**Lesson Plan Botany Department (2022-23)**

**Session: 2022-23 (odd semester)**

**Name: Anita Rathee**

 **Class: BSc Medical Ist Sem Section C**

**Lesson Plan: PAPER – I DIVERSITY OF MICROBES**

September-2022

**Bacteria:** Structure, nutrition, reproduction and economic importance **Cyanobacteria**: General characters; life-history of *Nostoc* **Algae:** General characters, classification (upto classes) and economic importance; General account of algal blooms

October-2022

Important features and life-history (excluding development) of *Volvox*, *Oedogonium* (Chlorophyceae), *Vaucheria* (Xanthophyceae), *Ectocarpus* (Phaeophyceae) and *Polysiphonia* (Rhodophyceae)

Test 1

November-2022

**Viruses:** General account of Viruses including structure of TMV and Bacteriophages

**Fungi:** General characters, classification (upto classes) and economic importance;

General account of Lichens

Test 2

December-2022

Important features and life-history of *Phytophthora* (Mastigomycotina), *Mucor*

(Zygomycotina), *Penicillium* (Ascomycotina), *Puccinia*, *Agaricus* (Basidiomycotina),

*Colletotrichum* (Deuteromycotina)

Revision and Test

**Name: Anita Rathee**

**Class: BSC Medical Ist Sem Section C**

**Lesson Plan: PAPER – II CELL BIOLOGY**

September-2022

**The Cell Envelopes**: Structure and functions of Cell Wall, Plasma Membrane,

Golgi Apparatus, Endoplasmic Reticulum, Lysosomes, Peroxisomes and Vacuoles

October-2022

**Ultra-structure and function**: Chloroplast, Mitochondria, Nucleus and Nucleolus

**Chromosome**: Morphology, ultra-structure - kinetochore, centromere and telomere

Test 1

November-2022

**Cell Cycle:** General account

**Cell Division**: Mitosis and Meiosis - Stages and Significance

Test 2

December-2022

**Chromosomal aberrations**: Structural and Numerical - deletions, duplications,

translocations, inversions, aneuploidy, polyploidy

Sex chromosomes and Sex determination in Plants

Revision and test

**Name of the Teacher-Anita rathee**

**Class – B.Sc. Pass Course Medical 5th sem Section C**

**Subject- Ecology (5.2)**

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| Month | Topics to be covered | Assignments/Test |
| September 2022 | Introduction to ecology , definition and its scope. importance of ecology and its level of organization.introduction to environment and environmental factors. climatic factors [water, humidity, wind, light, temperature] | Test |
| October 2022 | Edaphic factors [soil profile, its formation, physico-chemical properties of soil]topographic and biotic factors[ species interactionAdaptations of plants to water stress and salinity.morphological and anatomical features of hydrophytes and xerophytes. |  |
| November 2022 | 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 community ecology,quantitative and analytical characteristics of community ecology | Test |
| December 2022 | synthetic characteristics of community ecology, method of analysis.Ecological successionintroduction to ecosystem structural components of ecosystemfunctions of ecosystem like trophic levels, food chain, food web. ecological pyramids and energy flow. Biogeochemical cycle.carbon, nitrogen, phosphorus cyclehydrological cycleintroduction to phytogeography.phytogeographical regions of India. vegetation types of India. 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. |  |
|  | Assignment |
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**Session: 2022-23 (odd semester)**

**Name: Nisha**

 **Class: BSc Medical Ist Sem Section B**

**Lesson Plan: PAPER – I DIVERSITY OF MICROBES**

September-2022

**Bacteria:** Structure, nutrition, reproduction and economic importance **Cyanobacteria**: General characters; life-history of *Nostoc* **Algae:** General characters, classification (upto classes) and economic importance; General account of algal blooms

October-2022

Important features and life-history (excluding development) of *Volvox*, *Oedogonium* (Chlorophyceae), *Vaucheria* (Xanthophyceae), *Ectocarpus* (Phaeophyceae) and *Polysiphonia* (Rhodophyceae)

Test 1

November-2022

**Viruses:** General account of Viruses including structure of TMV and Bacteriophages

**Fungi:** General characters, classification (upto classes) and economic importance;

General account of Lichens

Test 2

December-2022

Important features and life-history of *Phytophthora* (Mastigomycotina), *Mucor*

(Zygomycotina), *Penicillium* (Ascomycotina), *Puccinia*, *Agaricus* (Basidiomycotina),

*Colletotrichum* (Deuteromycotina)

Revision and Test

**Name: Nisha**

**Class: BSC Medical Ist Sem Section B**

**Lesson Plan: PAPER – II CELL BIOLOGY**

September-2022

**The Cell Envelopes**: Structure and functions of Cell Wall, Plasma Membrane,

Golgi Apparatus, Endoplasmic Reticulum, Lysosomes, Peroxisomes and Vacuoles

October-2022

**Ultra-structure and function**: Chloroplast, Mitochondria, Nucleus and Nucleolus

**Chromosome**: Morphology, ultra-structure - kinetochore, centromere and telomere

Test 1

November-2022

**Cell Cycle:** General account

**Cell Division**: Mitosis and Meiosis - Stages and Significance

Test 2

December-2022

**Chromosomal aberrations**: Structural and Numerical - deletions, duplications,

translocations, inversions, aneuploidy, polyploidy

Sex chromosomes and Sex determination in Plants

Revision and test

**Name of the Teacher- Nisha**

**Class –B.Sc. Pass Course Medical 5th sem Section B**

**Subject-Plant Physiology (5.1)**

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| Month | Topics to be covered | Assignments/Test |
| September 2022 | Plant water relations, physical properties of water, Imbibition. Diffusion and osmosis, absorption of water.transport of water ,Transpiration and Physiology of stomata. Introduction to mineral nutrition. |  |
| October 2022 | Mineral nutrition, essential micronutrients and macronutrients, and their role, uptake of mineral nutrients.deficiency symptoms of mineral nutrition, 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. | Test |
| November 2022 | 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 systemPhotophosphorylation, dark reaction, Calvin cycle. C4 pathway.CAM plants and CAM pathway, Photorespiration. |  |
| December 2022 | 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 senescencePhysiology 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.concept of PhotomorphogenesisPhytochrome , their discovery and physiological role.mechanism of action of phytochrome , Introduction to cryptochrome. | Test |
|  | Assignment |
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**Session: 2022-23 (odd semester)**

**Name: Shweta Pandey**

 **Class: BSc Medical Ist Sem section A**

**Lesson Plan: PAPER – I DIVERSITY OF MICROBES**

September-2022

**Bacteria:** Structure, nutrition, reproduction and economic importance **Cyanobacteria**: General characters; life-history of *Nostoc* **Algae:** General characters, classification (upto classes) and economic importance; General account of algal blooms

October-2022

Important features and life-history (excluding development) of *Volvox*, *Oedogonium* (Chlorophyceae), *Vaucheria* (Xanthophyceae), *Ectocarpus* (Phaeophyceae) and *Polysiphonia* (Rhodophyceae)

Test 1

November-2022

**Viruses:** General account of Viruses including structure of TMV and Bacteriophages

**Fungi:** General characters, classification (upto classes) and economic importance;

General account of Lichens

Test 2

December-2022

Important features and life-history of *Phytophthora* (Mastigomycotina), *Mucor*

(Zygomycotina), *Penicillium* (Ascomycotina), *Puccinia*, *Agaricus* (Basidiomycotina),

*Colletotrichum* (Deuteromycotina)

Revision and Test

**Name: Shweta Pandey**

**Class: BSC Medical Ist Sem section A**

**Lesson Plan: PAPER – II CELL BIOLOGY**

September-2022

**The Cell Envelopes**: Structure and functions of Cell Wall, Plasma Membrane,

Golgi Apparatus, Endoplasmic Reticulum, Lysosomes, Peroxisomes and Vacuoles

October-2022

**Ultra-structure and function**: Chloroplast, Mitochondria, Nucleus and Nucleolus

**Chromosome**: Morphology, ultra-structure - kinetochore, centromere and telomere

Test 1

November-2022

**Cell Cycle:** General account

**Cell Division**: Mitosis and Meiosis - Stages and Significance

Test 2

December-2022

**Chromosomal aberrations**: Structural and Numerical - deletions, duplications,

translocations, inversions, aneuploidy, polyploidy

Sex chromosomes and Sex determination in Plants

Revision and test

**Lesson Plan( 2022-23 /Odd Semester)**

Name of the Teacher- Dr. Shweta Pandey

Class – B.Sc. Botany Hons. 5th sem.

Subject- Biostatistics, BOT 503

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| Month | Topics to be covered | Assignments/Test |
| September 2022 | Measures of central tendency: Mean, median and mode. Measures of dispersion; skewness, kurtosis. . Graphical representation of data. | Test on the topics taught |
| October 2022 | Discrete and Continuous Random variable, Mathematical Expectation, Mean and Variance of Binomial, Poisson and Normal distribution. Sample mean. | Test |
| November 2022 | Hypothesis testing using standard normal variate.Curve Fitting.Correlation and Regression.Emphasis on examples from Biological Sciences.Experimental design and sampling theories. | Test |
| December 2022 | Elementary Probability and basic laws**.**Probabilities theory; t- test, F- test and Chi square testProbability distributions and their properties, Sampling variance and coefficient of variation | Test |
|  | Test and assignmentRevision of topics Class Presentation by students |
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**Lesson Plan for B.Sc Pass Course 3th Semester 2022-2023**

**Subject** **– PLANT ANATOMY**

# Name – Dr. Archana Singh

**September:**

Tissues - meristematic and permanent (simple, complex and secretory) Tissue systems (Epidermal, ground and vascular) The Shoot system - shoot apical meristem and its histological organizations.

Class Test

**October:**

Cambium - structure and functions.

Secondary growth in dicot stem; characteristics of growth rings; sap wood and heart wood, periderm;

Anomalous secondary growth (*Dracaena, Boerhaavia* and *Achyranthes*)

 Class Test

**November:**

Leaf: Types of leaves (simple and compound); phyllotaxy. Epidermis- uniseriate and ultiseriate, epidermal appendages and their morphological types.

Anatomy of typical Monocot and Dicot leaf and cell inclusions in leaves, leaf abscission, Stomatal apparatus and their morphological types

Class Test

**December:**

 Root system: Root apical meristem; histological organization Secondary growth in dicot root.

Structural modifications in roots: Storage (*Beta*), Respiratory (*Rhizophora*), Epiphytic (*Vanda*).

Class Test

# Subject- Paper -I BIOLOGY AND DIVERSITY OF SEED PLANTS –I

# Name – Dr. Archana Singh

# September

General characters, origin and evolution of Gymnosperms , Geological Time Table; Evolution of Seed Habit.

Pilger and Melchior’s (1954) system of classification of Gymnosperms.

**October**

Palaeobotany- Fossils and Fossilization (Process involved, types of fossils and importance of fossils);

Reconstruction of the following fossil plants:*Lyginopteris Williamsonia*

*Cycadeoidea (= Bennettites*)

# November

Morphology and anatomy of root, stem, leaf/leaflet and reproductive parts including mode of reproduction, life-cycle and economic importance of following plants: *Cycas, pinus*

Class test

# December

Morphology and anatomy of root, stem, leaf/leaflet and reproductive parts including mode of reproduction, life-cycle and economic importance of *Ephedra* Economic importance of Gymnosperms

General characters, origin and evolution of Angiosperms

Class test

#  Lesson Plan for B.Sc Botany Hons 1th Semester 2022-2023

**Subject – Algae and Microbiology**

**Teacher’s Name- Dr. Archana Singh**

**September**

General characteristics; Ecology and distribution; range of thallus organization; Cell structure and Components; cell wall, pigment system, reserve food (of only groups represented in the syllabus),flagella; and methods of reproduction, classification; criteria, system of Fritsch, and evolutionaryclassification of Lee (only upto groups); significant contributions of important phycologists (F.E.Fritsch, G.M. Smith, R.N. Singh, T.V. Desikachary, H.D. Kumar, M.O.P. Iyengar). Role of algaein ecosystem; aquaculture, industry, biotechnology and agriculture.

**October**

Cyanophyta: Ecology and distribution; thallus organization; cell structure; chromatic adaptation;physiology; reproduction; economic importance; role in biotechnology; morphology and life cycle of Nostoc Chlorophyta: General characteristics; range of thallus organization; pigment systems; methods ofreproduction; evolutionary significance of Prochloron; morphology and life cycles of Chlamydomonas, Volvox, Oedogonium, Coleochaete Charophyta: General characteristics; morphology and life cycle of Chara; fossils, evolutionary significance

**November**

Xanthophyta: General, characteristics; range of thallus organization; methods of reproduction;morphology and life cycle of Vaucheria Phaeophyta: General characteristics; range of thallus structure; methods of reproduction;morphology and life cycles of Ectocarpus and Fucus. Rhodophyta: General characteristics; range of thallus organization; methods of reproduction;morphology and life cycles of Polysiphonia**.** Introduction to microbial world, microbial nutrition, growth and metabolism. Virus : Discovery, physiochemical and biological characteristics;Classification; replication, lyticand lysogenic cycle ; special types: DNA virus (coliphage T-2), RNA virus (TMV). Economicimportance; Symptoms, Transmission and management of diseases caused by viruses on plants.

**December**

. Bacteria- general characteristics, comparison of Archaebacteria and Eubacteria , Wall-less formsMycoplasma and sphaeroplasts), cell structure, nutrition; reproduction: vegetative, asexual, sexual (conjugation, transformation , transduction ), Economic importance.Microbial culturing technique, culture media, and microbial growth, microbes used inagriculture, mycorrhizae, environmental management and industry, Indian Institutes and theirresearch activities in microbiology

**Subject** **– PLANT ANATOMY**

# Name – Sanjeela punia

**September:**

Tissues - meristematic and permanent (simple, complex and secretory) Tissue systems (Epidermal, ground and vascular) The Shoot system - shoot apical meristem and its histological organizations.

Class Test

**October:**

Cambium - structure and functions.

Secondary growth in dicot stem; characteristics of growth rings; sap wood and heart wood, periderm;

Anomalous secondary growth (*Dracaena, Boerhaavia* and *Achyranthes*)

 Class Test

**November:**

Leaf: Types of leaves (simple and compound); phyllotaxy. Epidermis- uniseriate and ultiseriate, epidermal appendages and their morphological types.

Anatomy of typical Monocot and Dicot leaf and cell inclusions in leaves, leaf abscission, Stomatal apparatus and their morphological types

Class Test

**December:**

 Root system: Root apical meristem; histological organization Secondary growth in dicot root.

Structural modifications in roots: Storage (*Beta*), Respiratory (*Rhizophora*), Epiphytic (*Vanda*).

Class Test

# Subject- Paper -I BIOLOGY AND DIVERSITY OF SEED PLANTS –I 3rd sem

# Name – Sanjeela punia

# September

General characters, origin and evolution of Gymnosperms , Geological Time Table; Evolution of Seed Habit.

Pilger and Melchior’s (1954) system of classification of Gymnosperms.

**October**

Palaeobotany- Fossils and Fossilization (Process involved, types of fossils and importance of fossils);

Reconstruction of the following fossil plants:*Lyginopteris Williamsonia*

*Cycadeoidea (= Bennettites*)

# November

Morphology and anatomy of root, stem, leaf/leaflet and reproductive parts including mode of reproduction, life-cycle and economic importance of following plants: *Cycas, pinus*

Class test

# December

Morphology and anatomy of root, stem, leaf/leaflet and reproductive parts including mode of reproduction, life-cycle and economic importance of *Ephedra* Economic importance of Gymnosperms

General characters, origin and evolution of Angiosperms

Class test

Name of the Teacher- Mrs. Sanjeela Punia

Class – B.Sc Botany (Hons.) 5th Semester

Subject- Genetics and Genomics I

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| Month | Topics to be covered | Assignments/Test |
| September  | 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),  |  Class Test Mendelian genetics |
| October  | 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. | Assignments on Pedigree analysis and Epistasis |
| November  | Linkage and crossing over, Cytological basis of crossing over, Molecular mechanism of crossing over, Recombination frequency as a measure of linkage intensity, two factor and three factor crosses, Interference and coincidence, Somatic cell genetics – an alternative approach to gene mapping. | Class test on Linkage and crossing over  |
| December  | Chromosomal Mutations, Gene 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.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. | Discussion on Mutations and its various positive and negative effects. |
|  | Doubt Clearing sessions and revision  |
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**Lesson Plan(2022-23 /Odd Semester)**

**Name of the Teacher- Bhupendra yadav**

**Class –Botany Hons. 5th sem**

**Subject-Plant Physiology(502)**

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| Month | Topics to be covered | Assignments/Test |
| September 2022 | 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 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. |  |
| October 2022 | 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. | Test |
| November 2022 | 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. |  |
| December 2022 | 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 |
|  | Assignment |
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**Name of the Teacher- Bhupendra yadav**

**Class – B.Sc Botany (Hons.) 3rd Semester**

**Subject- MOLECULAR BIOLOGY-I**

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| Month | Topics to be covered | Assignments/Test |
| September | Nucleic Acids convey Genetic Information: DNA as the carrier of genetic information, Key experiments establishing-The Central Dogma, DNA Double helix, Genetic code, Direction of Protein Synthesis. The Structures of DNA and RNA / Genetic Material DNA Structure: Miescher to Watson and Crick- historic perspective, DNA structure, Salient features of double helix, Types of DNA, Types of genetic material, DNA topology - linking number, topoisomerases; RNA Structure, Organelle DNA -- mitochondria and chloroplast DNA.  | Class test 1 |
| October | Genome Structure, Chromatin and the Nucleosome: Organization of genome in Prokaryotes, Viruses, Eukaryotes. Genome Sequence and Chromosome Diversity, Chromosome Duplication and Segregation, The Nucleosome Chromatin structure- Euchromatin, Heterochromatin- Constitutive and Facultative heterochromatin. Regulation of Chromatin Structure and Nucleosome Assembly. Special chromosomes: polytene and lampbrush chromosomes. | Assignment |
| November  | The Replication of DNA (Prokaryotes and Eukaryotes) Chemistry of DNA synthesis, general principles - bidirectional replication, Semi- conservative, Semi discontinuous, RNA priming, Various models of DNA replication including rolling circle, D-loop (mitochondrial), (theta) mode of replication, replication of linear ds-DNA, replicating the 5’end of linear chromosome.  | Class Test 2 |
| December | Enzyme involved in DNA replication – DNA polymerases, DNA ligase, Primase, Telomerase and other accessory proteins. The Mutability and Repair of DNA Replication Errors, DNA Damage and their repairDNA denaturation and renaturation, cot curves, molecular mechanism of recombination, Genomics and Revision  | Assignment 2  |
|  | Class Test 3 |
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**Lesson Plan (2022-23/Odd Semester)**

**Name of the Teacher- Bhupendra**

**Class – Botany hons. 3rd sem.**

**Subject- cell biology-1 (BOT301)**

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| Month | Topics to be covered | Assignments/Test |
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| september | Overview of prokaryotic and eukaryotic cells, cell size and shape, Phages, Viriods, Mycoplasma and Escherichia coli. Microscopy: Principles of Light microscopy; Phase contrast microscopy; Confocal microscopy; Electron microscopy (EM)- scanning EM and scanning transmission EM (STEM); Fluorescence microscopy;Flow cytometry- flurochromes, fluorescent probe and working principle; Spectrophotometry; Mass spectrometry; X-ray diffraction analysis. Separation-Sub-cellular fractionation- differential and density gradient centrifugation; Chromatography- paper, thin-layer, gel-filtration, ion-exchange, affinity and High- Performance Liquid Chromatography (HPLC) | Class test 1 |
| october | Composition of Cells: Molecules of cell, cell membranes and cell Proteins. The Nucleus :Nuclear Envelope- structure of nuclear pore complex, nuclear lamina | Assignment on chromatography. |
| november | 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. |
| december | 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, Cytoskelton and Cell Movement ,Structure and organization of actin filaments; actin, myosin and cell movement; intermediate filaments; microtubules | Assignment on cytoskeleton.Class test 2 |
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**Lesson Plan (2022-23 /Odd Semester)**

**Name of the Teacher- Anjana anand**

**Class – Botany hons. 3rd Sem**

**Subject- Plant Resource Utilization**

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| Month | Topics to be covered | Assignments/Test |
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| september | Origin of Cultivated Plants Concept of centres of origin, their importance with reference to Vavilov’s work; examples of major plant introductions; Crop domestication and loss of genetic diversity; evolution of new crops/varieties, importance of germplasm diversty.Cereals Wheat and Rice | Class test1 |
|  | Role of dwarf varieties in green revolution; brief account of millets and Pseudocereals.Legumes: General account, importance to man and ecosystem; chief pulses grown in India. Fruits :Mango, Citrus, Papaya. Sugars and starches: Ratooning and nobilization of sugarcane, products and by products of sugarcane industry; Potato (Tuber anatomy and propagation methods) and comparative account with cassava. |
| october | Spices Listing of important spices, their family and part used; with special reference to fennel, saffron, clove, turmeric and all spices; common adulterants of spices. Beverages: Tea, coffee and cocoa, their processing and some common adulterants. | Class test 2 |
| november | Oils and Fats: General description with details of groundnut, coconut, linseed and Brassica spp and their use related health implications. Essential Oils: General account and comparison with fatty oils. Natural Rubber Para Rubber, tapping and processing, Various substitutes of Para Rubber |
| december | Drug Yielding Plants Therapeutic and habit forming drugs with special reference to Cinchona, Digitalis, Rauvolfia, Papaver and Cannabis.Masticatories and Fumitories Tobacco and Health hazards. Timber plants General account with special reference to teak and pine.Fibres: Classification based on the origin of fibres, Tetraploid cotton and Jute. | Assignment on drug yielding plants. |
|  | Examination |  |
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**Lesson Plan( 2022-23 /Odd Semester)**

**Name of the Teacher- Dr. Anjana Anand**

**Class – B.Sc. Botany Hons. 5th sem.**

**Subject-Plant Systematics and Evolution, BOT 501**

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| Month | Topics to be covered | Assignments/Test |
| September  | What is systematics; Identification, Classification and Nomenclature of plants; Field inventory, valid publication; rejection of names, principle of priority and its limitation; names ofHybrids and cultivars. Herbarium preparation and management; important herbaria and botanical gardens of the world andIndia | Test on the topics taught |
| October  | Documentation: Flora, Monographs, Journals, Online Journals and Keys; origin & evolution of angiosperms; co-evolution of angiosperms and animals; methods ofillustrating evolutionary relationship (phylogenetic tree, cladogram). | Test |
| November  | Evidences from morphology, palynology, cytotaxonomy, chemotaxonomy, serology, and molecular systematics,Terms and concepts (homology, analogy, parallelism, convergence, monophyly, polyphyly,clades) | Test |
| December  | Concept of taxa; categories and hierarchy; species concept (taxonomic,biological, evolutionary), Principles and rules of nomenclature; ranks and names; type method,author citationClassification by Bentham and Hooker, Engler and Prantl & Takhtajan; 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 |
|  | Test and assignmentRevision of topics Class Presentation by students |
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 **Lesson Plan ( 2022-23)**

**Name of teacher: Rakhi kaushik Class : B.Sc Botany (Hon) 1st sem**

**Subject and paper: Botany 101, 103 No of lectures per week: 6**

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| MONTH | WEEK | DATE | UNIT | TOPICS TO BE COVERED | ASSIGNMENT |
| September | Third week  | 12-16 | Unit-1 (101) | Introduction to concept of biology. | Questions given on daily basis. |
|  | Fourth | 19-23 | Unit-1(101) | A closer look at Ecosystem. | Questions given on daily basis. |
| Fifth | 27-30 | Unit-1 (103) | Definition, why study fungi?, General characteristics, ecology and distribution, thallus organization, EM of haustarium and septum, wall composition, nutrition and growth. |
| OCTOBER | First  | 3-8 | Unit-1(101) | A Closer look at Cell. | Questions given on daily basis. |
| Unit-1 (103) | Reproduction , spores heterokaryosis and parasexuality, sexual compatibility, life cycle pattern, role of fungi in biotechnology, application of fungi in industry, fermentation, baking industry, agriculture and mycological toxin. |
| Second  | 10-15 | UNIT -1 (101) | Different kingdom systems and kingdom archea, prokaryotes and eukaryotes |
| Unit-2 (103) | Myxomycota general feature and thallus organization and reproduction.aOOmycetes : general characteristic features and reproduction. |
| Third  | 17-22 | Unit-2 (101) | Pattern of Inheritance |
| Unit-2(103) | OOmycetes : general characteristic features and reproduction. |
| Fourth  | 24-29 | Unit- 2 (102) | Diwali Break |
| NOVEMBER | First  | 1-5 | Unit – 2(102) | Mendalian laws |  |
| Unit – 2(103) | Zygomycota : general characteristic feature and life cycles. |
|  | Second  | 7-12 | *Unit -2(101)* | The flow of genetic information from DNA, RNA & PROTEIN |  |
| *Unit – 3(103)* | Zygomycetes life cycle. |
|  | Third  | 14-19  | *Unit – 3 (101)* | Detecting macromolecules of genetics |  |
| *Unit -3 (103)* | Mushrosoms and its cultivation  |
|  | Fourth  | 21-26  | Unit – 2(101) | Methods to study gene and gene analysis |  |
| Unit -4(103) | Lichens , its type, reproduction and significance. |
| Fifth  | 28-30th  | Unit – 1(101) | Concept of Evolution and its Theories. |  |
| Unit- 4(103) | pathogen relationships s |
| December | First  | 1-3 | Unit- 3(101) | Chemical context of living system. |  |
| Unit – 4 (102) | Prevention and control of disease |
| Second  | 5-10 | Unit- 4(101)) | Carbon and Life |
| Unit- 4(103) | Geographical distribution of diseases, etiology, symptoms and its significanceRole of quarantine |
| Third  | 12-18 | Presentations | Deutromycetes |
| Fourth  | 1. 26
 | Revision | Revision  |

**Lesson Plan(2022-23 /Odd Semester)**

**Name of the Teacher- Amita Kumari**

**Class –B.Sc. Pass Course Medical 5th sem**

**Subject-Plant Physiology(5.1)**

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| --- | --- | --- |
| Month | Topics to be covered | Assignments/Test |
| September 2022 | Plant water relations, physical properties of water, Imbibition. Diffusion and osmosis, absorption of water.transport of water ,Transpiration and Physiology of stomata. Introduction to mineral nutrition. |  |
| October 2022 | Mineral nutrition, essential micronutrients and macronutrients, and their role, uptake of mineral nutrients.deficiency symptoms of mineral nutrition, 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. | Test |
| November 2022 | 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 systemPhotophosphorylation, dark reaction, Calvin cycle. C4 pathway.CAM plants and CAM pathway, Photorespiration. |  |
| December 2022 | 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 senescencePhysiology 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.concept of PhotomorphogenesisPhytochrome , their discovery and physiological role.mechanism of action of phytochrome , Introduction to cryptochrome. | Test |
|  | Assignment |
|  |  |  |

**Lesson Plan (2022-23 /Odd Semester)**

**Name of the Teacher-Amita Kumari**

**Class – B.Sc. Pass Course Medical 5th sem**

**Subject- Ecology (5.2)**

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| Month | Topics to be covered | Assignments/Test |
| September 2022 | Introduction to ecology , definition and its scope. importance of ecology and its level of organization.introduction to environment and environmental factors. climatic factors [water, humidity, wind, light, temperature] | Test |
| October 2022 | Edaphic factors [soil profile, its formation, physico-chemical properties of soil]topographic and biotic factors[ species interactionAdaptations of plants to water stress and salinity.morphological and anatomical features of hydrophytes and xerophytes. |  |
| November 2022 | 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 community ecology,quantitative and analytical characteristics of community ecology | Test |
| December 2022 | synthetic characteristics of community ecology, method of analysis.Ecological successionintroduction to ecosystem structural components of ecosystemfunctions of ecosystem like trophic levels, food chain, food web. ecological pyramids and energy flow. Biogeochemical cycle.carbon, nitrogen, phosphorus cyclehydrological cycleintroduction to phytogeography.phytogeographical regions of India. vegetation types of India. 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. |  |
|  | Assignment |
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**Lesson Plan (2022-23 /Odd Semester)**

**Name of the Teacher- Amita Kumari**

**Class – Botany hons. 5th sem.**

**Subject- Ecology -Ⅱ (BOT-505)**

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| Month | Topics to be covered | Assignments/Test |
| September 2022 | Introduction to community, analytical characteristics of community. Synthetic characteristics of community, Ecotone and edge effect. method of studying vegetation, dynamics of communities. plant succession : processes, types , primary and secondary succession |  |
| October 2022 | concepts of climax, structure of ecosystem.biotic and abiotic components in ecosystem, processes in ecosystemtrophic organization, basic source of energy, autotrophy and heterotrophy parasitism, food chains, food webs, ecological pyramids biomass, standing crop, functional aspects of ecosystem energy flow and its principles | Test |
| November 2022 | grazing and detritus food chains, models of energy flow. ecosystem productivity, measurements of ecosystem productivityecological efficiencies and concept of energy subsidy, biogeochemical cycledynamics of biogeochemical cycle, hydrological cyclegaseous cycles and sedimentary cycles.aquatic ecosystem, fresh water (lotic and lentic) marine ecosystem (pelagic and benthic) estuarine ecosystem, introduction to biomes ,tundra biome, temperate biome |  |
|  |  |
| December 2022 | tropical biome, introduction to phytogeographyprinciples of phytogeography, endemismhotspots, phytogeographical divisions of India, vegetation of Delhi | Assignment |
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