**Lesson Plan 2025-26 (Diversity of algae, fungi & archegoniate)**

**Class-BSc Life Science 1st sem**

**Teacher Names:**

* **Shweta Pandey (Sec A)**
* **Nisha (Sec B)**

**August -(Unit 1)**

Bacteria: Structure, nutrition, reproduction and economic importance.   
Viruses: General account of Virus including structure of TMV and Bacteriophages.   
Algae: General characters, Introductory classification; economic importance; and life cycle (excluding development) of *Nostoc* (Cyanophyceae), *Volvox* (Chlorophyceae), *Vaucheria* (Xanthophyceae), *Ectocarpus* (Phaeophyceae) and *Polysiphonia* (Rhodophyceae).   
Fungi: General characters, Introductory classification; economic importance; and life-history of *Phytophthora* (Mastigomycotina), *Penicillium* (Ascomycotina), *Puccinia* (Basidiomycotina), *Colletotrichum* (Deuteromycotina).

**September- (Unit 2)**

General account of Lichens, types, ecological and economic importance.   
Bryophyta: Bryophytes: General characteristics, classification upto classes (Smith, 1935), alternation of generations, structure and reproduction (excluding development) of *Marchantia* (Hepaticopsida), *Anthoceros* (Anthocerotopsida), *Funaria* (Bryopsida); ecological and economic importance.

**October- (Unit 3)**

General account of Lichens, types, ecological and economic importance.   
Bryophyta: Bryophytes: General characteristics, classification upto classes (Smith, 1935), alternation of generations, structure and reproduction (excluding development) of *Marchantia* (Hepaticopsida), *Anthoceros* (Anthocerotopsida), *Funaria* (Bryopsida); ecological and economic importance.

**November- (Unit 4)**Gymnosperms: General characters, classification up to classes (Smith 1955), economic importance; structure and reproduction of *Cycas*, *Pinus*, *Ephedra* (developmental details not included) required). General account of economic importance; General account of palaeobotany and Geological time scale.

**Lesson Plan**

Name of the Assistant Professor- Mrs. Sanjeela Punia Section A

Dr Archana Singh Section B

Class- B.Sc Lifesciences IIIrd semester

Name of the Course- Plant Physiology

Semester- IIIrd

Course Code/ID -240[BOTL/CC/301

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| Month | Topics | Assignment/Test |
| July | Plant water relations: water absorption, water potential and its components, transpiration, factor affecting transpiration, antitransmigrants; role of micro and macro nutrients. | Assignment 1 |
| August | Photosynthesis: significance; photosynthetic pigments; action spectra and enhancement effects;concept of two -photosystems; Z-scheme; photo phosphorylation; Calvin cycle; C4 pathway; CAM plants; photorespiration. | Test-1 |
| September | Respiration: Respiration: ATP— the biological energy currency; aerobic and anaerobic respiration; Krebs cycle; electron transport mechanism (chemiosmotic theory); redoxpotential; oxidative phosphorylation; pentose phosphate pathway , Lipid metabolism | Assignment 2 |
| October | Nitrogen metabolism: Nitrogen fixation and its mechanism, assimilation of ammonia Structure, function and mechanisms of action of phytochromes; stomatal movement; photoperiodism and biological clocks; mechanism of flowering. | Test-2 |
| November | Biosynthesis, mechanism of action and uses of auxin, gibberellin, cytokinin, abscisic acid, ethylene, Concepts of plant growth; factors affecting germination and dormancy of seeds; physiological and biochemical changes associated with senescence and abscission.  Revision | Assignment 3 |
| December | Exams |  |

**Lesson Plan(2025-26/Odd Semester)**

**Class –B.Sc. Pass Course Medical 5thsem**

**Name of the Teacher-Section A-Amita Kumari**

**Section B –Nisha**

**Subject-Plant Physiology(5.1)**

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| Month | Topics to be covered | | Assignments/Test |
| July 2025 | | Plant water relations, physical properties of water, Imbibition.Diffusion and osmosis |  |
| August 2025 | | Absorption of water, transport of water ,Transpiration and Physiology of stomata. Introduction to mineral nutrition. Mineral nutrition, essential micronutrients and macronutrients, and their role, uptake of mineral nutrients. deficiency symptoms of mineral nutrition | Assignment |
| September 2025 | | Transport of organic substances, mechanism of phloem transport.source sink relationship, factors affecting translocation. Photosynthesis, historical aspects and its significance, absorption spectra and action spectra. various photosynthetic pigments, two phases of photosynthesis, enhancement effects, hill reaction and oxidents. concept of two photosystems, photolysis of water, Z- scheme, cyclic electron transport system  Photophosphorylation, dark reaction, Calvin cycle. C4 pathway.CAM plants and CAM pathway, Photorespiration. | Test |
| October 2025 | | growth and development, Definitions and phases of growth.  Phases of development and seed dormancy.  Plant movements and concept of photoperiodism.  concept of flowering and its physiology.  florigen concept and senescence  Physiology of senescence and concept of fruit ripening  introduction to plant hormones , auxin –discovery of auxin hormone, mechanism of action and its physiological effects.  Gibberllins and cytokinins, their discovery, mechanism of action and physiological effects.  Abscissic acid and ethylene, their discovery, mechanism of action and physiological effects | Assignment |
| November 2025 | | concept of Photomorphogenesis  Phytochrome , their discovery and physiological role.  mechanism of action of phytochrome , Introduction to cryptochrome. | Test |
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**Lesson Plan (2025-26 /Odd Semester)**

**Class – B.Sc. Pass Course Medical5thsem**

**Name of the Teacher-Section A-Amita Kumari**

**Section B- Anita Rathee**

**Subject- Ecology (5.2)**

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| Month | Topics to be covered | | Assignments/Test | |
| July 2025 | | Introduction to ecology , definition and its scope.  importance of ecology and its level of organization. | |  |
| August 2025 | | Introduction to environment and environmental factors.climatic factors [water, humidity, wind, light, temperature]  Edaphic factors [soil profile, its formation, physico-chemical properties of soil] Topographic factors | | Assignment |
| September 2025 | | Biotic factors[ species interaction  Adaptations of plants to water stress and salinity.  morphological and anatomical features of hydrophytes and xerophytes. morphological and anatomical features of halophytes and introduction to population ecology.  characteristics of population ecology, Biotic potential. growth curves , ecotypes and ecads. concept of community ecology, qualitative characteristics of communityecology, | | Test |
| October 2025 | | quantitative and analytical characteristics of community ecology, synthetic characteristics of community ecology, method of analysis.Ecological succession introduction to ecosystem  structural components of ecosystem  functions of ecosystem like trophic levels, food chain, food web, ecological pyramids and energy flow. Biogeochemical cycle.carbon, nitrogen, phosphorus cyclehydrological cycle  introduction to phytogeography.  phytogeographical regions of India. vegetation types of India | | Assignment |
| November 2025 | | environmental pollution, types, sources and control of air and water pollution.green house effect and green house gases, impacts of global warming, carbon tradingozone layer depletion and biomagnification. | | Test |
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**LESSON PLAN ( 2025 – 2026 )**

**NAME: Dr. SHWETA PANDEY**

**CLASS: BSc MAJOR IN BOTANY Ist SEM**

**PAPER : BASIC LABORATORY TECHNIQUES IN PLANT BIOLOGY**

**MONTH : JULY/ AUGUST**

**Lab safety and good lab practices – &lt;br&gt; General laboratory safety, good laboratory practices, biosafety measures (first-aid practices to be followed in case of burn, acid spills and injury), safety symbols, labsafety equipments (fire extinguisher, fume hood, safety glasses), classes of laboratory chemicals,maintenance and handling of chemicals (Labels, Quality – LR/ AR/ Molecular biology grade/ HPLC grade/Tissue culture grade; Expiry date; Precautions for use), Disinfectants, Biocontainment, Disposal ofhazardous chemicals, radioactive and biological waste, Laboratory waste management.ASSIGNMENT / TEST**

**MONTH : SEPTEMBER**

**Use and maintenance of Laboratory equipment – Weighing balance (Top loading and Analytical),pH meter (calibration and use), magnetic stirrer, pipettes and micropipettes, autoclave, laminar airflow,BOD incubator, incubator shaker, micrometer, haemocytometer, spectrophotometer, Agarose gel electrophoresis unit, centrifuge, distillation unit, conductivity meter, Lux meter. &lt;br&gt;&lt;br&gt; Microscopy,sample and slide preparation – Microscopes (Dissecting, Compound and Electron microscopes), Fixation and Preservation (for light and electron microscopy); staining, mounting; basic introduction to other types of microscopes (Confocal, Fluorescence), Temporary and permanent slides. ASSIGNMENT / TEST**

**MONTH : OCTOBER**

**Measurements and calculations – Units of measurements and conversion from one unit to another, measurement of volumes of liquids, Weighing, calculations: scientific notations, powers, logarithm and fractions. &lt;br&gt;&lt;br&gt; Solutions and Buffers – Molarity, Molality, Normality, percent solution, stock solution, standard solution, dilution, dilution series, pH, acids and bases, buffers – phosphate, Tris-acetate, Tris-Cl and Citrate buffer. &lt;br&gt;&lt;br&gt; Basic culturing techniques – Basic culture media (LB, YEB, PDA) – liquid and solid, Culture techniques: plating (streak, spread &amp; pour), replica plating, serial dilution. ASSIGNMENT / TEST**

**MONTH : NOVEMBER**

**Data collection, statistical analysis and interpretation &lt;br&gt; Fundamentals of data collection,data types – primary and secondary, methods of data collection, sample; sampling methods – merits and demerits, technical and biological replicates, classification – tabulation and presentation of data ,Descriptives stastics – Mean , Mode , Median , differencebetween sample mean and population mean. Basic computer skills for biology MS Word , Power Point , Excel , introduction to biological databases.**

**REVISION / GROUP DISCUSSION Field Skills: Identification , Collection , cataloguing and preservation of plant specimens , Herbarium and Museum.**

**Lesson Plan (2025-26 /odd Semester)**

**Name of the Teacher- Mrs. BHUPENDRA**

**Class –B.Sc Major in Botany 3rd semester**

**Subject- Diversity of Algae (CC-A7)**

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| Month | Topics to be covered | Assignments/Test |
| July 2025 | **Unit 1**- **General Characterstics**- Ecology and Distribution ,range of thallus organization; cell structure and components; cell wall, pigment system, reserve food, flagella and methods of reproduction, classification. |  |
| August 2025 | Criteria system of Fristch and evolutionary classification of Lee( only up to groups); significant contributions of important phycologist (F.E. Fristch, G.M. Smith, R.N. Singh, T.V. Desikachary, H.D. kumar, M.O.P. Iyengar).  Cyanophyta - Ecology and occurrence, range of thallus organization, cell structure, heterocyst, reproduction, economic importance; role in biotechnology. Morphology and life-cycle of *Nostoc*. | Assignment 1 |
| September 2025 | Chlorophyta -General characteristics, occurrence, range of thallus organization, cell structure and reproduction. Morphology and life cycles of *Chlamydomonas, Volvox, Oedogonium*. Evolutionary si ificance of *Prochloron.*  Charophyta- General characteristics; occurrence, morphology, cell structure and life-cycle of *Chara;* evolutionary significance. | Class test 1 |
| October 2025 | Xanthophyta –General characteristics; range of thallus organization; Occurrence, morphology and life-cycle of *Vaucheria.* Phaeophyta – Characteristics, occurrence, range of thallus organization, cell structure and reproduction. Morphology and lifec cles *of Ectocarpus* *, Sargassam* and *Fucus*. | Assignment 2 |
| November 2023 | Rhodophyta –General characteristics, occurrence, range of thallus organization, cell structure and reproduction. Morphology and life cycle of *Polysiphonia*. Applied Phycology – Role of algae in the environment, agriculture, biotechnology and industry. | Test for internal assesment |
| December 2025 | Examinations |  |
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**Lesson Plan (2025-26 /odd Semester)**

**Name of the Teacher- Mrs. BHUPENDRA**

**Class –B.Sc Major in Botany 3rd semester**

**Subject-** **Diversity Of Fungi and Phytopathology (CC-A8)**

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| Month | Topics to be covered | Assignments/Test |
| July 2025 | Introduction to true fungi -Definition, General characteristics; Thallus organization; Cell wall composition; Nutrition; Classification. Chytridiomycetes -General account |  |
| August 2025 | Oomycota -General characteristic; Ecology; Life cycle and classification with reference to *Phytophthora* and *Albugo*. Zygomycota - General characteristics; Ecology; Thallus or organisation; Life cycle with reference to *Rhizopus*. | Assignment 1 |
| September 2025 | Ascomycota - General characteristics (asexual and sexual fruiting bodies); Ecology; Life cycle, Heterokaryosis and parasexuality; life cycle and classification with reference to Saccharomyces, *Aspergillus, Penicillium, Alternaria* and *Neurospora, Peziza*. Basidiomycota -General characteristics; Ecology; Life cycle and Classification with reference to black stem rust on wheat Puccinia (Physiological Specialization), loose and covered smut (symptoms only*), Agaricus*- Bioluminescence, Fairy Rings and Mushroom Cultivation. | Class test 1 |
| October 2025 | Allied Fungi - General characterises; Status of Slime molds, Classification; Occurrence; Types of plasmodia; Types of. fruiting bodies. Deuteromycota -General characteristic; Ecology; Life cycle and classification with reference to *Colletotricum* Symbiotic associations -Lichen — Occurrence; General characteristics; Growth forms and range of thallus organization; Nature of associations of algal and fungal partners; Reproduction. Mycorrhiza- Ectomycorrhiza, Endomycorrhiza and their significance. | Assignment 2 |
| November 2023 | Applied Mycology -Role of fungi in biotechnology, Application of fungi in food industry (Flavour & texture, Fermentation, Baking, Organic acids, Enzymes, Mycoproteins); Secondary metabolites (Pharmaceutical preparations); Agriculture (Biofertilizers); Mycotoxins; Biological control (Mycofungicides, Mycoherbicides, Mycoinsecticides, Myconematicides); Medical mycology. Phytopathology -Terms and concepts: General symptoms; Geographical distribution of diseases; etiology; symptomology; Host- Pathogen relationships; disease cycle and environmental relation; prevention and control of plant diseases, and role of quarantine. Bacterial diseases — Citrus canker and angular leaf spot disease of Cotton. Viral diseases — Tobacco Mosaic viruses, vein clearing. | Test for internal assessment |

**Lesson Plan**

Name of the Assistant Professor- Mrs. Sanjeela Punia

Class- B.Sc Botany Major IIIrd semester

Name of the Course- Fundamentals of Genetics

Semester- 3rd

Course Code/ID - 250/BOT/CC301

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| Month | Topics | Assignment/Test |
| July | History; Principles of inheritance; Chromosome  theory of inheritance; Autosomes and sex chromosomes;  Probability and pedigree analysis; Incomplete dominance and  codominance; Multiple alleles, Lethal alleles, Epistasis,  Pleiotropy, Recessive and Dominant traits, Penetrance and  Expressivity, Polygenic inheritance. | Assignment 1 |
| August | Extrachromosomal Inheritance - Chloroplast mutation:  Variegation in Four o’clock plant; Mitochondrial mutations in  yeast; Maternal effects-shell coiling in snail; Infective heredity-  Kappa particles in Paramecium.  Linkage, crossing over and chromosome mapping- Linkage and crossing over-Cytological basis of crossing over;  Recombination frequency, two factor and three factor crosses;  Interference and coincidence; Numericals based on gene  mapping; Sex Linkage. | Test-1 |
| September | Chromosomal Mutations: Deletion, Duplication, Inversion,  Translocation, Aneuploidy and Polyploidy;  Gene mutations- Types of mutations; Molecular basis of  Mutations; Mutagens – physical and chemical (Base analogs,  deaminating, alkylating and intercalating agents); Detection of  mutations: ClB method, Attached X method. Role of  Transposons in mutation. | Assignment 2 |
| October | DNA repair mechanisms, Sex Determination, Environmental  factors determining sex determination, Barr bodies, Dosage  compensation.  Extrachromosomal Inheritance -Chloroplast mutation:  Variegation in Four o’clock plant; Mitochondrial mutations in  yeast; Maternal effects-shell coiling in snail; Infective heredity-  Kappa particles in Paramecium | Test-2 |
| November | Population and Evolutionary Genetics- Allele frequencies,  Genotype frequencies, Hardy-Weinberg Law, role of natural  selection mutation, genetic drift. Genetic variation and  Speciation.  Revision | Assignment 3 |
| December | Exams |  |

**Lesson Plan (2025-26 /odd Semester)**

**Name of the Teacher- BHUPENDRA**

**Class –B.sc. Botany hons. 5thSem**

**Subject- Plant Physiology(502)**

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| Month | Topics to be covered | Assignments/Test |
| July 2025 | **Unit 1**- Pathway of water movement; concepts of symplast and apoplast; ascent of sap; transpiration; energy exchange during transpiration; role of stomata; relationship with photosynthesis; antitranspirants; guttation; exchange of gases. Characterization of stress response to water and high and low temperature |  |
| August 2025 | **Unit 2**-temperature response to saline soils; mechanism of response, essential and non-essential elements; criteria for essentiality; macro and micronutrients; roles of essential elements; mineral deficiency symptoms; ion antagonism and toxicity. | Assignment 1 |
| September 2025 | Transport of ions across cell membranes, passive absorption, electrochemical gradient, Donnan’s equilibrium, facilitated diffusion, accumulation against concentration gradient, active absorption, role of ATP, carrier systems, role of cell membrane, proton pump and ion flux, Structure-function relationship for the Translocation of photoassimilates from source to sink cells. | Class test 1 |
| October 2025 | **Unit 3-** Flowering; physiological definition; role of light; photoperiodism– discovery; variation in response; long day; short day and day neutral plants; inductive and non- inductive cycles; role of dark period; role of quality and intensity of light; vernalization; mechanism; bolting in long day plants; role of growth regulators; nutrient status; nature of the flowering stimulus; diffusibility of photoperiodic and vernalization stimuli; florigen concept. | Assignment 2 |
| November 2023 | **Unit 4** -Structure, biosynthesis, analysis, transport, physiological effects and mechanism of action. Of growth regulators, Physiological and biochemical changes of fruit ripening, phytochrome: Discovery; chemical nature; mode of action; role of low energy response (LER) and high irradiance response (HIR); red (R) and far red (FR) light on photomorphogenesis. | Test for internal |
| December 2025 | Examinations |  |
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**Lesson Plan (2025-26 /Odd Semester)**

**Name of the Teacher-Amita Kumari**

**Class – Botany hons. 5th sem.**

**Subject- Biostatistics(503)**

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| Month | Topics to be covered | Assignments/Test |
| July 2025 | Measures of central tendency: Mean, |  |
| August 2025 | median and mode. Measures of dispersion; skewness, kurtosis. . Graphical representation of data. | Assignment |
| September 2025 | Discrete and Continuous Random variable, Mathematical Expectation, Mean and Variance of Binomial, Poisson and Normal distribution. Sample mean, Sampling variance and coefficient of variation | Test |
| October 2025 | Hypothesis testing using standard normal variate.Curve Fitting.Correlation and Regression. Emphasis on examples from Biological Sciences.Experimental design and sampling theories | Assignment |
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| November 2025 | Elementary Probability and basic laws.Probabilities theory; t- test, F- test and 2- test; Probability distributions and their properties | Assignment |
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**Lesson Plan**

Name of the Assistant Professor- Mrs. Sanjeela Punia

Class- B.ScBotany (Hons.)

Name of the Course- Genetics and Genomics-I

Semester- Vth Semester

Course Code/ID –BOT-504

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| Month | Topics | Assignment/Test |
| July | Introduction to Genetics :Mendel’s work on transmission of traits, Genetic Variation, Molecular basis of Genetic Information.. | Assignment 1 |
| August | Interrelation between the cell structure and the genetics function, Mitosis, Meiosis (explaining Mendel’s ratios), Principles of Inheritance, Chromosome theory of inheritance, Laws of Probability, Pedigree analysis Incomplete and codominance, Multiple alleles, Lethal alleles, Epistasis, Pleiotropy, Environmental effects on phenotypic expression, sex linked inheritance | Test-1 |
| September | Introduction to Genetics :Mendel’s work on transmission of traits, Genetic Variation, Molecular basis of Genetic Information, Interrelation between the cell structure and the genetics function, Mitosis, Meiosis (explaining Mendel’s ratios), Principles of Inheritance, Chromosome theory of inheritance, Laws of Probability, Pedigree analysis Incomplete and codominance, Multiple alleles, Lethal alleles, Epistasis, Pleiotropy, Environmental effects on phenotypic expression, sex linked inheritance. | Assignment 2 |
| October | Chromosomal Mutations: Deletion, Duplication, Inversion, Translocation, Aneuploidy and Polyploidy; Gene mutations: Induced versus Spontaneous mutations, Back versus Suppressor mutations, Molecular basis of Mutations in relation to UV light and chemical mutagens, Detection of mutations: CLB method, Attached X method, DNA repair mechanisms, Sex Determination, Environmental factors determining sex determination, Barr bodies, Dosage compensation | Test-2 |
| November | Extrachromosomal Inheritance :Chloroplast mutation/Variegation in Four o’ clock plant and Chlymodomonas, Mitochondrial mutations in Neurospora and yeast, Maternal effects, Infective heredity- Kappa particles in Paramecium, Quantitative and multifactor inheritance, transgressive variations, Heterosis. | Assignment 3 |
| December | Exams |  |

**Session : 2025-26**

**Semester-1st**

**Lesson Plan: Environmental Studies**

**Teacher Name:**

* Anita Rathee (Sec A)
* Rakhi Kaushik (Sec B)
* Nisha (Sec C)  
    
  **August – Unit I (Basic Concepts of Environment)**

• Introduction – Definition and significance of environment • Habitat and ecological niche • Biosphere, atmosphere, lithosphere, hydrosphere • Abiotic factors: light, temperature, humidity, topography • Biotic factors: Microorganisms, animals, plants, humans • Sources of energy: Renewable & non-renewable

**September – Unit II (Ecosystem)**

• Ecosystem – Definition, types, and functions • Energy flow – Food chains, food webs, trophic structure, concept of productivity • Biogeochemical cycles – Hydrological, gaseous, and sedimentary cycles • Biological invasion and its impact on environment

**October – Unit III (Population & Sustainable Development)**

• Concept of population – Density, natality, mortality, carrying capacity, growth forms • Human population – National and international concerns • Indian efforts to control growing population • Concept of sustainable development

**November – Unit IV (Environmental Pollution & Global Issues)**

• Air, Water, Soil, and Noise pollution • Plastic & Marine pollution • Solid waste management • Ozone depletion, Global warming, Climate change • Revision of all Units

**LESSON PLAN 2025 – 2026**

**NAME : Dr. SHWETA PANDEY**

**CLASS : MINOR COURSE MIC -1**

**PAPER : PLANT DIVERSITY**

**MONTH JULY / AUGUST**

**General characteristics , morphology and economic importance of: Viruses ,Bacteria , Algae VOLVOX Fungi PHYTOPHTHRA , COLLETOTRICHUM, Lichen ASSIGNMENT / TEST**

**MONTH: SEPTEMBER**

**General characteristics , morphology and economic importance of:**

**Bryophyta MARCHANTIA , ANTHOCEROS**

**Pteridophyta EQUISETUM , PTERIS ASSIGNMENT / TEST**

**MONTH : OCTOBER**

**General characteristics , morphology and economic importance of: Gymnosperms CYCAS , PINUS ASSIGNMENT / TEST**

**MONTH : NOVEMBER**

**General characteristics , morphology and economic importance of:**

**Angiosperms MALVACEAE REVISION / GROUP DISCUSSION**

**Lesson Plan**

Name of the teacher: Dr Archana Singh

Class- B.Sc Major in Zoology IIIrd semester

Name of the Course- Organic Farming

Semester- IIIrd

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| Month | Topics | Assignment/Test |
| July | Basics of organic farming — Concept and components of organic farming, aims and objectives; Need of organic farming; Historical development of organic farming in India; Status of organic faming in India; Advantages and disadvantages of organic farming. | Assignment 1 |
| August | Organic farming process- Concept of farming system, Developing organic farms, Important steps & methods; Pure organic farming and integrated farming sysiem (combination of organic and inorganic . Plant nutrients: Essential plant nutrients, their role in plant growth and development, Nutrient uptake and utilization by plant. Nutrient management in organic farming: Balanced nutrients supply for organic farming system using nutrients from organic sources. | Test-1 |
| September | Preparation, nutrient content and methods of use of following- FYM/Rural compost, mulching, city compost, oil cakes, animal wastes, vermicomposts, vermiwash, jeevamrit, bee •amrit, reen manures, biofertilizers Bio fertilizers and their method of use — Nitrogenous, Phosphatic, Potassic, availability of nutrients from above sources. Recycling of organic matter in organic agriculture-Transformation of organic substances in soil. | Assignment 2 |
| October | Disease and pest management in organic farming-Integrated pest & disease managements; Organic pesticides, bio-pesticides; Inorganic pesticides, disadvantages of their use; Seed, seedling and soil treatment measures;Feasibility of complete dependence on or anic sources.Weed mana ement inor anic farmin Use ofNeem and other plant products in organic farming; Organic agrihorticulture in urban & semi urban areas. Certification, Standardization, Marketing - Quality control and certification procedures of organic products. | Test-2 |
| November | . Organic standards In India. Govt. schemes related to organic farming in India. Potential demand and Marketing of organic products. Organic farming and food security in India. | Assignment 3 |
| December | Exams |  |

**Lesson Plan**

Name of the teacher: Dr Archana Singh

Class- MDC

Name of the Course- Ornamental Plants

Semester- IIIrd

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| Month | Topics | Assignment/Test |
| July | History of gardens in India; terrace gardening; popular gardens of India; Types of gardens: Formal and Informal gardens; | Assignment 1 |
| August | Styles of gardens: Mughal gardens, Persian gardens, Italian gardens, French gardens, English gardens, Japanese gardens. | Test-1 |
| September | Significance of Shrubs, trees, palms, ferns, cycads, cacti and succulents, climbers, creepers, indoor plants, water plants, bonsai plants as ornamentals. | Assignment 2 |
| October | Flower and seed production; protected cultivation of ornamentals; present position and scope of floriculture in India. | Test-2 |
| November | Vegetative propagation-principles and practices of clone selection;techniques of cutting, budding, grafting and layering, propagation by specialized stems and roots. | Assignment 3 |
| December | Exams |  |

Name of the Assistant Professor: Dr. Anjana Anand

Class: B.sc. Botany Hons 5th sem.

Name of the course: Plant Systematics and Evolution

Semester: 5th

Course Code/ID: BOT 505

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| **Month** | **Topics to be covered** | **Assignment/ Test** |
| July | Systems of classifiation: Classification by Bentham and Hooker, Engler and Prantl &  Takhtajan | Assignment 1 |
| August | Brief reference of Angiosperm Phylogeny Group (APG) Classification, role of Computers in systematics; Characters and attributes; OTUs, character weighing and coding; cluster analysis, phenograms, cladistics. | Test 1 |
| September | What is systematics; Identification, Classification and Nomenclature of plants; Field  inventory,Herbarium preparation and management; Herbaria, Botanical gardens | Assignment 2 |
| October | terms and concepts of evolution, origin and evolutionary relationship, coevolution of angiosperms and animals | Test 2 |
| November | Documentation and evidences from various fields | Assignment 3 |

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| December | Revision and Group discussion, Presenrtation on various topics by students | Revisions |

Name of the Assistant Professor: Dr. Anjana Anand

Class: B.A pass course and B.A, English Hons.

Name of the course: fundamentals of Botany

Semester: 1st

Course Code/ID: 240/BOTL/MD 101

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| **Month** | **Topics to be covered** | **Assignment/ Test** |
| July | General characteristucs , morphology and economic importance of viruses | Assignment 1 |
| August | General characteristics , morphology and economic importance of , bacteria, morphology of Bryophytes, General characteristics of Gymnosperms, General characteristucs of Pteridophytes | Test 1 |
| September | Economic importance of Bryophytes, morphology and economic importance of Pteridophytes, Gymnosperms | Assignment 2 |
| October | General characteristics, morphology and economic importance of Angiosperms | Test 2 |
| November | Morphology and economic importance of Algae | Assignment 3 |

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| December | Revision and Group discussion, Presentation on various topics by students | Revisions |

Name of the Assistant Professor: Dr. Anjana Anand

Class: B.sc. Botany Hons 5th sem.

Name of the course: Ecology II

Semester: 5th

Course Code/ID: BOT 505

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| **Month** | **Topics to be covered** | **Assignment/ Test** |
| July | Plant communities: Characters, Ecotone, Succession and it' types | Assignment 1 |
| August | Ecosystem str., Trophic organisation, ecological pyramids, climax concepts | Test 1 |
| September | Functional aspects of ecosystems, Biogeochemical cycles, Vegetatiions of Delhi | Assignment 2 |
| October | Diversity of ecosystems and Biomass, Phytogeographica ldivisions of india, | Test 2 |
| November | Models of energy flow and productivity,Principles of phytogeography; endemism; Hotspots | Assignment 3 |

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| December | Revision and Group discussion, Presenrtation on various topics by students | Revisions |

**Lesson Plan**

Name of the Asst. Professor- Mrs. Rakhi Kaushik

Class- B.Sc Major in Botany Ist Semester

Course- **Plant Diversity and Microbes**

Course code- **250/BOT/CC101**

Course type- CC-A1

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| Month | Topics to be covered | Assigment/Test |
| July/August | **Algae**: General characteristic features, cell structure, range of thallus, methods of reproduction and evolutionary classification (only upto groups). Brief account of *Chlamydomonas* and *Sargassum*.  **Fungi:** General characteristic features, reproduction and broad classification. Myxomycetes and their similarities with fungi, plants and animals. Brief account of *Rhizopus* and *Agaricus*. Introduction to lichens. | Assignement-1 |
| September | **Bryophytes**: General characteristic features and reproduction, adaptation to land habit, broad classification, evolutionary trends in Bryophytes. Brief account of *Marchantia* and *Funaria***.**  **Pteridophytes**: General characteristic features and reproduction, broad classification, evolutionary trends in Pteridophytes, affinities with Bryophytes. Brief account of *Selaginella* and *Equistem*. | Test-1 |
| October | **Gymnosperms:** General characteristic features and reproduction, broad classification, evolutionary trends in Gymnosperm, affinities with Pteridophytes. Brief account of *Cycas* and *Pinus*.  **Angiosperms:** General characteristic features and reproduction, Concept of natural, artificial and phylogenetic system of classification. Affinities with Gymnosperms. | Assignment-2 |
| November | **Bacteria:** General characteristic features, cell structure, asexual reproduction and modes of gene tansfer (conjugation, transformation and transduction), brief introduction to Archaebacteria.  **Viruses**: General characteristic features, replication, RNA virus (structure of TMV), DNA virus (structure of T-phage), Lytic and Lysogenic life cycle (Lambda phage). | Test-2 |
| December | Examination |  |

**Lesson Plan**

Name of the Asst. Professor- Mrs. Rakhi Kaushik

Class- B.Sc Major in Botany Ist Semester

Course- **Fundamentals of Cell Biology**

Course code- **250/BOT/CC102**

Course type- CC-A2

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| Month | Topics to be covered | Assignment/Test |
| July/August | Cell as a unit of structure and function; Characteristics of prokaryotic and eukaryotic cells; Origin of Eukaryotic cell (Endosymbiotic theory). Cell Wall and Plasma membrane.  The Nucleus -Nuclear Envelope- structure of nuclear pore complex, nuclear lamina, Transport across Nuclear Envelope, Chromatin: molecular organization, Nucleolus and rRNA Processing. Protein Sorting and Transport, The Endoplasmic reticulum, The Golgi Apparatus, Mechanism of Vesicular Transport, Lysosomes. | Assignment 1 |
| September | Mitochondria, Chloroplasts and Peroxisomes, Structural organization, Function, Marker enzymes, Mitochondrial biogenesis, Protein import in mitochondria, Semiautonomous nature of mitochondria and chloroplast, chloroplast DNA, Peroxisomes’ assembly, Cytoskeleton and Cell Structure, organization of actin filaments, myosin and cell movement, intermediate filaments, microtubules. | Test-1 |
| October | The extracellular matrix and cell matrix interactions; cell-cell interactions.  Cell Signalling: Signalling molecules and their receptor, functions of cell surface receptors; Intracellular signal transduction pathway (GPCR).  The Cell Cycle: Eukaryotic Cell Cycle, Regulation of Cell cycle progression, Events of Mitotic Phase, Meiosis . | Assignment-2 |
| November | Cell Death and Cell Renewal Programmed Cell Death, Stem Cells and Maintenance of adult tissues, Embryonic Stem Cells and Therapeutic cloning.  **Cancer**: Development and Causes of Cancer, Tumor Viruses, Oncogenes, Tumor Suppressor genes, **Cancer Treatment**- molecular approach. | Test-2 |
| December | Examination |  |

Name of the Asst. Professor- Mrs. Rakhi Kaushik

Class- B.Sc Major in Botany Ist Semester

Course- **Plant Hybridization**

Course code- **250/BOT/SEC-1**

Course type- **SEC-1**

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| Month | Topic | Assignment /Test |
| July/August | General objectives of plant breeding Major achievements, Future Prospects.  Self-incompatibility- Definition, classification, heteromorphic SI, homomorphic SI i.e. gametophytic SI and sporophytic SI, utilization of self- incompatibility in plant breeding | Assignment 1 |
| September | Definition and concept of population genetics, random mating population, gene and genotypic frequency  Hardy-Weinberg law- Law, its validity, factors affecting gene frequency  Heterosis - Definition, heterosis and hybrid vigour, effects and estimation of heterosis, genetic basis/theories of heterosis Inbreeding depression- Definition, effects of inbreeding. | Test-1 |
| October | Hybridization techniques- Definition, aim and objectives, types of hybridization, steps and procedure of hybridization programme choice of parents, evaluation of parents, emasculation – different methods, bagging, tagging, pollination , harvesting and storing of the F1 seeds and selfing, consequences of hybridization  Wide hybridization- Definition, types, main features, interspecific and intergeneric hybridization, its examples, incompatibility barriers for wide hybridization, techniques for overcoming incompatibility barriers, achievements. | Assignment-2 |
| November | Methods of breeding in self-pollinated crops- Pure line selection, mass selection, pedigree method, bulk method.  Methods of breeding in cross pollinated crops- list of plant breeding methods for cross pollinated crops  Modes of selection- Recurrent selection, its types and its procedure | Test-2 |
| December | Examination |  |