



OFFICE OF THE REGISTRAR : DIBRUGARH UNIVERSITY : DIBRUGARH

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Date: 05.01.2021

NOTIFICATION

As proposed by the Head, Department of Life Sciences, Dibrugarh University and as recommended by the Board of Studies Meeting held on 04.01.2021, the Hon'ble Vice-Chancellor, Dibrugarh University is pleased to approve introduction of **Discipline Specific Elective (DSE) Course on "Angiosperm Systematics" in M. Sc. in Life Sciences (CBCS) Programme** w.e.f the academic session 2020-2021.

The above is notified under report to the next meeting of the Post Graduate Board, Dibrugarh University.

The syllabus of the aforementioned DSE Course is enclosed herewith.

Issued with due approval.

Arinjit Hazarika
05/01/2021

(Arinjit Hazarika)
Joint Registrar (Academic) i/c
Dibrugarh University.

Copy to:

1. The Hon'ble Vice-Chancellor, Dibrugarh University for favour of information.
2. The Deans, Dibrugarh University, for favour of information.
3. The Registrar, Dibrugarh University, for information.
4. The Head, Department of Life Sciences, Dibrugarh University, for information and needful.
5. The Controller of Examinations, Dibrugarh University, for favour of information. A copy of the Syllabi is enclosed herewith.
6. The Director, College Development Council, Dibrugarh University, for information.
7. The Principals of the Colleges affiliated to Dibrugarh University offering M.Sc. in Life Sciences (CBCS) Programme.
8. The Joint Controller of Examinations(C), Dibrugarh University, for information.
9. The Deputy Controller of Examinations(A), Dibrugarh University, for information
10. The Academic Officer, Dibrugarh University, for information and needful.
11. The Programmer, Dibrugarh University for kind information and with a request to upload the Notification in the University website.
12. File.

Arinjit Hazarika
05/01/2021

(Arinjit Hazarika)
Joint Registrar (Academic) i/c
Dibrugarh University.

**DISCIPLINE SPECIFIC ELECTIVE COURSE ON
ANGIOSPERM SYSTEMATICS**

LSD106.G: Fundamentals of Angiosperm Taxonomy

Credit: 4

Marks: 100

Unit 1:

Basics of Taxonomy: Concept, Aims and Principles. Systems of plant classifications: Pre and Post Darwinian systems of classifications. Alpha and Omega Taxonomy

Unit 2:

Botanical Nomenclature: History, Principles and Major Rules. Nomenclature of Angiosperms based on International Code of Nomenclature for Algae, Fungi and Plants (ICN, formerly ICBN): Melbourne Code (2012), Shenzhen code (2018). Taxonomic hierarchy, Author's citation, Principles of Priority, Effective and Valid Publication, Typification. Draft Biocode and Phylocode

Unit 3:

Taxonomic literatures: Classical literatures, general index, monographs and revisions, floras and manuals.

Unit 4:

Systems of classification: Cladistics, Phenetic and Phylogenetic systems; Critical account of the systems of classifications of Bentham & Hooker, Cronquist and Takhtajan

Unit 5:

Angiosperm phylogeny group (APG). Principles of the APG System, A brief account on APG systems of classification

Unit 6:

A general survey of the following taxa of Angiosperms with special reference to their characteristics, interrelationships, evolutionary trends: Magnoliales, Fabales, Asterales, Scrophulariales, Lamiales, Orchidales, Zingiberales, Commelinales, Cyperales, Poales (As per Takhtajan, 1997)

LSD107.G: Practical-1

Credit: 2

Marks: 50

1. Work out, drawing, description and identification of plant specimens from selected group of families.
2. Identification of unknown plants with the help of keys from different floras and manuals.
3. Preparation of taxonomic keys at family, generic and species level based on locally available plants.

Page 1 of 5



**Head
Department of Life Sciences
Dibrugarh University**

**DISCIPLINE SPECIFIC ELECTIVE COURSE ON
ANGIOSPERM SYSTEMATICS**

LSD206.G: Advanced Angiosperm Taxonomy

Credit: 4

Marks: 100

Unit 1:

Sources of taxonomic characters: Morphology, Palynology, Anatomy and ultrastructure, Embryology, Cytology, Phytochemistry, Serology.

Unit 2:

Herbarium techniques: methods of collection, identification, preparation of herbarium sheet and documentation. Arrangement of Herbarium.

Unit 3:

Tools of taxonomy: Botanical keys, construction of taxonomic keys, Serological techniques used in assessing relation between OTUs, Techniques of Chemo taxonomy, GIS, GPS

Unit 4:

Computer applications in taxonomy: Numerical taxonomy, statistical tools in taxonomy, Bioinformatics applications in taxonomy: Sequence alignment, molecular phylogeny.

Unit 5:

Molecular tools in taxonomy: Application of DNA Hybridisation, RFLP, RAPD, AFLP, DNA sequencing in solving taxonomic problems.

Unit 6:

DNA Barcoding: Overview of DNA Barcoding. Role of chloroplast DNA and mitochondrial DNA in taxonomy, PCR and PCR primer designing, molecular markers

LSD207.G: Practical-2

Credit: 2

Marks: 50

1. Chemotaxonomic variation in plant families.
2. Molecular tools in solving taxonomic problems: RFLP/RAPD/AFLP.
3. DNA Barcoding for plant identification
4. Classification of plants based on numerical taxonomic characters.



Page 2 of 5

**DISCIPLINE SPECIFIC ELECTIVE COURSE ON
ANGIOSPERM SYSTEMATICS**

LSD306B.G: Diversity and Conservation of Angiosperms

**Credit: 4
Marks: 100**

Unit-1

Phytogeography: Concept of Phytogeography, Static and Dynamic Phytogeography, Phytochoria and botanical provinces of India; Origin of Angiosperms: Theories, evidences, Migration of plants and Barriers, Centre of Origin, Vicariance, Endemism, Hotspots, IUCN categories,

Unit-2

Plant Diversity of India, Flora of North East India; Endemic, Exotic and RET Plants with respect to India and specifically North East India

Unit-3

Botanical Survey of India (BSI): History Activities of BSI. Organisational structure. Its Objectives and Publications. Role of Botanical Survey of India in studying the floristic diversity of India.

Unit-4

Herbaria and Botanic Gardens: Role and importance of herbaria and gardens in taxonomic studies, major Herbaria and Botanic Gardens.

Unit-5

Overview of RET Plants of India and Assam. Conservation strategies of RET plants: *in situ* and *ex situ* conservation.

Unit-6

Phylogeny of Angiosperms: Origin of Angiosperms, Primitive and advanced angiosperms, Evolutionary trends

LSD307B.G: Practical-3

**Credit: 2
Marks: 50**

1. Field trips within and around the University Campus, compilation of field notes and preparation of herbarium sheets of such plants.
2. Molecular phylogenetic analysis.
3. BLAST and FASTA in molecular taxonomy.
4. Application of Online Taxonomic Resources



**DISCIPLINE SPECIFIC ELECTIVE COURSE ON
ANGIOSPERM SYSTEMATICS**

LSD406B.G: Project Work

**Credit-4
Marks: 100**

The students will choose a topic in consultation with the course teacher and will complete the project work. He/she will have to prepare and submit a project work and will have to present it during submission.

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BOOKS RECOMMENDED for ANGIOSPERM TAXONOMY

1. Plant Taxonomy, 2 edition; O. P. Sharma. McGraw Hill Education (India) Private Limited;
2. Plant Systematic, 3rd Ed.; Gurcharan Singh. Oxibh
3. Practical Taxonomy of Angiosperms, 2010 Ed.; R. K. Sinha. I K International Publishing House Pvt. Ltd
4. Practical Manual of Angiosperm Taxonomy, 2003 Ed; Sundara S. Rajan. Anmol Publications Pvt Ltd
5. The Herbal Flora Of Assam & North Eastern India. Vol-III, 2005 Ed; S.N.Sharma. Spectrum Publications
6. The Kew Tropical Plant Identification Handbook (Paperback) 2nd Eds; Timothy Utteridge; Gemma Bramley. Kew Publishing
7. The Kew Plant Glossary: An Illustrated Dictionary of Plant Identification Terms, 2010 Ed; Henk J. Beentje. Royal Botanic Gardens
8. Indian Grasses, 2001 Ed; T.J. Symonds. Scientific Publishers Journals Dept
9. Indian Trees, 2011 Ed; Dietrich Brandis. Natraj Publishers
10. DNA Fingerprinting in Plants: Principles, Methods, and Applications, 2005 Ed; Kurt Weising, Hilde Nybom, Markus Pfenninger, Kirsten Wolff, Günter Kahl. CRC Press
11. Genomes 3, 3rd Ed; T.A. Brown. Garland Science;
12. Principles and Techniques of Biochemistry and Molecular Biology, 2010 Ed; Wilson/Walker. Cambridge University Press
13. Records of the Botanical Survey of India, Volume 1 (Paperback), 2012 Ed; Botanical Survey Of India. Ulan Press
14. Records of the Botanical Survey of India, Volume 2 (Paperback), 2012 Ed; Botanical Survey Of India. Ulan Press
15. Records of the Botanical Survey of India, Volume 3 (Paperback), 2012 Ed; Botanical Survey Of India. Ulan Press



**DISCIPLINE SPECIFIC ELECTIVE COURSE ON
ANGIOSPERM SYSTEMATICS**

16. Practical Biotechnology: Methods and Protocols (Paperback) , 2015 Ed; Janarthanan, S Vincent. Universities Press (India) Private Limited
17. Essential Molecular Biology: v.1: A Practical Approach (Paperback) 2000 Ed; T.A. Brown. Oxford University Press
18. Introduction To Mathematical Taxonomy (Paperback), 2004 Ed; G Dunn, Bs Everitt. Dover Publications Inc.
19. Fundamentals Of Molecular Evolution (Paperback), 2000 Ed; Dan Graur, Wen-Hsiung Li. Sinauer Associates
20. Introductory Laboratory Practice and Field Work in Taxonomy; Special Morphology, and Ecology of the Higher Plants (Paperback) 2010 Ed; Karl McKay. Wiegand General Books.
21. Field Botany: A Hand-Book for the Collector Containing Instructions for Gathering and Preserving Plants and the Formation of the Herbarium (Paperback). 2011 Ed; Walter Porter Manton Nabu Press
22. Practical Manual of Angiosperm Taxonomy (Paperback) 2003 Ed; S. Sundara Rajan. Anmol Publications Pvt Ltd
23. Field Manual on Herbarium Techniques (Hardcover) 2008 Ed; Singh H.B., Subramaniam B. National Institute of Science Communication and Information Resources, New Delhi
24. Plant Ecology and Phytogeography. 2016 Ed, V Kumaresan, N Arumugam. Saras Publication
25. Plant Names: A Guide To Botanical Nomenclature (Paperback), 2007 Ed; Peter Lumley, Robert Cross, Roger Spencer. CABI

