BHARATHIDASAN UNIVERSITY, TIRUCHIRAPPALLI -24

(For the candidates admitted from the academic year 2016 – 2017 onwards)

Allied Botany I

PLANT DIVERSITY AND PHYSIOLOGY, MUSHROOM TECHNOLOGY AND PLANT BIOTECHNOLOGY

Objectives

1. To expose the diversity of plant kingdom and their salient features
2. To acquire skills for engaging themselves in self-employment especially in the broad field of Mushroom Culture.
3. To expose various avenues of opportunities in the field of plant biotechnology considering its recognition, importance and utility value.

Unit I Algae and Fungi

Algae: General characteristics of algae and its importance. Structure, reproduction and life cycle of *Nostoc, Chlorella, Oedogonium, Ectocarpus* and *Polysiphonia.*

Fungi: General characteristics of fungi and its importance. Structure of *Albugo* and *Penicillium*.

Unit II Bryophytes, Pteridophytes and Gymnosperms

Bryophytes: General characteristics of bryophytes. Structure, reproduction and life cycle of *Riccia* and *Polytrichium*.

Pteridophytes: General characteristics of pteridophytes. Structure, reproduction and life cycle of *Lycopodium.*

Gymnosperms: General characteristics of gymnosperms and its importance. Structure, reproduction and life cycle of *Cycas.*

Unit III Plant Physiology

Absorption of water. Photosynthesis – Light and dark reaction (C_3 cycle only). Respiration. Plant movements.

Unit IV Mushroom Technology

Mushroom: Introduction, nutritive value and importance of mushrooms. Cultivation of Oyster mushroom - spawn preparation, preservation of mushrooms, and mushrooms recipes.

Unit V Plant Biotechnology

Plant tissue culture - basic principles, M.S. medium preparation, Callus culture and regeneration

Books:

1. Alexopoulos, C.J., Mims, C.W. and Blackwell, M. (1996). *Introductory Mycology* (4th edition). John Wiley and Sons (Asia), Singapore.
2. Alice, D., Muthusamy and Yesuraja, M. (1999). *Mushroom Culture*. Agricultural College, Research Institute Publications, Madurai.
3. Dubey, R.C. (2013). A Textbook of Biotechnology. S. Chand & Company Ltd., New Delhi.
4. Ganguly A.K. (1971). General Botany, Vol. I. The New Book Stall, Calcutta.
5. Gupta, P.K. (1994). *Elements of Biotechnology*. Restogi Publications, Meerut.
6. Ignacimuthu, S. (1997). *Plant Biotechnology.* Oxford & IBM Publishing Co., New Delhi.
7. Jain, V.K. (1990). *Fundamentals of Plant Physiology*. S. Chand & Co., New Delhi.
8. Kalyan Kumar De. (1997). *Plant Tissue culture*. New central Book Agency, Calcutta.
9. Kumar, H.D. (1991). *A Textbook on Biotechnology.* East west press, New Delhi.
10. Marimuthu, T. (1991). *Oyster Mushroom*. Department of Plant Pathology, Tamil Nadu Agricultural University, Coimbatore.
11. Nita Bhal (2000). *Handbook on Mushrooms Vol. I and II* (2nd Ed.). Oxford and IBH Publishing Co. Pvt. Ltd., New Delhi.
12. Noggle, R. and Fritz (1989). Introductory Plant Physiology. Prentice Hall of India.
13. Pandey, B.P. (2001). *College Botany Vol. I: Algae, Fungi, Lichens, Bacteria, Viruses, Plant Pathology, Industrial Microbiology and Bryophyta*. S. Chand & Company Ltd., New Delhi.
14. Pandey, S.N. (1991). *Plant Physiology*. Vikas Publishing House (P) Ltd., New Delhi.
15. Parihar, P. (2014). A Textbook of Biotechnology. Argobios Publications, Jodhpur
16. Pathak, V.N. and Yadav, N. (1998). *Mushroom Production and Processing Technology*. Agrobios, Jodhpur.
17. Rao K.N. Krishnamurthy K.V. and Rao G. (1979). Ancillary Botany. Viswanathan Pvt. Ltd., Chennai.
18. Sethi, I.K. and Walia, S.K. (2011). *Text book of Fungi & Their Allies*. MacMillan Publishers Pvt. Ltd., Delhi.
19. Suman B.C. and Sharma V.P. (1990). Mushroom Cultivation and Uses. Agrobios (India), Jodhpur.Tripathi, D.P. 2005. *Mushroom Cultivation*. Oxford & IBH Publishing Co. Pvt. Ltd., New Delhi.

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Allied Botany (P)

PLANT DIVERSITY AND PHYSIOLOGY, MUSHROOM TECHNOLOGY AND PLANT BIOTECHNOLOGY & MORPHOLOGY, TAXONOMY, ANATOMY, EMBRYOLOGY AND HORTICULTURE

1. Micro preparations of algae, fungi, bryophytes, pteridophytes, gymnosperms and demonstrating their description and identity included in the syllabus.
2. Micro preparations of stem, root and leaf of dicot and their identification.
3. Micro preparation of anther and observation of ovules (permanent slides).
4. Description of the plants and salient features of the families included in the syllabus.
5. Dissection flower and construction of floral diagram.
6. Comment on simple experimental setups in plant physiology included in the syllabus.
7. Demonstration of mushroom cultivation.
8. Propagation techniques.
9. Horticultural implements /tools.
10. Bonsai

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ALLIED BOTANY II

MORPHOLOGY, TAXONOMY, ANATOMY, EMBRYOLOGY AND HORTICULTURE

Objectives

1. To make the students aware of basic concepts in morphology, taxonomy, anatomy and embryology.
2. To help students for acquiring skills to engage themselves in self-employment through horticulture and landscaping.

Unit I Morphology

Inflorescence types - racemose, cymose, and mixed – special types, cyathium, hypanthodium, verticillaster and thyrsus. Technical description of flower and floral diagram.

Unit II Plant Taxonomy

General outline of Bentham and Hooker's system of classification. Study of the range of characters and economic importance of Annonaceae, Rutaceae, Rubiaceae, Solanaceae, Euphorbiaceae, and Poaceae.

Unit III Plant Anatomy

Tissues – simple and complex. Primary structure of dicot stem, root and leaf. Secondary thickening in dicot stem.

Unit IV Embryology

Structure of mature anther, pollen grain, development of male gametophyte, structure of mature ovule, development of female gametophyte (*Polygonum* type only), and fertilization.

Unit V Horticulture

Horticulture: scope and importance, propagation methods – cutting, layering and grafting techniques), gardening and landscaping, irrigation methods, manures, lawns, indoor plants, bonsai techniques.

Books:

1. Bhojwani, S.S. and Bhatnagar, S.P. (2000). *The Embryology of Angiosperms* (4th Edition). Vikas Publishing House (P) Ltd., UBS Publisher's Distributors, New Delhi.
2. Bose, T.K. and Mukherjee, D. (1972). *Gardening in India*. Oxford & IBH Publishing Co., Kolkatta.
3. Cutter, E.G. (1978). *Plant Anatomy Part-I: Cells and Tissues* (2nd Edn.), *Plant Anatomy Part-II: Experiments and Interpretations*. Edward Arnold, London.
4. Edmond, J.B., Musser, A.M. and Andrews, F.S. (1951). *Fundamentals of Horticulture*. McGraw-Hill Book Company, Inc., New York.

5. Esau K. (1980). Plant Anatomy (2nd Edition) Wiley Eastern Ltd., Madras.
6. Foster, A.S. (1960). *Practical Plant Anatomy*. Van Nostrand and East–West Press, New Delhi.
7. Ganguly A.K. (1971). General Botany, Vol.I. The New Book Stall, Calcutta.
8. Gurcharan Singh (1999). *Plant Systematics - Theory & Practice*. Oxford & IBH Publishing Co. (P) Ltd., New Delhi.
9. Jitendra Singh. (2014). *Basic Horticulture*. Kalyani Publishers, Chennai.
10. Johri, B.M. (1982). *Experimental Embryology of Vascular Plants*. Springer – Verlag, Heidelberg.
11. Kumar, N. (1997). *Introduction to Horticulture*. Rajalakshmi Publications, Nagercoil.
12. Lawrence, G.H.M. (1955). An Introduction to Plant Taxonomy. The Central Book Depot, Allahabad.
13. Lex Lauries and Victor, H.R. (1950). *Floriculture – Fundamental and Practices*. McGraw Hill Publishers, New York.
14. Maheswari, P. (1985). *An Introduction to the Embryology of Angiosperms*. Tata McGraw Hill Publishing Co. Ltd., New Delhi.
15. Mitra, J.N. (1964). *An Introduction to Systematic Botany & Ecology*. The World Press (P) Ltd., Calcutta.
16. Naik, K.C. (1963). *South Indian Fruits and Their Culture*. Vardhachary & Co., Madras.
17. Naik, V.N. (1996). *Taxonomy of Angiosperms* (9th Ed.). Tata McGraw-Hill Publishing Co., (P) Ltd., New Delhi.
18. Narayanaswamy, R.V. and Rao, K.N. (1976). *Outlines of Botany*. S. Viswanathan Printers & Publishers, Chennai.
19. Pandey, B.P. (1997). *Taxonomy of Angiosperms*. S. Chand & Company Pvt. Ltd., New Delhi.
20. Ramaswami, S.N., Lakshminarayana, S. and Venkateswaralu, V. (1976). *Taxonomy* (*Systematic Botany*) *for Degree Course*. Maruthi Book Depot, Guntur, Hyderabad.
21. Randhawa, G.C. (1973). *Ornamental Horticulture in India*. Today & Tomorrow Publishers, New Delhi.
22. Rao K.N. Krishnamurthy K.V. and Rao. G. (1979). *Ancillary Botany*. S. Viswanathan Printers & Publishers, Chennai.
23. Rogland, A. (2000). *Developmental Botany* (*Embrylogy of Angiosperms*). Saras Publications, Nagercoil.
24. Subramaniyan, N.S. (1999). *Laboratory Manual of Plant Taxonomy* (2nd Ed.). Tata McGraw-Hill Publishing Co., New Delhi.
25. Sundararajan, J.S., Muthuswamy, J., Shanmugavelu, K.G. and Balakrishnan, R. *A Guide to Horticulture*. Thiruvenkadam Printers, Coimbatore.
26. Vashista, P.C. (1997). *Taxonomy of Angiosperms*. S. Chand & Company Pvt. Ltd., New Delhi.
27. Vashista, P.C. (1977). *A Text Book of Plant Anatomy*. S. Nagin and Co., New Delhi.

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