

Syllabus and course structure for B.Sc. Botany for Leh Campus
Effective from academic session 2015 and onwards

2nd Semester

Course Code: BOT2

Course Name: B.Sc Botany

UNIT: I

- i. **Viruses:** Structure with special reference to TMV, T-2 phages, lytic and lysogenic cycles; general account of mycoplasma, viroids and prions.
- ii. **Bacteria and Cyanobacteria:** Bacteria ó overview of structure, Gram positive and Gram negative bacteria; general characters of cyanobacteria with special reference to *Nostoc*.
- iii. **Economic aspect:** Microbes in industrial production (with emphasis on dairy industry, production of organic acids, enzymes and antibiotics).

UNIT: II

- i. **Fungi:** General characteristics, classification proposed by Alexopoulos and Mims (1973); structure and life cycle of representative types shown against each group:

Oomycetes	<i>Phytophthora</i>
Ascomycetes	<i>Morchella</i>
Basidiomycetes	<i>Agaricus</i>
Deuteromycetes	<i>Alternaria</i>
- ii. **Plant Pathology:** General account of Pathogenicity; Symptoms, etiology and management of black stem rust of wheat, apple scab.
- iii. **Lichens:** General characters and types.

UNIT: III

- i. **Algae:** General characteristics; Range of thallus structure; criteria for algal classification; Roundø (1965) system of classification; Structure and life cycle of representative types shown against each group:

Chlorophyceae	<i>Volvox</i>
Xanthophyceae	<i>Vaucheria</i>
Rhodophyceae	<i>Batrachospermum</i>
Phaeophyceae	<i>Ectocarpus</i>
- ii. Economic importance of algae.

UNIT: IV

- i. **Bryophytes:** General characteristics; Proskauerø (1957) system of classification..
- ii. Structure and life cycle of representative types shown against each group (Development excluded):

Hepaticopsida	<i>Marchantia</i>
Anthocerotopsida	<i>Anthoceros</i>
Bryopsida	<i>Polytrichum</i>

- iii. Evolution of sporophyte; apogamy and apospory; alternation of generation; economic importance of bryophytes.

Laboratory Exercises:

- i. Study of vegetative and reproductive structures of *Chlorella*, *Volvox*, *Vaucheria*, *Ectocarpus*, *Batrachospermum*.
- ii. Study the mycelium and fruiting bodies of *Agaricus*, *Phytophthora*, *Alternaria* and *Morchella*.
- iii. Study of morphology, reproductive structures and anatomy of *Marchantia*, *Anthoceros* and *Polytrichum*.
- iv. Observation of disease symptoms and study of the pathogen in Wheat rust, powdery mildews and Apple scab.
- v. Study of bacteria from curd and sewage water using crystal violet stain.
- vi. Study of crustose, foliose and fruticose lichen thalli.

Suggested Readings:

- Alexopoulos, C.J. and Mims, C.W. 2002.: Introductory Mycology. 5th edition. John Wiley and Sons, New York.
- Kumar, H.D. 1999. Introductory Phycology. East-west Press Ltd., New Delhi.
- Sambamurty, A. V. S. S. 2005. A Textbook of Bryophytes, Pteridophytes, Gymnosperms and Paleobotany. I.K. International Pvt. Limited.
- Sharma, P.D. 2003. Microbiology. Rastogi Publications, Meerut, India.
- Shaw, A. J and Goffinet, B. 2000. Bryophyte Biology. Cambridge University Press.
- Singh, R. S. 1990. Plant Diseases. Oxford and IBH Publishers, New Delhi.
- Singh, R.S. 1990. Principles of Plant Pathology. Oxford and IBH Publishers, New Delhi
- Singh, V., Pande, P. C. and Jain, D. K. 2010. Diversity of Microbes and Cryptogams. Rastogi Publications, Meerut, India.
- Vanderpoorten, A. and Goffinet, B. 2009. Introduction to Bryophytes. Cambridge University Press.
- Vashishta, B.R., Sinha, A.K. and Singh, V.P. 2008. Botany for Degree Students-Algae. S. Chand and Company Pvt. Ltd., New Delhi.
- Webster, John. 2007. Introduction to Fungi . Cambridge University Press, London.