D.K.GOVT.COLLEGE FOR WOMEN (A), SPSR NELLORE-524003

Re-accredited by NACC with A Grade Recognized by UGC as

"College with Potential for Excellence"

BOARD OF STUDIES
DEPARTMENT OF BOTANY
2020-2021

Credits-03

S0102

D.K. GOVT COLLEGE FOR WOMEN (A), SPSR NELLORE.
CBCS / Semester System (w.e.f. 2020-'21 Admitted Batch
I Semester /Botany Core Course -1, 2020-21
Fundamentals of Microbes and Non-vascular Plants
(Viruses, Bacteria, Fungi, Lichens, Algae and Bryophytes)
(Total hours of teaching –60@ 04Hrs./Week)

Theory

Learning Outcomes:

On successful completion of this course, the students will be able to:

- Explain origin of life on the earth.
- Analyze the differences between prokaryotes and eukaryotes of nature
- Acquire awareness about economic importance of micro organisms
- Illustrate diversity among the viruses and prokaryotic organisms and can categorize them.
- Classify fungi, lichens, algae and bryophytes based on their structure, reproduction and life cycles.
- Analyze and ascertain the plant disease symptoms due to viruses, bacteria and fungi.
- Recall and explain the evolutionary trends among amphibians of plant kingdom for their shift to land habitat.
- Evaluate the ecological and economic value of microbes, thallophytes and bryophytes.

Unit –1:Origin of life and Viruses **12Hrs.**

1. Origin of life, concept of primary Abiogenesis. Five kingdom classification of R.H.Whittaker
2. Discovery of microorganisms, germ theory of diseases.
3. Shape and symmetry of viruses; structure of TMV and Gemini virus; multiplication of TMV; A brief account of Prions and Viroids.
4. A general account on symptoms of plant diseases caused by Viruses. Transmission of plant viruses and their control.
5. Significance of viruses in vaccine production, bio-pesticides and as cloning vectors.

Unit –2: Special groups of Bacteria and Eubacteria **12Hrs**

1. Brief account of Archaebacteria, Actinomycetes and Cyanobacteria.
2. Cell structure and nutrition of Eubacteria.
3. Reproduction-Asexual (Binary fission and endospores) and bacterial recombination (Conjugation, Transformation, Transduction).
4. Economic importance of Bacteria with reference to their role in Agriculture and industry (fermentation and medicine).

5. A general account on symptoms of plant diseases caused by Bacteria; Citrus canker.

Unit –3: Fungi & Lichens **12Hrs.**

1. General characteristics of fungi and Ainsworth classification (upto classes).
2. Structure, reproduction and life history of (a) Rhizopus (Zygomycota) and (b) Puccinia (Basidiomycota).
3. Economic uses of fungi in food industry, pharmacy and agriculture.
4. A general account on symptoms of plant diseases caused by Fungi; Blast of Rice.
5. Lichens-structure only, ecological and economic importance.

Unit –4: Algae **12Hrs.**

1. General characteristics of Algae (pigments, flagella and reserve food material); Fritsch classification (upto classes).
2. Brief account of thallus organization in Algae.
3. Occurrence, structure, reproduction and life cycle of Spirogyra (Chlorophyceae)
4. Occurrence, structure, reproduction and life cycle of Polysiphonia (Rhodophyceae).
5. Economic importance of Algae.

Unit –5: Bryophytes **12Hrs.**

1. General characteristics of Bryophytes; classification upto classes.
2. Occurrence, morphology, anatomy, reproduction (developmental details are not needed) and life cycle of Marchantia (Hepaticopsida).
3. Occurrence, morphology, anatomy, reproduction (developmental details are not needed) and life cycle of Funaria (Bryopsida).
4. General account on evolution of sporophytes in Bryophyta.
5. Economic importance of bryophytes

Text books:

- Botany – I (Vrukshasastram-I) : Telugu Akademi, Hyderabad
- Pandey, B.P. (2013) *College Botany, Volume-I,* S. Chand Publishing, New Delhi
- Hait ,G., K. Bhattacharya & A.K. Ghosh (2011) *A Text Book of Botany, Volume-I,* New Central Book Agency Pvt. Ltd., Kolkata
- Bhattacharjee, R.N., (2017) *Introduction to Microbiology and Microbial Diversity,* Kalyani Publishers, New Delhi.

Credits-03

S0202

D.K. GOVT. COLLEGE FOR WOMEN (A), NELLORE.
CBCS / Semester System (w.e.f. 2020-'21 Admitted Batch)
II Semester /BotanyCoreCourse –2, 2020-21
Basics of Vascular plants and Phytogeography
(Pteridophytes, Gymnosperms,Taxonomy of Angiosperms and Phytogeography)
(Total hours of teaching –60@ 02Hrs./Week)

Theory:

Learning Outcomes:

On successful completion of this course, the students will be able to:

- Classify and compare Pteridophytes and Gymnosperms based on their morphology, anatomy, reproduction and life cycles.
- Analyze and know the connecting links of cryptogams and phenorogams (gymnosperms)
- Justify evolutionary trends in tracheophytes to adapt for land habitat. Explain the process of fossilization and compare the characteristics of extinct and extant plants.
- To know the stellar evolution and seed harvest
- Analyze the morphology of the most common Angiosperm plants of their localities and recognize their families.
- Understand the anatomical tissues of plants
- Locate different phytogeographical regions of the world and India and can analyze their floristic wealth.

Unit –1:Pteridophytes **12Hrs.**

1. General characteristics of Pteridophyta; classificationof Smith (1955) upto divisions.
2. Occurrence, morphology, anatomy, reproduction (developmental details are notneeded) and life history of Lycopodium (Lycopsida) and Marsilea (Filicopsida).
3. Stelar evolution in Pteridophytes;
4. Heterospory and seed habit.

Unit –2:Gymnosperms **12Hrs.**

1. General characteristics of Gymnosperms; Sporne classification up to classes.
2. Occurrence, morphology, anatomy, reproduction (developmental details are not needed)and life history of Cycas (Cycadopsida)
3. Occurrence, morphology, anatomy, reproduction (developmental details are not needed) and life history of Gnetum (Gnetopsida).
4. A brief account on Cycadeoidea.

Unit –3: Basic aspects of Taxonomy **12Hrs.**

1. Aim and scope of taxonomy; Species concept: Taxonomic hierarchy, species, genus and family.
2. Plant nomenclature: Binomial system, ICN-rules for nomenclature. Herbarium and its techniques,
3. Bentham and Hooker system of classification;
4. Systematic description and economic importance of the following families:
   (a) Annonaceae (b) Curcurbitaceae

Unit –4: Systematic Taxonomy **12Hrs.**

1. Systematic description and economic importance of the following families
   (a) Asteraceae and (b) Asclepiadaceae
2. Systematic description and economic importance of the following families
   (a) Amaranthaceae and (b) Euphorbiaceae
3. Systematic description and economic importance of the following families
   (a) Arecaceae and (b) Poaceae
4. Outlines of Angiosperm Phylogeny Group (APG IV).

Unit –5: Phytogeography **12 Hrs.**

1. Principles of Phytogeography, Distribution (wide, endemic, discontinuous species)
2. Endemism –types and causes.
3. Phytogeographic regions of India.
4. Vegetation types in Andhra Pradesh.

Text books:

- Botany – I (Vrukshasastram-I) : Telugu Akademi, Hyderabad
- Botany – II (Vrukshasastram-II) : Telugu Akademi, Hyderabad
- Acharya, B.C., (2019) *Archchegoniates,* Kalyani Publishers, New Delhi
- Bhattacharya, K., G. Hait&Ghosh, A. K., (2011) *A Text Book of Botany, Volume-II,* New Central Book Agency Pvt. Ltd., Kolkata
- Hait,G., K.Bhattacharya&A.K.Ghosh (2011) *A Text Book of Botany, Volume-I,* New Central Book Agency Pvt. Ltd., Kolkata
- Pandey, B.P. (2013)*College Botany, Volume-I,* S. Chand Publishing, New Delhi
- Pandey, B.P. (2013)*College Botany, Volume-II,* S. Chand Publishing, New Delhi

Credits-03 S0302

D. K. GOVT COLLEGE FOR WOMEN (A), NELLORE.
II B. Sc - SEMESTER –III: BOTANY THEORY SYLLABUS, 2020-21.
Paper-III : Plant Taxonomy and Embryology)
Total hours of teaching 60hrs @ 4 hrs per week

Learning Outcomes:
On successful completion of this course,the students will be able to:

1. Acquire and know about the multidisciplinary science (taxonomy)
2. Understand Bentham and Hooker's and APG systems of classification
3. Acquire and the economic importance of various angiospermic families and there taxonomic relationships
4. Understand the act of pollination and fertilization in plants

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

1. Fundamental components of taxonomy : Identification, Nomenclature(ICBN)Types of classification,.
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 , Cyto-taxonomy.
3. Outlines of APG classification.

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

1. Systematic study and economic importance of the following families:

- Annonaceae ,
- Brassicaceae ,
- Curcurbitaceae,
- Apiaceae and A
- steraceae.

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

1. Systematic study and economic importance of the following families:

a. Asclepiadaceae, b. Lamiaceae, c. Euphorbiaceae, d. **Palmae** and e. 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 and **Apomixis.**

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.

Refence Books

1. Bhojwani, S. S. and S. P. Bhatnagar (2000)*The Embryology of Angiosperms (4th Ed.),* Vikas Publishing House, Delhi.
2. Pandey, A. K. (2000) *Introduction to Embryology of Angiosperms*. CBS Publishers & Distributors Pvt. Ltd. , New Delhi
3. Maheswari, P. (1971)*An Introduction to Embryology of Angiosperms*. McGraw Hill Book Co., London.
4. Johri, B.M. (2011)*Embryology of Angiosperms.* Springer-Verlag, Berlin
5. Smith, G.M. (1971)*CryptogamicBotanyVol. II.*, Tata McGraw Hill, New Delhi
6. Sharma,O.P.(2012)Pteridophyta. Tata McGraw-Hill, New Delhi
7. Kramer, K.U.&P. S. Green (1990) *The Families and Genera of Vascular Plants,*
8. Jeffrey, C. (1982)*An Introduction to Plant Taxonomy.* Cambridge University Press, Cambridge. London.
9. Sambamurty, A.V.S.S. (2005)*Taxonomy of Angiosperms* I. K .International Pvt. Ltd., New Delhi
10. Singh, G. (2012*). Plant Systematics: Theory and Practice.*Oxford & IBH Pvt. Ltd., NewDelhi.
11. Simpson, M.G. (2006). *Plant Systematics.* Elsevier Academic Press, San Diego, CA,U.S.A.

Credits-03

S0402

D. K. GOVT COLLEGE FOR WOMEN (A), NELLORE.
II B.Sc. BOTANY, SEMESTER- IV, THEORY SYLLABUS, 2020-21.
PAPER –IV: Plant Physiology and Metabolism
Total hours of teaching 60hrs @ 4 hrs per week

Learning Outcomes:
On successful completion of this course,the students will be able to:

1. Analyze the necessity of water relations of plants
2. Acquire knowledge about the metabolism of physiological activities like photosynthesis respiration, nitrogen metabolism, and Protein synthesis and phyto harmones
3. Understand the photo periodism and vernalization
4. Know about the physiology of phytochrome

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, SPAC_ Hypothesis, structure and opening and closing mechanism of Stomata, Demonstration of Transpiration($COCl_2$).

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, Potophosphorylation
2. 2 Dark Phase.Carbon Assimilation Pathways: C3, C4, 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.
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

Text books:

1. Botany – IV (Vrukshasastram-II) : Telugu Akademi, Hyderabad
2. Pandey, B.P. (2013) *College Botany, Volume-III,* S. Chand Publishing, New Delhi
3. Ghosh, A. K., K. Bhattacharya &G. Hait (2011) *A Text Book of Botany, Volume-III,* New Central Book Agency Pvt. Ltd., Kolkata

Books for Reference:

1. Aravind Kumar & S.S. Purohit (1998) *Plant Physiology – Fundamentals and Applications,*AgroBotanica, Bikaner
2. Datta, S.C. (2007) *Plant Physiology,*New Age International (P) Ltd., Publishers, New Delhi
3. Hans Mohr & P. Schopfer (2006)*Plant Physiology*, Springer (India) Pvt. Ltd., New Delhi
4. Hans-Walter heldt (2005) *Plant Biochemistry,*Academic Press, U.S.A.
5. Hopkins, W.G. & N.P.A. Huner (2014)*Introduction to Plant Physiology,* Wiley India Pvt. Ltd., New Delhi
6. Noggle Ray & J. Fritz (2013)*Introductory Plant Physiology*, Prentice Hall (India), New Delhi
7. Pandey, S.M. &B.K.Sinha (2006)*Plant Physiology*, Vikas Publishing House, New Delhi
8. Salisbury, Frank B. & Cleon W. Ross (2007)*Plant Physiology*, Thomsen & Wadsworth, Austalia&U.S.A
9. Sinha, R.K. (2014) *Modern Plant Physiology*, Narosa Publishing House,New Delhi
10. Taiz, L.&E. Zeiger (2003)*Plant Physiology*, Panima Publishers, New Delhi
11. Verma, V.(2007)*Text Book of Plant Physiology,*Ane Books India, New

Credits-03

S05502

D.K. GOVT COLLEGE FOR WOMEN (A), NELLORE.
III B. Sc - SEMESTER- V: BOTANY SYLLABUS, 2020-21.
THEORY PAPER – V
Paper-V: Cell Biology, Genetics and Plant Breeding
Total hours of teaching 60 hrs @ 3 hrs per week-

Learning Outcomes:

On successful completion of this course,the students will be able to:

1. **Know about the structure and functions of DNA and RNA**
2. **Know about the morphology of chromosomes**
3. **Acquire and know the Mendel's laws, linkage and crossing over**
4. **Understand crop improvement practices like hybridization, mutations, soma clonal variations and molecular breeding**

UNIT – I Cell Biology: **(12hrs)**

1. Cell, the unit of life- Cell theory, Prokaryotic and eukaryotic cells; Eukaryotic cell components.
2. Ultra structure and functions of cell wall, cell membranes and Mitotic cell division.
3. Chromosomes: morphology, organization of DNA in a chromosome (nucleosome model), Euchromatin and heterochromatin.

UNIT – II Genetic Material: **(12hrs)**

1. DNA as the genetic material: Griffith's and Avery's transformation experiment.
2. DNA structure (Watson & Crick model) and replication of DNA (semi-conservative)
3. Types of RNA (mRNA, tRNA, rRNA), their structure and function.

UNIT – III Mendelian Inheritance: **(12 hrs)**

1. Mendel's laws of Inheritance (Mono- and Di- hybrid crosses); backcross and test cross.
2. Chromosome theory of Inheritance.
3. Linkage: concept, complete and incomplete linkage, coupling and repulsion; linkage maps based on two and three factor crosses.
4. Crossing Over: concept & significance.

UNIT – IV Plant Breeding: **(12 hrs)**

1. Introduction and Objectives of plant breeding.
2. Methods of crop improvement: Procedure, advantages and Selection and Hybridization.

UNIT – V Breeding, Crop Improvement and Biotechnology: **(12 hrs)**

1. Role of mutations in crop improvement.
2. Role of somaclonal variations in crop improvement.
3. **Tissue culture technique and its applications.**

- **Suggested activity:** Seminar, Debate, Quiz, observation of live cells and nucleus in Onion peels, observation of Meiotic nuclei in Maize pollen. Solving Genetics problems.

Books for Reference:

- Old, R.W. and Primrose S.B. 1994, Principles of Gene Manipulation Blackwell Science,
- London 2. Grierson, D. and Convey S.N. 1989, Plant Molecular Biology, Blackie Publishers, New York.
- Lea, P.J. and Leegood R.C. 1999, Plant Biochemistry and Molecular Biology, John Wiley and Sons, London.
- Power C.B., 1984, Cell Biology, Himalaya Publishing Co. Mumbai
- De. Robertis and De Robertis, 1998, Cell and Molecelular Biology, K.M. Verghese and Company .
- Sinnott, E.W., L.C. Dunn & J. Dobshansky (1958) : Principles of Genetics (5th Edition) McGraw Hill Publishing Co., N.Y. Toronto, London.
- Winchester, A.M. (1958) : Genetics(3rd Edition) Oxford & IBH Publishing House, Calcutta, Bombay, New Delhi.
- Singleton, R.(1963) : Elementary Genetics, D. Van Nostrand Co., Ltd., Inc., N.Y. & Affiliated East West Press (P) Ltd., New Delhi.

  Strickberger, M.W. (1976): Genetics(2nd Edition) MacMillan Publishing Co., Inc.,N.Y., London
- Watson, J.D. (1977): Molecular Biology of the Gene, W.A. Benjamin, Inc., Menlo Park- California, Reading-Massachusetts, London, Amsterdam, Don Mills, Ontario, Sydney.
- Gardner,E.J & Snusted, D.P.(1984): Principles of Genetics (7thedition) John Wiley & Sons, N.Y. Chichester, Brisbane, Toronto, Singapore.
- 11. Lewin, B. (1985) Genes VII Wiley Eastern Ltd., New Delhi, Bombay, Calcutta,

Credits-03 S05602

D.K.GOVT COLLEGE FOR WOMEN (A). NELLORE.
III B. Sc - SEMESTER-V: BOTANY THEORY SYLLABUS, 2020-21
PAPER-VI: PLANT ECOLOGY& PHYTOGEOGRAPHY

Total hours of teaching 60 hrs @ 3 hrs per week

Learning Outcomes:

On successful completion of this course,the students will be able to:

1. Understand the ecosystems and biotic interactions
2. Acquire and know the population ecology
3. Acquire and know the bio diversity and Hot spots of India
4. Understand the global distribution of plants

UNIT – I. Elements of Ecology **(12 hrs)**

1. Ecology: definition, branches and significance of ecology.
2. **Abiotic** Factors: Light and Temperature, Origin, formation and soil profile only.
3. Biotic Factor: Interactions between plants and animals.

UNIT– II. Ecosystem Ecology **(12 hrs)**

1. Ecosystem: Concept and components, energy flow, Food chain, Food web, Ecological pyramids.
2. Productivity of ecosystem-Primary, Secondary and Net productivity.
3. Biogeochemical cycles- Carbon, Nitrogen and Phosphorous.

UNIT – III Population &Community Ecology **(12 hrs)**

1. Population -definition, characteristics and importance, outlines –ecotypes.
2. Biotic communities- characters of a Biotic community, outlines – Frequency, density, cover, life forms, competition.

UNIT – IV Phytogeography **(12 hrs)**

1. Principles of Phytogeography, Distribution (wides, endemic, discontinuous species)
2. Phytogeographic regions of India.
3. Endemism – Basic types and causes

UNIT- V: Plant Biodiversity and its importance **(12 hrs)**

1. Definition, levels of biodiversity-genetic, species and ecosystem.
2. Biodiversity major hotspots- Biodiversity hotspots of India. Eastern Himalayas and Western Ghats
3. Loss of biodiversity – causes and conservation (*In-situ* and *ex-situ* methods).

Suggested activity :Collection of different soils, studying their texture, observing polluted water bodies, student study projects, debates on man's activity on ecosystem and biodiversity conservation methods, visiting a nearest natural vegetation area. Visit to NGO, working in the field of biodiversity and report writing; to study Honey Bees and plants yielding honey.

Books for Reference:

1. Daubenmire, R.F. ( ): Plants & Environment (2nd Edn.,) John Wiley & Sons., New York
2. Puri, .G.S. (1960): Indian Forest Ecology (Vol.I & II) Oxford Book Co., New Delhi & Calcutta.

3. Billings, W.B. (1965): Plants and the Ecosystem Wadsworth Publishing Co., Inc., Belmont.

4. Misra, R. (1968): The Ecology work Book Oxford & INH Publishing Co., Calcutta

5. Odum E.P. (1971): Fundamentals of Ecology (2nd Edn.,) Saunders & Co., Philadelphia &

Natraj Publishers, Dehradun.

6. Odum E.P. (1975): Ecology By Holt, Rinert & Winston.

7. Oosting, H.G. (1978): Plants and Ecosystem Wadworth Belmont.

8. Kochhar, P.L. (1975): Plant Ecology. (9th Edn.,) New Delhi, Bombay, Calcutta-226pp.,

9. Kumar, H.D. (1992): Modern Concepts of Ecology (7th Edn.,) Vikas Publishing Co., NewDelhi.

10. Kumar H.D. (2000): Biodiversity & Sustainable Conservation Oxford & IBH Publishing Co Ltd. New Delhi.

11. Newman, E.I. (2000): Applied Ecology Blackwell Scientific Publisher, U.K.

12. Chapman, J.L&M.J. Reiss (1992): ecology (Principles & Applications). Cambridge University Press, U.K.

13. Cain, S.A . (1944): Foundations of Plant Geography Harper & Brothers, N.Y.

14. Mani, M.S (1974): Ecology & Biogeography of India Dr. W. Junk Publishers, The Haque

15. Good, R. (1997): The Geography of flowering Plants (2nd Edn.) Longmans, Green & Co., Inc., London & Allied Science Publishers, New Delhi

Cresits-03

S06702

D.K. GOVT COLLEGE FOR WOMEN (A), NELLORE.
III B. Sc - BOTANY SYLLABUS, SEMESTER- VI, 2020-21.
PAPER – VII B– ELECTIVE
Nursery, Gardening and Floriculture.
Total hours of teaching 60hrs @ 3hrs per week

Learning Outcomes:
On successful completion of this course,the students will be able to:

1. Develop an understanding of nursery business management (financial, marketing, personnel).
2. The student will acquire the required skills over a period of time.
3. Develop skills necessary to manage a wholesale nursery.
4. Acquire knowledge regarding theory and practice of cultural and production techniques and methods.
5. Describe basic green roof design, construction and maintenance techniques
6. Identify the relationships between soil, water, insects, diseases and weeds in agricultural systems.
7. Student is effectively managed Vegetable Nursery Management and cultivation as a small business enterprise.

Unit I: Nursery: **(12 hrs.)**

1. Nursery Management, infrastructure and Garden Operations.

2. Planning and seasonal activities - Planting - direct seeding and transplants.

Unit II: Gardening **(12 hrs.)**

1. Different types of gardening. **Some Famous gardens of India.**

2. Landscaping and types of gardens

Unit III: Propagation methods **(12 hrs.)**

1. Sowing/raising of seeds and seedlings, transplanting of seedlings
3. Propagation of ornamental plants by rhizomes, corms tubers, bulbs and bulbils.

4. .Green house - mist chamber, shade house and glass house for propagation.

Unit IV: Floriculture: **(12 hrs.)**

1. Ornamental Plants: Flowering annuals; herbaceous,

perennials.

2. Ornamental foliage plants, Cacti and succulents.

4. Cultivation of plants in pots; Indoor gardening; Bonsai.

Unit V: Commercial Floriculture **(12 hrs.)**

1. Production and packaging of cut flowers; Flower arrangements; Methods to prolong vase life of flowers

2. Cultivation of Important cut flowers (Aster, Dahlia, Gerbera, Rose, Lilium)

3. Management of pests, diseases.

4. Methods of flower harvesting.

Books for Reference:

1. Bose T.K. & Mukherjee, D., 1972, Gardening in India, Oxford & IBH Publishing Co., New Delhi.
2. Sandhu, M.K., 1989, Plant Propagation, Wile Eastern Ltd., Bangalore, Madras.
3. Kumar, N., 1997, Introduction to Horticulture, Rajalakshmi Publications, Nagercoil. institution)
4.Randhawa, G.S. and Mukhopadhyay, A. 1986. Floriculture in India. Allied Publishers.

Suggested Activities: Raising a nursery, managing it, studying and drawing various land scaping designs, practicing layering methods, using shade nets to protect horticultural crops, practicing indoor gardening techniques, visiting florists and recording their methods of prolonging vase life of commercial cut flowers.

D.K.GOVT.COLLEGE FOR WOMEN (A) .NELLORE. S06802
III B. Sc - BOTANY SYLLABUS SEMESTER- VI, 2020-21.
Paper VIII, CLUSTER ELECTIVE, Cluster-A,
Paper VIII-A-1 : PLANT DIVERSITY AND HUMAN WELFARE
Total hours of teaching 60hrs @ 3hrs per week

Learning Outcomes:
On successful completion of this course,the students will be able to:

1. Know about types, uses and values of biodiversity and agro biodiversity
2. Acquire and understand the laws of biodiversity
3. Know about the organizations of biodiversity
4. Analyze and acquire resource management and conservation methods of biodiversity

Unit- I: Plant diversity and Loss of biodiversity: **(12hrs)**

1. Agro biodiversity and cultivated plant taxa, wild taxa.
2. Loss of diversity: Genetic, Species, Ecosystem and agro biodiversity.

   projected scenario for biodiversity loss.
3. Methodologies for valuation of Biodiversity.

Unit -II: Management of Biodiversity: **(12hrs)**

1. Management of plant biodiversity: Organizations associated with biodiversity management-Methodology for execution-IUCN, UNEP, UNESCO, WWF, NBPGR.
2. Biodiversity legislation and conservations, Biodiversity information management and communication.

Unit-III: Contemporary practices in resource management: **(12hrs)**

1. Environmental Impact Assessment (EIA), Geographical Information System GIS, Participatory resource appraisal, Ecological footprint with emphasion carbon footprint, Resource accounting.
2. Solid and liquid waste management.

Unit -IV: Conservation of biodiversity **(12hrs)**

1. Conservation of genetic diversity, species diversity and ecosystem diversity, *In situ* and *ex situ* conservation,
2. Social approaches to conservation, Biodiversity awareness programmes, Sustainable development.

Unit- V: Role of plants in relation to Human Welfare **(12hrs)**

1. Importance of forestry, their utilization and commercial aspects-
    a. Avenue trees, b) ornamental plants of India. c) Alcoholic beverages through ages.
2. Important fruit crops their commercial importance. Wood, fiber and their uses.

Suggested Readings:

1. Krishnamurthy, K.V. (2004). An Advanced Text Book of Biodiversity - Principles and Practices. Oxford and IBH Publications Co. Pvt. Ltd. New Delhi.

2. Singh, J. S., Singh, S.P. and Gupta, S. (2006). Ecology, Environment and Resource Conservation. Anamaya Publications, New Delhi.

3. Rogers, P.P., Jalal, K.F. and Boyd, J.A. (2008). An Introduction to Sustainable Development. Prentice Hall of India Private Limited, New Delhi.

Suggested activities:

Study of flora and its diversity in the college campus or local area,enumerating wild and exotic species(*Parthenium*,Water hyacinth etc.)

Project work on any one of the International organizations striving for preservation of biodiversity, study of conservation efforts of local people, and civic bodies, study of locally available fruits in different seasons, enumerating the avenue plantations and their diversity in your town/city.