TEACHING PLAN FOR THE SESSION 2014-15

Name **: Dr. Neelam Ghildyal**
Designation : **Associate Professor**
Department : **Botany**

Class ; B.Sc. I	
Paper- II : Algae and Bryophyta	
Month	**Unit with Topic**
August	-
September	Unit I: 1.General characteristics of the group (Algae) And its position in Plant Kingdom. 2. Classification of Algae, basic outline of Fritisch and Smith's classification.
October	Unit I: 3.Elementary knowledge of organization of thallus in Algae. Unit II: 1.Occurrence, structure of thallus and mode of reproduction of the following genera : *Chlamydomonas, Volvox, Hydrodictyon, Cladophora, Oedogonium, Vaucheria and Chara.*
November	Unit II: 2.General account of the Bacillariophyceae. Unit II: 3. Ecology of Algae : A brief idea of freshwater ,marine and terrestrial algae, phytoplanktons,epiphytic, parasitic and symbiotic algae.
December	Unit III:1. Occurrence, structure and mode of reproduction of the following genera : *Sargassum, Ectocarpus, Batrachospermum, Polysiphonia.* 2. Cyanobacteria : A general account, *Nostoc* and *Spirulina*. Unit III: 3. Economic importance of Algae as food and fodder, in agriculture, industry and in public health.
January	Unit IV:1.Outline and basic principles of classification of the Bryophytes in accordance with the International Code of Botanical Nomenclature. Unit IV:2.Comparative account of the gross morphology anatomy, vegetative reproduction,Sexual reproduction, development and structure of the sporophytes and mechanism of spore dispersal based on *Riccia* and *Marchantia*.
February	Unit IV : 3.Habitat, distribution and economic importance of Bryophytes. Unit V : 1.Comparative account of the gross morphology, anatomy of the gametophytes, Vegetative and sexual reproduction, development and structure of the sporophytes and mechanism of spore dispersal in *Anthoceros*.
March	Unit V : 2.General account of Jungermanniales (*Pellia* and *Porella*) and mosses (*Funaria* and *Pogonatum*). 3. A brief account of the alternation of generations in Bryophytes. **Practical courses will be completed from 29th September to February 2015**

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Class ; B.Sc. II	
Paper- I : Taxonomy of Angiosperms	
Month	**Unit with Topic**
August	Unit I : 1. Angiosperms origin and evolution. Some examples of primitive angiosperms. Angiosperm taxonomy: fundamental components.
September	Unit I : 2. Historical development in plant taxonomy in pre-Linnean and post-Linnean Periods. 3.Comparison and evolution of the systems of classification as proposed by Linnaeus, Bentham and Hooker and Hutchinson.
October	Unit II:1. Nomenclature: International Code of Botanical Nomenclature(ICBN), history, Scientific naming of plants, priority, types, validity, *nomina conservanda*. 2. Collection and preservation techniques of specimens for herbaria and musea. 3. Botanical gardens and herbaria. A brief idea of Botanical Survey of India.
November	Unit III: 1.Taxonomy ,important distinguishing characters, classification and economic Importance of the following families : Polypetalae : Ranunculaceae, Papaveraceae, Caryophyllaceae, Malvaceae, Meliaceae, Rutaceae, Fabaceae, Rosaceae, Cucurbitaceae, Apiaceae.
December	Unit IV: 1.Gamopetalae: Rubiaceae, Solanaceae, Convolvulaceac, Apocynaceae, Asclepiadaceac, Acanthaceae and Lamiaceae.
January	Unit IV : 2. Monochlamydeae : Euphorbiaceae, Moraceae and Polygonaceae. 3. Monocotyledonae : Orchidaceae, Liliaceae and Poaceae.
February	Unit V : 1. Biodiversity: Basic concept, biodiversity at global and national level, causes of loss of Biodiversity. 2. Biodiversity conservation Action plan : in situ and ex situ conservation, gene bank, introductory account of Biosphere Reserves, National Parks and Sanctuaries.
March	Unit V : 3. Floristic Regions of India, flora and vegetation, Indian flora and endemism, characteristics of West Himalayan flora with reference to Uttaranchal Himalayas. **Practical courses will be completed from 29th September to March 2015.**

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Class ; B.Sc. III	
Paper- I : Cytogenetics, Molecular Biology and Biotechnology	
Month	**Unit with Topic**
August	Unit IV : 1. Protein structure : 1D, 2D and 3D structure 2. Genetic code and Protein synthesis 3. Regulation of gene expression in prokaryotes and eukaryotes.
September	Unit III:1.DNA,the genetic material: DNA structure, replication, DNA protein interaction, the nucleosome model, satellite and repetitive DNA. 2. RNA structure and types. 3. Gene concept: classical and modern concept of gene, operon concept
October	Unit I :1. Structure and function of nucleus: Ultrastructure,nuclear membrane. Nucleus, structure and function of other organelles, golgi bodies, ER, peroxisomes, vacuoles. The cell envelopes: plasma membrane, bilayer lipid structure, function of the cell wall. 2. Cell division: Mitosis, Meiosis, comparisons
November	Unit I :3. Chromosome organization: Morphology, centromere and telomere. Chromosome alteration in chromosome numbers, aneuploidy, polyploidy, sex chromosomes. 4. Extra nuclear genome : presence and functions of mitochondrial and plastid DNA, plasmids.
December	Unit II : 1. Genetic inheritance: Mendelism: Law of segregation and independent assortment, incomplete dominance 2.Interaction of Genes: Linkage- complete and incomplete linkage groups, crossing over.
January	Unit II : 3. Sex linked inheritance: Determination of sex. 4. Genetic variation: Mutations, transposable genetic elements, DNA damage and repair.
February	Unit V: 1.Genetic Engineering : Tool and techniques of DNA technology, cloning vectors, genome and DNA libraries, transposable elements, techniques of gene mapping and chromosome walking. 2. Biotechnology : Functional definition, basic concept of tissue culture, storage of germ plasm (cryopreservation), differentiation and morphogenesis, biology of agrobacterium, vectors for gene delivery and marker genes.
March	Unit V : 3. A brief account of Industrial biotechnology (fermentation and alcohol production),Agriculture biotechnology (biofertilizers and biopesticides) and Nutritional biotechnology (Mycotoxins and health hazards, control of mycotoxin production), single cell protein. 4. Elementary idea of (i) Gene bank (ii) Nif gene (iii) Nod gene (iv) Totipotency (v) Antibiotics and (vi) Mycoprotein. **Practical courses will be completed from 29 Sep.2014 to Feb. 2015.**