alexopoulos, C.J., Mims, C.W., Blackwell, M. (1996). *Introductory Mycology,* 4th edition. Singapore, John Wiley and Sons (Asia). 2. Kumar, H.D. (1999). Introductory Phycology, 2nd edition. Delhi, Delhi: Affiliated East-West. Press Pvt. Ltd. 3. Bhatnagar, S.P., Moitra, A. (1996). Gymnosperms. New Delhi, Delhi: New Age International (P) Ltd Publishers. 4. Parihar, N.S. (1991). An introduction to Embryophyta. Vol. I. Bryophyta. Prayagraj: U.P.: Central Book Depot. 5. Pelczar, M.J. (2001). Microbiology, 5th edition. New Delhi, Delhi: Tata McGraw-Hill Co. 6. Tortora, G.J., Funke, B.R., Case. C.L. (2007). Microbiology. San Francisco, U.S.A: Pearson Benjamin Cummings.
Unit 2: Microbes Viruses: General account; Replication, Lytic and Lysogenic cycle; Bacteria: structure, Wall less forms (L-forms, Mycoplasma), asexual reproduction and genetic recombination.	Weeks: 02	August 2025	
Unit 3: Algae Brief introduction of major classes Blue green, Green, Brown and Red algae. Diagnostic features of identification; morphology, reproduction and classification with special reference to Nostoc, Volvox, and Spirogyra.	Weeks: 1.5	August 2025	
Unit 4: Fungi Diagnostic features of identification; morphology, reproduction and classification with special reference to Rhizopus, Penicillium and Agaricus; Lichens (a general account).	Weeks: 1.5	September 2025	
Unit 5: Bryophytes, Pteridophytes and Gymnosperm Characteristic features of identification, Morphology and reproduction of Bryophytes. Pteridophytes and Gymnosperms, with special reference to Marchantia, Funaria, Pteris and Pinus (only morphology).	Weeks: 03	September 2025	
Unit 6: Angiosperms Diagnostic features, Structure of flower, types of inflorescence	Week: 01	October 2025	

Name of Paper : Plant Diversity and Systematics	Allocation of Lectures	Month wise schedule	References
Unit 7: Systematics Aims, fundamental components of systematics description, identification, nomenclature, phylogeny, biosystematics.	Week: 0.5	October 2025	7. Raven, P.H., Evert, RF., Eichhorn, S.E. (1999). Biology of Plants. New York, NY: W.H.Freeman and Company Worth Publishers. 8. Sethi, I.K. and Walia, S.K. (2018). Text book of Fungi and Their Allies. (2nd Edition), Medtech Publishers, Delhi. 9. Vashishta, P.C., Sinha, A.K., Kumar, A. (2010). Pteridophyta. New Delhi, Delhi: S. Chand & Co Ltd. 10. Singh, G. (2012). Plant Systematics: Theory and Practice, 3rd edition. Oxford and IBH Pvt.Ltd. New Delhi. 11. Simpson, M.G. (2010). Plant Systematics. Elsevier Academic Press, San Diego, CA, U.S.A. 12. Raven, F.H., Evert, R. F., Eichhorn, S.E. (1992). Biology of Plants. W.H. Freeman and Company. New York, NY. 13. Gupta R. 2011 (Ed.) Plant Taxonomy: past, present, and future. New Delhi: The Energy and resources Institute (TERI). 14. Walter S. Judd, et.al. 2015 Plant Systematics: A Phylogenetic Approach 4th Edition Sinauer Associates , Oxford University Press.USA . http://www.mobot.org/MOBOT/research/APweb/. (for APG IV classification).
Unit 8: Systematics in Practices Taxonomic Hierarchy- Concept of taxa and categories; Botanical Nomenclature- principles and rules; Type method; Author citation; Valid publication; Rejection of names, Principle of priority and its limitations; Names of hybrids and cultivars.	Weeks: 3.5	November 2025	
Unit 9: Systems of classification Classification: Artificial, Natural and Phylogenetic. An outline of Bentham and Hooker's (up to series only) and Engler and Prantl's (up to Subclasses) systems of classification and their merits and Demerits. APG System.	Weeks: 1.5	November 2025	
• Revision • Assignment/Presentation • Mock		November 2025	

Course : B.Sc. (Prog.) Life Sciences 1st year, Sem. I [1st August 2025 – 27th Nov. 2025]
Paper : Plant Diversity and Systematics – PRACTICALS (NEP) Group - 4
UPC : 2162521101
DSC – 01

Name of Paper : Plant Diversity and Systematics	**Allocation Of Lectures**	**Monthwise schedule**	**Reading suggestions**
1. **Viruses:** EM of TMV and Bacteriophage, Specimens of virus infected plants (any two).	1 Week	August 2025	1. Alexopoulos, C.J., Mims, C.W., Blackwell, M. (1996). Introductory Mycology, 4th edition. Singapore, John Wiley and Sons (Asia). 2. Kumar, H.D. (1999). Introductory Phycology, 2nd edition. Delhi, Delhi: Affiliated East-West. Press Pvt. Ltd. 3. Bhatnagar, S.P., Moitra, A. (1996). Gymnosperms. New Delhi, Delhi: New Age International (P) Ltd Publishers. 4. Parihar, N.S. (1991). An introduction to Embryophyta. Vol. I. Bryophyta. Prayagraj: U.P.: Central Book Depot. 5. Pelczar, M.J. (2001). Microbiology, 5th edition. New Delhi, Delhi: Tata McGraw- Hill Co. 6. Tortora, G.J., Funke, B.R., Case. C.L. (2007). Microbiology. San Francisco, U.S.A: Pearson Benjamin Cummings. 7. Raven, P.H., Evert, RF., Eichhorn, S.E. (1999). Biology of Plants. New York, NY: W.H.Freeman and Company Worth Publishers. 8. Sethi, I.K. and Walia, S.K. (2018). Text book of Fungi and Their Allies. (2nd Edition), Medtech Publishers, Delhi. 9. Vashishta, P.C., Sinha, A.K., Kumar, A. (2010). Pteridophyta. New Delhi, Delhi: S. Chand & Co Ltd. 10. Singh, G. (2012). Plant Systematics: Theory and Practice, 3rd edition. Oxford and IBH Pvt.Ltd. New Delhi. 11. Simpson, M.G. (2010). Plant Systematics. Elsevier Academic Press, San Diego, CA, U.S.A. 12. Raven, F.H., Evert, R. F., Eichhorn, S.E. (1992). Biology of Plants. W.H.
2. **Bacteria:** EM of a bacterium, types through permanent slides/photographs, specimens of infected plants (any two).	1 Week	August 2025	
3. **Algae:** Study of vegetative and reproductive structures of (a) *Nostoc* (b) *Volvox* (c) *Spirogyra* through temporary preparations and permanent slides.	1 Week	August 2025	
4. **Fungi:** Study of vegetative and reproductive structures of (a) Rhizopus, (b) Penicillium, and (c)Agaricus through temporary preparations and permanent slides/specimens/photographs.	1 Week	September 2025	
5. **Lichens:** Crustose, Foliose and Fruticose specimens/photographs).	1 Week	September 2025	
6. **Bryophytes:** Study of (a) *Marchantia* morphology of thallus, W.M. rhizoids and scales, V.S. thallus through gemma cup, W.M. gemmae (all temporary slides), V.S. antheridiophore, archegoniophore,L.S. sporophyte (all permanent slides), (b) *Funaria*: detailed study and classification from W.M. rhizoids, operculum, peristome, spores and permanent slides of archegonia, antheridia and capsule.	2 Weeks	September 2025	
7. **Pteridophytes:** Study of *Pteris*: T. S. of Rachis, V.S. of Sporophyll and	1 Week	October 2025	

W.M. of sporangium. 8. **Gymnosperms:** Study of *Pinus* morphology of long & dwarf shoot, male and female cones (specimens) and T.S. of needle (permanent slides only). 9. Herbarium technique (Mounting of a properly dried and pressed specimen of any wild plant on the herbarium sheet with complete herbarium label). **10.** Taxonomic study of characters of 1 plant from each of the following families (any four): Malvaceae, Solanaceae, Asteraceae, Fabaceace, and Liliaceae. • Revision • Mock Theory Exam	1 Week 1 Week 5 Weeks	October 2025 November 2025 November 2025	Freeman and Company. New York, NY. 13. Gupta R. 2011 (Ed.) Plant Taxonomy: past, present, and future. New Delhi: The Energy and resources Institute (TERI). 14. Walter S. Judd, et.al. 2015 Plant Systematics: A Phylogenetic Approach 4th Edition Sinauer Associates, Oxford University Press. USA. http://www.mobot.org/MOBOT/research/A Pweb/. (for APG IV classification).