

LESSON PLAN SUBJECT: BOTANY (Theory) SEMESTER- 3, PAPER: BOTN3011 - Botany: Microbiology		
Unit	TOPIC	Teacher
Unit 1: Viruses	Discovery, physiochemical and biological characteristics; organization and structure of capsid, viral genome- type and structure; classification of virus (Baltimore, 1975); viroids and prions	Dr. SK Aftabul Alam
Unit 2: Ultrastructure of prokaryotic cell	Cell wall and cell membrane of bacteria and archaea; glycocalyx, pili, and flagella. Bacterial chromosome, plasmid types and episome. Reserve material and other cytoplasmic inclusions; Endospore – structure, formation and germination.	Dr. SK Aftabul Alam
Unit 3: Bacterial taxonomy	Classical Taxonomy and Molecular Taxonomy, Modern concept of bacterial taxonomy specifically 16 S rDNA-based sequence homology and its importance in bacterial taxonomy. Bergey's Manual of Systemic Bacteriology; 2nd Ed. Characteristic features of Archaea and Bacteria	Dr. SK Aftabul Alam
Unit 4: Bacterial growth and nutrition	Growth curve, growth factor, growth Kinetics; batch and continuous culture; Microbial growth control by disinfectant, antiseptic and chemotherapeutic agents – a brief account of their types and mode of action. Brief idea about Autotrophy and heterotrophy.	Dr. SK Aftabul Alam
Unit 5: Microbes in N ₂ Cycle	Nitrification, Denitrification, Mechanism of biological N ₂ fixation. (8 lectures	Dr.Sayani Biswas
Unit 6: Applied Microbiology	Application of microbes in agriculture (biofertilizer, biocontrolling agents), Industry (fermentation and Food), environment bioremediation) and medicine (sources of antibiotics)	Dr.J.K.Pal
Unit 7: Basic immunology	Innate and acquired immunity; T-cell, B-cell; Antigen (Ag), hapten, and Antibody (Ab); Cell mediated and Humoral Immunity, vaccine.	Dr.Manjusha Sarkar

LESSON PLAN SUBJECT: BOTANY (Practical) SEMESTER- 1 , PAPER: BOTN1011 - Botany: Microbiology		
Sl. No.	TOPIC	Teacher
1	Aseptic method	Dr. SK Aftabul Alam
2	a.Sterilization technique by Autoclaving, Hot air oven and surface sterilization.	Dr. SK Aftabul Alam
3	b.Preparation of standard bacteriological medium (Nutrient agar, Nutrient broth and Glucose - peptone medium).	Dr. SK Aftabul Alam
4	c.Preparation of slant and plates.	Dr. SK Aftabul Alam
5	d.Subculturing of pure bacteriological culture	Dr. SK Aftabul Alam
6	e.Pure culture technique: dilution streak method	Dr. SK Aftabul Alam

7	Simple staining; differential staining: Gram staining.	Dr. SK Aftabul Alam
8	Microscopic examination of bacteria from natural habitats: curd and root nodules of leguminous plants	Dr. SK Aftabul Alam

LESSON PLAN SUBJECT: BOTANY (Theory) SEMESTER- 1 , PAPER: BOTN1011 - Botany (Theo): Archegoniate		
Unit	TOPIC	Teacher
Unit 1: Introduction	Unifying features of Archegoniate; Transition and adaptation to land habit; Alternation of generations.	Dr. Sayani Biswas
Unit 2: Bryophytes	General characteristics & Classification [up to class] of Stotler and Stotler (2000); Adaptations to land habit, Diversification of gametophytes and sporophytes.	Dr. Sayani Biswas
Unit 3: Type Studies- Bryophytes	Origin and evolution of Bryophytes, Morphology, anatomy, reproduction and evolutionary trends in Riccia, Pellia, Porella, Sphagnum, Pogonatum (developmental stages not included). Economic importance of bryophytes (a brief account).	Dr. Sayani Biswas
Unit 4: Pteridophytes	General characteristics & Classification [up to class] of Smith (2006) Origin and evolution of Pteridophytes; Telome theory; General characteristics; early land plants (Cooksonia, Rhynia, Lepidodendron, Lepidocarpon).	Dr. Jiban kumar Pal
Unit 5: Type Studies- Pteridophytes	Morphology, anatomy and reproduction of Lycopodium, Adiantum, Azolla (Developmental details not to be included). Apogamy, and apospory, heterospory and seed habit; stellar evolution; Ecological and economic importance.	Sujit Pal
Unit 6: Gymnosperms	General characteristics, Origin and evolution of Gymnosperms; classification Stewart and Rothwell, 1985 (up to class), Brief idea about Progymnospermopsida	Sujit Pal
Unit 7: Type Studies- Gymnosperms	Morphology, anatomy and reproduction of Lyginopteris, Pinus, and Ephedra (Developmental details not to be included); Ecological importance	Subir Samanta

LESSON PLAN SUBJECT: BOTANY (Practical) SEMESTER- 1 , PAPER: BOTN1011 - Botany: Archegoniate		
Sl. No.	TOPIC	Teacher
1	Riccia, Marchantia, Anthoceros-Anatomical study of sporophyte	Dr. SK Aftabul Alam
2.	Morpho-anatomical study of Lycopodium, Adiantum	
3.	Morpho-anatomical study of Pinus, Ephedra	
4.	Study of fossil slides of Lepidodendron, Lyginopteris oldhamia	

LESSON PLAN
SUBJECT: BOTANY (Theory)
SEMESTER- 1 , PAPER: BOTN1011 - Botany (Theo): Plant Diversity and Evolution

Unit	TOPIC	Teacher
Unit 1:	Medicinal plants in the traditional systems of medicine and modern medicine. Concept on the Indian traditional systems of medicine	Dr Jiban Kumar Pal
Unit 2:	Ayurveda& its fundamental doctrine, Important plants used in the Ayurveda system of medicine. Brief idea of Rasayanadrugs	Dr. Manjusha Sarkar
Unit 3:	Siddha& its concepts, therapeutic and pharmaceutical uses of important plants used in Siddha system of medicine	Mr. Sujit Pal
Unit 4	Unani: Concept of Umoor-e-Tabiya (Fundamentals of Physique), therapeutic and pharmaceutical uses of plants used in Unani system of medicine.	Mr. Subir Kumar Samanta
Unit 5	Nutraceuticals and polyherbal formulations. Plants used for the treatment of hepatic disorders, cardiac diseases,infertility, diabetes, blood pressure, cancer and skin diseases	Dr. Manjusha Sarkar
Unit 6:	Role of AYUSH, NMPB in the promotion of medicinal plants.	Dr. Manjusha Sarkar
Unit 7:	Fundamentals of Pharmacognosy. Organoleptic, microscopic and phytochemical evaluation of plant drugs.	Dr. Manjusha Sarkar
Unit 8:	Conservation of Endangered and Endemic Medicinal plants. Brief idea oncategories of Red Listed plants. In situ and ex situ Conservation	Dr. Sayani Bisawas