FYUGP CURRICULAR FRAMEWORK FOR BOTANY AS MAJOR FOR BATCH 2024 AND ONWARDS

SEMESTER	COURSE CODE	TYPES OF COURSE	TITLE OF COURSE	CREDITS	
				THEORY	PRACTICAL
I	BOT124J	CT - 1	**BOTANY:** MICROBES AND ALGAE	4	2
II	BOT224J	CT - 1	**BOTANY:** MYCOLOGY AND PLANT PATHOLOGY	4	2
III	BOT324J	CT - 1	**BOTANY:** ARCHEGONIATES: BRYOPHYTES, PTERIDOPHYTES & GYMNOSPERMS	4	2
IV	BOT422J1	CT - 1	**BOTANY:** PLANT TAXONOMY	3	1
	BOT422J2	CT - 2	**BOTANY:** PLANT PHYSIOLOGY	4	2
	BOT422J3	CT - 3	**BOTANY:** PLANT BIOCHEMISTRY	4	2
V	BOT524J1	CT - 1	**BOTANY:** PLANT MORPHOLOGY AND ANATOMY	3	1
	BOT522J2	CT - 2	**BOTANY:** CELL BIOLOGY	4	2
	BOT522J3	CT - 3	**BOTANY:** PLANT MOLECULAR BIOLOGY	4	2
VI	BOT624J1	CT - 1	**BOTANY:** REPRODUCTIVE AND DEVELOPMENTAL BIOLOGY OF ANGIOSPERMS	3	1
	BOT622J2	CT - 2	**BOTANY:** GENETICS & CYTOGENETICS	4	2
	BOT622J3	CT - 3	**BOTANY:** PLANT BREEDING	4	2
FYUGP HONOURS MODE					
VII	BOT722J1	CT - 1	**BOTANY:** PLANT ECOLOGY	3	1
	BOT722J2	CT - 2	**BOTANY:** PLANT BIOTECHNOLOGY	4	2
	BOT722J3	CT - 3	**BOTANY:** BIOSTATISTICS & BIOTECHNIQUES	4	2
VIII	BOT822J1	CT - 1	**BOTANY:** ECONOMIC BOTANY	3	1
	BOT822J2	CT - 2	**BOTANY:** CONSERVATION BIOLOGY	4	2
	BOT822J3	CT - 3	**BOTANY:** APPLIED AND EVOLUTIONARY ECOLOGY	4	2
FYUGP HONOURS WITH RESEARCH MODE					
VII	BOT722J1	CT - 1	**BOTANY:** PLANT ECOLOGY	3	1
	BOT722J2	CT - 2	**BOTANY:** PLANT BIOTECHNOLOGY	4	2
	BOT722J3	CT - 3	**BOTANY:** BIOSTATISTICS & BIOTECHNIQUES	4	2
VIII	BOT822J1	CT - 1	**BOTANY:** ECONOMIC BOTANY	3	1
	BOT824RP	PROJECT	**BOTANY:** PROJECT WITH DISSERTATION	12	

HoD / CONVENOR BOUGS

BACHELORS WITH BOTANY AS MAJOR (CT – I)
1st SEMESTER

BOT124J BOTANY _ MICROBES AND ALGAE

(CREDITS: THEORY: 04; PRACTICALS: 02)

OBJECTIVES:

To impart understanding about economic importance and diversity of viruses, bacteria and algae, and to acquaint them about the classification, structure, morphology and reproduction of viruses, bacteria and algae,

LEARNING OUTCOME:

The students will learn about basic concept, diversity, general characteristics of viruses, bacteria, algae; the significance of algal blooms and economic importance of bacteria and algae.

THEORY (4 CREDITS; 60 HOURS)

UNIT-I

Viruses: Evolution and general characteristics; structure, replication and life cycle of DNA and RNA viruses (T-phage, TMV); Isolation and purification of viruses; Overview of hosts and transmission.

UNIT-II

Bacteria: Evolution and diversity; Characteristics and cell structure; Growth and reproduction (conjugation, transformation and transduction); Bacterial nutrition; Economic importance.

UNIT-III

Algae: General characteristics, classification of algae (Fritsch 1935, 1945; Round 1965), criteria for classification of algae; range of thallus organization; morphology, reproduction and life cycle of *Nostoc*, *Chlamydomonas*, *Oedogonium*, *Vaucheria*, *Ectocarpus*, *Batrachospermum*;

UNIT-IV

Ecological and Economic Importance of Algae: Algal blooms; causal factors and control, algae as indicators of pollution, algae as sources of phycocolloids (Agar-agar, Algenic acid, Carrageenin, algae as food, algae as medicine, role of diatomaceous earth in industry, algae as source of biofuels.

PRACTICAL EXERCISES (2 CREDITS; 60 HOURS)

- Models/photographs of viruses T Phage and TMV, drawing/photograph of lytic and lysogenic Cycle.
- Types of bacteria from temporary/permanent slides/photographs; Gram staining
- Study of vegetative and reproductive structures of *Nostoc*, *Chlamydomonas*, *Oedogonium*, *Vaucheria*, *Ectocarpus and Batrachospermum* through temporary preparations and permanent slides.

SUGGESTED READINGS

- Tortora, G.J., Funke, B.R., Case, C. L. (2010). Microbiology: An Introduction, Pearson Benjamin Cummings, U.S.A. 10th edition.
- Fritsch, F.E. 1979. The structure and reproduction of algae. Vols. I and II. Cambridge University Press.
- Prescott, G.W. 1984. The Algae: A Review. Otto Koeltz Science Publishers, Germany.
- Bold and Wynne. 1985. Introduction to the Algae. Prentice Hall, USA.
- Singh, V., Pande, C. and Jain, D. K. 2010. Diversity of Microbes and Cryptogams. Rastogi Publications
- Vashishta, B. R., Sinha, A.K. and Singh, V. P. 2008. Botany for Degree Students- Algae. S. Chand and Company Pvt. Ltd., New Delhi.
- Kumar, H. D. (1999). Introductory Phycology. Affiliated East-West Press Pvt. Ltd. Delhi.2nd edition.
- Raven, P. H., Johnson, G. B., Losos, J.B., Singer, S. R., (2005). Biology. Tata McGraw Hill, Delhi, India.