B.Sc. (Programme) Syllabus under CBCS

Subject:Botany

SEMESTER – I

DSC-I (Algae, Fungi and Bryophyta)

Theory –

Algae -General characteristics; Ecology and distribution; Range of thallus organization and reproduction; Classification of algae (Lee – 2008); Morphology and life-cycles of the following: *Nostoc,Fucus.* Economic importance of algae.

Fungi -Introduction- General characteristics, cell wall composition, nutrition, reproduction and classification (Ainsworth and Bisby-1983)

General characteristics and life cycle of *Mucor* (Zygomycota), *Penicillium* (Ascomycota), *Agaricus* (Basidiomycota) and Deuteromycetes;

Lichens: General account, reproduction and significance;

Bryophytes -

General characteristics, Classification (Proskauer, 1957), Morphology, anatomy and reproduction of *Marchantia* and *Funaria*. (Developmental details not to be included). Economic importance of bryophytes.

Internal assessment – (10)

Practical (15)

(Algae, Fungi and Bryophyta)

Study of following genera: *Oscillatoria, Oedogonium, Mucor, Agaricus; Marchantia, and Funaria***.**

Identifications of all the genera included in the theoretical syllabus. Wet specimen collection and preservation.

SEMESTER – III

DSC III (Plant Taxonomy and Plant Anatomy)- Marks (25)

Plant Taxonomy-

1. Introduction to plant taxonomy-Identification, Classification, Nomenclature.

2. Identifcation

Functions of Herbarium, important herbaria and botanical gardens of the world and India;

3. Taxonomic hierarchy

Ranks, categories and taxonomic groups

4. Botanical Nomenclature-Principles and rules (ICN); ranks and names; binominal system, typifcation, author citation, valid publication, rejection of names, principle of priority and its limitations.

5. Classifcation-Types of classification-artificial, natural and phylogenetic. Bentham and Hooker (up to series).

Plant Anatomy-

1: Meristematic and permanent tissues

Root and shoot apical meristems; Simple and complex tissues.

2: Organs

Structure of dicot and monocot root stem and leaf.

3: Secondary Growth

Vascular cambium – structure and function, seasonal activity. Secondary growth in root and stem, Wood (heartwood and sapwood).

Internal assessment – (10)

Practical –15 Marks

Plant Taxonomy-

1. Study of vegetative and floral characters of the following families (Description, V.S. flower, section of ovary, floral diagram/s, floral formula/s and systematic position according to Bentham & Hooker's system of classification):Brassicaceae -*Brassica, Alyssum/Iberis;* Asteraceae- *Sonchus/Launaea, Vernonia/Ageratum, Eclipta/Tridax;* Solanaceae -*Solanum sp, Withania;* Lamiaceae -*Salvia, Ocimum*; Liliaceae - *Asphodelus / Lilium / Allium.*

2. Mounting of a properly dried and pressed specimen of any wild plant with herbarium label (to be submitted in the record book).

Plant Anatomy-

1. Study of meristems through permanent slides and photographs.

2. Tissues (parenchyma, collenchyma and sclerenchyma); Macerated xylary elements, Phloem (Permanent slides, photographs)

3. Stem: Monocot: *Zea mays;* Dicot: *Helianthus*; Secondary: *Helianthus* (only Permanent slides).

4. Root: Monocot: *Zea mays*; Dicot: *Helianthus*; Secondary: *Helianthus* (only Permanent slides).

5. Leaf: Dicot and Monocot leaf (only Permanent slides).

Skill Enhancement Course-I

Laboratory Skills

(25 Marks)

1. Fundamentals of laboratory work (safety, weights & measures, buffers, using a pH meter).

2.General idea on laboratory equipment's-a) Light Microscope

c) Centrifuges: Standard, high speed

d) Incubators

e) Colorimeter

f) Laminar Air Flow (LAF) Chamber

g) Autoclave

3. Preliminary idea on the following laboratory techniques:

a) Various methods of sectioning/cutting of samples

b) Procedures for proper staining like Gram Staining, single and double staining

c) Sterilise sample

e) Media preparation (Bacteriological)

f) Separation by various chromatographic technique like Paper and Thin Layer

h) determination of RNA, Protein and Nucleic Acids concentrations by UV-VISIBLE Spectroscopy

Skill Enhancment Course (SEC)

Mushroom Cultivation (25 Marks)

1: Introduction, history. Nutritional and medicinal value of edible mushrooms; Poisonous mushrooms. Types of edible mushrooms available in India –*Pleurotus citrinopileatus, Agaricus bisporus*.

2: CultivationTechnology: Infrastructure: substrates (locally available) Polythene bag, vessels, Inoculation hook, inoculation loop, low cost stove, sieves, culture rack, mushroom unit (Thatched house) water sprayer, tray, small polythene bag. Pure culture: Medium, sterilization, preparation of spawn, multiplication. Mushroom bed preparation - paddy straw.

-Low cost technology, Composting technology in mushroom production.

3. **Nutrition** - Proteins - amino acids, mineral elements nutrition - Carbohydrates, Crude fibre content - Vitamins.

Discipline Specific Elective Courses (DSE): DSE 3A

Plant Pathology (Theory) Marks-25

1. Diseases: Definition; concepts of parasitism and saprophytism, Koch's postulate.
2. Structural and biochemical defence mechanism of plants.
3. Control of Plant diseases: biological methods.
4. Symptoms, disease cycles and control measures of Brown spot of rice, Late blight of potato, Rust of wheat.