

## **CERTIFICATE COURSE**

### **BOT2CRD - CRYPTOGRAM DIVERSITY**

Coordinator: Dr. Faseela P.

Course Duration: 30 Hours

#### **OBJECTIVES**

1. A current overview and in-depth insight into cryptogram diversity (algae, bryophytes and pteridophytes).
2. Creating scientific temper in the field of cryptogram diversity by type study.

#### **COURSE OUTCOMES**

- CO1. Appreciate the diversity and evolutionary significance of lower plant groups.
- CO2. Classify algae, bryophytes and pteridophytes.
- CO3. Understand the economic and ecological importance of lower plant groups.

#### **Module I (15 Hours)**

1. Introduction to algae: Thallus structure, pigments, reproduction and life cycle.
2. Classification of Algae proposed by FE Fritsch (1935).
3. General Features: Occurrence, thallus structure, reproduction and life cycle of *Nostoc* (Cyanophyceae), *Chlorella*, *Chara* (Chlorophyceae) and *Sargassum* (Phaeophyceae).
4. Economic Importance: Algae as food, fodder, green manure, bio-fuels, pollution indicators, research tools, medicinal uses, commercial products.
5. Harmful effects of algae: Water bloom, eutrophication, neurotoxins, parasitic algae.

#### **Module II (5 Hours)**

1. Introduction to bryophytes.
2. General characters and classification by Stotler&Stotler (2008).
3. Study the distribution, morphology, anatomy, reproduction, life cycle and affinities of *Riccia* (Marchantiophyta).

### **Module 3 (10 Hours)**

1. Introduction to pteridophytes
2. General characters and classification (Smith *et al.*, 2008)
3. Study the distribution, morphology, anatomy, reproduction, life cycle and affinities of *Selaginella*(Lycopsida).
4. Apogamy and apospory in Pteridophytes.
5. Stelar evolution in Pteridophytes

### **References**

1. Fritsch, F.E. (1935) The structure and reproduction of the algae. Vol. 1 and II, Cambridge University Press.
2. Kumar, H.D. (1999). Introductory Phycology. Affiliated East-West Press, Delhi 5.
3. Lee, R.E. (2008). Phycology, Cambridge University Press, Cambridge. 4th edition.
4. Rober Edward Lee (2008). Phycology. Cambridge University Press India Pvt. Ltd. Ansari Road, New Delhi.
5. Chopra R.N. and P.K. Kumar, (1988). Biology of Bryophytes. Wiley Eastern Ltd. New Delhi.
6. Crandall-Stotler, B. and R. E. Stotler. (2008) In A. J. Shaw and B. Goffinet, Bryophyte Biology, Cambridge University Press (Revised edition).
7. Gangulee Das and Dutta. (2007). College Botany Vol.1, Central Book Dept. Kolkatta.
8. Chandra S. &Srivastava M. (2003) Pteridology in New Millenium, Kluwer Academic 38 Publishers.
9. Eames, A.J. (1979) Morphology of Vascular Plants, Lower Group. Wiley International edition, New Delhi.
10. Parihar, N.S. (1977) Biology and Morphology of Pteridophytes, Central Book Depot, Allhabad.