JYOTI NIVAS COLLEGE AUTONOMOUS
SYLLABUS FOR 2018 BATCH AND THEREAFTER

Programme: B.Sc. **Semester: III**

BOTANY PAPER III

PTERIDOPHYTES, PALEOBOTANY, ENVIRONMENTAL (BOTANY) AND PHYTOGEOGRAPHY

Course Code: 18IIIBO3 **No. of Hours: 60**

COURSE OBJECTIVES:

- To inculcate the knowledge about living and fossil pteridophytes.
- Understand diversity among various groups of plant kingdom.
- To understand the conservation and management of Biodiversity.

LEARNING OUTCOMES:

- Discuss the basic concepts of plant ecology, and evaluate the effects of environmental and biotic factors on plant communities.
- Appraise various qualitative and quantitative parameters to study the population and community ecology.
- Correlate the importance of biodiversity and consequences due to its loss.

UNIT I Pteridophytes **17 HRS**

Origin of Pteridophytes, General Characters,& Classification of Pteridophytes (Sporne) Distribution, structure and reproduction of *Psilotum, Lycopodium, Selaginella, Equisetum, Marsilea* and*Pteris.*A brief account of Stelar evolution, Heterospory and Seed habit

UNIT II Palaeobotany **8 HRS**

Geological time scale, process of fossilization, types of fossils, & their significance in evolution. Contribution of eminent Indian paleobotanist- Birbal Sahani. A brief account of *Rhynia, Lepidodendron*and *Calamites.*

Fossil regions of India (Rajmahal hills and Tiruvakarai). Application of Paleobotany in coal & petroleum explorations.

UNIT III Environmental Biology **16HRS**

Introduction and scope of Environmental biology, Environmental factors : **Climatic** (brief account of light, temperature, humidity and precipitation), **Edaphic (s**oil profile, soil microbes, soil pH, soil types), **Biotic** (Commensalism-Cooperation ,Symbiosis, Mutualism ,competition Predation Parasitism and Allelopathy). Ecosystem – concepts of ecosystem, components and their interactions, food chain and food web, Ecological Pyramids and energy flow in ecosystem. Outlines of classification of ecosystems (Holdridge classification) A brief study of Mangroove , Tropical evergreen and Semi evergreen Forest ecosystems. Ecological succession- Hydrosere and Xerosere.

UNIT IV Pollution and Conservation **13 HRS**

Pollution: Definition and Types (Air, Water Soil , Noise and Nuclear).Brief account of Major Pollutants -Soil (Heavy metals -lead, mercury and chromium),Water (Pesticides, Chemical Fertilizers and oil spills) Air (SO2. CO and CFCs).

Pollution indicators(Water : *E.coli, Eichhornia* , Air:Lichens, Soil- *Nostoc)* .Elementary account on Bio magnification, Phytoremediation- Brief account on sewage treatment, solid waste management, municipal water purification.

Conservation: Definition , Conservation of natural resources- renewable (soil and forests) and non-renewable (coal and petroleum) A brief account Biodiversity::Definition, types and conservation(Genetic, Species, and Ecosystem) conservation , Conservation of Germplasm (In *situ and ex situ* conservation, seed gene bank, field gene bank and pollen bank), Brief account of IUCN and Red data book. Brief account of Biodiversity-Definition, types (Genetic, Species and Ecosystem). Brief account of Remote Sensing & its applications.

UNIT V Phytogeography **6 HRS**

Introduction, Types of Phytogeographical regions of India (Cosmopolitan, endemic, and vicariant) Concept of Continental Drift. A brief account of, Vegetational types of Karnataka

REFERENCES

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15. Krishnamurthy, K .V., Murugan, R. and Ravikumar, K.: Bioresources of the Eastern Ghats (Their Conservation and Management) : 2014, Today and tomorrows publications, Dehradun.
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BOTANY PRACTICAL – III

1. Identification and classification of Pteridophytes studied in theory
2. Palaeobotany-study of specimens and slides studied in theory.
3. Study of one example for each Ecological adaptation (specimens and slides) of Hydrophytes, Xerophytes, Halophytes, Epiphytes & Parasites.
4. Marking of vegetation types on Karnataka map, spotter of Continental Drift, Rain Gauge.
5. Submission of 2 permanent slides of free hand sections (both Pteridophytes and ecological adaptions).
6. Test and Repetition

Activity For III Semester– Visit to Sewage treatment plant/Study of SWM/watershed management and Visit to Meteorological Department.