Course Code:

Diversity of Viruses, Bacteria, Algae, Lichens, & Fungi

Course Code: BEB110 **Credit: 04 (L-3, T-1, P-0)**
Contact Hours: 60 **MM: 100**

Course Objectives:

1. To learn the general concept of organization in prokaryotic and eukaryotic cells.
2. To study in detail the classification, characters, reproduction and economic importance of algae, lichens and bryophyte
3. To learn the role of cryptogams in the environment.
4. To learn the basic information about the oldest known vascular plants on this planet.
5. To learn about the various types of life cycles, alternation of generation, conservative organs.
6. To learn a truly integrated view of Plant and environmental science which incorporates the molecular, cellular and ecological approaches to the subject?
7. To learn about the origins of cells and the evolution of lower organisms like viruses, fungi and bacteria and relationship with plant and animals.

Unit 1:MICROBES: Viruses – Discovery; General Structure- RNA virus (TMV) and DNA virus (Tphage); Replication-Lytic and Lysogenic Cycle; Economic Importance. b) Bacteria – Discovery; General Characteristics and Cell Structure; ReproductionVegetative, Asexual and Genetic Recombination (Conjugation, Transformation and Transduction); Economic Importance.
Unit II: Algae: general characteristics, ecology and distribution; range of thallus organization and reproduction; classification of algae; morphology and life-cycles of the following: *Osillatoria*,*Chlamydomonas*,*Oedogoniurn*, *Volvox*,*Vaucheria*,*Chara, Odogonium*,*Ectocarpus*,*Sargassum*,*Polysiphonia*; economic importance.

Unit III:Fungi: general characteristics, ecology and distribution, range of thallus organization, cell wall composition, nutrition, reproduction and classification; life cycle of *Albugo*, *Aspergillus*, *Ustilago*, *Puccinia*, *Agaricus*; economic importance. **Lichens:** General account, reproduction and significance.

UNIT IV: Bryophytes: general characters, classification (up to family) reproduction and affinities. Comparative study of Gametophytic and sporophytic organization of: **Bryopsida:** *Sphagnum*; **Anthocerotopsida**: *Anthoceros*; **Hepaticopsida**: *Riccia*, *Marchantia.*

UNIT V: Pteridophytes: general characters, classification (up to family); heterospory and seed habit; stellar system and its evolution and affinities. Comparative study of morphology, anatomy, development, vegetative and reproductive systems of following: **Lycopsida-** *Lycopodium*, *Selaginella*; **Psilopsida-** *Rhynia*; **Filicopsida-** *Pteridium*, *Marsilea.*

UNIT VI: Gymnosperms: general characters, classification (up to family) reproduction and affinities.Comparative study of morphology, anatomy, development, vegetative and reproductive systems of following: *Cycas*, *Pinus* and *Ephedra.*

Suggested Reading:

1. An Introduction to Fungi: by Webster J (1985), Cambridge University Press, UK.
2. An Introduction to the Algae: by Morris I (1986), Cambridge University Press, UK.
3. An Introduction of Lichens: Bhatnagar, S. and Moitra, A. (1996), New Age International Limited, New Delhi.

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4. Introduction of Algae Taxonomy, Oliver and Boyd. (2004), London. Gifford, E.M. and Foster, A.
5. Morphology and Evolution of Non-vascular Plants, (2011), W.H. Freeman & Company, New York.
6. Text Book of Algae (2003), A.K. Awasthi, II edition. Vikas Publishing House, New Delhi, India.
7. A text book of Botany Vol-I. S.K. Panday and P.S.Trivedi. Vikas Publishing House, New Delhi.
8. An Introduction to Pteridophytes. A. Rashid, II edition. Vikas Publishing House, New Delhi, India.

CO: By the end of this course, students will be able to:

- Define the differences between primitive and advanced cells
- Evaluate the trend of evolution from unicellular to multicellular organisms.
- Determine significance of thallus organization and alternation of generation among

Different groups studied.

- Determine the affinities among different groups studied.
- Exploit different studied groups for various environmental issues and assessments.
- Evaluate different studied groups for several bio- prospection studies.
- Describe the all introductory terms concerned with vascular cryptogams.
- Describe the various types of life cycles, alternation of generation, conservative organs,

presence of vessels and tracheids.

- Create the comparative knowledge among different studied groups.