CLUSTER UNIVERSITY SRINAGAR

SYLLABUS (FYUP UNDER NEP 2020)

Offered By Department Of BOTANY

Semester 1st (Major Course)

Course Title: Biodiversity-an Introduction

Course Code: UGBOT22J101 **Max. Marks 100**
Credits: 4 (Theory: 3, Practical: 1) **Theory External: 60; Min Marks: 24**
Contact Hrs: 75 (Theory: 45, Practical: 30) **Theory Internal (Continuous Assessment): 15 Marks, Min Marks: 06**
Practical Experimental Basis= 15, Min. Marks: 06
Practical Experimental (Continuous assessment) = 10, Min. Marks: 04

Course Objectives: The principal objective of this course is to impart basic knowledge about diversity of life on the earth; basic features of viruses, microbes, fungi and plants and their importance in nature.

Learning outcomes: By the end of the session a student must be able to distinguish different viruses, microbes, fungi and plants on the basis of simple features and must have understood their ecological, economic and other roles in our daily life.

UNIT-I **(15 Hrs)**

Microbes and Algae

General characteristics of viruses, bacteria and fungi.

Cyanobacteria- General characteristics and significance of cyanobacteria, structureand life cycle of Nostoc

Algae- General characteristics of Algae, range of thallus organization. Morphology,reproduction and life cycle of *Volvox, Chara, Vaucheria, Batrachospermum.*

Symbiotic associations and their importance- Mycorrhizae and lichens

UNIT-II **(15 Hrs)**

Bryophytes and Pteridophytes

Bryophytes- General characteristics of bryophytes; morphology and reproduction of *Marchantia, Anthoceros* and *Funaria*.

Evolution of sporophyte. Apogamy and Apospory.

Pteridophytes- General characteristics of pteridophytes; morphology and reproduction (excluding development) of *Dryopteris* and *Selaginella.*

Heterospory and evolution of seed habit. Stellar system.

UNIT-III **(15 Hrs)**

Gymnosperms and Paleobotany

Gymnosperms- General characteristics of gymnosperms; morphology and reproduction (excluding anatomy) of *Pinus, Cycas* and *Ephedra.*

Paleobotany- Introduction to fossils and their types, *Williamsonia* and *Caytonia*

PRACTICAL **(30 Hrs)**

1. Models/Photographs of viruses, bacteria.
2. Preparation of temporary mount and study of the life cycle of Nostoc
3. Preparation of temporary mount and study of thallus structure of *Volvox*, , *Chara, Vaucheria, Batrachospermum.*
4. Study of morphology and reproductive structures of *Marchantia, Anthoceros* and *Funaria*.
5. Study of morphology and reproductive structures of *Dryopteris* and *Selaginella*.
6. Study of morphology and reproductive bodies of *Pinus* and *Cycas***.**
7. Study of different types of lichens.

Suggested Readings

01. Tortora, G.J., Funke, B.R., Case, C.L. (2010). Microbiology: An Introduction, Pearson
02. Singh, V., Pande, P. C. and Jain, D. K. 2016/17. Biodiversity, Rastogi Publications, Meerut, India.
03. Saad, S.K., Thakur, A.K, Bassi, S.K. and Shah Imtiyaz A., 2016. Biodiversity for B.Sc. Semester-I as per CCBCS.
04. Pelczar, JR Chan, ECS & Krieg JR. Microbiology. TATA McGRAWHILL
05. Raven, P.H., Johnson, G.B., Losos, J.B., Singer, S.R., (2005). Biology. Tata McGraw Hill, Delhi, India.
06. Alexopoulos, C.J. and Mims, C.W. 2002.: Introductory Mycology. 5th edition. John Wiley and Sons, New York.
07. Kumar, H.D. (1999). Introductory Phycology. Affiliated East-West. Press Pvt. Ltd. Delhi.
08. Parihar, N.S. (1991). An introduction to Embryophyta. Vol. I. Bryophyta. Central Book Depot, Allahabad.
09. Bhatnagar, S.P. and Moitra, A. (1996). Gymnosperms. New Age International (P) Ltd. Publishers, New Delhi, India.