**B. Sc. First/Second Semester: BOTANY**

 Generic Course - **GCB – 01**

**[***Biodiversity (Microbes, Algae, Fungi and Archegoniate)*]

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| **Part A: Introduction** |
| Program:**Certificate course in Microbial Diversity and Archaegoniate identification** | Class: **B.Sc.I Semester** | Year: **2022** | Session:**2022-2023** |
|  | Course Code | **BBotCT101** |
|  | Course Title | **Generic Course** |
|  | Course Type | **Theory** |
|  | Pre-requisite(If any)  | NO |
|  | Course Learning.Outcomes (CLO) | At the end of this course, the students will be able to* Understand the Viruses, Bacteria, Phycology, Mycology and Plant pathology
* Learn microbial techniques which will be beneficial for agriculture and industry.
* Learn life cycles of selected genera of different groups
* Understand etiology of plant diseases
* Apply their knowledge in the crop fields to eradicate or avoid the diseases
* Apply different bio fertilizers to enhance productivity
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|  | **Credit Value** | **Theory: 3** |
|  | **Total Marks** | **Max. Marks: 75** | **Min Passing Marks: 28** |

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| **Part B: Content of the Course** |
| Total Periods: 45 |
| **Unit** | **Topics** | **No. of Period** |
| **I** | **Viruses** – Discovery, general structure, multiplication, DNA virus (T-phage); Lytic and lysogenic cycle, RNA virus (TMV); Economic importance; Bacteria – General characters and cell structure; Reproduction – vegetative, asexual and recombination (conjugation,transformation and transduction); Economic importance. | 14 |
| **II** | **Algae**: General characteristics; Ecology and distribution. Range of thallus organization and reproduction; Classification of algae; Morphology and life-cycles of the following, Chlamydomonas. Economic importance of algae. | 14 |
| **III** | **Fungi:** Introduction- General characteristics, ecology a significance, range of thallus organization, nutrition, reproduction and classification; life cycle of *Penicillium (Ascomycetes)* Symbiotic Associations-Lichens: General account, reproduction and significance; Mycorrhiza: ectomycorrhiza and endomycorrhiza and their significance. | 14 |
|  **IV** |  **Introduction to Archegoniate –** **Bryophytes:** General characteristics, adaptations to land habit, Classification, Range of thallus organization, Classification (up to family), morphology, anatomy and reproduction of *Funaria* (Developmental details not to be included). Ecology and economic importance of bryophytes.  **Pteridophytes:** General characteristics, Early land plants (*Rhynia & Cooksonia*), Classification (up to family) concept of heterospory, seed habit and stelar evolution. Morphology, anatomy, and reproduction of Fern. **Gymnosperms:** General characteristics, classification. Classification, morphology, anatomy and reproduction of *Cycas* (Developmental details not to be included). Economic importance of Gymnosperms. | 14 |

**Key word:** Thallus, Mycology, Lichen & Mycorrhiza, Bryophytes.

**Suggested Readings**

1. Kumar, H.D. (1999). Introductory phycology.Affiliated East-West.Press Pvt. Ltd. Delhi.2ndedition.

2. Tortora, G.J., Funke, B.R., Case, C.L. (2010). Microbiology: An Introduction, Pearson Benjamin

Cummings, U.S.A. 10th edition.

3. Sethi, I.K. and Walia, S.K. (2011). Text book of Fungi & Their Allies, MacMillan Publishers Pvt. Ltd., Delhi.

4. Alexopoulos, C.J., Mims, C.W., Blackwell, M. (1996). Introductory Mycology, John Wiley and

Sons (Asia), Singapore.4th edition.

5. Raven, P.H., Johnson, G.B., Losos, J.B., Singer, S.R., (2005). Biology.Tata McGraw Hill, Delhi, India.

6. Vashishta, P.C., Sinha, A.K., Kumar, A., (2010). Pteridophyta, S. Chand. Delhi, India.

7. Bhatnagar, S.P. and Moitra, A. (1996). Gymnosperms. New Age International (P) LtdPublishers, New Delhi, India.

 8. Parihar, N.S. (1991). An introduction to Embryophyta. Vol. I. Bryophyta. Central Book Depot, Allahabad