

Course Code	Course Name	Credits
26BY509	PHYCOLOGY, MYCOLOGY, LICHENS AND BRYOLOGY	04

### Course Objectives

- To understand the characteristics of algae, fungi, lichen and bryophytes.
- To study in detail the habit, habitat, structure and life cycle of selected forms of algae, fungi, lichen and bryophytes.
- To study the ecological and physiological evolution of bryophytes.
- To learn the economic importance of the lower plant kingdom.

### Learning Outcomes

Upon successful completion of this course it is intended that a student will be able to:

- Gain knowledge on comparative account of various algal divisions.
- Study and impart knowledge about the occurrence, distribution, structure and life history of lower plants.
- Learn about the economic importance of these lower plants.
- Identify specimens and compare structural and reproductive features across groups.

### Unit 1 - Phycology (12 Hrs.)

Introduction, History and Modern Phycology; General characters of Algae; Classification of algae (F.E. Fritch 1945); Occurrence and Distribution of algae; Range of thallus structure; Thallus Evolution; Ultra structure of algae (Flagella, Chloroplast, Pyrenoids and Eyespot); Cytology of algae; Reproduction in algae; Life cycles in algae; Economic importance of algae.

### Unit 2 – Significant features of Algae (12 Hrs.)

Occurrence, Thallus organisation, Reproduction, Life cycles and Economic importance of Myxophyceae, Chlorophyceae, Xanthophyceae, Phaeophyceae and Rhodophyceae.

### Unit 3 - Mycology (12 Hrs.)

Introduction, Systematics of fungi (Alexopoulos and Mims (1979); Ecology of fungi (Habit and Habitat); Thallus variation in fungi; Reproduction and life cycles patterns in fungi; Parasexuality and Heterokaryosis; Sex hormones in fungi; Chemistry of Fungal cell; Growth & Nutrition; Diagnostic characters of Zygomycetes, Ascomycetes, Basidiomycetes and Deutromycetes; Economic importance of Fungi.

### Unit 4 – Lichens (12 Hrs.)

Introduction- Components of lichens (Phycobionts and Mycobionts); Origin and evolution of lichens; Occurrence; Classification; Morphology and anatomy of thallus; Different types of reproduction in lichens; Structure and reproduction in Ascolichens, Basidiolichens and Deuterolichens; Economic importance of Lichens.

### Unit 5 – Bryology (12 Hrs.)

Introduction; Origin of Bryophytes – Evolutionary and Ecological significance; Classification of Bryophytes; Biogeography & Ecology of Bryophytes; Reproduction in Bryophytes; Bryophytes as indicators of Pollution; Morphology, gametophytes and sporophytes generation of Hepaticae, Anthoceratae, Musci; Life histories of Marchantia, Anthoceros, Polytricum and Moss.

### Reference Books:

1. Sharma, O. P. (1989). *Textbook of fungi*. Tata McGraw Hill Pvt. Ltd.
2. Reddy, S.M. 1996. University Botany.I: *Algae, Bryophyta and Pteridophyta*. New Age International Publishers, New Delhi.
3. Nash, T. H. (1996). *Lichen biology*. Cambridge University Press.
4. Sambamurthy, A. V. S. S. (2005). *Textbook of algae*. IK International Publications.
5. Vanderpoorten, A., & Goffinet, B. (2009). *Introduction to bryophytes*. Cambridge University Press.
6. Sharma, O. P. (2011). *Algae*. Tata McGraw Hill Education Pvt. Ltd.
7. Kavanagh, K. (2017). *Fungi: Biology and applications* (3rd ed.). Wiley-Blackwell.
8. Krishnamurthy, V. (2020). *Biology of algae*. Oxford & IBH Publishing.