

## Lesson Plan

Name of Assistant Professor :Sadhana Yadav  
Class & Section :BSc.1 st semester  
Subject :Botany  
Session : 2022-23

| Date      | Contents   |
|-----------|--|
| August    | <ul style="list-style-type: none"><li>● Bacteria: Structure, nutrition, reproduction and economic</li><li>● Importance Cyanobacteria: General characters; life-history of</li><li>● Nostoc</li></ul>   |
| September | <ul style="list-style-type: none"><li>● Algae: General characters, classification (upto classes) and economic importance;</li><li>● General account of algal blooms</li><li>● Important features and life-history (excluding development) of Volvox,</li><li>● Important features and life-history (excluding development) of Oedogonium</li><li>● Important features and life-history (excluding development) of Vaucheria (Xanthophyceae),</li><li>● Ectocarpus</li><li>● Polysiphonia</li><li>● Viruses: General account of Viruses including structure of TMV and Bacteriophages</li></ul> |
| October   | <ul style="list-style-type: none"><li>● Test and Assignment</li><li>● Fungi: General characters, classification (upto classes) and economic importance;</li><li>● General account of Lichens</li><li>● Phytophthora</li><li>● Mucor</li><li>● test</li><li>● <b>Penicillium</b></li><li>● Puccinia,</li><li>● Colletotrichum</li></ul>   |

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|----------|--|
| November | <ul style="list-style-type: none"><li>• The Cell Envelopes: Structure and functions of Cell Wall, Plasma Membrane,</li><li>• Golgi Apparatus, Endoplasmic Reticulum, Lysosomes, Peroxisomes and Vacuoles</li><li>• Ultra-structure and function: Chloroplast, Mitochondria, Nucleus and Nucleolus</li><li>• Chromosome: Morphology, ultra-structure - kinetochore, centromere and telomere</li><li>• Cell Cycle: General account</li><li>• Cell Division: Mitosis and Meiosis - Stages and Significance</li><li>• test</li></ul> |
| December | <ul style="list-style-type: none"><li>• Chromosomal aberrations: Structural and Numerical - deletions, duplications, translocations, inversions, aneuploidy, polyploidy</li><li>• Sex chromosomes and Sex determination in Plants</li><li>• Revision</li></ul>   |

Sadhana Yadav  
Assistant Professor  
Department Of Botany  
GCW Narnaul

### Lesson Plan

Name of Assistant Professor : Sadhana Yadav  
Class & Section : BSc 5<sup>th</sup> semester  
Subject : Botany  
Session : 2022-23

| Date      | Contents   |
|-----------|--|
| August    | <ul style="list-style-type: none"><li>● Introduction to Ecology: Definition; scope and importance; levels of organization</li></ul>  |
| September | <ul style="list-style-type: none"><li>● Environment: Introduction; environmental factors- climatic water, humidity, wind.</li><li>● Light, temperature, edaphic (soil profile, physico-chemical properties), topographic</li><li>● Biotic factors (species interaction).</li><li>● Adaptations of plants to water stress and salinity</li><li>● (morphological and anatomical features of hydrophytes, xerophytes and halophytes)</li><li>● Population ecology: Basic concept; characteristics; biotic potential, growth curves;</li><li>● ecotypes and ecads.</li><li>● Test and Assignment</li></ul> |
| October   | <ul style="list-style-type: none"><li>● Population ecology: Basic concept; characteristics; biotic potential, growth curves;</li><li>● Ecotypes and ecads</li><li>● Community ecology: Concepts; characteristics (qualitative and quantitative analytical and synthetic); methods of analysis; ecological succession.</li><li>● Ecosystem: Structure (components) and functions (trophic levels, food chains, food webs, ecological pyramids and energy flow)</li><li>● Biogeochemical cycles: Carbon, nitrogen, phosphorus and hydrological cycle.</li><li>● Test</li><li>● Assignment</li></ul>      |

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| November | <ul style="list-style-type: none"><li>• Phyto-geography: Phyto- geographical regions of India; vegetation types of India</li><li>• (forests). Environmental pollution: Sources, types and control of air and water</li><li>• pollution.</li><li>• Global change: Greenhouse effect and greenhouse gases;</li><li>• Test</li><li>• Assignment</li></ul> |
| December | <ul style="list-style-type: none"><li>• Impacts of global warming; carbon trading; Ozone layer depletion; Biomagnification</li><li>• Revision</li></ul>  |

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# Lesson Plan of B.sc 5<sup>th</sup> Sem for the session (2022-2023)

Teacher Name – Dr. Neelam Yadav (Paper 1<sup>st</sup> )

18<sup>th</sup> Aug,2022 – 31<sup>st</sup> Aug, 2022

- Plant- Water Relations
- Absorption of Water
- Translocation of Water

September, 2022

- Transpiration
- Mineral Nutrition
- Uptake of Mineral Nutrients
- Translocation of Organic Substances

October, 2022

- Photosynthesis – 1<sup>st</sup>
- Photosynthesis 2<sup>nd</sup> (Light Phase)
- Photosynthesis 3<sup>rd</sup> (Dark Phase)
- Growth Hormones (Auxin, Gibberllin, Cytokinin ABA & Ethylene)

November, 2022

- Physiology of Flowering
- Plant Movements
- Seed Germination & Dormancy
- Senescence and Fruit Ripening

December, 2022

- Revision

# Lesson Plan of B.sc 3<sup>rd</sup> Sem for the session (2022-2023)

Teacher Name – Dr. Neelam Yadav (Paper 1<sup>st</sup> & 2<sup>nd</sup> )

18<sup>th</sup> Aug, 2022 – 31<sup>st</sup> Aug, 2022

- Gymnosperms (General Characters, Classification and Economic Importance)
- Gymnosperms (Evolution & Diversity)
- Evolution of Seed Habit
- Geological Time Scale
- Fossilisation and Fossils

September, 2022

- Fossils Gymnosperms
  - Lyginopteris
  - Williamsonia
  - Cycadeoidea
- Morphology, Anatomy, Life-Cycle & Economic Importance of following Plants :
  - Cycas
  - Pinus
  - Ephedra
- General Characters, Origin and Evolution of Angiosperms

October, 2022

- Diversity in Plant Forms
- Tissues :- Simple, Complex & Secretory
- Stems :- Meristem & Primary Structure
- Stem :- Cambium and Secondary Structure
- Stem:- Anomalous Secondary Growth

November, 2022

- The Leaf : Morphology
- The Leaf : Epidermis and Appendages
- The Leaf : Anatomy and Abscission
- The Root : Meristem and Primary Structure
- The Root : Secondary Structure
- The Root : Structural Modifications

December, 2022

- Revision



# Government College for Women ,Narnaul

## Lesson plan (session 2022-2023)

**Class:**B.Sc.6<sup>th</sup> semester

**Subject:**Botany (Paper-1)

**Name of Teacher:** Sadhana Yadav

**Month :** February

### **Unit -1**

Basics of Enzymology: Discovery and nomenclature; characteristics of enzymes; concept of holoenzyme, apoenzyme, coenzyme and co-factors; regulation of enzyme activity; mechanism of action.

### **Month : March**

Respiration: ATP – the biological energy currency; aerobic and anaerobic respiration; Krebs cycle; electron transport mechanism (chemiosmotic theory); redox -potential; oxidative phosphorylation; pentose phosphate pathway.

### **Month :April**

Lipid metabolism: Structure and functions of lipids; fatty acid biosynthesis;  $\beta$ -oxidation; saturated and unsaturated fatty acids; storage and mobilization of fatty acids.

Nitrogen metabolism: Biology of nitrogen fixation; importance of nitrate reductase and its regulation; ammonium assimilation.

### **Month :May**

Genetic engineering and Biotechnology: Tools and techniques of recombinant DNA technology;

Cloning vectors; genomic and cDNA library; transposable elements

plant tissue culture;

Cellular totipotency differentiation and morphogenesis;

biology of Agrobacterium; vectors for gene delivery and marker genes and Revision



# Government College for Women ,Narnaul

## Lesson plan (session 2022-2023)

Class:B.Sc.2<sup>nd</sup> semester

Subject:Botany (Paper-BOT. 2.1 Diversity of Archegoniates)

Name of Teacher: Sadhana Yadav

Month : February

Unit -1

Bryophyta: General characters

Classification up to classes

Alteration of generations

Evolution of sporophytes and economic importance.

Unit -II

Bryophyta: Structure and Reproduction of *Marchantia*

Structure and Reproduction of *Anthoceros*

Structure and Reproduction of *Funaria*

Month : March

Unit -III

Pteridophyta :General characters

Classification up to classes

Alteration of generations

Heterospory ,apospory ,apogamy& economic importance

General account of stellar evolution

Unit -IV

Pteridophyta: Structure and reproduction of *Rhynia*,

Structure and reproduction of *Selaginella*

Structure and reproductionof *Equisetum*

Structure and reproduction of *Pteris*

# **Government College for Women ,Narnaul**

## **Lesson plan (session 2022-2023)**

**Class : B.Sc.2<sup>nd</sup> semester**

**Subject :Botany(Paper-BOT 2.2 Genetics)**

**Name of Teacher : Sadhana Yadav**

**Month :April**

Unit-I

DNA -the Genetic material

DNA structure and replication

DNA protein interactions

The Nucleosome model

Genetic code,Satellite and repetitive DNA

Unit -II

Genetic inheritance:Mendelism :laws of segregation and Independent assortment

Linkage Analysis

Allelic and Non Allelic Interactions

Unit -III

Extra Nuclear Inheritance:Presence and function of mitochondrial and Plastid DNA,Plasmid

Genetic variations: Mutations

**Month :May**

Gene expression

Modern concept of Gene

RNA ,Ribosomes

Transcription

Translation

Structure of Protein

Regulation of Gene expression in Prokaryotes& eukaryotes & Revision

# Lesson Plan of B.Sc. 6th Sem

## Session (2022-2023)

Name of Teacher – Dr. Neelam Yadav

Subject – Botany

Class – B.Sc. 6<sup>th</sup> Sem

Paper – 2<sup>nd</sup>

February -2023

➤ Origin, Distribution, Botanical description, brief idea of cultivation and uses of the following :

1) Food Plants – Cereals

- I. Rice
- II. Wheat
- III. Maize

2) Pulses

- I. Gram
- II. Arhar
- III. Pea

March – 2023

3) Vegetables

- I. Potato
- II. Tomato
- III. Onion

4) Fibres

- I. Cotton
- II. Jute
- III. Flax

5) Oils

- I. Groundnut
- II. Mustard
- III. Sunflower
- IV. Coconut

April – 2023

Morphology of Plant- part used, Brief idea of cultivation and uses of following:

1. Spices
  - i. Coriander
  - ii. Ferula
  - iii. Ginger
  - iv. Turmeric
  - v. Cloves
  
2. Medicinal Plants
  - i. Cinchona
  - ii. Rauwolfia
  - iii. Atropa
  - iv. Opium
  - v. Cannabis
  - vi. Neem

May – 2023

Botanical description & processing of :

1. Beverages
    - i. Tea & Coffee
    - ii. Rubber -Hevea
    - iii. Sugar – Sugarcane
- General account and sources of Timber, Energy plantation & Bio-Fuels

# Lesson Plan of B.Sc. 4th Sem

## Session (2022-2023)

Name of Teacher – Dr. Neelam Yadav

Subject – Botany

Class – B.Sc. 4<sup>th</sup> Sem

February – 2023,

Paper – 1

- Unit – 1
  - Biology & diversity of seed plants
  - 1. Angiosperm taxonomy
  - 2. Modern trends in plant taxonomy
  - 3. Botanical Nomenclature & type concept
  - 4. Keys to identification of plants
  - 5. Phylogeny of Angiosperms
  - 6. Floral terms
  - 7. Inflorescence

March -2023

- Unit -2
  - 1. Classification of Angiosperms
  - 2. Description of an Angio spermic Plants
  - 3. Important family of Angiosperms

|                |                |
|----------------|----------------|
| Rannunculaceae | Asteraceae     |
| Brassicaceae   | Asclepiadaceae |
| Malvaceae      | Solanaceae     |
| Rutaceae       | Lamiaceae      |
| Fabaceae       | Euphorbiaceae  |
| Apiaceae       | Liliaceae      |
| Poaceae        |                |

**Paper – 2<sup>nd</sup>**

April - 2023

➤ Plant Embryology

1. Flowers as modified shoot
2. Microgenesis Gametogenesis
3. Pollination
4. Megasporogenesis & gametogenesis
5. Fertilization and its barriers

May – 2023

1. Endosperm
2. Embryogenesis
3. The Fruit
4. The Seed (Structure & Germination)
5. Dispersal in fruits & Seeds