Master of Science (Botany)
M. Sc Botany Semester I

Course Code	PS01CBOT51	Title of the Course	Biology and Diversity of lower plants
Total Credits of the Course	04	Hours per Week	04

Course Objectives:	• To know about the algae, bryophyte and pteridophytes, and their ecological importance • To understand the economic importance of lower plants • To understand the evolutionary trends in lower plants • To understand the structure and organization of vegetative and reproductive organs • To understand the life cycle of the algae, bryophytes and pteridophytes

Course Content		
Unit	Description	Weightage* (%)
1.	**Archebacteria and eubacteria:**General account; ultra-structure, nutrition and reproductionbiology and economic importance; cyanobacteria– salient features and biologicalimportance.	25
2.	**Phycology:** Algae in diversified habits (terrestrial, freshwater, marine); thallus organizationcell ultra-structure; reproduction (vegetative, asexual, sexual); criteria for classification ofalgae: pigments, reserve food, flagella; Classification, salient features of Protochlorophyta, Chlorophyta, Charophyta, Xanthophyta, Bacillariophyta, Phaeophyta and Rhodophyta; algal blooms.	25
3.	**Bryophyta:** Morphology, structure, reproduction and life history; distribution; classification;general account of Marchantiales; Jungermaniales, Anthoceratales, Sphangales, Funariales and Polytrichales; economic and ecological importance.	25
4.	**Pteridophyta :** Morphology, anatomy and reproduction; classification; Origin and life cycle of Pteridophyta, evolution of sporophyll, evolution of stele (vascular elements); heterospory and origin of seed habit; general account of fossil pteriodophyta; Psilopsida, Lycopsida, Sphenopsida and Pteropsida.	25

Teaching-Learning Methodology	Topics will be taught and discussed in interactive sessions using conventional black board and chalk as well as ICT tools such as power point presentations and videos. Practical sessions will be conducted in a suitably equipped laboratory either individually or in groups depending on the nature of exercise as well as availability of infrastructure. Course materials will be provided from primary and secondary sources of information.

Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.	Internal Written / Practical Examination (As per CBCS R.6.8.3)	15%
2.	Internal Continuous Assessment in the form of Practical, Viva-voce, Quizzes, Seminars, Assignments, Attendance (As per CBCS R.6.8.3)	15%
3.	University Examination	70%

Course Outcomes: Having completed this course, students will be able to	
1.	Recognize and identify the diversity and differences in the different classes of algae, bryophytes and pteridophytes.
2	Develop the knowledge of sequential evolutionary trend among these groups.
3.	Clear understanding about the ecological and economical significance of the these groups.
4.	
5.	
6	

Suggested References:	
Sr. No.	References

1.	Kumar, H. D. Introductory Phycology. Affilated East - West Press Ltd., New Delhi.
2.	Parihar, N. S. Bryophyta. Central Book Depot, Allahabad.
3.	Puri, P. Bryophytes. Atma Ram & Sons, Delhi.
4.	Round, F. E. The Biology ofAlgae. Cambridge University Press, Cambridge.
5.	Smith, G. M. Cryptogamic Botany (Vol. II) Bryohytes and Pteridophytes. McGraw- Hill.
6.	Sporne, K. K. The Morphology of Pteridophytes. B. I. Publishing Pvt. Ltd., Bombay.
7.	Stewart, W. N. and Rathwell, G. W. Paleobotany and the Evolution of Plants. Cambridge University Press.

On-line resources to be used if available as reference material
On-line Resources
Relevant review articles/research papers/handouts of latest development in the subject

Practical Exercises:

1. Dissect out the different species of bryophytes
2. Thallus organization of freshwater, marine and terrestrial algae
3. Reproductive structure of freshwater, marine and terrestrial algae
4. Observation of different species of algae from the fixed samples
5. Identification and observation of Algae and their diversity in the nearby water body
6. Collection and identification of bryophytic plants
7. Observation of different species of bryophyte from the fixed samples
8. Observation of different species of pteridophyte from the fixed samples
9. Observation of reproductive structures of bryophytes from permanent slides
10. Observation of anatomical structure of bryophytes from permanent slides
11. Observation of reproductive structures of pteridophytes from permanent slides
12. Observation of anatomical structure of from permanent slides