

MOHANLAL SUKHADIA UNIVERSITY, UDAIPUR

B. Sc. BIOTECHNOLOGY I YEAR TDC (2016-17)

Paper I : *Plant Biology and Diversity*

Unit I

Introduction to plant world – Plant kingdom; History and principles of classification and units of classification. Binomial nomenclature.

General features, distribution, classification, thallus organization, mode of nutrition, reproduction, life cycle patterns and economic importance of algae, fungi, bryophytes and pteridophytes. Alternation of generation. Thallus structure, ecological significance and economic importance of lichens.

15 Credit hours

Unit II

General features, classification, evolution, distribution, external features, comparative anatomy, development, reproduction, life-cycle, affinities and economic importance of gymnosperms. Evolutionary parallelism between gymnosperms and angiosperms.

15 Credit hours

Unit III

Technical description of a plant, systematic study, affinities, distinguishing characters of the following families of angiosperms with special reference to Cruciferae, Malvaceae, Leguminosae, Compositae, Solanaceae, Liliaceae.

15 Credit hours

Unit IV

Life history of a typical angiosperm, Male gametophyte – Structure of anthers, microsporogenesis, role of tapetum, pollen germination, pollen tube growth and guidance.

Female gametophyte – Megasporogenesis, organization of the embryo sac, types of embryo sacs, synergids and antipodal haustoria.

Pollination biology – Structural and functional aspects of pollen and pistil interaction, self and interspecific incompatibility, fertilization and control of fertilization, embryo and seed development.

Polyembryony : Types: genetic, somatic and pollen embryo apomixis and parthenocarpy.

15 Credit hours

Unit V

Introduction to economic botany, centre of origin, description and use of economically important plants from each category such as :

Cereals (Wheat, Rice, Maize)

Millets (Sorghum)

Pulses (Pigeonpea, Chickpea)

Vegetables (Potato, Onion)

Fruits (Mango, Banana)

Sugar producing plants (Sugar cane)

Oil crops (Groundnut, Mustard)

Spices and Condiments (Ginger, Turmeric)

Beverage Plants (Tea, Coffee)

Medicinally important Plants (*Cinchona*, Opium poppy, *Withania*)

Fibres (Cotton, Jute)

Wood (Sal, Teak, Shisham.)

15 Credit hours

Recommended Books

1. Alexopoulos, C.J., Mims, C.W. and Blackwell, M. 1996. Introductory Mycology. John Wiley and Sons, Inc.
2. Kumar, H.D. 1988. Introductory Phycology. Affiliated East-West Press Ltd., New Delhi.
3. Parihar, N.S. 1991. Bryophyta. Central Book Depot, Allahabad.
4. Stewart, W.N. and Rathwell, G.W. 1993. Paleobotany and the evolution of plants. Cambridge University Press.
5. Vashishta, P.C. 1991. Vascular Cryptogam. S. Chand and Co. Ltd., N. Delhi.
6. Pandey, Mishra and Trivedi. 2001. A text book of Botany, Vol. 1 and II. Publishing House New Delhi.
7. Bhatnagar, S.P. and Moitra, A. 1996. Gymnosperm. New Age International Limited, New Delhi.
8. Davis, P.H. and Heywood, V.H. 1963. Principles of Angiosperm taxonomy. Oliver and Boyd, London.
9. Bhojwani, S.S. and Bhatnagar, S.P. 2000. The embryology of Angiosperm, 4th Revised and Enlarged edition. Vikas Publishing House, New Delhi.
10. Sambamurthy, A.V.S.S. and Subramanyam, N.S. 1989. A Textbook of Economic Botany. Wiley Easter Ltd. New Delhi.