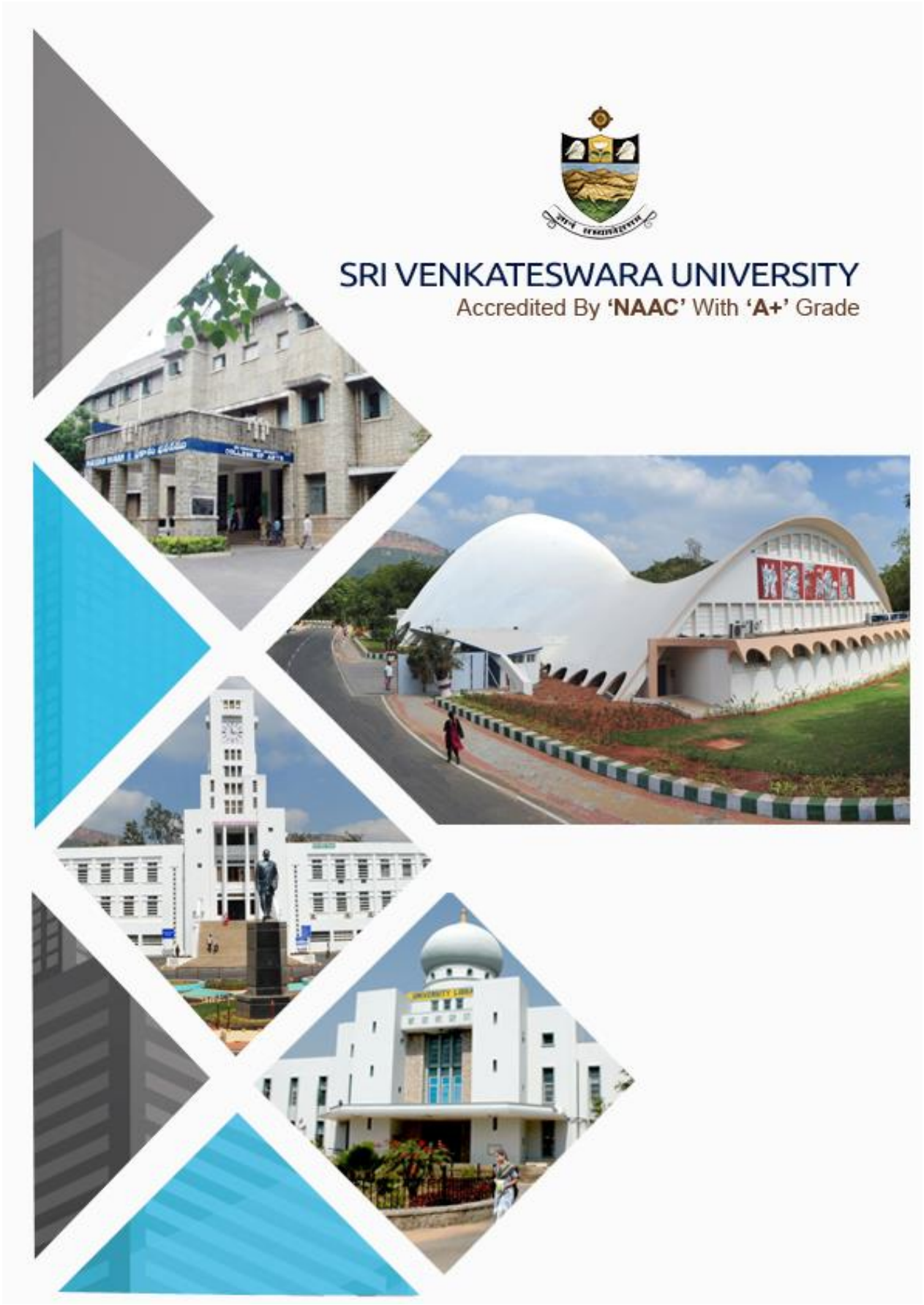



**7.1.6 QUALITY AUDITS ON ENVIRONMENT AND ENERGY ARE REGURALY UNDERTAKEN BY THE INSTITUTION AND ANY AWARDS RECEIVED FOR SUCH GREEN CAMPUS INITIATIVES**

**7.1.6. Quality audits on environment and energy are regularly undertaken by the Institution and any awards received for such green campus initiatives:**

1. Green audit
2. Energy audit
3. Environment audit
4. Clean and green campus recognitions / awards
5. Beyond the campus environmental promotion activities

## GREEN AUDIT

### INTRODUCTION

Green Audit is a process of systematic identification, quantification, recording, reporting and analysis of components of environmental diversity of various establishments. It aims to analyze environmental practices within and outside of the concerned sites, which will have an impact on the eco- friendly ambience. Green audit can be a useful tool for the Institution to determine how and where they are using the most energy or water and other resources; the Institution can then consider how to implement changes and make savings. It can also be used to determine the type and volume of waste, which can be used for a recycling project or to improve waste minimization plan. It can create health consciousness and promote environmental awareness, values and ethics. It provides staff and students better understanding of Green impact on campus.

If self-enquiry is a natural and necessary out-growth of a quality education, it could also be stated that institutional self-enquiry is a natural and necessary outgrowth of a quality educational institution. Thus it is imperative that the college evaluate its own contributions toward a sustainable future. As environmental sustainability is becoming an increasingly important issue for the nation, the role of higher educational institutions in relation to environmental sustainability is more prevalent.

The rapid urbanization and economic development at local, regional and global level has led to several environmental and ecological crises. On this background it becomes essential to adopt the system of the Green Campus for the institutes which will lead for sustainable development and at the same time reduce a sizable amount of atmospheric carbon-di-oxide from the environment. The National Assessment and Accreditation Council, New Delhi [NAAC] has made it mandatory that all Higher Educational Institutions should submit an annual Green Audit. Moreover, it is part of Corporate Social Responsibility of the Higher

Educational Institutions to ensure that they contribute towards the reduction of global warming through Carbon Footprint reduction measures.

**OBJECTIVES**

In recent tines, the Green Audit of an institution has been becoming a paramount important for self-assessment of the institution which reflects the role of the institution in mitigating the present environmental problems. The Institution has been putting efforts to keep campus environment clean since its inception, The purpose of the present Green Audit is to identify, quantify, describe and prioritize framework of Environment Sustainability in compliance with the applicable regulations, policies and standards. The main objectives of carrying out Green Audit are:-

1. Layout of the University plan

2. Improving Environmental standards

3. Reduction and Reuse of Resources

4. Environmental Education through Curriculum

5. Developing Environmental Ethics and Value systems in Young minds

**METHODOLOGY**

The purpose of the Green audit of Sri Venkateswara University is to ensure that the practices followed in the campus ate in accordance with the Green Policy adopted by the institution. The Methodology includes: Physical inspection of the campus, Observation and Review of the documentation, Interviewing key persons, Measurements and Recommendations.

**FINDINGS OF GREEN AUDITING**

The Institution has adopted the 'Green Campus' system for Environmental Conservation and Sustainability. There are main three pillars i.e. Zero environmental foot print, Positive impact on occupant health and performance and 100% graduates demonstrating environmental literacy. The goal is to reduce CO2 emission, energy and water use, while creating atmosphere where students.

## ENERGY AUDIT

According to Energy Conservation Act, 2001, Energy Audit is the verification, monitoring, and analysis of the use of energy including submission of a technical report containing recommendations for improving energy efficiency with cost-benefit analysis and an action plan to reduce energy consumption.

The Energy and Electricity audit aimed to cover the aggregate consumption within the campus including academic and administrative blocks. In different hostels, LPG cylinders are primarily used for cooking purposes and the number of uses was also counted. Domestic LPG connections were not included in the present study. Within the campus, no other fossil fuel like coal-fire or firewood, etc based energy is used.

All the buildings of the University are designed and constructed in such a way that during day time no electricity is consumed for lighting of tube lights and other electric lights. Proper daylight and ventilation facilities are available for every building.

## ENVIRONMENT AUDIT

Programs have been undertaken by the Institute for plantation. The Green belt is also maintained to reduce the pollution level by decreasing the carbon dioxide level. Every year on June 5$^{th}$ World Environmental Day [WED] will be celebrating by inviting a special guest to elaborate impact of healthy environment on human life among students and staffs.

As a part of Curriculum, University has incorporated environmental related subjects to have environmental education.

Generated Solid wastes like waste papers, vegetables matter and miscellaneous ate systematically dumped into and earthen pit for natural decomposition instead of burning, thereby reduction in CO2 has achieved.

सत्यमेव जयते

भारत सरकार /Government of India

महात्मा गांधी राष्ट्रीय ग्रामीण शिक्षा परिषद /Mahatma Gandhi National Council of Rural Education

उच्चशिक्षाविभाग/Department of Higher Education

शिक्षामंत्रालय / Ministry of Education

Where there is Rural Wellbeing there is Universal Prosperity

# *District Green Champion Certificate*

This is to certify that **SRI VENKATESWARA UNIVERSITY** is hereby recognized as **District Green Champion** for **Chittoor** District, Andhra Pradesh for the Academic Year 2021-22. The institution has successfully elevated the Swachhta Action Plan, adopted and implemented best practices in the areas of Sanitation, Hygiene, Waste Management, Water Management, Energy Management and Greenery Management.

**Dr W G Prasanna Kumar**
**Chairman, MGNCRE**
**Ministry of Education, Government of India**

तारीख / Date : 12.03.2022
ज्ञापनसंख्या/ Memo no: MGNCRE/SAP22/10

# Certificate

## HYM International Certifications Pvt. Ltd.

Certified that the Quality Management System of

## SRI VENKATESWARA UNIVERSITY

**Tirupati, Chittoor District - 517 502,
Andhra Pradesh, India**

has been assessed and found to be in accordance with the requirements of the quality standards

# ISO 9001 : 2015

for the following scope of certification

## PROVIDING EDUCATIONAL SERVICES

Further information about the scope of this certificate and applicability of ISO 9001 : 2015 requirements may be obtained by consulting the organization.

Issue Date : 18/08/2022

Renewal Date : 17/08/2025

1st Surveillance 17/08/2023

2nd Surveillance 17/08/2024

HYM International Certifications Pvt. Ltd. Corporate Seal

Authorised Signature

Certificate No : **Q91864142427**

HYM International Certifications Pvt. Ltd

**NOTE: This Certificate is Valid From 18/08/2022 to 17/08/2023**

This is an accredited certificate authorized for issue by Accreditation Service for Certifying Bodies [Europe] Limited who have assessed M/s.HYM International Certifications Pvt. Ltd. against defined criteria and in cognisance of ISO 17021:2015 "Conformity Assessment - Requirements for bodies providing audit and Certification of management Systems".

www.hymcertifications.com on for checking the validation of the Certification

Regd. Office : Plot No. 265/C, Addagutta Society, Opp. JNTU, Kukatpally, Hyderabad - 500 072, Telangana State, India.
E-mail: siva@hymcertifications.com, Website: www.hymcertifications.com

# Certificate

## HYM International Certifications Pvt. Ltd.

Certified that the Environmental Management System of

## SRI VENKATESWARA UNIVERSITY

**Tirupati, Chittoor District - 517 502,**
**Andhra Pradesh, India**

has been assessed and found to be in accordance with the requirements of the environmental standards

# ISO 14001 : 2015

for the following scope of certification

## IMPLEMENTATION OF GREENERY AND ENVIRONMENTAL PROMOTION ACTIVITIES

Further information about the scope of this certificate and applicability of ISO 14001 : 2015 requirements may be obtained by consulting the organization.

**Issue Date** : 18/08/2022

**Renewal Date** : 17/08/2025

1st Surveillance 17/08/2023

2nd Surveillance 17/08/2024

HYM International Certifications Pvt. Ltd. Corporate Seal

Authorised Signature

**Certificate No : E91864140183**

HYM International Certifications Pvt. Ltd

**NOTE: This Certificate is Valid From 18/08/2022 to 17/08/2023**

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www.hymcertifications.com on for checking the validation of the Certification

Regd. Office : Plot No. 265/C, Addagutta Society, Opp. JNTU, Kukatpally, Hyderabad - 500 072, Telangana State, India.
E-mail: siva@hymcertifications.com, Website: www.hymcertifications.com

# Certificate

## HYM International Certifications Pvt. Ltd.

Certified that the Energy Management System of

## SRI VENKATESWARA UNIVERSITY

**Tirupati, Chittoor District - 517 502,**
**Andhra Pradesh, India**

has been assessed and found to be in accordance with the requirements of the Energy standards

# ISO 50001 : 2018

for the following scope of certification

## IMPLEMENTATION OF ENERGY SAVING PRACTICES

Further information about the scope of this certificate and applicability of ISO 50001 : 2018 requirements may be obtained by consulting the organization.

**Issue Date** : 18/08/2022

**Renewal Date** : 17/08/2025

1st Surveillance 17/08/2023

2nd Surveillance 17/08/2024

Authorised Signature

**Certificate No : En9186414086**

HYM International Certifications Pvt. Ltd

**NOTE: This Certificate is Valid From 18/08/2022 to 17/08/2023**

This is an accredited certificate authorized for issue by Accreditation Service for Certifying Bodies [Europe] Limited who have assessed M/s.HYM International Certifications Pvt. Ltd. against defined criteria and in cognisance of ISO 17021:2015 "Conformity Assessment - Requirements for bodies providing audit and Certification of management Systems".

www.hymcertifications.com on for checking the validation of the Certification

Regd. Office : Plot No. 265/C, Addagutta Society, Opp. JNTU, Kukatpally, Hyderabad - 500 072, Telangana State, India.
E-mail: siva@hymcertifications.com, Website: www.hymcertifications.com

# Certificate

## HYM International Certifications Pvt. Ltd.

Certified that the Gender Sensitization Of Compliance

## SRI VENKATESWARA UNIVERSITY

Tirupati, Chittoor District - 517 502,
Andhra Pradesh, India

has been assessed and found to be in accordance with the requirements of the Gender Sensitization Of Compliance

# GENDER SENSITIZATION AUDIT

for the following scope of certification

## SPECIFIC FACILITIES PROVIDED FOR WOMEN IN TERMS OF SAFETY AND SECURITY, COUNSELING, COMMON ROOMS

Further information about the scope of this certificate and applicability Of Gender Sensitization Certification Of Compliance requirements may be obtained by consulting the organization.

Issued Certificate Date : 18/08/2022

Certificate Renewal Date : 17/08/2023

GSA

HYM International Certifications Pvt. Ltd. Corporate Seal

Authorised Signature

HYM International Certifications Pvt. Ltd

Certificate No : G9186414010

This is an accredited certificate authorized for issue by Accreditation Service for Certifying Bodies [Europe] Limited who have assessed M/s.HYM International Certifications Pvt. Ltd. against defined criteria and in cognisance of ISO 17021:2015 "Conformity Assessment - Requirements for bodies providing audit and Certification of management Systems".

www.hymcertifications.com on for checking validate of the Certification

Regd. Office : Plot No. 265/C, Addagutta Society, Opp. JNTU, Kukatpally, Hydearabad - 500 072, Telangana State, India.
E-mail: hym@hymcertifications.com, Website: www.hymcertifications.com

## 7.1.6 Quality Audits On Environment And Energy Are Reguraly Undertaken By The Institution And Any Awards Received For Such Green Campus Initiatives

### Introduction

### Green Audit, a Tool for Environmental Protection and Conservation

The modernization and industrialization are the two important outputs of twentieth century which have made human life more luxurious and comfortable. Simultaneously, they are responsible for voracious use of natural resources, exploitation of forests and wildlife, producing massive solid waste, polluting the scarce and sacred water resources and finally making our mother Earth ugly and inhospitable. Today, people are getting more familiar to the global issues like global warming, greenhouse effect, ozone depletion and climate change etc. Now, it is considered as a final call by mother Earth to walk on the path of sustainable development. The time has come to wake up, unite and combat together for sustainable environment.

Considering the present environmental problems of pollution and excess use of natural resources, Hon. Prime Minister, Shri. Narendra Modiji has declared the Mission of Swachch Bharat Abhiyan. Also, University Grants Commission has mentioned “Green Campus, Clean Campus” mission mandatory for all higher educational institutes. As environmental sustainability is becoming an increasingly important issue for the nation, the role of higher educational institutions in relation to environmental sustainability is more prevalent.

Green Audit is the most efficient ecological tool to solve such environmental problems. It is a process of regular identification, quantification, documenting, reporting and monitoring of environmentally important components in a specified area. Through this process the regular environmental activities are monitored within and outside of the concerned sites which have direct and indirect impact on surroundings. Green audit can be one of the initiative for such institutes to account their energy, water resource use as well as wastewater, solid waste, E-waste, hazardous waste generation. Green Audit process can play an important role in promotion of environmental awareness and sensitization about resource use. It can create consciousness towards ecological values and ethics. Through green audit one can get direction about how to improve the condition of environment.

### Need of Green auditing:

Green auditing is the process of identifying and determining whether institutions practices are eco-friendly and sustainable. Traditionally, we are good and efficient users of natural resources. But over the period of time excess use of resources like energy, water, chemicals are become habitual for everyone especially, in common areas. Now, it is necessary to check whether our processes are consuming more than required resources? Whether we are handling waste carefully? Green audit regulates all such practices and gives an efficient way of natural resource utilization. In the era of climate change and

resource depletion it is necessary to verify the processes and convert it into green and clean one.Green audit provides an approach for it. It also increases overall consciousness among the people working in institution towards an environment.

## Goals of Green audit:

University has conducted a green audit with specific goals as:

- Identification and documentation of green practices followed by university.
- Identify strength and weakness in green practices.
- Conduct a survey to know the ground reality about green practices.
- Analyze and suggest solution for problems identified from survey.
- Assess facility of different types of waste management.
- Increase environmental awareness throughout campus.
- Identify and assess environmental risk.
- Motivates staff for optimized sustainable use of available resources.
- The long-term goal of the environmental audit program is to collect baseline data of environmental parameters and resolve environmental issue before they become problem.

Students are the major strength of any academic institution. Practicing green actions in any educational institution will inculcate the good habit of caring natural resources in students. Many environmental activities like plantation and nurturing saplings and trees, Cleanliness drives, Rain water harvesting, etc. will make the students good citizen of the country. Through Green Audit, higher educational institutions can ensure that they contribute towards the reduction of Global warming through Carbon Footprint reduction measures.

## Benefits of Green Audit to an Educational Institute:

There are many advantages of green audit to an Educational Institute:

- It would help to protect the environment in and around the campus.
- Recognize the cost saving methods through waste minimization and energy conservation.
- Find out the prevailing and forthcoming complications.
- Empower the organization to frame a better environmental performance.
- It portrays good image of institution through its clean and green campus.

### Sri Venkateswara University, Tirupati, Andhra Pradesh at a Glance:

Sri Venkateswara University established in 1954, to cater to the educational needs and aspirations of people of Rayalaseema Region of Andhra Pradesh. After completing 68 years of excellence in teaching, research, extension and outreach activities, the University is

committed to cater to the needs of higher education offering a full range of post-graduate programs in Arts, Sciences, Law, Management, Education, Physical Education, Engineering and Pharmacy disciplines. From a humble beginning of one College with six departments, the University has now grown into the second largest University in Andhra Pradesh having four constituent Colleges viz. College of Arts, College of Sciences, College of Commerce, Management & Computer Science and College of Engineering accommodating 54 departments offering 88 programs.

The University has made rapid strides in the field of higher education and research and is adjudged as one of the best Universities in the country and got **ACCREDITED** A+

**GRADE BY NAAC-2017.**

**Various prestigious rankings and Academic credits in the year 2019-2020.**

| | |
|---|---|
| QS India Rankings-2020 | : 44 |
| NIRF University category | : 38 |
| THE Young University Rankings-2020 | : 101-150 |
| Education world Rankings 2020 | : 23 |
| THE world University Rankings-2021 | :801-1000 |
| Citations(Normalized) for 2014-2019 | :16.321 |
| PhDs awarded | : 217 FT + 129 PT |
| Patents filed | : 3 |
| Total research projects on going | : 34 |
| Total amount | : Rs.53.14,94,271 |
| Consultancy projects | : 629 |
| Money generated through consultancy | : Rs. 766965/- |

The University is selected under RUSA component 4 for Rs.100 crore. Under this program Centres of Excellence in (i)Nano & Micro Satellite (ii) Earth & Atmospheric Sciences (iii)Material Sciences (iv)VLP Technologies (v) Herbal Drug Development (vi) Psycho & Bio Sciences (viii) Water Resources and (ix) Bio Energy. University is having National facilities (UGC-SVU centre for MST Radar Applications) of repute and selected under Centre for Potential of Excellence in a particular area(CPEPA) by UGC, New Delhi and awarded and with Centres for Advanced Study (UGC-CAS). University was awarded based on research output DST-PURSE program.

Several departments have received Special Assistance Programmes (SAP) of UGC, New Delhi and also received fund under FIST program of DST, New Delhi to improve infrastructural facilities. Most of the faculties have obtained research grants from various national funding agencies like UGC, DST, DBT, CSIR, ICMR, ICSSR, BRNS, ISRO, MNES, MoES, MoEF and DRDO and foreign financing such as UNESCO, UK-DFID, ICRISAT, European Commission Programme ERASMUS MUNDUS. Utilizing these impressive funding, the faculty of the University have proactively interacted with Industry, Academic and Research Institutes in National and International level and entered into

collaborative research agreements through MoUs (Memorandum of Understating) to conduct research work in frontier areas of national & International importance.

The students belonging to socially and economically backward communities and those who are economically poor get State and Central Government Welfare Scholarships. Fellowships and Scholarships are offered to research students of the campus by the University and also by the UGC, CSIR, DAE, ICMR, ISRO, ICAR, ICPR, ICHR, ICSSR, DST, DRDO, SRNS and Rashtriya Sanskrit Sansthan.

The University central library is the major resource centre that provides information for research students and faculty. It provides unlimited access to the UGC INFONET e-resources and e-journals through UGC INFONET Digital Library Consortium. The library is kept open from 8.00 am till 10.00 pm on all working days and from 10.00 am to 5.00 pm on Sundays and public holidays besides the addition of latest books related to both teaching and research in the main library, most of the departments have developed departmental libraries by utilizing the grant from the University or from special assistance received from funding agencies like UGC, DST, etc. A Digital Library for PhD Theses submitted to the University has been designed using DSpace, an Open Source Software developed by HP and MIT, USA. 3,000 PhD Theses have been digitalized and uploaded to the Shodhganga database. This gives easy access to the PhD theses and research documents.

The University provides residential facilities to research scholars, Post-Doctoral fellows and other researchers in the hostels specially earmarked for them on the campus. Summer fellows, research associates, visiting scientists and faculty researchers from other universities and academics are provided accommodation in the university guest house and Academic Staf college guest house. The university campus is completely Wi-fi connected. The university provides computer and uninterrupted internet facilities for research students, fellows as well as faculty on the campus in all the blocks and laboratories. Direct internet facility and common internet hubs are set-ups near the hostels and quarters on the campus to provide internet access free of cost.

To further enhance the status of the University to compete with the top University at National and Global level through continued development during 2019-2020, additional Buildings for E-Class Rooms, Establishment of Incubation Centres, On-line Examination System/expansion of Laboratories to meet the requirements of new Courses are in the pipeline. Besides meeting the infrastructure facilities of office, Separate Hostels for Boys and Girls, Cultural Centre and world Class Gymnasium and Sports facilities are being created. International Students Canteen, Digital Library, Wi-Fi Connectivity, Networking, Smart Campus, Air-Conditioned Auditorium, Development of Greenery and State of the modern art furniture in classrooms, faculty rooms, offices, Guest House and Auditorium are under progress.

## Sri Venkateswara University Map

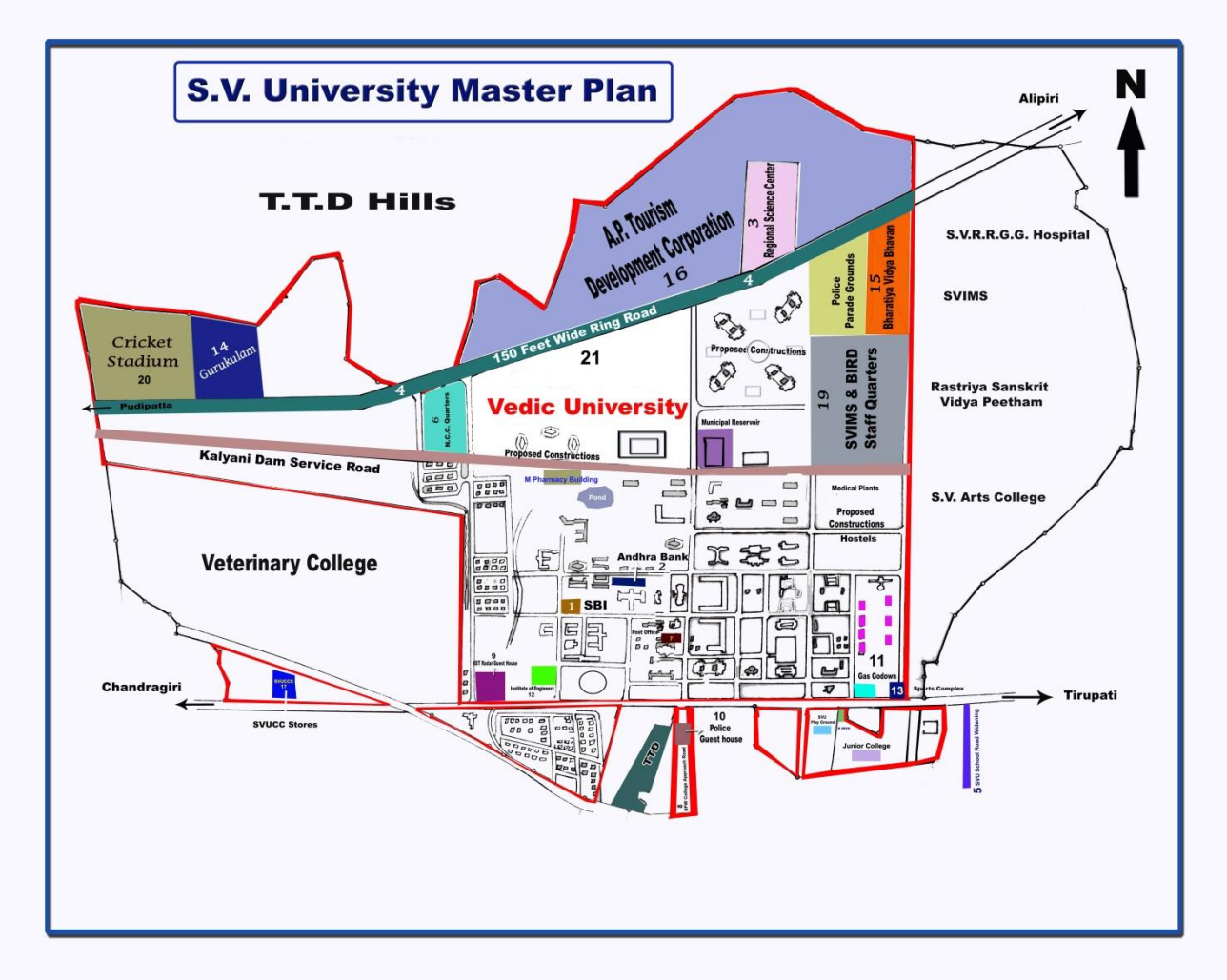



Fig .1: Sri Venkateswara University Master Plan

## Objectives of Green audit:

The main objective of Green Audit at **Sri Venkateswara University** is to make a complete assessment of the environmental indicators in the campus and make recommendations for implementation in the campus for better environmental management. To make a complete assessment of the environmental indicators in the campus and make recommendations for implementation in the campus for better environmental management.

1. To assess the quality of the water and recycling of waste water in the university campus
2. Estimation of energy & fuel usage and evaluating the carbon foot print of the university on a full attendance day
3. Evaluation of the measures implemented by university in reducing the Carbon Footprint
4. To monitor the generation of solid waste and adopting strategies for its recycling

5. To evaluate the biodiversity of flora and fauna of the campus and providing a database for corrective actions and future plans.

## Water and Wastewater Audit

Water which is precious natural national resource available with fixed quantum. The availability of water is decreasing due to increasing population of nation, as per capita availability of utilizable water is going down. Due to ever rising standard of living of people, industrialization, urbanization, demand of fresh water is increasing day by day. The unabated discharge of industrial effluent in the available water bodies is reducing the quality of these ample sources of water continuously. Hence, the national mission on water conservation was declared by the then Hon. Prime Minister Narendra Modi as 'Jal Shakti Abhiyan' and appealed to all citizens to collectively address the problem of water shortage, by conserving every drop of water and suggested for conducting water audit for all sectors of water use.

Water audit can be defined as a qualitative and quantitative analysis of water consumption to identify means of reducing, reusing and recycling of water. Water Audit is nothing but an effective measure for minimizing losses, optimizing various uses and thus, enabling considerable conservation of water in irrigation sector, domestic, power and industrial as well. A water audit is a technique or method which makes possible to identify ways of conserving water by determining any inefficiencies in the system of water distribution. The measurement of water losses due to different uses in the system or any utility is essential to implement water conservation measures in such an establishment.

## Importance of Water audit

It is observed that a number of factors like climate, culture, food habits, work and working conditions, level and type of development, and physiology to determine the requirement of water. The community which has a population between 20,000 to 1,00,000 requires 100 to 150 liters per person (capita) per day. The communities with a population can consume over 1, 00,000 requires 150 to 200 liters per person (capita) per day. As per the standards provided by WHO Regional office for South East Asia Schools require 2 liters per student; 10-15 liters per student if water-flushed toilets.

. Water usage can be defined as water used for all activities which are carried out on campus from different water sources. This includes usage in all residential halls, academic buildings, on campus and on grounds. Wastewater is referred as the water which is transported off the campus. The wastewater includes sewage, hostel and residential water used in cooking, showering, clothes washing as well as waste water from chemical and biological laboratories which ultimately going down in sink or drainage system.

### University water resources

The Main water uses in the campus includes drinking, cleaning, toilets and gardening. The University campus has continuous water supply of 24/7 through AP Government Telugu

Ganga project. In addition there are 10 numbers of water bore wells in Men and Women Hostels, Engineering college campus and university gardens. The campus has several water harvesting units to recharge ground water. The water requirement is calculated based on per person utility per day. Toilet usage -20 lts, Shower -20 lts, clothes washing- 20 lts, utensil washing – 10 lts, mopping and washing rooms– 10 lts, cooking – 5 litres, drinking -2.5 lts and gardening – 30 lts.




Fig. 2:Bore well




**Fig. 3: Open well**

## Rain Water Harvesting

Rainwater harvesting means capturing rain where it falls or capturing the run off of rain water in Sri Venkateswara University premises. Rainwater harvesting system, also called rainwater collection system or rainwater catchment system, technology that collects and stores

rainwater for further use. The collected water is also kept clean by filtering and such design of facility that does not allow pollutants to mix with collected water. Rain water is harvested from terrace, and ground floor areas for reusing in watering of lawns. Surface runoff from various ground sources and terraces are collected, filtered and recirculated for gardening and washing purpose. Besides natural percolation tanks, concrete storage tanks have also been built and rain water has been stored after proper filtration paving the open places with concrete roads is avoided so that rain water can be percolated. The rainwater harvested during rains not only helps to save water from conventional sources, but also to save energy and reduce expenses incurred on transportation and distribution of water. Awareness programmes on water conservation and rain water harvesting have been conducted regularly through various service of the University. One of the rain water harvesting pit is seen near Post Office. Similar structures are seen at different locations within premises.



**Fig 4: Rain water Harvestng Pit**



**Fig. 5: Rain Water Harvesting**



**Fig. 6a.: Rain Water Harvesting at Academic Building**



**Fig. 6b.: Rain Water Harvesting at Academic Building**

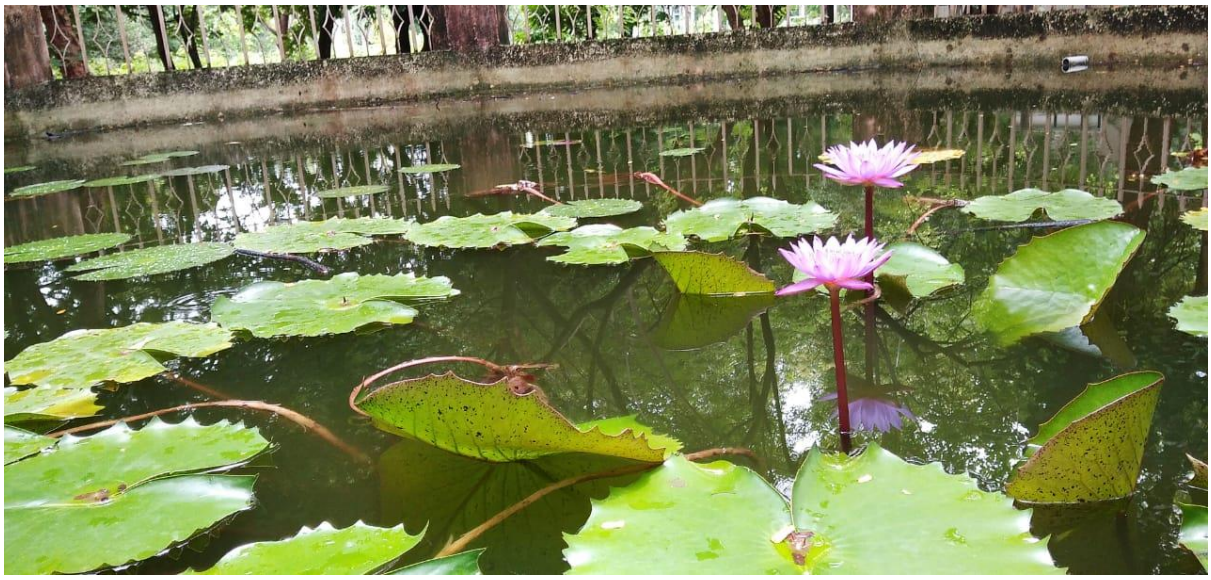


**Fig. 6c.: Rain Water Harvesting at Academic Building**

## Reusage of waste water:

Wastewater recycling is considered as the best option of water usage. The waste water generated is filtered through coarse filter system and is used for watering outdoor lawns, gardens, potted plants, cleaning of stair case, verandas, pavements and drive ways.



**Fig. 7.: Reusage of Waste water**

**Energy Audit:**

Energy is one of the major inputs for the economic development of any country. The fundamental goal of energy management is to produce goods and provide services with the least cost and least environmental effect. Also it can be said as “the strategy of adjusting and optimizing energy, using system and procedure so as to reduce energy requirements per unit of output while holding constant or reducing total costs of producing the output from these systems”. The energy audit is key to a systematic approach for decision making in the area of energy management. It attempt to balance the total energy inputs with its use, and serve to identify all the energy streams in a facility.

According to Energy Conservation Act, 2001, Energy Audit is the verification, monitoring, and analysis of the use of energy including submission of a technical report containing recommendations for improving energy efficiency with cost-benefit analysis and an action planto reduce energy consumption.

Energy resources utilized by all the departments, support services and the administrative buildings of Sri Venkateswara University, Tirupati, Andhra Pradesh campus include electricity and liquid petroleum. Major use of the energy is at office, canteen, hostel and laboratories, for lighting, transportation, cooking and workshop instruments. Sri Venkateswara University has installed solar power plant having a capacity of 1.75 MW. Electricity is also supplied to the University campus by Andhra Pradesh Southern power Distribution Company Limited (APSPDCL).



**Fig 8: Solar Panel at SVU Administrative Building**





**Fig. 9 Solar Panel at SVU Library** **Fig 10 ：Solar Panel at Prakasam Bhavan**





**Fig. 11: Solar Panel at Engineering College** **Fig. 12: Solar Panel at SVU Hostels**

In Academics and Research, Solar dryer facility is available in the Department of Home Science. Food technology students and scholars conducted research projects using solar dehydration technology. Drying foods using solar energy helps in retaining the colour, Flavour and nutritional value to a large extent. It can minimize cost, wastage and increase the productivity in terms of quality and quantity. Hands on training was given to the students with the resource persons on solar dehydration. Various foods and food products were developed. The students undergone training programmes and internship in Society for Energy, Environment and Development (SEED) Hyderabad.

Solar dryers require a certain investment for the set-up of the appliance, but no expenditures for the fuel. The basic function of a solar dryer is to heat air to a constant temperature with solar energy, which facilitates extraction of humidity from foods inside a drying chamber. Ventilation is enabled at a constant rate through defined air inlets and outlets, small solar ventilators or temperature difference, either due to exposition or vertical height. In direct sun driers the food is put in boxes with a transparent lid. Additionally, the temperature in the drier is raised due to the greenhouse effect and the air exchange is regulated by vents. The food is not exposed to direct sunlight in indirect sun driers as the fresh air is heated separately from the food chamber. This method is preferable for drying

foods which lose nutritional value when exposed to direct sunlight. Hybrid driers combine solar energy with a fossil fuel or biomass fuel. Solar drying has many advantages over open traditional drying like; Safe & hygienic, Free from insect and bird contamination, Clean &dust free products, more uniform quality products, Uniform color, texture, and appearance of the product, evenness in drying, moisture control to optimum levels, Nutrient retention especially beta carotene, yields high quality Products with better shelf life of the products.





**Fig. 13: Solar Drying Facility in the Department of Home Science**




**Fig. 14: Solar Drying by the students of Food Technology**

Solar energy generated by solar panels are exported to the grid of electricity distribution utility of Southern Power distribution company of Andhra Pradesh Ltd. Direct savings in electricity bills are availed from electricity distribution utility on monthly basis. Workshops on 'Green Power Technology in Power Grid: Issues, Challenges and Control'' was taken place in the university.



**Fig. 15: "Green Power Technology in Power Grid: Issues, Challenges and Control''**

The Energy and electricity audit aimed to cover the aggregate consumption of Electrical and Natural gas energy within the Sri Venkateswara University campus including academic and administrative blocks. In different hostels, LPG cylinders are primarily used for cooking purposes and the number of uses was also counted. Domestic LPG connections were not included in the present study. Within the campus, no other fossil fuel like coal-fire or firewood,etc based energy is used.

All the buildings of the University are designed and constructed in such a way that during daytime no electricity is consumed for lighting of tube lights and other electric lights. Proper day light and ventilation facilities are available for every building.




**Fig. 16: ISO 50001 : 2918 Certificate for Implementation of Energy Saving Practices**

Fossil fuels (such as petrol, diesel) contribute significantly to environmental pollution through emission of greenhouse gases into the atmosphere mainly as carbon dioxide. Vehicular emissionis the main source of carbon emission in the campus, hence to document the various means of transportation that is practiced by the university members is important.

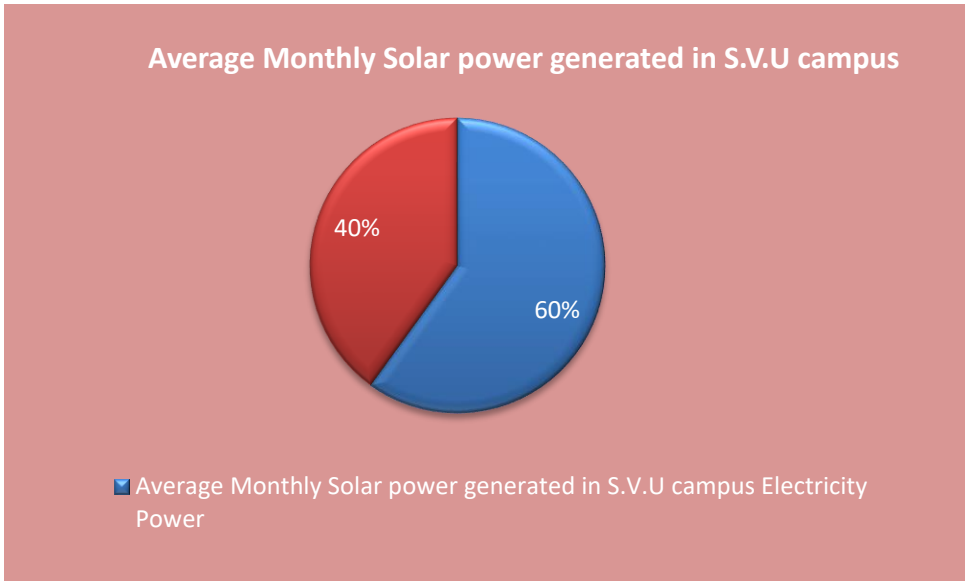



**Fig 16: Monthly Solar power generated within S.V.U campus**

Fossil fuels (such as petrol, diesel) contribute significantly to environmental pollution through emission of greenhouse gases into the atmosphere mainly as carbon dioxide. Vehicular emissionis the main source of carbon emission in the campus, hence to document the various means of transportation that is practiced by the university members is important. The fuel energy audit determines the approximate use of petrol or diesel by the vehicles inside the university. It also includes the efforts taken by the university to conserve the fuel. The conventional source of fuel for the vehicle is petrol and diesel. Maximum students, teaching and non teaching staff of university and visitors use two wheeler and four wheeler vehicles. So, the data regarding fuel utilization for students, teaching and non teaching staff of university and visitor are monitored in the study.

Carbon Foot Print Analysis

Total number of students on the campus - 4

Total number of regular faculty - 206

Total number of Academic Consultants - 239

Total number of non-teaching staff - 900

Total number of 2 wheelers used - 1147

Total number of electrical 2 wheelers - 41

Total number of 4 wheelers used - 154

Number of electrical four wheelers - 04

Average consumption of fuel per month

By two wheelers - 458 lts

By four wheelers - 135 lts

Total consumption of fuel per year – 7116lts
Awareness programmes on effects of $CO_2$ emission are conducted to encourage usage of electric bikes and cars to reduce on campus air pollution.

## Solid Waste Audit

Solid waste is the unwanted or useless solid material generated from the human activities in residential, industrial or commercial area. Solid waste management reduces or eliminates the adverse impact on the environment and human health. A number of processes are involved in efficiently managing waste for an organization. It is necessary to manage the solid waste properly to reduce the load on waste management system. Unavailability of proper waste management practices may lead to environmental pollution. A waste management audit helps educational institutes to efficiently and responsibly dispose of the waste that is generated every day. By designing a more efficient waste disposal program through a waste audit, we can enhance recycling practices

Solid waste generation and its management is a burning issue in current days. The rate of generation of solid waste is very high and yet we do not have adequate technology to manage the generated waste. Unscientific handling of solid waste can create threats to public health and environmental safety issues. Thus, it is necessary to manage the solid waste properly to reduce the load on waste management system. The purpose of this audit is to find out the quantity, volume, type and current management practice of solid waste generation in Sri Venkateswara University campus. This report will help for further solid waste management and to go for green campus development. The waste generated from Sri Venkateswara University campus includes paper waste, plastic waste, biodegradable waste, construction waste, glass waste, biomedical waste and other wastes.

**Table No. 1: Category wise solid waste generation at University (kg / month)**

| Category of waste | Paper waste | Plastic waste | Biodegradable waste | Construction waste | Glass waste | Other waste | Total waste kg/month | Total waste kg/year |
|---|---|---|---|---|---|---|---|---|
| **Quantity** | 784 | 75 | 2985 | 123 | 23 | 132 | **4122** | **49464** |
| **percentage** | 19.02 | 01.82 | 72.41 | 02.98 | 00.55 | 03.20 | 100 | |

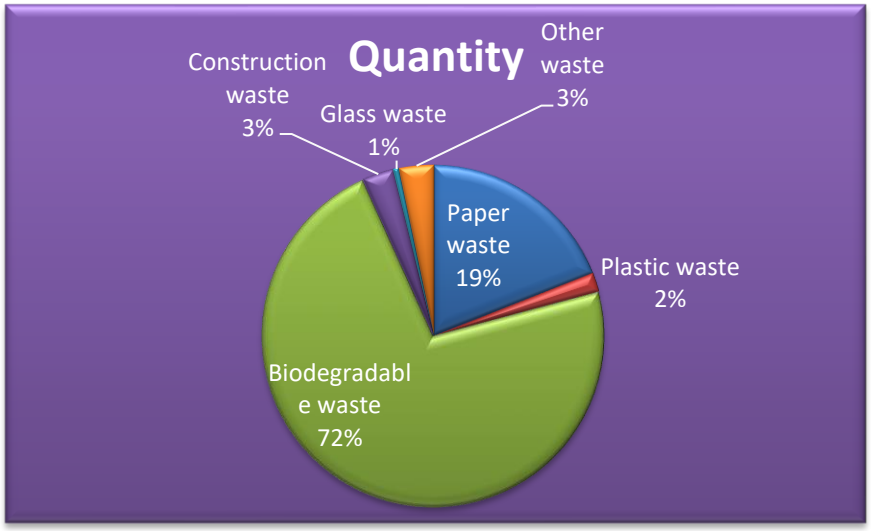



**Fig. 17: Graph - Solid waste generation at university campus**

**Solid Waste Management**

Waste is collected and segregated properly. Solid waste is divided into two categories: dry waste and wet waste. Wet waste consist of bio-degradable materials, Dry waste consist of bio-degradable and non-biodegradable materials. Students, faculty, and staff are aware and educated on proper waste management practices of recycling and disposal of plastic waste, paper waste and food waste. Solid and liquid residual waste generated in men and women hostels has been effectively disposed. SV University generated income of Rs.3.0 lakhs/ year through solid and liquid residual waste disposal and also Rs.67.0 lakhs generated by selling paper.

In the University campus premises, Blue and Green covered/ pedal-pushed dustbins are placed for waste collection. Waste bins are provided on each floor, in staff rooms, laboratories, washrooms, kitchen and in campus area. The waste materials like glass, metals, wrappers, papers, plastics, old newspapers, used papers like journal files and workshop scrap etc, are given for recycling to external agencies, where they are segregated and disposed/recycled according to the nature of the waste.

University strictly follows the guidelines regarding plastic usage and has prohibited the use of single use plastic such as carry-bags, glasses, spoons etc, in the campus. As per the College guidelines, Canteen Contractors are prohibited to use plastic cutlery, instead paperplates and wooden spoons are used. The waste from the canteens and other areas are channeled into a reservoir where they are treated biologically before the water goes out into river bodies. Metal scrap is segregated separately and sent for recycling units.




**Fig 18: Say No to Plastic**

The solvents used in the laboratories are reused after distillation to minimize the use of solvents. The waste solvents are separated as halogenated and non-halogenated and transferred to plastic containers. To prevent heat generation and gas evolution or other reaction, compatibility of the waste is checked carefully.

To prevent accidental spillage of chemicals the laboratory wastes are subjected to process through three stages of waste management. Stage-I gravel, Stage-II sand, Stage –III coal. The three chambers are replenished with new materials after a period of six months.

There is a separate room for the Nuclear Laboratory where radiation hazard is displayed for safety measures. The harmful radiations are radiated by appropriate routes. Containers containing radioactive elements are properly leadsealed.

Wearing appropriate lab coats, gloves and face shields while working with nanomaterials. The hazardous chemical wastes are kept in separate containers. Later they are filtered and drained out.

Biodegradable waste consists of Leaf litter, food waste, vegetable and fruit waste etc. is decomposed in composting, vermicomposting and bio-gas units established in the University campus



**Fig 19: Biogas Plant**

Other dry waste is collected by Waste collection vehicles of Tirupati Municipal Corporation. Overall University campus is maintained neat and clean throughout. Various awareness programmes were organized in and around campus for effective management of solid waste.

## Table-2: Awareness programme on solid waste management in rural areas (10 villages) of Tirupati, Andhra Pradesh.

| S.No. | Name of the village (Location) | Date of event conducted | Number of persons attended | Composition of Trainees | Composition of Project Team | Subject of Programme | Number of beneficiaries |
|---|---|---|---|---|---|---|---|
| 1. | Thondavada | 14.05.2022 | 150 | People of Thondavada including Harijanawada (Both Men and Women of different ages from 18years to 70 years) | Prof. G. Madhavi and S. Kiranmai | Solid waste management | 150 |
| | | | | PHC workers | M. Venu | Elimination of single use plastics | |
| | | | | SWPC workers | NCC,NSS students | Medical waste awareness | |
| | | | | Sachivalayam staff | S. Anitha Devi | Sanitary waste awareness | |
| 2. | Peruru | 25.05.2022 | 130 | People of Peruru .Both Men and Women of different ages from 21years to 75 years) | Prof. G. Madhavi and P.G.Students of M.Sc Environmental Chemistry, S.V.University | Solid waste management | 130 |
| | | | | PHC workers | M.Venu and Research Scholars of Chemistry | Elimination of single use plastics | |
| | | | | Anganvadi workers | S. Kiranmai, NCC,NSS, Chemistry students | Medical waste awareness | |
| | | | | Sachivalayam staff | S. Anitha Devi | Sanitary waste awareness | |
| 3. | Thummalagunta | 05.06.2022 | 250 | People of Thummalagunta , of different ages from 21years to 75 years) | Prof. G. Madhavi and P.G.Students of M.Sc Environmental Chemistry, Prof. K.V Saritha, Dept of Biotechnology S.V.University | Solid waste management | 250 |
| | | | | PHC workers, | M.Venu and Prof. Uma Maheswar Reddy, Dept.of ECE. | Elimination of single use plastics | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | Anganvadi staff | S. Kiranmai ,Prof.M.R.Bhaskar Reddy, Dept.of Geography | Medical waste awareness | |
| | | | | Sachivalayam staff | S. Anitha Devi, NCC,NSS, Chemistry students | Sanitary waste awareness | |
| 4. | Avilala | 18.06.2022 | 120 | People of Avilala. Both Men and Women of different ages from 21years to 75 years) | Prof. G. Madhavi and P.G.Students of M.Sc Environmental Chemistry, S.V.University | Solid waste management | 120 |
| | | | | PHC workers | M.Venu and Research Scholars of Chemistry, | Elimination of single use plastics | |
| | | | | Anganvadi workers | S. Kiranmai, NSS students | Medical waste awareness | |
| | | | | Sachivalayam staff | S. Anitha Devi, students of B.P.Ed | Sanitary waste awareness | |
| 5. | Tiruchanuru-I | 25.06.2022 | 250 | People of Avilala. Both Men and Women of different ages from 21years to 75 years) | Prof. G. Madhavi and P.G.Students of M.Sc Environmental Chemistry, S.V.University | Solid waste management | 250 |
| | | | | PHC workers, Municipality workers | M.Venu and Research Scholars of Chemistry | Elimination of single use plastics | |
| | | | | SWPC workers | S. Kiranmai, NCC&NSS students | Medical waste awareness | |
| | | | | Sachivalayam staff | S. Anitha Devi | Sanitary waste awareness | |
| | Tiruchanuru-II (Yogimallavaram) | 30.06.2022 | 96 | People of Avilala. Both Men and Women of different ages from 21years to 75 years) | Prof. G. Madhavi and P.G.Students of M.Sc Environmental Chemistry, S.V.University | Solid waste management | 96 |
| | | | | PHC workers | M.Venu and Research Scholars of Chemistry | Elimination of single use plastics | |
| | | | | SWPC workers | S. Kiranmai, students of B.P.Ed | Medical waste awareness | |
| | | | | Sachivalayam staff | S. Anitha Devi, NCC&NSS | Sanitary waste awareness | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | | students | | |
| 6. | For NCC & NSS Students of S.V.University | 12.05.2022 | 41 | NCC | Prof. G. Madhavi | Solid waste management, Medical waste awareness | 103 |
| | | | 62 | NSS | M.Venu, S. Kiranmai | Elimination of single use plastics | |




Fig 20a: Awareness Programme on Solid waste Management in rural areas around Tirupati




**Fig 20 b:** Awareness Programme on Solid waste Management in rural areas around Tirupati



**Fig 20 c:** Awareness Programme on Solid waste Management in rural areas around Tirupati

**VERMICOMPOST**



**Fig 21: Vermicomposting**

**E-waste generation and management on university campus:**

Generation of e-waste is apparent in every educational institute. Especially, at the university level where there are several equipments and instruments used for administrative as well as for scientific execution. Computers, Printers and Xerox machines are must for the administrative and research work. The wires required for the connectivity also gets included in the e-waste. More usage of these electronicas well as electrical materials generates huge amount of e-waste. Similarly, various scientific equipments and instruments get worn out with time. These too contribute to the e- waste.

E-waste include monitor, CPU, key board, electric wire, printer. Paperless work increase load on computer and therefore it is a need to reduce e-waste by repairing all these electric equipment. There is aneed to reuse and recycling of electronic equipments and material. E-waste is collected and stored in University campus and sent to authorised vendor for recycling/ disposal under buy-back policy.




**Fig 22: E-waste collection**

**Biodiversity Audit**

Carbon is the basis of life on mother Earth. It is incorporated into the plants through photosynthesis, consumed by animal species through the food, present in the form of carbon dioxide ($CO_2$) in the atmosphere, locked into the rocks as limestone and compressed into the different fossil fuels such as coal and oil. As $CO_2$ level in the atmosphere continue to increase, most climate designs or project that the oceans of the world and trees will keep soaking up more than half $CO_2$ . The plants on land and in the sea, taken up carbon by over many years increased the percentage discharged during decay, and this increased carbon became locked away as fossil fuels beneath the surface of the planet.

The starting of the 21$^{st}$ century brought growing concern about global warming, climate change, food security, poverty and population growth. In the 21$^{st}$ century more carbon has been released into the atmosphere than that has been absorbed. $CO_2$ is a principle component causing global warming. Atmospheric carbon dioxide levels have increased to 40 % from preindustrial levels to more than 390 parts per million $CO_2$. On this background it is a need of time to cover the research areas interrelated with climate change.

The “Carbon Sequestration and Green cover inventory” is a current status of tree cover and vegetation carbon storage assessment of area under Sri Venkateswara University campus. In an era of climate change and global warming carbon emission, carbon footprints, carbon sequestration, adaptations, mitigation are the keywords in academia. Carbon sequestration is a process of converting atmospheric carbon i.e. $CO_2$ into other sinks of carbon such as vegetation, soil, oceanetc. in various forms to mitigate global warming audit is one of the important clauses of Kyoto Protocol.

While transforming ourselves from regional university to global university it is a responsibility of such universities to face the global future challenges and try to find out possible solutions for them. It is a social and environmental responsibility of Government Institutes, Universities, National and International Organizations to respond positively for various global issues at local level and should percolate the generated knowledge in to the society. Global warming and climate change are current environmental issues need to be addressed scientifically and efficiently. As Universities are provided with skillful human resource supported by analytical infrastructure, it is our duty to bring such ideas in practice. While understanding the call of time the Department

of Botany and Environmental Science, Sri Venkateswara University has decided to enumerate the greencover of Sri Venkateswara University campus.

Around 100 M.Sc. Environmental Science and Botany students were involved in the field survey. Team of 4 students was made and one sector was allocated to a team. A team is provided with a measuring tape, chalks, writing pad and tree census form. A tree with girth (circumference of tree) more than 10 cm at chest level and height more than 4 feet were considered as tree and taken for enumeration. Girth of each tree was measured with the help of tape and approximate height by visual method. Identification of tree species was done with the help of field guides, web source and with the help of Taxonomist of Department of Botany of Sri Venkateswara University.

**Table -3: List of plant species on Sri Venkateswara University Campus**

| S. NO | COMMON NAME | BOTANICAL NAME | TYPE/ USE |
|---|---|---|---|
| 1 | Custard Apple | *Annona squamosa* L. ( Var.name:seethapalam) | Fruit yielding, Medicinal |
| 2 | False ashoka | *Polyalthia longifolia* (Sonner) Thw. (Naramamidi) -60 | Wind breaker |
| 3 | False ashoka | *Polyalthia longifolia* Hook. & Thom. Var. pendula (Ontikomma naraamamidi) -51 | Wind breaker |
| 4 | Snuff-Box Tree | *Oncoba spinoa* Forsk. (Line gulabi) -01 | Medicinal |
| 5 | Red silk-Cotton tree | *Bombax ceiba* L. (Buruga) -03 | Fibre yielding |
| 6 | Buddha's coconut tree | *Sterculia alata* -01 | |
| 7 | Bael | *Agle marmelos* (L.) Corr. (Maredu) -01 | Medicinal |
| 8 | Tree of heaven | *Ailanthus excelsa* Roxb. (Pedda vepa) -01 | Matchstick industry |
| 9 | Neem tree | Azadirachta indica A. Juss. (Vepa) -150 | Medicinal |
| 10 | Indian mahogany | *Chukraia tabularis* A. Juss. (Konda vepa) -01 | Medicinal |
| 11 | Indian rose wood | *Somyda febrifuga* (Roxb.) A. Juss. | Medicinal, Wood |

| | | | |
|---|---|---|---|
| | | (Somi) -02 | yielding |
| 12 | Ceylon satinwood or East Indian satinwood | *Chloroxylon swietenia* DC. (Billudu) -08 | Wood yielding |
| 13 | Ceylon Tea | *Cassine glauca* (Rottb.) Kuntz. (Neridi) -06 | Medicinal |
| 14 | Indian jujube | *Ziziphus mauritiana* Lam. (Regi chettu) -18<br>1) | Fruit yielding |
| 15 | Kath Ber | *Ziziphus xylopyrus* ( Retz.,) Willd. (Gotti) -03 | Medicinal |
| 16 | Notched Leaf Soapnut | *Sapindus emarginatus* Vahl. (Kunkudu) -08 | Medicinal |
| 17 | Mango | *Mangifera indica* L. (Mamidi) -04 | Fruit yielding |
| 18 | Indian ash tree | *Lannea coromandelica* (Houtt.) Mann. (Gumpana) -60 | Plywood making |
| 19 | Flame-of-the-forest | *Butea monosperma* (Lam.) Taub. (Modhuga) -02 | Medicinal |
| 20 | Indian rosewood | *Dalbergia latifolia* Roxb. (Iridi) -02 | Wood yielding |
| 21 | Mexican Lilac | *Gliricidia sepium* (Jacq.) Kunth ex Walp. (Seema kanuga) -10 | Rat poison |
| 22 | Indian beech and Pongame oiltree. | *Pongamia pinnata* (L.) Pier. (Kanuga) -136 | Medicinal , Biodiesel preparation |
| 23 | Malabar kino | *Pterocarpus marsupium* Roxb. (Yegi) -02 | Medicinal |
| 24 | Red Sanders | *Pterocarpus santalinus* L.f. (Errachandhanam) -16 | Medicinal, Wood yielding |
| 25 | Orchid Tree | *Bauhinia purpurea* L. (Deva kanchanam) -02 | Medicinal |
| 26 | Bidi leaf tree | *Bauhinia recemosa* Lam. (Ari chettu) | Medicinal |

| | | | |
|---|---|---|---|
| | | -01 | |
| 27 | Red cassia, Ceylon senna | *Cassia roxburghii* DC. (Rela) -54 | Medicinal |
| 28 | Siamese cassia | *Cassia siamea* L. (Seema thangedu) -33 | Medicinal |
| 29 | Royal Poinciana | *Delonix regia* (Boj. Ex Hook.) Rafin. (Thurai) -12 | Ornamental |
| 30 | Yellow Flame/ Copper pod | *Peltophorum pterocarpum* (DC.) Baker ex Heyne. (Konda chintha) -272 | Ornamental |
| 31 | Tamarind | *Tamarindus indica* L. (Chintha) -59 | Cuisines , Medicinal |
| 32 | Auri, | *Acacia auriculiformis* A. Cunn. ex Benth. (Australia thumma) -02 | Ornamental |
| 33 | White-bark acacia | *Acacia leucophloea* (Roxb.) Willd. (Thella thumma) -02 | Wood |
| 34 | Lebbeck /Woman's tongue tree | *Albizia lebbeck* (L.) Benth. (Bagichettu) -16 | Forage , Wood |
| 35 | Jumbay, white leadtree, | *Leucaena latisiliqua* (L.) Gillis. (Subabulu) -07 | Multipurpose tree |
| 36 | Badminton ball tree | *Parkia biglandulosa* Wt.& Arn. (Banthi thumma) -02 | Ornamental |
| 37 | Manila Tamarind | *Pithecellobium dulce* (Roxb.) Benth. (Cheema chintha) -01 | Food, Traditional medicine |
| 38 | Chilean mesquite | *Prosopis chilenis* (Molina) Stuntz. (Sarkar thumma) -01 | Shade tree |
| 39 | Rain tree | *Samanea saman* (Jacq.) Merr. J. Wash. (Nidraganneru) -19 | Shade tree |
| 40 | Arjuna/ Arjun tree | *Terminalia arjuna* (Roxb. ex DC.) Wt. & Arn. (Tellamaddhi) -16 | Silk production (Tassar) |

| | | | |
|---|---|---|---|
| 41 | Baheda | *Terminalia bellirica* (Gaertn.) Roxb. (Thandra) -02 | Medicinal |
| 42 | Indian almond | *Terminalia catappa* L. (Badam chettu) -02 | Food/ wood/ Ornamental |
| 43 | Southern blue gum | *Eucalyptus globulus* Labill. (Neelagiri thylam) -52 | Essential oil/ Wood |
| 44 | Common guava | *Psidium guajava* L. (Jama chettu) -01 | Food, Traditional medicine |
| 45 | Jamun | *Syzygium cumini* (L.) Skeels. (Neredu chettu) -60 | Food medicine |
| 46 | Gummy Gardenia | *Gardenia gummifera* L.f. (Bikki) -02 | Medicinal |
| 47 | West Indian jasmine | *Ixora acuminata* Roxb. (Tella ramabanam) -02 | Ornamental |
| 48 | Aal or Indian mulberry | *Morinda pubescens* J.E. Smith var. pubecens Verdc. (Maddi) -56 | Dye yielding |
| 49 | Torch tree | *Ixora pavetta* Andr. (Korivi chettu) -03 | Ornamental |
| 50 | Madhūka, | *Madhuca longifolia* (K oen.) Macbr. Var. latifolia (Roxb.) A. Cheval. (Ippa) -08 | Silk production (tassar) and medicinal |
| 51 | Sapodilla | *Manilkara zapota* (L.) P. Royen. (Sapota) -01 | Fruit yielding |
| 52 | Spanish cherry | *Mimusops elengi* L. (Pogada) -05 | Medicinal |
| 53 | Caterpillar tree | *Plumeria alba* L. (Tella devaganneru) - 08 | Ornamental, Medicinal |
| 54 | Pinwheel flower, | *Tabernaemontana divaricata* L. (Nandivardhanam) -02 | Ornamental, Medicinal |
| 55 | Small Pinwheel flower | *Ervatamia divaricata* (L.) Burkill (Sanna nandivardanamu) -02 | Ornamental, Medicinal |

| | | | |
|---|---|---|---|
| 56 | Sweet Indrajao | *Wrightia tinctoria* (Roxb.) R. Br. (Reppala) -28 | Dye yielding, Medicinal |
| 57 | Yellow oleander | *Cascabela thevitia* (L.) Lipp. (Patcha ganneru) -04 | Poisonous |
| 58 | Indian Cherry | *Cordia dichotoma* Forst. (Iriki) -01 | Traditional medicine |
| 59 | Geiger tree | *Cordia sebestena* L. -01 | Ornamental |
| 60 | Wavy trumpet flower | *Dolichandrone atrovirens* (Roth) Spr. (Oddi) -02 | Ornamental |
| 61 | Jacaranda, blue jacaranda | *Jacaranda acutifolia* Humb . & Bonpl. (Swarna sundari) -01 | Ornamental, Wood |
| 62 | Sausage tree | *Kigelia africana* (Lam.) Benth. In Hook. (Enugu thondamu) -06 | Poisonous |
| 63 | Tree jasmine or Indian cork tree | *Millingtonia hortensis* L.f. (Manu malli) -05 | Ornamental |
| 64 | African tulip tree | *Spathodea companulata* P.Beauv. (Yerra neeru budda) -01 | Ornamental |
| 65 | Silver Trumpet Tree | *Tebebuia argentea* (Bur. & K. Schum.) Britt. -03 | Ornamental |
| 66 | Rosy trumpet tree | *Tebebuia rosea* (Bertol.) DC. -05 | Ornamental |
| 67 | Yellow trumpetbush | *Tecoma stans* (L.) Kunth. (Pasupu ganneru) -01 | Ornamental |
| 68 | Desert teak | *Tecomella undulata* (Sm.) Seem. -02 | Wood yielding |
| 69 | Teak | *Tectona grandis* L.f. (Teku) -09 | Wood yielding |
| 70 | Helicopter tree | *Gyrocarpus asiaticus* Willd. (Kummara poliki) -02 | Ornamental |
| 71 | Great bougainvillea, | *Bougainvillea spectabilis* Willd. -03 | Ornamental, Tribal medicine |
| 72 | Indian sandalwood | *Santalum albam* L. (Srigandhamu) - | Wood, Medicine |

| | | | |
|---|---|---|---|
| | | 02 | |
| 73 | Indian gooseberry | *Phyllanthus emblica* L. (Nellikaya) -07 | Culinary, Traditional medicine |
| 74 | Indian elm | *Holoptelea integrifolia* (Roxb.) Planch. -09 | Cheap wood, Medicinal |
| 75 | Banyan | *Ficus benghalensis* L. -44 | Cultural significance |
| 76 | Sacred Fig | *Ficus religiosa* L. (Ravi chettu) -17 | Traditional medicine |
| 77 | The common fig | *Ficus carica* L. (Atthi chettu) -01 | Food, Folk medicine |
| 78 | Australian pine tree or whistling pine tree | *Casurina littorea* L. (Sarugudu) -02 | Wood, Ornamental |
| 79 | Traveler's palm | *Ravenala madagascarensis* Sonner. (Panka arati) -01 | Ornamental |
| 80 | Indian shot | *Canna indica* L. (Metta thamara) -02 | Ornamental |
| 81 | Thorny bamboo | *Bambusa arundinacea* (Retz.) Roxb. (Veduru) -02 | Wood for thatching |
| 82 | Toddy Palm | *Borassus flabellifer* L. (Tati chettu) -01 | Edible, Palm wine |
| 83 | Cuban royal palm | *Roystonea regia* (Kunth) O.F. Cook. -20 | Ornamental |
| 84 | Yellow Cane Palm | *Dypsis lutescens* (H.W endl.) Beentje & J. Dransf. -14 | Ornamental |



Custard Apple



Indian mahogany



Indian ash tree



Flame-of-the-forest



Red cassia,  Ceylon senna



Arjuna/  Arjun tree



Sweet Indrajao



Rosy trumpet tree



Silver Trumpet Tree



Geiger tree



Indian elm



*Cycas beddomei*





*Couroupita guianensis (*Cannonball tree) Indian sandalwood

**Fig. 22: Plant species on Sri Venkateswara University Campus**

In ecology, the mass of living biological organism in a given area or ecosystem at a given time is called as biomass. Biomass can refer to species biomass and community biomass. The species biomass is the mass of one or more species. The community biomass, which is the mass of all species in the community. It includes microorganisms, plants or animals. The mass can be defined as the average mass per unit area, or as the total mass in the community.

To estimate the biomass of the each individual tree species non- destructive method was used. To calculate the circumference Diameter at Breast Height (DBH) can be determined by measuring tree Girth at Breast Height (GBH), approximately at 1.3 meter from the ground. The Girth at Breast Height of trees having diameter which greater than 10 centimeters were measureddirectly by measuring tape.

To maintain green cover and carbon sequestration potential of the University following precautionary measures were taken.

Plantation of endemic species like *Pterocarpus santalinus, Cycas beddomei,Boswelia ovalifoliata, Syzyzium cumini* etc were planted to conserve native biodiversity. The plantation of tree species like *Acacia nilotica subsp. indica, Albizia lebbeck,*

*Azadirachta indica*, *Citrus aurantium* works as green belt which can maintain the ecological balance in the environment as well as act as sink for the harmful gases and improve air quality. Plantation activity is taken every year to increase the green cover on the University campus. Avoided the plantation of exotic species like *Casuarina*, which is fast growing species with less ecological values. Sri Venkateswara University received **:** IS0 14001: 2015 certificate for Implementation of Greenary and Environmental Promotion Activities

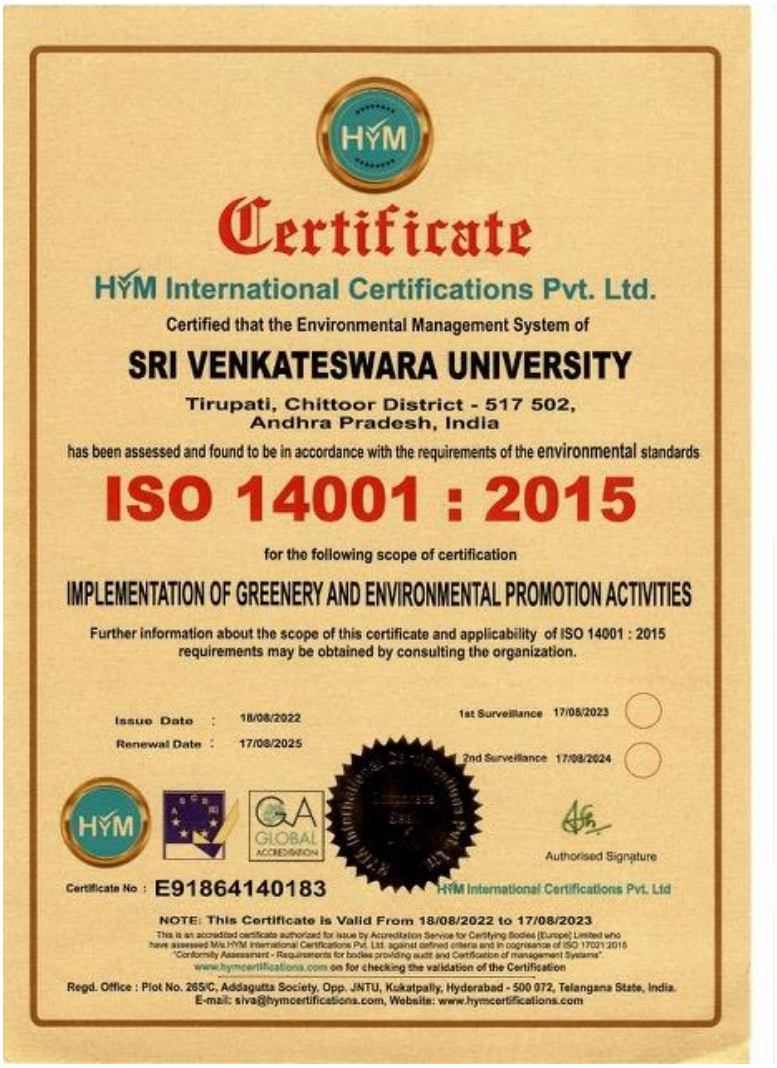



**Fig. 23: IS0 14001: 2015 Implementation of Greenary And Environmental Promotion Activities**

India has large geographical size and variety of climate and habitats. Wild animals constitute great national resources. Preservation and protection of wildlife is important from the ecological point of view. As per the UNESCO's Man and Biosphere program, the government of India has established the Seshachalam Biosphere Reserve on 20th September,

2010. The reserve is the first biosphere reserve in Andhra Pradesh and the 17th in India. By size, it is the 9th largest in India.

Sri Venkateswara University is located at foot hills of Tirumala of Seshachalam hill range a Biosphere reserve spread over in area of 480 acres with lush green campus possessing more than ten thousand different kinds of plants. At North side of the campus are seven peaks of, Eastern Ghats namely Seshadri, Neeladri, Garudadri, Anjanadri, Vrushabadri, Narayanadri and Venkatadri. Being covered with hilly region and green luxurious coverage the Sri Venkateswara University harbours different species of birds, insects, reptiles, deers and rabbits etc. In addition to above plant species a diversified fauna has been observed and documented.

Students of department of Zoology involved in counting Bird population in the campus from 18 – 21, February, 2022. As part of the program 44 different species of birds observed and posted in eBird India web page.




**Fig 24: Bird count in Sri Venkateswara University Campus**

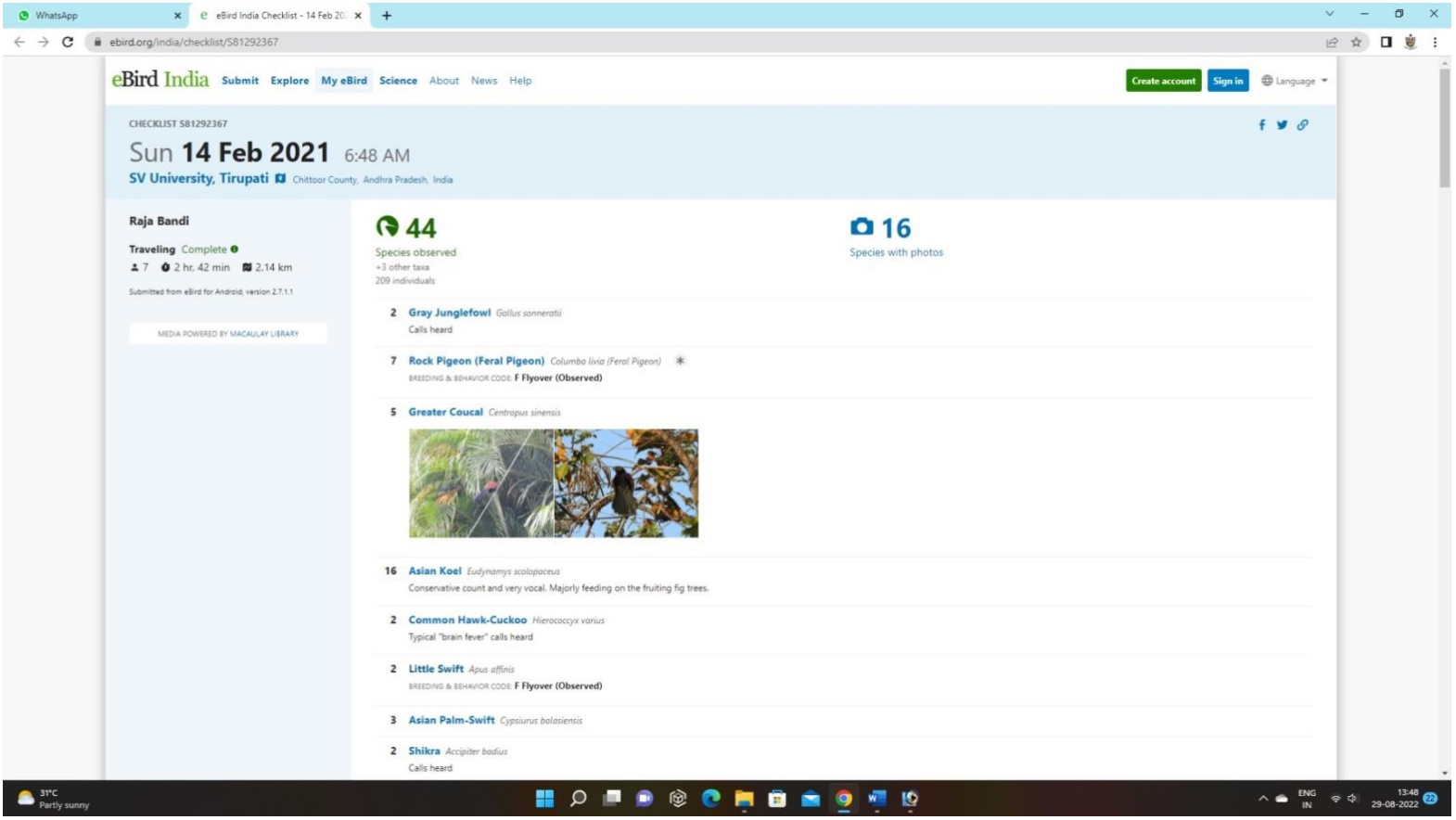



**Fig 25: eBird India WEB PAGE**

https://ebird.org/india/checklist/S81292367



**Greater Coucal** *Centropus sinensis*



***Asian Koel Eudynamys scolopaceus***



**Common Hawk-Cuckoo** ***Hierococcyx varius***



**White-throated Kingfisher** ***Halcyon smyrnensis***



**Rose-ringed Parakeet** ***Psittacula krameri***



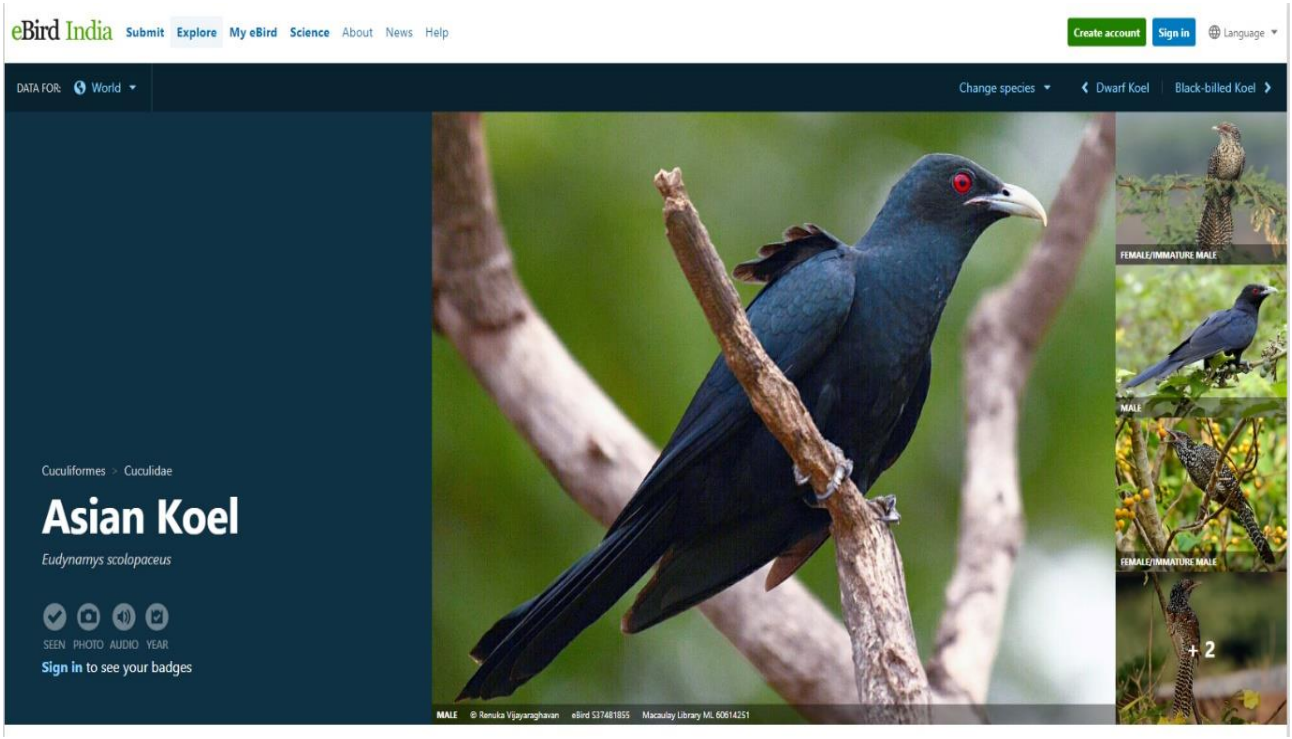
**Common Tailorbird** *Orthotomus sutorius*

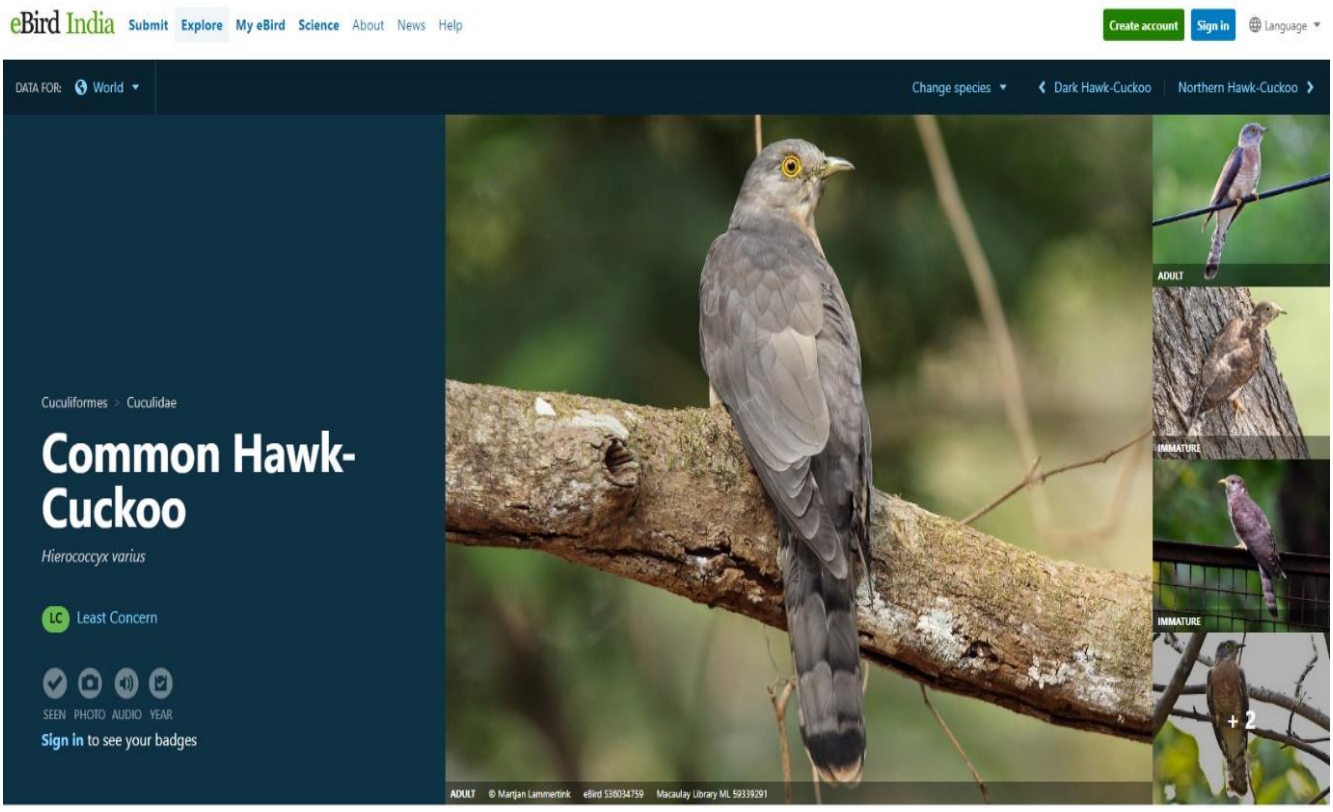


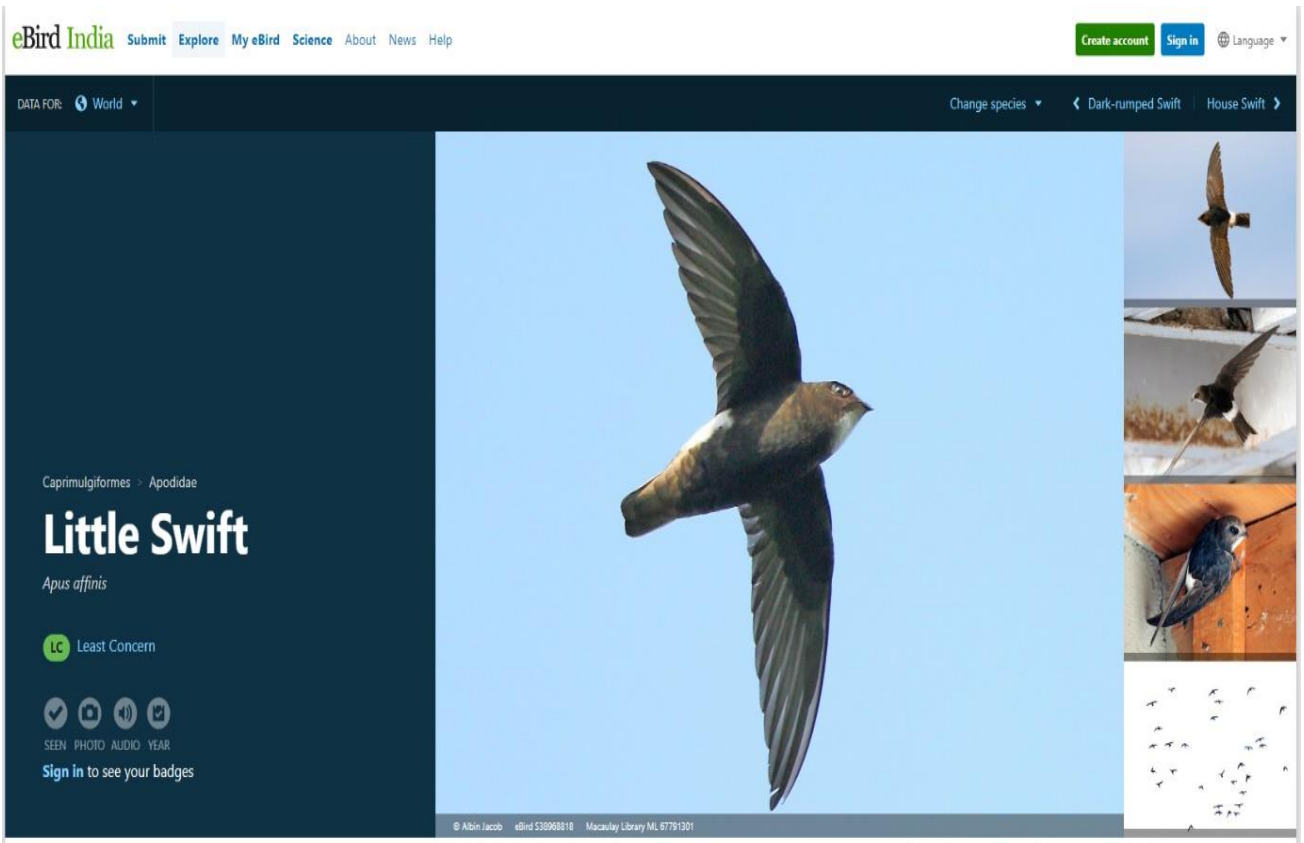
**Common Tailorbird** *Orthotomus sutorius*

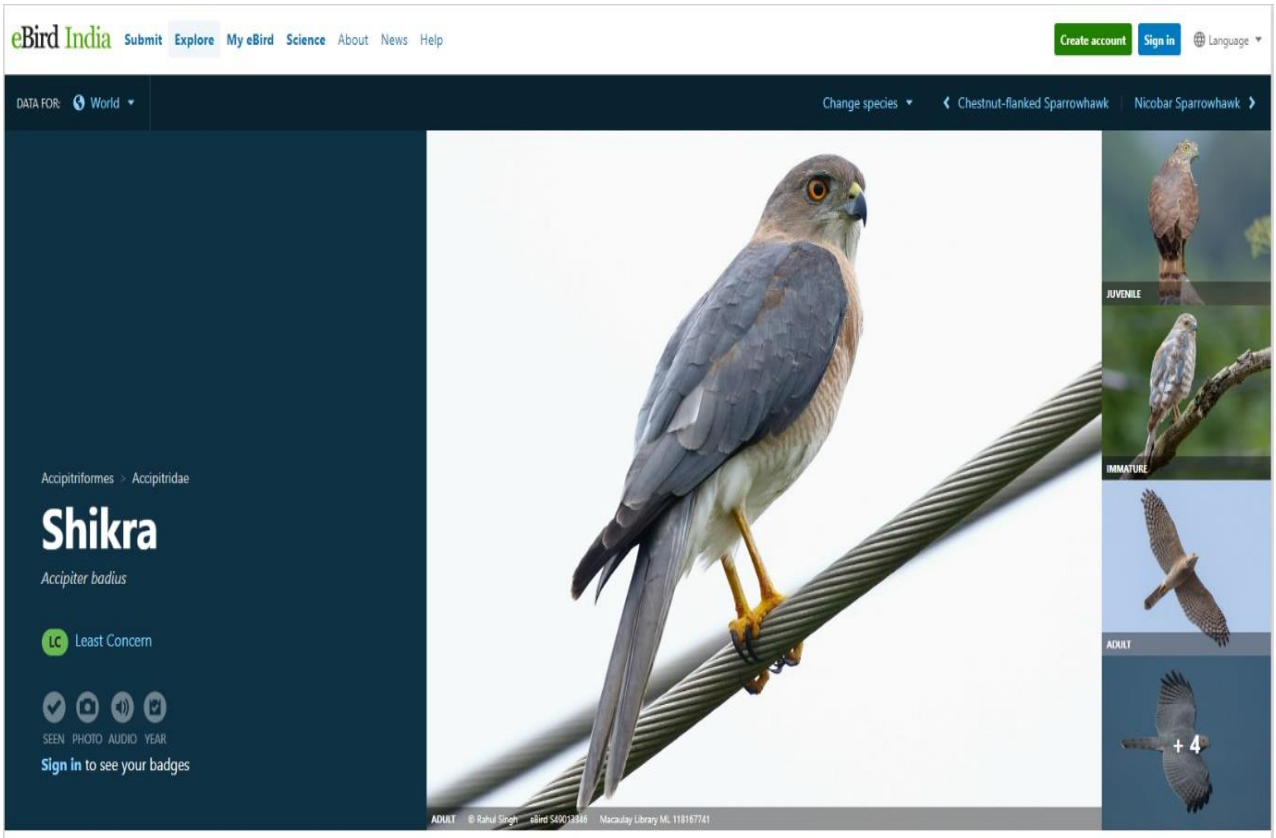


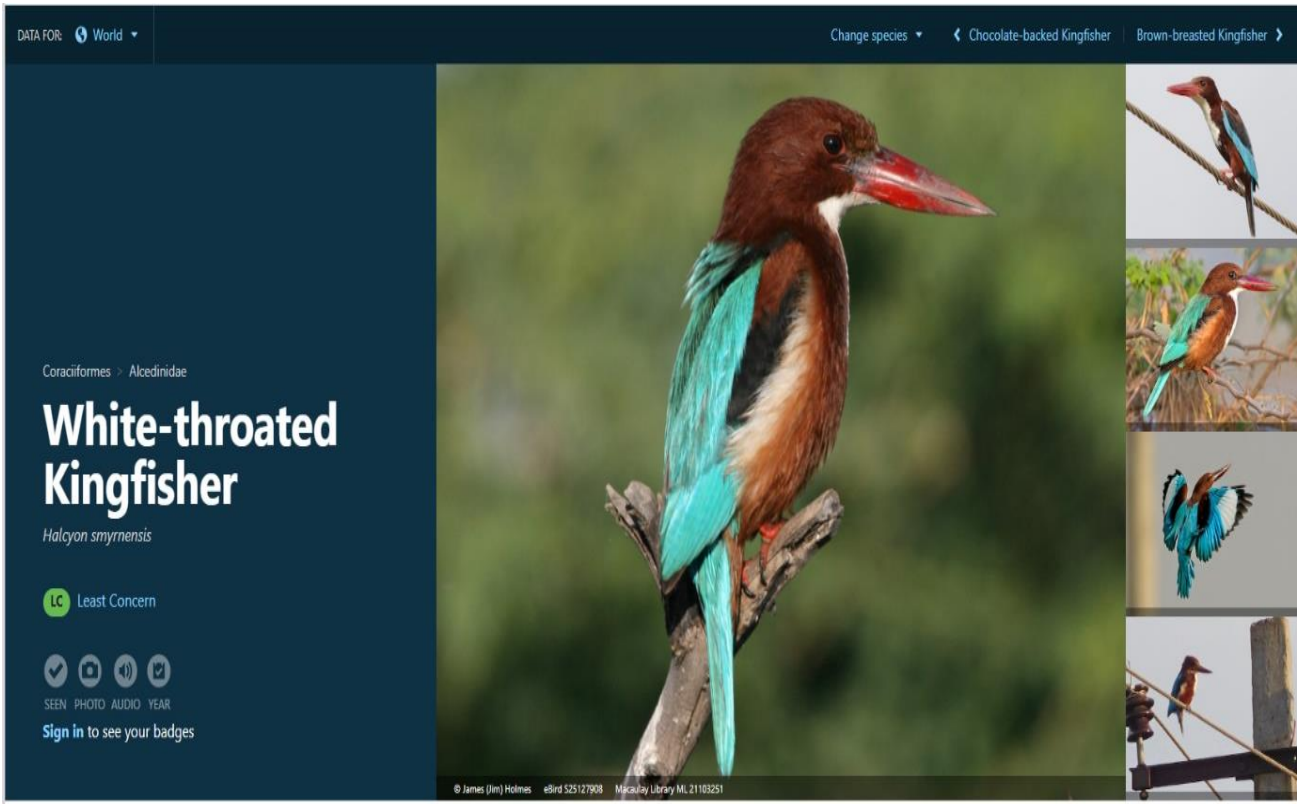
**Black-headed Cuckooshrike** *Lalage melanoptera*

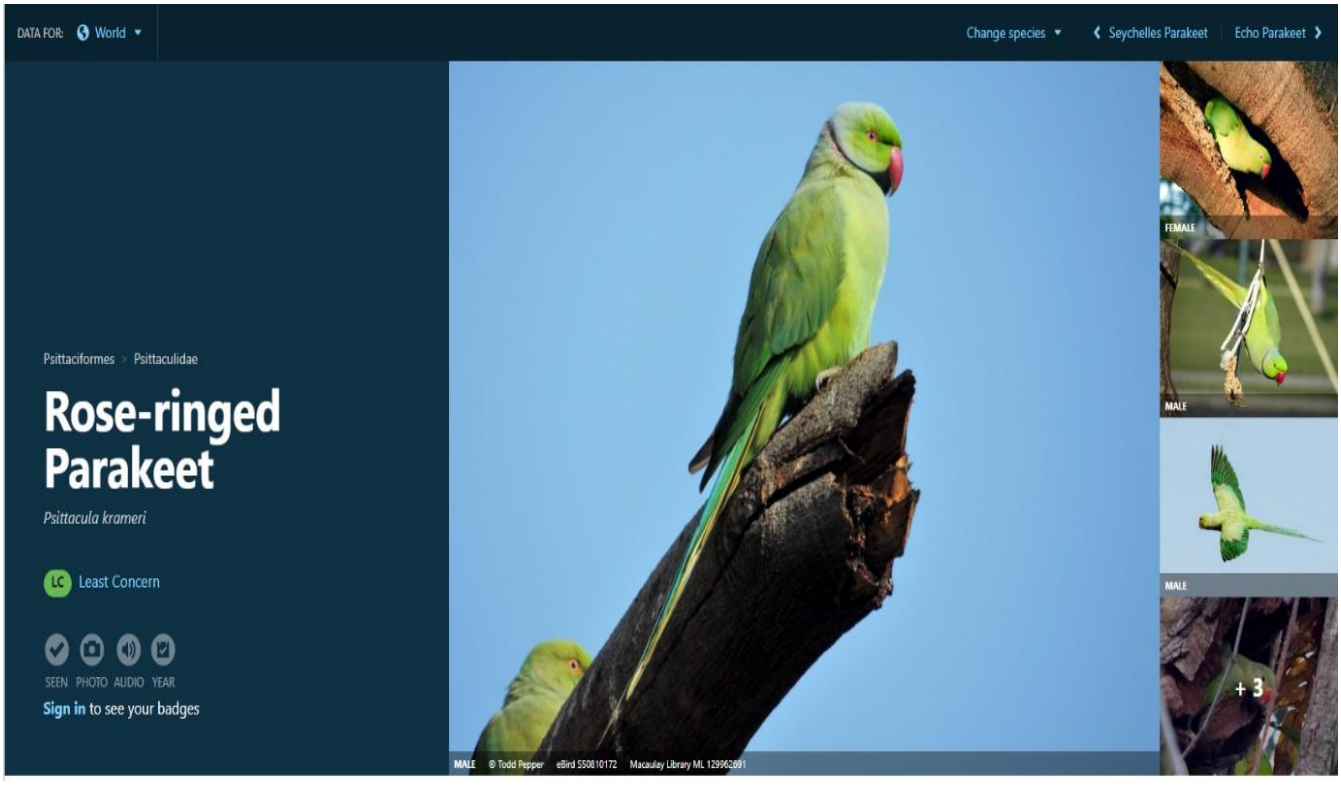

eBird India
Submit
Explore
My eBird
Science
About
News
Help
Create account
Sign in
Language
DATA FOR: World
Change species
Dwarf Koel
Black-billed Koel
Cuculiformes > Cuculidae
Asian Koel
Eudynamys scolopaceus
SEEN PHOTO AUDIO YEAR
Sign in to see your badges
FEMALE/IMMATURE MALE
MALE
FEMALE/IMMATURE MALE
+ 2
MALE © Renuka Vijayaraghavan eBird S37481855 Macaulay Library ML 60614251

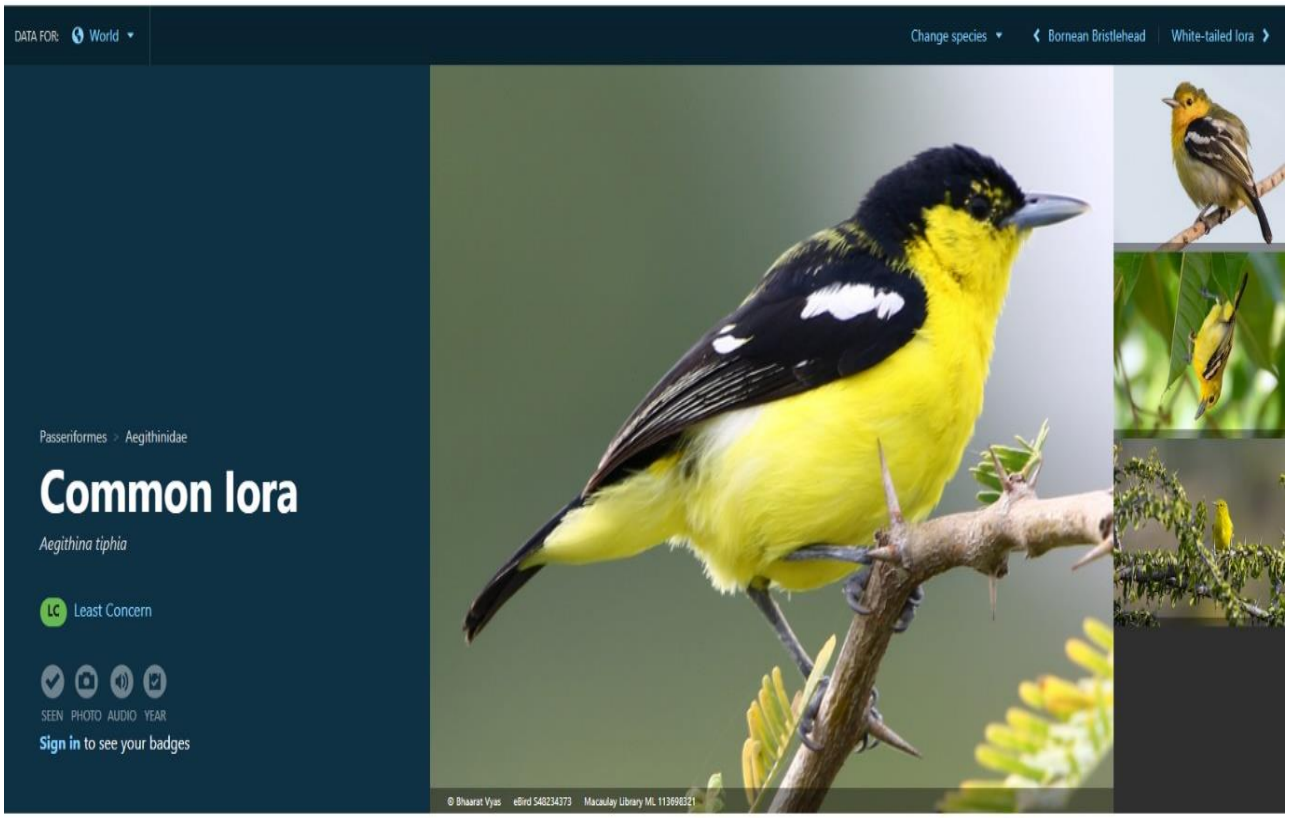

eBird India
Submit
Explore
My eBird
Science
About
News
Help
Create account
Sign in
Language
DATA FOR: World
Change species
Dark Hawk-Cuckoo
Northern Hawk-Cuckoo
Cuculiformes > Cuculidae
Common Hawk-Cuckoo
Hierococcyx varius
LC Least Concern
SEEN PHOTO AUDIO YEAR
Sign in to see your badges
ADULT
IMMATURE
IMMATURE
+ 2
ADULT © Marjan Lammertink eBird S36034759 Macaulay Library ML 59339291


eBird India
Submit
Explore
My eBird
Science
About
News
Help
Create account
Sign in
Language
DATA FOR: World
Change species
Dark-rumped Swift
House Swift
Caprimulgiformes > Apodidae
Little Swift
Apus affinis
LC Least Concern
SEEN PHOTO AUDIO YEAR
Sign in to see your badges
© Albin Jacob eBird S38968818 Macaulay Library ML 67791301


eBird India
Submit
Explore
My eBird
Science
About
News
Help
Create account
Sign in
Language
DATA FOR: World
Change species
Chestnut-flanked Sparrowhawk
Nicobar Sparrowhawk
Accipitriformes > Accipitridae
Shikra
Accipiter badius
LC Least Concern
SEEN PHOTO AUDIO YEAR
Sign in to see your badges
JUVENILE
IMMATURE
ADULT
+ 4
ADULT © Rahul Singh eBird S40013846 Macaulay Library ML 118167741


DATA FOR: World
Change species
Chocolate-backed Kingfisher
Brown-breasted Kingfisher
Coraciiformes > Alcedinidae
White-throated Kingfisher
Halcyon smyrnensis
LC Least Concern
SEEN PHOTO AUDIO YEAR
Sign in to see your badges
© James (Jim) Holmes eBird S25127908 Macaulay Library ML 21103251


DATA FOR: World
Change species
Seychelles Parakeet
Echo Parakeet
Psittaciformes > Psittaculidae
Rose-ringed Parakeet
Psittacula krameri
LC Least Concern
SEEN PHOTO AUDIO YEAR
Sign in to see your badges
FEMALE
MALE
MALE
+ 3
MALE © Todd Pepper eBird S50810172 Macaulay Library ML 129962891



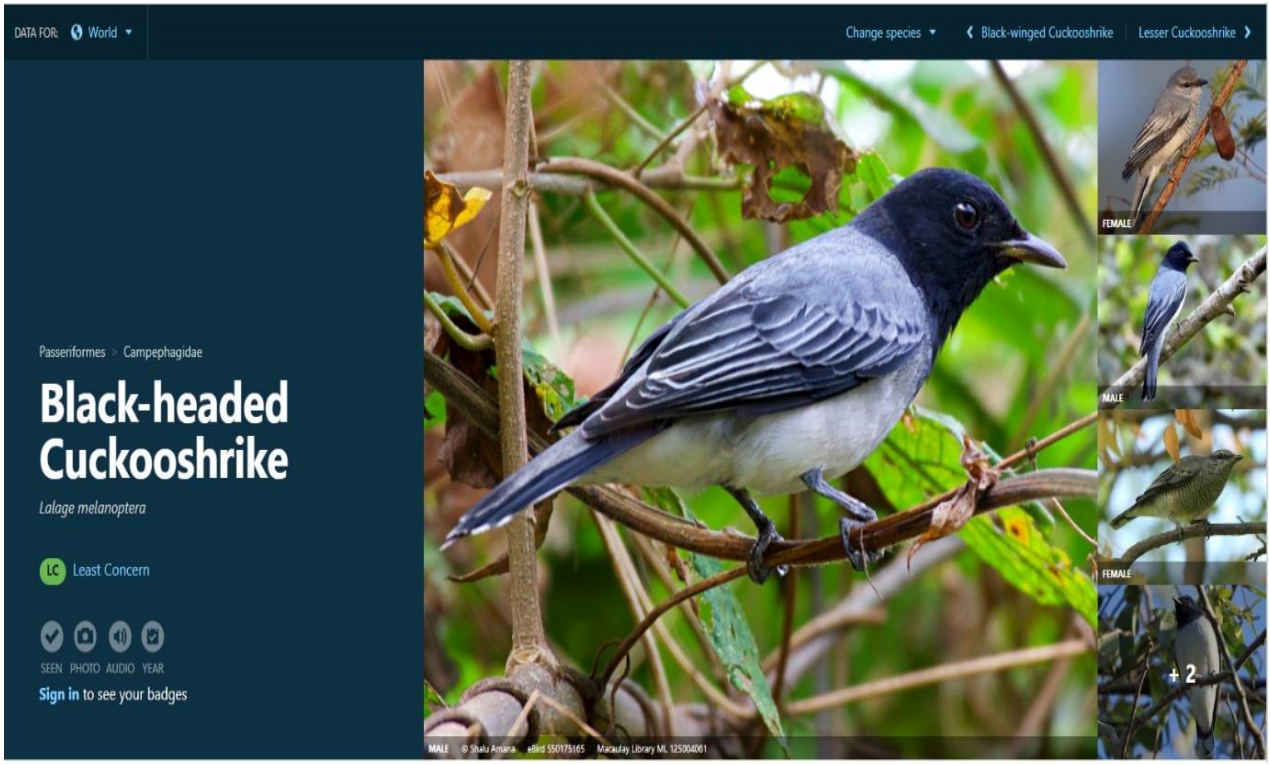




***Fig 26: Birds at Sri Venkateswara University campus***

Prof. M. Srinivasulu Reddy
Director
NAAC Steering Committee
Sri Venkateswara University
Tirupati-517 502

# SRI VENKATESWARA UNIVERSITY
Tirupati - 517502

# ENVIRONMENTAL AUDIT
2018 - 2019



# ACKNOWLEDGEMENT

The Audit Assessment Team thanks **the Sri Venkateswara University, Tirupati, Andhra Pradesh, India** for assigning this important work of Environment Audit. We appreciate the cooperation extended to our team during the entire process of the year **2018-2019**.

Our special thanks are due to **Hon'ble , Vice-Chancellors; Prof. G. Janaki Ramaiah I/c, M.A., Ph.D. , Prof. VVN Rajendra Prasad,M.A., Ph.D., Sri J.S.V. Prasad, IAS,(I/c Vice-Chancellor ) Sri Satish Chandra, IAS,(I/c Vice-Chancellor ) , Prof.G. Jankiramaiah Rector and Prof. R.K Anuradha Registrar.**

We are also thankful to University's Task force- the faculty members who have collected data required.

We highly appreciate the assistance of the Admin Staff for their support while collecting the data.

The kind gesture of the Non-Teaching Staff and Maintenance Staff for the inventory and data collection is quite commendable.

# AUDIT COMMITTEE MEMBERS

The Committee members are listed below:

| S. No. | Name | Designation |
|---|---|---|
| 1. | Vice-Chancellor Prof. G. Janaki Ramaiah I/c, M.A., Ph.D. , Prof. VVN Rajendra Prasad,M.A., Ph.D., Sri J.S.V. Prasad, IAS,(I/c Vice-Chancellor ) Sri Satish Chandra, IAS,(I/c Vice-Chancellor ) | Chairman |
| 2. | Registrar(Prof. R.K Anuradha) | Convener |
| 3. | Rector(Prof.G. Jankiramaiah) | Member |
| 4. | IQAC Director | Member |
| 5. | NAAC Steering Committee Director | Member |
| 6. | Prof. S. Narayana Reddy<br>E.C. E | Member |
| 7. | Prof. G. Padmanabham<br>Arts | Member |
| 8. | Prof. G. Anjan Babu<br>Computer Science | Member |
| 9. | Dr. K. Majula<br>Home Science | Member |
| 10. | Dr. K.V. Sucharita<br>Home Science | Member |

# An Environment

# &

# Ecological Friendly Premises

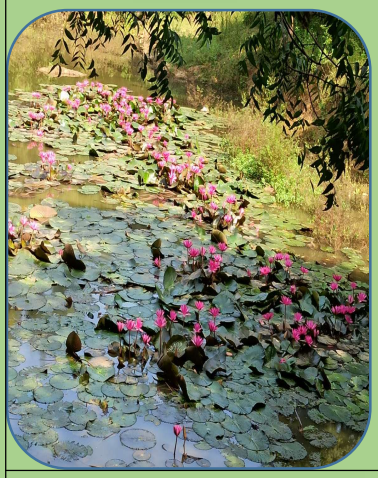
**Govt. State Level University**

**Recognized by UGC (Under the act of 1954)**

# SRI VENKATESWARA UNIVERSITY

**Tirupati, Andhra Pradesh – India 517 502**



| | | |
|---|---|---|
|  |  |  |
| LOTUS POND | AN ENVIRONMENT AND ECOLOGICAL FRIENDLY PREMISE | SVU GREENERY |
|  |  |  |
| SOLAR GENERATION | POLLUTION FREE ENVIRONMENT | SVU GARDEN |

# 1.INTRODUCTION

## 1.1 About Sri Venkateswara University

An educational institute is beyond than being just a building. It helps one in acquiring knowledge which is a gateway to bring successful and a good human in the society.

*"The goal of Education is the advancement of Knowledge and the dissemination of truth." —John F. Kennedy*

Sri Venkateswara University is one of the Prestigious Universities in the state of Andhra Pradesh located serenely in a picturesque campus at the foot of the Seven hills of the Tirupati. It was started in the year 1954 by Sri Tanguturi Prakasam Pantulu, the Chief Minister of Andhra Pradesh and the founder Vice-Chancellor Siram Gonvidarajulu Naidu, with a passion desire for the students to become tomorrow's creators of the Nation and to inculcate skills of leadership in all aspects of life.

The University was established under Sri Venkateswara University Act No. XIV of 1954, which came into force on 2nd September 1954 with the Campus area of 483 acres (427650.8sq.mts.).The University has been a premier Institution of Higher Learning, Research, Extension and consultancy to cater to the Educational needs and aspirants of the people of the Rayalaseema Region of Andhra Pradesh and has been playing a pivotal role in creating new knowledge, fostering innovation to produce economic value, and addressing the societal needs and challenges.

Judging the historical time constants of evolution SVU has emerged as one of the leading Universities in the World in a relatively short span of time.

This rapid ascent stems from the core activities of SVU which have a demonstrable influence in advancing knowledge that benefits national priorities and global scientific innovations.

*"Education is the most powerful weapon which you can use to change the world." —Nelson Mandela*

The University offers Undergraduate, Post-Graduate courses, research programmes. It has full-fledged infrastructure, advanced academic programmes and efficient administrative hierarchy. It produces students who contribute to the intellectual, social, political, moral, ethical and technological development of the society in which they live. It is one of the best Educational Universities providing quality education through an outcome and value based education, supported

by competent and learned Faculty members who regularly update their knowledge through organizing and participating in National and International Conferences, Seminars and Workshops.

The Faculty Members have also raised the standards of Teaching through incorporating MOOC courses, chiefly NPTEL& SWAYAM in their routine classroom Teaching.

The University is doing commendable work in scientific research as visible from the citations per paper through SCOPUS and Web of Science.

The University has many accomplishments over these years which include accreditation by NAAC with 'A+' Grade,.

University also figured consecutively in the different Ranking systems including QS Asia Rankings, Times Higher Education, Education World Rankings, Asia University Rankings.
All the courses are being run on CBCS, whereas the Engineering subject are accredidated by NBA, AICTE, andother courses are accredidated with NCTE, PCI etc.

All these achievements helped the University to receive substantial funding from DST-FIST, UGC-SAP, RUSA, TEQIP, DST-PURSE etc and to develop academic collaboration with reputed National and International Institutions.Besides, the University also received a major contribution/ support from Government of Andhra Pradesh.

Several departments have received Special Assistance Programmes (SAP) of UGC, New Delhi and also received fund under FIST program of DST, New Delhi to improve infrastructural facilities. Most of the faculties have obtained research grants from various national funding agencies like UGC, DST, DBT, CSIR, ICMR, ICSSR, BRNS, ISRO, MNES, MoES, MoEF and DRDO and foreign financing such as UNESCO, UK-DFID, ICRISAT, European Commission Programme ERASMUS MUNDUS. Utilizing these impressive funding, the faculty of the University have proactively interacted with Industry, Academic and Research Institutes in National and International level and entered into collaborative research agreements through MoUs (Memorandum of Understating) to conduct research work in frontier areas of national & International importance.

The students belonging to socially and economically backward communities and those who are economically poor get State and Central Government Welfare Scholarships. Fellowships and Scholarships are offered to Research Students of the campus by the University and also by the UGC, CSIR, DAE, ICMR, ISRO, ICAR, ICPR, ICHR, ICSSR, DST, DRDO, SRNS and Rashtriya Sanskrit Sansthan.

The University Central Library is the major resource Centre that provides information for research students and faculty. It provides unlimited access to the UGC INFONET e-resourcesand e-journals through UGC INFONET Digital Library Consortium. The library is kept open from 8.00 am till 10.00 pm on all working days and from 10.00 am to 5.00 pm on Sundays and public

holidays besides the addition of latest books related to both teaching and research in the main library, most of the departments have developed departmental libraries by utilizing the grant from the University or from special assistance received from funding agencies like UGC, DST, etc.

The University provides residential facilities to research scholars, Post-Doctoral fellows and other researchers in the hostels specially earmarked for them on the campus. Summer fellows, research associates, visiting scientists and faculty researchers from other universities and academics are provided accommodation in the university guest house and Academic Staff college guest house. The university campus is completely Wi-Fi connected. The university provides computer and uninterrupted internet facilities for research students, fellows as well as faculty on the campus in all the blocks and laboratories. Direct internet facility andcommon internet hubs are set-ups near the hostels and quarters on the campus to provide internet access free of cost.

Besides meeting the infrastructure facilities of office, Separate Hostels for Boys and Girls, Cultural Centre and world Class Gymnasium and Sports facilities are being created. International Students Canteen, Digital Library, Wi-Fi Connectivity, Networking, Smart Campus, Air-Conditioned Auditorium, Development of Greenery and State of the modern art furniture in classrooms, faculty rooms, offices, Guest House and Auditorium are underprogress.

## 1.2 Vision and Mission of University

### 1.2.1 Vision to the prospect

- To impart quality education to meet the global standards with a need based and outcome based approach.
- To extend eco-friendly innovative research adhering to International standards and sustenance by becoming a hub for innovative practices.
- To take up research on par with the highest standards in academia and to ensure that the Institution serves the needs of community in which it is based.
- To prioritize industry community University linkage to bring out employability skilled, quality and responsible citizens for the nation.

### 1.2.2 Mission

The University is to create, disseminate and inculcate the knowledge in the domains of Higher Education.Being a reputed University of Academic Excellence, the University is striving to:

- Provide the quality learning and teaching environment for the well-being of students and to deliverentrepreneurial skills for young minds.
- Promote Academic Freedom, Transparency and Accountability to all the Stakeholders for a holisticgrowth and development of the Institution.
- Prosper an Intellectual culture that drives discipline and ideas to foster reputation for a

Dynamic,Diverse, Equitable and Global University.

- Provide innovative solutions, process and products for social prosperity and promotion.
- Provide a vibrant learning environment, fostering innovation and creativity by Cutting Edge Research.
- Aspire as a National leader in developing educated contributors, career ready learners and globallycompetitive citizens.
- Offer need based, society driven, industrially relevant academic programmes with a view to make futureready civilians.
- Make a significant, consistent and sustainable contribution towards social, cultural and economic life.
- Adopt hassle free, distributed, committed and transparent governance.

The University has conducted various workshops/seminars related to Research methodology, IPR, entrepreneurship and skill development. The Institution has received several Awards/Recognitions and patents have been published /awarded. The University code of research ethics is promulgated through research methodology course work, Board of studies, ethical committee and plagiarism check software (URKUUD/Original).

Faculty were recognised through incentives such as medals, certificates of honour and announcement in either newsletter or University website for their Research contributions. students were awarded Ph.D.'s during this period of assessment. The faculty and their research associated have published research publications, with a h-index of Web of science, Scopus and Books/Book Chapters/Conference Proceedings.

The University continuously extends its activities by the active participation of students in the neighborhood habitations through rallies, different types of programmes / Camps benefiting many people.

For these extension activities, the NSS Units got awards/accolades from state government and other agencies. Different collaborative activities have been undertaken with various institutions/laboratoriesthrough various functioning MOU's.

**Recognitions-**University Grants Commission (UGC) by 2(f) 12(b)

**Accreditation Details-** The following are details of the reaccreditation of the College.

| Cycle Info | Accreditation | Grade | CGPA | Upload Peer Team Report |
|---|---|---|---|---|
| Cycle 1 | Accreditation | Four Star | 70.2 | Cycle-1.pdf |
| Cycle 2 | Accreditation | A | 3.13 | Cycle-2.pdf |
| Cycle 3 | Accreditation | A+ | 3.52 | Cycle-3.pdf |

राष्ट्रीय मूल्यांकन एवं प्रत्यायन परिषद्

विश्वविद्यालय अनुदान आयोग का स्वायत्त संस्थान बेंगलूर

# NATIONAL ASSESSMENT AND ACCREDITATION COUNCIL

*An Autonomous Institution of the University Grants Commission, Bangalore*

## Certificate of Accreditation

The Executive Committee of the National Assessment and Accreditation Council, on the recommendation of the duly appointed Peer Team, is pleased to declare the

**Sri Venkateswara University**

Tirupati, Andhra Pradesh, as

**Accredited**[1]

at the Four star level[2]

(among the Universiies)

Director

Date : May 15, 2002

1. This certification is valid for a period of 5 (five) years with effect from the academic year 2001-2002.
2. An institutional score (%) in the range of 55-60 denotes one star, 60-65 two stars, 65-70 three stars, 70-75 four stars, and 75 and above five stars (upper limit exclusive).

CC-25-5

Scanned with CamScanner

राष्ट्रीय मूल्यांकन एवं प्रत्यायन परिषद

विश्वविद्यालय अनुदान आयोग का स्वायत्त संस्थान

**NATIONAL ASSESSMENT AND ACCREDITATION COUNCIL**

*An Autonomous Institution of the University Grants Commission*

# Quality Profile

***Name of the Institution*** : Sri Venkateswara University

***Place*** : Tirupati, Andhra Pradesh

| *Criteria* | *Weightage* ($W_i$) | *Criterion-Wise Grade Point Averages* ($Cr_i GPA$) | $W_i$ X $Cr_i GPA$ |
|---|---|---|---|
| I. *Curricular Aspects* | 150 | 3.67 | 551 |
| II. *Teaching-Learning and Evaluation* | 250 | 3.12 | 780 |
| III. *Research, Consultancy and Extension* | 200 | 3.00 | 600 |
| IV. *Infrastructure and Learning Resources* | 100 | 3.35 | 335 |
| V. *Student Support and Progression* | 100 | 3.30 | 330 |
| VI. *Governance and Leadership* | 150 | 2.37 | 356 |
| VII. *Innovative Practices* | 050 | 3.60 | 180 |
| Total | $\sum_{i=1}^{7} w_i = 1000$ | | $\sum_{i=1}^{7}(W_i X\ Cr_i GPA) = 3132$ |

$$\textit{Institutional Score} = \frac{\sum_{i=1}^{7}(W_i X\ Cr_i GPA)}{\sum_{i=1}^{7} W_i} = \frac{3132}{1000} = \boxed{3.13}$$

***Grade*** = **A** ***Descriptor*** = **VERY GOOD**

*Date : March 08, 2009*

*Director*

- This certification is valid for a period of Five years with effect from March 08, 2009
- An institutional CGPA on four point scale in the range of 3.01 - 4.00 denotes A grade (Very Good), 2.01 - 3.00 denotes B grade (Good), 1.51 - 2.00 denotes C grade (Satisfactory)
- Scores rounded off to the nearest integer

EC/48/RAR/07

राष्ट्रीय मूल्यांकन एवं प्रत्यायन परिषद

विश्वविद्यालय अनुदान आयोग का स्वायत्त संस्थान

**NATIONAL ASSESSMENT AND ACCREDITATION COUNCIL**

*An Autonomous Institution of the University Grants Commission*

# Quality Profile

***Name of the Institution*** : Sri Venkateswara University

***Place*** : Tirupati, Dist. Chittoor, Andhra Pradesh

| *Criteria* | *Weightage* ($W_i$) | *Criterion-wise Weighted Grade Point* ($Cr\,WGP_i$) | *Criterion-wise Grade Point Averages* ($Cr\,WGP_i / W_i$) |
|---|---|---|---|
| *I. Curricular Aspects* | 150 | 550 | 3.67 |
| *II. Teaching-Learning and Evaluation* | 200 | 650 | 3.25 |
| *III. Research, Consultancy and Extension* | 250 | 910 | 3.64 |
| *IV. Infrastructure and Learning Resources* | 100 | 370 | 3.70 |
| *V. Student Support and Progression* | 100 | 360 | 3.60 |
| *VI. Governance, Leadership & Management* | 100 | 350 | 3.50 |
| *VII. Innovations and Best Practices* | 100 | 330 | 3.30 |
| **Total** | $\sum_{i=1}^{7} w_i = 1000$ | $\sum_{i=1}^{7} (Cr\,WGP_i) = 3520$ | |

$$\textit{Institutional CGPA} = \frac{\sum_{i=1}^{7} (Cr\,WGP_i)}{\sum_{i=1}^{7} W_i} = \frac{3520}{1000} = \boxed{3.52}$$

***Grade*** = $\boxed{A^+}$

*Date : June 09, 2017*

*Director*

- **This certification is valid for a period of *Five* years with effect from June 09, 2017**
- **An institutional CGPA on seven point scale in the range of 3.76 - 4.00 denotes $A^{++}$ grade, 3.51 - 3.75 denotes $A^+$ grade, 3.01 - 3.50 denotes A grade, 2.76 - 3.00 denotes $B^{++}$ grade, 2.51 - 2.75 denotes $B^+$ grade, 2.01 - 2.50 denotes B grade, 1.51 - 2.00 denotes C grade**
- **Scores rounded off to the nearest integer**

EC(SC)/25/A&A/6.3

राष्ट्रीय मूल्यांकन एवं प्रत्यायन परिषद

विश्वविद्यालय अनुदान आयोग का स्वायत्त संस्थान

**NATIONAL ASSESSMENT AND ACCREDITATION COUNCIL**

*An Autonomous Institution of the University Grants Commission*

# Certificate of Accreditation

The Executive Committee of the
National Assessment and Accreditation Council
on the recommendation of the duly appointed
Peer Team is pleased to declare the
Sri Venkateswara University
Tirupati, Andhra Pradesh as
Accredited
with CGPA of 3.13 on four point scale
at A grade
valid up to March 07, 2014

Date : March 08, 2009

Director

EC/48/RAR/07

राष्ट्रीय मूल्यांकन एवं प्रत्यायन परिषद

विश्वविद्यालय अनुदान आयोग का स्वायत्त संस्थान

**NATIONAL ASSESSMENT AND ACCREDITATION COUNCIL**

*An Autonomous Institution of the University Grants Commission*

# Certificate of Accreditation

The Executive Committee of the
National Assessment and Accreditation Council
on the recommendation of the duly appointed
Peer Team is pleased to declare the
Sri Venkateswara University
Tirupati, Dist. Chittoor, Andhra Pradesh as
Accredited
with CGPA of 3.52 on seven point scale
at A+ grade
valid up to June 08, 2022

Date : June 09, 2017

Director

EC(SC)/25/A&A/6.3

# 2.Green Building Audit

## 2.1 About the Green Building Study Audit

It is a systematic study of the aspects which make the Institution a suitable and healthy premises for its inhabitants.

## 2.2 Analysis for the Green Building Study Audit

### Energy Audit

- Analysis of the Lights, Fans, AC equipment
- Renewable energy
- Scope for reducing the current energy bills
- Improvement in the thermal comfort of the Campus

### Green Audit

- Green Initiatives
- Hygiene Audit

### Environmental Audit

- Analysis of the current landscape
- Analysis of the flora and fauna of Campus
- Measures that can be adopted for Ecological improvement of the premises.

## 2.3 Green Audit, a Tool for Environmental Protection and Conservation

The modernization and industrialization are the two important outputs of twentieth century which have made human life more luxurious and comfortable. Simultaneously, they are responsible for voracious use of natural resources, exploitation of forests and wildlife, producing massive solid waste, polluting the scarce and sacred water resources and finally making our mother Earth ugly and inhospitable. Today, people are getting more familiar to the global issues like global warming, greenhouse effect, ozone depletion and climate change etc. Now, it is considered as a final call by mother Earth to walk on thepath of sustainable development. The time has come to wake up, unite and combat togetherfor sustainable environment.

Considering the present environmental problems of pollution and excess use of natural resources, Hon. Prime Minister, Shri. Narendra Modiji has declared the Mission of Swachch Bharat Abhiyan. Also, University Grants Commission has mentioned “Green Campus, Clean Campus” mission mandatory for all higher educational institutes. As environmental sustainability is becoming an increasingly important issue for the nation, the role of higher educational institutions in relation to environmental sustainability ismore prevalent.

Green Audit is the most efficient ecological tool to solve such environmentalproblems. It is a process of regular identification, quantification, documenting, reporting and monitoring of environmentally important components in a specified area. Through this process the regular environmental activities are monitored within and outside of theconcerned sites which have direct and indirect impact on surroundings. Green audit can be one of the initiative for such institutes to account their energy, water resource use as well as wastewater, solid waste, E-waste, hazardous waste generation. Green Audit process can play an important role in promotion of environmental awareness and sensitization about resource use. It can create consciousness towards ecological values and ethics. Through green audit one can get direction about how to improve the condition of environment.

## Need of Green auditing:

Green auditing is the process of identifying and determining whether institutions practices are eco-friendly and sustainable. Traditionally, we are good and efficient users of natural resources. But over the period of time excess use of resources like energy, water, chemicals are become habitual for everyone especially, in common areas. Now, it is necessary to check whether our processes are consuming more than required resources? Whether we are handling waste carefully? Green audit regulates all such practices and gives an efficient way of natural resource utilization. In the era of climate change and resource depletion it is necessary to verify the processes and convert it into green and clean one. Green audit provides an approach for it. It also increases overall consciousness among the people working in institution towards an environment.

## Goals of Green audit:

University has conducted a green audit with specific goals as:

- Identification and documentation of green practices followed by university.
- Identify strength and weakness in green practices.
- Conduct a survey to know the ground reality about green practices.
- Analyze and suggest solution for problems identified from survey.
- Assess facility of different types of waste management.
- Increase environmental awareness throughout campus.
- Identify and assess environmental risk.
- Motivates staff for optimized sustainable use of available resources.
- The long-term goal of the environmental audit program is to collect baseline data of environmental parameters and resolve environmental issue before they become problem.

Students are the major strength of any academic institution. Practicing green actions in any educational institution will inculcate the good habit of caring natural resources in students. Many environmental activities like plantation and nurturing saplings and trees, Cleanliness drives, Rain water harvesting, etc. will make the students good citizen of the country. Through Green Audit, higher educational institutions can ensure that they contribute towards the reduction of Global warming through Carbon Footprint reduction measures.

## Benefits of Green Audit to an Educational Institute:

There are many advantages of green audit to an Educational Institute:

- It would help to protect the environment in and around the campus.
- Recognize the cost saving methods through waste minimization and energy conservation.
- Find out the prevailing and forthcoming complications.
- Empower the organization to frame a better environmental performance.
- It portrays good image of institution through its clean and green campus.




**Fig .: Sri Venkateswara University Master Plan**

## Objectives of Green audit:

The main objective of Green Audit at **Sri Venkateswara University** is to make a complete assessment of the environmental indicators in the campus and make recommendations for implementation in the campus for better environmental management. To make a complete assessment of the environmental indicators in the campus and make recommendations for implementation in the campus for better environmentalmanagement.

1. To assess the quality of the water and recycling of waste water in the universitycampus
2. Estimation of energy & fuel usage and evaluating the carbon foot print of theuniversity on a full attendance day
3. Evaluation of the measures implemented by university in reducing the CarbonFootprint
4. To monitor the generation of solid waste and adopting strategies for its recycling
5. To evaluate the biodiversity of flora and fauna of the campus and providing a database for corrective actions and future plans.

## 2.4 Water and Wastewater Audit

Water which is precious natural national resource available with fixed quantum. The availability of water is decreasing due to increasing population of nation, as per capita availability of utilizable water is going down. Due to ever rising standard of living of people, industrialization, urbanization, demand of fresh water is increasing day by day. The unabated discharge of industrial effluent in the available water bodies is reducing the quality of these ample sources of water continuously. Hence, the national mission on water conservation was declared by the then Hon. Prime Minister Narendra Modi as 'Jal Shakti Abhiyan' and appealed to all citizens to collectively address the problem of water shortage, by conserving every dropof water and suggested for conducting water audit for all sectors of water use.

Water audit can be defined as a qualitative and quantitative analysis of water consumption to identify means of reducing, reusing and recycling of water. Water Audit is nothing but an effective measure for minimizing losses, optimizing various uses and thus, enabling considerable conservation of water in irrigation sector, domestic, power andindustrial as well. A water audit is a technique or method which makes possible to identify ways of conserving water by determining any inefficiencies in the system of water distribution. The measurement of water losses due to different uses in the system or any utility is essential to implement water conservation measures in such an establishment.

### Importance of Water Audit

It is observed that a number of factors like climate, culture, food habits, work and working conditions, level and type of development, and physiology to determine therequirement of water. The community which has a population between 20,000 to 1,00,000 requires 100 to 150 liters per person (capita) per day. The communities with a population can consume over 1, 00,000 requires 150 to 200 liters per person (capita) per day. As per the standards provided by WHO Regional office for South East Asia Schools require 2 liters per student; 10-15 liters per student if water-flushed toilets.

. Water usage can be defined as water used for all activities which are carried out on campus from different water sources. This includes usage in all residential halls, academic buildings, on campus and on grounds. Wastewater is referred as the water which is transported off the campus. The wastewater includes sewage, hostel and residential water used in cooking, showering, clothes washing as well as waste water from chemical and biological laboratories which ultimately going down in sink or drainage system.

## University Water Resources

The Main water uses in the campus includes drinking, cleaning, toilets and gardening. The University campus has continuous water supply of 24/7 through AP Government Telugu Ganga Project. In addition, there are 10 numbers of water bore wells in Men and Women Hostels, Engineering college campus and university gardens. The campus has several water harvesting units to recharge ground water. The water requirement is calculated based on per person utility per day.

Toilet usage -20 lts, Shower -20 lts, clothes washing- 20 lts, utensil washing – 10 lts, mopping and washing rooms– 10 lts, cooking – 5 litres, drinking -2.5 lts and gardening – 30 lts.




**Fig.: Bore well**




**Fig.: Open well**

## 2.5 Rain Water Harvesting

Rainwater harvesting means capturing rain where it falls or capturing the run off of rain waterin Sri Venkateswara University premises. Rainwater harvesting system, also called rainwater collection system or rainwater catchment system, technology that collects and stores rainwater for further use. The collected water is also kept clean by filtering and such designof facility that does not allow pollutants to mix with collected water. Rain water is harvested from terrace, and ground floor areas for reusing in watering of lawns. Surface runoff from various ground sources and terraces are collected, filtered and recirculated for gardening and washing purpose. Besides natural percolation tanks, concrete storage tanks have also been built and rain water has been stored after proper filtration paving the open places with concrete roads is avoided so that rain water can be percolated. The rainwater harvested duringrains not only helps to save water from conventional sources, but also to save energy and reduce expenses incurred on transportation and distribution of water. Awareness programmeson water conservation and rain water harvesting have been conducted regularly through various service of the University. One of the rain water harvesting pit is seen near Post Office. Similar structures are seen at different locations within premises.



**Fig: Rain water Harvesting Pit**



Fig.: Rain Water Harvesting



Fig: Rain Water Harvesting at Academic Building



Fig.: Rain Water Harvesting at Academic Building



Fig.: Rain Water Harvesting at Academic Building

## Reusage Of Waste Water:

Wastewater recycling is considered as the best option of water usage. The waste water generated is filtered through coarse filter system and is used for watering outdoor lawns, gardens, potted plants, cleaning of stair case, verandas, pavements and drive ways.



Fig.: Reusage of Waste water

## a. CONSTRUCTION OF TANKS AND BUNDS

As the water crisis continues to become severe, there is a dire need of reform in water management system and revival of traditional systems. As a part of revival to traditional wisdom, the institution-built rain water storage tank, to collect the rainwater and can be used whenever it is required. One of such bunds are seen in front of SVU Women's Hostel. Bunds are constructed to create stability of existing subsoils, slope angles and water levels to ensure the integrity of the reclamation area. Bunds are constructed to control the water table within the reclamation area; and. control the flow of the discharge water in the fill area.



**BUNDS**

## b. MAINTENANCE OF WATER BODIES AND DISTRIBUTION SYSTEM IN THE CAMPUS

Water works Department maintain the water bodies and distribution system in the campus. The ground water is pumped into storage tanks located at different places in the campus. There are few numbers of overhead storage tanks. The water is distributed through well laid pipe network. Drinking water after treating in RO plant is supplied through a separate set of distribution pipes and water for all other purpose is supplied through another set of distributionpipes. Entire distribution system is well supervised by Civil works people to ensure that there are no leakages and wastages of precious water through joints, valves etc. Waste usage of wateris reduced using low pressure flushes. All the stakeholders of the college are well educated to use water economically and efficiently. Also, wash basins are available at each laboratory, staffrooms and department. Water facilities are availed in the entire college without any interruption. The RO plants are periodically cleaned and maintained by assigning a specific technician in the maintenance department. The University have the cleaning schedule of all overhead water storage tanks. The water works section of the Engineering Department of S.V. University is regularly checking and cleaning all the tanks once in six months.





**Water Tanks 13.62867/ 79.40366**




**Water Pumping System 13.63306/ 79.39824**



**RO-PLANT**



**WATER SUPPLY SYSTEM**

## 2.6 Energy Audit

Energy is one of the major inputs for the economic development of any country. The fundamental goal of energy management is to produce goods and provide services with the least cost and least environmental effect. Also it can be said as “the strategy of adjusting and optimizing energy, using system and procedure so as to reduce energy requirements per unit of output while holding constant or reducing total costs of producing the output from these systems”. The energy audit is key to a systematic approach for decision making in the area of energy management. It attempts to balance the total energy inputs with its use, and serve to identify all the energy streams in a facility.

According to Energy Conservation Act, 2001, Energy Audit is the verification, monitoring, and analysis of the use of energy including submission of a technical report containing recommendations for improving energy efficiency with cost-benefit analysis and an action planto reduce energy consumption.

Energy resources utilized by all the departments, support services and the administrative buildings of Sri Venkateswara University, Tirupati, Andhra Pradesh campus include electricity and liquid petroleum. Major use of the energy is at office, canteen, hostel and laboratories, for lighting, transportation, cooking and workshop instruments. Sri Venkateswara University has installed solar power plant having a capacity of 1.75 MW. Electricity is also supplied to the University campus by Andhra Pradesh Southern Power Distribution Company Limited (APSPDCL).



**Fig.: Solar Panel at SVU Administrative Building**



Fig.:Solar Panel at SVU Library



Fig.: Solar Panel at Prakasam Bhavan





Fig.: Solar Panel at SVU Hostels

In Academics and Research, Solar dryer facility is available in the Department of Home Science. Food technology students and scholars conducted research projects using solar dehydration technology. Drying foods using solar energy helps in retaining the colour, Flavour and nutritional value to a large extent. It can minimize cost, wastage and increase the productivity in terms of quality and quantity. Hands on training was given to the students with the resource persons on solar dehydration. Various foods and food products were developed. The students undergone training programmes and internship in Society for Energy, Environment and Development (SEED) Hyderabad.

Solar dryers require a certain investment for the set-up of the appliance, but no expenditures for the fuel. The basic function of a solar dryer is to heat air to a constant temperature with solar energy, which facilitates extraction of humidity from foods inside a drying chamber. Ventilation is enabled at a constant rate through defined air inlets and outlets, small solar ventilators or temperature difference, either due to exposition or vertical height. In direct sun driers the food is put in boxes with a transparent lid. Additionally, the temperature in the drier is raised due to the greenhouse effect and the air exchange is regulated by vents. The food is not exposed to direct sunlight in indirect sun driers as the fresh air is heated separately from the food chamber. This method is preferable for drying foods

which lose nutritional value when exposed to direct sunlight. Hybrid driers combine solar energy with a fossil fuel or biomass fuel. Solar drying has many advantages over open traditional drying like; Safe & hygienic, Free from insect and bird contamination, Clean &dust free products, more uniform quality products, Uniform color, texture, and appearance of the product, evenness in drying, moisture control to optimum levels, Nutrient retention especially beta carotene, yields high quality Products with better shelf life of the products.

Solar energy generated by solar panels are exported to the grid of electricity distribution utility of Southern Power distribution company of Andhra Pradesh Ltd. Direct savings in electricity bills are availed from electricity distribution utility on monthly basis. Workshops on 'Green Power Technology in Power Grid: Issues, Challenges and Control'' was taken place in the university.

The Energy and electricity audit aimed to cover the aggregate consumption of Electrical and Natural gas energy within the Sri Venkateswara University campus including academic and administrative blocks. In different hostels, LPG cylinders are primarily used for cooking purposes and the number of uses was also counted. Domestic LPG connections were not included in the present study. Within the campus, no other fossil fuel like coal-fire or fire wood, etc., based energy is used.

All the buildings of the University are designed and constructed in such a way that during daytime no electricity is consumed for lighting of tube lights and other electric lights. Proper day light and ventilation facilities are available for every building.

Fossil fuels (such as petrol, diesel) contribute significantly to environmental pollution through emission of greenhouse gases into the atmosphere mainly as carbon dioxide. Vehicular emissions are the main source of carbon emission in the campus, hence to document the various means of transportation that is practiced by the university members is important.

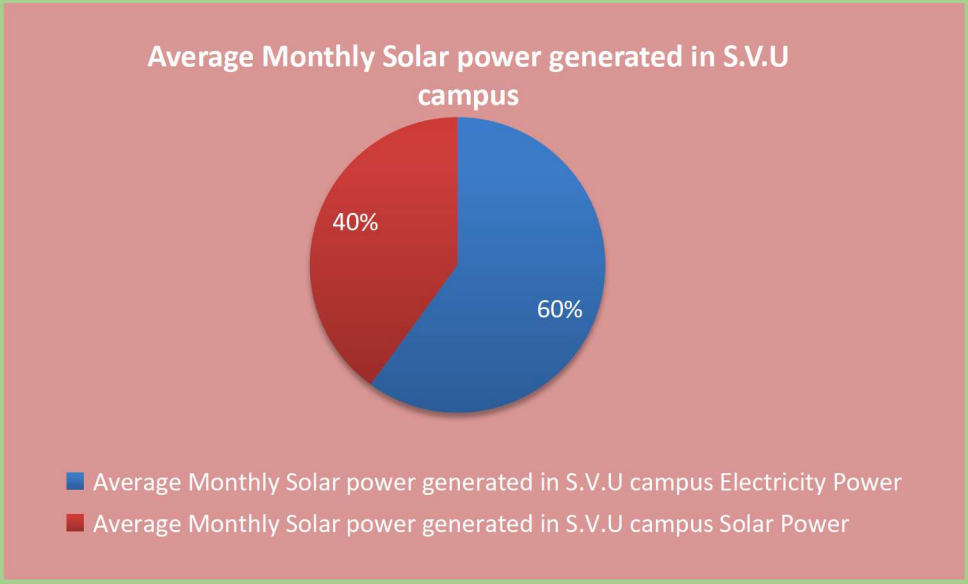



**Fig: Monthly Solar power generated within S.V.U Campus**

Fossil fuels (such as petrol, diesel) contribute significantly to environmental pollution through emission of greenhouse gases into the atmosphere mainly as carbon dioxide. Vehicular emissions the main source of carbon emission in the campus, hence to document the various means of transportation that is practiced by the university members is important. The fuel energy audit determines the approximate use of petrol or diesel by the vehicles inside the university. It also includes the efforts taken by the university to conserve the fuel. The conventional source of fuel for the vehicle is petrol and diesel. Maximum students, teaching and non-teaching staff of university and visitors use two wheeler and four wheeler vehicles. So, the data regarding fuel utilization for students, teaching and non-teaching staff of university and visitor are monitored in the study.

## Carbon Foot Print Analysis

| | |
|---|---|
| Total number of 2 wheelers used | 1147 |
| Total number of electrical 2 wheelers | 41 |
| Total number of 4 wheelers used | 154 |
| Number of electrical four wheelers | 04 |
| Average consumption of fuel per month<br>a. By two wheelers<br>b. By four wheelers | <br>458 lts<br>135 lts |

Total consumption of fuel per year – 7116lts

Awareness programmes on effects of $CO_2$ emission are conducted to encourage usage of electric bikes and cars to reduce on campus air pollution.

## 2.7 Solid Waste Audit

Solid waste is the unwanted or useless solid material generated from the human activities in residential, industrial or commercial area. Solid waste management reduces or eliminates the adverse impact on the environment and human health. A number of processes are involved in efficiently managing waste for an organization. It is necessary to manage the solid waste properly to reduce the load on waste management system. Unavailability of proper waste management practices may lead to environmental pollution. A waste management audit helps educational institutes to efficiently and responsibly dispose of the waste that is generated every day. By designing a more efficient waste disposal program through a waste audit, we can enhance recycling practices.

Solid waste generation and its management is a burning issue in current days. The rate of generation of solid waste is very high and yet we do not have adequate technology to manage the generated waste. Unscientific handling of solid waste can create threats to public health and environmental safety issues. Thus, it is necessary to manage the solid waste properly to reduce the load on waste management system. The purpose of this audit is to find out the quantity, volume, type and current management practice of solid waste generation in Sri Venkateswara University campus. This report will help for further solid waste management and to go for green campus development. The waste generated from Sri Venkateswara University campus includes paper waste, plastic waste, biodegradable waste, construction waste, glass waste, biomedical waste and other wastes.

**Table: Category wise solid waste generation at University (kg / month)**

| Category of waste | Paper waste | Plastic waste | Biodegradable waste | Construction waste | Glass waste | Other waste | Total waste kg/month | Total waste kg/year |
|---|---|---|---|---|---|---|---|---|
| **Quantity** | 784 | 75 | 2985 | 123 | 23 | 132 | **4122** | **49464** |
| **percentage** | 19.02 | 01.82 | 72.41 | 02.98 | 00.55 | 03.20 | 100 | |




**Fig. : Graph - Solid waste generation at university campus**

## Solid Waste Management

Waste is collected and segregated properly. Solid waste is divided into two categories: dry waste and wet waste. Wet waste consists of bio-degradable materials, Dry waste consist of bio-degradableand non-biodegradable materials. Students, faculty, and staff are aware and educated on proper waste management practices of recycling and disposal of plastic waste, paper waste and food waste. Solid and liquid residual waste generated in men and women hostels has been effectively disposed. SV University generated income of Rs.3.0 lakhs/ year through solid and liquid residual waste disposaland also Rs.67.0 lakhs generated by selling paper.

In the University campus premises, Blue and Green covered/ pedal-pushed dustbins are placed for waste collection. Waste bins are provided on each floor, in staff rooms, laboratories, washrooms, kitchen and in campus area. The waste materials like glass, metals, wrappers, papers, plastics, old newspapers, used papers like journal files and workshop scrap etc, are given for recycling to external agencies, where they are segregated and disposed/recycled according to the nature of the waste.

University strictly follows the guidelines regarding plastic usage and has prohibited the use of single use plastic such as carry-bags, glasses, spoons etc, in the campus. As per the College guidelines, Canteen Contractors are prohibited to use plastic cutlery, instead paperplates and wooden spoons are used. The waste from the canteens and other areas are channeled into a reservoir where they are treated biologically before the water goes out into river bodies. Metal scrap is segregated separately and sent for recycling units.




**Fig : Eco Friendly Environment**

The solvents used in the laboratories are reused after distillation to minimize the use of solvents. The waste solvents are separated as halogenated and non-halogenated and transferred to plastic containers. To prevent heat generation and gas evolution or other reaction, compatibility of the waste is checked carefully.

To prevent accidental spillage of chemicals the laboratory wastes are subjected to process through three stages of waste management. Stage-I gravel, Stage-II sand, Stage –III coal. The three chambers are replenished with new materials after a period of six months.

There is a separate room for the Nuclear Laboratory where radiation hazard is displayed for safety measures. The harmful radiations are radiated by appropriate routes. Containers containing radioactive elements are properly lead sealed.

Wearing appropriate lab coats, gloves and face shields while working with nanomaterials. The hazardous chemical wastes are kept in separate containers. Later they are filtered and drained out.

Biodegradable waste consists of Leaf litter, food waste, vegetable and fruit waste etc. is decomposed in composting, vermicomposting and bio-gas units established in the University campus.



**Fig : Biogas Plant**

Other dry waste is collected by Waste collection vehicles of Tirupati Municipal Corporation. Overall University campus is maintained neat and clean throughout. Various awareness programmes were organized in and around campus for effective management of solid waste.

## 2.8 E-waste generation and management on University Campus

Generation of e-waste is apparent in every educational institute. Especially, at the university level where there are several equipments and instruments used for administrative as well as for scientific execution. Computers, Printers and Xerox machines are must for the administrative and research work. The wires required for the connectivity also gets included in the e-waste. More usage of these electronicas well as electrical materials generates huge amount of e-waste. Similarly, various scientific equipments and instruments get worn out with time. These too contribute to the e- waste.

E-waste include monitor, CPU, key board, electric wire, printer. Paperless work increase load on computer and therefore it is a need to reduce e-waste by repairing all this electric equipment. There is aneed to reuse and recycling of electronic equipments and material. E-waste is collected and stored in University campus and sent to authorised vendor for recycling/ disposalunder buy-back policy.




**Fig : E-waste collection**

### f.HAZARDOUS CHEMICALS AND RADIOACTIVE WASTE MANAGEMENT

Campus is free from any kind of hazardous waste. Ideally, collection, transportation and proper handling of chemicals begin with understanding the potential hazards related to their use. All stakeholders, especially from Academic departments and laboratories are responsible for disseminating information on hazardous materials being used in the facility. Various types of chemicals are used in chemistry labs for number of experiments in the University. Some might be harmful while others may not. Some of the dangerous chemicals in lab are Acetonitrile, Chloroform, Dimethyl sulfoxide, Formaldehyde, 2-mercaptoethanol, Methanol, Sodium Azide, Sodium Hydroxide, Sodium hypochlorite, and Tetrahydrofuran. Highly toxic chemicals such as Arsenic trioxide, Chlorine, Hydrogen cyanide, Nitrous oxides, Phosgene, Potassium cyanide, Sodium arsenate, and Sodium cyanide which are dangerous and hence they are handled with care.

## General procedures while working with hazardous chemicals -

1. Personal behaviour.

2. Minimising exposure to hazardous chemicals.

3. Avoiding Eye injury.

4. Avoiding ingestion of hazardous chemicals.

5. Avoiding inhalation of hazardous chemicals.

6.Avoiding injection of hazardous chemicals.

7. Minimising skin contact.

8. Storage of chemicals.

9. Use & maintenance of equipment and glassware.

10. Working with scaled-up reactions.

11. Responsibility for unattended experiments & working alone.

12. Chemistry demonstration & Magic shows.

13. Responding to accidents and emergencies.

14. Handling the accidental release of hazardous substance.

Four fundamental principles followed in the labs are -

1. Plan a head: Determine the potential hazards associated without an experiment before beginning.

2. Minimize exposure to chemicals:

Do not allow laboratory chemicals to come in contact with skin. Use laboratory chemical hoods and other ventilation devices to prevent exposure to airborne substance whenever possible.

3. Do not underestimate hazards or risk:

Assume that any mixture of chemicals will be more toxic than its most toxic component. Treat all new compounds and substances of unknown toxicity as toxic substances.

4. Be prepared for accident:

Before beginning an experiment know what specific action to take in the event of accidentally release of any hazardous substance. Post telephone number to call in an emergency or accident in a prominent location. Know the location of all safety equipment and the nearest fire alarm and telephone.

Be prepared to provide basic emergency treatment. Keep your co-workers informed of your activities so they can respond appropriately.

## Common Laboratory chemicals & their Hazard class-

1. Oxidizers: inorganic Nitrates, Nitrites, permanganates, chlorates, percholates, iodayes, periodates, persulfates, chromates, hypochlorite, peroxides, sodium nitrates, sodium updates, Ammonium persulfate, sodium peroxides.

2. Oxidizing acids: Nitric acid, perchloric acids, Hydrogen peroxide, periodic acid, chromic acids.

3. Flammable liquids: methanol, ethanol, acetone, xylene, toluene, ethyl acetate, tetrahydrofuran, ethyl ether, Benzene, Fimethylformamide, Hexane.

3. Inorganic bases: metal hydroxides such as sodium, potassium, calcium, nickel hydroxide Ammonium hydroxide.

4. Organic bases: Amines such as Ethanolamine, tributylamine.

5. Acid flammable liquids: Glacial acetic acid, acetic acid, acetic anhydride, formic acid, propanoic acid.

6. Organic acids: Butyric acid, pentanoic acid.

7. Inorganic acids: Hydrochloric acid, Sulfuric acid, Phosphoric acids, Hydrofluoric acid.

8. Poisons: Acrylamides, chloroform, Formaldehyde, phenol, Glutaraldehyde, methylene chloride,

9.Toxic metals such as silver chloride, mercury acetate, barium carbonate, lead acetate, cadmium sulfate.

10. Cynadies

11. sulfides

12. Pyrophorics (air reactives)




**Hazardous Chemicals Kept Separately in the Laboratories**

## 2.9 Biodiversity Audit

Carbon is the basis of life on mother Earth. It is incorporated into the plants through photosynthesis, consumed by animal species through the food, present in the form of carbon dioxide ($CO_2$) in the atmosphere, locked into the rocks as limestone and compressed into the different fossil fuels such as coal and oil. As $CO_2$ level in the atmosphere continue to increase, most climate designs or project that the oceans of the world and trees will keep soaking up more than half $CO_2$. The plants on land and in the sea, taken up carbon by over many years increased the percentage discharged during decay, and this increased carbon became locked away as fossil fuels beneath the surface of the planet.

The starting of the 21$^{st}$ century brought growing concern about global warming, climate change, food security, poverty and population growth. In the 21$^{st}$ century more carbon has been released into the atmosphere than that has been absorbed. $CO_2$ is a principle component causing global warming. Atmospheric carbon dioxide levels have increased to 40 % from preindustrial levels to more than 390 parts per million $CO_2$. On this background it is a need of time to cover the research areas interrelated with climate change.

The "Carbon Sequestration and Green cover inventory" is a current status of tree cover and vegetation carbon storage assessment of area under Sri Venkateswara University campus. In an era of climate change and global warming carbon emission, carbon footprints, carbon sequestration, adaptations, mitigation are the keywords in academia. Carbon sequestration is a process of converting atmospheric carbon i.e. $CO_2$ into other sinks of carbon such as vegetation, soil, ocean etc. in various forms to mitigate global warming audit is one of the important clauses of Kyoto Protocol.

While transforming ourselves from regional university to global university it is a responsibility of such universities to face the global future challenges and try to find out possible solutions for them. It is a social and environmental responsibility of Government Institutes, Universities, National and International Organizations to respond positively for various global issues at local level and should percolate the generated knowledge in to the society. Global warming and climate change are current environmental issues need to be addressed scientifically and efficiently. As Universities are provided with skillful human resource supported by analytical infrastructure, it is our duty to bring such ideas in practice. While understanding the call of time the Department of Botany and Environmental Science, Sri Venkateswara University has decided to enumerate the green cover of Sri Venkateswara University campus.

## Table : List of plant species on Sri Venkateswara University Campus

| S. NO | COMMON NAME | BOTANICAL NAME | TYPE/ USE |
|---|---|---|---|
| 1. | Custard Apple | *Annona squamosa* L. ( Var.name:seethapalam) | Fruit Me yielding, |
| 2. | False ashoka | *Polyalthia longifolia* (Sonner) Thw. (Naramamidi) -60 | Wind breaker |
| 3. | False ashoka | *Polyalthia longifolia* Hook. & Thom. Var. pendula (Ontikomma naraamamidi) -51 | Wind breaker |
| 4. | Snuff-Box Tree | *Oncoba spinoa* Forsk. (Line gulabi) -01 | Medicinal |
| 5. | Red silk-Cotton tree | *Bombax ceiba* L. (Buruga) -03 | Fibre yielding |
| 6. | Bael | *Agle marmelos* (L.) Corr. (Maredu) -01 | Medicinal |
| 7. | Tree of heaven | *Ailanthus excelsa* Roxb. (Pedda vepa) -01 | Matchstick industry |
| 8. | Neem tree | Azadirachta indica A. Juss. (Vepa) -150 | Medicinal |
| 9. | Indian mahogany | *Chukraia tabularis* A. Juss. (Konda vepa) -01 | Medicinal |
| 10. | Indian rose wood | *Somyda febrifuga* (Roxb.) A. Juss. (Somi) -02 | Medicinal,Wood yielding |
| 11. | Ceylon satinwood or East Indian satinwood | *Chloroxylon swietenia* DC. (Billudu) -08 | Wood yielding |
| 12. | Ceylon Tea | *Cassine glauca* (Rottb.) Kuntz. (Neridi) -06 | Medicinal |
| 13. | Indian jujube | *Ziziphus mauritiana* Lam. (Regi chettu) -18 1) | Fruit yielding |
| 14. | Kath Ber | *Ziziphus xylopyrus* ( Retz.,) Willd. (Gotti) -03 | Medicinal |

| | | | |
|---|---|---|---|
| 15. | Notched Leaf Soapnut | *Sapindus emarginatus* Vahl. (Kunkudu) -08 | Medicinal |
| 16. | Mango | *Mangifera indica* L. (Mamidi) -04 | Fruit yielding |
| 17. | Indian ash tree | *Lannea coromandelica* (Houtt.) Mann. (Gumpana) -60 | Plywood making |
| 18. | Flame-of-the-forest | *Butea monosperma* (Lam.) Taub. (Modhuga) -02 | Medicinal |
| 19. | Indian rosewood | *Dalbergia latifolia* Roxb. (Iridi) -02 | Wood yielding |
| 20. | Mexican Lilac | *Gliricidia sepium* (Jacq.) Kunth ex Walp. (Seema kanuga) -10 | Rat poison |
| 21. | Indian beech and Pongame oiltree. | *Pongamia pinnata* (L.) Pier. (Kanuga) -136 | Medicinal preparation, Biodiesel |
| 22. | Malabar kino | *Pterocarpus marsupium* Roxb. (Yegi) -02 | Medicinal |
| 23. | Red Sanders | *Pterocarpus santalinus* L.f. (Errachandhanam) -16 | Medicinal, Wood yielding |
| 24. | Orchid Tree | *Bauhinia purpurea* L. (Deva kanchanam) -02 | Medicinal |
| 25. | Bidi leaf tree | *Bauhinia recemosa* Lam. (Ari chettu) -01 | Medicinal |
| 26. | Red cassia, Ceylon senna | *Cassia roxburghii* DC. (Rela) -54 | Medicinal |
| 27. | Siamese cassia | *Cassia siamea* L. (Seema thangedu) -33 | Medicinal |
| 28. | Royal Poinciana | *Delonix regia* (Boj. Ex Hook.) Rafin. (Thurai) -12 | Ornamental |
| 29. | Yellow Flame/ Copper pod | *Peltophorum pterocarpum* (DC.) Baker ex Heyne. (Konda chintha) -272 | Ornamental |
| 30. | Tamarind | *Tamarindus indica* L. (Chintha) -59 | Cuisines , Medicinal |

| | | | |
|---|---|---|---|
| 31. | Auri, | *Acacia auriculiformis* A. Cunn. ex Benth. (Australia thumma) -02 | Ornamental |
| 32. | White-bark acacia | *Acacia leucophloea* (Roxb.) Willd. (Thella thumma) -02 | Wood |
| 33. | Lebbeck /Woman's tongue tree | *Albizia lebbeck* (L.) Benth. (Bagichettu) -16 | Forage , Wood |
| 34. | Jumbay, white leadtree, | *Leucaena latisiliqua* (L.) Gillis. (Subabulu) -07 | Multipurpose tree |
| 35. | Badminton ball tree | *Parkia biglandulosa* Wt.& Arn. (Banthi thumma) -02 | Ornamental |
| 36. | Manila Tamarind | *Pithecellobium dulce* (Roxb.) Benth. (Cheema chintha) -01 | Food, Traditional medicine |
| 37. | Chilean mesquite | *Prosopis chilenis* (Molina) Stuntz. (Sarkar thumma) -01 | Shade tree |
| 38. | Rain tree | *Samanea saman* (Jacq.) Merr. J. Wash. (Nidraganneru) -19 | Shade tree |
| 39. | Arjuna/ Arjun tree | *Terminalia arjuna* (Roxb. ex DC.) Wt. & Arn. (Tellamaddhi) -16 | Silk production (Tassar) |
| 40. | Baheda | *Terminalia bellirica* (Gaertn.) Roxb. (Thandra) -02 | Medicinal |
| 41. | Indian almond | *Terminalia catappa* L. (Badam chettu) -02 | Food/ wood/ Ornamental |
| 42. | Southern blue gum | *Eucalyptus globulus* Labill. (Neelagiri thylam) -52 | Essential oil/ Wood |
| 43. | Common guava | *Psidium guajava* L. (Jama chettu) -01 | Food, Traditional medicine |
| 44. | Jamun | *Syzygium cumini* (L.) Skeels. (Neredu chettu) -60 | Food medicine |
| 45. | Gummy Gardenia | *Gardenia gummifera* L.f. (Bikki) -02 | Medicinal |
| 46. | West Indian jasmine | *Ixora acuminata* Roxb. (Tella ramabanam) -02 | Ornamental |

| | | | |
|---|---|---|---|
| 47. | Aal or Indian mulberry | *Morinda pubescens* J.E. Smith var. pubecens Verdc. (Maddi) -56 | Dye yielding |
| 48. | Torch tree | *Ixora pavetta* Andr. (Korivi chettu) -03 | Ornamental |
| 49. | Madhūka, | *Madhuca longifolia* (K oen.) Macbr. Var. latifolia (Roxb.) A. Cheval. (Ippa) -08 | Silk production (tassar) and medicinal |
| 50. | Sapodilla | *Manilkara zapota* (L.) P. Royen. (Sapota) -01 | Fruit yielding |
| 51. | Spanish cherry | *Mimusops elengi* L. (Pogada) -05 | Medicinal |
| 52. | Caterpillar tree | *Plumeria alba* L. (Tella devaganneru) - 08 | Ornamental, Medicinal |
| 53. | Pinwheel flower, | *Tabernaemontana divaricata* L. (Nandivardhanam) -02 | Ornamental, Medicinal |
| 54. | Small Pinwheel flower | *Ervatamia divaricata* (L.) Burkill (Sanna nandivardanamu) -02 | Ornamental, Medicinal |
| 55. | Sweet Indrajao | *Wrightia tinctoria* (Roxb.) R. Br. (Reppala) -28 | Dye yielding, Medicinal |
| 56. | Yellow oleander | *Cascabela thevitia* (L.) Lipp. (Patcha ganneru) -04 | Poisonous |
| 57. | Indian Cherry | *Cordia dichotoma* Forst. (Iriki) -01 | Traditional medicine |
| 58. | Geiger tree | *Cordia sebestena* L. -01 | Ornamental |
| 59. | Wavy trumpet flower | *Dolichandrone atrovirens* (Roth) Spr. (Oddi) -02 | Ornamental |
| 60. | Jacaranda, blue jacaranda | *Jacaranda acutifolia* Humb . & Bonpl. (Swarna sundari) -01 | Ornamental, Wood |
| 61. | Sausage tree | *Kigelia africana* (Lam.) Benth. In Hook. (Enugu thondamu) -06 | Poisonous |
| 62. | Tree jasmine or Indian cork tree | *Millingtonia hortensis* L.f. (Manu malli) -05 | Ornamental |

| | | | |
|---|---|---|---|
| 63. | African tulip tree | *Spathodea companulata* P.Beauv. (Yerra neeru budda) -01 | Ornamental |
| 64. | Silver Trumpet Tree | *Tebebuia argentea* (Bur. & K. Schum.) Britt. -03 | Ornamental |
| 65. | Rosy trumpet tree | *Tebebuia rosea* (Bertol.) DC. -05 | Ornamental |
| 66. | Yellow trumpetbush | *Tecoma stans* (L.) Kunth. (Pasupu ganneru) -01 | Ornamental |
| 67. | Desert teak | *Tecomella undulata* (Sm.) Seem. -02 | Wood yielding |
| 68. | Teak | *Tectona grandis* L.f. (Teku) -09 | Wood yielding |
| 69. | Helicopter tree | *Gyrocarpus asiaticus* Willd. (Kummara poliki) -02 | Ornamental |
| 70. | Great bougainvillea, | *Bougainvillea spectabilis* Willd. -03 | Ornamental, Tribal Medicine |
| 71. | Indian sandalwood | *Santalum albam* L. (Srigandhamu) – 02 | Wood, Medicine |
| 72. | Indian gooseberry | *Phyllanthus emblica* L. (Nellikaya) - 07 | Culinary, Traditional medicine |
| 73. | Indian elm | *Holoptelea integrifolia* (Roxb.) Planch. -09 | Cheap wood, Medicinal |
| 74. | Banyan | *Ficus benghalensis* L. -44 | Cultural significance |
| 75. | Sacred Fig | *Ficus religiosa* L. (Ravi chettu) -17 | Traditional medicine |
| 76. | The common fig | *Ficus carica* L. (Atthi chettu) -01 | Food, Folk medicine |
| 77. | Australian pine tree or whistling pine tree | *Casurina littorea* L. (Sarugudu) -02 | Wood, Ornamental |
| 78. | Traveler's palm | *Ravenala madagascarensis* Sonner. (Panka arati) -01 | Ornamental |
| 79. | Indian shot | *Canna indica* L. (Metta thamara) -02 | Ornamental |

| | | | |
|---|---|---|---|
| 80. | Thorny bamboo | *Bambusa arundinacea* (Retz.) Roxb. (Veduru) -02 | Wood for thatching |
| 81. | Toddy Palm | *Borassus flabellifer* L. (Tati chettu) -01 | Edible, Palm wine |
| 82. | Cuban royal palm | *Roystonea regia* (Kunth) O.F. Cook. -20 | Ornamental |
| 83. | Yellow Cane Palm | *Dypsis lutescens* (H.W endl.) Beentje & J. Dransf. -14 | Ornamental |



Custard Apple



Indian mahogany



Indian ash tree



Flame-of-the-forest



Red cassia, Ceylon senna



Arjuna/ Arjun tree



Sweet Indrajao



Rosy trumpet tree



Silver Trumpet Tree



Geiger tree



Indian elm



*Cycas beddomei*





***Couroupita guianensis* (Cannonball tree)** **Indian sandalwood**

**Fig. : Plant species on Sri Venkateswara University Campus**

In Ecology, the mass of living biological organism in a given area or ecosystem at a given time is called as biomass. Biomass can refer to species biomass and community biomass. The species biomass is the mass of one or more species. The community biomass, which is the mass of all species in the community. It includes microorganisms, plants or animals. The mass can be defined as the average mass per unit area, or as the total mass in the community.

To estimate the biomass of each individual tree species non- destructive method was used. To calculate the circumference Diameter at Breast Height (DBH) can be determined by measuring tree Girth at Breast Height (GBH), approximately at 1.3 meter from the ground. The Girth at Breast Height of trees having diameter which greater than 10 centimeters were measured directly by measuring tape.

To maintain green cover and carbon sequestration potential of the University following precautionary measures were taken.Plantation of endemic species like *Pterocarpus santalinus, Cycas beddomei,Boswelia ovalifoliata, Syzyzium cumini* etc were planted to conserve native biodiversity. The plantation of tree species like *Acacia nilotica subsp. indica, Albizia lebbeck, Azadirachta indica, Citrus aurantium* works as green belt which can maintain theecological balance in the environment as well as act as sink for the harmful gases and improve air quality. Plantation activity is taken every year to increase the green coveron the University campus. Avoided the plantation of exotic species like *Casuarina,* which is fast growing species with less ecological values.

India has large geographical size and variety of climate and habitats. Wild animals constitute great national resources. Preservation and protection of wildlife is important from the ecological point of view. As per the UNESCO's Man and Biosphere program, the government of India has established the Seshachalam Biosphere Reserve on 20th September,2010. The reserve is the first biosphere reserve in Andhra Pradesh and the 17th in India. By size, it is the 9th largest in India.

Sri Venkateswara University is located at foot hills of Tirumala of Seshachalam hill range a Biosphere reserve spread over in area of 480 acres with lush green campus possessing more than ten thousand different kinds of plants. At North side of the campus are seven peaks of, Eastern Ghats namely Seshadri, Neeladri, Garudadri, Anjanadri, Vrushabadri, Narayanadri and Venkatadri. Being covered with hilly region and green luxurious coverage the Sri Venkateswara University harbours different species of birds, insects, reptiles, deers and rabbits etc. In addition to above plant species a diversified fauna has been observed and documented.



**Greater Coucal *Centropus sinensis***



*Asian Koel Eudynamys scolopaceus*



**Common Hawk-Cuckoo** ***Hierococcyx varius***



**White-throated Kingfisher** ***Halcyon smyrnensis***



**Rose-ringed Parakeet** ***Psittacula krameri***



**Common Tailorbird** ***Orthotomus sutorius***



**Common Tailorbird** ***Orthotomus sutorius***



**Black-headed Cuckooshrike** ***Lalage melanoptera***

# 3. SITE STUDY

## 3.1 On-Site Observations Study

The following listed are some of the positive site elements which are beneficial to the University in terms of tangible and intangible benefits.

**Location-**The Sri Venkateswara University, Tirupati-517 502, Andhra Pradesh, India and falls under the Tirupati Municipal Corporation, the largest University in the Rayalaseema district of Andhra Pradesh.

**Neighborhood context**- The premises is surrounding by open spaces and Residential spaces on the immediate surroundings of the site, there are educational institutes and site is close to National Highway 44 and is based in the Tirupati city which is famous for Handicrafts like Woodcarving and Calakari.

**Natural Physical features-**The premises is centrally situated in the city amidst residential areas and open spaces with appropriate proximity to necessary amenities. There is sufficient appreciation space for entrance.

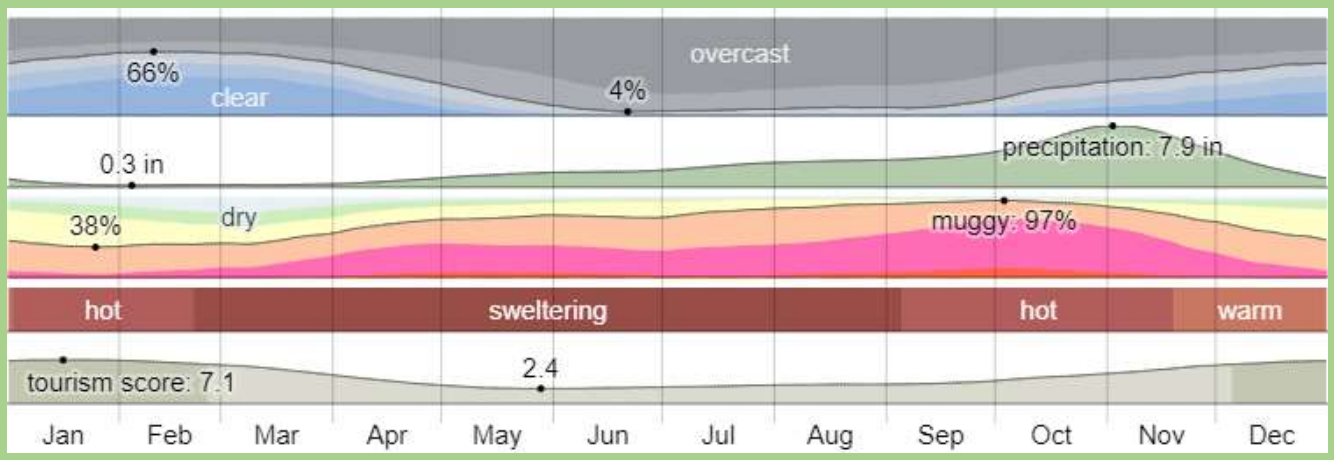
**Circulation-**There is a smooth transition of pedestrian traffic inside the premises due to the large entrance gate along with pollution free Campus.

**Climate**-the wet season is hot, oppressive, and overcast and the dry season is sweltering, muggy, and partly cloudy. Over the course of the year, the temperature typically varies from 62°F to 106°F and is rarely below 58°F or above 112°F.

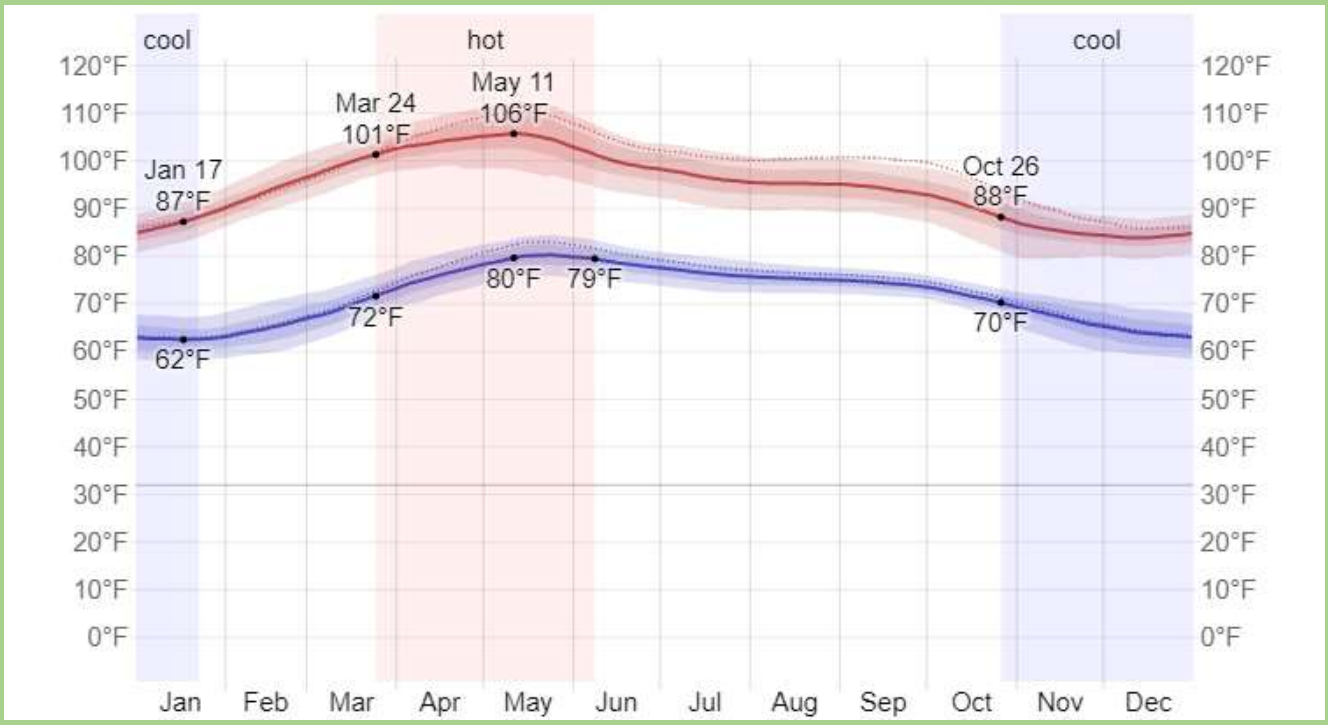
### Average Temperature in Tirupati

The hot season lasts for 2.5 months, from March 24 to June 8, with an average daily high temperature above 101°F. The hottest month of the year in Tirupati is May, with an average high of 105°F and low of 80°F.

The cool season lasts for 2.9 months, from October 26 to January 22, with an average daily high temperature below 88°F. The coldest month of the year in Tirupati is December, with an average low of 64°F and high of 84°F.




## CLIMATE IN TIRUPATI




### Average High and Low Temperature in Tirupati

**The daily average high (red line) and low (blue line) temperature, with 25th to 75th and 10th to 90th percentile bands. The thin dotted lines are the corresponding average perceived temperatures.**

| Average | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| High | 87°F | 94°F | 100°F | 104°F | 105°F | 100°F | 97°F | 95°F | 94°F | 90°F | 85°F | 84°F |
| Temp. | 73°F | 78°F | 84°F | 89°F | 91°F | 88°F | 85°F | 84°F | 83°F | 80°F | 75°F | 73°F |
| Low | 63°F | 65°F | 70°F | 76°F | 80°F | 79°F | 76°F | 75°F | 74°F | 71°F | 67°F | 64°F |

# 4. ECOLOGICAL (ENVIRONMENT) AUDIT

## 4.1 Noise Audit

### Macro Level

On the macro level there are open grounds in the site. The approach road too has very minimal traffic. As the University is located amdist the residential areas with immense vegetation. The noise levels do not affect the students and the staff in their day to day functioning.

### Micro Level

The University has adequate plantation with cool atmosphere in and around Campus. There are minimum parking areas with restricted automobile entry inside the Campus and students are encouraged to use bicycles in order to maintain Pollution Free Environment. There is no inconvenience or sound problems inside the Premises as the sub-stations are a bit away from the Premises.

## 4.4 Fire Safety

Fire safety measures well adopted in the University and each floor has an open stair-case without any barriers for fire safety measures. Additional fire safety measures like fire alarms, smoke detectors and fire emergency kit are available in the necessary areas in the Premises.

**The building wise summary of fire safety is as follows:**

| S.No. | Building Name | Floor | Number of Fire Extinguishers |
|---|---|---|---|
| 1. | Administrative Building | Ground floor | 09 |
| 2. | Administrative Building | First floor | 11 |
| 3. | Administrative Building | Second floor | 02 |
| 4. | Dr. D.J.Reddy Bhavan Natural Sciences Block | Ground floor | 03 |
| 5. | Dr. D.J.Reddy Bhavan Natural Sciences Block | First floor | 04 |
| 6. | Dr. D.J.Reddy Bhavan Natural Sciences Block | Second floor | 02 |
| 7. | Dr. D.J.Reddy Bhavan Natural Sciences Block | Third floor | 01 |
| 8. | Vaman Rao Bhavan | Ground floor | 03 |
| 9. | Vaman Rao Bhavan | First floor | 03 |
| 10. | Physical Sciences Block | All floors | 14 |
| 11. | Virology Building | First floor | 01 |

| | | | |
|---|---|---|---|
| 12. | Virology Building | Second floor | 01 |
| 13. | Microbiology Building | Ground floor | 01 |
| 14. | Engineering Department | All buildings | 30 |
| 15. | Praksham Bhavan | All floors | 12 |
| 16. | Pharmaceutical Sciences Building | All floors | 03 |
| 17. | CM&CS Building | All floors | 09 |
| 18. | Library | All floors | 06 |
| 19. | Health Centre | All floors | 07 |
| 20. | Computer Centre | All floors | 04 |
| 21. | Srinivasa Auditorium | Ground floor | 06 |
| 22. | All Messes | Ground floor | 05 |
| 23. | Physical Education Block | Ground floor | 02 |
| 24. | Prof. Choppla Ratnam Bhavan | Ground floor | 02 |
| 25. | Old MBA Building | All floors | 06 |
| 26. | Commerce Builing | Ground floor | 01 |
| 27. | DST Purse Centre Building | All floors | 04 |
| 28. | IASE | All floors | 02 |
| 29. | PG Department of Law | Ground floor | 01 |
| 30. | Biotechnology Building | All floors | 03 |
| 31. | ORI | All floors | 02 |
| 32. | DDE | All floors | 03 |
| 33. | Guest House | All buildings | 04 |
| 34. | V C Bungalow | All floors | 03 |
| 35. | Annamaya Bhavan | All floors | 02 |
| 36. | Geography Block | All floors | 01 |
| 37. | Hostels | All | 12 |
| 38. | Post Office | Ground floor | 01 |
| 39. | Bio Chemistry | All floors | 03 |
| 40. | SEAPS | All floors | 01 |
| 41. | Annapoorna Canteen | Ground floor | 01 |
| 42. | State Bank of India+ DOA | All floors | 03 |
| 43. | Union Bank of India + MHRD | All floors | 03 |
| 44. | SVU Campus School | All floors | 04 |
| 45. | SVU Stadium | Ground floor | 04 |

The University abides to the Rules and Regulations of the Fire Department and equal number of fire extinguishers are provided in all the premises of the University. Red colour buckets with sand are also present in the University.

Study of Site features:

- Route maps to facilitate easy transport
- Usage of bicycles and motor vehicles to reduce pollution
- Water pits to harvest rain water
- Pleasant environment with Ponds and variety of trees
- Acclimatization of land to grow different flowering plants
- Clearing of unwanted plants to control mosquitoes and insects
- Solar panels installation to reduce electricity
- Restricted automobiles entry into the campus at the main gates
- Xerox shop and canteen facilities to in order to allow students to take print outs at the hostels.

## Positive site features as per our study:

**1. Terrace roof tops:**

White colour paintings on the top of roofs to reduce the temperature

**2. User friendly movability in premises:**

Low height hand rails are available for ease of access

**3. Resting places:**

Rest places are present in the indoor and outdoor areas for students and the visitors

**4. Zero plastic usage**

Plastic usage is banned in the University premises strictly to maintain ecofriendly environment

**5. Plantation:**

Medicinal plants are planted on either sides of the roads in the campus area along with the name boards as a signage to spread awareness among the people to recognize them easily.

**6. Cleanliness maintenance:**

Yellow, green and blue dustbins are placed in the campus to segregate waste materials beyond their characterization

**7. Wheel chairs and ease of transport:**

Wheel chair facility is provided in the campus for disabled and senior citizens for their benefit.

**8. Transmission signal elimination inside the premises:**

The University has eliminated transmission signal in the interiors to protect ecosystem.

## Sustainable habitat

### Site beautification

#### a) Low VOC Paints and Adhesives

Whenever the University undergoes repairs or renovations there should be the use of materials with low emissions so as to reduce the adverse health impacts on workmen and the students occupying the space thereafter.

#### b) Child area – Day care centre

There is a provision where if student's or staff relative who are toddlers can rest in the Day care facility is available for the students or staff children which is located in old MBA building.




## SVU DAY CARE CENTRE



**Creative Activity**








**SRI VENKATESWARA UNIVERSITY**
**TIRUPATI - 517502**

# ENVIRONMENTAL AUDIT
# 2019 - 2020




SRI VENKATESWARA UNIVERSITY

# ACKNOWLEDGEMENT

We, The Environment Audit Team thank Sri Venkateswara University for assigning us an important work on Environmental audit. We appreciate the cooperation of our team for the assigned study, giving us necessary inputs to carry out audit activities.

Our special thanks to:

**Hon'ble, Vice-Chancellors of the University; Prof. Avula Damodaram, Ph.D., Prof. G. Janaki Ramaiah I/c, M.A., Ph.D., Prof. G.M. Sundaravalli Rector and Prof. P. Sreedhara Reddy Registrar.**

IQAC Members

Teaching & supporting staff

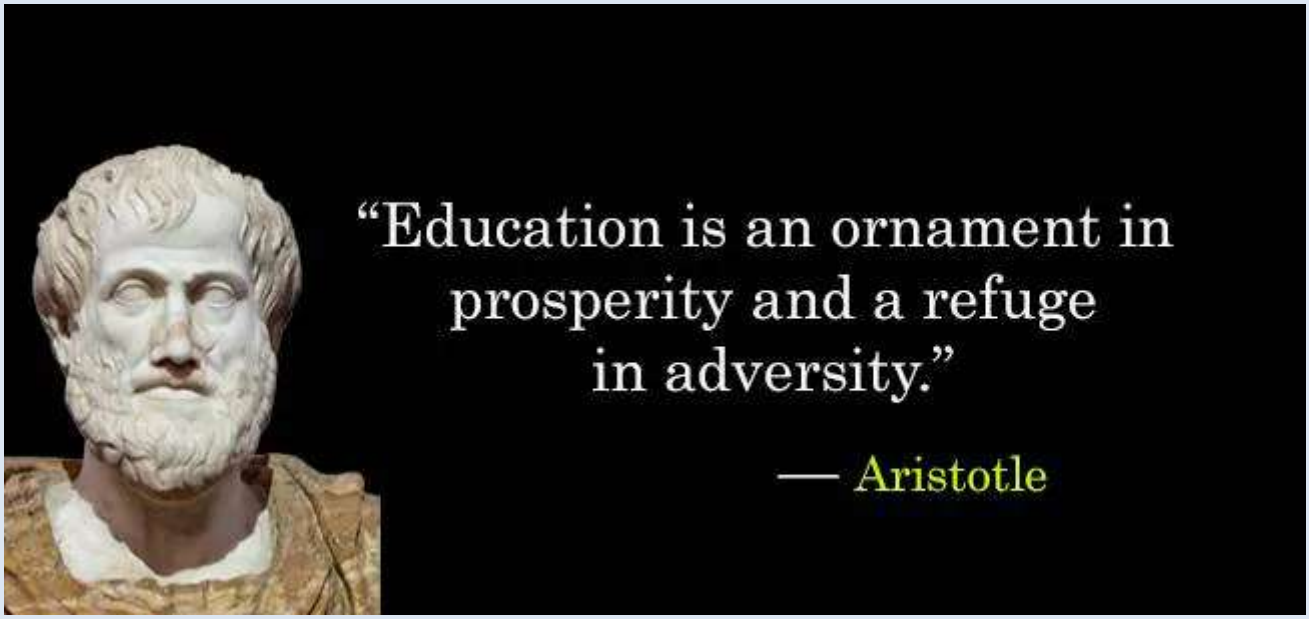
# AUDIT COMMITTEE MEMBERS

The Committee members are listed below:

| S. No. | Name | Designation |
|---|---|---|
| 1. | Vice-Chancellor {Prof. Avula Damodaram, Ph.D.,<br>Prof. G. Janaki Ramaiah I/c, M.A., Ph.D.,} | Chairman |
| 2. | Registrar (Prof. P. Sreedhara Reddy) | Convener |
| 3. | Rector (Prof. G.M. Sundaravalli) | Member |
| 4. | IQAC Director | Member |
| 5. | NAAC Steering Committee Director | Member |
| 6. | Prof. T. Damodaram<br>Environment Science | Member |
| 7. | Prof. M. Sri Murali<br>Civil Engineering | Member |
| 8. | Prof. B.V. Muralidhar<br>Political Science | Member |
| 9. | Prof. P. Mohan Reddy<br>CM&CS | Member |

## 1.INTRODUCTION

The word “Green” means eco-friendly to produce better environment. Green and environmental Audit is a process of systematic, documented, periodic and objective evaluation of components of environmental diversity with the aim of ensuring readiness in eco-friendly environment and conservation of natural resources in its operations. The process starts with systematic identification, quantification, recording, reporting and analysis of components of environmental diversity of the University. Green audit is a valuable means for a University to determine how and where they are using the most energy or water or other resources. The University can consider how to implement changes and make green savings. It can create healthy consciousness and promotes environmental awareness, values and ethics.




## 2.GOALS AND OBJECTIVES

It aims to analyse environments within and outside the concerned area, which will have an impact on the eco-friendly atmosphere. It provides staff and students better understanding of Resource management on their area of work.

The main objectives of carrying of green audit:

- To ensure the performance of the Institution with respect to environmental activities they are involved in, in compliance with existing laws and regulations.
- To locate the Green area and the Geographical location of the University – aerial view.
- To document the floral and faunal diversity of the University.
- To develop and follow the waste management system.
- To reduce the energy consumption of the Institution.
- To report the expenditure on green initiatives, carbon foot print.
- To conserve the natural resources.

**Areas Of Concern**

- Water Management
- Waste Management
- E-Waste Management
- Energy Management

## 3. ABOUT THE UNIVERSITY

Sri Venkateswara University established in 1954 is located serenely in a picturesque campus at the foot of the seven hills.

The University has been a premier Institution of Higher Learning, Research, Extension and consultancy to caterto the Educational needs and aspirants of the people of the Rayalaseema Region of Andhra Pradesh and has been playing a pivotal role in creating new knowledge, fostering innovation to produce economic value, and addressing the societal needs and challenges.

The **University** presently houses **52 Departments, 88 Programmes**
**22 in Arts,**
**17 in Sciences,**
**03 in CM&CS,**
**6 in Engineering,**
**2 in Centres,**
**1 in IASE and**
**1 in Pharmaceutical Sciences**
**Constituent Colleges 6,**
**Affiliated Colleges187, while 46 Under Graduate Programmes,**
**NAAC Accredited Colleges 8,**
**Autonomous College 1,**
**Colleges with Postgraduate Departments 31,**
**Colleges with Research Departments 14,**
**University Recognized Research Institutes/Centers 8**
**Total area of the university campus –483 acres,**
**Main campus: 427650.8 sq.mts.,**

# MAIN CAMPUS CONSISTS

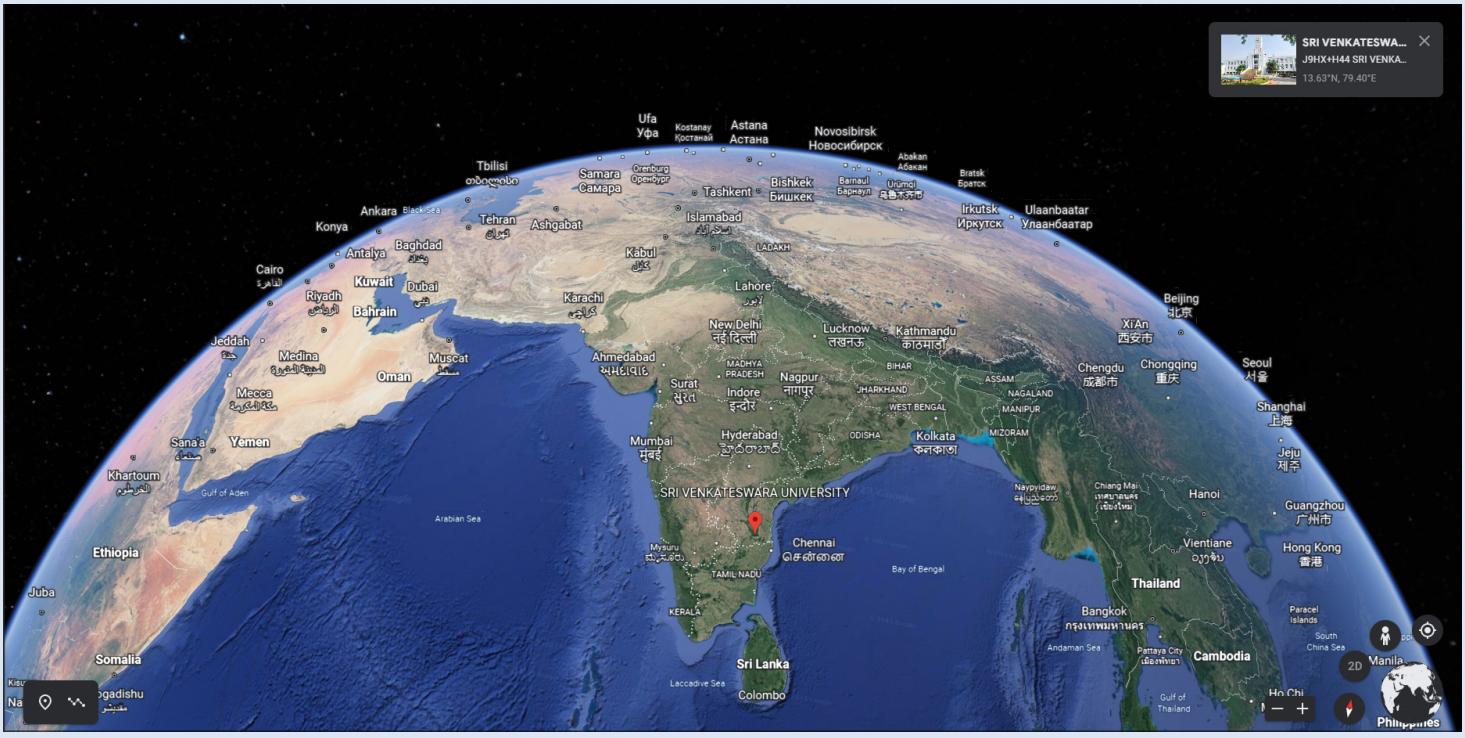
| S.No. | BUILDINGS |
|---|---|
| 1. | ADMINISTRATIVE BUILDING |
| 2. | PRAKASAM BHAVAN |
| 3. | DDE BUILDING |
| 4. | JANARDHAN BHAVAN |
| 5. | OLD MBA BUILDING |
| 6. | S.V.U PRESS BUILDING |
| 7. | PHYSICAL SCIENCES BLOCK |
| 8. | NATURAL SCIENCES BLOCK: Dr. D.J. REDDY BHAVAN |
| 9. | GEOGRAPHY SCIENCES BLOCK |
| 10. | ARTS BLOCK: VAMANARAO BHAVAN |
| 11. | CIVIL ENGINEERING BUILDING |
| 12. | ECE BUILDING |
| 13. | CHEMICAL ENGINEERING BUILDING |
| 14. | MECHANICAL ENGINEERING BUILDING |
| 15. | EEE & CSE BUILDING |
| 16. | SVU LIBRARY |
| 17. | HEALTH CENTRE |
| 18. | PHYSICAL EDUCATION |
| 19. | LAW & LIBRARY SCIENCE |
| 20. | ORIENTAL RESEARCH INSTITUTE BUILDING |

| S.No. | BUILDINGS |
|---|---|
| 21. | POPULATION STUDIES & BIO-TECHNOLOGY– (Lecture theatre Complex) |
| 22. | BIO-CHEMISTRY |
| 23. | MICROBIOLOGY |
| 24. | DST PURSE PROGRAM |
| 25. | VIROLOGY BUILDING |
| 26. | PHARMACY BUILDING |
| 27. | ANDHRA BANK SCHOOL OF MANAGEMENT |
| 28. | COMPUTER SCIENCE |
| 29. | SEAPS (AUDITORIUM OPP) |
| 30. | SVU COMPUTER CENTRE |
| 31. | USIC BUILDING |
| 32. | SVU CAMPUS SCHOOL |
| 33. | ANNAMAYYA BHAVAN |
| 34. | PRAKASAM RECREATION CENTRE |
| 35. | I.A.S.E BUILDING |
| 36. | Prof. CHOPPALA RATHNAM BHAVAN |
| 37. | HOSTEL OFFICES |
| 38. | STATE BANK OF INDIA |
| 39. | UNION BANK OF INDIA |
| 40. | INDIAN POST OFFICE |
| 41. | SVU AUDITORIUM |
| 42. | SVU TARAKA RAM STADIUM |

## RESIDENTIAL CAMPUS CONSISTING

| S.No. | BUILDINGS |
|---|---|
| 1. | WOMEN HOSTEL PREMISES-I (BLOCKS 1 TO 4) |
| 2. | WORKING WOMENS' HOSTEL PREMISES-II (BLOCKS 5 TO 9) |
| 3. | MENS' HOSTELS (BLOCKS A TO J) |
| 4. | QUARTERS FOR TEACHING AND NON-TEACHING STAFF |
| 5. | QUARTERS FOR WARDENS AND DEPUTY WARDENS |
| 6. | QUARTERS FOR ATTENDERS AND PEONS |

## UNIVERSITY LOCATION



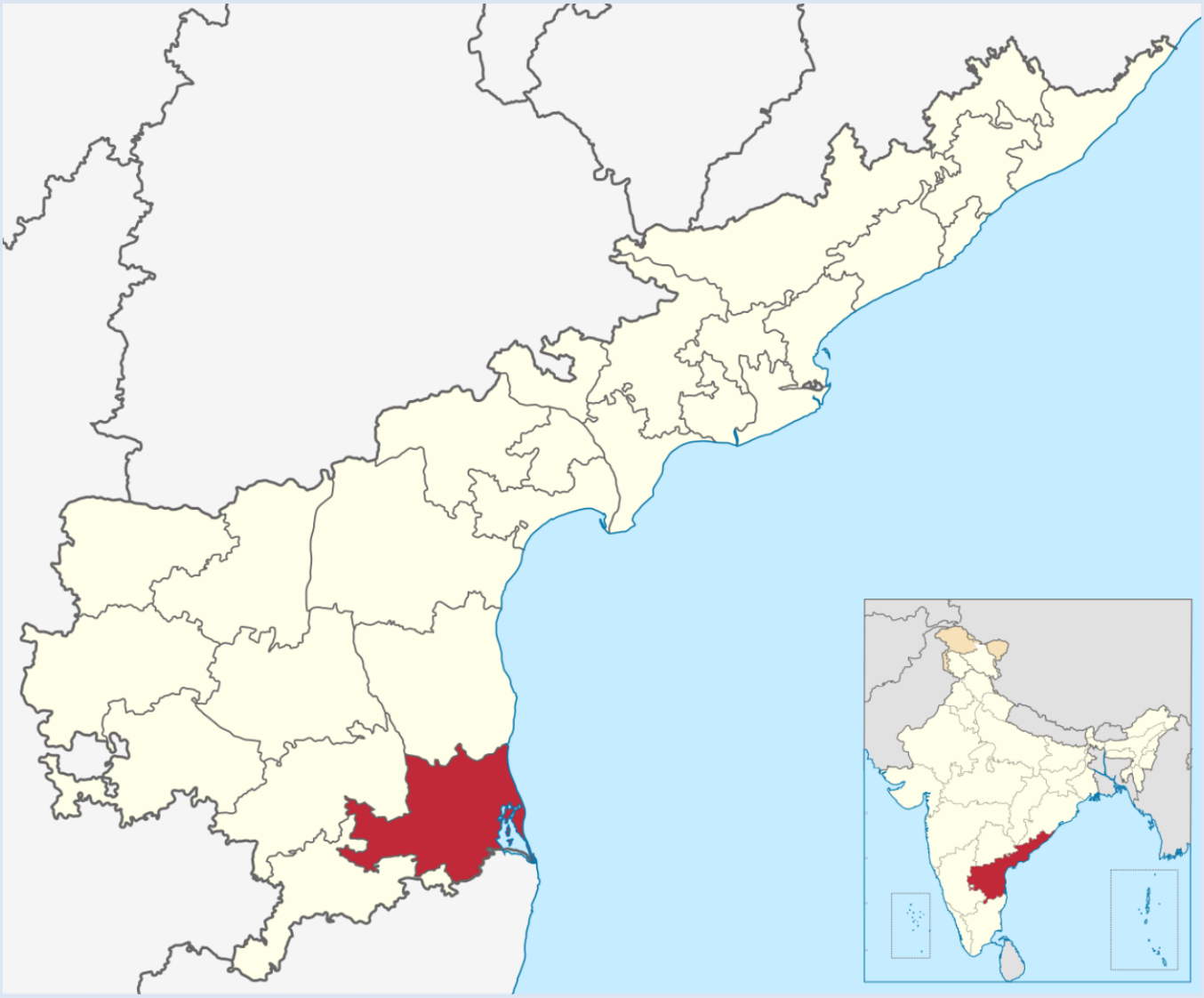

## INDIA IN GLOBE



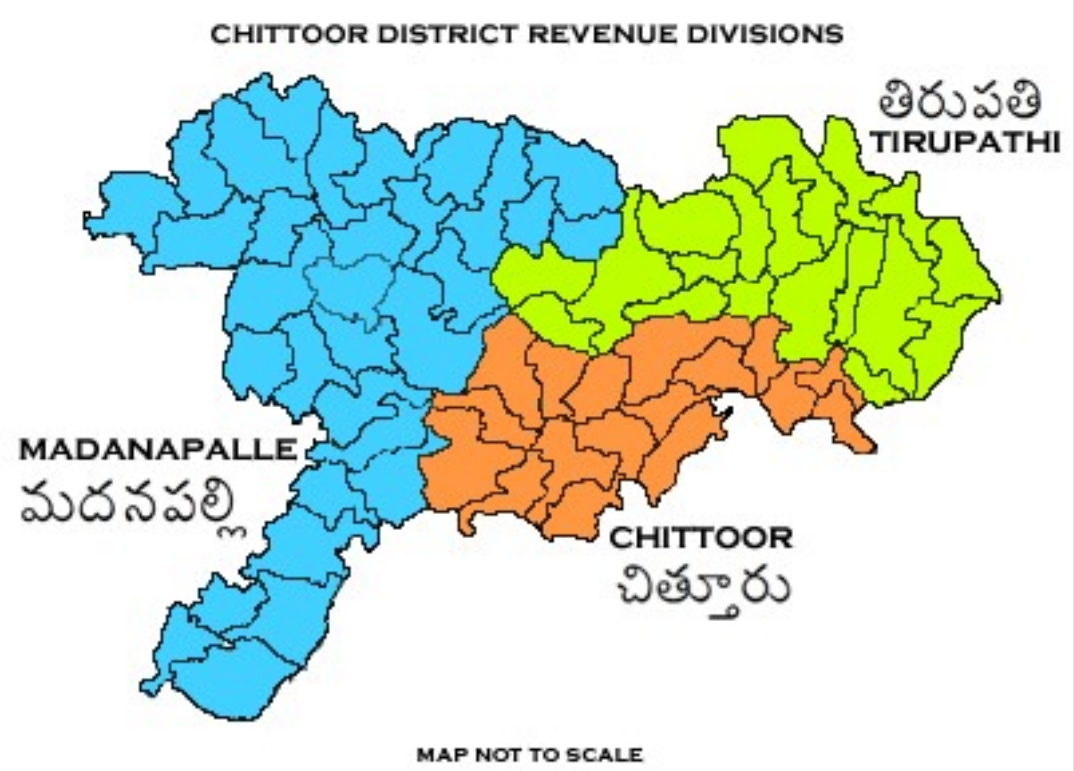

POLITICAL MAP OF INDIA



**INDICATING ANDHRA PRADESH TERRITORY IN INDIA MAP**



**POINTING OF CHITTOR DISTRICT IN ANDHRA PRADESH MAP ALONG WITH INDICATING ANDHRA PRADESH STATE IN INDIA MAP**




SHOWING TIRUPATI DISTRICT FROM CHITTOOR MAP



DISTINCT VIEW OF SRI VENKATESWARA UNIVERSITY ADIMINISTRATIVE BUILDING

The Audit covered the following major areas:

- Water Management
- Energy Efficiency and Energy Management
- Carbon foot print and Management
- Waste and Waste Management

## 4. WATER MANAGEMENT

| S.No. | WATER CONSERVATION | FACILITIES AVAILABLE AT SRI VENKATESWARA UNIVERSITY |
|---|---|---|
| 1. | RAIN WATER HARVESTING | Rainwater harvesting system, also called rainwater collection system or rainwater catchment system, technology that collects and stores rainwater for further use. The structures are seen at different locations within premises. Awareness programmes on water conservationand rain water harvesting have been conducted regularly through various service of the University. |
| 2. | BORE WELL/OPEN WELL RECHARGE | The bore wells on campus are used to replenish rainwater.Bore well recharge technique also makes sure the storage of naturally filtered rainwater. |
| 3. | CONSTRUCTIONOF TANKS AND BUNDS | As a part of revival to traditional wisdom, the institution-built rain water storage tank, to collect the rainwater and can be used whenever it is required. Bunds are constructedto control the water table within the reclamation area; and. control the flow of the discharge water in the fill area. |
| 4. | WASTE WATER RECYCLING | Waste water management has been critical towards oursustainability models for reducing and reusing water atour campuses. The waste water after treatment is proposed to be utilized effectively for gardening purposes. |
| 5. | MAINTENANCE OF WATER BODIES AND DISTRIBUTION SYSTEM IN THE CAMPUS | Water works Department maintain the water bodies and distribution system in the campus. The ground water is pumped into storage tanks located at different places in the campus. There are few numbers of overhead storage tanks. The water is distributed through well laid pipe network. |

## a.RAIN WATER HARVESTING

Rainwater harvesting means capturing rain where it falls or capturing the run off of rain water in your own premises. Rainwater harvesting system, also called rainwater collection system or rainwater catchment system, technology that collects and stores rainwater for further use. The collected water is also kept clean by filtering and such design of facility that does not allow pollutants to mix with collected water. Rain water is harvested from terrace, and ground floor areas for reusing in watering of lawns. Surface runoff from various ground sources and terraces are collected, filtered and recirculated for gardening and washing purpose. Besides natural percolation tanks, concrete storage tanks have also been built and rain water has been stored after proper filtration paving the open places with concrete roads is avoided so that rain water can be percolated. The rainwater harvested during rains not only helps to save water from conventional sources, but also to save energy and reduce expenses incurred on transportation and distribution of water. Awareness programmes on water conservation and rain water harvesting have been conducted regularly through various service of the University. One of the rain water harvesting pit is seen near Post Office. Similar structures are seen at different locations within premises.



**Rain Water Harvesting Roof Top to the Plants**



**Rain Water Harvesting Roof Top to the Plants**







**Rain Water Harvesting Pits**




Rain Water Harvesting Pits



Rain Water Harvesting-Department of Biotechnology

## b. BORE WELL / OPEN WELL RECHARGE

Bore well / Open well recharge is very effective method of rain water harvesting. The bore wells on campus is used to replenish rainwater. Bore well recharge technique also makes surethe storage of naturally filtered rainwater. The water level rises when the bore wells are recharged. As a part of water conservation facilities that are available in the University, the bore well facilities are available in the campus. As the water crisis continues to become severe,there is a dire need of reform in water management system and revival of traditional systems.




**Bore well**

**13.62859/79.3975**




**Open well**

**13.62749/79.3998**



**Bore wells**



## c.CONSTRUCTIONION OF TANKS AND BUNDS

As the water crisis continues to become severe, there is a dire need of reform in water management system and revival of traditional systems. As a part of revival to traditional wisdom, the institution-built rain water storage tank, to collect the rainwater and can be used whenever it is required. One of such bunds are seen in front of SVU Women's Hostel. Bunds are constructed to create stability of existing subsoils, slope angles and water levels to ensure the integrity of the reclamation area. Bunds are constructed to control the water table within the reclamation area; and. control the flow of the discharge water in the fill area.



**BUNDS**




**BUNDS**

## d.WASTE WATER RECYCLING

Waste water management has been critical towards our sustainability models for reducing andreusing water at our campuses. The waste water after treatment is proposed to be utilized effectively for gardening purposes. Waste Water Recycling process facilitates the treatment ofexisting contaminants in the water or reduces the concentration of such contaminants so that the water becomes fit for the desired use. One of such seen in S V University Working Women's Hostel.




**Waste Water Recycling in Women's Hostel**

## e.MAINTENANCE OF WATER BODIES AND DISTRIBUTION SYSTEM IN THE CAMPUS

Water works Department maintain the water bodies and distribution system in the campus. The ground water is pumped into storage tanks located at different places in the campus. There are few numbers of overhead storage tanks. The water is distributed through well laid pipe network. Drinking water after treating in RO plant is supplied through a separate set of distribution pipes and water for all other purpose is supplied through another set of distributionpipes. Entire distribution system is well supervised by Civil works people to ensure that there are no leakages and wastages of precious water through joints, valves etc. Waste usage of wateris reduced using low pressure flushes. All the stakeholders of the college are well educated to use water economically and efficiently. Also, wash basins are available at each laboratory, staffrooms and department. Water facilities are availed in the entire college without any interruption. The RO plants are periodically cleaned and maintained by assigning a specific technician in the maintenance department. The University have the cleaning schedule of all overhead water storage tanks. The water works section of the Engineering Department of S.V. University is regularly checking and cleaning all the tanks once in six months.





**Water Tanks 13.62867/ 79.40366**




**Water Pumping System  13.63306/ 79.39824**





**WATER SUPPLY SYSTEM**



**RO Plants**




**Water Transport System**

# 5.WASTE MANAGEMENT

## a. SOLID WASTE MANAGEMENT

The University and colleges pay dedicated focus to see that minimal waste is generated in the campus. Solid waste is segregated as bio degradable and non-degradable and handed over to Tirupati Municipal corporation as a part of Swachh Bharat initiative and Clean and Green Tirupati. All Departments and classrooms are provided with dustbins for dry wastage disposal. Segregation of waste in to dry and wet waste from the separately allotted dustbins is done in strategic locations, thusmaintaining the Campus clean and Eco-friendly. The use of plastic carry bags, cups and laminated paper plates are prohibited on the campus. Students and staff are advised to bring cloth bags. Workshops and awareness programmes were organized in the University.



**Solid waste management in the campus**

## b.LIQUID WASTE MANAGEMENT

Next to air, water is the most important element for the preservation of life. Water is a finite commodity which, if not managed properly, will result in shortages in the near future. Water conservation can go a long way to help alleviate these impending shortages. Students are made aware that conserving water is equivalent to conserving their future. Drinking water from the tap,and refilling bottle as often as the students need is one of the best practices followed at SVU Disposable bottles are not allowed. Sustainable liquid waste treatment is adopted in campus through bioremediation using microorganism metabolism which helps to minimize the chemical and biological load of domestic sewage and is good for gardening purpose.

## c.BIOMEDICAL WASTE MANAGEMENT

In the S.V University biomedical waste is produced in the labs where animals are using for research purpose. "Bio-medical waste" means wastes that are generated during diagnosis, treatment or immunization of human beings or animals or research activities or in the production or testing of biologicals. Medical waste includes all the waste generated from the Health Care Facility which can have adverse effects on the human health or to the environment in general if not disposed properly. In general, the quantity of biomedical waste will be 5% to 10% of total waste generated from the campus. Though the amount of waste is very negligible amount, the carcass of the animals are stored in the -20 $^{o}$C for the time being. After sufficient amount of carcass stored university hand over to Tirupati Municipal Corporation for Biomedical waste management. Workshops on Bio Medical Waste Management Rules, procedures were conducted in the University.

## d..E-WASTE MANAGEMENT

With the proliferation of electronics also comes the challenge of their proper disposal. S.V. University has very efficient mechanism to dispose E wastes generated from various sources. E-wastes are generated from computer laboratories, electronic labs, Physics Labs, Chemistry Lab, Biotech Labs, Academic and Administrative Offices. The e-waste includes out of order equipment’s or obsolete items like lab instruments, circuits, desktops, laptops and accessories, printer, charging and network cables, Wi-Fi devices, cartridges, sound systems, display units, UPS, Biometric Machine, scientific instruments etc. All these wastes are put to optimal use. All such equipment’s which cannot be reused or recycled is being disposed off through authorized vendors. Instead of a new procurement Buy-Back option is preferred for

technology up gradation. The University is grappling with ways to efficiently and cost-effectively handle the issue of electronic waste, ore-waste, on campus. It's normal for people to discard of products due to normal wear and tear, but technological advancements have accelerated e-waste growth as students, faculty and administrators frequently upgrade to better gadgets. This surge has forced University administrators to carefully examine and address the environmentally responsible disposal of these products on a campus-wide scale. E Waste collected is stored and disposed off annually. Students are also made aware of E-Waste issues and its safe disposal.



**E-Waste Collection**

## e.WASTE RECYCLING SYSTEM

Degradable solid waste collected from cafeteria, Boys and Girls Hostels, Guest Houses and from Residential Quarters are dumped in the Vermi Compost Unit to make some Organic fertilizer which are used for Gardening.

## f.HAZARDOUS CHEMICALS AND RADIOACTIVE WASTE MANAGEMENT

Campus is free from any kind of hazardous waste. Ideally, collection, transportation and proper handling of chemicals begin with understanding the potential hazards related to their use. All stakeholders, especially from Academic departments and laboratories are responsible for disseminating information on hazardous materials being used in the facility. Various types of chemicals are used in chemistry labs for number of experiments in the University. Some might be harmful while others may not. Some of the dangerous chemicals in lab are Acetonitrile, Chloroform, Dimethyl sulfoxide, Formaldehyde, 2-mercaptoethanol, Methanol, Sodium Azide, Sodium Hydroxide, Sodium hypochlorite, and Tetrahydrofuran. Highly toxic chemicals such as Arsenic trioxide, Chlorine, Hydrogen cyanide, Nitrous oxides, Phosgene, Potassium cyanide, Sodium arsenate, and Sodium cyanide which are dangerous and hence they are handled with care.

### General procedures while working with hazardous chemicals -

1. Personal behaviour.
2. Minimizing exposure to hazardous chemicals.
3. Avoiding Eye injury.
4. Avoiding ingestion of hazardous chemicals.
5. Avoiding inhalation of hazardous chemicals.
6. Avoiding injection of hazardous chemicals.
7. Minimizing skin contact.
8. Storage of chemicals.
9. Use & maintenance of equipment and glassware.
10. Working with scaled-up reactions.
11. Responsibility for unattended experiments & working alone.
12. Chemistry demonstration & Magic shows.
13. Responding to accidents and emergencies.
14. Handling the accidental release of hazardous substance.

**Four fundamental principles followed in the labs are -**

**1. Plan a head:**

Determine the potential hazards associated without an experiment before beginning.

**2. Minimize exposure to chemicals:**

Do not allow laboratory chemicals to come in contact with skin. Use laboratory chemical hoods and other ventilation devices to prevent exposure to airborne substance whenever possible.

**3. Do not underestimate hazards or risk:**

Assume that any mixture of chemicals will be more toxic than its most toxic component. Treat all new compounds and substances of unknown toxicity as toxic substances.

**4. Be prepared for accident:**

Before beginning an experiment know what specific action to take in the event of accidentally release of any hazardous substance. Post telephone number to call in an emergency or accident in a prominent location. Know the location of all safety equipment and the nearest fire alarm and telephone.

Be prepared to provide basic emergency treatment. Keep your co-workers informed of your activities so they can respond appropriately.

## Common Laboratory chemicals & their Hazard class-

1. Oxidizers: inorganic Nitrates, Nitrites, permanganates, chlorates, percholates, iodayes, periodates, persulfates, chromates, hypochlorite, peroxides, sodium nitrates, sodium updates, Ammonium persulfate, sodium peroxides.

2. Oxidizing acids: Nitric acid, perchloric acids, Hydrogen peroxide, periodic acid, chromic acids.

3. Flammable liquids: methanol, ethanol, acetone, xylene, toluene, ethyl acetate, tetrahydrofuran, ethyl ether, Benzene, Fimethylformamide, Hexane.

4. Inorganic bases: metal hydroxides such as sodium, potassium, calcium, nickel hydroxide Ammonium hydroxide.

5. Organic bases: Amines such as Ethanolamine, tributylamine.

6. Acid flammable liquids: Glacial acetic acid, acetic acid, acetic anhydride, formic acid, propanoic acid.

7. Organic acids: Butyric acid, pentanoic acid.

8. Inorganic acids: Hydrochloric acid, Sulfuric acid, Phosphoric acids, Hydrofluoric acid.

9. Poisons: Acrylamides, chloroform, Formaldehyde, phenol, Glutaraldehyde, methylene chloride,

10. Toxic metals such as silver chloride, mercury acetate, barium carbonate, lead acetate, cadmium sulfate.

11. Cynadies

12. sulfides

13. Pyrophorics (air reactives)



**Hazardous Chemicals kept separately in the Laboratory**

The solvents used in the laboratories are reused after distillation to minimize theuse of solvents. The waste solvents are separated as halogenated and non-halogenated and transferred to plastic containers. To prevent heat generation and gas evolution or other reaction, compatibility of the waste is checked carefully.

To prevent accidental spillage of chemicals the laboratory wastes are subjectedto process through three stages of waste management. Stage-I gravel, Stage-II sand, Stage –III coal. The three chambers are replenished with new materials after a period of six months.

There is a separate room for the Nuclear Laboratory where radiation hazard is displayed for safety measures. The harmful radiations are radiated by appropriate routes. Containers containing radioactive elements are properly lead sealed.

Wearing appropriate lab coats, gloves and face shields while working with nano materials. The hazardous chemical wastes are kept in separate containers. Later they are filtered and drained out.

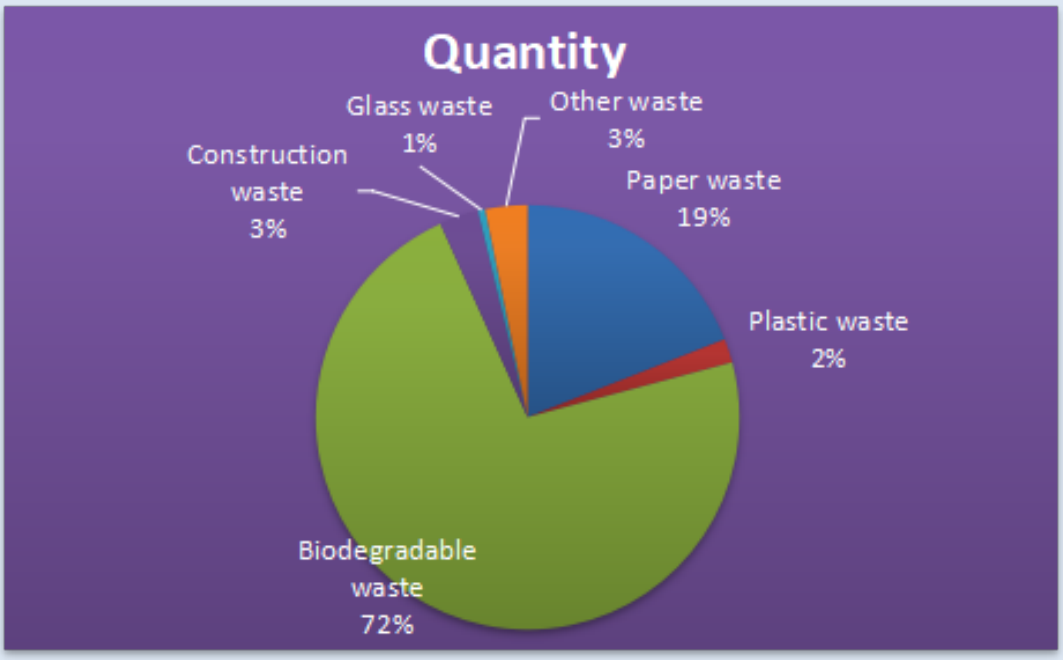
## SOLID WASTE AUDIT

Solid waste is the unwanted or useless solid material generated from the human activities in residential, industrial or commercial area. Solid waste management reduces or eliminates the adverse impact on the environment and human health. A number of processes are involved in efficiently managing waste for an organization. It is necessary to manage the solid waste properly to reduce the load on waste management system. Unavailability of proper waste management practices may lead to environmental pollution. A waste management audit helps educational institutes to efficiently and responsibly dispose of the waste that is generated every day. By designing a more efficient waste disposal program through a waste audit, we can enhance recycling practices

Solid waste generation and its management is a burning issue in current days. The rate of generation of solid waste is very high and yet we do not have adequate technology to manage the generated waste. Unscientific handling of solid waste can create threats to public health and environmental safety issues. Thus, it is necessary to manage the solid waste properly to reduce the load on waste management system. The purpose of this audit is to find out the quantity, volume, type and current management practice of solid waste generation in Sri Venkateswara University campus. This report will help for further solid waste management and to go for green campus development. The waste generated from Sri Venkateswara University campus includes paper waste, plastic waste, biodegradable waste, construction waste, glass waste, biomedical waste and other wastes.

### TABLE: CATEGORY WISE SOLID WASTE GENERATION AT UNIVERSITY (KG / MONTH)

| Category of waste | Paper waste | Plastic waste | Biodegradable waste | Construction waste | Glass waste | Other waste | Total waste kg/month | Total waste kg/year |
|---|---|---|---|---|---|---|---|---|
| **Quantity** | 784 | 75 | 2985 | 123 | 23 | 132 | **4122** | **49464** |
| **percentage** | 19.02 | 01.82 | 72.41 | 02.98 | 00.55 | 03.20 | 100 | |




GRAPH - SOLID WASTE GENERATION AT UNIVERSITY CAMPUS



**BIOGAS PLANT**

Biodegradable waste consists of Leaf litter, food waste, vegetable and fruit waste etc. is decomposed in composting, vermicomposting and bio-gas units established in the University campus.Other dry waste is collected by Waste collection vehicles of Tirupati Municipal Corporation. Overall University campus is maintained neat and clean throughout. Various awareness programmes were organized in and around campus for effective management of solid waste.



**VERMICOMPOSTING**

## 6. Energy Efficiency and Energy Management

| S.No. | AITERNATE SOURCES OF ENERGY AND ENERGY CONSERVATION | FACILITIES AVAILABLE AT S V UNIVERSITY |
|---|---|---|
| 1. | SOLAR ENERGY | SV University has installed Total 1.75MW Rooftop Solar Power Plants to harness the solar energy on RESCO mode. Building wise installed solar plants details along with geo tagged photographs are enclosed.<br>Solar dehydration technology has been using in food processing by the students of food technology in Department of Home Science. Research projects and student trainings were conducted in solar dehydration technology in collaboration with Society for Energy, Environment and Development (SEED) Hyderabad. |
| 2. | BIOGAS PLANT | A Biogas Plant is located in the Campus for energy conservation. This energy release allows biogas is used as a fuel; it can be used for any heating purpose, such as cooking. |
| 3. | WHEELING TO THE GRID | Solar energy generated by solar panels are exported to the grid of electricity distribution utility of Southern Power distribution company of Andhra Pradesh Ltd. Direct savings in electricity bills are availed from electricity distribution utility on monthly basis. Details of benefits accrued in bills are enclosed. |
| 4. | SENSOR-BASED ENERGY CONSERVATION | Using sensors, we are minimizing the consumption of electrical power. With the help of the sensors, we are eliminating this shortage by minimizing the wastage of electrical power or saving our generated power. sensor that gives us signal when anything crosses its rays and detect a change in motion in its surroundings within different range of radius. The campus is equipped with sensor-based water taps and ACs at various locations. |
| 5. | USE OF LED BULBS/ POWER EFFICIENT EQUIPMENT | The University adopted energy efficient lighting including L.E.D. based lights, Bulbs and Tube lights etc. to promote energy efficiency. Detailed Work Orders & Bills are enclosed. |

## a.SOLAR ENERGY

The Institution has facilities for alternate sources of energy and energy conservation measures. Solar energy is the most attractive and abundant form of renewable energy source because it is free, environment friendly, and available most of the year. The most common and simplest application of solar energy is to convert it into heat. The University has been taken initiatives to utilize solar energy in the campus. Solar panels were established in various places in the university viz., Administrative Building, University library, Prakasam Bhavan, Engineering College, Hostels etc. The information in the establishment and utilization of solar energy is given in Annexures enclosed.



**Solar Panel at SVU Library**



**Solar Panel at SVU Administrative Building**



**Solar Panel at Prakasam Bhavan**



**Solar Panel at Engineering College**



**Solar Panel at SVU Hostels**

In Academics and Research, Solar dryer facility is available in the Department of Home Science. Food technology students and scholars conducted research projects using solar dehydration technology. Drying foods using solar energy helps in retaining the colour, Flavour and nutritional value to a large extent. It can minimize cost, wastage and increase the productivity in terms of quality and quantity. Hands on training was given to the students with the resource persons on solar dehydration. Various foods and food products were developed. The students undergone training programmes and internship in Society for Energy, Environment and Development (SEED) Hyderabad.

Solar dryers require a certain investment for the set-up of the appliance, but no expenditures for the fuel. The basic function of a solar dryer is to heat air to a constant temperature with solar energy, which facilitates extraction of humidity from foods inside a drying chamber. Ventilation is enabled at a constant rate through defined air inlets and outlets, small solar ventilators or temperature difference, either due to exposition or vertical height. In direct sun driers the food is put in boxes with a transparent lid. Additionally, the temperature in the drier is raised due to the greenhouse effect and the air exchange is regulated by vents. The food is not exposed to direct sunlight in indirect sun driers as the fresh air is heated separately from the food chamber. This method is preferable for drying foods which lose nutritional value when exposed to direct sunlight. Hybrid driers combine solar energy with a fossil fuel or biomass fuel. Solar drying has many advantages over open traditional drying like; Safe & hygienic, Free from insect and bird contamination, Clean &dust free products, more uniform quality products, Uniform colour, texture, and appearance of the product, evenness in drying, moisture control to optimum levels, Nutrient retention especially beta carotene, yields high quality Products with better shelf life of the products.





**Solar Drying by the students of Food Technology**



Plate 7: Osmo solar dried strawberry bits



Plate 8: Osmo solar dried pineapple bits

**Dehydration of Fruits using Solar energy**

PRE –PROCESSING AN



Fresh Pineapple



Removing the crown



Peeled Pineapple



Pineapple slices



Pineapple chunks



Steam blanching



After steam blanching



Cold water dipping



Dipping in sugar syrup



Loading into trays



Drying in solar chamber



Osmo solar dehydrated pineapple slices (end product)

## b.BIOGAS PLANT

A Biogas Plant is located in the Campus for energy conservation. Biogas is a renewable energy source, a mixture of gases produced by the breakdown of organic matter in the absence of oxygen (anaerobically), primarily consisting of methane and carbon dioxide. Biogas is produced from raw materials such as plant material, leafs, Kitchen waste like Vegetables and fruits peelings, stale food, waste generated in the campus. sewage, green waste or food waste etc. Biogas is primarily methane ($CH_4$) and carbon dioxide ($CO_2$) and hydrogen sulphide ($H_2S$), moisture and siloxanes. The gases methane, hydrogen, and carbon monoxide (CO) can be combusted or oxidized with oxygen. This energy release allows biogas is used as a fuel; it can be used for any heating purpose, such as cooking. It can also be used in a gas engine to convert the energy in the gas into electricity and heat.



**Biogas Plant Facility in the Campus**

## c.WHEELING TO THE GRID

Solar energy generated by solar panels are exported to the grid of electricity distribution utility of Southern Power distribution company of Andhra Pradesh Ltd. Direct savings in electricity bills are availed from electricity distribution utility on monthly basis. Details of benefits accrued in bills are enclosed. Workshops on ‘Green Power Technology in Power Grid: Issues, Challenges and Control’’ was taken place in the university.



**Solar Panels are exported to the Grid of Electricity**



**Solar Panels are exported to the Grid of Electricity**




**18th -21st DECEMDER 2019**

**(i) "Green Power Technology in Power Grid: Issues, Challenges and Control''**




**(ii) "Green Power Technology in Power Grid: Issues, Challenges and Control''**



**(iii) “Green Power Technology in Power Grid: Issues, Challenges and Control’’**

# 7.BIODIVERSITY AUDIT

Carbon is the basis of life on mother Earth. It is incorporated into the plants through photosynthesis, consumed by animal species through the food, present in the form of carbon dioxide ($CO_2$) in the atmosphere, locked into the rocks as limestone and compressed into the different fossil fuels such as coal and oil. As $CO_2$ level in the atmosphere continue to increase, most climate designs or project that the oceans of the world and trees will keep soaking up more than half $CO_2$. The plants on land and in the sea, taken up carbon by over many years increased the percentage discharged during decay, and this increased carbon became locked away as fossil fuels beneath the surface of the planet.

The starting of the 21$^{st}$ century brought growing concern about global warming, climate change, food security, poverty and population growth. In the 21$^{st}$ century more carbon has been released into the atmosphere than that has been absorbed. $CO_2$ is a principle component causing global warming. Atmospheric carbon dioxide levels have increased to 40 % from preindustrial levels to more than 390 parts per million $CO_2$. On this background it is a need of time to cover the research areas interrelated with climate change.

The "Carbon Sequestration and Green cover inventory" is a current status of tree cover and vegetation carbon storage assessment of area under Sri Venkateswara University campus. In an era of climate change and global warming carbon emission, carbon footprints, carbon sequestration, adaptations, mitigation are the keywords in academia. Carbon sequestration is a process of converting atmospheric carbon i.e. $CO_2$ into other sinks of carbon such as vegetation, soil, ocean etc. in various forms to mitigate global warming audit is one of the important clauses of Kyoto Protocol.

While transforming ourselves from regional university to global university it is a responsibility of such universities to face the global future challenges and try to find out possible solutions for them. It is a social and environmental responsibility of Government Institutes, Universities, National and International Organizations to respond positively for various global issues at local level and should percolate the generated knowledge in to the society. Global warming and climate change are current environmental issues need to be addressed scientifically and efficiently. As Universities are provided with skillful human resource supported by analytical infrastructure, it is our duty to bring such ideas in practice. While understanding the call of time the Department of Botany and Environmental Science, Sri Venkateswara University has decided to enumerate the green cover of Sri Venkateswara University campus.

**Table: List of plant species on Sri Venkateswara University Campus**

| S. NO | COMMON NAME | BOTANICAL NAME | TYPE/ USE |
|---|---|---|---|
| 2. | Custard Apple | *Annona squamosa* L. ( Var.name:seethapalam) | Fruit yielding, Medicinal |
| 3. | False ashoka | *Polyalthia longifolia* (Sonner) Thw. (Naramamidi) -60 | Wind breaker |
| 4. | False ashoka | *Polyalthia longifolia* Hook. & Thom. Var. pendula (Ontikomma naraamamidi) -51 | Wind breaker |
| 5. | Snuff-Box Tree | *Oncoba spinoa* Forsk. (Line gulabi) -01 | Medicinal |
| 6. | Red silk-Cotton tree | *Bombax ceiba* L. (Buruga) -03 | Fibre yielding |
| 7. | Bael | *Agle marmelos* (L.) Corr. (Maredu) -01 | Medicinal |
| 8. | Tree of heaven | *Ailanthus excelsa* Roxb. (Pedda vepa) -01 | Matchstick industry |
| 9. | Neem tree | Azadirachta indica A. Juss. (Vepa) -150 | Medicinal |
| 10. | Indian mahogany | *Chukraia tabularis* A. Juss. (Konda vepa) -01 | Medicinal |
| 11. | Indian rose wood | *Somyda febrifuga* (Roxb.) A. Juss. (Somi) -02 | Medicinal, Wood yielding |
| 12. | Ceylon satinwood or East Indian satinwood | *Chloroxylon swietenia* DC. (Billudu) -08 | Wood yielding |
| 13. | Ceylon Tea | *Cassine glauca* (Rottb.) Kuntz. (Neridi) -06 | Medicinal |
| 14. | Indian jujube | *Ziziphus mauritiana* Lam. (Regi chettu) -18 | Fruit yielding |
| 15. | Kath Ber | *Ziziphus xylopyrus* ( Retz.,) Willd. (Gotti) -03 | Medicinal |
| 16. | Notched Leaf Soapnut | *Sapindus emarginatus* Vahl. (Kunkudu) -08 | Medicinal |
| 17. | Mango | *Mangifera indica* L. (Mamidi) -04 | Fruit yielding |
| 18. | Indian ash tree | *Lannea coromandelica* (Houtt.) Mann. (Gumpana) -60 | Plywood making |
| 19. | Flame-of-the-forest | *Butea monosperma* (Lam.) Taub. (Modhuga) -02 | Medicinal |
| 20. | Indian rosewood | *Dalbergia latifolia* Roxb. (Iridi) -02 | Wood yielding |
| 21. | Mexican Lilac | *Gliricidia sepium* (Jacq.) Kunth ex Walp. (Seema kanuga) -10 | Rat poison |
| 22. | Indian beech and Pongame oiltree. | *Pongamia pinnata* (L.) Pier. (Kanuga) -13 | Medicinal , Biodiesel preparation |
| 23. | Malabar kino | *Pterocarpus marsupium* Roxb. (Yegi) | Medicinal |

| | | | |
|---|---|---|---|
| | | -02 | |
| 24. | Red Sanders | *Pterocarpus santalinus* L.f. (Errachandhanam) -16 | Medicinal, Wood yielding |
| 25. | Orchid Tree | *Bauhinia purpurea* L. (Deva kanchanam) -02 | Medicinal |
| 26. | Bidi leaf tree | *Bauhinia recemosa* Lam. (Ari chettu) -01 | Medicinal |
| 27. | Red cassia, Ceylon senna | *Cassia roxburghii* DC. (Rela) -54 | Medicinal |
| 28. | Siamese cassia | *Cassia siamea* L. (Seema thangedu) -33 | Medicinal |
| 29. | Royal Poinciana | *Delonix regia* (Boj. Ex Hook.) Rafin. (Thurai) -12 | Ornamental |
| 30. | Yellow Flame/ Copper pod | *Peltophorum pterocarpum* (DC.) Baker ex Heyne. (Konda chintha) -272 | Ornamental |
| 31. | Tamarind | *Tamarindus indica* L. (Chintha) -59 | Cuisines , Medicinal |
| 32. | Auri, | *Acacia auriculiformis* A. Cunn. ex Benth. (Australia thumma) -02 | Ornamental |
| 33. | White-bark acacia | *Acacia leucophloea* (Roxb.) Willd. (Thella thumma) -02 | Wood |
| 34. | Lebbeck /Woman's tongue tree | *Albizia lebbeck* (L.) Benth. (Bagichettu) -16 | Forage , Wood |
| 35. | Jumbay, white leadtree, | *Leucaena latisiliqua* (L.) Gillis. (Subabulu) -07 | Multipurpose tree |
| 36. | Badminton ball tree | *Parkia biglandulosa* Wt.& Arn. (Banthi thumma) -02 | Ornamental |
| 37. | Manila Tamarind | *Pithecellobium dulce* (Roxb.) Benth. (Cheema chintha) -01 | Food, Traditional medicine |
| 38. | Chilean mesquite | *Prosopis chilenis* (Molina) Stuntz. (Sarkar thumma) -01 | Shade tree |
| 39. | Rain tree | *Samanea saman* (Jacq.) Merr. J. Wash. (Nidraganneru) -19 | Shade tree |
| 40. | Arjuna/ Arjun tree | *Terminalia arjuna* (Roxb. ex DC.) Wt. & Arn. (Tellamaddhi) -16 | Silk production (Tassar) |
| 41. | Baheda | *Terminalia bellirica* (Gaertn.) Roxb. (Thandra) -02 | Medicinal |
| 42. | Indian almond | *Terminalia catappa* L. (Badam chettu) -02 | Food/ wood/ Ornamental |
| 43. | Southern blue gum | *Eucalyptus globulus* Labill. (Neelagiri thylam) -52 | Essential oil/ Wood |

| | | | |
|---|---|---|---|
| 44. | Common guava | *Psidium guajava* L. (Jama chettu) -01 | Food, Traditional medicine |
| 45. | Jamun | *Syzygium cumini* (L.) Skeels. (Neredu chettu) -60 | Food medicine |
| 46. | Gummy Gardenia | *Gardenia gummifera* L.f. (Bikki) -02 | Medicinal |
| 47. | West Indian jasmine | *Ixora acuminata* Roxb. (Tella ramabanam) -02 | Ornamental |
| 48. | Aal or Indian mulberry | *Morinda pubescens* J.E. Smith var. pubecens Verdc. (Maddi) -56 | Dye yielding |
| 49. | Torch tree | *Ixora pavetta* Andr. (Korivi chettu) -03 | Ornamental |
| 50. | Madhūka, | *Madhuca longifolia* (K oen.) Macbr. Var. latifolia (Roxb.) A. Cheval. (Ippa) -08 | Silk production (tassar) and medicinal |
| 51. | Sapodilla | *Manilkara zapota* (L.) P. Royen. (Sapota) -01 | Fruit yielding |
| 52. | Spanish cherry | *Mimusops elengi* L. (Pogada) -05 | Medicinal |
| 53. | Caterpillar tree | *Plumeria alba* L. (Tella devaganneru) - 08 | Ornamental, Medicinal |
| 54. | Pinwheel flower, | *Tabernaemontana divaricata* L. (Nandivardhanam) -02 | Ornamental, Medicinal |
| 55. | Small Pinwheel flower | *Ervatamia divaricata* (L.) Burkill (Sanna nandivardanamu) -02 | Ornamental, Medicinal |
| 56. | Sweet Indrajao | *Wrightia tinctoria* (Roxb.) R. Br. (Reppala) -28 | Dye yielding, Medicinal |
| 57. | Yellow oleander | *Cascabela thevitia* (L.) Lipp. (Patcha ganneru) -04 | Poisonous |
| 58. | Indian Cherry | *Cordia dichotoma* Forst. (Iriki) -01 | Traditional medicine |
| 59. | Geiger tree | *Cordia sebestena* L. -01 | Ornamental |
| 60. | Wavy trumpet flower | *Dolichandrone atrovirens* (Roth) Spr. (Oddi) -02 | Ornamental |
| 61. | Jacaranda, blue jacaranda | *Jacaranda acutifolia* Humb . & Bonpl. (Swarna sundari) -01 | Ornamental, Wood |
| 62. | Sausage tree | *Kigelia africana* (Lam.) Benth. In Hook. (Enugu thondamu) -06 | Poisonous |
| 63. | Tree jasmine or Indian | *Millingtonia hortensis* L.f. (Manu malli) -05 | Ornamental |

| | | | |
|---|---|---|---|
| | cork tree | | |
| 64. | African tulip tree | *Spathodea companulata* P.Beauv. (Yerra neeru budda) -01 | Ornamental |
| 65. | Silver Trumpet Tree | *Tebebuia argentea* (Bur. & K. Schum.) Britt. -03 | Ornamental |
| 66. | Rosy trumpet tree | *Tebebuia rosea* (Bertol.) DC. -05 | Ornamental |
| 67. | Yellow trumpetbush | *Tecoma stans* (L.) Kunth. (Pasupu ganneru) -01 | Ornamental |
| 68. | Desert teak | *Tecomella undulata* (Sm.) Seem. -02 | Wood yielding |
| 69. | Teak | *Tectona grandis* L.f. (Teku) -09 | Wood yielding |
| 70. | Helicopter tree | *Gyrocarpus asiaticus* Willd. (Kummara poliki) -02 | Ornamental |
| 71. | Great bougainvillea, | *Bougainvillea spectabilis* Willd. -03 | Ornamental, Tribal medicine |
| 72. | Indian sandalwood | *Santalum albam* L. (Srigandhamu) -02 | Wood, Medicine |
| 73. | Indian gooseberry | *Phyllanthus emblica* L. (Nellikaya) -07 | Culinary, Traditional medicine |
| 74. | Indian elm | *Holoptelea integrifolia* (Roxb.) Planch. -09 | Cheap wood, Medicinal |
| 75. | Banyan | *Ficus benghalensis* L. -44 | Cultural significance |
| 76. | Sacred Fig | *Ficus religiosa* L. (Ravi chettu) -17 | Traditional medicine |
| 77. | The common fig | *Ficus carica* L. (Atthi chettu) -01 | Food, Folk medicine |
| 78. | Australian pine tree or whistling pine tree | *Casurina littorea* L. (Sarugudu) -02 | Wood, Ornamental |
| 79. | Traveler's palm | *Ravenala madagascarensis* Sonner. (Panka arati) -01 | Ornamental |
| 80. | Indian shot | *Canna indica* L. (Metta thamara) -02 | Ornamental |
| 81. | Thorny bamboo | *Bambusa arundinacea* (Retz.) Roxb. (Veduru) -02 | Wood for thatching |
| 82. | Toddy Palm | *Borassus flabellifer* L. (Tati chettu) -01 | Edible, Palm wine |
| 83. | Cuban royal palm | *Roystonea regia* (Kunth) O.F. Cook. -20 | Ornamental |
| 84. | Yellow Cane Palm | *Dypsis lutescens* (H.W endl.) Beentje & J. Dransf. -14 | Ornamental |



Custard Apple



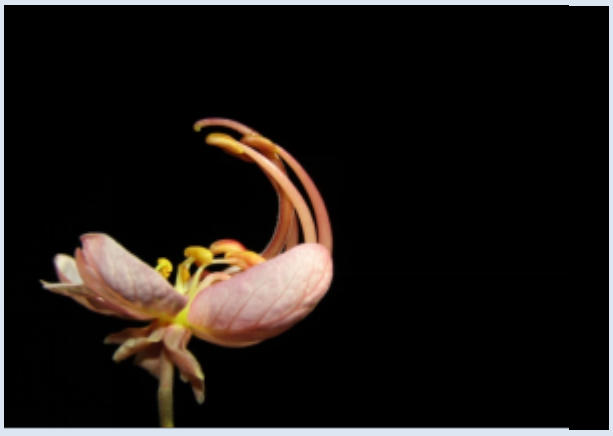
Indian mahogany



Indian ash tree



Flame-of-the-forest



Red cassia, Ceylon senna



Arjuna/ Arjun tree



Sweet Indrajao



Rosy trumpet tree



Silver Trumpet Tree



Geiger tree



Indian elm



*Cycas beddomei*



*Couroupita guianensis (*Cannonball tree)



Indian sandalwood

Plant species on Sri Venkateswara University Campus

In ecology, the mass of living biological organism in a given area or ecosystem at a given time is called as biomass. Biomass can refer to species biomass and community biomass. The species biomass is the mass of one or more species. The community biomass, which is the mass of all species in the community. It includes microorganisms, plants or animals. The mass can be defined as the average mass per unit area, or as the total mass in the community.

To estimate the biomass of each individual tree species non- destructive method was used. To calculate the circumference Diameter at Breast Height (DBH) can be determined by measuring tree Girth at Breast Height (GBH), approximately at 1.3 meter from the ground. The Girth at Breast Height of trees having diameter which greater than 10 centimeters were measureddirectly by measuring tape.

To maintain green cover and carbon sequestration potential of the University following precautionary measures were taken.

Plantation of endemic species like *Pterocarpus santalinus, Cycas beddomei,Boswelia ovalifoliata, Syzyzium cumini* etc were planted to conserve native biodiversity. The plantation of tree species like *Acacia nilotica subsp. indica, Albizia lebbeck, Azadirachta indica, Citrus aurantium* works as green belt which can maintain the ecological balance in the environment as well as act as sink for the harmful gases and improve air quality. Plantation activity is taken every year to increase the green cover on the University campus. Avoided the plantation of exotic species like *Casuarina,* which is fast growing species with less ecological values.

# 8.SITE STUDY

## On-Site Observations Study

The following listed are some of the positive site elements which are beneficial to the University in terms of tangible and intangible benefits.

**Location-**The Sri Venkateswara University, Tirupati-517 502, Andhra Pradesh, India and falls under the Tirupati Municipal Corporation, the largest University in the Rayalaseema region of Andhra Pradesh.

**Neighborhood context**- The premises is surrounded by open spaces and Residential spaces. On the immediate surroundings of the site, there are educational institutes and site is close to National Highway 44 and is in Tirupati city which is famous for Handicrafts like Woodcarving and Calakari.

**Natural Physical features-**The premises is centrally situated in the city amidst residential areas and open spaces with appropriate proximity to necessary amenities. There is sufficient appreciation space for entrance.

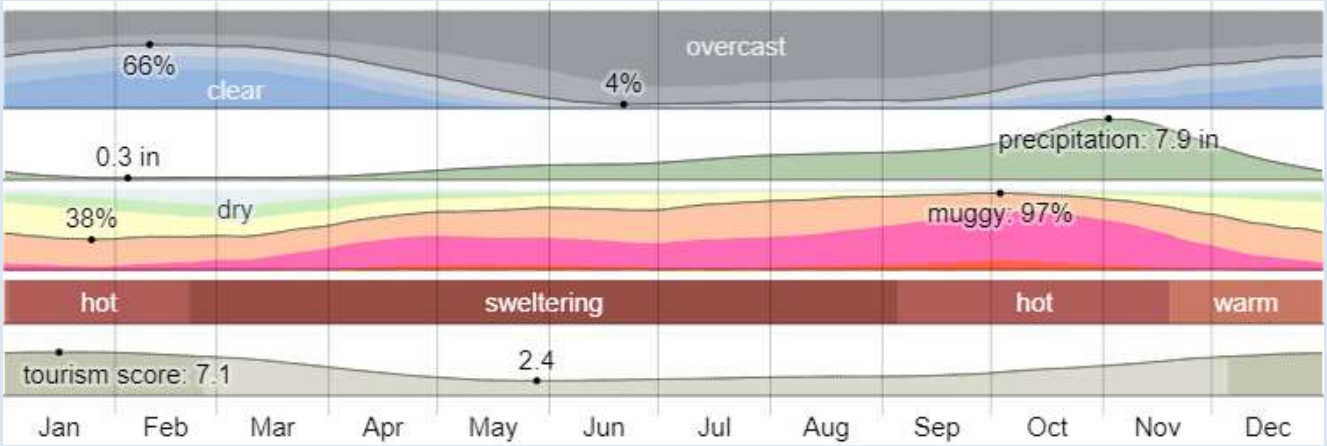
**Circulation-**There is a smooth transition of pedestrian traffic inside the premises due to the large entrance gate along with pollution free Campus.

**Climate**-the wet season is hot, oppressive, and overcast and the dry season is sweltering, muggy, and partly cloudy. Over the course of the year, the temperature typically varies from 62°F to 106°F and is rarely below 58°F or above 112°F.

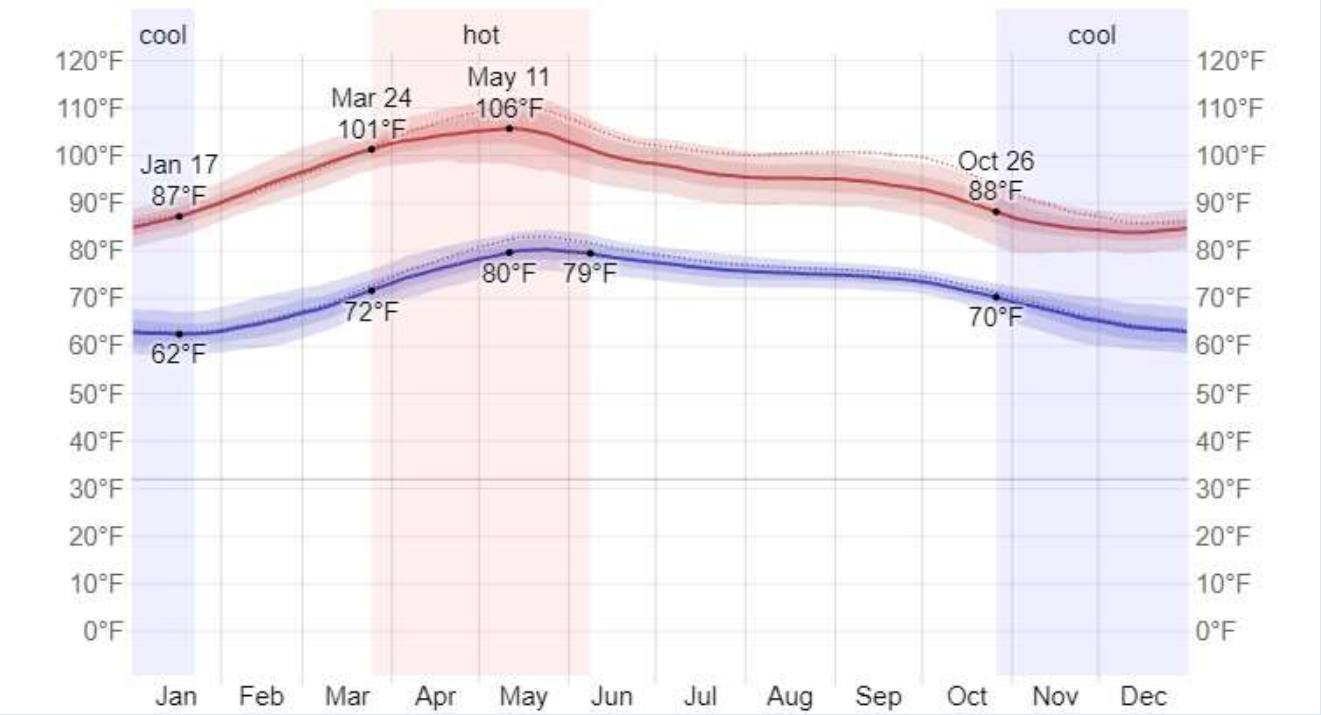
### Average Temperature in Tirupati

The hot season lasts for 2.5 months, from March 24 to June 8, with an average daily high temperature above 101°F. The hottest month of the year in Tirupati is May, with an average high of 105°F and low of 80°F.

The cool season lasts for 2.9 months, from October 26 to January 22, with an average daily high temperature below 88°F. The coldest month of the year in Tirupati is December, with an average low of 64°F and high of 84°F.




## CLIMATE IN TIRUPATI




### Average High and Low Temperature in Tirupati

**The daily average high (red line) and low (blue line) temperature, with 25th to 75th and 10th to 90th percentile bands. The thin dotted lines are the corresponding average perceived temperatures.**

| Average | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| High | 87°F | 94°F | 100°F | 104°F | 105°F | 100°F | 97°F | 95°F | 94°F | 90°F | 85°F | 84°F |
| Temp. | 73°F | 78°F | 84°F | 89°F | 91°F | 88°F | 85°F | 84°F | 83°F | 80°F | 75°F | 73°F |
| Low | 63°F | 65°F | 70°F | 76°F | 80°F | 79°F | 76°F | 75°F | 74°F | 71°F | 67°F | 64°F |

## 9.Routine Green Practices

World Water Day-21st March, World Earth Day- April 22, World Biodiversity Day- May 22, World Environment Day – June 5, Ozone Day – September 16

Awareness seminars are organized on various environmental problems. Distribution of fruit trees, poster exhibitions etc. are some activities performed on those days.

University also conducts competitions, invited lectures etc. and University has been following the policy of **'Save Water Save Earth'**.

The Green campus drive is an initiative of the University to protect the Environment. The University has declared 'No Plastic' & No Smoking' zone in the campus. The campus protects age old trees in addition to several new plants planted. The campus is lush green with gardens, lawns, flowers and plants wherever there is open space. Rain water is harvested and collected. There is a pond located infront of Working Women's Hostel where it diversifies the beauty of nature. Bio-degradable waste is collected and made into compost. Non-degradable and electronic waste and toxic materials are regularly disposed off. Important days like World Environment Day, Ozone Day, World Soil Day, World Dietetics Day, etc are observed and several programmes including processions with placards, competitions and street plays are conducted by various departments to create awareness on environment protection and conservation.






## WORLD ENVIRONMENT DAY JUNE 5TH




## WORLD DIETETICS DAY MARCH 8TH

# 10.Carbon Foot Print

## Eco-friendly commuting Practices

**Ease of Commuting-**Owing to close proximity to Public transport the access is very feasible and walkable.

**Area-** The University covers a land of approximately 483 acres with more than 42 buildings accommodating Administrative, College buildings, Guest House V C Bungalow, Staff Quarters and Hostel facilities.

**Vehicular Traffic-** The entry of two-wheelers into the Campus is restricted to 425 per day, four wheelers 40 per day and battery-operated vehicles 25 per day and parking facilities are minimum to avoid Pollution and reduce noise levels which is a good approach.

**Heat Island Reduction**

The University has adopted Solar Panels on the terrace of Hostels and in all Administrative buildings to absorb the heat especially in the dark roof surfaces and radiating it out again overnight.

The Premises has planted huge number of trees on both sides of the road and provide immense shade to the sun exposed roads and placed with adequate concrete benches in the sit-out area for students to carry out the studies smoothly.

## 11. Fire Safety

Fire safety measures are well adopted in the University and each floor has an open stair-case without any barriers for fire safety measures. Additional fire safety measures like fire alarms, smoke detectors and fire emergency kit are available in the necessary areas in the Premises.

The building wise summary of fire safety is as follows:

| S.No. | Building Name | Floor | Number of Fire Extinguishers |
|---|---|---|---|
| 1. | Administrative Building | Ground floor | 09 |
| 2. | Administrative Building | First floor | 11 |
| 3. | Administrative Building | Second floor | 02 |
| 4. | Dr. D.J.Reddy Bhavan Natural Sciences Block | Ground floor | 03 |
| 5. | Dr. D.J.Reddy Bhavan Natural Sciences Block | First floor | 04 |
| 6. | Dr. D.J.Reddy Bhavan Natural Sciences Block | Second floor | 02 |
| 7. | Dr. D.J.Reddy Bhavan Natural Sciences Block | Third floor | 01 |
| 8. | Vaman Rao Bhavan | Ground floor | 03 |
| 9. | Vaman Rao Bhavan | First floor | 03 |
| 10. | Physical Sciences Block | All floors | 14 |
| 11. | Virology Building | First floor | 01 |
| 12. | Virology Building | Second floor | 01 |
| 13. | Microbiology Building | Ground floor | 01 |
| 14. | Engineering Department | All buildings | 30 |
| 15. | Praksham Bhavan | All floors | 15 |
| 16. | Pharmaceutical Sciences Building | All floors | 03 |
| 17. | CM&CS Building | All floors | 09 |
| 18. | Library | All floors | 06 |
| 19. | Health Centre | All floors | 07 |
| 20. | Computer Centre | All floors | 04 |
| 21. | Srinivasa Auditorium | Ground floor | 06 |
| 22. | All Messes | Ground floor | 05 |
| 23. | Physical Education Block | Ground floor | 02 |
| 24. | Prof. Choppla Ratnam Bhavan | Ground floor | 02 |
| 25. | Old MBA Building | All floors | 06 |
| 26. | Commerce Building | Ground floor | 01 |
| 27. | DST Purse Centre Building | All floors | 04 |
| 28. | IASE | All floors | 02 |

| | | | |
|---|---|---|---|
| 29. | PG Department of Law | Ground floor | 01 |
| 30. | Biotechnology Building | All floors | 03 |
| 31. | ORI | All floors | 02 |
| 32. | DDE | All floors | 03 |
| 33. | Guest House | All buildings | 04 |
| 34. | V C Bungalow | All floors | 03 |
| 35. | Annamaya Bhavan | All floors | 02 |
| 36. | Geography Block | All floors | 01 |
| 37. | Hostels | All | 12 |
| 38. | Post Office | Ground floor | 01 |
| 39. | Bio Chemistry | All floors | 03 |
| 40. | SEAPS | All floors | 01 |
| 41. | Annapoorna Canteen | Ground floor | 01 |
| 42. | State Bank of India+ DOA | All floors | 03 |
| 43. | Union Bank of India + MHRD | All floors | 03 |
| 44. | SVU Campus School | All floors | 04 |
| 45. | SVU Stadium | Ground floor | 04 |

The University abides to the Rules and Regulations of the Fire Department and equal number of fire extinguishers are provided in all the premises of the University. Red colour buckets with sand are also present in the University.

**Study of Site features:**

- Route maps to facilitate easy transport
- Usage of bicycles and e-motor vehicles to reduce pollution
- Water pits to harvest rain water
- Pleasant environment with Ponds and variety of trees
- Acclimatization of land to grow different flowering plants
- Clearing of unwanted plants to control mosquitoes and insects
- Solar panels installation to reduce electricity consumption
- Restriction on automobile entry into the campus
- Xerox shop and canteen facilities are available for the usage of students and faculty community.

## 12.SUMMARY

- The environmental awareness initiatives are adequate.
- The University campus is plastic free.
- The installation of solar panels, Fire extinguishers are seen.
- Fully carbon foot prints and wastes free zone action.
- Rain water harvesting systems, solar power generation, Bio Gas, Re-use of water

environmental education programs are well implemented.

### Awareness on Carbon Consumption

- Students and Staff members are made totally aware of pollution caused by the use of vehicles.
- The carbon consumption awareness programs on carbon emission at Individual as

well as social level will help to avoid air and noise pollution in the campus due to vehicles.

### Environmental Education

The following environmental education program may be implemented in the University before the next green auditing: -

Increase the number of display boards on environmental awareness such as – save water, save electricity, no wastage of food/water, no smoking, switch off light and fan after use, plastic free campus etc.

# SRI VENKATESWARA UNIVERSITY
## Tirupati - 517502

# ENVIRONMENTAL AUDIT
# 2021 - 2022

# ACKNOWLEDGEMENT

The Audit Assessment Team thanks **Sri Venkateswara University, Tirupati, Andhra Pradesh, India** for assigning this important work of Environment Audit. We appreciate the cooperation extended to our team during the entire process of the year **2021-2022**.

Our special thanks are due to **Honorable, Vice-Chancellor** of the University **Prof. K. Raja Reddy, M.A., Ph.D., Prof. V. Srikanth Reddy M.Sc., Ph.D., Rector and Prof. O. Mahammad Hussain M.Sc., Ph.D., Registrar.**

We are also thankful to IQAC Faculty members and NAAC Steering Director who have collected required data.

We highly appreciate the assistance of the Admin Staff for their support while collecting the data.

The kind gesture of the Non-Teaching Staff and Maintenance Staff for the inventory and data collection is quite commendable.

# AUDIT COMMITTEE MEMBERS

The Committee members are listed below:

| S. No. | Name | Designation |
|---|---|---|
| 1. | Vice-Chancellor(Prof. K. Raja Reddy, M.A., Ph.D.,) | Chairman |
| 2. | Registrar(Prof. V. Srikanth Reddy M.Sc., Ph.D., ) | Convener |
| 3. | Rector(Prof. O. Mahammad HussainM.Sc., Ph.D.,) | Member |
| 4. | IQAC Director | Member |
| 5. | NAAC Steering Committee Director | Member |
| 6. | Prof. T.Vijaya<br>Botany | Member |
| 7. | Prof. I.V. Ramana Reddy<br>Civil Engineering | Member |
| 8. | Prof. T. Sarada<br>Arts | Member |
| 9. | Dr. K.V. Saritha<br>Biotechnology | Member |

## CONTEXT AND CONCEPT

ln India, the process for Environmental Audit was first mentioned under the Environment Protection Act, 1986 by the Ministry of Environment of forests on 13th March, 1992. As per this act, every person owning an industry or performing an operation or process needs a legal consent and must submit an Environmental report or statement.

The National Assessment and Accreditation Council, Bangalore (NAAC) has made it mandatory from the academic year 2019-20 onwards that all Higher Educational Institutions should submit an annual Green, Environment and Energy Audit Report. Moreover, it is part of Corporate Social Responsibility of the Higher Educational Institutions to ensure that they contribute towards the reduction of global warming through Carbon Footprint Reduction measures.

In view of the NAAC circular regarding Environment Auditing, the University has decided to conduct an external environment assessment which was headed by various departments and faculty members throughout the University.

The term 'Environmental audit' or 'Green audit means different to different people. Terms like 'assessment', 'survey' and 'review' are also used to describe similar activities. Furthermore, some organizations believe that an 'environmental audit' addresses only environmental matters, whereas others use the term to mean an audit of health, safety and environment-related matters. Although there is no universal definition of Green Audit, many leading companies/institutions follow the basic philosophy and approach summarized by the broad definition adopted by the International Chambers of Commerce (lCC) in its publication of Environmental Auditing (1989).

The ICC defines Environmental Auditing as: "A management tool comprising a systematic, documented, periodic and objective evaluation of how well environmental organization, management and equipment are performing with the aim of safeguarding the environment and natural resources in its operations/projects."

# 1. INTRODUCTION

Nature is very precious gift for all life forms. Disturbance in the nature causes Environmental Problems increasing day by day due to development of Urbanization and Industrialization on Earth.The planet is facing tremendous pressure due to unplanned utilization of resources which result in the increase of temperature. Therefore, urgent need for planning and consumption of the resources in sustainable manner to preserve natural resources for future generation.

Sustainable development is becoming popular in the world for saving the Earth. Utilizing resources judicially can save the Earth's precious resources. Measurement of Environmental components are the most effective step to conserve and protect natural resources.

Environmental auditing had begun in the early 1970s with provision of civil lawsuits for non-compliance with Environmental regulations. Environment auditing involves on site visit, collection of samples, performing analyses, and report results to competent authorities. Industries, and the Corporate World are initiating auditing for saving natural resources. Academic Institutions also can contribute to the preservation and conservation of resources within their Premises.

This "Environment Audit" report would help everyone to think about preserving resources, show willingness to learn their importance, adopt steps to minimize resource use and set an example for others to follow the path of eco-friendly practices to achieve the goal of sustainable development. Effective implementation of environmental auditing helps in minimization of environmental risks at low cost.

# Green Champion Certificate



सत्यमेव जयते

भारत सरकार /Government of India

महात्मा गांधी राष्ट्रीय ग्रामीण शिक्षा परिषद / Mahatma Gandhi National Council of Rural Education

उच्चशिक्षाविभाग/Department of Higher Education

शिक्षामंत्रालय / Ministry of Education

Where there is Rural Wellbeing there is Universal Prosperity

## *District Green Champion Certificate*

This is to certify that **SRI VENKATESWARA UNIVERSITY** is hereby recognized as **District Green Champion** for **Chittoor** District, Andhra Pradesh for the Academic Year 2021-22. The institution has successfully elevated the Swachhta Action Plan, adopted and implemented best practices in the areas of Sanitation, Hygiene, Waste Management, Water Management, Energy Management and Greenery Management.

**Dr W G Prasanna Kumar**
**Chairman, MGNCRE**
**Ministry of Education, Government of India**

तारीख / Date : 12.03.2022
ज्ञापनसंख्या/ Memo no: MGNCRE/SAP22/10



# ENVIRONMENT CONSERVATION MEASURES

## OVERVIEW OF UNIVERSITY

Sri Venkateswara University established in 1954 is located serenely in a picturesque campus at the foot of the Seven hills.

The University has been a premier Institution of Higher Learning, Research, Extension and consultancy to cater to the Educational needs and aspirants of the people of the Rayalaseema Region of Andhra Pradesh and has been playing a pivotal role in creating new knowledge, fostering innovation to produce economic value, and addressing the societal needs and challenges.

Judging the historical time constants of evolution SVU has emerged as one of the leading Universities in theWorld in a relatively short span of time.

This rapid ascent stems from the core activities of SVU which have a demonstrable influence in advancing knowledge that benefits national priorities and global scientific innovations.

University has been imparting quality education through an outcome and value based education, supported by competent and learned Faculty members who regularly update their knowledge through organizing andparticipating in National and International Conferences, Seminars and Workshops.

The Faculty Members have also raised the standards of Teaching through incorporating MOOC courses, chiefly NPTEL & SWAYAM in their routine classroom Teaching.

The University is doing commendable work in scientific research as visible from the citations per paper throughSCOPUS and Web of Science.

The University has many accomplishments over these years which include accreditation by NAAC with 'A+' grade, NIRF University Ranking 54.

University also figured consecutively in the different Ranking systems including QS Asia Rankings, Times Higher Education, Education World Rankings, Asia University Rankings.

All the courses are being run on CBCS, whereas the Engineering subject are accredited by NBA, AICTE, andother courses are accredited with NCTE, PCI etc.

All these achievements helped the University to receive substantial funding from DST-FIST, UGC-SAP, RUSA, TEQIP, DST-PURSE etc and to develop academic collaboration with reputed National and International Institutions.Besides, the University also received a major contribution/support from Govt of Andhra Pradesh.



## VISION

- To impart quality education to meet the global standards with a need based and outcome based approach.
- To establish Centres of Excellence in tune with NEP 2020.
- To extend eco-friendly innovative research adhering to international standards and sustenance by becoming a hub for innovative practices.
- To prioritise industry community university linkage to bring out employability skilled, quality and responsible citizens for the nation.




## MISSION

The University is to create, disseminate and inculcate the knowledge in the domains of Higher Education.Being a reputed University of Academic Excellence, the University is striving to:

- Provide the quality learning and teaching environment for the well-being of students and to deliver entrepreneurial skills for young minds.
- Promote Academic Freedom, Transparency and Accountability to all the Stakeholders for a holistic growth and development of the Institution.
- Prosper an Intellectual culture that drives discipline and ideas to foster reputation for a Dynamic, Diverse, Equitable and Global University.
- Provide innovative solutions, process and products for social prosperity and promotion.
- Provide a vibrant learning environment, fostering innovation and creativity by Cutting Edge Research. Aspire as a National leader in developing educated contributors, career ready learners and globally competitive citizens.

- Offer need based, society driven, industrially relevant academic programmes with a view to make future ready civilians.
- Make a significant, consistent and sustainable contribution towards social, cultural and economic life. Adopt hassle free, distributed, committed and transparent governance.

The University is selected under RUSA component for Rs.100 crore. Under this program Centres of Excellence in (i) Nano & Micro Satellite (ii) Earth & Atmospheric Sciences (iii) Material Sciences (iv) VLP Technologies (v) Herbal Drug Development (vi) Psycho & Bio Sciences (viii) Water Resources and (ix) Bio Energy. University is having National facilities (UGC-SVU centre for MST Radar Applications) of repute and selected under Centre for Potential of Excellence in a particular area(CPEPA) by UGC, New Delhi and awarded and with Centres for Advanced Study (UGC-CAS). University was awarded based on research output DST-PURSE program.

Several departments have received Special Assistance Programmes (SAP) of UGC, New Delhi and also received fund under FIST program of DST, New Delhi to improve infrastructural facilities. Most of the faculties have obtained research grants from various national funding agencies like UGC, DST, DBT, CSIR, ICMR, ICSSR, BRNS, ISRO, MNES, MoES, MoEF and DRDO and foreign financing such as UNESCO, UK-DFID, ICRISAT, European Commission Programme ERASMUS MUNDUS. Utilizing these impressive funding, the faculty of the University have proactively interacted with Industry, Academic and Research Institutes in National and International level and entered into collaborative research agreements through MoUs (Memorandum of Understating) to conduct research work in frontier areas of national & International importance.

The students belonging to socially and economically backward communities and those who are economically poor get State and Central Government Welfare Scholarships. Fellowships and Scholarships are offered to research students of the campus by the University and also by the UGC, CSIR, DAE, ICMR, ISRO, ICAR, ICPR, ICHR, ICSSR, DST, DRDO, SRNS and Rashtriya Sanskrit Sansthan.

The University central library is the major resource centre that provides information for research students and faculty. It provides unlimited access to the UGC INFONET e-resources and e-journals through UGC INFONET Digital Library Consortium. The library is kept open from 8.00 am till 10.00 pm on all working days and from 10.00 am to 5.00 pm on Sundays and public holidays besides the addition of latest books related to both teaching and research in the main library, most of the departments have developed departmental libraries by utilizing the grant from the University or from special assistance received from funding agencies like UGC, DST, etc. A Digital Library for PhD Theses submitted to the University has been designed using DSpace, an Open Source Software developed by HP and MIT, USA. 3,000 PhD Theses have been digitalized and uploaded to the Shodhganga database. This gives easy access to the PhD theses and research documents.

The University provides residential facilities to research scholars, Post-Doctoral fellows and other researchers in the hostels specially earmarked for them on the campus. Summer fellows, research associates, visiting scientists and faculty researchers from other universities and academics are provided accommodation in the university guest house and Academic Staff college guest house. The university campus is completely Wi-Fi connected. The university provides computer and uninterrupted internet facilities for research students, fellows as well as faculty on the campus in all the blocks and laboratories. Direct internet facility and common internet hubs are set-ups near the hostels and quarters on the campus to provide internet access free of cost.

To further enhance the status of the University to compete with the top University at National and Global level through continued development during, additional Buildings for E-Class Rooms, Establishment of Incubation Centres, On-line Examination System/expansion of Laboratories to meet the requirements of new Courses are in the pipeline. Besides meeting the infrastructure facilities of office, Separate Hostels for Boys and Girls, Cultural Centre and world Class Gymnasium and Sports facilities are being created. International Students Canteen, Digital Library, Wi-Fi Connectivity, Networking, Smart Campus, Air-Conditioned Auditorium, Development of Greenery and State of the modern art furniture in classrooms, faculty rooms, offices, Guest House and Auditorium are under progress.

## UNIVERSITY SATELLITE VIEW




INDIA




## ANDHRA PRADESH




## TIRUPATI




# SRI VENKATESWARA UNIVERSITY




**SRI VENKATESWARA UNIVERSITY MAP**




**MAIN ENTRANCE OF SRI VENKATESWARA UNIVERSITY**





**ADMINISTRATIVE BUILDING**



**SRINIVASA AUDITORIUM**




**UNIVERSITY LIBRARY**



**SRI VENKATESWARA STADIUM**
**TARAKARAMA PAVILLION**



OPEN AIR AUDITORIUM




DEPARTMENT OF PHYSICAL EDUCATION




**PRAKASAM BHAVAN**
**COLLEGE OF ARTS DEPARTMENT**




**PHYSICAL SCIENCES BULIDING**




**Dr. D.J. REDDY BHAVAN**
**NATURAL SCIENCES BUILDING**




**ENGINEERING DEPARTMENT**




**VAMANARAO BHAVAN**
**HUMANITIES DEPARTMENT**




**OLD MBA BUILDING**




**DIRECTORATE OF DISTANCE EDUCATION**




**HEALTH CENTRE**



## DEPARTMENT OF POPULATION STUDIES AND SOCIAL WORK




## DEPARTMENT OF PSYCHOLOGY




**Prof. CHOPPALA RATNAM BHAVAN**
**DEPARTMENT OF COMMERCE**




**INSTITUTE OF ADVANCED STUDY IN EDUCATION DEPARTMENT**




## ANDHRA BANK SCHOOL OF MANAGEMENT
## DEPARTMENT OF COMMERCE, MANAGEMENT AND COMPUTER SCIENCE




## PHARMACEUTICAL SCIENCES DEPARTMENT




**SIEMENS**




**DST PURSE CENTRE**




**S.V.UNIVERSITY PRESS**




**STATE BANK OF INDIA S.V.U. CAMPUS**




**UNION BANK OF INDIA**




**S. V.U. COMPUTER CENTRE**



**S.V.UNIVERSITY V C BUNGALOW**



S.V.UNIVERSITY GUEST HOUSE




JANARDHAN BHAVAN




## WOMEN'S HOSTEL



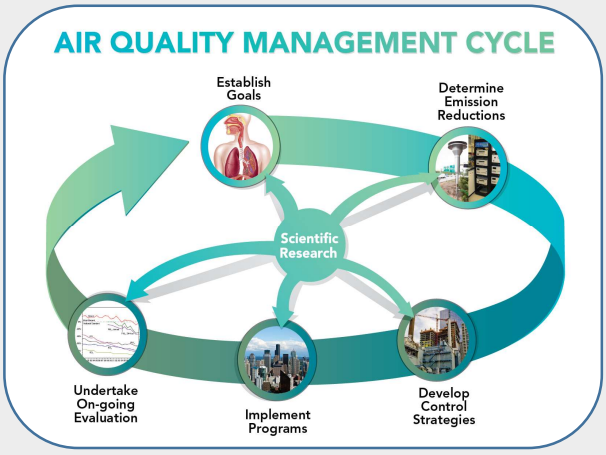

## MEN'S HOSTEL

SRI VENKATESWARA UNIVERSITY : : TIRUPATI

**Name of work:- Plinth Area of SVU Buildings**

| **SI.No** | **Name of the Building** | **Plinth Area in Sft** |
|---|---|---|
| 1 | AD BUILDING | 51110 |
| 2 | PRAKASAM BHAVAN | 96990 |
| 3 | DDE BUILDING | 15387 |
| 4 | JHANARDHAN BHAVAN | 8300 |
| 5 | OLD MBA BUILDING | 25680 |
| 6 | PRESS BUILDING | 14897 |
| 7 | PHYSICAL SCINECES BLOCK | 90168 |
| 8 | NATURAL SCINECES BLOCK | 85595 |
| 9 | GEOGRAPHY SCINECES BLOCK | 7532 |
| 10 | VAMANA RAO BHAVAN | 39500 |
| 11 | CIVIL ENGINEERING & EEE BUILDING | 32280 |
| 12 | ECE BUILDING | 20121 |
| 13 | CHEMICAL ENGINEERING | 22198 |
| 14 | MECHANICAL ENGINEERING | 33140 |
| 15 | HEALTH CENTRE | 6240 |
| 16 | PHYSICAL EDUCATION | 13820 |
| 17 | LAW & LIBRARY SCEIENCE | 5380 |
| 18 | ORI BUILDING | 18992 |
| 19 | POPULATION STUDIES &BIO-TECHNOLOGY – (Lecturetheatre Complex) | 17635 |
| 20 | BIO- CHEMISTRY & MICROBIOLOGY | 24726 |
| 21 | DST PURUSUE PROGRAM | ___ |
| 22 | VIROLOGY BUILDING | 8870 |
| 23 | PHARMACY BUILDING | 12912 |
| 24 | CMCS BUILDING | 30450 |
| 25 | COMPUTER SCIENCE | 10737 |
| 26 | SEAPS (AUDITORIUM OPP) | 2903 |
| 27 | SVU COMPUTER CENTRE | 5268 |
| 28 | USIC BUILDING | 2634 |
| 29 | SVU CAMPUS SCHOOL | 22273 |
| 30 | HOSTELS | |
| | a) MEN'S HOSTEL (College of Arts & Sciences) 1 to 10 | 218196 |
| | b) MEN'S HOSTEL (College of Engineering) 1 to 4 | 132505 |
| | c) WOMEN'S HOSTELS(College of Arts, Sciences&Engineering) 1 to 8 | 110316 |
| 31 | QUARTERS | |
| | Red Buildings 6 Nos | 12000 |

| | | |
|---|---|---|
| | Twin Quarters 12 nos | 4623 |
| | Readers Quarters 8 Nos (III SET) | 14040 |
| | Lecturers Qtrs ( I SET) | 24000 |
| | Lecturers Qtrs ( III SET) | 16109 |
| | Superintendents & Qtrs | 6000 |
| | Superintendents & N.T. Qtrs | 5456 |
| | Warden & Deputy Warden Qtrs | 1900 |
| | Dy. Warden Qtrs 4 Nos | 4508 |
| | Servant Qtrs for Engg. Hostels | 13520 |
| | Officers Qtrs | 3308 |
| | UDC's & LDC's Qtrs | 9108 |
| | Lecturers Qtrs (IV SET) | 13990 |
| | Attenders & Peons Qtrs | 2050 |
| | II Type I Qtrs for Proofessors/Readers | 18383 |
| | 4 Type I Qtrs for Preofessors/Readers | 6719 |
| | 4 Type I Qtrs for Lecturers | 9568 |
| | Teachers Hostel - 8 Blocks - 2 qtrs Each | 12196 |
| | Teachers qtrs - 3 blocks | 4354 |
| | Staff Quarters | 14467 |
| | Total | 1383054 |

| | |
|---|---|
|  |  |
| **ENERGY CONSERVATION** | **BIODIVERSITY CONSERVATION** |
|  |  |
| **AIR QUALITY MANAGEMENT** | **WASTE MANAGEMENT** |
|  |  |
| **WATER AND WASTE WATER MANAGEMENT** | **LEGISLATIVE COMPLIANCE** |

# 2.WASTE MANAGEMENT

## a. SOLID WASTE MANAGEMENT

The University and colleges pay dedicated focus to see that minimal waste is generated in the campus. Solid waste is segregated as bio degradable and non-degradable and handed over to Tirupati Municipal corporation as a part of Swachh Bharat initiative and Clean and Green Tirupati. All Departments and classrooms are provided with dustbins for dry wastage disposal. Segregation of waste in to dry and wet waste from the separately allotted dustbins is done in strategic locations, thus maintaining the Campus clean and Eco-friendly. The use of plastic carry bags, cups and laminated paper plates are prohibited on the campus. Students and staff are advised to bring cloth bags. Workshops and awareness programmes were organized in the University.




**BANNER ON SOLID WASTE MANAGEMENT**




**BAN ON PLASTIC**

## ఘనవ్యర్థాల నిర్వహణ పర్యావరణానికి ఎంతో మేలు : ఆచార్య మాధవి



విశాలాంధ్ర - తిరుపతి ఎస్వీయూ: పారిశ్రామిక విప్లవం నేపథ్యంలో సమాజంలో ఘన వ్యర్థాల యాజమాన్య నిర్వహణ పద్ధతులు పాటించడం ద్వారా పర్యావరణానికి ఎంతో మేలు కలుగు తుందని శ్రీ వేంకటేశ్వర విశ్వవిద్యాలయం రసాయన శాస్త్రం అధ్యాపకులు ఆచార్య జి.మాధవి పేర్కొన్నారు. ఆచార్య మాధవి ఆధ్వర్యంలో ఎంఓ ఈఎఫ్, సిసి ప్రాజెక్టులో భాగంగా రసాయనశాస్త్ర విభాగం విద్యార్థులు, ఎన్ సిసి, ఎన్ ఎస్ ఎస్ విద్యార్థులతో సంయుక్తంగా ఆదివారం ఎస్వీయూ లోని రసాయన శాస్త్ర విభాగం నుంచి తుమ్మలగుంట వరకు ఘన వ్యర్థాల నిర్వహణపై అవగాహన ర్యాలీ నిర్వహించారు. ఈ కార్యక్రమంలో ఎస్వీయూ అధ్యాపకులు రెడ్డి భాస్కర్ రెడ్డి, సరిత, ఉమా మహేశ్వర్ రెడ్డి, శ్రీనివాసులు రెడ్డి, తుమ్మలగుంట సర్పంచ్ సుబ్బారెడ్డి, పరిశోధకులు, విద్యార్థులు, అంగన్వాడీ కార్యకర్తలు, ప్రాథమిక ఆరోగ్య కేంద్రం సిబ్బంది తదితరులు పాల్గొన్నారు.

**PAPER CLIPPING ON SOLID WASTE MANAGEMENT**




**AWARENESS PROGRAMME ON SOLID WASTE MANAGEMENT**




**WASTE THROWN IN RESPECTIVE DUSTBINS**

## b. LIQUID WASTE MANAGEMENT

Next to air, water is the most important element for the preservation of life. Water is a finite commodity which, if not managed properly, will result in shortages in the near future. Water conservation can go a long way to help alleviate these impending shortages. Students are made aware that conserving water is equivalent to conserving their future. Drinking water from the tap, and refilling bottle as often as the students need is one of the best practices followed at SVU Disposable bottles are not allowed. Sustainable liquid waste treatment is adopted in campus through bio remediation using microorganism metabolism which helps to minimize the chemical and biological load of domestic sewage and is good for gardening purpose.



**LIQUID WASTE MANAGEMENT**

## c. BIOMEDICAL WASTE MANAGEMENT

In the S.V University biomedical waste is produced in the labs where animals are using for research purpose. "Bio-medical waste" means wastes that are generated during diagnosis, treatment or immunization of human beings or animals or research activities or in the production or testing of biologicals. Medical waste includes all the waste generated from the Health Care Facility which can have adverse effects on the human health or to the environment in general if not disposed properly. In general, the quantity of biomedical waste will be 5% to 10% of total waste generated from the campus. Though the amount of waste is very negligible amount, the carcass of the animals are stored in the -20$^{o}$C for the time being. After sufficient amount of carcass stored university hand over to Tirupati Municipal Corporation for Biomedical waste management. Workshops on Bio Medical Waste Management Rules, procedures were conducted in the University.




**(i)BIO MEDICAL WASTE MANAGEMENT AWARENESS PROGRAMME.**



**(ii)BIO MEDICAL WASTE MANAGEMENT AWARENESS PROGRAMME.**



# బయోమెడికల్ వ్యర్థాల తొలగింపులో జాగ్రత్తలు అవసరం

## కాలుష్యనియంత్రణ మండలి ఈఈ నరేంద్రబాబు

**తిరుపతి(స్విమ్స్), న్యూస్‌టుడే:** ఆసుపత్రుల్లో ఉత్పత్తి అయ్యే బయోమెడికల్ వ్యర్థాల తొలగింపులో కాలుష్య నియంత్రణ మండలి నిర్దేశించిన ప్రమాణాలను పాటించాలని ఆంధ్రప్రదేశ్ కాలుష్య నియంత్రణ మండలి పర్యావరణ ఇంజినీర్ నరేంద్రబాబు సూచించారు. శనివారం స్విమ్స్‌లోని శ్రీ పద్మావతి ఆడిటోరియంలో 'బయోమెడికల్ వేస్ట్ మేనేజ్‌మెంట్ రూల్స్-2017' అనే అంశంపై సదస్సు నిర్వహించారు. సదస్సుకు ముఖ్యఅతిథిగా హాజరైన ఆయన మాట్లాడుతూ.. ఆధునిక సమాజంలో పర్యావరణాన్ని పరిరక్షించుకోవడం ద్వారా గాలి, నీరు, భూమిని పరిశుభ్రంగా ఉంచుకోవాల్సిన బాధ్యత ప్రతిఒక్కరిపై ఉందన్నారు. ఆసుపత్రుల్లో ఉత్పత్తి అయ్యే బయోమెడికల్ వ్యర్థాలను సక్రమంగా నిర్మూలించకపోతే మనుషులకు ఇన్‌ఫెక్షన్ సోకే ప్రమాదం ఉందని హెచ్చరించారు. అనంతరం 'బయోమెడికల్ వేస్ట్ మేనేజ్‌మెంట్ రూల్స్, డిస్పోజబుల్ ఆఫ్ బయోమెడిక్ అనే అంశంపై డాక్టర్ మోహన్ పవర్‌పాయింట్ ప్రజెంటేషన్ ద్వారా వివరించారు. కార్యక్రమంలో రిజిస్ట్రార్ డాక్టర్ కళావత్, ఎన్వీయూ ఎన్విరాన్‌మెంటల్ స్టడీస్ ప్రొఫెసర్ దామోదరం, విభాగాధిపతులు, పారామెడికల్ సిబ్బంది, నర్సింగ్, పరిపాలన ఉద్యోగులు పాల్గొన్నారు.

సదస్సులో మాట్లాడుతున్న కాలుష్య నియంత్రణ మండలి ఈఈ నరేంద్రబాబు

**PAPER CLIPPING ON BIO MEDICAL WASTE AWARENESS**




**ANIMAL HOUSE IS ONE OF THE SOURCES OF BIOMEDICAL WASTE**

## d. E-WASTE MANAGEMENT

With the proliferation of electronics also comes the challenge of their proper disposal. SV University has very efficient mechanism to dispose E wastes generated from various sources. E-wastes are generated from computer laboratories, electronic labs, Physics Labs, Chemistry Lab, Biotech Labs, Academic and Administrative Offices. The e-waste includes out of order equipment's or obsolete items like lab instruments, circuits, desktops, laptops and accessories, printer, charging and network cables, Wi-Fi devices, cartridges, sound systems, display units, UPS, Biometric Machine, scientific instruments etc. All these wastes are put to optimal use. All such equipment's which cannot be reused or recycled is being disposed off through authorized vendors. Instead of a new procurement Buy-Back option is preferred for technology up gradation. The University is grappling with ways to efficiently and cost-effectively handle the issue of electronic waste, ore-waste, on campus. It's normal for people to discard of products due to normal wear and tear, but technological advancements have accelerated e-waste growth as students, faculty and administrators frequently upgrade to better gadgets. This surge has forced University administrators to carefully examine and address the environmentally responsible disposal of these products on a campus-wide scale. E Waste collected is stored and disposed off annually. Students are also made aware of E-Waste issues and its safe disposal.




**ATHLETIC SCULPTURE**



**E-Waste Collection**



## f.HAZARDOUS CHEMICALS AND RADIOACTIVE WASTE MANAGEMENT

Campus is free from any kind of hazardous waste. Ideally, collection, transportation and proper handling of chemicals begin with understanding the potential hazards related to their use. All stakeholders, especially from Academic departments and laboratories are responsible for disseminating information on hazardous materials being used in the facility. Various types of chemicals are used in chemistry labs for number of experiments in the University. Some might be harmful while others may not. Some of the dangerous chemicals in lab are Acetonitrile, Chloroform, Dimethyl sulfoxide, Formaldehyde, 2-mercaptoethanol, Methanol, Sodium Azide, Sodium Hydroxide, Sodium hypochlorite, and Tetrahydrofuran. Highly toxic chemicals such as Arsenic trioxide, Chlorine, Hydrogen cyanide, Nitrous oxides, Phosgene, Potassium cyanide, Sodium arsenate, and Sodium cyanide which are dangerous and hence they are handled with care.

### General procedures while working with hazardous chemicals -

1. Personal behaviour.
2. Minimising exposure to hazardous chemicals.
3. Avoiding Eye injury.
4. Avoiding ingestion of hazardous chemicals.
5. Avoiding inhalation of hazardous chemicals.
6.Avoiding injection of hazardous chemicals.
7. Minimising skin contact.
8. Storage of chemicals.
9. Use & maintenance of equipment and glassware.
10. Working with scaled-up reactions.
11. Responsibility for unattended experiments & working alone.
12. Chemistry demonstration & Magic shows.
13. Responding to accidents and emergencies.
14. Handling the accidental release of hazardous substance.

Four fundamental principles followed in the labs are -

1. Plan a head: Determine the potential hazards associated without an experiment before beginning.
2. Minimize exposure to chemicals:

Do not allow laboratory chemicals to come in contact with skin. Use laboratory chemical hoods and other ventilation devices to prevent exposure to airborne substance whenever possible.

3. Do not underestimate hazards or risk:

Assume that any mixture of chemicals will be more toxic than its most toxic component. Treat all new compounds and substances of unknown toxicity as toxic substances.

4. Be prepared for accident:

Before beginning an experiment know what specific action to take in the event of accidentally release of any hazardous substance. Post telephone number to call in an emergency or accident in a prominent location. Know the location of all safety equipment and the nearest fire alarm and telephone.

Be prepared to provide basic emergency treatment. Keep your co-workers informed of your activities so they can respond appropriately.

## Common Laboratory chemicals & their Hazard class-

1. Oxidizers: inorganic Nitrates, Nitrites, permanganates, chlorates, percholates, iodayes, periodates, persulfates, chromates, hypochlorite, peroxides, sodium nitrates, sodium updates, Ammonium persulfate, sodium peroxides.
2. Oxidizing acids: Nitric acid, perchloric acids, Hydrogen peroxide, periodic acid, chromic acids.
3. Flammable liquids: methanol, ethanol, acetone, xylene, toluene, ethyl acetate, tetrahydrofuran, ethyl ether, Benzene, Fimethylformamide, Hexane.
3. Inorganic bases: metal hydroxides such as sodium, potassium, calcium, nickel hydroxide Ammonium hydroxide.
4. Organic bases: Amines such as Ethanolamine, tributylamine.
5. Acid flammable liquids: Glacial acetic acid, acetic acid, acetic anhydride, formic acid, propanoic acid.
6. Organic acids: Butyric acid, pentanoic acid.
7. Inorganic acids: Hydrochloric acid, Sulfuric acid, Phosphoric acids, Hydrofluoric acid.
8. Poisons: Acrylamides, chloroform, Formaldehyde, phenol, Glutaraldehyde, methylene chloride,
9.Toxic metals such as silver chloride, mercury acetate, barium carbonate, lead acetate, cadmium sulfate.
10. Cynadies
11. sulfides
12. Pyrophorics (air reactives)



**Hazardous Chemicals kept separately in the Laboratory**

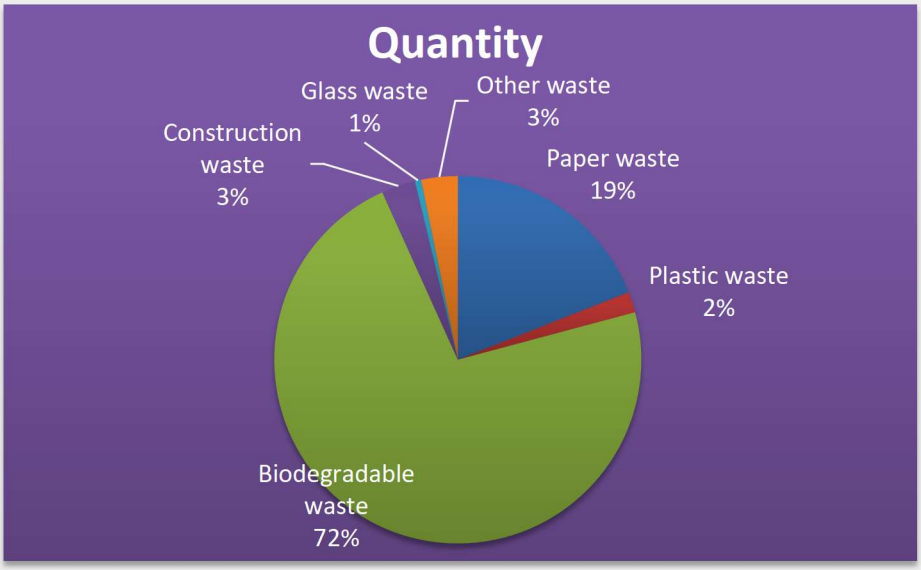
## SOLID WASTE AUDIT

Solid waste is the unwanted or useless solid material generated from the human activities in residential, industrial or commercial area. Solid waste management reduces or eliminates the adverse impact on the environment and human health. A number of processes are involved in efficiently managing waste for an organization. It is necessary to manage the solid waste properly to reduce the load on waste management system. Unavailability of proper waste management practices may lead to environmental pollution. A waste management audit helps educational institutes to efficiently and responsibly dispose of the waste that is generated every day. By designing a more efficient waste disposal program through a waste audit, we can enhance recycling practices

Solid waste generation and its management is a burning issue in current days. The rate of generation of solid waste is very high and yet we do not have adequate technology to manage the generated waste. Unscientific handling of solid waste can create threats to public health and environmental safety issues. Thus, it is necessary to manage the solid waste properly to reduce the load on waste management system. The purpose of this audit is to find out the quantity, volume, type and current management practice of solid waste generation in Sri Venkateswara University campus. This report will help for further solid waste management and to go for green campus development. The waste generated from Sri Venkateswara University campus includes paper waste, plastic waste, biodegradable waste, construction waste, glass waste, biomedical waste and other wastes.

### TABLE: CATEGORY WISE SOLID WASTE GENERATION AT UNIVERSITY (KG / MONTH)

| Category of waste | Paper waste | Plastic waste | Biodegradable waste | Construction waste | Glass waste | Other waste | Total waste kg/month | Total waste kg/year |
|---|---|---|---|---|---|---|---|---|
| **Quantit** | 784 | 75 | 2985 | 123 | 23 | 132 | **4122** | **49464** |
| **percentage** | 19.02 | 01.82 | 72.41 | 02.98 | 00.55 | 03.20 | 100 | |




GRAPH - SOLID WASTE GENERATION AT UNIVERSITY CAMPUS



BIOGAS PLANT

The solvents used in the laboratories are reused after distillation to minimize the use of solvents. The waste solvents are separated as halogenated and non-halogenated and transferred to plastic containers. To prevent heat generation and gas evolution or other reaction, compatibility of the waste is checked carefully.

To prevent accidental spillage of chemicals the laboratory wastes are subjected to process through three stages of waste management. Stage-I gravel, Stage-II sand, Stage –III coal. The three chambers are replenished with new materials after a period of six months.

There is a separate room for the Nuclear Laboratory where radiation hazard is displayed for safety measures. The harmful radiations are radiated by appropriate routes. Containers containing radioactive elements are properly lead sealed.

Wearing appropriate lab coats, gloves and face shields while working with nano materials. The hazardous chemical wastes are kept in separate containers. Later they are filtered and drained out.

Biodegradable waste consists of Leaf litter, food waste, vegetable and fruit waste etc. is decomposed in composting, vermicomposting and bio-gas units established in the University campus.Other dry waste is collected by Waste collection vehicles of Tirupati Municipal Corporation. Overall University campus is maintained neat and clean throughout. Various awareness programmes were organized in and around campus for effective management of solid waste.

# 3.GREEN AUDIT

## Green Audit, a Tool for Environmental Protection and Conservation

The modernization and industrialization are the two important outputs of twentieth century which have made human life more luxurious and comfortable. Simultaneously, they are responsible for voracious use of natural resources, exploitation of forests and wildlife, producing massive solid waste, polluting the scarce and sacred water resources and finally making our mother Earth ugly and inhospitable. Today, people are getting more familiar to the global issues like global warming, greenhouse effect, ozone depletion and climate change etc. Now, it is considered as a final call by mother Earth to walk on the path of sustainable development. The time has come to wake up, unite and combat together for sustainable environment.

Considering the present environmental problems of pollution and excess use of natural resources, Hon. Prime Minister, Shri. Narendra Modiji has declared the Mission of Swachch Bharat Abhiyan. Also, University Grants Commission has mentioned "Green Campus, Clean Campus" mission mandatory for all higher educational institutes. As environmental sustainability is becoming an increasingly important issue for the nation, the role of higher educational institutions in relation to environmental sustainability is more prevalent.

Green Audit is the most efficient ecological tool to solve such environmental problems. It is a process of regular identification, quantification, documenting, reporting and monitoring of environmentally important components in a specified area. Through this process the regular environmental activities are monitored within and outside of the concerned sites which have direct and indirect impact on surroundings. Green audit can be one of the initiative for such institutes to account their energy, water resource use as well as wastewater, solid waste, E-waste, hazardous waste generation. Green Audit process can play an important role in promotion of environmental awareness and sensitization about resource use. It can create consciousness towards ecological values and ethics. Through green audit one can get direction about how to improve the condition of environment.

## Need of Green auditing:

Green auditing is the process of identifying and determining whether institutions practices are eco-friendly and sustainable. Traditionally, we are good and efficient users of natural resources. But over the period of time excess use of resources like energy, water, chemicals are become habitual for everyone especially, in common areas. Now, it is necessary to check whether our processes are consuming more than required resources? Whether we are handling waste carefully? Green audit regulates all such practices and gives an efficient way of natural resource utilization. In the era of climate change and resource

depletion it is necessary to verify the processes and convert it into green and clean one. Green audit provides an approach for it. It also increases overall consciousness among the people working in institution towards an environment.

## Goals of Green audit:

University has conducted a green audit with specific goals as:

- Identification and documentation of green practices followed by university.
- Identify strength and weakness in green practices.
- Conduct a survey to know the ground reality about green practices.
- Analyze and suggest solution for problems identified from survey.
- Assess facility of different types of waste management.
- Increase environmental awareness throughout campus.
- Identify and assess environmental risk.
- Motivates staff for optimized sustainable use of available resources.
- The long-term goal of the environmental audit program is to collect baseline data of environmental parameters and resolve environmental issue before they become problem.

Students are the major strength of any academic institution. Practicing green actions in any educational institution will inculcate the good habit of caring natural resources in students. Many environmental activities like plantation and nurturing saplings and trees, Cleanliness drives, Rain water harvesting, etc. will make the students good citizen of the country. Through Green Audit, higher educational institutions can ensure that they contribute towards the reduction of Global warming through Carbon Footprint reduction measures.

**Benefits of Green Audit to an Educational Institute:**

There are many advantages of green audit to an Educational Institute:

- It would help to protect the environment in and around the campus.
- Recognize the cost saving methods through waste minimization and energy conservation.
- Find out the prevailing and forthcoming complications.
- Empower the organization to frame a better environmental performance.
- It portrays good image of institution through its clean and green campus.

## Objectives of Green audit:

The main objective of Green Audit at **Sri Venkateswara University** is to make a complete assessment of the environmental indicators in the campus and make recommendations for implementation in the campus for better environmental management. To make a complete assessment of the environmental indicators in the campus and make recommendations for implementation in the campus for better environmental management.

1. To assess the quality of the water and recycling of waste water in the university campus
2. Estimation of energy & fuel usage and evaluating the carbon foot print of the university on a full attendance day.
3. Evaluation of the measures implemented by university in reducing the Carbon Footprint.
4. To monitor the generation of solid waste and adopting strategies for its recycling.
5. To evaluate the biodiversity of flora and fauna of the campus and providing a database for corrective actions and future plans.

## Water and Waste water Audit

Water which is precious natural national resource available with fixed quantum. The availability of water is decreasing due to increasing population of nation, as per capita availability of utilizable water is going down. Due to ever rising standard of living of people, industrialization, urbanization, demand of fresh water is increasing day by day. The unabated discharge of industrial effluent in the available water bodies is reducing the quality of these ample sources of water continuously. Hence, the national mission on water conservation was declared by the then Hon. Prime Minister Narendra Modi as 'Jal Shakti Abhiyan' and appealed to all citizens to collectively address the problem of water shortage, by conserving every dropof water and suggested for conducting water audit for all sectors of water use.

Water audit can be defined as a qualitative and quantitative analysis of water consumption to identify means of reducing, reusing and recycling of water. Water Audit is nothing but an effective measure for minimizing losses, optimizing various uses and thus, enabling considerable conservation of water in irrigation sector, domestic, power and industrial as well. A water audit is a technique or method which makes possible to identify ways of conserving water by determining any inefficiencies in the system of water distribution. The measurement of water losses due to different uses in the system or any utility is essential to implement water conservation measures in such an establishment.

## Importance of Water audit

It is observed that a number of factors like climate, culture, food habits, work and working conditions, level and type of development, and physiology to determine the requirement of water. The community which has a population between 20,000 to 1,00,000 requires 100 to 150 liters per person (capita) per day. The communities with a population can consume over 1, 00,000 requires 150 to 200 liters per person (capita) per day. As per the standards provided by WHO Regional office for South East Asia Schools require 2 liters per student; 10-15 liters per student if water-flushed toilets.

. Water usage can be defined as water used for all activities which are carried out on campus from different water sources. This includes usage in all residential halls, academic buildings, on campus and on grounds. Wastewater is referred as the water which is transported off the campus. The wastewater includes sewage, hostel and residential water used in cooking, showering, clothes washing as well as waste water from chemical and biological laboratories which ultimately going down in sink or drainage system.

## University water resources

The Main water uses in the campus includes drinking, cleaning, toilets and gardening. The University campus has continuous water supply of 24/7 through AP Government Telugu Ganga project. In addition there are 10 numbers of water bore wells in Men and Women Hostels, Engineering college campus and university gardens. The campus has several water harvesting units to recharge ground water. The water requirement is calculated based on per person utility per day. Toilet usage -20 lts, Shower -20 lts, clothes washing- 20 lts, utensil washing – 10 lts, mopping and washing rooms– 10 lts, cooking – 5 litres, drinking - 2.5 lts and gardening – 30 lts.



**BORE WELL**



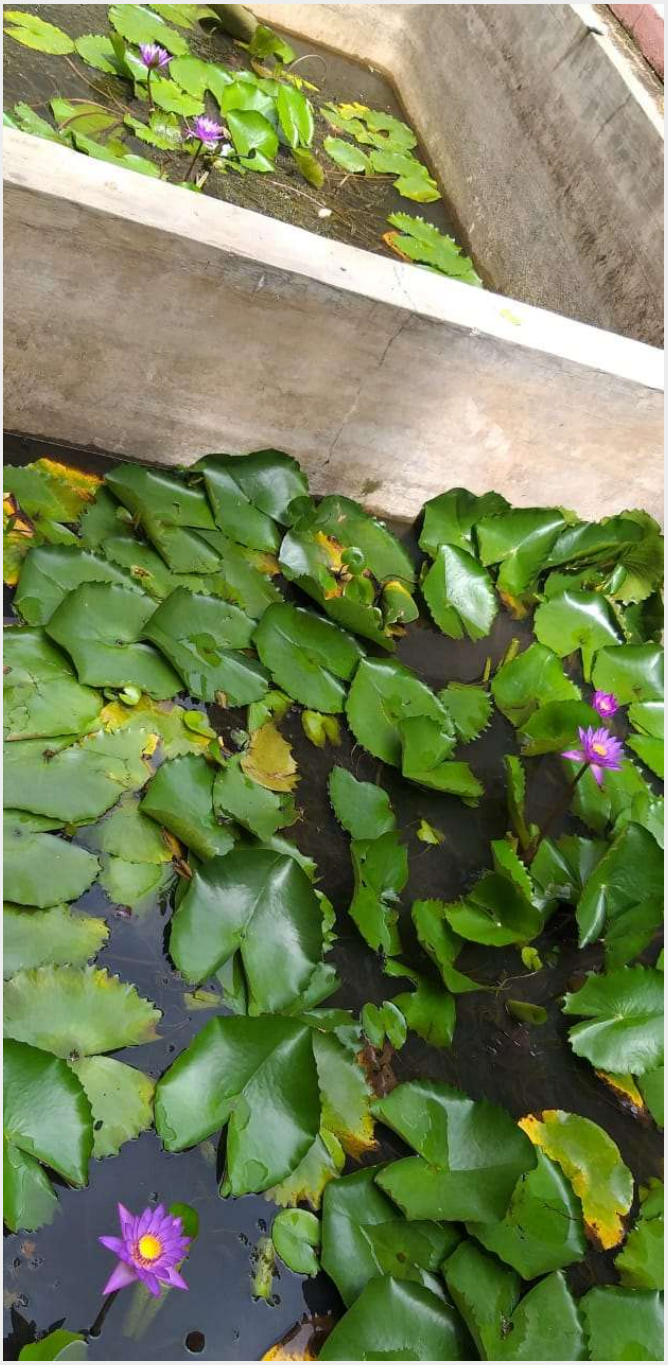

**OPEN WELL**

## Rain Water Harvesting

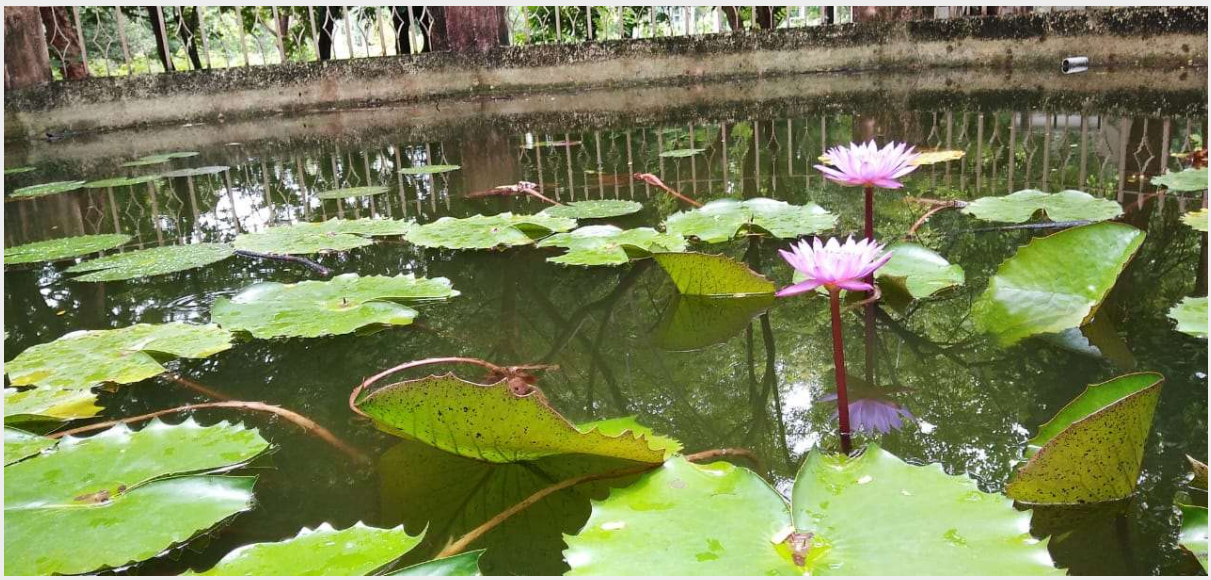
Rainwater harvesting means capturing rain where it falls or capturing the run off of rain water in Sri Venkateswara University premises. Rainwater harvesting system, also called rainwater collection system or rainwater catchment system, technology that collects and stores rainwater for further use. The collected water is also kept clean by filtering and such design of facility that does not allow pollutants to mix with collected water. Rain water is harvested from terrace, and ground floor areas for reusing in watering of lawns. Surface runoff from various ground sources and terraces are collected, filtered and recirculated for gardening and washing purpose. Besides natural percolation tanks, concrete storage tanks have also been built and rain water has been stored after proper filtration paving the open places with concrete roads is avoided so that rain water can be percolated. The rainwater harvested during rains not only helps to save water from conventional sources, but also to save energy and reduce expenses incurred on transportation and distribution of water. Awareness programmes on water conservation and rain water harvesting have been conducted regularly through various service of the University. One of the rain water harvesting pit is seen near Post Office. Similar structures are seen at different locations within premises.




**RAIN WATER HARVESTING PIT**



## RAIN WATER HARVESTING



RAIN WATER HARVESTING AT ACADEMIC BUILDING

## Reusage of waste water:

Wastewater recycling is considered as the best option of water usage. The waste water generated is filtered through coarse filter system and is used for watering outdoor lawns, gardens, potted plants, cleaning of stair case, verandas, pavements and drive ways.





REUSAGE OF WASTE WATER

# 4. ENERGY AUDIT

Energy is one of the major inputs for the economic development of any country. The fundamental goal of energy management is to produce goods and provide services with the least cost and least environmental effect. Also it can be said as “the strategy of adjusting and optimizing energy, using system and procedure so as to reduce energy requirements per unit of output while holding constant or reducing total costs of producing the output from these systems”. The energy audit is key to a systematic approach for decision making in the area of energy management. It attempt to balance the total energy inputs with its use, and serve to identify all the energy streams in a facility.

According to Energy Conservation Act, 2001, Energy Audit is the verification, monitoring, and analysis of the use of energy including submission of a technical report containing recommendations for improving energy efficiency with cost-benefit analysis and an action planto reduce energy consumption.

Energy resources utilized by all the departments, support services and the administrative buildings of Sri Venkateswara University, Tirupati, Andhra Pradesh campus include electricity and liquid petroleum. Major use of the energy is at office, canteen, hostel and laboratories, for lighting, transportation, cooking and workshop instruments. Sri Venkateswara University has installed solar power plant having a capacity of 1.75 MW. Electricity is also supplied to the University campus by Andhra Pradesh Southern power Distribution Company Limited (APSPDCL).



SOLAR PANEL AT SVU ADMINISTRATIVE BUILDING



**SOLAR PANEL AT SVU LIBRARY**



**SOLAR PANEL AT PRAKASAM BHAVAN**

In Academics and Research, Solar dryer facility is available in the Department of Home Science. Food technology students and scholars conducted research projects using solar dehydration technology. Drying foods using solar energy helps in retaining the colour, Flavour and nutritional value to a large extent. It can minimize cost, wastage and increase the productivity in terms of quality and quantity. Hands on training was given to the students with the resource persons on solar dehydration. Various foods and food products were developed. The students undergone training programmes and internship in Society for Energy, Environment and Development (SEED) Hyderabad.

Solar dryers require a certain investment for the set-up of the appliance, but no expenditures for the fuel. The basic function of a solar dryer is to heat air to a constant temperature with solar energy, which facilitates extraction of humidity from foods inside a drying chamber. Ventilation is enabled at a constant rate through defined air inlets and outlets, small solar ventilators or temperature difference, either due to exposition or vertical height. In direct sun driers the food is put in boxes with a transparent lid. Additionally, the temperature in the drier is raised due to the greenhouse effect and the air exchange is regulated by vents. The food is not exposed to direct sunlight in indirect sun driers as the fresh air is heated separately from the food chamber. This method is preferable for drying foods which lose nutritional value when exposed to direct sunlight. Hybrid driers combine solar energy with a fossil fuel or biomass fuel. Solar drying has many advantages over open traditional drying like; Safe & hygienic, Free from insect and bird contamination, Clean &dust free products, more uniform quality products, Uniform color, texture, and appearance of the product, evenness in drying, moisture control to optimum levels, Nutrient retention especially beta carotene, yields high quality Products with better shelf life of the products.





**SOLAR DRYING FACILITY IN THE DEPARTMENT OF HOME SCIENCE**

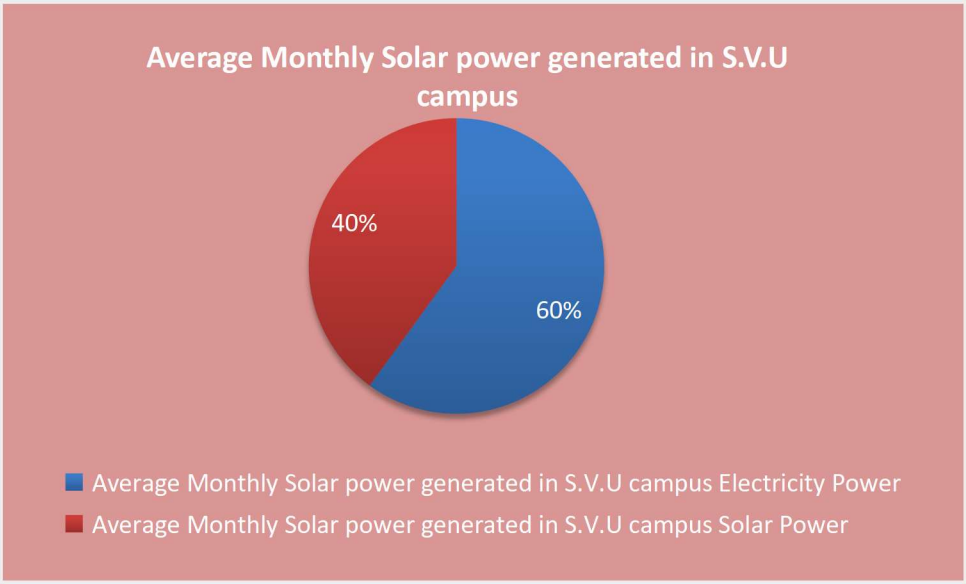
Solar energy generated by solar panels are exported to the grid of electricity distribution utility of Southern Power distribution company of Andhra Pradesh Ltd. Direct savings in electricity bills are availed from electricity distribution utility on monthly basis.

The Energy and electricity audit aimed to cover the aggregate consumption of Electrical and Natural gas energy within the Sri Venkateswara University campus including academic andadministrative blocks. In different hostels, LPG cylinders are primarily used for cooking purposes and the number of uses was also counted. Domestic LPG connections were not included in the present study. Within the campus, no other fossil fuel like coal-fire or firewood,etc based energy is used.




**ISO 50001 : 2918 CERTIFICATE FOR IMPLEMENTATION OF ENERGY SAVING PRACTICES**

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**Monthly Solar power generated within S.V.U campus**

Fossil fuels (such as petrol, diesel) contribute significantly to environmental pollution through emission of greenhouse gases into the atmosphere mainly as carbon dioxide. Vehicular emissionis the main source of carbon emission in the campus, hence to document the various means of transportation that is practiced by the university members is important. The fuel energy audit determines the approximate use of petrol or diesel by the vehicles inside the university. It also includes the efforts taken by the university to conserve the fuel. The conventional source of fuel for the vehicle is petrol and diesel. Maximum students, teaching and non teaching staff of university and visitors use two wheeler and four wheeler vehicles. So, the data regarding fuel utilization for students, teaching and non teaching staff of university and visitor are monitored in the study.

## Carbon Foot Print Analysis

Total number of students on the campus - 4

Total number of regular faculty - 206

Total number of Academic Consultants - 239

Total number of non-teaching staff - 900

Total number of 2 wheelers used - 1147

Total number of electrical 2 wheelers - 41

Total number of 4 wheelers used - 154

Number of electrical four wheelers - 04

# BIODIVERSITY AUDIT

Carbon is the basis of life on mother Earth. It is incorporated into the plants through photosynthesis, consumed by animal species through the food, present in the form of carbon dioxide ($CO_2$) in the atmosphere, locked into the rocks as limestone and compressed into thedifferent fossil fuels such as coal and oil. As $CO_2$ level in the atmosphere continue to increase, most climate designs or project that the oceans of the world and trees will keep soaking up more than half $CO_2$ . The plants on land and in the sea, taken up carbon by over many years increased the percentage discharged during decay, and this increased carbon became locked away as fossil fuels beneath the surface of the planet.

The starting of the 21$^{st}$ century brought growing concern about global warming, climate change, food security, poverty and population growth. In the 21$^{st}$ century more carbon has been released into the atmosphere than that has been absorbed. $CO_2$ is a principle component causing global warming. Atmospheric carbon dioxide levels have increased to 40 % from preindustrial levels to more than 390 parts per million $CO_2$. On this background it is a need of time to cover the research areas interrelated with climate change.

The “Carbon Sequestration and Green cover inventory” is a current status of tree cover and vegetation carbon storage assessment of area under Sri Venkateswara University campus. In an era of climate change and global warming carbon emission, carbon footprints, carbon sequestration, adaptations, mitigation are the keywords in academia. Carbon sequestration is a process of converting atmospheric carbon i.e. $CO_2$ into other sinks of carbon such as vegetation, soil, ocean etc. in various forms to mitigate global warming audit is one of the important clauses of Kyoto Protocol.

While transforming ourselves from regional university to global university it is a responsibility of such universities to face the global future challenges and try to find out possible solutions for them. It is a social and environmental responsibility of Government Institutes, Universities, National and International Organizations to respond positively for various global issues at local level and should percolate the generated knowledge in to the society. Global warming and climate change are current environmental issues need to be addressed scientifically and efficiently. As Universities are provided with skillful human resource supported by analytical infrastructure, it is our duty to bring such ideas in practice. While understanding the call of time the Department of Botany and Environmental Science, Sri Venkateswara University has decided to enumerate the green cover of Sri Venkateswara University campus.

## LIST OF PLANT SPECIES ON SRI VENKATESWARA UNIVERSITY CAMPUS

| S. NO | COMMON NAME | BOTANICAL NAME | TYPE/ USE |
|---|---|---|---|
| 1 | Custard Apple | *Annona squamosa* L. ( Var.name:seethapalam) | Fruit yielding, Medicinal |
| 2 | False ashoka | *Polyalthia longifolia* (Sonner) Thw. (Naramamidi) -60 | Wind breaker |
| 3 | False ashoka | *Polyalthia longifolia* Hook. & Thom. Var. pendula (Ontikomma naraamamidi) -51 | Wind breaker |
| 4 | Snuff-Box Tree | *Oncoba spinoa* Forsk. (Line gulabi) -01 | Medicinal |
| 5 | Red silk-Cotton tree | *Bombax ceiba* L. (Buruga) -03 | Fibre yielding |
| 6 | Buddha's coconut tree | *Sterculia alata* -01 | |
| 7 | Bael | *Agle marmelos* (L.) Corr. (Maredu) -01 | Medicinal |
| 8 | Tree of heaven | *Ailanthus excelsa* Roxb. (Pedda vepa) -01 | Matchstick industry |
| 9 | Neem tree | Azadirachta indica A. Juss. (Vepa) -150 | Medicinal |
| 10 | Indian mahogany | *Chukraia tabularis* A. Juss. (Konda vepa) -01 | Medicinal |
| 11 | Indian rose wood | *Somyda febrifuga* (Roxb.) A. Juss. (Somi) -02 | Medicinal, Wood yielding |
| 12 | Ceylon satinwood or East Indian satinwood | *Chloroxylon swietenia* DC. (Billudu) -08 | Wood yielding |
| 13 | Ceylon Tea | *Cassine glauca* (Rottb.) Kuntz. (Neridi) -06 | Medicinal |
| 14 | Indian jujube | *Ziziphus mauritiana* Lam. (Regi chettu) -18 | Fruit yielding |
| 15 | Kath Ber | *Ziziphus xylopyrus* ( Retz.,) Willd. (Gotti) -03 | Medicinal |

| | | | |
|---|---|---|---|
| 16 | Notched Leaf Soapnut | *Sapindus emarginatus* Vahl. (Kunkudu) -08 | Medicinal |
| 17 | Mango | *Mangifera indica* L. (Mamidi) -04 | Fruit yielding |
| 18 | Indian ash tree | *Lannea coromandelica* (Houtt.) Mann. (Gumpana) -60 | Plywood making |
| 19 | Flame-of-the-forest | *Butea monosperma* (Lam.) Taub. (Modhuga) -02 | Medicinal |
| 20 | Indian rosewood | *Dalbergia latifolia* Roxb. (Iridi) -02 | Wood yielding |
| 21 | Mexican Lilac | *Gliricidia sepium* (Jacq.) Kunth ex Walp. (Seema kanuga) -10 | Rat poison |
| 22 | Indian beech and Pongame oiltree. | *Pongamia pinnata* (L.) Pier. (Kanuga) -136 | Medicinal , Biodiesel preparation |
| 23 | Malabar kino | *Pterocarpus marsupium* Roxb. (Yegi) -02 | Medicinal |
| 24 | Red Sanders | *Pterocarpus santalinus* L.f. (Errachandhanam) -16 | Medicinal, Wood yielding |
| 25 | Orchid Tree | *Bauhinia purpurea* L. (Deva kanchanam) -02 | Medicinal |
| 26 | Bidi leaf tree | *Bauhinia recemosa* Lam. (Ari chettu) -01 | Medicinal |
| 27 | Red cassia, Ceylon senna | *Cassia roxburghii* DC. (Rela) -54 | Medicinal |
| 28 | Siamese cassia | *Cassia siamea* L. (Seema thangedu) -33 | Medicinal |
| 29 | Royal Poinciana | *Delonix regia* (Boj. Ex Hook.) Rafin. (Thurai) -12 | Ornamental |
| 30 | Yellow Flame/ Copper pod | *Peltophorum pterocarpum* (DC.) Baker ex Heyne. (Konda chintha) -272 | Ornamental |
| 31 | Tamarind | *Tamarindus indica* L. (Chintha) -59 | Cuisines , Medicinal |
| 32 | Auri, | *Acacia auriculiformis* A. Cunn. ex Benth. (Australia thumma) -02 | Ornamental |

| | | | |
|---|---|---|---|
| 33 | White-bark acacia | *Acacia leucophloea* (Roxb.) Willd. (Thella thumma) -02 | Wood |
| 34 | Lebbeck /Woman's tongue tree | *Albizia lebbeck* (L.) Benth. (Bagichettu) -16 | Forage , Wood |
| 35 | Jumbay, white leadtree, | *Leucaena latisiliqua* (L.) Gillis. (Subabulu) -07 | Multipurpose tree |
| 36 | Badminton ball tree | *Parkia biglandulosa* Wt.& Arn. (Banthi thumma) -02 | Ornamental |
| 37 | Manila Tamarind | *Pithecellobium dulce* (Roxb.) Benth. (Cheema chintha) -01 | Food, Traditional medicine |
| 38 | Chilean mesquite | *Prosopis chilenis* (Molina) Stuntz. (Sarkar thumma) -01 | Shade tree |
| 39 | Rain tree | *Samanea saman* (Jacq.) Merr. J. Wash. (Nidraganneru) -19 | Shade tree |
| 40 | Arjuna/ Arjun tree | *Terminalia arjuna* (Roxb. ex DC.) Wt. & Arn. (Tellamaddhi) -16 | Silk production (Tassar) |
| 41 | Baheda | *Terminalia bellirica* (Gaertn.) Roxb. (Thandra) -02 | Medicinal |
| 42 | Indian almond | *Terminalia catappa* L. (Badam chettu) -02 | Food/ wood/ Ornamental |
| 43 | Southern blue gum | *Eucalyptus globulus* Labill. (Neelagiri thylam) -52 | Essential oil/ Wood |
| 44 | Common guava | *Psidium guajava* L. (Jama chettu) -01 | Food, Traditional medicine |
| 45 | Jamun | *Syzygium cumini* (L.) Skeels. (Neredu chettu) -60 | Food medicine |
| 46 | Gummy Gardenia | *Gardenia gummifera* L.f. (Bikki) -02 | Medicinal |
| 47 | West Indian jasmine | *Ixora acuminata* Roxb. (Tella ramabanam) -02 | Ornamental |
| 48 | Aal or Indian mulberry | *Morinda pubescens* J.E. Smith var. pubecens Verdc. (Maddi) -56 | Dye yielding |
| 49 | Torch tree | *Ixora pavetta* Andr. (Korivi chettu) - | Ornamental |

| | | | |
|---|---|---|---|
| | | 03 | |
| 50 | Madhūka, | *Madhuca longifolia* (K oen.) Macbr. Var. latifolia (Roxb.) A. Cheval. (Ippa) -08 | Silk production (tassar) and medicinal |
| 51 | Sapodilla | *Manilkara zapota* (L.) P. Royen. (Sapota) -01 | Fruit yielding |
| 52 | Spanish cherry | *Mimusops elengi* L. (Pogada) -05 | Medicinal |
| 53 | Caterpillar tree | *Plumeria alba* L. (Tella devaganneru) - 08 | Ornamental, Medicinal |
| 54 | Pinwheel flower, | *Tabernaemontana divaricata* L. (Nandivardhanam) -02 | Ornamental, Medicinal |
| 55 | Small Pinwheel flower | *Ervatamia divaricata* (L.) Burkill (Sanna nandivardanamu) -02 | Ornamental, Medicinal |
| 56 | Sweet Indrajao | *Wrightia tinctoria* (Roxb.) R. Br. (Reppala) -28 | Dye yielding, Medicinal |
| 57 | Yellow oleander | *Cascabela thevitia* (L.) Lipp. (Patcha ganneru) -04 | Poisonous |
| 58 | Indian Cherry | *Cordia dichotoma* Forst. (Iriki) -01 | Traditional medicine |
| 59 | Geiger tree | *Cordia sebestena* L. -01 | Ornamental |
| 60 | Wavy trumpet flower | *Dolichandrone atrovirens* (Roth) Spr. (Oddi) -02 | Ornamental |
| 61 | Jacaranda, blue jacaranda | *Jacaranda acutifolia* Humb . & Bonpl. (Swarna sundari) -01 | Ornamental, Wood |
| 62 | Sausage tree | *Kigelia africana* (Lam.) Benth. In Hook. (Enugu thondamu) -06 | Poisonous |
| 63 | Tree jasmine or Indian cork tree | *Millingtonia hortensis* L.f. (Manu malli) -05 | Ornamental |
| 64 | African tulip tree | *Spathodea companulata* P.Beauv. (Yerra neeru budda) -01 | Ornamental |
| 65 | Silver Trumpet Tree | *Tebebuia argentea* (Bur. & K. Schum.) Britt. -03 | Ornamental |
| 66 | Rosy trumpet tree | *Tebebuia rosea* (Bertol.) DC. -05 | Ornamental |
| 67 | Yellow trumpetbush | *Tecoma stans* (L.) Kunth. (Pasupu | Ornamental |

| | | | |
|---|---|---|---|
| | | ganneru) -01 | |
| 68 | Desert teak | *Tecomella undulata* (Sm.) Seem. -02 | Wood yielding |
| 69 | Teak | *Tectona grandis* L.f. (Teku) -09 | Wood yielding |
| 70 | Helicopter tree | *Gyrocarpus asiaticus* Willd. (Kummara poliki) -02 | Ornamental |
| 71 | Great bougainvillea, | *Bougainvillea spectabilis* Willd. -03 | Ornamental, Tribal medicine |
| 72 | Indian sandalwood | *Santalum albam* L. (Srigandhamu) -02 | Wood, Medicine |
| 73 | Indian gooseberry | *Phyllanthus emblica* L. (Nellikaya) -07 | Culinary, Traditional medicine |
| 74 | Indian elm | *Holoptelea integrifolia* (Roxb.) Planch. -09 | Cheap wood, Medicinal |
| 75 | Banyan | *Ficus benghalensis* L. -44 | Cultural significance |
| 76 | Sacred Fig | *Ficus religiosa* L. (Ravi chettu) -17 | Traditional medicine |
| 77 | The common fig | *Ficus carica* L. (Atthi chettu) -01 | Food, Folk medicine |
| 78 | Australian pine tree or whistling pine tree | *Casurina littorea* L. (Sarugudu) -02 | Wood, Ornamental |
| 79 | Traveler's palm | *Ravenala madagascarensis* Sonner. (Panka arati) -01 | Ornamental |
| 80 | Indian shot | *Canna indica* L. (Metta thamara) -02 | Ornamental |
| 81 | Thorny bamboo | *Bambusa arundinacea* (Retz.) Roxb. (Veduru) -02 | Wood for thatching |
| 82 | Toddy Palm | *Borassus flabellifer* L. (Tati chettu) -01 | Edible, Palm wine |
| 83 | Cuban royal palm | *Roystonea regia* (Kunth) O.F. Cook. -20 | Ornamental |
| 84 | Yellow Cane Palm | *Dypsis lutescens* (H.W endl.) Beentje & J. Dransf. -14 | Ornamental |



Custard Apple



Indian mahogany



Indian ash tree



Flame-of-the-forest



Red cassia,  Ceylon senna



Arjuna/  Arjun tree



Sweet Indrajao



Rosy trumpet tree



Silver Trumpet Tree



Geiger tree



Indian elm



*Cycas beddomei*



*Couroupita guianensis (*Cannonball tree)



Indian sandalwood

**Plant Species On Sri Venkateswara University Campus**

In ecology, the mass of living biological organism in a given area or ecosystem at a given time is called as biomass. Biomass can refer to species biomass and community biomass. The species biomass is the mass of one or more species. The community biomass, which is the mass of all species in the community. It includes microorganisms, plants oranimals. The mass can be defined as the average mass per unit area, or as the total mass in the community.

To estimate the biomass of the each individual tree species non- destructive method was used. To calculate the circumference Diameter at Breast Height (DBH) can be determined by measuring tree Girth at Breast Height (GBH), approximately at 1.3 meter from the ground. The Girth at Breast Height of trees having diameter which greater than 10 centimeters were measureddirectly by measuring tape.

To maintain green cover and carbon sequestration potential of the University following precautionary measures were taken.

Plantation of endemic species like *Pterocarpus santalinus, Cycas beddomei,Boswelia ovalifoliata, Syzyzium cumini* etc were planted to conserve native biodiversity. The plantation of tree species like *Acacia nilotica subsp. indica, Albizia lebbeck, Azadirachta indica, Citrus aurantium* works as green belt which can maintain the ecological balance in the environment as well as act as sink for the

harmful gases and improve air quality. Plantation activity is taken every year to increase the green cover on the University campus. Avoided the plantation of exotic species like *Casuarina,* which is fast growing species with less ecological values. Sri Venkateswara University received **:** IS0 14001: 2015 certificate for Implementation of Greenary and Environmental Promotion Activities



Certificate

HYM International Certifications Pvt. Ltd.

Certified that the Environmental Management System of

SRI VENKATESWARA UNIVERSITY

Tirupati, Chittoor District - 517 502,
Andhra Pradesh, India

has been assessed and found to be in accordance with the requirements of the environmental standards

ISO 14001 : 2015

for the following scope of certification

IMPLEMENTATION OF GREENERY AND ENVIRONMENTAL PROMOTION ACTIVITIES

Further information about the scope of this certificate and applicability of ISO 14001 : 2015 requirements may be obtained by consulting the organization.

Issue Date : 18/08/2022
Renewal Date : 17/08/2025

1st Surveillance 17/08/2023
2nd Surveillance 17/08/2024

Authorised Signature

Certificate No : E91864140183

HYM International Certifications Pvt. Ltd

NOTE: This Certificate is Valid From 18/08/2022 to 17/08/2023

This is an accredited certificate authorized for issue by Accreditation Service for Certifying Bodies (Europe) Limited who have assessed M/s HYM International Certifications Pvt. Ltd. against defined criteria and in cognisance of ISO 17021:2015 "Conformity Assessment - Requirements for bodies providing audit and Certification of management Systems"

www.hymcertifications.com on for checking the validation of the Certification

Regd. Office : Plot No. 265/C, Addagutta Society, Opp. JNTU, Kukatpally, Hyderabad - 500 072, Telangana State, India.
E-mail: siva@hymcertifications.com, Website: www.hymcertifications.com

**IS0 14001: 2015 IMPLEMENTATION OF GREENARY AND ENVIRONMENTAL PROMOTION ACTIVITIES**

India has large geographical size and variety of climate and habitats. Wild animals constitute great national resources. Preservation and protection of wildlife is important from the ecological point of view. As per the UNESCO's Man and Biosphere program, the government of India has established the Seshachalam Biosphere Reserve on 20th September, 2010. The reserve is the first biosphere reserve in Andhra Pradesh and the 17th in India. By size, it is the 9th largest in India.

Sri Venkateswara University is located at foot hills of Tirumala of Seshachalam hill range a Biosphere reserve spread over in area of 483 acres with lush green campus possessing more than ten thousand different kinds of plants. At North side of the campus are seven peaks of, Eastern Ghats namely Seshadri, Neeladri, Garudadri, Anjanadri, Vrushabadri, Narayanadri and Venkatadri. Being covered with hilly region and green luxurious coverage the Sri Venkateswara University harbours different species of birds, insects, reptiles, deers and rabbits etc. In addition to above plant species a diversified fauna has been observed and documented.



*GREATER COUCAL  Centropus sinensis*



*ASIAN KOEL  Eudynamys scolopaceus*



***COMMON HAWK-CUCKOO*** ***Hierococcyx varius***



**WHITE-THROATED KINGFISHER** ***Halcyon smyrnensis***



**ROSE-RINGED PARAKEET** ***Psittacula krameri***



**COMMON TAILORBIRD** ***Orthotomus sutorius***



***COMMON TAILORBIRD*** ***Orthotomus sutorius***



**BLACK-HEADED CUCKOOSHRIKE** ***Lalage melanoptera***



**INDIAN PEA FOWL Pavo cristatus**



**INDIAN EAGLE OWL *Bubo bengalensis***



**GUNIEA FOWL** ***Numida meleagris***



**JUNGLE FOWL** **Gallus** ***sonneratii***



**ROOSTER** ***Gallus gallus domestics***



**RED-BELLIED WOODPECKER** ***Melanerpes carolinus***

Sri Venkateswara University is located at foot hills of Tirumala of Seshachalam hill range a Biosphere reserve spread over in area of 483 acres with lush green campus possessing several wild animals in and around the Campus of the University.



**SPOTTED DEER**



**INDIAN BOAR**



**RED SLENDER LORIS**



**MONKEY**



**RABBIT**




**COW**



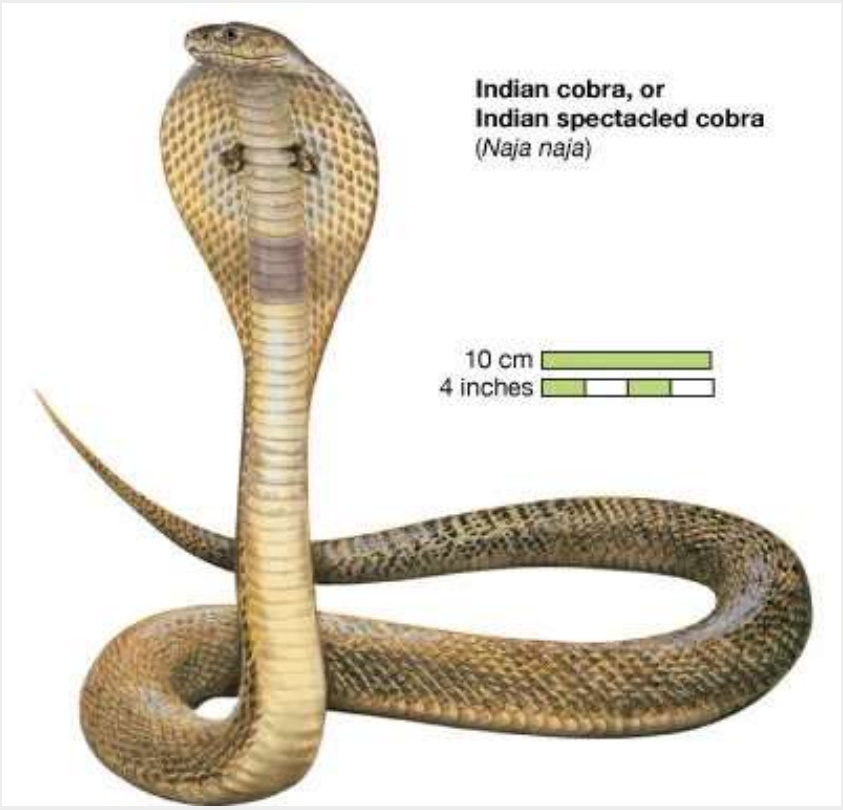
SQUIRREL



INDIAN WILD DOG



**INDIAN CAT**




**INDIAN COBRA**



**GREEN SNAKE**



**RED SAND BOA SNAKE**



**PHYTON**



**GOLDEN GECKO**



**MARBLED BALLON FROG**



**SNAIL**



**SCORPION**



**MILLIPEDE**



CENTIPEDE



EARTHWORMS



**BEETLE**

Different types of Invertebrata and Cordata are found in and around the University

# Fire Safety

Fire safety measures well adopted in the University and each floor has an open stair-case without any barriers for fire safety measures. Additional fire safety measures like fire alarms, smoke detectors and fire emergency kit are available in the necessary areas in the Premises.

The building wise summary of fire safety is as follows:

| S.No. | Building Name | Floor | Number of Fire Extinguishers |
|---|---|---|---|
| 1. | Administrative Building | Ground floor | 09 |
| 2. | Administrative Building | First floor | 11 |
| 3. | Administrative Building | Second floor | 02 |
| 4. | Natural Sciences Block: Dr. D.J.Reddy Bhavan | Ground floor | 03 |
| 5. | Natural Sciences Block: Dr. D.J.Reddy Bhavan | First floor | 04 |
| 6. | Natural Sciences Block: Dr. D.J.Reddy Bhavan | Second floor | 02 |
| 7. | Natural Sciences Block: Dr. D.J.Reddy Bhavan | Third floor | 01 |
| 8. | Vaman Rao Bhavan | Ground floor | 03 |
| 9. | Vaman Rao Bhavan | First floor | 03 |
| 10. | Physical Sciences Block | All floors | 14 |
| 11. | Virology Building | First floor | 01 |
| 12. | Virology Building | Second floor | 01 |
| 13. | Microbiology Building | Ground floor | 01 |
| 14. | Engineering Department | All buildings | 30 |
| 15. | Praksham Bhavan | All floors | 19 |
| 16. | Pharmaceutical Sciences Building | All floors | 03 |

| | | | |
|---|---|---|---|
| 17. | CM&CS Building | All floors | 09 |
| 18. | Library | All floors | 06 |
| 19. | Health Centre | All floors | 07 |
| 20. | Computer Centre | All floors | 04 |
| 21. | Srinivasa Auditorium | Ground floor | 06 |
| 22. | All Messes | Ground floor | 05 |
| 23. | Physical Education Block | Ground floor | 02 |
| 24. | Prof. Choppla Ratnam Bhavan | Ground floor | 02 |
| 25. | Old MBA Building | All floors | 06 |
| 26. | Commerce Builing | Ground floor | 01 |
| 27. | DST Purse Centre Building | All floors | 04 |
| 28. | IASE | All floors | 02 |
| 29. | PG Department of Law | Ground floor | 01 |
| 30. | Biotechnology Building | All floors | 03 |
| 31. | ORI | All floors | 02 |
| 32. | DDE | All floors | 03 |
| 33. | Guest House | All buildings | 04 |
| 34. | V C Bungalow | All floors | 03 |
| 35. | Annamaya Bhavan | All floors | 02 |
| 36. | Geography Block | All floors | 01 |
| 37. | Hostels | All | 12 |
| 38. | Post Office | Ground floor | 01 |
| 39. | Bio Chemistry | All floors | 03 |
| 40. | SEAPS | All floors | 01 |
| 41. | Annapoorna Canteen | Ground floor | 01 |
| 42. | State Bank of India+ DOA | All floors | 03 |
| 43. | Union Bank of India + MHRD | All floors | 03 |
| 44. | SVU Campus School | All floors | 04 |
| 45. | SVU Stadium | Ground floor | 04 |

The University abides to the Rules and Regulations of the Fire Department and equal number of fire extinguishers are provided in all the premises of the University. Red colour buckets with sand are also present in the University.

**Study of Site features:**

- Route maps to facilitate easy transport
- Usage of bicycles and motor vehicles to reduce pollution
- Water pits to harvest rain water
- Pleasant environment with Ponds and variety of trees
- Acclimatization of land to grow different flowering plants
- Clearing of unwanted plants to control mosquitoes and insects
- Solar panels installation to reduce electricity
- Restricted automobiles entry into the campus at the main gates
- Xerox shop and canteen facilities to in order to allow students to take print outs at the hostels.

# FIELD TRIPS VISIT IN DIFFERENT AREAS








SRI VENKATESWARA UNIVERSITY
TIRUPATI
BOTANICAL STUDY TOUR
MUNNAR
Dept of Botany
Date :: 25-28th June 2022

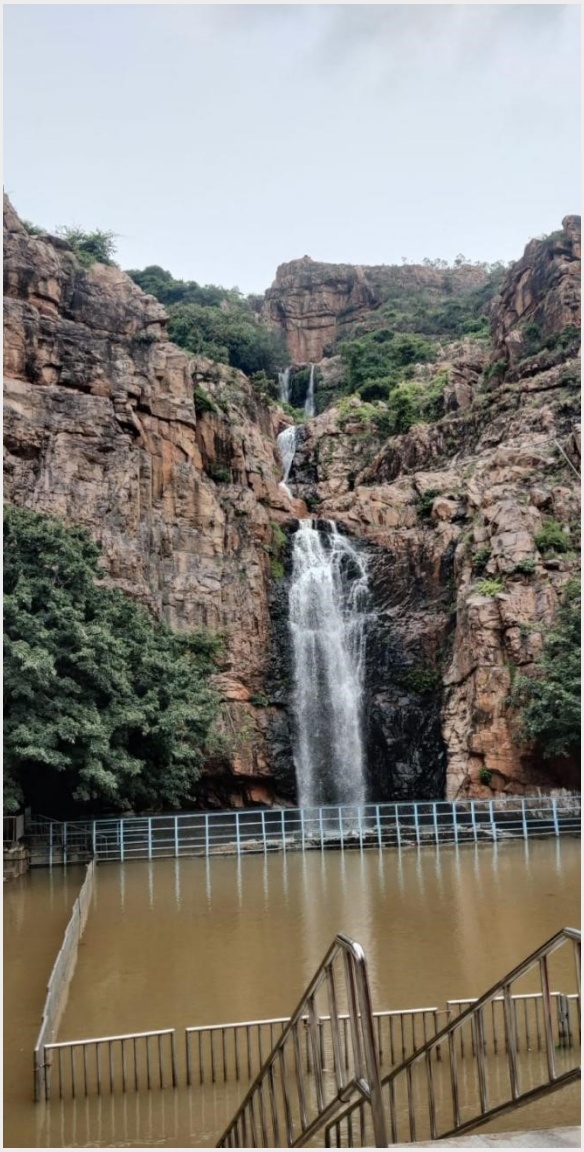
**FIELD VISIT**


OPPO F19





**FIELD VISITS**







**Field trip visits**



## FIELD TRIPS AT VARIOUS PLACES









## SPECIES IDENTIFICATION



(i)




(ii)



(ii)



(iii)


Wanda spathuleta

(iv)


hirculigo archiodis

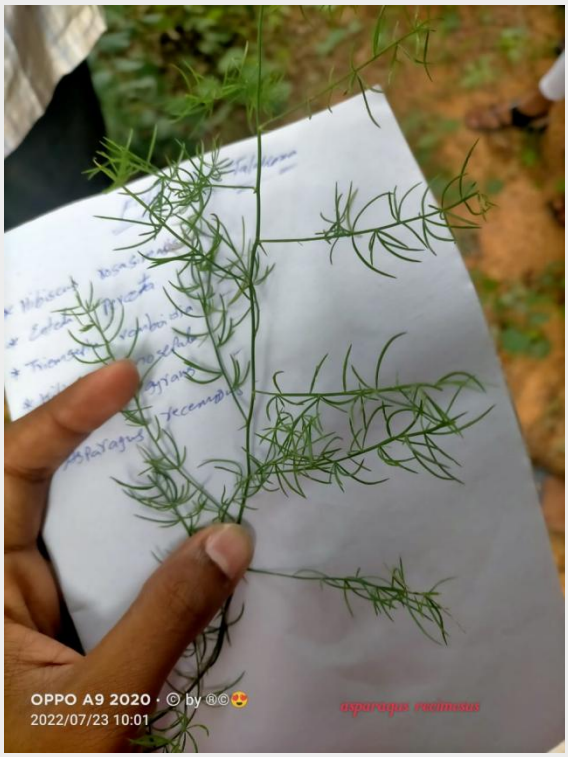
(v)


veyi kanlaaku

(vi)


pavonia zylanica

(vii)


OPPO A9 2020 · © by @©😍
2022/07/23 10:01
asparagus racemosus

**(viii)**


MURI-
KOOTTI

**(ix)**



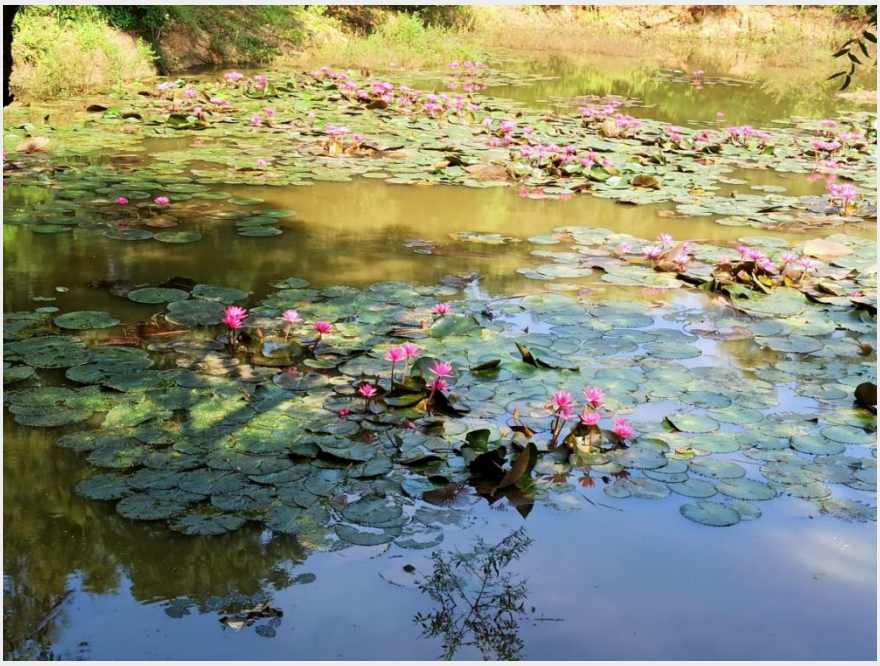
**(x)**

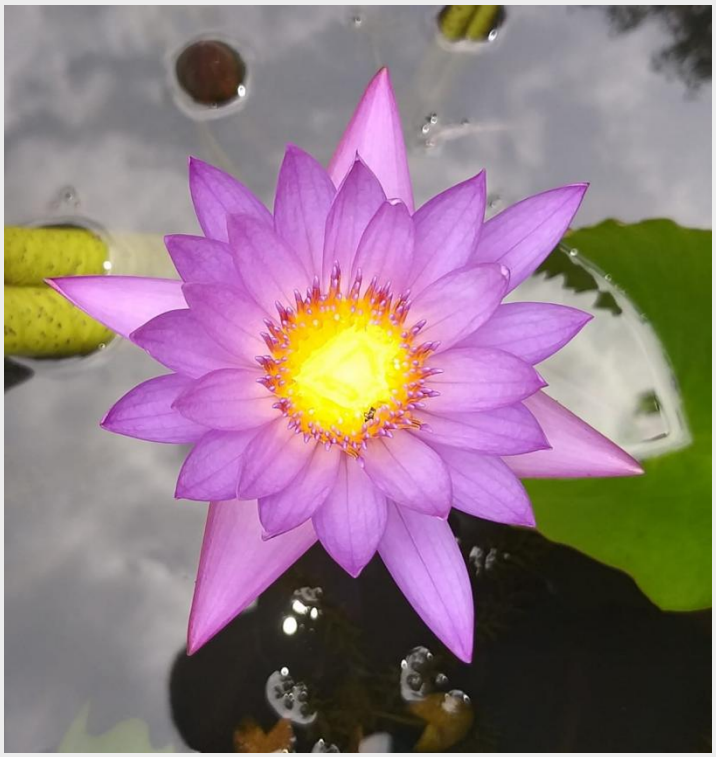


**(xi)**

**(i) To (xi) SPECIES COLLECTION AND IDENTIFICATION**

## 5. SOME OF THE PRACTICES OF OUR UNIVERSITY







**PUG MARKS COLLECTION OF DIFFERENT ANIMALS**



LEOPARD PUG MARK



PUG MARK OF DEER

# CREATIVE GALLERY






## 7. EXECUTIVE SUMMARY

A Green Campus is a place where environmental friendly practices and education combine to promote sustainability in the campus which ultimately offers an institution to take the lead in redefining its environmental culture and developing new paradigms by creating sustainable solutions to environmental, social and economic needs of the mankind.

Audit criterion is environmental cognizance, waste minimization and management biodiversity, water conservation, energy conservation and environmental legislative compliance by the campus. A questionnaire is used during audit. This audit report contains observations and recommendations for the improvement of environmental consciousness on the Campus of the University.




# CARBON NEUTRALITY

# SRI VENKATESWARA UNIVERSITY:: TIRUPATI



# SRI VENKATESWARA UNIVERSITY, TIRUPATI

## CARBON NEUTRALITY

## NOT ZERO -NET ZERO

CARBON NEUTRAL

# CARBON NEUTRALITY

## INTRODUCTION

Global warming is one of the most pressing concerns facing humanity today. Anthropogenic activities have been shown to result in negative impacts on the environment through increasing Green House Gas (GHG) emissions. Climate change and its effects are a fact of life that people are currently confronted with. There have been talks about inter generational equity and developing a sustainable way of life as an approach to combating this worldwide threat. As sustainability can be a difficult concept to grasp, there are many different perspectives on what it means to be sustainable. In 2015, 196 nations signed the Paris Climate Accord with the objective of limiting global warming to far below 2℃ above Pre-industrial levels and pursuing extra measures to reduce it to 1.5℃ above Pre-industrial levels. To keep global warming below 1.5℃, immediate action is needed to cut global GHG emissions by 44% below 2010 levels by 2030, with net zero emissions by 2050.



## Carbon Neutrality

Carbon neutrality is defined in a variety of ways; thus, it is critical to have a common consensus in order to avoid any misunderstanding. The Publicly Available Specification by the British Standards Institution (BSI PAS 2060) defines carbon neutrality as the absence of net GHG emissions during a certain time period, while the Carbon Neutral Cities Alliance (CNCA) describes it as a goal of cutting GHG emissions by 80–100% by 2050 or sooner when compared to the baseline year of 1990. The two documents, BSI PAS 2060 and CNCA, are similar in their conclusions in the sense that a city's net GHG emissions should be zero at some point in the future during a predetermined period.

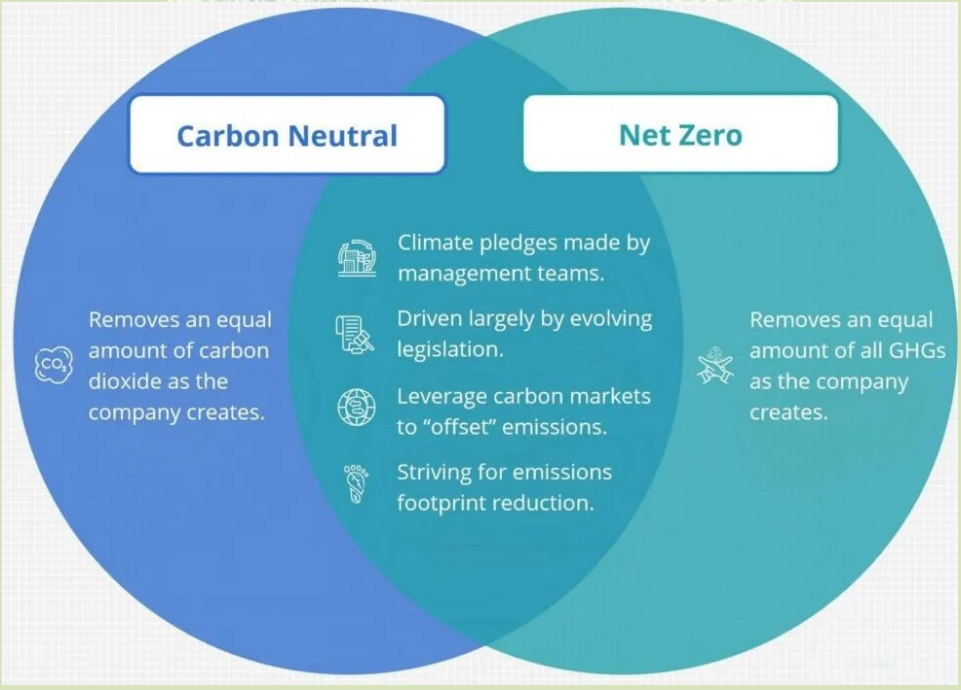
Carbon neutrality means having a balance between emitting carbon and absorbing carbon from the atmosphere in carbon sinks. Removing carbon oxide from the atmosphere and then storing it is known as carbon sequestration.

In order to achieve net zero emissions, all worldwide Green House Gas (GHG) emissions will have to be counterbalanced by carbon sequestration.

Carbon sink is any system that absorbs more carbon than it emits. The main natural carbon sinks are soil, forests and oceans. According to estimates, natural sinks remove between 9.5 and 11 Gt of Carbon dioxide per year. Annual global Carbondioxide emissions reached 36.0 Gt in 2020.

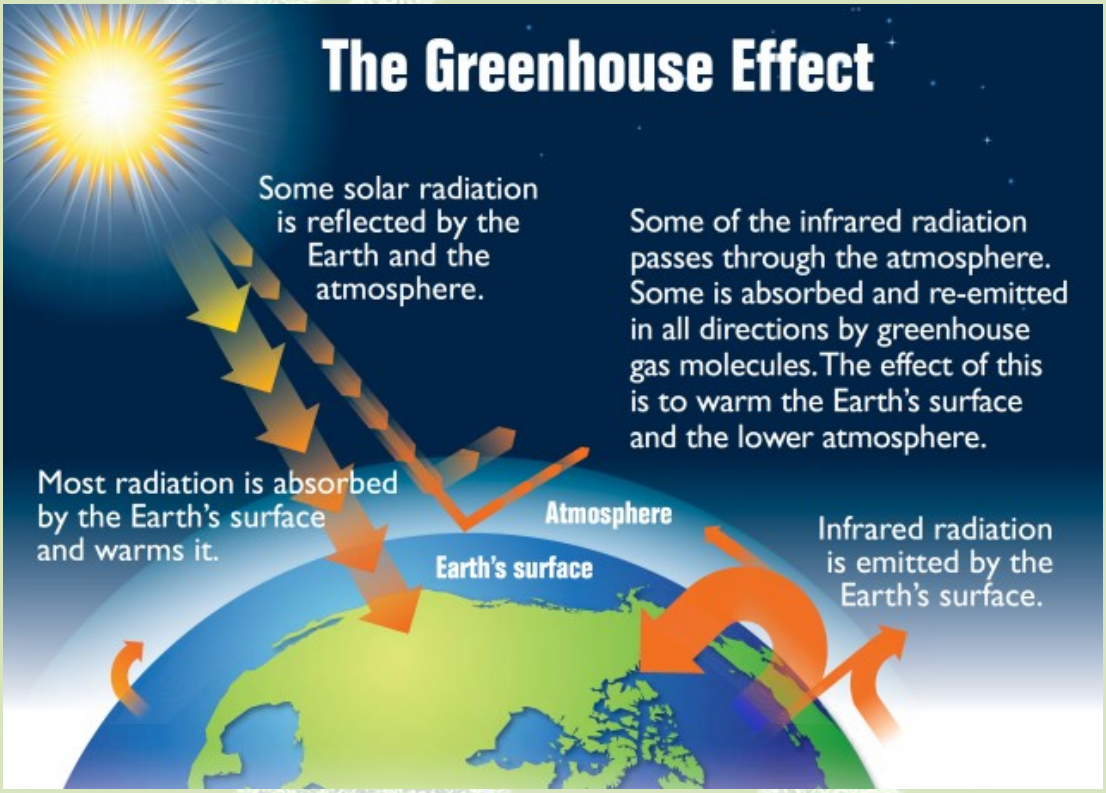
To date, no artificial carbon sinks are able to remove carbon from the atmosphere on the necessary scale to fight global warming.

The carbon stored in natural sinks such as forests is released into the atmosphere through forest fires, changes in land use or logging. This is why it is essential to reduce carbon emissions in order to reach climate neutrality.



## Green House Gas (GHGs)

Emissions GHG are gases that absorb and radiate heat from infrared radiation. Almost all of the rise in GHG in the atmosphere during the last 150 years can be attributed to human activities. This is the primary activity contributing to global climate change.Sri Venkateswara University is committed to assisting in the construction of a zero-carbon society. The Race to Zero criteria includes achieving net zero emissions by 2050 or sooner, describing the steps that will be followed to achieve net zero, taking action towards net zero while documenting where carbon reductions are being made and making a commitment to report progress on an annual basis.

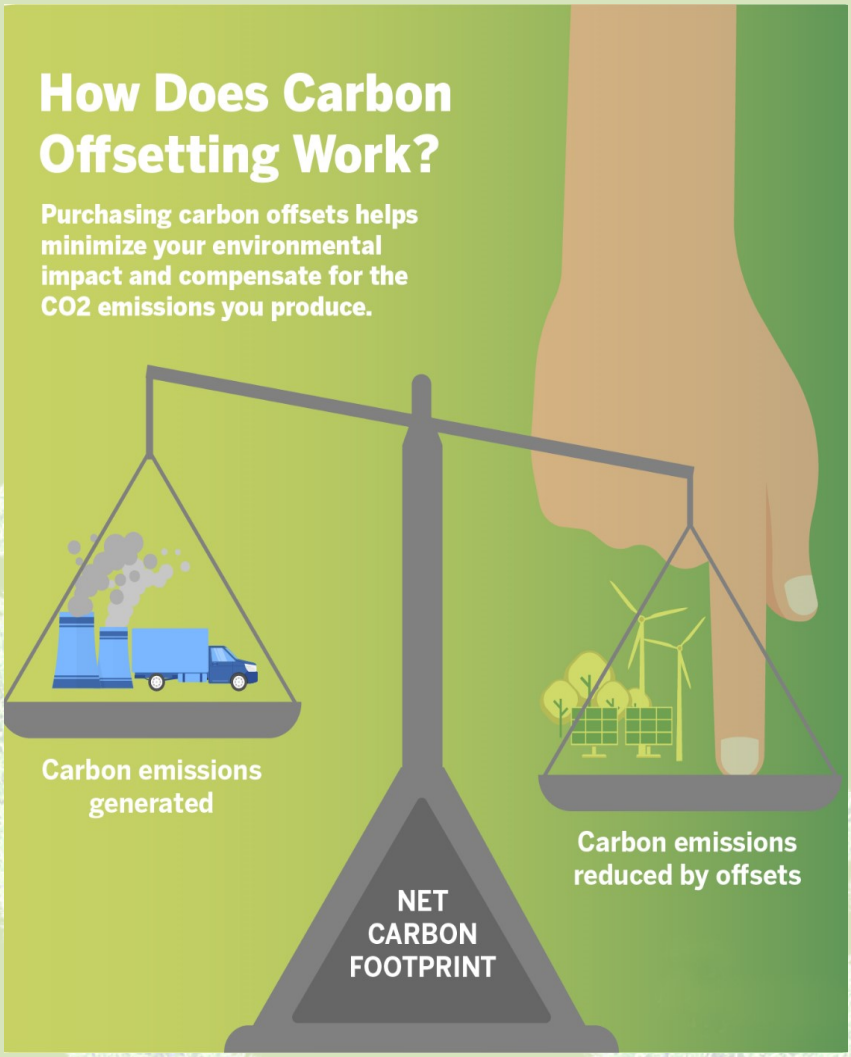



## Carbon Offsetting

Another way to reduce emissions and to pursue carbon neutrality is to offset emissions made in one sector by reducing them somewhere else. This can be done through investment in renewable energy, energy efficiency or other clean, low-carbon technologies. The EU's Emissions Trading System (ETS) is an example of a carbon offsetting system.

Another example of an initiative to reduce emissions is the carbon border adjustment mechanism, which would apply carbon prices on imported goods from less climate ambitious countries. This should help discourage companies moving production from the EU to somewhere with less stringent greenhouse gas emissions rules. The Commission should propose this carbon levy in 2021.

.




## Carbon Footprint

A measure of the total amount of greenhouse gasses released into the atmosphere as a result of an individual's, organization's, or nation's actions. It's usually measured in tonnes (or Kgs) of CO2e (carbon dioxide equivalent). It measures the impact of activities on the environment, in particular climate change. It relates to the amount of green house gases produced through burning fossil fuels for electricity, heating and transportation etc. A Carbon Footprint Disclosure of any educational institution is very important to understand such that its key emission sources can be identified and necessary mitigation measures can be adopted for carbon reduction.

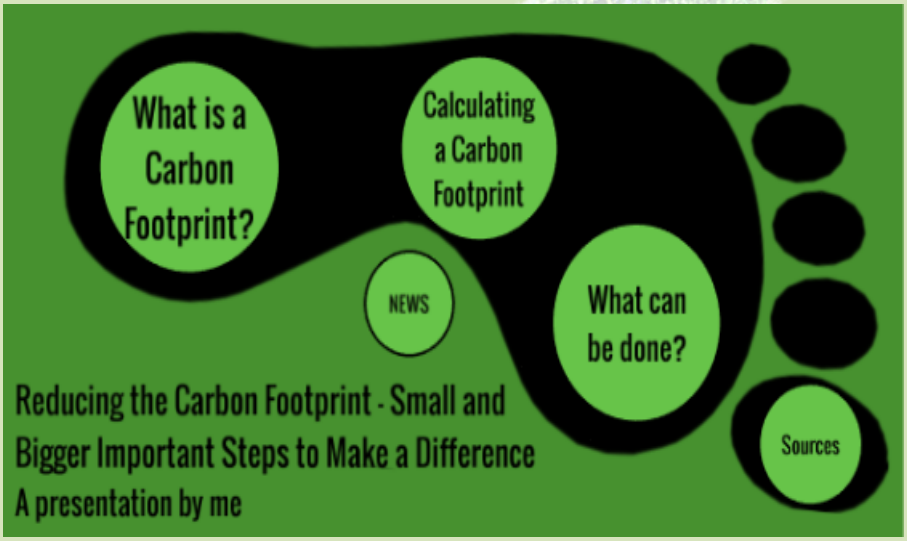
Carbon Footprint, as an indicator of climate performance, helps identify major GHG emission sources and potential areas for improvement. It has been introduced as a tool to guide the relevant emission cuts and verification that will facilitate the understanding of the risk of global warming at the very first stage. India must set an example by balancing energy use and climate goals.

India must set an example by balancing energy use and climate goals

- **Green House Gasses (GHG)**. Any type of gas in the atmosphere that blocks heat from escaping. In relation to your carbon footprint and climate change, the main ones to mention are carbon dioxide, nitrous oxide, and methane.
- **The Green House Effect.** The process through which GHGs in the Earth's atmosphere trap heat from the sun. Although this is a natural phenomenon that keeps the planet habitable, our GHG emissions are causing the Earth to warm up at an unnatural rate.
- **Climate Change**.A pattern of long-term change in the temperature and weather patterns either globally or regionally. Although these alterations occur naturally, man-made climate change is rapidly accelerating the pace of them.
- **Global Warming**. The rapid increase in average surface temperatures on Earth caused by the accumulation of greenhouse gases in the atmosphere. It is just one element of climate change.
- **Fossil Fuels**. Natural resources that produce carbon dioxide and other greenhouse gasses when burnt. Coal, oil and natural gas are all examples.

As India started to make an advancement and change in society as an Education Institution or University , University started Carbon Neutrality Not Zero- Net Zero Policy in and around the Campus. In this report negligible emissions from garden waste, mobile source and fugitive emissions. The awareness will invite career opportunities for the students in the students in the field of environment and ecology.Besides the computation of Carbon Footprint of Sri Venkateswara University, the study has raised a reasonable awareness amongst faculty and students about carbon footprint and impacts of global warming which was lacking initially.

Few of the several benefits associated with this study is implementing directional mitigation measures of the University, thereby, saving resources. Setting of policy and objectives will help the University to achieve both environmental and financial sustainability.



# CARBON FOOTPRINT

A carbon footprint is defined as the total amount of greenhouse gases produced directly and indirectly to support human activities, usually expressed in equivalent tons of carbon dioxide (CO2).

Your carbon footprint is the sum of all emissions of CO2 (carbon dioxide), which were induced by your activities in a given time frame. Usually a carbon footprint is calculated for the time period of a year.

The best way to calculate the carbon dioxide emissions based on the fuel consumption.

## Measures to reduce Greenhouse Gases Emissions from Agricultural Sector

1) Mitigation practices are effective in reducing carbon footprinting from other agricultural activities
2) Effective use of fossil fuels and other sources of non-renewable energy in the agricultural system.
3) Diversified cropping system
4) By straw return plantation, enhancing soil carbon sequestration
5) By adopting a Crop Rotation System
6) Limiting Deforestation



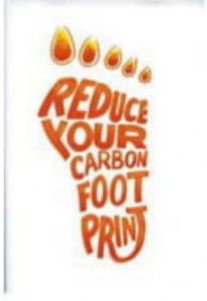






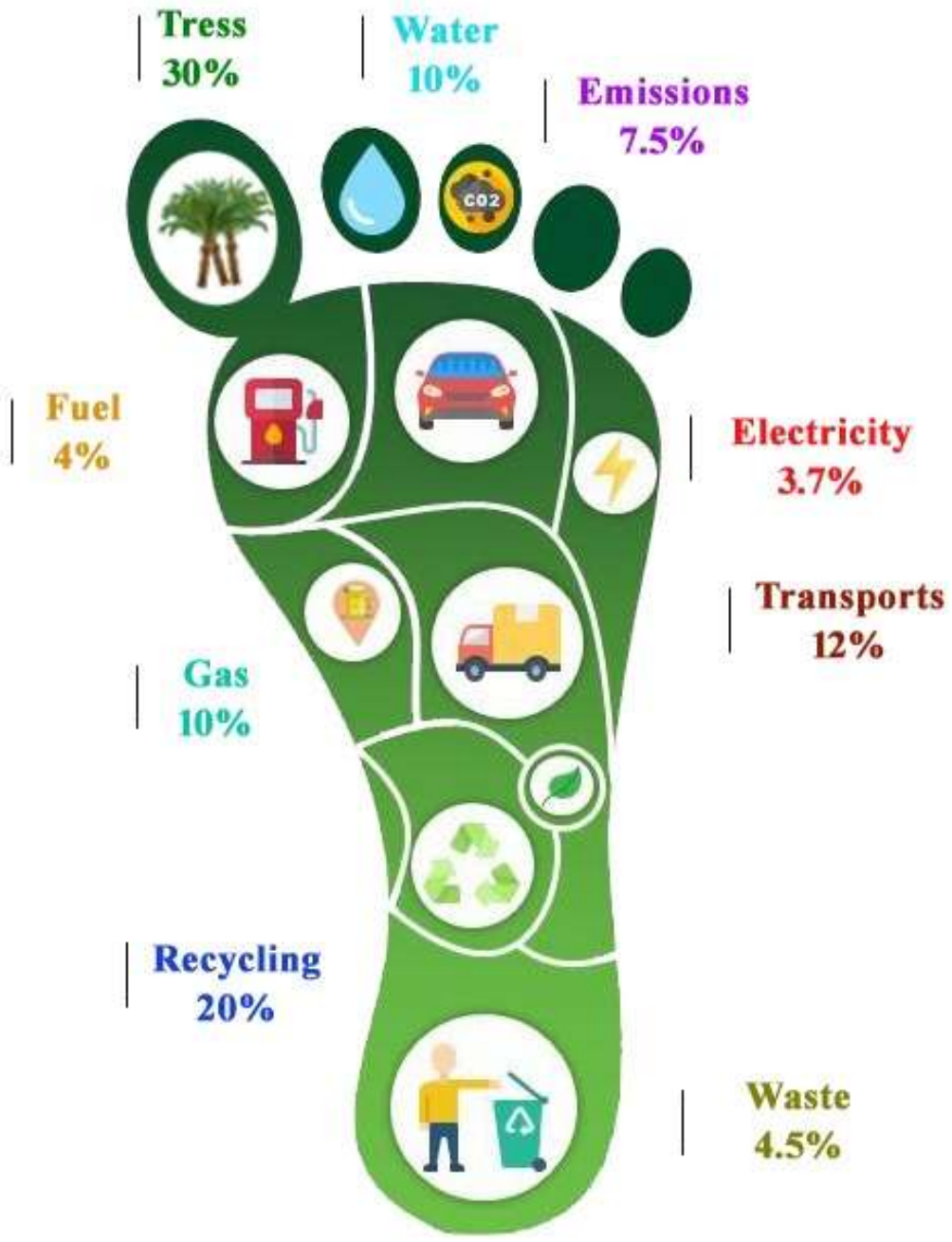









# CARBON FOOTPRINT



| S. No | Sources In S.V University |
|---|---|
| 1. | Fans |
| 2. | LEDS |
| 3. | Electricity / Solar Power Consumption |
| 4. | ACs |
| 5. | Mess |
| 6. | Jungle Report |

## 1. FANS

| S. NO | BUILDING NAME | FAN NOS | FAN TYPES |
|---|---|---|---|
| 1. | ADMINISTRATIVE BUILDING | 140 | High Speed Fan |
| 2. | PRAKASAM BHAVAN ARTS BLOCK | 150 | High Speed Fan |
| 3. | DDE BUILDING | 50 | High Speed Fan |
| 4. | JANARDHAN BHAVAN | 25 | High Speed Fan |
| 5. | OLD MBA BUILDING | 45 | High Speed Fan |
| 6. | PRESS BUILDING | 10 | High Speed Fan |
| 7. | PHYSICAL SCIENCES BLOCK | 120 | High Speed Fan |
| 8. | Dr. D.J. REDDY BHAVAN NATURAL SCIENCES BLOCK | 135 | High Speed Fan |
| 9. | GEOGRAPHY SCIENCES BLOCK | 30 | High Speed Fan |
| 10. | VAMANARAO BHAVAN | 45 | High Speed Fan |
| 11. | CIVIL ENGINEERING BUILDING | 30 | High Speed Fan |
| 12. | ECE BUILDING | 38 | High Speed Fan |
| 13. | CHEMICAL ENGINEERING BUILDING | 42 | High Speed Fan |
| 14. | MECHANICAL ENGINEERING BUILDING | 37 | High Speed Fan |
| 15. | EEE & CSE BUILDING | 44 | High Speed Fan |
| 16. | SVU LIBRARY | 28 | High Speed Fan |
| 17. | HEALTH CENTRE | 35 | High Speed Fan |
| 18. | PHYSICAL EDUCATION | 21 | High Speed Fan |
| 19. | LAW & LIBRARY SCIENCE | 18 | High Speed Fan |
| 20. | ORIENTAL RESEARCH INSTITUTE BUILDING | 27 | High Speed Fan |

| S. NO | BUILDING NAME | FAN NOS | FAN TYPES |
|---|---|---|---|
| 21. | POPULATION STUDIES & BIO-TECHNOLOGY– (Lecture theatre Complex) | 35 | High Speed Fan |
| 22. | BIO-CHEMISTRY | 24 | High Speed Fan |
| 23. | MICROBIOLOGY | 10 | High Speed Fan |
| 24. | DST PURSE PROGRAM | 12 | High Speed Fan |
| 25. | VIROLOGY BUILDING | 18 | High Speed Fan |
| 26. | PHARMACY BUILDING | 22 | High Speed Fan |
| 27. | ANDHRA BANK SCHOOL OF MANAGEMENT | 38 | High Speed Fan |
| 28 | COMPUTER SCIENCE | 16 | High Speed Fan |
| 29. | SEAPS (AUDITORIUM OPP) | 42 | High Speed Fan |
| 30. | SVU COMPUTER CENTRE | 18 | High Speed Fan |
| 31. | USIC BUILDING | 12 | High Speed Fan |
| 32. | SVU CAMPUS SCHOOL | 40 | High Speed Fan |
| 33. | ANNAMAYYA BHAVAN | 10 | High Speed Fan |
| 34. | PRAKASAM RECREATION CENTRE | 10 | High Speed Fan |
| 35. | I.A.S.E BUILDING | 36 | High Speed Fan |
| 36. | Prof. CHOPPALA RATHNAM BHAVAN | 24 | High Speed Fan |
| 37. | HOSTELS | | |
| | a) MEN'S HOSTEL<br>(College of Arts & Sciences) 1 to 10 Blocks | 1354 | High Speed Fan |
| | b) MEN'S HOSTEL<br>(College of Engineering) 1to 4 Blocks | 610 | High Speed Fan |
| | c) WOMEN'S HOSTELS<br>(Colleges of Arts, Sciences & Engineering) 1to 8 Blocks | 812 | High Speed Fan |

| | | | |
|---|---|---|---|
| 38. | QUARTERS | | |
| | a. Red buildings 6 No's | 28 | High Speed Fan |
| | b. Twin Quarters 12 No's | 42 | High Speed Fan |
| | c. Readers Quarters 8 No's (III SET) | 16 | High Speed Fan |
| | d. Lectures Quarters (I SET) | 4 | High Speed Fan |
| | e. Lectures Quarters (III SET) | 8 | High Speed Fan |
| | f. Superintendents & Quarters | 4 | High Speed Fan |
| | g. Superintendents & N.T. Quarters | 4 | High Speed Fan |
| | h. Warden & Deputy Warden Quarters | 4 | High Speed Fan |
| | i. Deputy Warden Quarters 4 No's | 16 | High Speed Fan |
| | j. Servant Quarters for Engineering. Hostels | 4 | High Speed Fan |
| | k. Officers' Quarters | 4 | High Speed Fan |
| | l. UDC'S & LDC'S Quarters | 4 | High Speed Fan |
| | m. Lecturers Quarters (IV SET) | 12 | High Speed Fan |
| | n. Attenders & Peons Quarters | 3 | High Speed Fan |
| | o. Type I Quarters for Professors /Readers | 4 | High Speed Fan |
| | p. 4 Type I Quarters for Professors. Readers | 12 | High Speed Fan |
| | q. 4 Type I Quarters for Lectures | 8 | High Speed Fan |
| | r. Teachers Hostel – 8 Blocks – 2 Quarters Each | 16 | High Speed Fan |
| | s. Teachers Quarters – 3 Blocks | 9 | High Speed Fan |
| 39. | HOSTEL OFFICES | 4 | High Speed Fan |
| 40. | STATE BANK OF INDIA | 12 | High Speed Fan |
| 41. | UNION BANK | 10 | High Speed Fan |
| 42. | INDIAN POST OFFICE | 12 | High Speed Fan |
| 43. | S V U AUDITORIUM | 14 | High Speed Fan |
| 44. | GYMNASIUM | - | High Speed Fan |

## 2. LEDs

| S. NO | BUILDING NAME | FLOUROSENT LIGHTS | LED LIGHTS | SOLAR LIGHTS |
|---|---|---|---|---|
| 1. | ADMINISTRATIVE BUILDING | 20 | 350 | 150 |
| 2. | PRAKASAM BHAVAN ARTS BLOCK | 10 | 210 | 70 |
| 3. | DDE BUILDING | 2 | 70 | 10 |
| 4. | JANARDHAN BHAVAN | - | 30 | - |
| 5. | OLD MBA BUILDING | 10 | 120 | 20 |
| 6. | PRESS BUILDING | - | 10 | - |
| 7. | PHYSICAL SCIENCES BLOCK | 30 | 230 | 80 |
| 8. | Dr. D.J. REDDY BHAVAN NATURAL SCIENCES BLOCK | 25 | 240 | 90 |
| 9. | GEOGRAPHY SCIENCES BLOCK | - | 80 | - |
| 10. | VAMANARAO BHAVAN | 10 | 110 | 30 |
| 11. | CIVIL ENGINEERING BUILDING | 15 | 70 | 20 |
| 12. | ECE BUILDING | 12 | 74 | 18 |
| 13. | CHEMICAL ENGINEERING BUILDING | 15 | 68 | 16 |
| 14. | MECHANICAL ENGINEERING BUILDING | 10 | 53 | 14 |
| 15. | EEE & CSE BUILDING | 14 | 69 | 20 |
| 16. | SVU LIBRARY | - | 70 | - |
| 17. | HEALTH CENTRE | - | 85 | - |
| 18. | PHYSICAL EDUCATION | - | 37 | - |
| 19. | LAW & LIBRARY SCIENCE | - | 40 | - |
| 20. | ORIENTAL RESEARCH INSTITUTE BUILDING | - | 62 | - |

| | | | | |
|---|---|---|---|---|
| 21. | POPULATION STUDIES & BIO-TECHNOLOGY– (Lecture theatre Complex) | - | 53 | - |
| 22. | BIO-CHEMISTRY | 5 | 20 | 10 |
| 23. | MICROBIOLOGY | 7 | 18 | 8 |
| 24. | DST PURSE PROGRAM | - | 27 | - |
| 25. | VIROLOGY BUILDING | - | 24 | 15 |
| 26. | PHARMACY BUILDING | - | 32 | - |
| 27. | ANDHRA BANK SCHOOL OF MANAGEMENT | - | 77 | 18 |
| 28. | COMPUTER SCIENCE | - | 24 | - |
| 29. | SEAPS (AUDITORIUM OPP) | - | 56 | - |
| 30. | SVU COMPUTER CENTRE | - | 25 | - |
| 31. | USIC BUILDING | - | 14 | - |
| 32. | SVU CAMPUS SCHOOL | 50 | 32 | - |
| 33. | ANNAMAYYA BHAVAN | - | 10 | - |
| 34. | PRAKASAM RECREATION CENTRE | 20 | - | - |
| 35. | I.A.S.E BUILDING | - | 28 | - |
| 36. | Prof. CHOPPALA RATHNAM BHAVAN | - | 32 | - |
| 37. | HOSTELS | | | |
| | a. MEN'S HOSTEL<br>(College of Arts & Sciences) 1 to 10 Blocks | - | 1226 | - |
| | b. MEN'S HOSTEL<br>(College of Engineering) 1to 4 Blocks | - | 604 | - |
| | c. WOMEN'S HOSTELS<br>(Colleges of Arts, Sciences & Engineering) 1to 8 Blocks | | 464 | - |

| | | | | |
|---|---|---|---|---|
| 38 | QUARTERS | | | |
| | A. Red buildings 6 No's | - | 42 | - |
| | B. Twin Quarters 12 No's | - | 54 | - |
| | C. Readers Quarters 8 No's (III SET) | - | 38 | - |
| | D. Lectures Quarters (I SET) | - | 8 | - |
| | E. Lectures Quarters (III SET) | - | 16 | - |
| | F. Superintendents & Quarters | - | 8 | - |
| | G. Superintendents & N.T. Quarters | - | 8 | - |
| | H. Warden & Deputy Warden Quarters | - | 6 | - |
| | I. Deputy Warden Quarters 4 No's | - | 32 | - |
| | J. Servant Quarters for Engineering. Hostels | - | 8 | - |
| | K. Officers' Quarters | - | 8 | - |
| | L. UDC'S & LDC'S Quarters | - | 8 | - |
| | M. Lecturers Quarters (IV SET) | - | 16 | - |
| | N. Attenders & Peons | - | 8 | - |

| | | | | |
|---|---|---|---|---|
| | Quarters | | | |
| | O. II Type I Quarters for Professors /Readers | - | 10 | - |
| | P. 4 Type I Quarters for Professors. Readers | - | 22 | - |
| | Q. 4 Type I Quarters for Lectures | - | 12 | - |
| | R. Teachers Hostel – 8 Blocks – 2 Quarters Each | - | 36 | - |
| | S. Teachers Quarters – 3 Blocks | - | 16 | - |
| 39 | HOSTEL OFFICES | - | 8 | - |
| 40 | STATE BANK OF INDIA | - | 18 | - |
| 41 | UNION BANK | - | 16 | - |
| 42 | INDIAN POST OFFICE | - | 14 | - |
| 43 | S V U AUDITORIUM | - | 12 | - |
| 44 | GYMNASIUM | 20 | - | - |

## 3. Electricity / Solar Power Consumption

| Name of Service | Service No | Contracted Load (KVA) | Category & Voltage Level (KV) | Available Transformer Capacity (KVA) | Name of the Building Connected to the Service |
|---|---|---|---|---|---|
| The Registrar, SVU, TPT | (HT-23,27,36,156, 246,301,529,2316) (LT- 174,175,176, 292,293,557232) | RYB- (Red, Yellow, Blue) | 160/200/400 | 250/350 | All Buildings of Sri Venkateswara University |

| S. No. | Service No | Contracted Load (KVA) | Category & Voltage Level (KV) | Available Transformer Capacity (KVA) | Months | Year | Electricity Consumption | Bill Amount (RS.) |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | Units | |
| 1 | (HT-23,27,36,156,246, 301,529,2316) (LT-174,175,176,292, 293,557232) | RYB-(Red, Yellow, Blue) | 160/200/400 | 250/350 | July | 2017 | 69,461 | 6,73,771.7/- |
| 2 | | | | | August | 2017 | 1,02,528 | 9,94,521.6/- |
| 3 | | | | | September | 2017 | 1,16,947 | 11,34,385.9/- |
| 4 | | | | | October | 2017 | 1,21,471 | 11,78,268.7/- |
| 5 | | | | | November | 2017 | 86,249 | 8,36,615.3/- |
| 6 | | | | | December | 2017 | 1,49,980 | 14,54,806/- |
| | | | | | | | Total Amount | 62,72,369.2/- |

| S. No. | Service No | Contracted Load (KVA) | Category & Voltage Level (KV) | Available Transformer Capacity (KVA) | Months | Year | Electricity Consumption | Bill Amount (RS.) |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | Units | |
| 1 | (HT-23,27,36,156,246, 301,529,2316) (LT-174,175,176,292, 293,557232) | RYB-(Red, Yellow, Blue) | 160/200/400 | 250/350 | January | 2018 | 1,65,706 | 16,40,489.4/- |
| 2 | | | | | February | 2018 | 1,82,101 | 18,02,799.2/- |
| 3 | | | | | March | 2018 | 1,91,145 | 18,92,335.5/- |
| 4 | | | | | April | 2018 | 1,82,746 | 18,09,185.4/- |
| 5 | | | | | May | 2018 | 1,70,707 | 16,89,999.3/- |
| 6 | | | | | June | 2018 | 1,60,928 | 15,93,187.2/- |
| 7 | | | | | July | 2018 | 1,49,736 | 14,82,386.4/- |
| 8 | | | | | August | 2018 | 1,51,024 | 14,95,137.6/- |
| 9 | | | | | September | 2018 | 1,78,258 | 17,64,754.2/- |
| 10 | | | | | October | 2018 | 1,75,010 | 17,32,599/- |
| 11 | | | | | November | 2018 | 1,54,119 | 15,25,778.1/- |
| 12 | | | | | December | 2018 | 1,66,636 | 16,49,696.4/- |
| | | | | | | | Total Amount | 2,00,78,347.7/- |

| S. No. | Service No | Contracted Load (KVA) | Category & Voltage Level (KV) | Available Transformer Capacity (KVA) | Months | Year | Electricity Consumption | Bill Amount (RS.) |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | Units | |
| 1 | (HT-23,27,36,156,246, 301,529,2316) (LT-174,175,176,292, 293,557232) | RYB-(Red, Yellow, Blue) | 160/200/400 | 250/350 | January | 2019 | 1,62,362 | 16,07,383.8/- |
| 2 | | | | | February | 2019 | 1,28,972 | 12,76,822.8/- |
| 3 | | | | | March | 2019 | 1,74,999 | 17,32,490.1/- |
| 4 | | | | | April | 2019 | 1,62,021 | 16,04,007.9/- |
| 5 | | | | | May | 2019 | 1,44,517 | 14,30,718.3/- |
| 6 | | | | | June | 2019 | 1,25,979 | 12,47,192.1/- |
| 7 | | | | | July | 2019 | 1,36,400 | 13,50,360/- |
| 8 | | | | | August | 2019 | 1,32,497 | 13,11,720.3/- |
| 9 | | | | | September | 2019 | 1,12,748 | 11,16,205.2/- |
| 10 | | | | | October | 2019 | 1,26,277 | 12,50,142.3/- |
| 11 | | | | | November | 2019 | 1,18,060 | 11,68,794/- |
| 12 | | | | | December | 2019 | 1,04,109 | 10,30,679.1/- |
| | | | | | | | Total Amount | 1,61,26,515.9/- |

| S. No. | Service No | Contracted Load (KVA) | Category & Voltage Level (KV) | Available Transformer Capacity (KVA) | Months | Year | Electricity Consumption | Bill Amount (RS.) |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | Units | |
| 1 | (HT- 23,27,36,156,246, 301,529,2316) (LT- 174,175,176, 292,293,557232) | RYB- (Red, Yellow, Blue) | 160/200/400 | 250/350 | January | 2020 | 1,42,154 | 12,79,386/- |
| 2 | | | | | February | 2020 | 1,53,087 | 13,77,783/- |
| 3 | | | | | March | 2020 | 2,91,533 | 26,23,797/- |
| 4 | | | | | April | 2020 | | |
| 5 | | | | | May | 2020 | 85,237 | 7,67,133/- |
| 6 | | | | | June | 2020 | 1,12,450 | 10,12,050/- |
| 7 | | | | | July | 2020 | 1,13,033 | 10,17,297/- |
| 8 | | | | | August | 2020 | 1,01,946 | 9,17,514/- |
| 9 | | | | | September | 2020 | 91,947 | 8,27,523/- |
| 10 | | | | | October | 2020 | 1,00,368 | 9,03,312/- |
| 11 | | | | | November | 2020 | 72,150 | 6,49,350/- |
| 12 | | | | | December | 2020 | 80,295 | 7,22,655/- |
| | | | | | | | Total Amount | 1,20,97,800/- |

| S. No. | Service No | Contracted Load (KVA) | Category & Voltage Level (KV) | Available Transformer Capacity (KVA) | Months | Year | Electricity Consumption | Bill Amount (RS.) |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | Units | |
| 1 | (HT-23,27,36,156,246,301,529,2316) (LT-174,175,176,292,293,557232) | RYB-(Red, Yellow, Blue) | 160/200/400 | 250/350 | January | 2021 | 1,06,727 | 10,24,579.2/- |
| 2 | | | | | February | 2021 | 1,36,716 | 13,12,473.6/- |
| 3 | | | | | March | 2021 | 1,64,217 | 15,76,483.2/- |
| 4 | | | | | April | 2021 | 1,36,231 | 13,07,817.6/- |
| 5 | | | | | May | 2021 | 1,49,528 | 14,35,468.8/- |
| 6 | | | | | June | 2021 | 1,26,305 | 12,12,528/- |
| 7 | | | | | July | 2021 | 1,24,432 | 11,94,547.2/- |
| 8 | | | | | August | 2021 | 1,10,349 | 10,59,350.4/- |
| 9 | | | | | September | 2021 | 1,03,624 | 10,25,877.6/- |
| 10 | | | | | October | 2021 | 1,04,914 | 10,07,174.4/- |
| 11 | | | | | November | 2021 | 42,017 | 4,03,363.2/- |
| 12 | | | | | December | 2021 | 87,843 | 8,43,292.8/- |
| | | | | | | | Total Amount | 1,34,02,956/- |

| S. No. | Service No | Contracted Load (KVA) | Category & Voltage Level (KV) | Available Transformer Capacity (KVA) | Months | Year | Electricity Consumption Units | Bill Amount (RS.) |
|---|---|---|---|---|---|---|---|---|
| 1 | (HT-23,27,36,156,246,301,529,2316) (LT-174,175,176,292,293,557232) | RYB-(Red, Yellow, Blue) | 160/200/400 | 250/350 | January | 2022 | 89,502 | 8,90,544.9 |
| 2 | | | | | February | 2022 | 1,04,219 | 10,36,979.05 |
| 3 | | | | | March | 2022 | 90,939 | 9,04,843.05 |
| 4 | | | | | April | 2022 | 1,04,064 | 10,35,436.8 |
| 5 | | | | | May | 2022 | 80,961 | 8,05,561.95 |
| 6 | | | | | June | 2022 | 95,572 | 9,50,941.4 |
| 7 | | | | | July | 2022 | 76,985 | 7,66,000.75 |
| 8 | | | | | August | 2022 | 88,917 | 8,84,724.15 |
| 9 | | | | | September | 2022 | 95,897 | 9,54,175.15 |
| Total Amount | | | | | | | | 82,29,207.2 |

## 5.Air Conditioning (ACs)

| S. NO. | BUILDING NAME | QUANTITY OF A/CS INSTALLED | CAPACITY OF A/C (IN TONS) |
|---|---|---|---|
| 1. | ADMINISTRATIVE BUILDING | 20 | 350 |
| 2. | PRAKASAM BHAVAN ARTS BLOCK | 10 | 210 |
| 3. | DDE BUILDING | 2 | 70 |
| 4. | JANARDHAN BHAVAN | - | 30 |
| 5. | OLD MBA BUILDING | 10 | 120 |
| 6. | PRESS BUILDING | - | 10 |
| 7. | PHYSICAL SCIENCES BLOCK | 30 | 230 |
| 8. | Dr. D.J. REDDY BHAVAN NATURAL SCIENCES BLOCK | 25 | 240 |
| 9. | GEOGRAPHY SCIENCES BLOCK | - | 80 |
| 10. | VAMANARAO BHAVAN | 10 | 110 |
| 11. | CIVIL ENGINEERING BUILDING | 15 | 70 |
| 12. | ECE BUILDING | 12 | 74 |
| 13. | CHEMICAL ENGINEERING BUILDING | 15 | 68 |
| 14. | MECHANICAL ENGINEERING BUILDING | 10 | 53 |
| 15. | EEE & CSE BUILDING | 14 | 69 |
| 16. | SVU LIBRARY | - | 70 |
| 17. | HEALTH CENTRE | - | 85 |
| 18. | PHYSICAL EDUCATION | - | 37 |
| 19. | LAW & LIBRARY SCIENCE | - | 40 |
| 20. | ORIENTAL RESEARCH INSTITUTE BUILDING | - | 62 |
| 21. | POPULATION STUDIES & BIO-TECHNOLOGY– (Lecture theatre Complex) | 6 | 1.5/2 |
| 22. | BIO-CHEMISTRY | 5 | 1.5/2 |

| | | | |
|---|---|---|---|
| 23. | MICROBIOLOGY | 2 | 1.5/2 |
| 24. | DST PURSE PROGRAM | 8 | 1.5/2 |
| 25. | VIROLOGY BUILDING | 6 | 1.5/2 |
| 26. | PHARMACY BUILDING | 3 | 1.5/2 |
| 27. | ANDHRA BANK SCHOOL OF MANAGEMENT | 6 | 1.5/2 |
| 28. | COMPUTER SCIENCE | 2 | 1.5/2 |
| 29. | SEAPS (AUDITORIUM OPP) | 7 | 1.5/2 |
| 30. | SVU COMPUTER CENTRE | 4 | 1.5/2 |
| 31. | USIC BUILDING | 2 | 1.5/2 |
| 32. | SVU CAMPUS SCHOOL | 1 | 1.5/2 |
| 33 | ANNAMAYYA BHAVAN | - | - |
| 34. | PRAKASAM RECREATION CENTRE | - | - |
| 35. | I.A.S.E BUILDING | 3 | 1.5/2 |
| 36. | Prof. CHOPPALA RATHNAM BHAVAN | 5 | 1.5/2 |
| 37. | QUARTERS | | |
| | a. Red buildings 6 No's | 6 | 1.5/2 |
| | b. Twin Quarters 12 No's | 12 | 1.5/2 |
| | c. Readers Quarters 8 No's (III SET) | - | - |
| | d. Lectures Quarters (I SET) | 1 | 1.5/2 |
| | e. Lectures Quarters (III SET) | 2 | 1.5/2 |
| | f. Superintendents & Quarters | 2 | 1.5/2 |
| | g. Superintendents & N.T. Quarters | 2 | 1.5/2 |
| | h. Warden & Deputy Warden Quarters | 1 | 1.5/2 |
| | i. Deputy Warden Quarters 4 No's | 4 | 1.5/2 |
| | j. Servant Quarters for Engineering | 1 | 1.5/2 |

| | | | |
|---|---|---|---|
| | k. Officers' Quarters | 1 | 1.5/2 |
| | l. UD<br>m. C'S & LDC'S Quarters | 1 | 1.5/2 |
| | n. Lecturers Quarters (IV SET) | 2 | 1.5/2 |
| | o. Attenders & Peons Quarters | 1 | 1.5/2 |
| | p. II Type I Quarters for Professors /Readers | 1 | 1.5/2 |
| | q. 4 Type I Quarters for Professors. Readers | 4 | 1.5/2 |
| | r. 4 Type I Quarters for Lectures | 4 | 1.5/2 |
| | s. Teachers Hostel – 8 Blocks – 2 Quarters Each | 8 | 1.5/2 |
| | t. Teachers Quarters – 3 Blocks | 3 | 1.5/2 |
| 38. | HOSTEL OFFICES | | |
| 39. | STATE BANK OF INDIA | 4 | 1.5/2 |
| 40. | UNION BANK | 4 | 1.5/2 |
| 41. | INDIAN POST OFFICE | 1 | 1.5/2 |
| 42. | ANNAPOORNA CANTEEN | 0 | - |

## 5. Mess

| 5.1. NO OF STUDENTS & MESS DETAILS OF SVU MEN'S HOSTELS ( Engineering ) Viswateja,Viswapragathi,Visweswara,Viswakarma | | | |
|---|---|---|---|
| **S. No.** | **Description** | **Mess- A** | **Mess- B** |
| 1 | **Capacity of the Meals Cooking PerSession** | 480 | 4650 |
| 2 | **No. of LPG Cylinders are used forcooking per day** | 03 | 04 |
| 3 | **Type of LPG (Domestic /Commercial** | Domestic | Domestic |
| 4 | **Boiler Operating Timings** | | |
| | **Breakfast (Timings)** | 07:00 am to 09:00 am | 07:00 am to 09:00 am |
| | **Lunch (Timings)** | 11:30 am to 02:00 pm | 11:30 am to 02:00 pm |
| | **Dinner (Timings)** | 07:00 pm to 09:00 pm | 07:00 pm to 09:00 pm |
| 5 | **No of Idly steam vessels in Kitchen** | 02 | 02 |
| 6 | **Quantity of Items cooked per session** | | |
| | **Rice (in Kgs)** | 65 | 65 |
| | **Dal (in kgs)** | 14 | 14 |
| | **Vegetables (in kgs)** | 45 | 45 |
| | **Milk (in ltrs)** | 65 | 65 |
| 7 | **No.Of LPG Stoves in Kitchen** | 04 | 04 |
| 8 | **No. Of Tawa stoves in Kitchen** | 02 | 02 |

## 5.2 NO OF STUDENTS & MESS DETAILS OF SVU MEN'S HOSTELS (Arts, Sciences, CM&CS, Pharmacy, Law)

| S. No. | Description | Mess- A (Blocks-A, B, F, I) | Mess-B (Block-C) | Mess-C (Block-D) | Mess-D (Block-E, G, J) | Mess-H (Block-H) |
|---|---|---|---|---|---|---|
| 1 | **Capacity of the Meals Cooking PerSession** | 285 | 322 | 390 | 170 | 220 |
| 2 | **No. of LPG Cylinders are used forcooking per day** | 2/3 | 02 | 2/3 | 2 | 2 |
| 3 | **Type of LPG (Domestic /Commercial** | Domestic | Domestic | Domestic | Domestic | Domestic |
| 4 | **Boiler Operating Timings** | | | | | |
| | **Breakfast (Timings)** | 07:00 am to 09:00 am | 07:00 am to 09:00 am | 07:00 am to 09:00 am | 07:00 am to 09:00 am | 07:00 am to 09:00 am |
| | **Lunch (Timings)** | 12:00 pm to 02:00 pm | 12:00 pm to 02:00 pm | 12:00 pm to 02:00 pm | 12:00 pm to 02:00 pm | 12:00 pm to 02:00 pm |
| | **Dinner (Timings)** | 07:00 pm to 09:00 pm | 07:00 pm To 09:00 pm | 07:00 pm to 09:00 pm | 07:00 pm to 09:00 pm | 07:00 pm to 09:00 pm |
| 5 | **No of Idly steam vessels in Kitchen** | 01 | 01 | 02 | 01 | 01 |
| 6 | **Quantity of Items cooked per session** | | | | | |
| | **Rice (in kgs)** | 60 | 60 | 80 | 35 | 35 -40 |
| | **Dal (in kgs)** | 10 | 10 | 10 | 07 | 07 |
| | **Vegetables (in kgs)** | 95/Session | 30 | 50 | 15 | 15/Session |
| | **Milk (in ltrs)** | 20 | 35 | 40 | 30 | 30 |
| 7 | **No.Of LPG Stoves in Kitchen** | 04 | 04 | 05 | 04 | 04 |
| 8 | **No. Of Tawa stoves in Kitchen** | 02 | 02 | 02 | 01 | 01 |

## 5.3 NO OF STUDENTS & MESS DETAILS OF SVU WOMEN'S HOSTELS

| S. No. | Description | Premises-I | | | Premises-II | | |
|---|---|---|---|---|---|---|---|
| 1 | **Capacity of the Meals Cooking PerSession** | 1180/1083 | | | 875/1050 | | |
| 2 | **No. of LPG Cylinders are used forcooking per day** | 03 | | | 05 | | |
| 3 | **Type of LPG (Domestic /Commercial** | Commercials & Domestic<br>1 Large 2 Small | | | Domestic 15 | | |
| 4 | **Boiler Operating Timings** | | | | | | |
| | **Breakfast (Timings)** | 5:30 am to 09:00 am | | | 5:30 am to 09: am | | |
| | **Lunch (Timings)** | 10:00 am to 1:00 am | | | 10:00 am to 11:30 am | | |
| | **Dinner (Timings)** | 4:00 am to 6:00 pm | | | 4:00 pm to 6:00 pm | | |
| 5 | **No of Idly steam vessels in Kitchen** | 02 | | | 03 | | |
| 6 | **Quantity of Items cooked per day.** | | | | | | |
| | **Rice (in Kgs)** | 60 | | | 130 | | |
| | **Dal (in kgs)** | 17 | | | 22 | | |
| | **Vegetables (in kgs)** | 250 | | | 170 | | |
| | **Milk (in ltrs)** | 120 | | | 185 | | |
| 7 | **No. Of LPG Stoves in Kitchen** | 3 Burners | 2 Burners | 1Burner | 3 Burners | 2Burners | 1Burner |
| | | 1 | 1 | 1 | 2 | 2 | 1 |
| 8 | **No. Of Tawa stoves in Kitchen** | 3 | | | 3 | | |

6.

# JUNGLE REPORT

Total Number of Trees - 48,257

Total Number of Shrubs - 6,000

Herbs -29,358

Rare Species - 18

Overall this initiative will have to step forward towards contributing to India's nationally determined goals and achieving Carbon Neutrality by Sri Venkateswara University.

The Father of the Nation, Gandhi ji emphasized that "The Earth, the air, the land and the water are not an inheritance from our forefathers but on loan from our children". In the true spirit of Mahatma's insightful and prudent message,. began its march on the road that is still considered less travelled, the road leading towards the goal of re-visiting the Green Revolution by adopting a Green Policy that would transform the whole campus into "Carbon-neutral", "Eco-friendly" and Green campus.

# రాయలపురం గ్రామ పంచాయతీ కార్యాలయము

తేదీ. 18.01.2021

శ్రీ వెంకటేశ్వర విశ్వవిద్యాలయం ప్రిన్సిపాల్ గారికి మా గ్రామము తరపున నమస్కారములు.శ్రీ వెంకటేశ్వర విశ్వవిద్యాలయము నుండి మా గ్రామానికి విచ్చేసిన విద్యార్థిని , విద్యార్థులు చేపట్టిన కార్యక్రమ వివరాలు

ఉచిత వైద్య శిబిరాలు , ఉచితముగా మందుల పంపిణి , వైద్య శిబిరాల అవగాహన సదస్సులు , రక్తదాన ఆవశ్యకత, గ్రామ పరిసరాల శుభ్రత మరియు పరిశుభ్రత , నీటి సంరక్షణ విధానాలు వ్యర్థ పదార్థాలు సేకరణ మరియు దాని నిర్వాహణ , వ్యవసాయ సంబంధిత అనేక అంశాల పై అవగాహన సదస్సులు మరియు నిర్మూలన కార్యక్రమాలు, గ్రామ ప్రజలకు ఓటు హక్కు దాని యొక్క విశిష్టత పై అవగాహన కలిపించడం, గర్భిణీ స్త్రీలకు ప్రత్యేక వైద్య శిబిరాలు నిర్వహించి వారికీ ఉచిత మందుల పంపిణి, బాలికలకు విద్య ఆవశ్యకత, విద్యార్థిని విద్యార్థులకు మరియు తల్లిదండ్రులకు పోషక ఆహార పద్ధతులు మీద అవగాహన కల్పించటం, స్త్రీలకు ప్రత్యేక కార్యక్రమాలైనటువంటి పేపర్ ప్లేట్స్ తయారీ, ఎంబ్రాయిడరీ, సారీ రోలింగ్, ఫాబ్రిక్ పెయింటింగ్ వంటి నైపుణ్య శిక్షణ కార్యక్రమాలు నిర్వహించటం ద్వారా వారి యొక్క నెలవారీ ఆదయ వనరులను పెంచటం జరిగింది.

ఈ కార్యాక్రమాల నిర్వహణ గత నాలుగు సంవత్సరములుగా జరిపించటం వలన మా గ్రామ పురోభివృద్ధి కి పాటుపడుతున్న విశ్వవిద్యాలయ అధికారులకు ధన్య వాదములు తెలుపుకుంటున్నాము.

ఇట్లు,

p. Venkataiah

SARPANCH
Rayalapuram Grama Panchayath
Chandragiri Mandal

# అగరాల గ్రామ పంచాయతీ కార్యాలయము

తేదీ. 08.01.2021

శ్రీ వెంకటేశ్వర విశ్వవిద్యాలయ అధ్యాపిక మరియు విద్యార్థిని విద్యార్దునులచే మా గ్రామము నందు క్రింద కనపరిచిన వివిధ కార్యక్రమాలను విజయ వంతముగా నిర్వహించటము వలన మా గ్రామ ప్రజలకు ఎన్నో విధాలా లాభము చేకూరినది.

1. మా గ్రామము నందు ఆరోగ్య అవగాహనా సదస్సులు మరియు ఉచిత వైద్య శిబిరాలు చేయుట వలన మా గ్రామ ప్రజలకు ఆరోగ్య ప్రరిరక్షణ పై అవగాహనా కలిగింది.

2. మా గ్రామమము నందు గర్భిణీ స్త్రీలకూ, పిల్లలకు, బడికి వెళ్తున్న విద్యార్థిని విద్యార్థులకు ఉచిత వైద్య శిబిరాలు ద్వారా, తిరుపతి నుండి సంబంధిత వైద్యుల చేత ఉచిత మందుల పంపిణి చేయడం జరిగింది.

3. విశ్వవిద్యాలయ విద్యార్థిని విద్యార్థులు చే మా గ్రామ ప్రజలకు కాగితపు కవర్లు తయారీ పై నైపుణ్య శిక్షణ కార్యక్రమము నిర్వహించి మా గ్రామ ప్రజలను ప్రోత్సహించడం వలన వారి యొక్క ఆదయ వనరులు పెంచడం జరిగింది.

4. ఇదే విధముగా గ్రామ అభివృద్ధికి పలురకాల కార్యక్రమాలలో శ్రీ వెంకటేశ్వర విశ్వవిద్యాలయ అధ్యాపకులు విద్యార్థిని విద్యార్థులు పాల్గొని వారి సహాయ సహకారములు అందించి మా గ్రామ అభివృధికి ఎంతో సహాయము చేయడము జరిగింది.

5. గత గడిచిన మూడు, నాలుగు సంవత్సరాలలో మా గ్రామాభివృద్ధి మరియు మా గ్రామ పరిసర ప్రాంతాలు అన్ని చాల మెరుగుపడినందుకు విశ్వవిద్యాలయ సిబ్బందికీ మేము ఎంతగానో రుణపడి ఉన్నాము.

ఇట్లు,

అగరాల గ్రామ పంచాయతీ సర్పంచ్

SARPANCH
AGARALA GRAMA PANCHAYATI
CHANDRAGIRI MANDALAM
Cell. 9849677399

# పిచ్చినాయుడుపల్లి  గ్రామ పంచాయతీ కార్యాలయము

తేదీ.22.01.2021

శ్రీ వెంకటేశ్వర విశ్వవిద్యాలయ బృందానికి మా గ్రామములో చేపట్టిన వివిధ రకాల అభివృద్ధి మరియు సంక్షేమ కార్యక్రమాలను నిర్వహించిన వారికీ ధన్యవాదములు తెలుపుకుంటూ

గ్రామము నందు పరిశుద్ధ కార్యక్రమాలు, వ్యర్థ పథార్దల నిర్ములన, విద్య, వైద్యం, ఆరోగ్యము, వంటి కార్యక్రమాలు పై అవగాహనా కల్పించటం, ఉచిత వైద్య శిబిరం నిర్వహించటం, ఉచిత మందుల పంపిణి మరియు పిల్లలకు, గర్భిణీ స్త్రీలకూ ప్రేత్యక వైద్య శిబిరాలు నిర్వహించి వారికీ ఆరోగ్య సంరక్షణ విధానాలను నేర్పించటం వంటి కార్యక్రమాలు గత  మూడు, నాలుగు ఏళ్లలో గ్రామాభివృద్ధి సంబందించిన కార్యక్రమాలు ఎన్నో చేయటం వలన మా గ్రామ ప్రజలకు ఎంతో ఉపకారము జరిగింది. జాతీయ సేవ పథకం విద్యార్థుల బృందము చే మా గ్రామము నందు రోడ్లు వేయటం, కాలువలు శుభ్రము చేయటం, నీటి పరిరక్షణ విధానాలను విశిదీకరించడం వంటి కార్యక్రమాల వలన మా గ్రామ ప్రజలు ఎంతో చైతన్యవంతులయ్యారు. ఇటువంటి కార్యక్రమాలను విశ్వవిద్యాలయ విద్యార్థిని విద్యార్థులు ఎన్నో చేయాలనీ తద్వారా మా గ్రామ అభివృద్ధికి తోడ్పడుతారు ఆని కోరుకుంటున్నారు.

ఇట్లు,

M. Bhaskar

SARPANCH
Pichinaidupalli Grama Panchayath
Chandragiri Mandal

# తొండవాడ  గ్రామ పంచాయతీ కార్యాలయము

తేదీ. 05.01.2021

శ్రీ వెంకటేశ్వర విశ్వవిద్యాలయ అధికారులకు నమస్కారాలు. శ్రీ వెంకటేశ్వర విశ్వవిద్యాలయము నుండి వచ్చిన విద్యార్థిని విద్యార్థులు మరియు జాతీయ సేవ పథకం విద్యార్థులు మా గ్రామము నందు ఎన్నో రకాల కార్యక్రమాల నిర్వాహణ చేయడం జరిగింది.

1. విద్యార్థిని విద్యార్థులు వ్యవసాయ సంబంధిత నూతన పద్ధతులు, పంట మార్పిడి విధానాలు మరియు భూమిని సారవంతము చేయడం సంబంధిత మందుల వాడకం, మరియు సేంద్రియ వ్యవసాయ పద్ధతుల కార్యక్రమాల వివరాలను మా గ్రామ వ్యవసాయదారులకు వివరించటం వలన వ్యవసాయ సంబంధిత కార్యక్రమాలు ఊపందుకోవడం జరిగింది. ఈ కార్యక్రమానికి

శ్రీ వెంకటేశ్వర విశ్వవిద్యాలయము అధికారులతో పాటు ఆంధ్ర ప్రదేశ్ వ్యవసాయ జిల్లా సంచాలకులు కూడా కార్యక్రమాలలో పాల్గోని వ్యవసాయ ఆధారిత నిర్వాహణ ఎన్నో సూచనలు ఇవ్వడం జరిగింది.

2. మా గ్రామములో విశ్వవిద్యాలయ  అధికారులు సంబంధిత జిల్లా యంత్రాగంముతో పాటు కలిసి విద్య, వైద్యము, ఆరోగ్యము, వృత్తివిద్యా, నైపుణ్యాలు, స్త్రీలకూ ప్రేత్యేక శిక్షణలు సంబంధిత కార్యక్రమాలను 2017 నుండి నిరంతరాయంగా చేస్తునందుకు వారికీ మా ధన్యవాదములు.

ఇట్లు,

తొండవాడ గ్రామ పంచాయతీ సర్పంచ్

# శ్రీ వెంకటేశ్వర విశ్వవిద్యాలయం

# SRI VENKATESWARA UNIVERSITY

**AGARALA VILLAGE**

Income Generating Programme - Saree Rolling & Polishing on 21.07.2017



# శ్రీ వెంకటేశ్వర విశ్వవిద్యాలయం

# SRI VENKATESWARA UNIVERSITY

**TONDAVADA VILLAGE**

Income Generating Programme - Organic Fertilizers on 05.09.2017



# శ్రీ వెంకటేశ్వర విశ్వవిద్యాలయం

# SRI VENKATESWARA UNIVERSITY

**RAYALAPURAM VILLAGE**

Income Generation Programme - Agarbathi Making on 13-12-2017



# శ్రీ వెంకటేశ్వర విశ్వవిద్యాలయం

# SRI VENKATESWARA UNIVERSITY

**PICHINAYUDUPALLI VILLAGE**

Income Generating Programme - Paper Plates Making - 23.01.2018



# శ్రీ వెంకటేశ్వర విశ్వవిద్యాలయం

# SRI VENKATESWARA UNIVERSITY

**PICHINAYUDUPALLI VILLAGE**

Income Generating Programme - Paper Bags Making on 09.03.2018



# శ్రీ వెంకటేశ్వర విశ్వవిద్యాలయం

# SRI VENKATESWARA UNIVERSITY

**AGARALA VILLAGE**

Income Generating Programme - Fabric Painting & Hand Embroidery on 24.04.2018



# శ్రీ వెంకటేశ్వర విశ్వవిద్యాలయం

# SRI VENKATESWARA UNIVERSITY

**TONDAVADA VILLAGE**

Income Generating Programme - Basics in Tailoring on 16.06.2018



# శ్రీ వెంకటేశ్వర విశ్వవిద్యాలయం

# SRI VENKATESWARA UNIVERSITY

**AGARALA VILLAGE**

Income Generating Programme - Eco Friendly Cutlery 23.07.2018



# శ్రీ వెంకటేశ్వర విశ్వవిద్యాలయం

# SRI VENKATESWARA UNIVERSITY

**TONDAVADA VILLAGE**

Income Generating Programme - Paper Bags Making on 12.08.2018



# శ్రీ వెంకటేశ్వర విశ్వవిద్యాలయం

# SRI VENKATESWARA UNIVERSITY

**AGARALA VILLAGE**

Income Generating Programme - AGARABATHI Making on 18.09.2018



# శ్రీ వెంకటేశ్వర విశ్వవిద్యాలయం

# SRI VENKATESWARA UNIVERSITY

**PICHINAIDUPALLI VILLAGE**

Income Generating Programme - Saree Rolling & Polishing on 21.10.2018



# శ్రీ వెంకటేశ్వర విశ్వవిద్యాలయం

# SRI VENKATESWARA UNIVERSITY

**TONDAVADA VILLAGE**

AWARENESS ON PREGNANCY FOR LADIES - 17.11.2018



# శ్రీ వెంకటేశ్వర విశ్వవిద్యాలయం

# SRI VENKATESWARA UNIVERSITY

## PICHINAIDUPALLI VILLAGE

Income Generating Programme - 27.12.2018






# శ్రీ వెంకటేశ్వర విశ్వవిద్యాలయం

# SRI VENKATESWARA UNIVERSITY

**TONDAVADA VILLAGE**

Income Generating Programme - Embroidery Skills on 22.01.2019



# శ్రీ వెంకటేశ్వర విశ్వవిద్యాలయం

# SRI VENKATESWARA UNIVERSITY

## AGARALA & TONDAVADA VILLAGE

Tree Plantation Programme on 23.03.2019 &25.03.2019





# ARYALAPURAM VILLAGE

## PANCHGAVYA - 2019

వరి, రకరకాల కూరగాయలు, పండ్ల పంటలైన మామిడి, అరటి, గువా, ఆమ్ల సున్నం నగదు పంటలైన చెరకు , పసుపు, మల్లి, మొరింగా, తోటల పంటలు పంచకావ్య దరఖాస్తుకు చాలా బాగా స్పందించాయి. సోమసుందరం మరియు ఇతరులు , (2004) పంచకవ్యలో ఇండోల్ ఎసిటిక్ యాసిడ్, గిబ్బెరాలిక్ యాసిడ్ మరియు సైటోకినిన్ వంటి వృద్ధి నియంత్రణ పదార్థాలు మరియు అవసరమైన మొక్కల పోషకాలు ఉన్నాయని నివేదించింది. ఇది ప్రయోజనకరమైన , ప్రభావవంతమైన సూక్ష్మ జీవులు , ప్రధానంగా లాక్టిక్ యాసిడ్ బ్యాక్టీరియా , ఈస్ట్, ఆక్టినోమైసెట్స్, కిరణజన్య సంయోగక్రియ మరియు కొన్ని ఫలీంద్రాలతో పాటు అజోటోబ్యాక్టర్ అజోస్పిరిల్లమ్ మరియు ఫాస్ఫోబ్యాక్టీరియం వంటి ప్రయోజనకరమైన మరియు నిరూపితమైన జీవ ఎరువులను కలిగి ఉంటుంది. జయశ్రీ మరియు జార్జ్ (2006)

### పంచగవ్య

### తయారీ మరియు ఉపయోగాలు




విస్తరణ అధ్యయన కేంద్రం

(CENTRE FOR EXTENSION STUDIES)

శ్రీ వెంకటేశ్వర విశ్వవిద్యాలయం

తిరుపతి

డిసెంబర్ -2019

### వేప ద్రావణాలు

తయారు చేయు విధానం : వేపాకులను పెస్తులాగ చేసి గిన్నెలో ,నీరు మరిగించి వేపాకు పేస్టుని కలిపి మరిగించి చల్లార్చాలి ఆ నీరు . . చల్లారిన తరువాత వడకట్టాలి ఈ వేపాకు నీటితో మూడురకాల ద్రావణాలను తయారు చేసుకోవచ్చు.

1. ఏదైనా నూనెని లీటరు (వేరుసెనగ ,నువ్వులు ,కొబ్బరి) .వేపాకు నీటిలో అరకఅప్పు నునే పోసి బాగా కలియబెట్టాలి
2. పచ్చిమిరపకాయలు వెల్లుల్లి పేస్టుని వేపాకు రసం లో కలిపి ఒక్కరోజు తరువాత వడగట్టాలి.
3. వేపాకు పేస్టులో ఒక లీటరు నీరు, పొగాకు కాడలను కలపాలి. దినిని ఒక వారం అలాగే ఉంచి తరువాత వడకట్టాలి.

**ప్రయోజనాలు:**

ఈ ద్రావణాలను ఎరువు లాగా వాడవచ్చు. ఈ ద్రావనము చేదు వలన పురుగులను చంపకుండా అవి పారిపోయే లా చేస్తుంది. పునరుత్పత్తి లేకుండా చేస్తుంది. వీటిని ఇంటి పంటలకు ఉపయోగించవచ్చు.

### వేపాకుతో పురుగుల మందులు

### తయారీ మరియు ఉపయోగాలు




విస్తరణ అధ్యయన కేంద్రం

(CENTRE FOR EXTENSION STUDIES)

శ్రీ వెంకటేశ్వర విశ్వవిద్యాలయం

తిరుపతి

డిసెంబర్ -2019

మహిళా సాధికారత: రేషన్ కార్డుల జారీ కోసం 18 ఏళ్లు లేదా అంతకంటే ఎక్కువ వయస్సు ఉన్న ఇంటి పెద్ద మహిళ ఇంటి అధిపతి.

గ్రీవెన్స్ రిడ్రెసల్ మెకానిజం: జిల్లా మరియు రాష్ట్ర స్థాయిలో ఫిర్యాదుల పరిష్కార విధానం. ప్రస్తుత యంత్రాలను ఉపయోగించటానికి లేదా ప్రత్యేక యంత్రాంగాన్ని ఏర్పాటు చేయడానికి రాష్ట్రాలకు సౌలభ్యం ఉంటుంది.

ఇంట్రా-స్టేట్ రవాణా ఖర్చులు మరియు ఆహార ధాన్యాలు మరియు ఎఫ్‌పిఎస్ డీలర్ల మార్జిన్ నిర్వహణ: రాష్ట్రంలోని ఆహార ధాన్యాల రవాణా, దాని నిర్వహణ మరియు ఎఫ్‌పిఎస్ డీలర్ల మార్జిన్ నిబంధనల ప్రకారం రాష్ట్రాలు వారు చేసిన ఖర్చులను తీర్చడంలో కేంద్ర ప్రభుత్వం సహాయం చేస్తుంది. ఈ ప్రయోజనం కోసం రూపొందించబడింది.

పారదర్శకత మరియు జవాబుదారీతనం: పారదర్శకత మరియు జవాబుదారీతనం ఉండేలా పిడిఎస్‌కు సంబంధించిన రికార్డులను బహిర్గతం చేయడం, సామాజిక ఆడిట్లు మరియు విజిలెన్స్ కమిటీలను ఏర్పాటు చేయడం వంటివి ఏర్పాటు చేయబడ్డాయి.

ఆహార భద్రతా భత్యం: అర్హత కలిగిన ఆహార ధాన్యాలు లేదా భోజనం సరఫరా చేయకపోతే అర్హత కలిగిన లబ్ధిదారులకు ఆహార భద్రత భత్యం కల్పించడం.

### జాతీయ ఆహార భద్రత పథకం



విస్తరణ అధ్యయన కేంద్రం

(CENTRE FOR EXTENSION STUDIES)

శ్రీ వెంకటేశ్వర విశ్వవిద్యాలయం

తిరుపతి

డిసెంబర్ -2019

2. వ్యవసాయం కోసం కార్యక్రమాలను ప్రణాళిక మరియు అమలు చేయడంలో రాష్ట్రాలకు వశ్యత మరియు స్వయంప్రతిపత్తిని అందించడం
3. జిల్లాలు, రాష్ట్రాలకు వ్యవసాయ ప్రణాళికల తయారీ ఉండేలా చూడటం ముఖ్యమైన పంటలలో దిగుబడి అంతరాలను తగ్గించే లక్ష్యాన్ని సాధించడంరైతులకు రాబడిని పెంచడానికి
4. వ్యవసాయం మరియు అనుబంద రంగాలను సమగ్ర పద్ధతిలో పరిష్కరించడం

### రాష్ట్రీయ కృషి వికాస యోజన

### రాష్ట్రీయ కృషి వికాస యోజన



విస్తరణ అధ్యయన కేంద్రం

(CENTRE FOR EXTENSION STUDIES)

శ్రీ వెంకటేశ్వర విశ్వవిద్యాలయం

తిరుపతి

డిసెంబర్ -2019

రాష్ట్రీయ కృషి వికాస యోజన నేపథ్యం

వ్యవసాయం మరియు అనుబంద రంగాలలో నెమ్మదిగా వృద్ధి చెందుతున్న ఆందోళనతో, జాతీయ అభివృద్ధి మండలి (ఎన్‌డిసి) , 2007 మే 29 న జరిగిన సమావేశంలో ప్రత్యేక అదనపు కేంద్ర సహాయ పథకం (ఆర్‌కెవివై) ప్రారంభించాలని నిర్ణయించింది. రైతుల అవసరాలను తీర్చడానికి వ్యవసాయ అభివృద్ధి వ్యూహాలను తిరిగి మార్చాలని ఎన్‌డిసి తీర్మానించింది మరియు వ్యవసాయాన్ని పునరుజ్జీవింపచేయడానికి ఒక వ్యూహాన్ని రూపొందించాలని కేంద్ర , రాష్ట్ర ప్రభుత్వాలకు పిలుపునిచ్చింది. 11 వ ప్రణాళికలో వ్యవసాయ రంగంలో 4 శాతం వార్షిక వృద్ధిని సాధించాలన్న నిబద్ధతను ఎన్‌డిసి పునరుద్ఘాటించింది.

# TONDAVADA VILLAGE

## JEEVAMRUTHAM - 2019



**ప్రయోజనాలు:**

జీవామృతం చల్లిన భూమిలో వానపాములు చైతన్యవంతమై అన్ని రకాల పోషకాలను పంటలకు అందించేందుకు నిరంతరం శ్రమిస్తాయి. జీవనద్రవ్యంతో కూడిన భూసారాన్ని పరిరక్షించుకోవడం అవసరం. మెట్ట పొలాల్లో ఆచ్ఛాదనకు గడ్డి లేకపోతే, భూమిని పైపైన దుక్కి చేసి మట్టి పెళ్లలతో ఆచ్ఛాదన కల్పించవచ్చు. ప్రకృతి వ్యవసాయంలో ఎటువంటి ఎరువూ వేయనక్కర లేదు. దేశీ లేదా నాటు ఆవు పేడ, మూత్రంతో తయారైన 'జీవామృతం'లో కోటానుకోట్ల సూక్ష్మజీవులు ఉంటాయి. ద్రవ జీవామృతం పంటకు బలాన్ని ఇస్తుంది. ఈ జీవామృతమును ద్రవ, ఘన రూపాలలో తయారు చేసుకోవచ్చు . మనం పంటకు నీరు పెట్టె కాల్వ దగ్గర లేదా పంటలో దీనిని పోసుకోవాలి. ఈ విధంగా తయారు చేసుకున్న మిశ్రమం ఒక ఎకరాకు పనిచేస్తుంది.

**జీవామృతం**

**తయారీ మరియు ఉపయోగాలు**




**విస్తరణ అధ్యయన కేంద్రం**

(CENTRE FOR EXTENSION STUDIES)

**శ్రీ వెంకటేశ్వర విశ్వవిద్యాలయం**

**తిరుపతి**

**డిసెంబర్ -2019**

ఎ పి ఎం ఐ పి ప్రాజెక్టు కింద పార్ట్ లిస్ట్ చేయబడిన కంపెనీలు

1. ఇపిసి ఇండస్ట్రీ లిమిటెడ్
2. జైన్ ఇరిగేషన్ సిస్టం లిమిటెడ్
3. ప్రీమియర్ ఇరిగేషన్ ఎక్విప్ మెంట్ లిమిటెడ్
4. నాగార్జున ఫార్మా ఇండియా లిమిటెడ్
5. పరికిత్ ఇండస్ట్రీస్ లిమిటెడ్
6. నేతాఫిమ్ ఇరిగేషన్ ఇండియా ప్రై. లిమిటెడ్
7. ప్లాస్ట్రో ప్లాసన్ ఇండస్ట్రీస్ (ఇండియా) లిమిటెడ్ లబ్దిదారుల ఎంపిక విధానం

మైక్రో ఇరిగేషన్ సిస్టమ్స్ సఫ్ చేసేవారు ఆయా గ్రామాలకు చెందిన ఉద్యానవన వ్యవసాయ/పట్టు పరిశ్రమ/ చెరకు డిపార్ట్ మెంట్ వారు కూడా సర్వేను పూర్తిచేసి అందుకు సంబంధించిన లిస్టును తయారు చేయవలసి ఉంటుంది. ఆ తయారు కాలడిన లిస్ట్' అర్హత పొందిన రైతుల వివరాలు మరియు భూమికి సంబంధించిన వివరాలు, ఆ భూమిలో ఇంతకు ముందు పండించిన పంట వివరాలు / అలాగే పండించబోయే పంటల వివరాలు పొందుపర్చాలి. మైక్రో ఇరిగేషన్ సిస్టం యొక్క అంచనా విలువ కూడా తెలియజేయాలి. మైక్రో ఇరిగేషన్ సిస్టం ఏర్పాటుకు సంబంధించి ఆయా రైతుల నుండి అంగీకార పత్రాలు పొందవలసి ఉంటుంది.

**డ్రిప్ ఇరిగేషన్**

**సూక్ష్మనీటి పారుదల పథకం**



**విస్తరణ అధ్యయన కేంద్రం**

(CENTRE FOR EXTENSION STUDIES)

**శ్రీ వెంకటేశ్వర విశ్వవిద్యాలయం**

**తిరుపతి**

**డిసెంబర్ -2019**

**మౌలిక సదుపాయాలు**

ప్రతి అంగన్వాడి కేంద్రం లో ఒక బీరువా, ఒక టేబులు, ఒక కుర్చీ, జాతీయ జండా, ప్రధమ చికిత్స కిట్, త్రాగునీటి సదుపాయం, ఆరోగ్య కార్డులు, పెరుగుదల చార్టులు, రికార్డులు, మరియు మరుగు దొడ్డి సదుపాయాలు ఉండాలి.

**ప్రయోజనాలు**

దశాబ్దాల ఆకట్టుకునే వృద్ధి ఉన్నప్పటికీ, భారతదేశంలో వైద్యుల కొరత ఉంది. 2013 లో డాక్టర్ జనాభా నిష్పత్తి 1: 1800; సిఫార్సు చేసిన స్థాయి 1: 1000. అంగన్వాడీ వ్యవస్థ ద్వారా, స్థానిక జనాభాకు సరసమైన మరియు అందుబాటులో ఉన్న ఆరోగ్య సంరక్షణను అందించే లక్ష్యాన్ని చేరుకోవడానికి దేశం ప్రయత్నిస్తోంది. అదే గ్రామీణ ప్రాంతంలో నివసిస్తున్న వైద్యుల కంటే అంగన్‌వాడీ కార్మికులకు ప్రయోజనం ఉంది, ఇది వారికి ప్రాంతంలోని ఆరోగ్య స్థితిపై అవగాహన కల్పిస్తుంది మరియు సమస్యల కారణాన్ని గుర్తించడంలో మరియు వారిని ఎదుర్కోవడంలో సహాయపడుతుంది. వారు మంచి సామాజిక నైపుణ్యాలను కూడా కలిగి ఉంటారు మరియు అందువల్ల స్థానిక ప్రజలతో మరింత సులభంగా సంభాషించవచ్చు.

**అంగన్‌వాడీ కేంద్రాల ప్రాముఖ్యత**



**విస్తరణ అధ్యయన కేంద్రం**

(CENTRE FOR EXTENSION STUDIES)

**శ్రీ వెంకటేశ్వర విశ్వవిద్యాలయం**

**తిరుపతి**

**డిసెంబర్ -2019**

***" స్వస్థ ధారా. ఖేత హరా. "*** - ఆరోగ్యకరమైన భూమి. గ్రీస్ ఫామ్ .

నేల ఆరోగ్యం యొక్క ప్రస్తుత స్థితిని అంచనా వేయడానికి మరియు కాలక్రమేణా ఉపయోగించినప్పుడు, భూ నిర్వహణ ద్వారా ప్రభావితమైన నేల ఆరోగ్యంలో మార్పులను నిర్ణయించడానికి ఒక నేల ఆరోగ్య కార్డు ఉపయోగించబడుతుంది. నేల ఆరోగ్య కార్డు నేల ఆరోగ్య సూచికలను మరియు అనుబంధ వివరణాత్మక పదాలను ప్రదర్శిస్తుంది. సూచికలు సాధారణంగా రైతుల ఆచరణాత్మక అనుభవం మరియు స్థానిక సహజ వనరుల పరిజ్ఞానంపై ఆధారపడి ఉంటాయి. సాంకేతిక లేదా ప్రయోగశాల పరికరాల సహాయం లేకుండా అంచనా వేయగల నేల ఆరోగ్య సూచికలను కార్డు జాబితా చేస్తుంది.

సాయిల్ హెల్త్ కార్డ్ (ఎస్‌హెచ్‌సి) అనేది వ్యవసాయ మరియు రైతు సంక్షేమ మంత్రిత్వ శాఖ ఆధ్వర్యంలోని వ్యవసాయ మరియు సహకార శాఖచే ప్రోత్సహించబడిన భారత ప్రభుత్వ పథకం. ఇది అన్ని రాష్ట్ర మరియు కేంద్ర పాలిత ప్రభుత్వాల వ్యవసాయ శాఖ ద్వారా అమలు చేయబడుతోంది.

**సాయిల్ హెల్త్ కార్డ్స్**




**విస్తరణ అధ్యయన కేంద్రం**

(CENTRE FOR EXTENSION STUDIES)

**శ్రీ వెంకటేశ్వర విశ్వవిద్యాలయం**

**తిరుపతి**

**డిసెంబర్ -2019**

| 2021 | | |
|---|---|---|
| AGARALA | TONDAVADA | RAYALAPURAM |
| సహజ సస్య రక్షణ పద్ధతులు<br>  <br>విస్తరణ అధ్యయన కేంద్రం<br>శ్రీ వెంకటేశ్వర విశ్వవిద్యాలయం, తిరుపతి<br>జనవరి- 2021 | భారతదేశంలో స్త్రీల హక్కులు – చట్టాలు<br>  <br><br>విస్తరణ అధ్యయన కేంద్రం<br>శ్రీ వెంకటేశ్వర విశ్వవిద్యాలయం ,తిరుపతి<br>డిసెంబర్2021- | లింగ సమానత్వం – నిర్వచనం పరిచయం<br>  <br>విస్తరణ అధ్యయన కేంద్రం<br>శ్రీ వెంకటేశ్వర విశ్వవిద్యాలయం, తిరుపతి<br>డిసెంబర్-2021 |

# శ్రీ వెంకటేశ్వర విశ్వవిద్యాలయం

# SRI VENKATESWARA UNIVERSITY

## AGARALA VILLAGE

Blood Donation Camp - 11.11.2017



# శ్రీ వెంకటేశ్వర విశ్వవిద్యాలయం

# SRI VENKATESWARA UNIVERSITY

**RAYALAPURAM VILLAGE**

Blood Donation Camp- 14.4.2018






# శ్రీ వెంకటేశ్వర విశ్వవిద్యాలయం

# SRI VENKATESWARA UNIVERSITY

## PICHINAIDUPALLI VILLAGE

Blood Donation Camp - 16.04.2019






# శ్రీ వెంకటేశ్వర విశ్వవిద్యాలయం

# SRI VENKATESWARA UNIVERSITY

**TONDAVADA VILLAGE**

Blood Donation Camp - 04.01.2021



# శ్రీ వెంకటేశ్వర విశ్వవిద్యాలయం

# SRI VENKATESWARA UNIVERSITY

**RAYALAPURAM VILLAGE**

Tree plantation & Road formation - 18.8.2017



# శ్రీ వెంకటేశ్వర విశ్వవిద్యాలయం

# SRI VENKATESWARA UNIVERSITY

**AGARALA VILLAGE**

Voters day - 25.01.2020



# శ్రీ వెంకటేశ్వర విశ్వవిద్యాలయం

# SRI VENKATESWARA UNIVERSITY

**RAYALAPURAM VILLAGE**

Swatch Bharath - 05.08.2018



# శ్రీ వెంకటేశ్వర విశ్వవిద్యాలయం

# SRI VENKATESWARA UNIVERSITY

**TONDAVADA VILLAGE**

Swatch Bharath - 16.07.2019






# శ్రీ వెంకటేశ్వర విశ్వవిద్యాలయం

# SRI VENKATESWARA UNIVERSITY

## AGARALA VILLAGE

Tree Plantation - 05.06.2019






# శ్రీ వెంకటేశ్వర విశ్వవిద్యాలయం

# SRI VENKATESWARA UNIVERSITY

Medical camp - 18.10.2018

| AGARALA VILLAGE | PICHINAIDUPALLI VILLAGE |
| --- | --- |
|  |  |

# VILLAGE ADOPTION -A BEST PRACTICE OF SRI VENKATESWARA UNIVERSITY

**Mission of the University :**
Sri Venkateswara University was established with a Mission to impart Higher Education among the students of the locality and to create an environment for the intellectual, ethical, moral and physical upliftment of the people, by preserving their heritages and exposing the students to modern technologies to make them aware of their rights and duties for the betterment of the society.

**Vision of the University :**
To strengthen the communities with the spirit of Higher Education by upholding the ethos of intellectuality and value orientations for a sustainable society

**The Context:**

Sri Venkateswara University, since its inception focuses on building a strong linkage with the people of the neighbouring villages. This specific approach can be explicitly attributed to the fact that the University is founded exclusively with the funds raised by the public. Therefore, the University deemed it a moral obligation to address the societal needs and contribute to redress the problems faced by the people of the neighbouring villages. Keeping in mind all these and in a bid to uphold its mission, the University adopted a village, and took initiatives for Community Development. Besides, with a motive to instil a sense of civic responsibilities among the students and to introduce them to the ground realities, various extension and outreach activities are undertaken in other villages too through different units of the University.

**Objectives of the Practice:**

Accomplishment of societal commitment through initiatives of social and economic well being of the rural people by integrating knowledge into practice is one of the primary motives of the University. Instilling a strong sense of ethical and humanitarian values among the students, besides developing leadership quality among them is another fundamental objective behind the mission of 'Village Adoption' and other extension activities in the neighbouring area of Sri Venkateswara University.

**The Practice:**

Extension activities are a strong forte of the Sri Venkateswara University which exhibits an enduring commitment to the society as well as the nation. The various programmes initiated by the Extension Cell, NSS, NCC, the Student's of different departments go beyond curriculum to foster social empowerment, livelihood security and improvement of the socio-economic standard of the people of the neighbourhood.

The multifaceted initiatives and practices undertaken by different societies, forums and units of the University in the form of extension and outreach programme depict the ethos of the University. A cross sectional view of all the activities and its services that extend to the society at large brings to the fore the importance that Sri Venkateswara University has ascribed in fostering the mission of transforming the neighbouring rural areas. The University seeks to align its activities to the national standard through a concerted effort of faculties, students and outsourced resources. The various initiatives and practices are as follows :

**Life and Livelihood Initiatives at Village Level:**

- Cattle health check-up camp in different villages

- Medical Camps in different villages
- Saree Rolling, Fabric painting, Embroidery, Paper Plates Preparation training for women in different villages
- Organising of Blood donation Camps & Blood grouping Camps.
- Water Treatment plant (Improvement)
- Awareness programme on Public health, sanitation and health issues of women especially pregnant ladies and Children.
- Organic farming in different villages.
- Crop rotation and its uses in selected villages

**Health and sensitization**

- Health Awareness Programme by NSS/NCC (Sri Venkateswara University Unit)
- COVID-19 precautions and regulations by NSS/ NCC, Sri Venkateswara University
- Community diseases and awareness Programmes

**Environmental Awareness**

- Plantation Programmes in Agarala village by Sri Venkateswara University Extension Cell
- Plantation Programmes in Shanambatla village by NSS/NCC , Sri Venkateswara University
- Cleanliness Drive at Pichhinaidu Village by NSS Unit
- Swachh Bharat Programme in Rayalapuram Village by S.V.U.College of Sciences, Sri Venkateswara University

**Obstacles faced if any /strategies adopted to overcome them**

While augmenting the mission of fostering transformation of neighbourhood villages, Sri Venkateswara University is hindered with various obstacles. However, the different departments, cells and forums carry out the activities by mostly utilising own resources. The Government agencies and non-government organisations are approached for funding such activities. The frequently encountered problems are-

- Lack of scientific spirit owing to poor literacy level of the villagers is the major hurdles which dissuades them from accepting new ideas and incorporating new approaches into their lifestyle.
- Lack of motivation of the people especially towards entrepreneurial mindset.
- Limited financial resources of the University stand as a bigger hurdle for taking up capital intensive initiatives.

**Strategies to overcome the hurdles**

- Efforts have been made in the form of awareness, guidance and support programmes for the academic and intellectual development of the upcoming generation of the society and thereby infuse them with the scientific spirit.
- In order to augment the mission of intellectual and socio-economic transformation of the rural areas around the University and to minimize the issue of financial hardship for the mission, the University has started the necessary communication for registering the University under 'Unnat Bharat Abhiyan' (UBA) under the Ministry of MHRD.

**Impact of the Practice**

- The appreciation and the expression of gratitude by managements of the beneficiary schools where the special classes by the faculties and the peers were held indicates the level of success of the programmes.
- There are four Self Help Groups (SHGs) in the village formed after the adoption of the village. These SHGs are working towards financial self-sufficiency by engaging in mushroom cultivation, poultry rearing etc.
- The impact of cleanliness drives, awareness programmes etc. could be gauged from the fact that the villagers have become environmentally conscious. They keep their roads and households very clean and the bamboo dustbins provided by the University are found in the village.

**Resources Required**

Both financial resources and technically sound human resource is required for augmenting the extension and outreach programme in the neighbouring villages. The fund currently available for such initiatives is not sufficient. It is expected that through approval of schemes under UBA, the University would be able to deliver service to the community as per the requirements of the villagers. Capacity building programmes for students and faculty and active networks with alumni can provide enhanced scope for meaningful work.

# SRI VENKATESWARA UNIVERSITY :: NSS ACTIVITIES

NSS volunteers generally work with villages, slums and voluntary agencies to complete 120 hours of regular activities during an academic year. As per the fundamental principles of National Service Scheme, a volunteer is expected to remain in constant touch with the community. Hence, it is of vital importance that a particular village/slum is selected for implementation of NSS Programmes. As the NSS volunteer is to live with the members of the community and learn from their experience during his/her tenure in NSS, the Village/Slum should be carefully selected for adoption by NSS unit.

**1. Adoption of Villages**

Adoption of a village and area is a very meaningful programme in NSS. It is far better to concentrate attention on one village and take up the task for development perspective, than to fritter away energy in many locations involving too many activities which may not be completed at all or where the follow up action may not be possible. From this point of view, village adoption programme should ensure continuity of work vis-a-vis sustained action, evaluation and follow up work.

**Contacting Village/Area Leaders**

As a first step in this programme, it is necessary to establish contact with more than one village which would help to select a village where 'Leadership' is well established. In other words, selecting a village with proper leadership is very important as the sustained follow up action and evaluation is ensured in such places. To start with, the NSS unit can take the help of the Block Authorities, District Panchayat Officer, District Medical Officer, Extension Officer of Agriculture, Irrigation and Education Departments for the selection of the village. It is to be noted that the selected villages should be within a short distance from the college so that constant contact can easily be made.

**Survey of the Village/Area**

Before drawing up the plan of action, it is absolutely necessary to conduct a comprehensive survey of few villages situated at a short distance from the University. The assistance from the teachers and students of Economics, Commerce, Geography, statistics, Home Science, Social work, Psychology and Education etc. have to be sought for the purpose. Conducting socio-economic survey can be an interesting field activity which has direct bearing on the curriculum of Economics, Commerce, Statistics, Psychology, Home Science etc. The report of such a survey will provide up-to-date information about the problems and potentials of the village and help in programme planning for village development. The

applied field work will help the students to increase their analytical ability and deepen their thinking. Further, this will help them to identify the problems which have been left unnoticed. The survey work can also be accomplished with the help of Participatory Rural Appraisal exercises.

**Identification of Problem(s)**

It is on the basis of this need assessment that projects/programmes are to be formulated. The programme officers should use their discretion and should identify the projects which can be completed by seeking assistance from the communities/other agencies.

As the aim of adoption of village or area is to give new ideas of development to the villagers which would improve their living conditions. Once the trust of the communities is won, they start cooperating with the NSS volunteers and approach them for solution of their problems. One of the important services that can be rendered by NSS volunteers is disseminating information about the latest developments in agriculture, watershed management, wastelands development, non-conventional energy, low cost housing, sanitation, nutrition and personal hygiene, schemes for skill development, income generation, government schemes, legal aid, consumer protection and allied field. A liaison between government and other development agencies like Banks, IRDP, ICDS, DWCRA, JRY etc. can also be made.

The Programme Officers (PO) should motivate the communities to involve themselves with NSS for the community development work undertaken by the NSS unit. Further he or she will have to seek the help of various government departments and agencies for technical advice and financial assistance. Therefore, he/she must establish lathes good rapport with the government officials and development agencies. For this, it is better if the administration is taken into confidence by prior consultations.

**Completion of Projects**

As already stated, the Programme Officer must select the projects very carefully as the image of NSS depends upon the successful completion of such projects. Successful completion of the projects can win appreciation and credit of the community.

**Evaluation of Project**

Every project should be evaluated after its completion by involving members of the community, Government officials and Panchayat officials. The NSS unit should learn from the lapses in the execution of the project and plan for the next project keeping in view the bottlenecks and constraints faced by them during the earlier project.

**2. Adoption of Slums :** Most of the Universities and Educational Institutes are usually located in the urban areas.

**Survey of the Slum**

For adoption of a slum, there should be composite survey team consisting of students drawn from faculties like, Arts, Science, Engineering, Home Science and Social Work etc. The selected areas should be compact and should be easily accessible for students. Areas with acute political conflicts may be avoided.

The issues pertaining to the identification of problems, project planning, interaction and coordination with the various departmental agencies, execution and completion of projects shall be undertaken on the same basis/lines as discussed earlier in the part 'Adoption of Villages'. The progress of projects should also be reviewed frequently.

**Services in Slums**

The slum, tenements can be adopted by the NSS units with the aim of slum improvement and check its spread. Under this, activities like providing water, water logging, sanitation, electricity, drainage, health and welfare services, life and living conditions, can be undertaken.

**NSS Volunteers for Slum Work**

Taking into account the living conditions & status of slum dwellers of the slums, only highly motivated, adaptable, mature and skilled students should, be selected for slum development.

Following are the tasks which the students can undertake in slum areas:-

A. As Community Investigators: They can prepare brief community profile on various slums in the city or town covering different amenities, services, and living conditions etc.
B. As Community Workers: They can identify local leaders and in cooperation with them discuss local problems on which cooperative action can be initiated.
C. As Programme Aides: Students can help the local communities' in launching a number of programmes like setting up a free medical camps and free medicines distribution centre,blood donation camps and its awareness,plantation programme, sanitation drive, recreation, health projects like immunization. first aid centre, child care, nutrition classes, etc.
D. As Community Organizers: NSS students, after establishing rapport with the slum dwellers, can form community association to tackle local problems on a group basis

with reliance on local resources, self help and mutual aid and with some minimum external assistance.

**Some suggestions for Selection of slums**

A. There should be a socio-economic survey of the slum by a team of volunteers drawn from different faculties;
B. The community people should be receptive to the ideas of improving their living standard. They should also be ready to coordinate and involve in the projects undertaken by the NSS for their upliftment;
C. The areas where political conflicts are likely to arise should be avoided by the NSS units;
D. The area should be easily accessible to the NSS volunteers to undertake frequent visits to slums;
E. The working in the slum needs commitment and hard work. Only sensitive and highly motivated NSS volunteers can find easy to serve in slum areas.

**3. Coordination with Voluntary Organizations**

It may be noted that the NSS unit has no financial resource to implement any programme in the adopted villages or slum on its own. Therefore, a successful unit has to closely coordinate with the government agencies and voluntary organisations working in this field.

After identification of the needs of the community and the selection of projects, the programme officer should look for the Government agency or a Voluntary Organisation who can assist in the completion of a particular project. The different departments of the Government like Forest, Adult Education, Health & Family welfare, can render very useful assistance to the project pertaining to community work. Voluntary organisations can also help in forming public opinion in favour of NSS Projects.

NSS volunteers can be placed with these agencies considering the inherent aptitudes and inclinations of NSS volunteers. NSS volunteers must be told to develop a sense of belonging and respect for the people with whom they are working. Working in close collaboration with these agencies will help the NSS volunteers in understanding the problems of a vulnerable section of the society.

The work opportunities in the welfare institutions may be enumerated as under :-

A. Adoption of welfare institutions and helping the inmates and staff by arranging outings, fund collection drives, reading and writing letters for those who are unable to do so;
B. Propagation of the message of small family norms, health education, small savings drives etc;
C. Working for improvement of physical environment;
D. Programme of non-formal education and general literacy classes;
E. Organization of economic development activities;
F. Assisting in the rehabilitation work of the disabled, destitute etc.
In addition, NSS units and welfare agencies can take up joint community development projects and other programmes of community welfare land awareness depending on the local needs.

The NSS Programme Officers should plan activities in the adopted village or slum in such a way that the leisure time of the NSS volunteers can be utilized in the service of adopted village or slum. Week-end visits to the adopted areas provide suitable opportunities to live with the community and know their problems and make an earnest effort to do something for them. Similarly efforts should be made to follow up the work done in the areas earlier. Such sustained efforts will flower into friendship between the NSS unit and the community. These activities can be arranged through one day camps and frequent visits under regular activities.

# MEASURES ADOPTED DURING COVID-19 LOCKDOWN PERIOD BY SRI VENKATESWARA UNIVERSITY

1. Due to COVID-2019 Pandemic, the Prime Minister issued the Janata Curfew on a Nationwide scale on 22nd March,2020, for the period ranging from 7:00 a.m. to 9:00 p.m. The Government has made an arrangement for strictly enforcing the Janata Curfew at the Local level.
2. The Tirupati was kept under complete lockdown in the sense that no peoples were permitted to enter and exit from the Town. If any unavoidable cases arise, permission were granted by issuing a letter from the District Level Task Force. All the members of the community were informed to put mask while going outside and strictly maintained social distancing as suggested by norms.
3. At the different locations Local Level Task Force Personnel were deputed for duty to maintain lockdown properly and to address any problems faced by the community.
4. Through A.P Grama Sachivalayam Staff Members along with Volunteers, Online Social Media etc. different notifications regarding COVID-19 were informed to the general public.
5. The community was kept under lockdown that no one was allowed to move within the community. In the case of unavoidable circumstances like health problem, supply of essential commodities special permission was provided.
6. Any person(s) or family who were out of shortages of basic essential commodities shall be given at a free of cost by the Local Level Task Force.

**Steps taken :**

1. **Stock of Essential commodities:** All the whole sale traders, retailers and petty traders in the community have been informed to maintain stock of essential commodities like rice, potatoes, eggs, onion, tomato, cabbage, green leafy vegetables, dal, edible oil, and other goods. They were also informed to avoid unnecessary hiking of commodity prices due to hoarding. The Task force has also maintained stock essential commodities.

2. **Home Delivery System:** The Local Level Task Force has provided essential commodities to the families and needy people in form of Home Delivery at their doorstep at the price equal to the Pre-COVID market price. Home delivery system was adopted mainly in order to have social distance in the community.

3. **Chain of Duty:** Since 23rd March, 2020, a chain of duty was arranged at various places and streets in the locality in the manner of 24 hrs duty chain. Police personnel were also deployed to discharge duty. Janata Curfew, 22nd March was strictly observed.
4. **Reduction of Pollution:** As the 24 hrs Lockdown was implemented, the movement of vehicle was restricted, except goods carrying vehicles, the unwanted gases emitted from the vehicle were drastically reduced.

5. **Restriction of movement*:*** During the Lockdown 1 and Lockdown 2, the Local Level Task force enforced complete lockdown within the community and was relaxed to partial lockdown during the lockdown 3. Information were disseminated to the public through Public Address system and other means of social electronic media.

6. **Maintaining of Home Quarantine:** Home Quarantine was implemented Strictly in our Tirupati area. Before undertaking home quarantine, all the home quarantine facilities were strictly inspected with the help of voluntary medical personnel.

a) The time of opening shops were restricted on specified time, i.e. Morning : 6:00 a.m. – 9:00 a.m. and Afternoon : 3:00 p.m. – 6:00 p.m. All the customers were maintained socialdistancing in buying goods from the shops by tracing a circle spot on the road. All the shop owners were informed to maintain normal price and strictly informed not fixed abnormal price of their commodities due to hoarding.
b) Inflows of essential commodities form outside District were restricted and those who wanted to carry from outside shall sought prior permission from the District Level Task Force.
c) All gathering in any forms are strictly prohibited at the community level.
d) Strangers stranded in the District shall have to remain in the District.
e) All houses in the District were sprayed by Hydrochlorine solution.
f) House to house survey were conducted in order to know difficulties faced like shortages of essential commodities etc.
g) Members of District stranded in other states and abroad were informed to follow government instructions as notified from time to time.
h) If any problems faces by the households or arises within the community, the District Level Local Task Force may resolved through executive meetings.
i) If deceased occurred in the community, the task force have handled the deceased body as per the Standard Operating Procedures (SOP) issued by the government.

# SVU Activities during COVID - 19 Pandemic :

**Worked as a Scientist – ICMR – VDRL Lab During Covid-19 and tested Free Government samples of Tirupati, Chittoor, Kadapa and Nellore Districts of SARS Variants and Delta Variants viral RT-PCR samples and received dedication and appreciation award from different organizations (worked for 18 hrs per day)**




**LAB Environment**




**Sample Collection**




**LAMINAR AIR FLOW CHAMBER**








**LAB ANALYSIS**



**EXTRACTION PROCEDURE**

# CERTIFICATES RECEIVED FOR THE CONTRIBUTION BY DR.KUTAGOLLA PEERA IN COVID-19



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## Certificate
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*This Certificate Is Awarded To*

Dr.Kutagolla Peera(Scientist covid-19 )

Has Served Awarenesss Program of COVID-19. He/She made a effort of best practices on prevention of Coronavirus Disease as specified by **World Health Organization (WHO)**. He/She Has Dedicated to Promote "Safety Against COVID-19 Awareness Program His/Her Services Appreciated by all.

*We Wish Him/Her to all success in future.*

my GOV मेरी सरकार

COVID-19 CORONAVIRUS

DR. K.D. ARYA
Founder Director

DR. ANJU BHANDARI
Director General



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SPREADING KINDNESS DIGITALLY

ASSIST WORLD RECORDS RESEARCH FOUNDATION

CERTIFICATE OF KINDNESS

This is to certify

**DR.KUTAGOLLA PEERA**

Tirupati, Andhra Pradesh, India

in accordance with regulations and commitment to promote safety against COVID- 19. In supporting this cause, in the prevention of Corona Virus, as initiated by (WHO) World Health Organization . He / She participating in the Era of Campaign known as "Spreading Kindness Digitally" This Persisting kindness should prolong and sustain throughout the scenario of his /her life (Post Lock Down) spread the kindness chain of positivity to one and all .

Issued on: July 18th 2020 Certificate no: 10046372

Dr. R. Rajendran, Founder
World Records Biennale Foundation,
Assist World Records

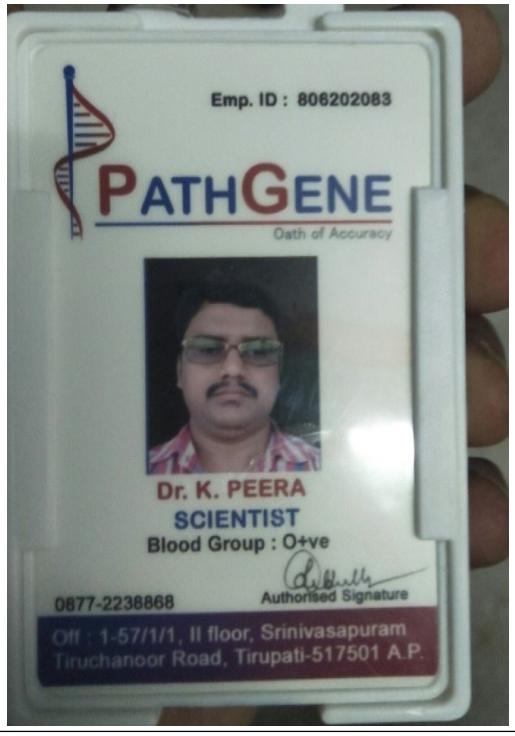
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