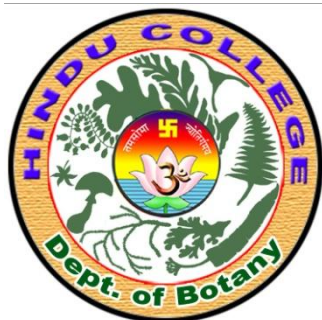




HINDU COLLEGE – GUNTUR

STUDENT CENTRIC METHODS

2.3.1(QLM)

DEPARTMENT OF BOTANY

EXPERIENTIAL LEARNING

COMMUNITY OUTREACH PROGRAMME

LAB SESSIONS

FIELD VISITS

2017-2018

HINDU COLLEGE – GUNTUR
STUDENT CENTRIC METHODS
2.3.1(QLM)

COMMUNITY OUTREACH PROGRAMME

SNO	ACTIVITY	DATE	DURATION hrs/days	No. of Participants
2017-18				
1	SWACHH BHART	03-08-2017	ONE DAY	57
2	VANA MAHOTSAV	19-08-2017	ONE DAY	45
3	OZONE DAY	16-09-2017	ONE DAY	38
4	JANMA BHOOMI STUDENTS PROGRAMME	01-01-2018 to 11-01-2018	11 days	38

LABORATORY SESSIONS

INDEX

S.No.	Name of The Activity	Date	Duration hrs/days	No. of Participants
2017-18				
1	LAB WORK ON “ ALGAE STUDY			22

FIELD VISITS

INDEX

S.No.	Name of The Activity	Date	Duration hrs/days	No. of Participants
2017-18				
1	FIELD TRIP TO ANU	13-12-2017	ONE DAY	52

HINDU COLLEGE – GUNTUR
STUDENT CENTRIC METHODS
2.3.1(Q_LM)

Swachh Bharat

Title of the Event : Swachh Bharat

Date : 03-08-2017

Venue : Nallapadu

Co-ordinator : Dr.M.Madhavi

No. of Staff members involved : 02

No. of Students participated : 55

Objective of the Event: To bring awareness about the hygiene and hygienic practices in life are critical for health not only to improve a living environment but also to elevate our thinking to a more pure and healthy life.

Plan of Execution: For implementing this Swachh Bharat program, we the staff and students taken permission from the Principal of the college. We started at 9 AM in the college and reached to Nallapadu by 10 A.M. We carried the necessary Flexi to exhibit in the Village, at 1 P.M. we had lunch and by 5 P.M. we all lectured in college. All the 55 students are divided to 2 groups they cleaned the road side garbages, removing all the waste leaves and unwanted plants. To keep the road sides neat and clean. So that we can avoid diseases and can improve the health to bring awareness among the village people about the importance of cleanliness one of the most common problem in rural areas is that of defecation.

The village people got awareness about the hygiene practice and to keep the surroundings clean and green .

HINDU COLLEGE – GUNTUR
STUDENT CENTRIC METHODS
2.3.1(Q_LM)



HINDU COLLEGE – GUNTUR
STUDENT CENTRIC METHODS
2.3.1(Q_LM)

Vana Mahotsav

Name of the Event	: Van Mahotsav
Date	: 19-08-2017
Venue	: Chebrolu
Co-ordinator	: K.V.S.Durga Prasad
No. of Staff members involved	: 02
No. of Students participated	: 43

Objective of the Event: To bring awareness about the importance of plants and planting trees for conservation. This is an annual tree – planting festival in India, celebrated in the first week of July. This festival aims to create awareness regarding the planting trees, samplings in homes, offices, schools, colleges and thus called a forestation. Students planted trees on the road side nearly 50 plants are planted.

Plan of Execution: We the Staff and Students taken permission from Principal all the students did rally in the village, with slogans saying “SAVE THE TREES” cut the greed not the trees, “Save the trees – save the earth”. Shade giving are planted on the road side, the village people also joined in this program.

Out coming the event: The students are very happy in learning about the importance social service and also the use of plants for the mankind.,

HINDU COLLEGE – GUNTUR
STUDENT CENTRIC METHODS
2.3.1(QLM)

Vanam manam programme at Yanamadala



వనమహోత్సవము



HINDU COLLEGE – GUNTUR
STUDENT CENTRIC METHODS
2.3.1(Q_LM)

Ozone Day

Name of the Event	: Ozone Day
Date	: 16-09-2017
Venue	: Botany Department
Co-ordinator	: Dr.M.Madhavi
No. of Staff members involved	: 02
No. of Students participated	: 36
Objective of the Event	: To bring awareness about the importance of Ozone Layer protecting from direct sun light.
Chief guest	: Dr.K.Tirupathi Reddy

“The main objective of the Ozone day of 2017 is “caring for all life under the sun”

Sir explained the reasons for ozone depletion, as umbrella protects us from rain ozone protects earth from sun. The ozone layer is being depleted by chemicals released by industry, mainly chloro fluorocarbons (CFCs). Concerns that increased UV radiation due to ozone depletion threatened life on earth, including increased skin cancer in humans and other ecological problems, led to bans on the chemicals, and the latest evidences is that the ozone depletion is stopped. United Nations Assembly every 16 September as ozone day for the prevention of ozone layer.

Out coming the event: The students are learned and got awareness about the importance of ozone layer.

HINDU COLLEGE – GUNTUR
STUDENT CENTRIC METHODS
2.3.1(QLM)



HINDU COLLEGE – GUNTUR
STUDENT CENTRIC METHODS
2.3.1(QLM)

zone day:

16.09.2017



HINDU COLLEGE – GUNTUR
STUDENT CENTRIC METHODS
2.3.1(Q_LM)

Janmaboomi Students Programme

Name of the event : Janmabhoomi Programme

Date : 01-01-2018 to 11-01-2018

Co-ordinator : K.V.S. Durga Prasad

No. of students participated : 38

Venue : Selapadu Village

Objective of the Event: Janmabhoomi programme is initiated by N.Chandra babu Naidu, the students of the Botany Department actively involved in this programme visited selapadu village, along with staff. Participated in plantation programme, cleaning of the road side in the village.

Outcome of the event : The students are happy in interacting with the village people.

HINDU COLLEGE – GUNTUR STUDENT CENTRIC METHODS

2.3.1(QLM)



HINDU COLLEGE – GUNTUR STUDENT CENTRIC METHODS

2.3.1(QLM)



Day - 3

HINDU COLLEGE – GUNTUR STUDENT CENTRIC METHODS

2.3.1(QLM)



HINDU COLLEGE – GUNTUR
STUDENT CENTRIC METHODS
2.3.1(QLM)

LAB WORK ON “ALGAL STUDY”

2017-2018

Name of the Event : Lab work on “Algae study”

Venue : Botany Lab-1

Co-ordinator : K.V.S. Durga Prasad

No. of Students participated: 22

Objective of the event : To study the Algae types and the specific type study of spirogyra, Chara, Chlamydomonas. The spirogyra is identified by the presence of ribbon shaped chloroplast, slimy to touch, Filamentous body. The chara is identified by, stem is leaf like, contain rhizoids, presence of antheridium and oogonium on the same branch. The chlamydomonas is identified by presence of unicellular, narrow anterior and broad posterior, flagella present.

Out Come of the event: The students are actively involved in identifying algae and characters based on its external characters. And also the students are able to separate the algae mixture.



HINDU COLLEGE – GUNTUR
STUDENT CENTRIC METHODS
2.3.1(Q_LM)

FIELD TRIP TO ANU

Name of the Event	: Field Trip
Date	: 13-12-2017
Venue	: A.N.U. Campus
Co-ordinator	: K.V.S.Durga Prasad
No. of Staff members involved	: 02
No. of Students participated	: 50
Objective of the Event	: To Collect the plants for herbarium and for plant identification.

Plan of Execution: All the students and staff visited ANU Botanical Garden, Dr. K. Raju Sir guided us in identifying the plants. We collected the rare plants for herbarium and for preserving in the specimen bottles it added vigor in learning processes and relieves monotones of indoor education. Field study is an essential part of botany as plants are best studied in their natural habitat. These tours also help to build good repo among the students and teachers. Sir, explained the importance of herbarium preservation methods. Taxonomic keys are explained.

Outcome of the event: Students gained practical knowledge in identifying the plants.

HINDU COLLEGE – GUNTUR
STUDENT CENTRIC METHODS

2.3.1(QLM)

Field Trip to ANU

13.12.2017



HINDU COLLEGE – GUNTUR STUDENT CENTRIC METHODS

2.3.1(QLM)



13.12.2017 - ANU



13-12-2017



HINDU COLLEGE – GUNTUR

STUDENT CENTRIC METHODS

2.3.1(Q.M)

DEPARTMENT OF BOTANY

PARTICIPATIVE LEARNING

ASSIGNMENTS

GROUP DISCUSSIONS

SEMINARS

2017-2018

HINDU COLLEGE – GUNTUR
STUDENT CENTRIC METHODS
2.3.1(QLM)

INDEX
ASSIGNMENTS

S.NO	TOPIC	No. of Participants
2017-18		
1	Economic Importance of Bacteria	5
2	Evolution of Sporophytes in Bryophytes	5
3	Bentham & Hooker's Classification	5
4	Stelar Evolution in Pteridophytes	5
5	Female gametophyte	5

WEB ASSIGNMENTS

S.No.	Name of the Topic	No. of students Participated
2017-18		
1	Thallus organization & reproduction in Algae	1
2	Reproduction in Bacteria	1
3	Economic importance of teak Rose wood & Red sandals	1

GROUP DISCUSSIONS

Sl.No.	Name of the Topic	No.of Participants
2017-2018		
1	Plant water relations	4
2	Plant identification	4
3	Cell biology	4

SEMINARS

SNO	TOPIC	DURATION hrs/days	No. of Participants
2017-18			
1	Transmission of plant viruses	10 min	1
2	Polysiphonia	10min	1
3	Tissues	10min	1
4	Annonaceae	10min	1
5	Applications of Biodiversity	10min	1

HINDU COLLEGE – GUNTUR
STUDENT CENTRIC METHODS
2.3.1(Q_LM)

ASSIGNMENTS

S.NO	TOPIC	No. of Participants
2017-18		
1	Economic Importance of Bacteria	5
2	Evolution of Sporophytes in Bryophytes	5
3	Bentham & Hooker's Classification	5
4	Stelar Evolution in Pteridophytes	5
5	Female gametophyte	5

WEB ASSIGNMENTS

S.No.	Name of the Topic	No. of students Participated
2017-18		
1	Thallus organization & reproduction in Algae	1
2	Reproduction in Bacteria	1
3	Economic importance of teak Rose wood & Red sandals	1

HINDU COLLEGE – GUNTUR

STUDENT CENTRIC METHODS

2.3.1(Q_LM)

Group Discussion::2017-2018

Topic : “ Plant water relations”

Title of the Event : Group Discussion on Plant water Relations

Venue : Botany lab

Co-ordinator : KVS Durga Prasad

No. of Staff members involved : 01

No. of Students involved : 04

Objective of the event: The students of 2nd semester were divided into 3 groups and the topic given to them is “ Plant water relations”. Discussed about soil type, in take of water by roots, flow of water from root to stem tip and how the water is evaporated from leaves.

Outcome of the event: The students got good knowledge sharing among them about the water relations. This group discussion is very benefitable to the students for easy understanding to perform in public exam.



HINDU COLLEGE – GUNTUR

STUDENT CENTRIC METHODS

2.3.1(QLM)

Topic: “ Plant identification (Taxonomy)”

Title of the Event : Group Discussion on plant identification (Toxonomy)

Venue : Botany lab

Co-ordinator : KVS Durga Prasad

No. of Staff members involved : 01

No. of Students involved : 04

Objective of the event: The students are divided into 4 groups, each group is given one complete plant with root, stem, leaf, flower and fruit. They were discussing about the identification characters basing on the taxonomic tools like Herbarium and flora of Andhra Pradesh. The students are much involved in solving the plant identification.

Outcome of the event: The students actively involved in sharing their knowledge, this group discussion is very much useful for their practical examination and also for theory public exams. This is one type of self learning method.



HINDU COLLEGE – GUNTUR STUDENT CENTRIC METHODS

2.3.1(QLM)

Topic : “ CELL BIOLOGY (MITOSIS)”

Title of the Event : Cell Biology (Mitosis)

Venue : Botany lab

Co-ordinator : Dr. M. Madhavi

No. of Staff members involved : 01

No. of Students involved : 04

Objective of the event: The Botany students of 4th semester are divided into 5 groups. The students are given onion-root-tips, fine brown coloured tips are taken for section cutting and the staining is acetocarmine for quick colouring the chromosome. They discussed about the use of acetocarmine and types divisions.

Outcome of the event: It is very much useful for practical and theory public examination, students gained self knowledge.



HINDU COLLEGE – GUNTUR
STUDENT CENTRIC METHODS
2.3.1(QLM)
2017-18

Name of the Department: Department of Botany

Student name : M. Chaitanya

Topic: Transmission of plant viruses.

Duration: 10 mins

No. of students attended: 14

Synopsis :Transmission of plant viruses: Viruses are known to infect both plant cells and animal cells. Since viruses are obligate intracellular parasites they must develop direct methods of transmission, between hosts, in order to survive. The mobility of animals increases the mechanisms of viral transmission that have evolved, whereas plants remain immobile, and thus plant viruses must rely on environmental factors to be transmitted between hosts.

The following points highlight the eight chief methods used for the transmission of plant viruses. The methods are:

Seed Transmission of Virus: Transmission through the seeds of the host plant was earlier considered to play a minor part in the spread of virus diseases.

Transmission by Vegetative Propagation: The vegetative parts, the infected plants such as the tubers, bulbs, roots, offshoots, buds and scions which are used for propagation, will contain the virus present in the parent.

Transmission by Mechanical Means: Many mosaic viruses are transmitted mechanically from diseased plants to healthy plants.

Transmission by Cuscuta: In many cases Dodder (*Cuscuta*) serves as a transmitting agent and an effective bridge between the infected host and the healthy plants by establishing intimate biological contact through its haustoria.

Soil Transmission: Quite a number of viruses are transmitted through the soil. Common examples of soil borne viruses are Potato mosaic virus, Oat mosaic, Wheat mosaic, etc. In all these cases the disease is contracted from the soil.

Insect Transmission: The insect which carries the disease is called a vector. The insect vectors which play a major role in the dissemination of plant viruses are the Aphids, Leafhoppers, Flea beetles, Scale insects, thrips and White flies.

Transmission by Fungi: The first proof of the fungus as a vector of plant viruses was found by Gorgon in 1958. He found that the diseased lettuce was invariably infected by a soil chytrid, *Olpidium*. Later he discovered that the fungus acts as a reservoir and vector of the big vein virus.

Some Soil Inhabiting Viruses have Nematode Vectors: Animal viruses may gain access to the higher animals through the mouth and nose from dust or contaminated food. Besides infection from outside, virus may also be transmitted from cell to cell but the internal transmission need not be in the form of virus particles.

HINDU COLLEGE – GUNTUR

STUDENT CENTRIC METHODS

2.3.1(QLM)



HINDU COLLEGE – GUNTUR

STUDENT CENTRIC METHODS

2.3.1(QLM)

Name of the Department: Botany

Student name: V. Laasya Priya

Topic: Polysiphonia.

Duration: 10 mins

No. of students attended : 17

Synopsis : Polysiphonia

Polysiphonia is a member of the order Ceramiales. The genus *Polysiphonia* derives its name from the polysiphonous nature of its thallus. The central siphon is surrounded by 4–24 pericentral siphons. *Polysiphonia* is commonly found as an epiphyte on plants and lithophyte on rocks in brackish estuaries in the intertidal and sublittoral regions. Most species prefer quiet waters whereas some are found in rough or even polluted waters. The filamentous thalli are brownish red to dark purple coloured, highly branched and with a feathery appearance.

Polysiphonia is a heterotrichous alga having an erect series of branches and a filamentous prostrate section attached to the substratum by means of unicellular rhizoids. Polysiphonia is composed of dark-reddish filaments with a single tier of pericentral cells around the axial cell. No freshwater collections have an additional layer of cortication but a few marine species do. Delicately branched hairs (trichoblasts) are formed in upper portions of the plant. Polysiphonia is a red algae, polysiphonous and usually well branched, with some plants reaching a length of about 30 cm. They are attached by rhizoids or haptera to a rocky surface or other alga. The thallus (tissue) consists of fine branched filaments each with a central axial filament supporting pericentral cells. The number of these pericentral cells (4–24) is used in identification.

Polysiphonia elongata shows a central axial cell with 4 periaxial cells with cortical cells growing over the outside on the older fronds. Its cuticle contains bromine.



HINDU COLLEGE – GUNTUR

STUDENT CENTRIC METHODS

2.3.1(QLM)

Name of the Department : Department of Botany
Student name : E. Navya
Topic : Tissues.
Duration : 10 mins
No. of students attended : 15

Synopsis: Tissues:

A tissue is a group of cells which are similar in structure and origin and perform a similar function. Plant tissue - plant tissue is a collection of similar cells performing an organized function for the plant. Each plant tissue is specialized for a unique purpose, and can be combined with other tissues to create organs such as flowers, leaves, stems and roots.

Plant tissues are of two types: Meristematic tissue; Permanent tissue

Meristematic Tissue: The cells of this tissue have the ability to divide and redivide to form new cells (mitosis). The newly formed cells are similar to the parent cell but as they grow their characteristics change and they differentiate. These cells, found in growing areas of plants, help in increase of length and width of plants.

Types of Meristematic Tissue: -

Apical Meristem:- Apical Meristem is present at the growing tips of stems and roots and increases the length of the stem and the root.

Lateral Meristem:- The girth of the stem or root increases due to Lateral Meristem(cambium).

Axillary Meristem (or intercalary meristem):- Intercalary Meristem seen in some plants is located near the node and helps to increase the length of two nodes.

PERMANENT TISSUE: These are matured meristematic tissue. The meristematic cells form permanent tissue once they lose the ability to divide. The process by which cells arise from meristematic tissue and take up a permanent shape, size and function is called differentiation.

Permanent tissues are of three types:

Simple permanent tissue.

Protective permanent tissue.

Complex permanent tissue.

SIMPLE PERMANENT TISSUE

This type of tissues are made of one type of cells, which are similar in origin, structure and function. Simple permanent tissues are of three types., i.e., Parenchyma, Collenchyma Sclerenchyma

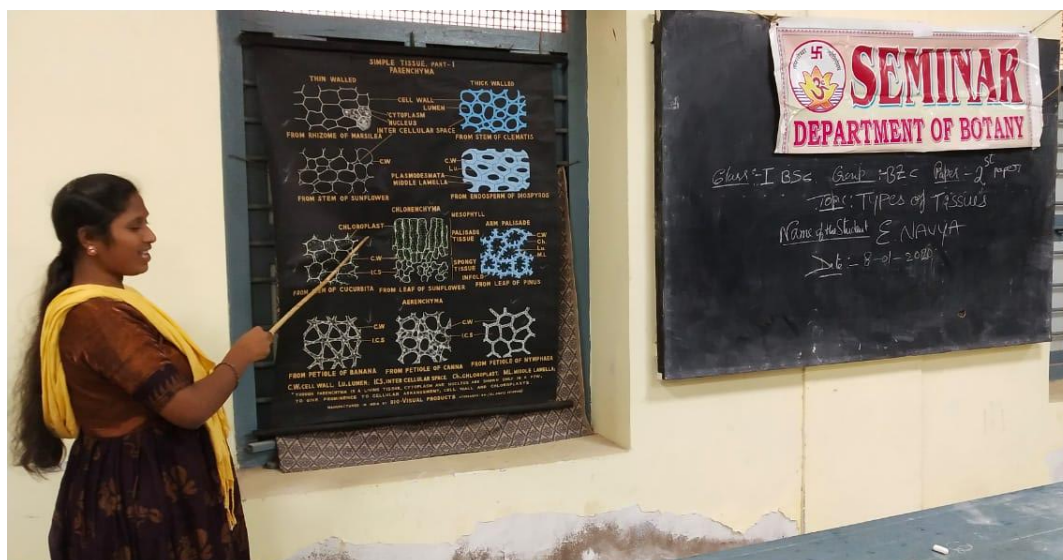
COMPLEX PERMANENT TISSUE

This type of tissue is made up of more than one type of cells that have a common origin and work together to do a common function. Its function is to transport water, minerals and food to all parts of the plant. Complex permanent tissue is of two types., i.e., XYLEM & PHLOEM.

HINDU COLLEGE – GUNTUR

STUDENT CENTRIC METHODS

2.3.1(QLM)



HINDU COLLEGE – GUNTUR

STUDENT CENTRIC METHODS

2.3.1(QLM)

Name of the Department : Botany

Student name : P. Yasaswi

Topic : Annonaceae

Duration : 10 mins

No. of students attended : 18

Synopsis: Annonaceae: Annonaceae are flowering plants consisting of trees, shrubs, or rarely lianas having 2106 accepted species and more than 130 genera. Several genera produce edible fruits, most notably *Annona*, *Anonidium*, *Asimina*, *Rollinia*, and *Uvaria*. The family is concentrated in the tropics, and about 900 species are neotropical, 450 are Afrotropical, and the other species are Indomalayan. Some of the spices in this family are used as food ingredients having medicinal properties. The family Annonaceae is composed of more than 119 genera with more than 2000 species. It is the largest family in Magnoliales. Only four genera (*Annona*, *Asimina*, *Rollinia*, and *Uvaria*) produce edible fruit. The genus *Annona* is composed of about 120 species and is the most important source of edible fruit in Annonaceae. *Annona cherimola* L., *Annona muricata* L., *Annona squamosa* L., *Annona reticulata* L., *Asimina triloba* L., and the interspecific hybrid atemoya (*A. cherimola* x *A. squamosa* Mabb.) are some of the most important species of this genus. The Annonaceae consist of trees, shrubs, or woody vines (lianas). The leaves are usually distichous, simple, and exs-tipulate. The inflorescence is a solitary flower or cyme. The flowers are bisexual [unisexual] and hypogynous. The perianth is triseriate, usually 3+3+3, hypanthium absent. The stamens are numerous, usually spiral, apostemonous, rarely basally connate. Anthers are longitudinally dehiscent. The pollen is released as monads, tetrads, or polyads. The gynoecium consists of numerous carpels with superior ovaries, either apocarpous with usually spiral carpels, or rarely syncarpous with whorled carpels. Placentation is variable; ovules are anatropous or campylotropous, bitegmic or rarely tritegmic, 1-numerous per carpel. The fruit is an aggregate of berries or dry and indehiscent units, or a syncarp in which the unit berries fuse to a fleshy receptacular axis. The seeds are endospermous, the endosperm ruminant (having an uneven, coarsely wrinkled texture), oily, sometimes starchy. Resin canals and a septate pith are usually present.



HINDU COLLEGE – GUNTUR

STUDENT CENTRIC METHODS

2.3.1(QLM)

Name of the Department: Botany

Student name: Ch. Pavan teja

Topic: Applications of Biodiversity

Duration: 10 mins

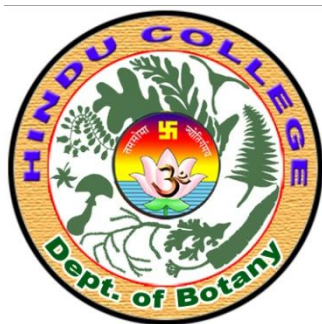
No. of students attended: 09

Synopsis: Applications of Biodiversity:

Biodiversity is important to humans for many reasons. Biodiversity is also considered by many to have intrinsic **value**—that is, each **species** has a **value** and a right to exist, whether or not it is known to have **value** to humans.

- Economic—biodiversity provides humans with raw materials for consumption and production. Many livelihoods, such as those of farmers, fishers and timber workers, are dependent on biodiversity.
- Ecological life support—biodiversity provides functioning ecosystems that supply oxygen, clean air and water, pollination of plants, pest control, wastewater treatment and many ecosystem services.
- Recreation—many recreational pursuits rely on our unique biodiversity, such as birdwatching, hiking, camping and fishing. Our tourism industry also depends on biodiversity.
- Cultural—the Australian culture is closely connected to biodiversity through the expression of identity, through spirituality and through aesthetic appreciation. Indigenous Australians have strong connections and obligations to biodiversity arising from spiritual beliefs about animals and plants.
- Scientific—biodiversity represents a wealth of systematic ecological data that help us to understand the natural world and its origins.





HINDU COLLEGE – GUNTUR

STUDENT CENTRIC METHODS

2.3.1(QLM)

DEPARTMENT OF BOTANY

PROBLEM SOLVING

CHARTS & WORKING MODELS

STUDENT PROJECT WORKS

QUIZ ON BOTANY SUBJECT

2017-2018

HINDU COLLEGE – GUNTUR

STUDENT CENTRIC METHODS

2.3.1(QLM)

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LIST OF CHARTS & MODELS

SNO	NAME OF THE CHART/WORKING MODEL	No of Charts
2017-18		
1	C3&C4 Cycle	1
1	Structure of Mitochondria	1
3	Structure of Chloroplast	1
4	TMV	1

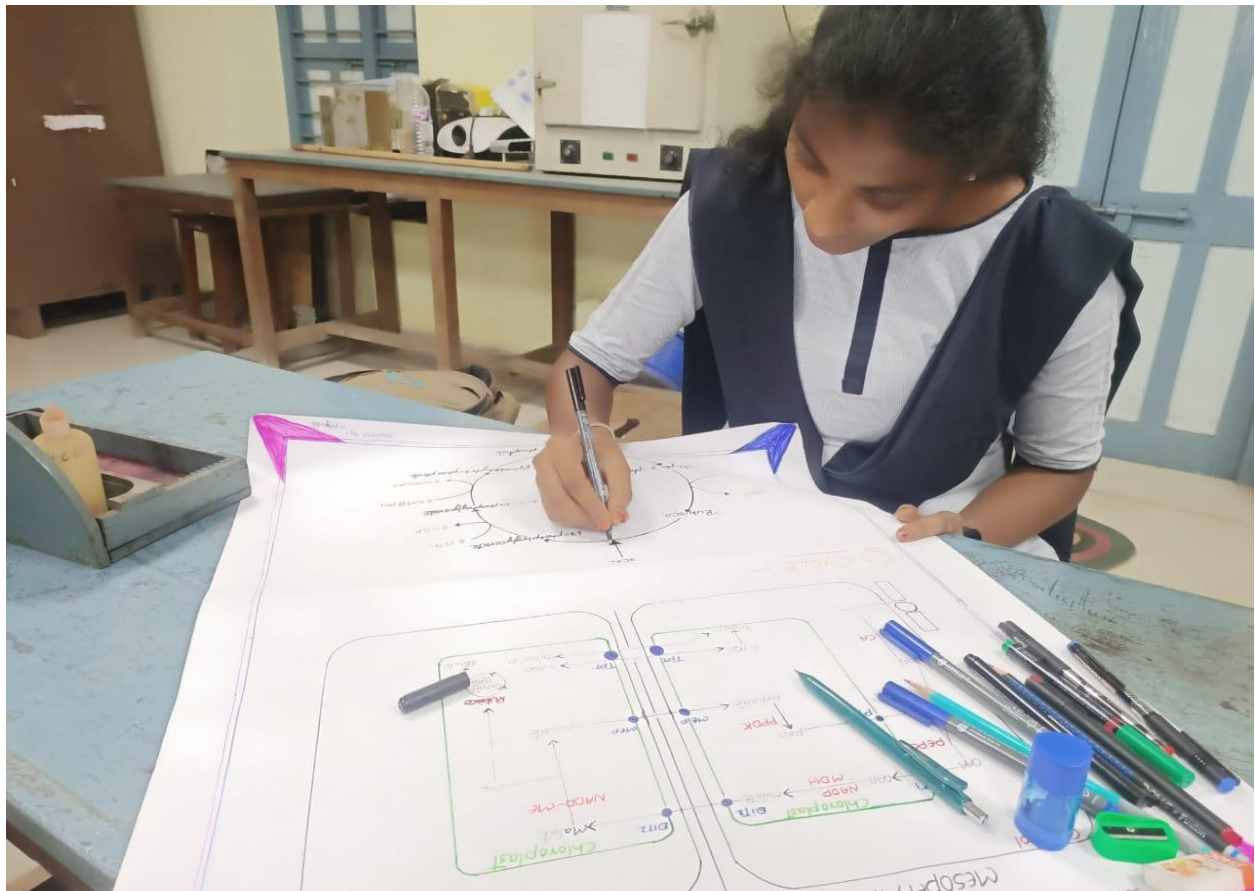
STUDENT PROJECTS

SNO	ACTIVITY	PRINCIPAL INVISTIGATOR	No. of Particip ants
2017-18			
1	A STUDY ON CAMPUS FLORA OF HINDU COLLEGE	KVS DURGA PRASAD	03
2	A STUDY ON AVAILABILITY & POTABILITY OF DRINKING WATER	Dr. M. MADHAVI	03

QUIZ ON BOTANY SUBJECT

SNO	ACTIVITY	DATE	DURATI ON hrs/days	No. of Particip ants
2017-18				
1	Quiz on Botany subject on the occasion of Dr.T.S.Ramarao's death anniversary (An Inter Collegiate Botany Quest on botany subject)	17-12-2017	ONE DAY	65

HINDU COLLEGE – GUNTUR
STUDENT CENTRIC METHODS
2.3.1(Q_LM)



HINDU COLLEGE – GUNTUR
STUDENT CENTRIC METHODS
2.3.1(Q_LM)



HINDU COLLEGE – GUNTUR
STUDENT CENTRIC METHODS

2.3.1(Q_LM)

A STUDY ON CAMPUS FLORA OF HINDU COLLEGE

D. Deepthi, B. Vani, G. Divya Sri Lakshmi,
3rd BZC Students

Project submitted to
The Research committee
HINDU COLLEGE
GUNTUR

Project Guide
SRI K.V.S. DURGA PRASAD
HOD
Department of Botany
HINDU COLLEGE
GUNTUR



Department of Botany
HINDU COLLEGE
GUNTUR
December - 2017



DEPARTMENT OF BOTANY HINDU COLLEGE GUNTUR

This is to certify that the project entitled “ A study on campus flora” submitted by D. Deepthi, B. Vani, G. Divya Sri Lakshmi incorporates the bonafied project work carried out by the in the Department of Botany, Hindu College, under my supervision. This work has not been previously submitted.

K.V.S. Durga Prasad
HOD
Department of Botany
Hindu College, Guntur.

**Department of Botany
HINDU COLLEGE
GUNTUR.**



DECLARATION

We declare that the present work entitled “Project on Campus on Flora” submitted to research committee Hindu College is a bonafied work done by us under the supervision of Sri KVS Durga Prasad, HOD in the Department of Botany, Hindu College, and this work has not submitted earlier in any other institution

Place: Guntur

D. Deepthi

B. Vani

G. Divya Sri Lakshmi

CONTENTS

1. INTRODUCTION

2. MATERIALS AND METHOD

3. RESULTS

4. CONCLUSION

5. REFERENCES

Project on Campus flora of Hindu college, Guntur

ABSTRACT

Focus on plants and 'botanical literacy' in education. There is no question that plants are essential for our survival. On the one hand there are falling levels of botanical literacy and on the other there is an increasing need for a botanically literate society. The present study was aimed at determining the vascular plant species richness of the Hindu college, Guntur dist. Market centre campus. Hindu college campus is extended over 4 acres of land. The campus area is the representative of climax vegetation and exhibit the diversity of species such as trees, herbs, climbers, other shade loving herbs. Botanical gardens are the storehouses of valuable medicinal and other plants having high economic value. The data from the primary and secondary sources resulted in the documentation of 50 species. Considering the rapidly changing urban land use in the city, much attention should be paid towards the conservation of these green spaces.

INTRODUCTION:

A Green Campus is a place where environmentally friendly practices and education combine to promote sustainable and eco-friendly practices in the campus. The green campus concept offers an institution the opportunity to take the lead in redefining its environmental culture and developing new models by creating sustainable solutions to environmental, social and economic needs of the mankind. Botanical gardens of Hindu college campuses of the state are forest fragments of varying sizes, which are communally protected and which usually have a significant religious connotation for the protecting community. Harvesting of the plants is usually prohibited within the campus. All around the globe, different cultures have made use of plants that grew around them. The richness of flowering plants makes India one of the mega diversity countries in the world with four biodiversity hotspots. India ranked seventh among 17 mega diversity countries of the world and more than 17,000 species of higher plants are reported to India. Biodiversity keeps the ecological processes in a balanced state, which is necessary for human survival. In the present work is designed with an objective to study the floristic diversity and documentation of campus flora.

METHODOLOGY:

Floristic studies were carried out in the Hindu College, Market centre campus. Collecting the plant species and data in different seasons. All habitats of the study area surveyed carefully. Plant collection carried out by standard method. Plant specimens were preserved by dipping the whole specimens in saturated solution of Mercuric chloride and alcohol. Dry and preserved plants mounted on herbarium sheets by adhesive glue and fevicol. Identification of plants done with the help of flora and other taxonomic literature.

RESULTS:

An extensive plant survey was carried out in the Hindu College, market centre campus. During the survey more than 100 plants were collected from Hindu College, market campus. Among them 50 plant have been identified (Table.1). No work is done in the past in this area. Due to various factors such as changing environmental conditions, biotic factors, destruction of habitat etc. biotic factors, destruction of habitat some plant species facing threats for their

existence. Conservation of the campus flora is one of the vital segments in the natural resource management.

Table-1: List of flowering plants of Hindu College, market centre, Guntur.

S.No.	Scientific name of the plant	Name of the family
1	<i>Annona squamosa</i>	Annonaceae
2	<i>Hybiscus rojasinensis</i>	Malvaceae
3	<i>Sterculia foetida</i>	Sterculiaceae
4	<i>Bambusa vulgaris</i>	Poaceae
5	<i>Citrus aurantium</i>	Rutaceae
6	<i>Terminalia catappa</i>	Combretaceae
7	<i>Phyllanthus emblica</i>	Phyllanthaceae
8	<i>Resinus communis</i>	Euphorbiaceae
9	<i>Solanum surattense</i>	Solanaceae
10	<i>Peltophorum pterocarpum</i>	Fabaceae
11	<i>Mimosops elengi</i>	Sapotaceae
12	<i>Ficus religiosa</i>	Moraceae
13	<i>Citrus lemon</i>	Rutaceae
14	<i>Cynodon dactylon</i>	Poaceae
15	<i>Physalis minima</i>	Solanaceae
16	<i>Solanum nigrum</i>	Solanaceae
17	<i>Euphorbia hirta</i>	Euphorbiaceae
18	<i>Euphorbia heterophylla</i>	Euphorbiaceae
19	<i>Calatropis gigantea</i>	Apocynaceae
20	<i>Coccinia grandis</i>	Cucurbitaceae
21	<i>Rauvolfia tetraphylla</i>	Apocynaceae
22	<i>Dracaena trifasciata</i>	Asparagaceae
23	<i>Commelina benghalensis</i>	Commelinaceae
24	<i>Chlorophytum comosum</i>	Asparagaceae
25	<i>Epipremnum aureum</i>	Araceae
26	<i>Saraca indiaca</i>	Fabaceae

27	<i>Carissa carandas</i>	Apocynaceae
28	<i>Aegle marmelos</i>	Rutaceae
29	<i>Syzygium cumini</i>	Myrtaceae
30	<i>Mangifera indica</i>	Anacardiaceae
31	<i>Azadirachta indica</i>	Meliaceae
32	<i>Tinospora cordifolia</i>	Menispermaceae
33	<i>Abrus precatorius</i>	Fabaceae
34	<i>Ocimum sanctum</i>	Lamiaceae
35	<i>Nerium oleander</i>	Apocynaceae
36	<i>Plumaria rubra</i>	Apocynaceae
37	<i>Ficus elastica</i>	Moraceae
38	<i>Callistemon speciosus</i>	Myrtaceae
39	<i>Cassia fistula</i>	Fabaceae
40	<i>Lawsonia inermis</i>	Lythraceae
41	<i>Adenium obesum</i>	Apocynaceae
42	<i>Tecoma stans</i>	Bignoniaceae
43	<i>Psidium guajava</i>	Myrtaceae
44	<i>Conocarpus erectus</i>	Combretaceae
45	<i>Catharanthus roseus</i>	Apocynaceae
46	<i>Vitex negundo</i>	Lamiaceae
47	<i>Tabernamontana divaricata</i>	Apocynaceae
48	<i>Pongamia pinnata</i>	Fabaceae
49	<i>Ixora coccinea</i>	Rubiaceae
50	<i>Clitiria ternatea</i>	Fabacea

COCLUSIONS:

Botanical gardens of Hindu college campuses of the state are forest fragments of varying sizes, which are communally protected and which usually have a significant religious connotation for the protecting community. Harvesting of the plants is usually prohibited within the campus. Botanical gardens are the storehouses of valuable medicinal and other plants having high economic value. The data from the primary and secondary sources resulted in the documentation of 50 species and 50 dried and preserved plants mounted on herbarium sheets.

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HINDU COLLEGE – GUNTUR
STUDENT CENTRIC METHODS
2.3.1(Q_LM)

A STUDY ON AVAILABILITY & POTABILITY OF DRINKING WATER

C.Chakradhar, V.Anil Kumar,A.Nagamani
3rd BZC Students

Project submitted to
The Research committee
HINDU COLLEGE
GUNTUR

Project Guide
Dr. M. Madhavi, M.Sc., M.Phil., Ph.D.
Department of Botany
HINDU COLLEGE
GUNTUR



Department of Botany
HINDU COLLEGE
GUNTUR
December - 2017



DEPARTMENT OF BOTANY, HINDU COLLEGE, GUNTUR

This is to certify that the project entitled “Availability & Potability of drinking water” submitted by C. Chakradhar, V. Anil Kumar, A. Nagamani incorporates the bonafied project work carried out by the in the Department of Botany, Hindu College, under my supervision. This work has not been previously submitted.

Dr. M. Madhavi, M.Sc., M.Phil., Ph.D.
Department of Botany
Hindu College
Guntur.

**Department of Botany
HINDU COLLEGE
GUNTUR.**



DECLARATION

We declare that the present work entitled “Availability & potability of drinking water” submitted to research committee Hindu College is a bonafied work done by us under the supervision of Dr. M. Madhavi in the Department of Botany, Hindu College, and this work has not submitted earlier in any other institution

Place: Guntur

**C. Chakradhar
V. Anil Kumar
A. Nagamani**

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Availability and portability of drinking Water

Abstract

This report gives an account of various portable water purifiers available for deployment. The objective is to compare different purifiers and determine the suitability of purifiers in different conditions. The water quality standards and the requirements of a portable purifier are discussed. The purifiers are classified according to the different purification techniques involved. Subsequently the descriptions of different water purifiers are given. The purifiers are then compared with respect to various attributes.

Introduction:

Several people in the faraway areas and villages merged with GMC are reportedly facing water scarcity. Currently, the population of the city is around 10 lakh and about 125 million gallons of water is being supplied to the people each day, which is far from sufficient.

Water problems were reported at Gujjanagunda, SVN Colony, and merged villages. In order to resolve the water problems, the officials are making proposals to increase the capacity of Sangam Jagarlamudi Head Water Works. The entire city gets water from Takkellapadu and Sangam Jagarlamudi plants.

In 2010, 10 villages were merged with GMC, including Gorantla, Reddypalem, Pedapalakaluru, Nallapadu, Chowdavaram, Naidupet, Potturu, Ankireddypalem, Etukuru, Budampadu villages. Since then, the civic body has been providing drinking water through water tankers. In 2019, under the AMRUT scheme, a drinking water project was initiated at Gorantla with ₹33 crore. The 53 MLD-project includes a 10-km pipeline and two reservoirs—one with 600 KL capacity and another with 4,200 KL capacity.

Due to various reasons, including delay in getting required permissions, unavailability of suitable land, and the Covid-19 pandemic, the project got delayed. The villagers are hoping for the project to be completed as about 2.34 lakh people will get sufficient water. Recently, Commissioner Keerthi Chekuri inspected the progress of works and instructed officials to complete the remaining works at the earliest.

Reviews of recent times have opined that diarrhoeal illnesses could be reduced by as much as 30-40% by developing household level treatment solutions which makes such interventions more effective than improving water quality at the source (Sobsey et al., 2008). Also, centralised water supply systems which have incorporated water treatment have been established only in densely populated urban areas. The rural communities which are generally dispersed and the marginalized communities in urban areas may have to depend on decentralised sources like dug wells, bore holes, hand pumps and ponds. Especially, in case of emergencies such as floods, often the affected people have access to water which is not potable. There is a lot of variety of portable water purifiers already available.

Specific objectives of the study :

The objectives of the study in point-wise form are as follows.

- To find out issues concerning drinking water
- To determine the standards stipulated for drinking water quality.
- To survey different water purifiers and purification techniques which are already available.

Outline of the report

This study involved reviewing the literature regarding a variety of portable water purification techniques like boiling, solar water disinfection, sedimentation and ceramic filters coagulation, adsorption (activated carbon), chlorination, UV irradiation, ultra filtration, reverse osmosis and other combined methods that have been predominantly used at the household level. The information on performance of these purifiers with respect to parameters like cost, availability, ease of use, dependence on utilities, and microbial efficacy was also mostly obtainable in the literature.

Drinking water Macmillan Dictionary says that drinking water is “water that is safe to drink.” The definition of safe drinking water according to the Joint Management Programme (JMP) of WHO and UNICEF is “water used for domestic purposes, drinking, cooking and personal hygiene. Safe drinking water is water with microbial, chemical and physical characteristics that meet WHO guidelines or national standards on drinking water quality.” Also regarding access of drinking water the JMP states “Access to drinking water means that the source is less than 1 kilometre away from its place of use and that it is possible to reliably obtain at least 20 litres per member of a household per day”; further “Access to safe drinking water is the proportion of people using improved drinking water sources: household connection; public standpipe; borehole; protected dug well; protected spring; rainwater.” It is significant to note that Millennium Development Goal 7 which is to ensure environmental sustainability has a Target 7c which asks nations to: "Halve, by 2015, the proportion of people without sustainable access to safe drinking-water and basic sanitation." (MDG, 24.10.2014).

Water Quality specifications Potable water quality is generally specified under three types namely, Physical, Chemical and Biological parameters. Physical and chemical specifications cover criteria like turbidity, presence of heavy metals and Total Suspended Solids. The biological parameters are basically a measure of microbial contamination from bacteria, protozoa and viruses. Four different water quality standards are mentioned in the report. They are BIS, WHO, CPHEEO and CPCB specifications.

Overview of the Current Situation Nearly 70% of surface water is contaminated with microbial and chemical pollutants (Water Pollution, 2013). Even ground water sources are increasingly getting polluted due to natural and anthropogenic reasons. Water contamination forms nearly 60% of health related issues caused due to environment. Nearly 67% of the families in India do not use any purification methods for drinking water. More than 33% of the ground water sources in rural areas are polluted (Water Pollution, 2013). Analysis of water quality measures from 1995 till 2009 by Central Pollution Control Board revealed that microbial pollution is the chief source of contamination of Indian water bodies. Out of these samples 36% had biochemical oxygen demand more than the prescribed limit of 3 mg/L. The chief microbes infecting water sources in India are *E. coli*, *V. cholerae* and *Shigella* (all bacteria); *E. histolytica* and *Giardia* (both protozoa) and Polio virus, Rota virus and Hepatitis A virus (Water Pollution, 2013). 7 In 2002, Nearly 7.5% of the total deaths and 9.4% of total disability adjusted life years or DALYs (expressed as the number of years lost due to ill-health, disability or early death) in

India was caused due to problems in water and sanitation (Prüss et al. 2008). Pneumonia and diarrhoea cause nearly 33% of total number of deaths below the age of five (Prüss et al. 2008). Around 74% of rural public do not treat their drinking water (Water Pollution, 2013). During floods which occur quite regularly diarrhoeal diseases like cholera becomes widespread. The anthropogenic sources of water contamination are industrial effluents, improper solid waste disposal, agricultural run-off and inappropriate waste water treatment.

Natural Sources of Water Pollution The natural sources of water pollution which cause health problems are salinity, fluoride, arsenic, nitrate and iron. These sources are described below in detail. i. Salinity The saline water from the sea leaching into ground water in coastal areas is a natural problem which has been aggravated by the rapid exploitation of ground water leading to reversal of natural hydraulic gradients.

Classification of Water Purifiers Traditionally there has been no specific method of classifying various purification techniques. Each of the water treatment methods were separately described as in Gadgil (1998). However over the years some compartmentalization can be found. Some of the broad types as classified in Sobsey (2002) are Thermal and Ultraviolet forms of treatment, Physical filtration and sedimentation and Chemical Purification methods. Of late a new category of treatment options involving membranes have been formed (Loo et al., 2012). So in this study a separate category for membrane based purification methods has been created. Apart from this a separate section for novel purifiers which are in their early stages of deployment and which use innovative or integrated methods of purification. So with this scheme in place, the classification is as follows.

Thermal or light based treatment techniques

• Boiling • Thermal pasteurization • Solar Disinfection (SODIS) • Solar distillation • Ultraviolet (UV) treatment
Physical Removal Methods • Sedimentation or Clarification • Paper, Fabric and Fiber Filters • Biosand filter
Chemical treatment techniques • Chlorination • Combined flocculation and disinfection • Adsorption
Membrane based treatment methods • Microfiltration (MF) • Ultrafiltration (UF) and Nanofiltration (NF) • Reverse Osmosis (RO) • Forward Osmosis (FO)
Novel Purifiers • Plant Xylem Filtration • Integrated Purification • Biopolymer reinforced nanocomposites • Other novel filters

HINDU COLLEGE – GUNTUR

STUDENT CENTRIC METHODS

2.3.1(Q_LM)

Name of the Event: Quiz on Botany subject on the occasion of Dr.T.S.Ramarao's Death Anniversary (An Inter Collegiate Botany Quest on botany subject)

Date: 19-12-2017

Venue : SEMINAR HALL, HINDU COLLEGE,GUNTUR

Co-ordinator: K.V.S. Durga Prasad

Chief Guest: Dr. T. RAMAKRISHNA, Opthmalogist, RK.EYE HOSPOTALS,GUNTUR

No. of Staff members involved: 05

No. of Students participated: 65

Objective of the Event: On the occasion of Legendary personality, Dr.T.S. Ramarao's, death anniversary conducted quiz on botany subject through the interaction among the students of different colleges.

Plan of Execution: On the occasion of Dr.T.S.Ramarao death anniversary all the botany staff members and students gathered in the botany department and discussed and remembered about the services rendered by Dr. T. S. Ramarao garu to the botany department, also his sincersity and honesty. On this day we conducted quiz, elocution to the students. And also distributed 1st, 2nd and 3rd prizes to the students.

Outcome of the Event: The students and staff felt very happy in remembering the greatness

Dr.T.S. Ramarao garu. The students got much interaction with all the staff members.

HINDU COLLEGE – GUNTUR STUDENT CENTRIC METHODS

2.3.1(QLM)

