

BSc II Semester :

Course Title: Non- Flowering Plants and Paleobotany

Unit	Content	Hours
I	Bryophytes: General Characteristics and Classification. Structure and Reproduction of Riccia, Marchantia, Anthoceros, Polytrichum, Funaria. Brief account of Evolution of Sporophytes in Bryophytes and economic importance. General account of Spagnum.	14
II	Pteridophyta: General Characteristics and Classification. Structure and Reproduction of Lycopodium, Selaginella, Equisetum, Marselia, Nephrolepis, Brief Account on Heterospory and seed habit, Stealar Evolution in Pteridophytes and economic importance.	14
III	Gymnosperms: General Characteristics, Classification. Structure, Reproduction and Life Cycles of Cycas, Pinus and Gnetum. Economic Importance. Affinity and evolutionary significance of Gymnosperms.	14
IV	Paleobotany: Introduction, Geological time Scale, Process of Fossilization, Types of Fossil Plants, Radiocarbon Dating. Fossil Taxa: Rhynia, Lepidodendron, Calamites. Birbal-Sahani Institution of Paleosciences.	14

Text Books

1. Chopra C.L. A text book of Algae. Rastogi & Co., Meerut, Co. New Delhi, Depot Allahabad
2. Sharma, O.P. 1990. A text book of Pteridophyta. McMillan India Ltd. New Delhi.
3. Sharma, O.P. 1992. Text book of Thallophytes. McGraw Hill Publishing Co. New Delhi.
4. Singh, Pande, Jain 2004-05. A text Book of Botany, Rastogi Publication Meerut.

References

1. Agashe, S.N. 1995. Paleobotany. Plants and the past, their evolution, Paleoenvironment and Allied Plants. Hutchinson and Co., Ltd., London.
2. Goffinet B and Shaw A.J. 2009, Bryophyte Biology, 2nd ed. Cambridge University Press, Cambridge. Gymnosperms.
3. Parihar, N.S. 1970. The Morphology of Pteridophytes, Central Book Depot, Allahabad.
4. Rashid, A. 1998. An Introduction to Pteridophyta. II ed., Vikas Publishing House, New Delhi.
5. Smith, G.M. 1971. Cryptogamic Botany. Vol. II. Bryophytes and Pteridophytes. Tata Mc Graw Hill Publishing, New Delhi.
6. Smith, G.M. 1971. Cryptogamic Botany. Vol. I. Algae and Fungi. Tata Mc Graw Hill Publishing, New Delhi.

7. Sporne, K.R. 1965. **The Morphology of Gymnosperms.** Hutchinson and Co., Ltd., London.
8. Stewart, W.M. 1983. **Paleobotany and the Evolution of Plants,** Cambridge University Cambridge.
9. Sundarajan, S. 1997. **College Botany Vol. I.** S Chand and Co. Ltd., New Delhi.
10. Vashista, B.R. 1978. **Bryophytes.** S Chand and Co. Ltd., New Delhi.

List of Practicals/Experiments to be conducted

Sl.No	Experiments
Study of Morphology, anatomy and reproductive structure of the following types	
1	Bryophytes - Riccia, Anthoceros, Funeria
2	Pteridophytes –Lycopodium, Selaginella, Equisetum, Marsilea, Nephrolepis
3	Gymnosperm- Cycas, Pinus, Gnetum
4	Paleobotany – Fossil Plants- Rhynia, Lepidodendron, Calamites, Cycadeoidea