JYOTI NIVAS COLLEGE AUTONOMOUS BANGALORE – 560 095
DEPARTMENT OF BOTANY
B.Sc. II SEMESTER BOTANY PAPER II SYLLABUS (2024 SEP Batch Onwards)
BRYOPHYTES, PTERIDOPHYTES, PALEOBOTANYAND PLANT ANATOMY

Course title	**Bryophytes, Pteridophytes, Paleobotany and Plant Anatomy**
Course code	**24IIBO2T**
Course credits	**03**
Total contact hours	**56 Hours**
Duration of ESA	**03 Hours**
Continuous Internal assessment (CIA)	**20 Marks**
End Semester Examination	**80 Marks**

Course objectives

- Understand the basics of Bryophytes and Pteridophytes covering the characteristics,occurrence, organization, and classification of Bryophytes and Pteridophytes.
- Explore the economic and ecological roles of Bryophytes and Pteridophytes in the field of medicine, agriculture and industry.
- Investigate the structure, reproduction and life cycles of Bryophytes and Pteridophytes.
- To understand the mode of evolution of plants through paleobatanical studies, formation of fossils and type study.
- Explore meristematic tissues, root and shoot apical meristems, their organization, types of vascular bundles and anomalous secondary growth in plants.

Course outcomes:

- Understand the diversity and affinities among Bryophytes and Pteridophytes.
- Understand the morphology, anatomy, reproduction and life cycle across Bryophytes and Pteridophytes and their economic, ecological and evolutionary significance.
- Observation of fossil types, their formation and structure of various plant parts indifferent era.
- Skill development for the proper description of internal structure using botanical terms, their identification and further classification**.**
- Obtain laboratory skills/ explore non-flowering plants for their commercial applications.

Unit I	**BRYOPHYTES**	**14 Hrs.**
	General characters ,classification, distribution, structure, reproduction and alternation of generations in *Marchantia*, *Anthoceros* and *Funaria*. Ecological and economic importance of Bryophytes. Importance in the peat production. Affinities of Bryophytes with pteridophytes and algae.	
Unit II	**PTERIDOPHYTES**	**14 Hrs.**
	Introduction and general characters of Pteridophytes Study of diversity in morphology, anatomy, reproduction and life cycle of the following groups in representative forms: *1.* Psilotopsida – Ex. *Psilotum* *2.* Lycopsida – Ex. *Lycopodium*and*Selaginella* *3.* Filicopsida - Ex. *Marsilea* (Developmental stages not required) Brief account of stelar evolution, heterospory and seed habit. Ecological and economic importance of Pteridophytes. Affinities of pteridophytes.	
Unit III	**PALEOBOTANY**	**14 Hrs.**
	Contributions of paleobotanist – Birbal Sahni. Outline of geological time scale with special emphasis on Paleozoic and Mesozoic Era. Process of fossilization – Compression, Impression, Petrifaction, Compaction, Casts and Moulds, Coal balls. Application of paleobotany in coal & petroleum explorations.	
Unit IV	**Meristematic Tissues -** Structure, function and classification. **Organization of Apical Meristems**: Apical cell theory, Tunica-corpus theory and Histogen theory. Shoot and root apical meristems. **Histology:** Structure, Classification and significance of simple, complex and secretory tissues. Types of vascular bundles. **Secondary growth:** Dicot stem Ex. –*Tridax.* A**nomalous Secondary growth**: *Boerhaavia and Dracaena.* Brief account of wood anatomy. Applications in plant systematics, Pharmacognosy and Forensic.	**14 Hrs.**

BOTANY PAPER II PRACTICALS

Course title	**Bryophytes, Pteridophytes, Paleobotany and Plant Anatomy**
Course code	**24IIBO2P**
Course credits	**02**
Total contact hours	**3 Hours / week**
Duration of ESA	**03 Hours**
Continuous Internal assessment (CIA)	**10 Marks**
End Semester Examination	**40 Marks**

1.	Study of Bryophytes (Forms studied in theory)	**3 Units**
2	Study of Pteridophytes (Forms studied in theory)	**4 Units**
3	Paleobotany – Type study (Fossil material/slide/photos) **Type study** – *Rhynia*, *Cycadeoidea* and *Pentaxylon)*	**2 Units**
4	Histology – Permanent tissues	**2 Units**
5	Study of T. S of Dicot stem and sectioning: *Tridax*	**1 Unit**
6	Study of T. S of *Boerhaavia* stem and sectioning.	**1 Unit**
7	Study of T. S of *Dracaena* stem and sectioning.	**1 Unit**
8	Visit to Institute of Wood Science	**1 Unit**

REFERENCES

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