

GOVT DEGREE COLLEGE FOR WOMEN (A), NALGONDA

DEPARTMENT OF BOTANY

Course Outcomes of B.Sc. in Botany Programme AY 2023-24

COURSE OUTCOMES: B. SC. BOTANY

SEMESTER-I, PAPER 1 (MICROBILA DIVERSITY & LOWER PLANTS)

(As per CBCS syllabus *With Effect from the Academic Year 2023-2024*)

CO 1	Understand the fundamental concepts related to bacteria, viruses, algae, fungi, Bryophyta and Pteridophyta.
CO 2	Examine the general characteristics of bacteria and their cell, reproduction/recombination.
CO 3	Analyses the general structure and replication of viruses.
CO 4	Develop critical understanding of plant diseases and their remediation.
CO 5	Understand the structure, reproduction & different life cycles of algae & fungi
CO 6	Develop critical understanding on morphology, anatomy and reproduction of Bryophytes and Pteridophytes.
CO 7	Demonstrate proficiency in the experimental techniques and methods of appropriate analysis of bacteria, viruses, algae, fungi, bryophyta & Pteridophyta.


SEMESTER-II, PAPER 2 (GYMNOSPERMS, TAXONOMY OF ANGIOSPERMS & ECOLOGY)

(As per CBCS syllabus *With Effect from the Academic Year 2023-2024*)

CO 2	Develop critical understanding on morphology, anatomy, reproduction and economic importance of Gymnosperms
CO 3	Students develop knowledge about plant identification and nomenclature.
CO 4	Students can able to understand the systematic position of different plant species in surrounding environment.
CO 5	Students can able to know the Technique of making herbarium.
CO 6	Comprehend the basic concepts of plant ecology.
CO 7	Understanding the concepts of biotic and abiotic components.
CO 8	Assess the adaptation of plants with reference to hydrophytes, Xerophytes & Mesophytes
CO 9	Analyze the characteristics of different plant communities and their succession.
CO 10	Demonstrate the experimental techniques & methods of analysis of gymnosperms, plant taxonomy & Ecology.


Lecturer in Botany
SABARJUNA GOVT COLLEGE
NALGONDA A.P.


S. VEERAIYAH
Assistant Professor
Dept. of Botany,
Govt. Degree College for Women,
Gajwel, Siddipet(Dist.), T.S.-502278.


DR. N. SIDDULU
M.Sc Ph.D
Asst. Professor of Botany
Tara Govt. College Sangareddy

Department of Botany

B.SC BOTANY SYLLABUS UNDER CBCS

B.Sc. Botany Theory I Year (Semester -I)

DSC-I Microbial Diversity & Lower Plants

(w.e.f. academic year 2023-24)

Total periods	60
Theory 4 Hours/Week	4 credits
Practical 2 Hours/Week	1 credit

UNIT - I

(15 hours)

1. Bacteria: Structure, nutrition, reproduction, and economic importance. Brief account of Archaeobacteria, Actinomycetes and Mycoplasma with reference to little leaf of Brinjal and Papaya leaf curl.
2. Viruses: Structure, replication and transmission; plant diseases caused by viruses and their control with reference to Tobacco Mosaic and Rice Tungro.
3. An outline of plant diseases of important crop plants caused by bacteria and their control with reference to Angular leaf spot of cotton and Bacterial blight of Rice.

UNIT- II

(15hours)

4. General characters, structure, reproduction and classification of algae (Fritsch).
5. Cyanobacteria: General characters, cell structure their significance as biofertilizers with special reference to Oscillatoria, Nostoc and Anabaena.
6. Structure and reproduction of the following:
Chlorophyceae- *Volvox*, *Oedogonium* and *Chara*.
Phaeophyceae- *Ectocarpus*
Rhodophyceae- *Polysiphonia*.

UNIT-III

(15hours)

7. General characters and classification of fungi (Ainsworth).
8. Structure and reproduction of the following:
(a) Mastigomycotina- *Albugo*
(b) Zygomycotina- *Mucor*
(c) Ascomycotina- *Saccharomyces* and *Penicillium*.
(d) Basidiomycotina- *Puccinia*
(e) Deuteromycotina- *Cercospora*.
9. Economic importance of Lichens.

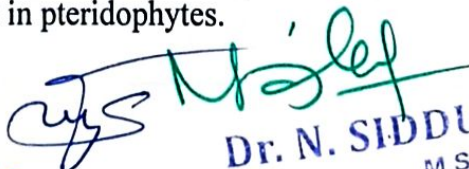
UNIT-IV

(15hours)

10. Bryophytes: Structure, reproduction, life cycle and systematic position of Marchantia, Anthoceros and Polytrichum, Evolution of Sporophyte in Bryophytes.
11. Pteridophytes: Structure, reproduction, life cycle and systematic position of Rhynia, Lycopodium, Equisetum and Marsilea.
12. Stelar evolution, Heterospory and Seed habit in pteridophytes.


Lecturer in Botany
NAGUNDA GOVT. COLLEGE
NAGUNDA A.P.



S. VEERIAH
Assistant Professor
Dept. of Botany,
Govt. Degree College for Women,
Gaiwel, Siddipet (Dist.) T.S. -502278.


Dr. N. SIDDULU
M.Sc Ph.D
Asst. Professor of Botany
College Sangareddy
Tara



Chairman Board of Studies
Department of Botany
Govt. Degree College,
Nagunda A.P.


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3. Pandey, B. P. 2001. College Botany, Vol. I: Algae, Fungi, Lichens, Bacteria, Viruses, Plant Pathology, Industrial Microbiology and Bryophyta. S. Chand & Company Ltd, New Delhi.
4. Pandey, B. P. 2007. Botany for Degree Students: Diversity of Microbes, Cryptogams, Cell Biology and Genetics. S. Chand & Company Ltd, New Delhi.
5. Sambamurthy, A. V. S. S. 2006. A Textbook of Plant Pathology. I. K. International Pvt. Ltd., New Delhi.
6. Sambamurthy, A. V. S. S. 2006. A Textbook of Algae. I. K. International Pvt. Ltd., New Delhi.
7. Sharma, O. P. 1992. Textbook of Thallophyta. McGraw Hill Publishing Co., New Delhi.
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9. Vashishta, B. R., A. K. Sinha and V. P. Singh. 2008. Botany for Degree Students: Algae. S. Chand & Company Ltd, New Delhi.
10. Vashishta, B. R. 1990. Botany for Degree Students: Fungi, S. Chand & Company Ltd, New Delhi.
11. Dutta A.C. 2016. Botany for Degree Students. Oxford University Press.
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Lecturer in Botany
AGARJUNA GOVT COLLEGE
NALGONDA A.P.


S. VEERAI AH
Assistant Professor
Dept. of Botany,
Govt. Degree College for Women,
Gajwel, Siddipet (Dist.), T.S.-502278.


DR. N. SIDDULU
M.Sc PH.D
Asst. Professor of Botany
Tara Govt. College Sangareddy


Chairman-Board of Studies
Department of Botany
Govt. Degree College for Women (A)
Nalgonda.

B.Sc. (CBCS) Botany-I-year
Semester-I - Paper-I
Microbial Diversity and Lower Plants
Practical Syllabus
(w.e.f academic year 2023-24)


Credits – 2


(30 hours)

1. Study of viruses and bacteria using electron micrographs (photographs).
2. Gram staining of Bacteria.
3. Study of symptoms of plant diseases caused by viruses, bacteria, Mycoplasma and fungi:
Viruses: Tobacco mosaic
Bacteria: Angular leaf spot of cotton and Rice tungro.
Mycoplasma: Little leaf of Brinjal and Leaf curl of papaya
Fungi: White rust on Crucifers, Rust on wheat & Tikka disease of Groundnut.
4. Vegetative and reproductive structures of the following taxa:
Algae: *Oscillatoria*, *Nostoc*, *Volvox*, *Oedogonium*, *Chara*, *Ectocarpus* and *Polysiphonia*.
Fungi: *Albugo*, *Mucor*, *Saccharomyces*, *Penicillium*, *Puccinia* and *Cercospora*
5. Section cutting of diseased material infected by Fungi and identification of pathogens as per theory syllabus. **White rust of Crucifers, Rust on wheat & Tikka disease of Groundnut.**
6. Lichens: Different types of thalli and their external morphology
7. Examination of important microbial, fungal and algal products Biofertilizers, protein capsules, antibiotics, mushrooms, Agar-agar etc.
8. Field visits to places of algal / microbial / fungal interest (e.g., Mushroom cultivation, water bodies).
9. Study of Morphology (vegetative and reproductive structure) and anatomy of the following Bryophytes: *Marchantia* and *Anthoceros* and *Polytrichum*.
10. Study of morphology (vegetative and reproductive structure) and anatomy of the following Pteridophytes: *Lycopodium*, *Equisetum* and *Marsilea*.
11. Study of Anatomical features of *Lycopodium* stem, *Equisetum* stem, and *Marsilea* petiole and rhizome by preparing double-stained permanent mounts.


Lecturer in Botany
MARJUNA GOVT COLLEGE
A.P.


S. VEERIAH
Assistant Professor
Dept. of Botany,
Govt. Degree College for Women,
Gajwel, Siddipet (Dist.), T.S.-502278.


Dr. N. SIDDULU
M.Sc Ph.D.
Asst. Professor of Botany
Tara Govt. College Sangareddy


Chairman Board of Studies
Department of Botany
Govt. Degree College for Women (A)
Kalyandurga

B. Sc(CBCS) Botany- I year
Semester-II - Paper-II
Gymnosperms, Taxonomy of Angiosperms and Ecology
Theory Syllabus
(w. e. f 2023-24 academic year)

DSC-1B (4 hrs./week)

Credits- 4 (60 hours)

UNIT-I

15 hrs.

1. Gymnosperms: General characters, structure, reproduction and classification (Sporne's) Distribution and Economic importance of Gymnosperms.
2. Morphology of vegetative and reproductive parts, systematic position and life cycle of *Pinus* and *Gnetum*.
3. Geological time scale, Introduction to Palaeobotany, Types of fossils and fossilization, importance of fossils.

UNIT-II

15 hrs.

4. Introduction: Principles of plant systematic, Types of classification: Artificial, Natural and Phylogenetic; Systems of classifications; salient features and comparative account of Bentham and Hooker, Engler and Prantl classification systems. An introduction to Angiosperm Phylogeny Group (APG)
5. Current concepts in Angiosperm Taxonomy: Embryology in relation to taxonomy, Cytotaxonomy, Chemotaxonomy and Numerical Taxonomy.
6. Nomenclature and Taxonomic resources: An introduction to ICBN, Shenzhen code – a brief account. Herbarium: Concept, techniques and applications.

UNIT-III

15 hrs.

7. Systematic study and economic importance of plants belonging to the following families: Polypetalae: Annonaceae, Capparidaceae, Rutaceae, Fabaceae, (Faboideae / Papilionoideae, Caesalpinioideae, Mimosoideae), Cucurbitaceae, Apiaceae.
8. Gamopetalae: Asteraceae, Asclepiadaceae, Lamiaceae,
9. Monochlamydeae: Amaranthaceae, Euphorbiaceae
10. Monocotyledons: Orchidaceae, Poaceae and zingiberaceae

UNIT-IV.

15 hrs.

11. Components of ecosystem, energy flow, food chain and food webs.
12. Plants and environment, ecological adaptations of plants, Hydrophytes, Xerophytes and Mesophytes.
13. Plant Succession serial stages, modification of environment, climax formation with reference to Hydrosere and Xerosere.



Lecturer in Botany
GARJUNA GOVT COLLEGE
Nalgonda

S. VEERAIYAH
Assistant Professor
Dept. of Botany,
Govt. Degree College for Women,
Gajwel, Siddipet (Dist.), TS - 502278

Dr. N. SIDDULU

M.Sc Ph.D 17
Asst. Professor of Botany
Tara Govt. College Sangareddy

Chairman-Board of Studies
Department of Botany
Govt. Degree College for Women
Nalgonda

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1. Watson, E. V. 1974. The structure and life of Bryophytes, B. I. Publications, New Delhi.
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Lecturer in Botany
WINA GOVT. COLLEGE


S. VEEBAIAH
Assistant Professor
Dept. of Botany,
Govt. Degree College for Women,
Gajwel, Siddipet (Dist.) T.S. 502278.



DR. N. SIDDURU
M.Sc Ph.D
Asst. Professor of Botany
Tara Govt. College Sangareddy
18749
Govt. Degree College for Women,
Nalgonda.


B. Sc (CBCS) Botany- I-year
Semester-II - Paper-II
Gymnosperms, Taxonomy of Angiosperms and Ecology
Practical Syllabus
Credits-I (30hours)
(w.e.f academic year 2023-24)

1. Study of Morphology (vegetative and reproductive structures) of the following taxa: Gymnosperms: *Pinus* and *Gnetum*.
2. Study of Anatomical features of *Pinus* needle and *Gnetum* stem by preparing double-stained permanent mounts.
3. Fossil forms using permanent slides / photographs: *Cycadeoidea*.
4. Systematic study of locally available plants belonging to the families prescribed in theory Syllabus (Minimum of one plant representative for each family).
5. Study of morphological and anatomical characteristics of locally available plant species (*Eichornia*, *Hydrilla*, *Pistia*, *Nymphaea*, *Asparagus*, *Opuntia*, *Euphorbia melli*)
6. Demonstration of herbarium techniques.
7. Candidate has to submit at least 30 herbarium sheets.


Lecturer in Botany
AGARJUNA GOVT. COLLEGE
NALGONDA


S. VEERAIHAH
Assistant Professor
Dept. of Botany,
Govt. Degree College for Women,
Gajwel, Siddipet(Dist.), T.S.-502278


Dr. N. SIDDULU
M.Sc Ph.D
Asst. Professor of Botany
Tara Govt. College Sangareddy


Chairman-Board of Studies
Department of Botany
Govt. Degree College for Women (A)
Nalgonda.

