DEPARTMENT OF BOTANY
UNDERGRADUATE COURSE CURRICULUM 2023-24

PART-A: Introduction				
Program: *Certificate Course*		**Class: B. Sc. Semester-I**	**Year: 2023**	**Session: 2023-2024**
1	Course Code	**BSC – 1T**		
2	Course Title	**Microbes, Algae and Fungi**		
3	Course Type	**Discipline Specific Course (DSC)**		
4	Pre-requisite(if,any)	As per Government norms / Institutional scheme		
5	Course Learning. Outcomes (CLO)	*After completion of this course, the students will be able to -* ➢ *- understand the nature, occurrence and diversity of Microorganisms and thallophytic plants (algae & fungi) in the environment* ➢ *- learn basic techniques of its collection, identification and preservation.* ➢ *– become familiar with the common features, habitat, structure, mode of reproduction of organism and their economic importance*		
6	CreditValue	03 (Credit = 15 Hours Teaching-learning)		
7	Total Marks	**Max. Marks: 100**	**Min Passing Marks:** 40	

PART -B: Content of the Course		
Total No. of Teaching–learning - Hours– 45 / Periods-60		
Unit	**Topics (Course contents)**	**No. of Hours**
I	**Microbes-Viruses:** Concept of Microbe & Microbial world, Concept of Prokaryotes vs Eukaryotes. Viruses – Discovery, general structure, chemical composition, Virions, Viroids & Prions; Classification (Baltimore classification) Transmission, Multiplication, DNA virus (T-phage); Lytic and lysogenic cycle, RNA virus (TMV); Economic importance Viruses	**12Hours**
II	**Microbes-Bacteria:** General concept / characteristics of Bacteria – Archea & Eu -bacteria, Cell structure and cell division; Reproduction and Recombination Transformation, Transduction and Conjugation. General account of Mycoplasma and Actinomycetes. Common bacterial disease of Plants.. General account of Cyanobacteria. Economic importance of Bacteria	**11Hours**
III	**Thallophyta–Algae:** Characteristics features and Classification (Lee 'classification) Range of thallus organization, Pigments & Stored food. Reproduction – types & mode, Concept & types of Life cycle and Economic importance. Life-cycles of *Volvox*, *Oedogonium*, *Vaucheria*, *Ectocarpus* & *Polysiphonia*. Economic importance of Algae. Eminent Phycologists.	**11Hours**
IV	**Thallophyta–Fungi:** Characteristics and Classification, thallus organization, Reproduction. Heterothallism & Parasexuality, Life cycle of *Rhizopus*, *Penicillium*, *Puccinia*, *Agaricus*, *Alternaria*, *Fusarium* & *Colletotrichum*. General account of Lichen and Mycorrhiza. Economic importance of Fungi. Eminent Mycologists.	**11Hours**
Keywords	*Microbes, Viruses, Bacteria, Cyanobacteria, Algae. Fungi*	

Signature of Convener & Members of BOS:

(1) Dr. A. N. Bahadur
(2) Dr. D. U. Srivastava
(3) Dr. Uttara Tiwari
(4) Dr. V. U. Upadhyaya
(5) Dr. A. Shahabir
(6) Dr. M. L. Jaiswal
(7) Miss Rashmi Kaushik Botanist

PART–C (BSC – 1T)

Learning Resources: Text Books, Reference Books and Others

Text Books Recommended

1. Kumar, H.D. (1999). Introductory phycology. Affiliated East-West. Press Pvt. Ltd. Delhi.2nd edition.
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. Powar C.B. and Daginawala H.I General Microbiology; Vol I & II, Himalayn Pub. House, Bombay.
7. Dubey & Maheshwari, A Text Book of Microbiology
8. R. P. Singh, A Text Book of Microbiology

Online Resources–

- **e-Resources / e-books and e-learning portals**

- **Use of following sites**
  - https://microbeonline.com/types-of-staining-techniques-used-in-microbiology-and-their-applications/
  - **https://www.youtube.com/watch?v=gOFKk4LFYHI&ab_channel=MicrobialConcepts%28Microbiologychannel%29**
  - https://gclambathach.in/lms/Algae.pdf
  - **https://biologydictionary.net/bacteria/**
  - **https://byjus.com/biology/kingdom-fungi/#:~:text=Characteristics% 20of%20Fungi, Following%20are%20the&text=Fungi% 20are%20eukaryotic%2C% 20non% 2D vascular, phenomenon%20of%20alternation%20of%20generation.**
  - **http://eagri.org/eagri50/PATH171/lec03.pdf**
  - **https://byjus.com/biology/algae/**
  - **https://www.youtube.com/watch?v=Z_4UNFjqILo&ab_channel=subratadas**
  - **https://www.biologydiscussion.com/algae/algae-definition-characteristics-and-structure-with-diagram/46727**

Part - D: Assessment and Evaluation

Suggested Continuous Evaluation Methods:

Maximum Marks:	**100 Marks**
Continuous Comprehensive Evaluation (CCE):	**20 Marks**
Semester End Exam (SEE):	**80 Marks**

Internal Assessment: Continuous Comprehensive Evaluation (CCE)	Internal Test - 02 of 10 Marks each Assignment –01 of 10 Marks	The best obtained marks of both test exam and marks of Assignment shall be considered against 20 Marks
Semester End Exam (SEE):	Paper – **Two section – A & B** Section A: Objective and Short answer type questions – **10 + 30 = 40 Marks** **Objective-10 x 1=10; Short Answer Type Questions- 10 x 3=30** Section B: Descriptive answer type questions unit wise – **4 x 10 = 40 Marks**	

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