

## DSC-2 Taxonomy of Angiosperms &amp; Herbal Technology

MM : 100

Time : 3 hrs

L Credit

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Sessional : 30

ESE : 70

Pass Marks : 40

Total Hours: 60

**Learning objective:**

- To understand about the medicinal herbs and herbal technology.
- To acquire the information about the herbal Pharmacognosy.
- To acquire an overall knowledge on Phytochemistry.
- To become familiar with Analytical pharmacognosy.
- To learn technique and acquire the information on tissue culture and micropropagation.

**Learning outcomes:**

- The student shall be able to familiar with medicinal plants in traditional systems of medicine.
- The student shall be able to understand the systematic position, and medicinal uses of herbal plants.
- The student shall understand the active principles and methods of their testing, identification and utilization of the medicinal herbs.
- The student shall learn about drug adulteration, types, methods of drug evaluation, and biological testing of herbal drugs.
- The students can understand micro propagation of important medicinal herbal plant species.
- The student shall be able to take the decisions for carrier point of views related to research, industries and academia entrepreneurship etc.

**Unit I: Introduction to Plant Taxonomy and Identification****(10 Lectures)**

Identification, classification, nomenclature. Functions of herbarium, important herbaria and botanical gardens of the India and world; documentation: flora, Modern trends in Plant taxonomy, APG System of classification, Phenetics and Cladistics.

**Unit II: Taxonomic Hierarchy and Evidences, Botanical Nomenclature and Classification (16 Lectures)**

Ranks, categories and taxonomic groups. Principles and rules (ICBN); ranks and names; binominal system of nomenclature, typification, author citation, valid publication, rejection of names, principle of priority and its limitations. Types of classification-artificial, natural and phylogenetic. Classification proposed by Bentham and Hooker (up to series) with special reference to Families: Ranunculaceae, Malvaceae, Rosaceae, Cucurbitaceae, Asteraceae, Asclepiadaceae, Convolvulaceae, Solanaceae, Acanthaceae, Verbinaceae, Lamiaceae, Euhorbiaceae and Poaceae.

**Unit III: Herbal Medicines:****(10 Lectures)**

History and scope - definition of medical terms - role of medicinal plants in Ayurveda and Siddha systems of medicine; cultivation - harvesting - processing - storage - marketing and utilization of medicinal plants.

**Unit IV: Introduction to Pharmacognosy:****(10 Lecturers)**

Definitions, history, scope and development of Pharmacognosy. Sources of crude drugs: Plants, and tissue culture. Systematic position and medicinal uses of the following herbs in curing various ailments; Tulsi, Ginger, Fenugreek, Indian Goose berry and Ashoka.

**Unit V: Phytochemistry and Analytical pharmacognosy****(14 Lecturers)**

Organized and unorganized drugs: latex, gums, exudation, resins etc. Drug adulteration - types, methods of drug evaluation -biological testing of herbal drugs. Phytochemical screening tests for secondary metabolites (alkaloids, flavonoids, steroids, triterpenoids, phenolic compounds). Introduction to traditional medicines.

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DSC-2 SEMESTER-II BBO-C251(LAB COURSE-CC-02)

1. Methods of collection plant specimens,
2. Introduction to advance herbarium techniques.
3. Identification and determination plant names
4. Features used to describe an Angiospermic plant (Habitat, Habit, Root, Stem, Leaf, Inflorescence, Flower and Floral formula.
5. Preparation of Herbal Formulations.
6. Preparation of Herbal Syrup
7. Preparation of Herbal Churna
8. Preparation of Bhasma
9. Preparation of Asava and Arishta
10. Preparation of Vatika and Gutika

Suggested Reading

1. Thapliyal S. and Nautiyal V. (2021) Practical Pharmacognosy and Phytomedicine, P.K. Publishers & Distributors, New Delhi.
2. Anatomy of Crude Drugs by Iyengar, MA and Nayak SCK., 8<sup>th</sup> edition, 2001, Munipal.
3. Ayurvedic Pharmacopoeia of India, 1990, 1999, 2001, 2004, Ministry of Health and Family Welfare, Govt. of India, New Delhi.
4. Indian Pharmacopoeia 1985, 1996, 2007, Ministry of Health and Family Welfare, Govt. of India, New Delhi.
5. Pharmacognosy by Trease G.E., Brady L.R. robberts J.E. 8<sup>th</sup> edition, Lea and Febiger, USA.
6. Maheswari, P. 1971. An Introduction to Embryology of Angiosperms. McGraw Hill Book Co., London.
7. Dutta A.C. 2016. Botany for Degree Students. Oxford University Press.
8. E.J.Eames . Morphology of Vascular Plants, Standard University Press.
9. Principal Crude Herbal Drugs of India : An Illustrated Guide to Important Largely Used and Traded, By Y.K. Sarin. ISBN 10: 8121106036 / ISBN 13: 9788121106030 Publisher: BSMPS.
10. Herbal Drug Technology By M. Paridhavi S.S. Agrawal Paridhavi Agrawal. ISBN 10: 8173717877 / ISBN 13: 9788173717871 Published by Universities Press (India) Pvt. Ltd., 2021.
11. Plant Taxonomy. Singh, Pandey and Jain. Publisher: Rastogi Publications, Merrut. ISBN: 9789350781708, 9789350781708.
12. Taxonomy of Angiosperms. by V. Singh , D. K. Jain. Rastogi Publication, Meerut.
13. Bridson, D. & L. Forman. eds. 1998. The Herbarium Handbook. 3rd ed. Royal Botanic Gardens, Kew
14. (Reprinted 1999).
15. De Vogel, E.F. 1987. Manual of Herbarium Taxonomy: Theory and Practice. UNESCO, Jakarta.
16. Fosberg, F.R. & M.-H. Sachet. 1965. Manual for tropical herbaria. Int. Bur. Pl. Tax. & Nom. Regnum
17. Vegetabile Vol. 39. Utrecht.
18. Jain, S.K. & R.R. Rao. 1977. A handbook of field and herbarium methods. Today & Tomorrow's Printers
19. and Publishers, New Delhi.
20. Victor, J.E., M. Koekemoer, L. Fish, S.J. Smithies, M. Mossmer. 2004. Herbarium essentials: the Southern
21. African Herbarium user manual. Southern African Botanical Diversity Network Report No. 25. SABONET, Pretoria.
22. Jeffrey, C. 1982. An Introduction to Plant Taxonomy. Cambridge University Press, Cambridge. London.
23. The useful plant of India, S.P. Ambasta (Eds), NISCAIR, New Delhi.

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