D.K.GOVT.COLLEGE FOR WOMEN

(AUTONOMOUS) , NELLORE

BOARD OF STUDIES

2017-2018

BOTANY

D K (A) GOVT. DEGREE COLLEGE, NELLORE

B.Sc., BOTANY SEMESTER-WISE SYLLABUS
THEORY, PRACTICALS AND MODEL QUESTION PAPERS
I B.Sc - SEMESTER- I: BOTANY SYLLABUS

PAPER- I : MICROBIAL DIVERSITY, ALGAE AND FUNGI & PHYTOPATHOLOGY

Total hours of teaching 60hrs @ 4 hrs per week

UNIT- I: MICROBIAL WORLD - **(12hrs)**

1.Discovery of microorganisms, origin of life, spontaneous, biogenesis, Pasteur experiments, germ theory of disease.

2.Classification of microorganisms – R.H. Whittaker's five kingdom concept, Carl Woese's-Domain system)

3.Brief account of special groups of bacteria- Archaebacteria, Mycoplasma,Actinomycetes

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UNIT- II VIRUSES&: BACTERIA (12hrs)

1.Viruses- Discovery, general account, structure, replication,transmission and control.

2.Bacteria, General characteristics, cell structure and nutrition,,Reproduction-Economic importance of Bacteria.

UNIT- III: PHYTOPATHOLOGY **(12hrs)**

1. Symptomology& Disease control
2. Plant diseases caused by viruses– Study of Tobacco Mosaic, Bhendi Vein clearing.
3. Plant diseases caused byBacteria,Citrus canker.
4. Plant diseases caused by Fungi – Tikka disease of Groundnut, Red rot of sugarcane.

UNIT IV: ALGAE **(12hrs)**

1. Cyno Bacteria , General account and economic imporatance
2. General account - thallus organization
   Fritsch classification of Algae (up to classes only) and economic importance.
3. Structure, reproduction and life history of *Oedogonium, and Ectocarpus*

UNIT –V FUNGI **(12hrs)**

1. General characteristics and outlines of classification (Ainsworth), Economic Importance of Fungi
2. Structure, reproduction and life history ofAlbugo,*Penicillium* and *Puccinia* ..
3. Lichens-Structure and economic importance

Suggested activity: Seminar, Quiz, debate, collection of diseased plant parts –studying symptoms and identification of pathogen, collection and study of fresh and marine Algae available in local area.

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I B. Sc - SEMESTER- II: BOTANY THEORY SYLLABUS

Paper –II : Diversity of Archaegoniates &Plant Anatomy

Total hours of teaching 60hrs @ 4 hrs per week

UNIT – I: BRYOPHYTES **(12hrs)**

1. Bryophytes: General characters, Classification (up to classes)
2. Structure, reproduction and Life history of *Marchantia*, and *Funaria.*
3. Evolution of Sporophyte in Bryophytes.

UNIT - II: PTERIDOPHYTES **(12hrs)**

1. Pteridophytes: General characters, classification (up to Classes)
2. Structure, reproduction and life history of *Lycopodium,* and *Marsilea.*
3. Heterospory and seed habit.
4. Evolution of stele in Pteridophytes.

UNIT – III: GYMNOSPERMS **(12hrs)**

1. Gymnosperms: General characters, classification (up to classes)
2. Morphology, anatomy, reproduction and life history of *Pinus and Gnetum*
3. Economic importance with reference to wood, essential oils and drugs

UNIT –I V: Tissues and Tissue systems **(10hrs)**

1. Tissues – Meristematic and permanent tissues (simple, complex, secretory)
2. Tissue systems–Epidermal, ground and vascular.

UNIT – V. Secondary growth **(14hrs)**

1. Anomalous secondary growth in *Achyranthes, Boerhaavia* and *Dracaena.*
2. Study of local timbers of economic importance-Teak, Rosewood, Red sanders and Arjun (Tella maddi).

Suggested activity: Collection of *Marsilea* sporocarp, *Pinus* needles, male and female conestudy of *Pinus* pollen grains, collection of locally available economically useful timbers.

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II B. Sc - SEMESTER –III: BOTANY THEORY PAPER –III

Paper-III : Plant Taxonomy and Embryology)

Total hours of teaching 60hrs @ 4 hrs per week

UNIT – I: INTRODUCTION TO PLANT TAXONOMY (10hrs)

1.Fundamental components of taxonomy : Identification, Nomenclature(ICBN)Types of classification, Author citation, Valid Publication.
2. Taxonomic resources: Herbarium- functions& importance of Herbaria.
3. Botanical Gardens, Flora, Keys- single access and multi-access.

UNIT – II: CLASSIFICATION (10 hrs)

1. Bentham & Hooker's system of classification- merits and demerits.
2. Current concepts in taxonomy – Chemo taxonomy , Numerical taxonomy.
3. Phylogeny – origin and evolution (APG classification).

UNIT –III: SYSTEMATIC TAXONOMY-1 (14 hrs)

Systematic study and economic importance of the following families:
Annonaceae , Brassicaceae , Curcurbitaceae, Apiaceae and Asteraceae.

UNIT –IV: SYSTEMATIC TAXONOMY-2 (14 hrs)

Systematic study and economic importance of the following families:

Asclepiadaceae, Lamiaceae, Euphorbiaceae , Arecaceae and Poaceae

UNIT – V: EMBRYOLOGY (12hrs)

1. Anther structure, microsporogenesis and development of male gametophyte.
2. Ovule structure and types; Megasporogenesis, development & Structure of Embryo sac.[Monosporic Embryosac]
3. Pollination and Fertilization (out lines) Endosperm , . Structure of Dicot and Monocot embryos, Polyembryony.

Suggested activity:

1. Collection of locally available plants of medicinal importance
2. observing pollen grains in Honey.
3. Aero palynology-collection of pollen from air using glycerin strips in different seasons.
4. Field trips for collection of local plants.

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II B.Sc. BOTANY, SEMESTER- IV, Paper-IV: THEORY SYLLABUS

PAPER –IV: Plant Physiology and Metabolism

Total hours of teaching 60hrs @ 4 hrs per week

UNIT – I Plant – Water relations (10 hrs)

1. Physical properties of water, and its Importance ,
. Diffusion, Imbibition and Osmosis; concept & components of Water Potential.and
2 Mechanism of Ascent of Sap.
3. Transpiration –Definition, types of Transpiration, structure and opening and closing mechanism of Stomata.

UNIT –II: Mineral nutrition & Enzymes (12 hrs)

1. Mineral Nutrition. Mineral Ion uptake (Active and Passive transport).
2. Nitrogen metabolism- biological nitrogen fixation in *Rhizobium*, outlines of protein synthesis (transcription and translation).
3. Enzymes: General characteristics, mechanism of Enzyme action and factors regulating Enzyme action.

UNIT –III: PHOTOSYNTHESIS (14 hrs)

1. Photosynthesis: Photosynthetic pigments, Photosynthetic Light Phase ,Photophosphorylation
2 Dark Phase.Carbon Assimilation Pathways: C_3, C_4, and CAM
3. Translocation of Organic Solutes: Munchs Mass Flow Hypothesis.

. UNIT – IV: RESPIRATION & PLANT METABOLISM (12 hrs)

1. Aerobic Respiration: Glycolysis, , TCA cycle, Electron Transport System.
2. Anaerobic Respiration

UNIT –V: GROWTH AND DEVELOPMENT (12hrs)

1. Physiological effects of phytohormones - Auxins, Gibberellins, Cytokinins, ABA, Ethylene and Brassinosteroids.
2. Physiology of flowering Plants –Photoperiodism, Phytochrome , Vernalization.

Suggested activity: Seminars, Quiz, Debate, Question and Answer sessions, observing animations of protein biosynthesis in you tube