

CC 1 PHYCOLOGY AND MICROBIOLOGY (BOT-A-CC-1-1-TH, BOT-A-CC-1-1-P)

Lead Teacher : DR. RUPAK KUMAR SENGUPTA

DR. RUPAK KUMAR SENGUPTA	
<b>THEORETICAL</b>	<b>No of lectures allotted – Two (2)/ Week</b>
<b>1.VIRUS</b>	
1.1. Discovery, 1.2.Plant virus- types, 1.3. Transmission and translocation of Plant virus, 1.4. TMV7 Physicochemical characteristics and Multiplication, 1.5. One step growth curve, 1.6. Lytic cycle (T4 phage) and Lysogenic cycle (Lambda phage), Significance of lysogeny, 1.7.Viroids and Prions.	
<b>2.BACTERIA</b>	
2.1. Discovery, .2.2. Distinguishing features of Archaea and Bacteria, 2.3. Characteristics of some major groups: Proteobacteria (Enterobacteria), Firmicutes, Mollicutes, Actinobacteria, Spirochaetes, Chlamydiae, 2.4. Bacterial growth curve and generation time, 2.5.Flagella (ultrastructure) & Pilli, 2.6. Cell wall – chemical structure and differences between Gram +ve & Gram – ve bacteria, 2.7. Bacterial genome and plasmid, 2.8. Endospore - formation, structure and function, 2.9.Genetic Recombination (a) Transformation – with special emphasis on Natural and Induced competence and DNA uptake, (b) Conjugation– F- factor, F+ X F–, Hfr X F–, concept of F',chromosome mobilization, (c) Transduction– Generalised and specialized.	
<b>PRACTICAL</b>	
<b>DR. RUPAK KUMAR SENGUPTA and SMT. SANDHYA DUTTA</b>	
<b>PHYCOLOGY</b>	<b>(No of Practical Classes allotted - Two (2) / week</b>
<b>1.</b> Work out of the following algae with reproductive structure (Free hand drawing and drawing under drawing prism with magnification): <i>Oedogonium</i> , <i>Chara</i> , <i>Ectocarpus</i> .	
<b>2.</b> Study of (a) Permanent slides : <i>Gloeotrichia</i> , <i>Volvox</i> , <i>Vaucheria</i> , <i>Coleochaete</i> , <i>Polysiphonia</i> , Centric and Pennate diatom; (b) Macroscopic specimens : <i>Laminaria</i> , <i>Sargassum</i> .	
<b>MICROBIOLOGY</b>	
<b>1.</b> Preparation of bacterial media – (a) Nutrient agar and nutrient broth, (b) Preparation of slants and pouring Petri-plates. <b>2.</b> Sub-culturing of bacterial culture. <b>3.</b> Gram staining from bacterial culture. <b>4.</b> Microscopic examination of bacteria from natural habitat (curd) by simple staining.	
<b>FIELD WORK</b>	
One local excursion for study and collection of algae.	
DR. NANDINI CHAKRABARTY	
<b>THEORETICAL</b>	
<b>ALGAE</b>	<b>No of lectures allotted – One (1)/ Week</b>
1.General Account: 1.2. Ultrastructure of Plastids and Flagella, 1.3. Origin and evolution of sex, 1.4. Life cycle patterns, 1.5. Significant contributions of important phycologists (Fritsch, Smith, R. N. Singh, T.V. Desikachary, H.D. Kumar, M.O.P. Iyengar)	
<b>2. Classification</b>	
2.1. Criteria and basis of Fritsch’s classification, 2.2. Classification by Lee (2008) upto phylum with examples; 2.3. Salient features of Cyanobacteria, Rhodophyta, Chlorophyta ,	

Charophyta, Bacillariophyta, Xanthophyta, Phaeophyta, Heterokantophyta.

**4. Bacillariophyta**

4.1. Cell structure, 4.2. Cell division, 4.3. Auxospore formation in Centrales and Pennales.

Life History: 5.1. *Chlamydomonas, Chara, Polysiphonia*.

**DR. ARKAJO MAJUMDAR**

**THEORETICAL**

**No of lectures allotted – One (1) / Week**

**1. General account:** 1.1. Thallus organization.

**3. Cyanobacteria:** 3.1. Ultrastructure of cell, 3.2. Heterocyst - structure and function, 3.3. Ecology.

**5.2. Oedogonium, Ectocarpus**

**CC 2 MYCOLOGY AND PHYTOPATHOLOGY (BOT-A-CC-1-2-TH, BOT-A-CC-1-2-P)**

**Lead Teacher : PROF. SUTAPA GUPTA**

**DR. SITAL CHATTERJEE**

**MYCOLOGY**

**No of lectures allotted – Two (2)/ Week**

**1. General Account:**

1.1. Hyphal forms, 1.2. Fungal spore forms and mode of liberation, 1.3. Sexual reproduction and degeneration of sex, 1.4. Parasexuality and sexual compatibility, 1.5. Life cycle patterns.

**2. Classification:** 2.1. Classification of Fungi (Ainsworth, 1973) upto sub-division with diagnostic characters and examples. 2.2. General characteristics of Myxomycota, Oomycota, Zygomycota, Ascomycota, Basidiomycota, Deuteromycota.

**3. Life history:** 3.1. *Synchytrium*, 3.2. *Rhizopus*, 3.3. *Ascobolus*, 3.4. *Agaricus*.

**4. Mycorrhiza:** 4.1. Types with salient features, 4.2. Role in Agriculture & Forestry.

**5. Lichen:** 5.1. Types, 6.2. Reproduction, 6.3. Economic and ecological importance.

**PROF. SUTAPA GUHA**

**THEORETICAL**

**1. Terms and Definitions :**

**No of lectures allotted – One (1)/ Week**

1.1. Disease concept, 1.2. Symptoms, 1.3. Etiology & causal complex, 1.4. Primary and secondary inocula, 1.5. Infection, 1.6. Pathogenecity and pathogenesis, 1.7. Necrotroph and Biotroph, 1.8. Koch's Postulates, 1.9. Endemic, Epidemic, Pandemic and Sporadic disease, 1.10. Disease triangle, 1.11. Disease cycle (monocyclic, polycyclic and polyetic).

**2. Host – Parasite Interaction:** 2.1. Mechanism of infection (Brief idea about Pre-penetration, Penetration and Post-penetration), 2.2. Pathotoxin (Definition, criteria and example), 2.3. Defense mechanism with special reference to Phytoalexin, 2.4. Resistance-

Systemic acquired and Induced systemic.

**DR. PARTHA KARAK**

**THEORETICAL**

**PHYTO-PATHOLOGY**

**No of lectures allotted – One (1)/ Week**

**3. Plant Disease Management :**

3.1. Quarantine, 3.2. Chemical, 3.3. Biological, 3.4. Integrated.

**4. Symptoms , Causal organism, Disease cycle and Control measures of:**

4.1. Late blight of Potato, 4.2. Brown spot of rice, 4.3. Black stem rust of wheat, 4.4. Stem rot of jute.

**PRACTICAL**

**DR. PARTHA KARAK and PROF. SUTAPA GUPTA**

**MYCOLOGY**

**No of lectures allotted – Two (2)/ Week**

**1.** Work out of the following fungi with reproductive structures (including microscopic measurement of Reproductive structures): *Rhizopus* (asexual), *Ascobolus* , *Agaricus* .

**2.** Study from permanent slides: Zygosporangium of *Rhizopus*, Conidia of *usarium*, Conidiophore of *Penicillium*.

**3.** Morphological study of Fungi (fruit body of *Polyporus*, *Cyathus*), Lichens (fruticose and foliose).

**PHYTO- PATHOLOGY**

**1.** Preparation of fungal media (PDA).

**2.** Sterilization process.

**3.** Isolation of pathogen from diseased leaf.

**4.** Inoculation of fruit and subculturing.

**5.** Identification : Pathological specimens of Brown spot of rice, Bacterial blight of rice , Loose smut of wheat, Stem rot of jute, Late blight of potato; Slides of uredial, telial, pycnial & aecial stages of *Puccinia graminis*.

**FIELD WORK**

One local excursion for study and collection of macrofungi .

**TRACKING ACADEMIC PROGRESSION THROUGH INTERNAL ASSESSMENT/EVALUATION**

**1. METHOD : CLASS TEST – First during MID TERM and the second before the END TERM by each teacher concerned.**

**2. MENTOR – MENTEE APPROACH**

**3. One Parent – Teacher Meeting after the first MID TERM Test.**