TEACHING PLANS

BOTANY GENERIC ELECTIVE COURSES

Under LOCF/NEP syllabus

(Year 2023-24onwards)

Semester III

Paper Code: BOT-HG-601

Paper Title: Plant Diversity

No. of Hours per week	Credit	Total No. of Hours	Marks
6 (Theory)	4 (Theory)	60	75
4 (Practical)	2 (Practical)	30	25

Course Objectives

1. To highlight microbes and their structure, importance and reproduction.

2. To impart knowledge of diversity, life forms, life cycles, morphology and importance of algae, bryophytes, pteridophytes and gymnosperms along with proficiency in the experimental techniques of analysis of these plant groups.

Learning Outcomes

On completion of this course, students will be able to:

1. Understand importance, classification and reproduction of virus, bacteria and fungi
2. Demonstrate and understand algae, bryophytes, pteridophytes and gymnosperms.
3. Develop critical understanding on morphology, anatomy and reproduction of algae, bryophytes, pteridophytes and gymnosperms.
4. Understand plant evolution and their transition to land habitat.
5. Demonstrate proficiency in the experimental techniques and methods of appropriate analysis of algae, bryophytes, pteridophytes and gymnosperms.

Unit 1: Microbes (9 Lec.)					
Section	*Topic*	*Lec. Hrs.*	*Learning Outcome*	*Pedagogy*	*Assessment/Evaluation*
1.	Virus: Discovery and General structure	1	Have knowledge on the discovery and general structure of viruses	*Lecture/Discussion/PPT/Demonstration*	*Quiz/Class test/ Seminar/ Group Discussion/ Q & A Session/ Assignment*
2.	Replication of virus (general account); Lytic and Lysogenic cycle	1	Understand replication in and the differences between lytic and lysogenic cycle in virus replication		
3.	DNA virus (T-phase) and RNA virus (TMV)	1	Students are able to differentiate DNA and RNA viruses		

4.	Economic importance of virus.	1	Have knowledge of the importance of viruses	*Lecture/Discussion/ PPT/Demonstration*	*Quiz/Class test/ Seminar/ Group Discussion/ Q & A Session/ Assignment*
5.	Bacteria: Discovery; General characteristics; and Cell structure	1	Have knowledge of the discovery of bacteria. Also understand the characteristic features and the cell structure of bacteria		
6.	Reproduction – vegetative, asexual &	1	Understand vegetative and asexually reproduction in bacteria		
7.	Recombination (conjugation, transformation and transduction	1	Understand the different methods of genetic recombination (sexual reproduction) in bacteria		
8.	.....contd.	1			
9.	Economic importance of bacteria	1	Have knowledge of the economic importance of bacteria		

Unit 2: Algae (9 Lec.)					
Section	*Topic*	*Lec. Hrs.*	*Learning Outcome*	*Pedagogy*	*Assessment/Evaluation*
1.	General characteristics; Ecology and distribution of algae	1	Have understanding of the characteristic features of algae and also know the role of algae in the environment	*Lecture/Discussion/ PPT/Demonstration*	*Quiz/Class test/ Seminar/ Group Discussion/ Q & A Session/ Assignment*
2.	Range of thallus organization in algae	1	Have knowledge of the different form of thallus found in algae		
3.	Cell wall composition, nutrition,	1	Have knowledge of the nutrition and the cell wall constituent in different groups algae		
4.	Reproducton in algae	1	Know the different methods of reproduction found in fungi		
5.	Classification of algae	1	Understand algal classification		

6.	Morphology and life cycle of *Nostoc and Chlamydomonas*	1	Have critical understand of the vegetative structure and the life cycle patterns of *Nostoc and Chlamydomonas*	*Lecture/Discussion/ PPT/Demonstration*	*Quiz/ Class test/ Seminar/ Group Discussion/ Q & A Session/ Assignment*
7.	Morphology and life cycle of *Oedogonium and Vaucheria*	1	Have critical understand of the vegetative structure and the life cycle patterns of *Oedogonium and Vaucheria*		
8.	Morphology and life cycle of*Fucus and Polysiphonia*	1	Have critical understand of the vegetative structure and the life cycle patterns of *Fucus and Polysiphonia*		
9.	Economic importance of algae	1	Have knowledge of the economic importance of algae		

Unit 3: Fungi (9 Lec.)					
Section	*Topic*	*Lec. Hrs.*	*Learning Outcome*	*Pedagogy*	*Assessment/Evaluation*
1.	Introduction – General characteristics; Ecology and significance	1	Have understanding of the characteristic features of fungi and also know the role of fungi in the environment	*Lecture/Discussion/ PPT/Demonstration*	*Quiz/ Class test/ Seminar/ Group Discussion/ Q & A Session/ Assignment*
2.	Thallus organization, Cell wall composition and Nutrition in Fungi	1	Have knowledge of the different form of thallus found in fungi; constituent of cell wall in different groups of fungi and also the types of nutrition in fungi		
3.	Reproduction; and Classification	1	Know the different methods of reproduction found in fungi and also their classification		
4.	True fungi – General characteristics. Ecology and significance	1	Have clear knowledge about all the fungi with cell walls and their role in ecosystem		

5.	Life cycle of *Rhizopus (Zygomycota)*	1	Understand the life cycle pattern in *Rhizopus*	*Lecture/Discussion/ PPT/Demonstration*	*Quiz/Class test/ Seminar/ Group Discussion/ Q & A Session/ Assignment*
6.	Life cycle of*Penicillium, Alternaria(Ascomycota)*	1	Understand the life cycle patterns in*Penicillium* and *Alternaria*		
7.	Life cycle of*Puccinia, Agaricus(Basidiomycota)*	1	Understand the life cycle patterns in*Puccinia* and *Agaricus*		
8.	Lichens: General account, reproduction and significance	1	Know what lichens are, their methods of reproduction and economic importance		
9.	Mycorrhiza: Ectomycorrhiza, *endomycorrhiza* and significance	1	Know what mycorrhiza is, its types and their role in ecosystem		

Unit 4: Introduction to Archegoniate (9 Lec.)					
Section	*Topic*	*Lec. Hrs.*	*Learning Outcome*	*Pedagogy*	*Assessment/Evaluation*
1.	Introduction to Archegoniate: Unifying features of archegoniate	1	Have on the knowledge unifying features of archegoniate	*Lecture/Discussion/ PPT/Demonstration*	*Quiz/Class test/ Seminar/ Group Discussion/ Q & A Session/ Assignment*
2.	Transition to land habit	1	Have knowledge on the adaptations to land habit of the archegoniates		
3.	Alternation of generation	1	Understand the life cycle of bryophytes		
4.	Bryophytes: General characteristics; Adaptations to land habit	1	Have knowledge on the characteristic features of bryophytes and their adaptations to land habit		
5.	Classification (up to family)	1	Understand the classification of bryophytes		
6.	Range of thallus organization	1	Have critical understand of the different form of thallus found in bryophytes		
7.	Morphology, anatomy and reproduction of *Marchantia (Developmental details not to be included)*	1	Have critical understand of the morphology, anatomy and reproduction of *Marchantia*		

8.	Morphology, anatomy and reproduction of*Funaria(Developmental details not to be included)*	1	Have critical understand of the Morphology, anatomy and reproduction of *Funaria*	*Lecture/Discussion/ PPT/Demonstration*	*Quiz/Class test/ Seminar/ Group Discussion/ Q & A Session/ Assignment*
9.	Ecology and economic importance of bryophytes with special reference to *Sphagnum*	1	Understand the role of bryophytes in the environment and also the economic importance of *Sphagnum*		

Unit 5: Pteridophytes and Gymnosperms (9 Lec.)					
Section	*Topic*	*Lec. Hrs.*	*Learning Outcome*	*Pedagogy*	*Assessment/Evaluation*
1.	Pteridophytes: General characteristics; and Classification (up to family)	1	Understand the characteristics features and the classification of pteridophytes.	*Lecture/Discussion/ PPT/Demonstration*	*Quiz/ Class test/ Seminar/ Group Discussion/ Q & A Session/ Assignment*
2.	Early land plants (*Cooksonia* and *Rynia*)	1	Have knowledge of the early land plants *(Cooksonia and Rhynia)*		
3.	Morphology, anatomy and reproduction of *Sellaginella, Equisetum and Pteris(developmental details not to be included)*	1	Understand the morphology, anatomy and methods of reproduction of *Sellaginella, Equisetum and Pteris*		
4.	……..contd.	1			
5.	Heterospory and seed habit; Stellar evolution	1	Understand the significant evolutionary steps leading to seed habit; and also the stellar evolution in pteridophytes		
6.	Ecological and economic importance of Pteridophytes	1	Understand the ecological role and the economic importance of pteridophytes		
7.	Gymnosperms: General characteristics; Classification (up to family)	1	Understand the characteristics features and the classification of gymnosperms		

8.	Morphology, anatomy and reproduction of*Cycas* and *Pinus (developmental details not to be included)*	1	Have critical understand on the morphology, anatomy and methods of reproduction in *Sellaginella, Equisetum and Pteris*	*Lecture/Discussion/ PPT/Demonstration*	*Quiz/ Class test/ Seminar/ Group Discussion/ Q & A Session/ Assignment*
9.	Ecological and economic importance of gymnosperms	1	Understand the ecological role and the economic importance of gymnosperms		

N.B. The contact hours for tutorial classes is 15 hours

Course teachers:

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