GV/RN/GA/05-24/54

(Renewal) Green Audit Certificate

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It is awarded for **2022-2023 and 2023-2024** to the Esteemed Institution

(Analysed for 2 years and extended validity for 1 year, thus total 3 years)

Shalini Vidya Samithi's

Jyothishmathi Institute of Technology & Science

Nustulapur (M), Hyderabad to Karimnagar Road, District Karimnagar – 505481

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We appreciate the immense efforts taken by Staff and students towards the Efficient Management of Premise.

Issued on **15 May 2024** valid till **30 April 2025**

Ar. Nahida Shaikh
Architect, IGBC Accredited Professional, ISO Certified I. A. (IMS)
Assocham GEM Certified Professional (Regn. No. 22/718)

Project Head and Green Building Professional-Consultant

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GV/RN/EA/05-24/53

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GREEN AUDIT

STUDY PERIOD (TWO YEARS) 2022 – 2023 & 2023 - 2024

Sustainability study

AUDIT REPORT

Studied for

Shalini Vidya Samithi's

Jyothishmathi Institute of Technology & Science

Nustulapur (M), Hyderabad to Karimnagar Road,

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Brand of Greenvio Solutions, Palghar District, Maharashtra- 401208

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1. Introduction

1.1 Statements of the Institution

Jyothishmathi Institute of Technology & Science, Karimnagar was established in the year 1997 as a self- financing engineering institution by Shalini Vidya Samstha, under the Chairmanship of Sri. Juvvadi Sagar Rao, a philanthropist and great visionary, having vast experience in successfully running the Jyothishmathi Group of Institutions. The institution is approved by All India Council for Technical Education (AICTE), New Delhi and is affiliated to Jawaharlal Nehru Technological University (JNTU), Hyderabad.

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The College adheres and focuses to the following mission:

- *To embrace the emerging teaching techniques that help students face the technical challenges.*
- *To inculcate research culture through innovative thinking.*
- *To induce leadership qualities in students and promote entrepreneurship benevolent to the society.*

2. Overview

The information for year-wise population data for both years was not shared.

DETAILED REPORT

3. Compliance

The compliance study was carried out through investigative ways. This was done to understand extent of implementations based on previous reports.

- Original report study for 2019-2020 and 2020-2021
- Renewal study one (Current) for 2022-2023 and 2023-2024

3.1 Compliance status

The details of compliance are analysed on previous year Report i.e. 2019-2020 and 2020-2021 depicted with following background colour codes:

- Implemented (Fully)
- Partially implemented
- Not implemented

S. No.	Recommendation	Compliance Status evidence detail
Section 1 – Green practices audit		
1.	Undertake No vehicle day practice	Not implemented
2.	Environmental Awareness messages & signages	Partial implementation
3.	Cutlery in the Canteen	Not implemented
Section 2 – Waste audit		
4.	Zero waste campus initiative	Not implemented
5.	Waste management practice for every type of waste generated	Not implemented
6.	Signages about waste management	Not implemented
7.	Dustbins at every 100m	Not implemented
8.	Material of the dustbin	Not implemented

Section 3 – Water audit		
9.	Water tanks with better support	Not implemented
10.	Recycle waste water from toilets	Not implemented
11.	Signages about water management	Not implemented
Section 4 – Health and Hygiene Audit		
12.	No suggestions	Not applicable

Table 1: Details of the compliance study

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3.2 Compliance technical study

The details of the community development activities/ initiatives are documented below; Note: These activities are undertaken through NSS.

- **Anti-Drug Awareness Programme** is organized by NSS UNIT-JITS at JITS Campus on 25-03-2023
- **Awareness Program on "Plastic usage and its Adverse Effects"** at Kaman Chowrasta, Karimnagar" is organized by NSS UNIT-JITS at JITS Campus 30-03-2023
- **Awareness Program on "Plastic usage and its Adverse Effects"** at Geetha Bhavan Chowrasta, Karimnagar" is Organized by NSS UNIT-JITS at JITS Campus on 06-04-2023
- **Awareness Program on "Plastic usage and its Adverse Effects"** at Court Chowrasta, Karimnagar" is Organized by NSS UNIT-JITS at JITS Campus 13-03-2023

4. Suggestion

The suggestion (inference) would act as a 'PLAN OF ACTION' to implement all the suggestions in a detailed manner. The same has been identified in two phases for a total duration of three years.

- **Phase 1**
  - *Duration: One year from the date of Report submission – Shared currently*
  - These are first hand suggestions
  - They are easy and quick to implement
  - They involve close very less or almost no expenses
  - They can serve as a foundation for the entire plan of action

Section 1 – Green practices audit

- **Environmental awareness**
  - There can be various slogans in local and national language on the compound wall giving the message of saving the environment through the joint efforts of the students and staff thereby making the student socially and environmentally responsible citizens.
- **Government initiatives**
  - Undertake initiatives such as Swachh Bharat Abhiyan, cleanliness drives in the Institute and surrounding villages also activities such as the capacity building of locals in surrounding villages by Institute students.
- **Increase the green awareness practice**
  - This should be in terms of the physical and virtual events, which will be beneficial for all stakeholders in the shared premises. (Basically the frequency of the lectures should be increased)
- **Mandatory programs should be conducted on following days**
  - January
    i. Wd. Braille Day

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- February
  i. Wd. Wetland day
  ii. Wd. Pulses day
  iii. Intd. Polar Bear Day
  iv. Nl. Science day
- March
  i. Wd. Wildlife day
  ii. Intd. Action for Rivers
  iii. Global Recycling Day
  iv. Wd. Sparrow day
  v. Wordl forest day/ Intl. day of happiness
  vi. Wd. Water day
  vii. Wd. Meteorological & resources day
- April
  i. Intd. Mine awareness day
  ii. World health day
  iii. Wd Atmosphere Day
  iv. Intd. Earth day
  v. Intd girl in ict/ Wd. Safety, health
- May
  i. Wd Migratory Bird Day
  ii. Intd. Of plant health
  iii. Wd. Bee day
  iv. Intd. Biological diversity
  v. Wd. No tobacco day
- June
  i. Wd. Bicycle day
  ii. Wd. Envt day
  iii. World Oceans Day
  iv. Global Wind Day
  v. Wd. Combat drought
  vi. Sustn. Gastronomy day
  vii. Intd. Of the tropics
- July
  i. Intd. Of cooperatives & World Day Free of Plastic Bags

DEMO

ii. Soil conservation
iii. Wd. Population day
iv. Mangrove Ecosystem

- August
  i. Intd. Indigenous day
- September
  i. Intd. Clean blue sky
  ii. Intd. Literacy/ Clean-up Day
  iii. World ozone day
  iv. Intd. Of peace/ Zero Emission Day
  v. Intd. Aware food loss
- October
  i. Wd. Nature day
  ii. Wd. Habitat day
  iii. Wd. Wildlife day
  iv. Wd. Cotton day
  v. Wd. Migratory bird
  vi. Intd. Rural women
  vii. Wd. Food day
  viii. Climate Action
  ix. Wd. Cities day
- November
  i. Wd. Tsunami awareness
  ii. Nl. Birds day
  iii. Wd. Energy/ Diabetes
  iv. Wd. Toilet day
- December
  i. Intd. Person with disability day
  ii. Wd. Soil day

Note:

- Wd. Stands for World
- Intd. Stands for International Day

DRAFT

Section 2 – Waste audit

- **Awareness**
  - *Educate the housekeeping staff through monthly or quarterly programs* related to waste management
  - *Generate awareness among student and staff stakeholders about products that generate waste* through display boards about 'Do not litter' with messages about waste management, its importance and process
- **Measures towards waste management**
  - *Check cutlery practice in canteen area to inculcate healthy habits*
    i. Steel/ paper/ *bagasses* (sugarcane waste) plates for food
    ii. Paper cups/ *Kulhad* or mud containers for tea
    iii. Food served on leaf and further used for composting
    iv. Spoons or straws made of disposable or edible material
    v. Stakeholders can be guided to bring their own tiffin's for material management
    vi. Possibilities of waste paper reused including newspaper for cutlery replacement can be explored
  - *Waste management for every type of waste*
    i. *Increase the manpower for campus management*
    ii. *Avoid any kind of waste burning as it is hazardous*
    iii. *Green organic waste* – Dust, dry leaves, twigs, branches – Converted into organic compost/ bio fertilizer
    iv. *Brown organic waste* – Non-vegetarian food waste along with green organic waste converted into vermin compost
    v. *Scrap materials* – Generated through furniture or old products should be recycled 100% through workshops for stakeholders
    vi. *Go paperless* – Use online medium to transfer notes and all information which save paper waste

DETAILED

Regular checks

- *Food wastage* - Check the quantity of food wastage in canteen/ hostel mess and device a plan of action with the staff accordingly
- *Dustbins overflow* – Location of the dustbins, whether they are over flowing, whether the waste is dumped anywhere within or in backyard of premises – Take a check and collect the waste appropriately

Facilities

- *One dry small dustbin* of each class must be installed
- *One dry big dustbin* has to be installed in every 10-20 meters of walking area in outdoor spaces
- *Install twin litter dustbins* on every floor, outdoors specifically canteen - Provision of coloured specific dustbins for different waste, instruction boards at multiple locations 'OR' Blue dustbin for degradable or red dustbin for household waste or green dustbin for recyclable
- *Install Sani bins* with display of 'Sanitary pads icon' in washrooms of every department and toilets

DETAILED

Section 3 – Water audit

- **Awareness**
  - *Remind every stakeholder about water conservation/ avoid water wastage by displaying board* at every wash room, laboratories, outdoor ground and canteen areas
  - *Literate employees about water conservation and educate the staff* members about the measures and action that can be taken
- **Measures towards water conservation**
  - *Put a container below the outdoor unit pipe of every air conditioner and reuse the same for secondary purposes* such as washing cars, cleaning campus outdoor areas etc. avoid using the same for plantation.
    i. Maintain a record of the nos. of containers and water recycled on a daily basis, further prepare a monthly or quarterly report about the same
- **Regular checks**
  - *Check taps/ faucets of toilets, wash basins, laboratories and outdoor areas for non-working conditions and leakages on a daily basis after 5 pm or once Institute's working hours are over*
  - If there is hostel facility there should be *a regular check once students go to the Institute for any open taps or any type of water wastage; additionally replace all showers wiht bucket and tap system* within hostel premises
  - *Lock the outdoor taps when they are not in use and check pipelines for damage to avoid any non-maintenance*
  - *Use buckets for floor cleaning* to save water and recycle the waste water
  - Any kind of *water wastage in any area indoor/ outdoor in every department of the Institute and report about the same to authorities*
  - *Cover any open drain/ open water area* (except farm/ water pond) that can be prone to become a mosquito breeding spot

Section 4 – Health and Hygiene Audit

- **Awareness**
  - *Prepare specific instructions for cleaning and sanitizing* and display the instructions all over premises
  - *Display signages/ posters about 'Do not spit' and 'Keep surrounding clean' No smoking' and 'Healthy premises'* for healthy habits
  - Undertake *every Saturday 'Campus Cleanliness program'* once in a week by the students and staff members
- **Neat and clean premises practices**
  - Daily one times cleaning of all floors passage areas through sweeping dusting in indoor areas collection of dry fallen leaves and access ways; watering of plants in outdoor areas
  - Daily three times cleaning, disinfecting washroom areas and check to avoid any garbage burning all around campus
  - Weekly deep cleaning of building spaces including individual areas, open grounds and grass cutting
- **Stakeholder intervention**
  - *Practice pest control programs* with through external stakeholders such that 'Once in every 15 days for Library' whereas 'Once in a month for outdoor areas such as open drains, mosquito breeding spots etc.' and 'Once in every six months or annually for entire campus'
- **Hygiene Facilities - Availability of Sanitizing Equipment**
  - *Water dispenser (Non-mechanic/ electric), hand wash* on every floor
  - There should be facilities such as *potpourri, camphor tablets* in the toilet to avoid smell and health related issues in toilet areas
  - *Install sanitary vending machine or make the sanitary pads available* through a female repsentative, the information about the same should be displayed in foyer areas
  - *Green carpets* could be placed outside drinking water and toilet blocks. This will add to hygiene areas and keep the water spillage under control.

5. Compilation

The study is based on the data collected, analyzed, rechecked, and confirmed through multiple modes. For the quality study, some standards/ notes have been referred to. These are listed and noted below. However, no direct references have been used anywhere. These are used as a base to analyze and study the data collected.

- Uniform Plumbing Code – India, 2008
- IGBC Green Existing Buildings – Operation & Maintenance (O&M) Rating system, Pilot version, Abridged Reference Guide, April 2013
- IGBC Green Landscape Rating system, March 2013
- BOMA Canada Waste Auditing Guide, Best Environmental Standards, BOMA BEST – Canada

DETAILED REPORT

ENERGY AUDIT

STUDY PERIOD (TWO YEARS) 2022 – 2023 & 2023 - 2024

Sustainability study

AUDIT REPORT

Studied for

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Section 1 – Energy management		
1.	Replace Non-LED Tubelights to LEDs as these are available in major quantities	Not implemented
2.	Replace regular ceiling fans to energy efficient appliance	
3.	Replace regular air conditioners to energy efficient appliance	
4.	Replace desktop computers with laptops	
5.	Undertake building management systems	
6.	Undertake Controls & Facility management systems	
Section 2 – Energy generation (To increase the solar energy)		
7.	No recommendations were proposed	
Section 3 – Life safety management		
8.	No recommendations were proposed	

Table 1: Details of the compliance study

3.2 Compliance technical study

3.2.1 Section 1 – Energy management

The study focuses only on those appliances that have a scope of energy reduction and preservation as the other appliances are a mandatory requirement and cannot be overlooked.

A. Calculated Electrical Consumption as per inventory

The electricity bills provide actual consumption data. The following is the calculated consumption. It is done to understand the percentage of energy usage in the premises by various applications. It is based on the inventory collected and interviews with the staff.

The additional data such as wattage is taken from market research. In terms of electrical consumption, the main sources are lights, fans, air conditioner, and equipment. The inventory and data collection for sources of energy consumed in the premise in summarised in the following sections.

The following documentation is based on the consumption practice of the premises on a regular working day.

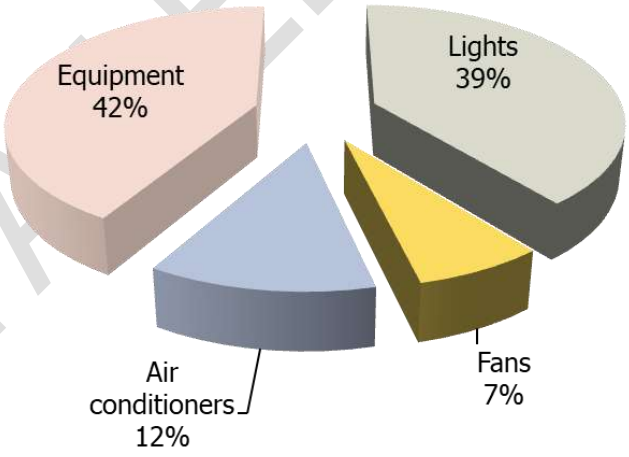

Figure 1: Summary of the calculated electrical consumption as per inventory

The above graph shows that equipment consume 42% whereas the lights consume 39% while the air conditioners consume 12% and fans consume 7% of the total calculated electrical energy.

DETAILED REPORT

B. Lights

Types of lights based on the numbers

There are **983 lights on the premises (Increase as compared to 736 lights in the previous study)** the following table shows the various types of lights on the premises.

S. No.	Type	Nos.
1	**LED lights** *(Energy efficient appliance)*	425
2	**Non-LED lights** *(Non-Energy efficient appliance)*	558

Table 2: Summary of the types of lights on-premise

Types of lights based on the power consumption

The energy consumption of lights is **68,256 kWh** of energy.

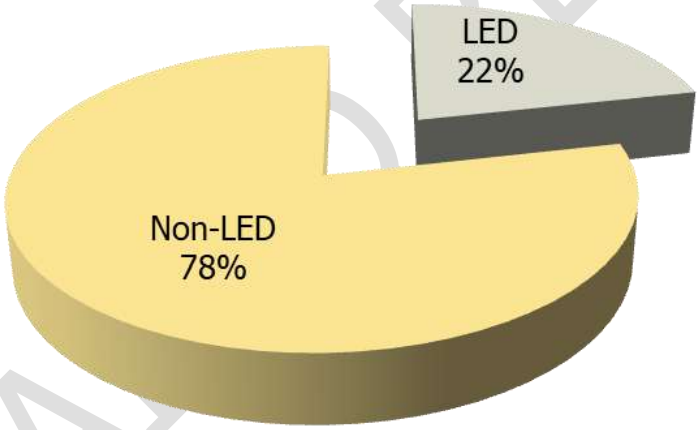

Figure 2: Energy consumed by types of lights in the premise based on the usage study

The analysis of the types of Lights on-premises shows **Non-LED lights consume 78%** whereas the **LED lights consume 22%** of the total power consumed by lights.

DETAILED REPORT

C. Fans

C1) Types of fans based on the numbers

There are **624 fans (Increase as compared to 592 fans in the previous study)** on the premises, it is assumed all these are ceiling fans as there is no bifurcation provided.

C2) Types of fans based on the power consumption

The energy consumption of fans is **12,168 kWh** of the energy with the **Ceiling fans consuming 100%** of the total power.

D. Air conditioners

D1) Types of air conditioners based on the numbers

There are **47 nos. of air conditioners (Increase as compared to 21 air conditioners in the previous study)** on the entire premises**.**

D2) Building-wise consumption analysis

The energy consumption of air conditioners is **21,150 kWh** of energy.

E. Equipment

E1) Types of Equipment

There are **11 nos. of refrigerators (Increase as compared to two nos. in the previous study)** in the Educational sector, other equipment details are not shared.

E2) Types of equipment as per their energy contribution

The energy consumption of equipment is **72,270 kWh** of energy.

DETAILED REPORT

3.2.2 Section 2 - Energy generation

Sr. No.	Month	Year	Amount	Total units consumed	Solar Units generated	Gross units consumed after deductions
Academic year 1 between 2022-2023						
1	June	2022	1,38,297	20,799	13,455	7,344
2	July	2022	1,19,423	14,061	7,073	6,988
3	August	2022	1,27,758	20,116	12,409	7,707
4	September	2022	1,19,152	18,286	11,048	7,238
5	October	2022	89,771	11,540	7,469	4,071
6	November	2022	93,011	15,149	11,078	4,071
7	December	2022	90,814	20,282	16,226	4,056
8	January	2023	72,454	13,698	9,501	4,197
9	February	2023	73,019	13,700	12,296	1,404
10	March	2023	75,805	14,326	14,066	260
11	April	2023	1,02,099	17,268	14,174	3,094
12	May	2023	71,398	15,760	14,064	1,696

Table 3: Details of the electrical consumption

The observation related to above information states:

Note: The study is for past one year.

- The **total amount** spent in past one year is **Rs. 11,73,001/-**
- The **average amount** spent every month are **Rs. 97,750/-**
- The **total units** consumed in past one year is **~ 52,126 units (Only solar)**
- The **average units** consumed every month are **~ 4,344 units (Only solar)**
- **Percentage of energy met by alternate (solar (renewable)) source is 27% in entire year consumption, however there is scope to improve the renewable energy sources as there is still major expense spent every month.**

3.2.3 Section 3 - Life safety management

It was informed that six fire extinguishers were purchased.

DETAILED REPORT

4. Suggestion

The suggestion (inference) would act as a 'PLAN OF ACTION' to implement all the suggestions in a detailed manner. The same has been identified in two phases for a total duration of three years.

- **Phase 1**
  - *Duration: One year from the date of Report submission – Shared currently*
  - These are first hand suggestions
  - They are easy and quick to implement
  - They involve close very less or almost no expenses
  - They can serve as a foundation for the entire plan of action

Section 1 – Energy management

- **General practice**
  - *The stakeholders should be educated to*
    i. Keep the lights on in the class room only when needed and unplug electrical devices when not in use.
    ii. Electrical appliances consume energy even when you are not using them hence plugging something in only when needed can save electrical energy usage.
    iii. At the time of locking the departments all fans, lights should be switched off.
    iv. The students should be trained to switch off fans and lights when there is no need of them.
    v. Staff should be trained to switch of lights and fans in their rooms when they leave the room.
- **Awareness and vigilance**
  - *Strict instructions* for avoiding wastage of energy including rules such as if anyone is found putting on the switch unnecessary may be a punishable offence

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or fine

- *Seminars/ Webinars/ Workshops* o stakeholders on energy preservation, use of e-vehicles
- *Conduct visits and monitoring by authority* for check of appliances/ their working conditions/ energy usage etc. every fifteen to twenty days

➲ **Facilities intervention to reduce electrical load**

- *Use white colored* interiors and exterior façade to reflect light and
- *Avoid dark colored* interior and exterior façade, especially exterior façade
- *Cover the inverters/ solar meters on the rooftop areas*
- *Demarcate the areas as 'DANGER'* and do not allow any other stakeholder except the skilled or expertise staff member
- *Cover the rooftop of outdoor air conditioner units* to avoid any direct sun exposure on the top area as this may lead to increased electrical consumption and reduce the duration of quick cooling

➲ **Display information about the technical facilities**

- *Any space that has any source of renewable energy in the block certain information as follows should be displayed on a board near the entrance or foyer area of the block for sensitization*
  i. 'DANGER ZONE' and 'NO SMOKING ZONE' boards
  ii. Do and Don't for the specific type of plant
  iii. Plant name
  iv. Capacity
  v. Location
  vi. Type of renewable energy system
  vii. Nos. of units
  viii. Installation date, month and year
  ix. Energy generated per day and annually
  x. Energy consumption actual requirement per day and annually
  xi. Energy saved per day and annually
  xii. Last maintenance date and vendor
  xiii. Revenue generation (if any) per day and annually
  xiv. Institute name and logo

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Section 2 – Energy generation

- **Design interventions - Natural energy catchers through solar light wells for Direct/ indirect solar heat gain**
  - *The natural light can be harnessed and utilised during day time to reduce the artificial electrical loads and provide fresh ventilation*
    i. Plastic bottles filled with 3/4th water and washing soda ½ bottle; partially nailed outside the roof can invite up to 100W of energy
    ii. Turbo ventilators act as a natural source of light and air with areas that have good wind source and sunlight
    iii. Any geometrical shaped skylight either open to sky or covered with transparent sheets invites direct or filtered natural light inside the building; when equipped with plantations such as climbers it invites further fresh ventilation
    iv. Caution: All of these have to be installed keeping the monsoon condition of the site and surrounding in mind

i. ii. iii.

Plate 1: Demonstration of solar lamp, turbo ventilator and asbestos sheet

(Photo left side https://www.instructables.com/How-to-build-a-SOLAR-BOTTLE-BULB/ and Photo right side ABDHC Ashti)

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Section 3 – Life safety management

➲ Display boards for awareness

- *All fire and life safety exit signages* as per NBC norms should be displayed at every nook and corner including assembly point, exit points
- *A RACE Board* at the location of extreme populace/ footfalls.
- There should be *a PASS Board* alongside every fire extinguisher

Reference suggestions 1: PASS Board display

➲ Fire and life safety measures

- Every space that has a gas cylinder/ air conditioner/ combustible appliance/ more than ten electrical or electronic appliance and Server rooms there should be EITHER sand bucket/ fire ball/ fire extinguisher

➲ Laboratory safety measures

- *There should be additional provisions in the LABORATORIES including:*

  i. Eye washers

  ii. First aid box

  iii. Concealing of exposed wiring

  iv. Display chart about the 'dos and don'ts, a workshop for stakeholders about fire and life safety

  v. Rubber flooring as an electrical safety measure

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Plate 2: Lab safety manual in the premises

- **Earth pit zones**
  - Add signboard about 'Outdoor Electrical area'
  - Code the earthing pits in the courtyard.

- **DG and Transformer area**
  - Add safety signages such as 'Danger-do not touch' etc.
  - Add signboards about the usage such as 'Transformer areas' and 'Diesel Generator area' etc.
  - Every user in this space should compulsorily jacket, helmet, gloves, boots while working and being a part of this space.
  - Code the earthing pits in the courtyard.
  - Add additional fire extinguishers

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5. Compilation

The study is based on the data collected, analyzed, rechecked, and confirmed through multiple modes. For the quality study, some standards/ notes have been referred to. These are listed and noted below. However, no direct references have been used anywhere. These are used as a base to analyze and study the data collected.

Specific references for study related to energy

- https://www.energy.gov/eere/buildings/zero-energy-buildings
- https://www.dsaarch.com/zero-net-positive-energy
- U.S. Energy Information Administration
- https://www.happysprout.com/inspiration/what-is-smart-gardening/
- https://ieeexplore.ieee.org/document/6779316
- https://www.murata.com/en-global/apps/industry/security/entranceandexitsystem
- https://www.energuide.be/en/questions-answers/what-are-the-alternatives-to-air-conditioning/2121/
- IGBC Green Campus rating system Abridged Reference Guide
- GEM Sustainability Certification Rating Program
- Inference study reference images
    - https://seors.unfccc.int/applications/seors/attachments/get_attachment?code=NG125PFE4WHMWSYAK8TCAKIHMWX0F4QD
    - https://housing.com/news/smart-gardening/
    - https://solarpowerproject.in/solar-panels-for-parking-lots.php

DETAILED REPORT

Environment Audit

Study Period (Two Years) 2022 – 2023 & 2023 - 2024

Sustainability study

AUDIT REPORT

Studied for

Shalini Vidya Samithi's

Jyothishmathi Institute of Technology & Science

Nustulapur (M), Hyderabad to Karimnagar Road,

District Karimnagar – 505481

Studied in the capacity of

Accredited and Certified GBP

Studied by

Website: https://thegreenviosolutions.co.in/

Email: greenviosolutions@gmail.com

Background reference image Nic Y C Gua on unsplash

Disclaimer

The Audit Team has prepared this report for **Shalini Vidya Samithi's Jyothishmathi Institute of Technology & Science** located at *Nustulapur (M), Hyderabad to Karimnagar Road, District Karimnagar – 505481* based on input data submitted by the Institute analysed by the team to the best of their abilities.

The details have been consolidated and thoroughly studied as per the various guidelines for Green Buildings available in National and International Standards; the report has been generated based on comparative analysis of the existing facilities and the prerequisites formulated by various standards. The inputs derived are a result of the inspection and research. These will further enhance and develop a Healthy and Sustainable Institution.

These can be implemented phase wise or as a whole depending on the decision taken by the internal team. The warranty or undertaking, expressed or implied is made and no responsibility is accepted by Audit Team in this report or for any direct or consequential loss arising from any use of the information, statements or forecasts in the report.

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Acknowledgement

The Audit Assessment Team extends its appreciation to **Shalini Vidya Samithi's Jyothishmathi Institute of Technology & Science, Telangana** for assigning this important work of Environment Audit. We appreciate the cooperation extended to our team during the entire process.

We are also thankful to Institute's Task force who have played a major role in data collection.

Sustainable Academe
Brand of Greenvio Solutions, Palghar District, Maharashtra- 401208

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1. Introduction

1.1 Statements of the Institution

Jyothishmathi Institute of Technology & Science, Karimnagar was established in the year 1997 as a self- financing engineering institution by Shalini Vidya Samstha, under the Chairmanship of Sri. Juvvadi Sagar Rao, a philanthropist and great visionary, having vast experience in successfully running the Jyothishmathi Group of Institutions. The institution is approved by All India Council for Technical Education (AICTE), New Delhi and is affiliated to Jawaharlal Nehru Technological University (JNTU), Hyderabad.

1.1.1 Vision

The College proposes *"To be the Premier Engineering Institution imparting quality technical education and research, moulding the young engineers to achieve global excellence with societal consciousness."*

1.1.2 Mission

The College adheres and focuses to the following mission:

- *To embrace the emerging teaching techniques that help students face the technical challenges.*
- *To inculcate research culture through innovative thinking.*
- *To induce leadership qualities in students and promote entrepreneurship benevolent to the society.*

2. Overview

The information for year-wise population data for both years was not shared.

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3. Compliance

The compliance study was carried out through investigative ways. This was done to understand extent of implementations based on previous reports.

- Original report study for 2019-2020 and 2020-2021
- Renewal study one (Current) for 2022-2023 and 2023-2024

3.1 Compliance status

The details of compliance are analysed on previous year Report i.e. 2019-2020 and 2020-2021 depicted with following background colour codes:

- Implemented (Fully)
- Partially implemented
- Not implemented

S. No.	Recommendation	Compliance Status evidence detail
Section 1 – Eco-restoration		
1.	Scope for executing multiple dense forests (Green zones) in the premises based on the prototype	Not implemented
2.	Community gardening	Not implemented
3.	Plant more carbon dioxide absorbing plants	Not implemented
4.	Terrace farming (Applicable only for the buildings with a flat roof)	Not implemented
Section 2 – Documentation		
5.	Carbon sequestration study	Not implemented
6.	Articles and Documentation	Not implemented
7.	Signages	Introduced partially

Section 3 – Amenities		
8.	Additional facilities for birds	Not implemented
Section 4 – Environmental management systems		
9.	Promote the use of Eco-friendly vehicles	Not implemented
10.	Smart Gardening System	Not implemented

Table 1: Details of the compliance study

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3.2 Compliance technical study

There are no e-vehicles, total 29 cycles with 18 for students and 11 for staff members.

4. Suggestion

The suggestion (inference) would act as a 'PLAN OF ACTION' to implement all the suggestions in a detailed manner. The same has been identified in two phases for a total duration of three years.

- **Phase 1**
  - *Duration: One year from the date of Report submission – Shared currently*
  - These are first hand suggestions
  - They are easy and quick to implement
  - They involve close very less or almost no expenses
  - They can serve as a foundation for the entire plan of action

Section 1 – Eco-restoration of outdoors (Landscape perspective)

- **Feeders**
  - At appropriate locations there can be provisions for drinking water and some grains for birds as they visit the site much frequently.
- **Numbering the plantations in the premises**
  - *Make a list of all the plantations in the premises*
  - *Secondly, start numbering the plantations in either of the ways:*
    i. Painting the nos. on iron plates and nailing the same
    ii. Printing the nos. on paper, laminating and pasting the same
    iii. Painting the nos. with letters and nos. directly
  - *Care should be taken that the display should be visible*
  - *Uniform color palette should be identified and used*
  - *Measures should be taken to avoid withering during monsoon*
  - *This could be undertaken as a student activity*

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Reference suggestions 1: Numbering the plantations

- **Improve the ecological footprint of the premises**
  - Undertake the landscape ecological redesign to increase green cover
  - Opportunity can be explored to have a dedicated:
    i. Nursery
    ii. Greenhouse
    iii. Organic farm
    iv. Kitchen garden in backyard
  - The following plantations can be planted for Carbon neutralisation as an additional measure, even though they might be existing in premises
    i. Pine – Known for its ability to sequester carbon

    (https://www.single.earth/blog/which-trees-absorb-the-most-carbon#:~:text=Pine%20trees%20as%20carbon%20sinks,their%20ability%20to%20sequester%20carbon.&text=These%20trees%20are%20found%20in,also%20make%20good%20landscape%20plants)

    ii. Neem – Helps reduce greenhouse gases through photosynthesis absorbing large quantities of CO_2 producing oxygen

    (https://neemfoundation.org/greening-india-with-neem/#:~:text=The%20planting%20of%20Neem%20trees,of%20CO2%20and%20producing%20oxygen)

    iii. Peepal – Can uptake CO_2 during the night as well because of its ability to perform a type of photosynthesis called Crassulacean Acid Metabolism (CAM)

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(https://nurserylive.com/blogs/sustainable-living/do-you-know-plants-that-give-oxygen-24-hours#:~:text=2.-,Peepal,Crassulacean%20Acid%20Metabolism%20(CAM))

iv. Bamboo - Can absorb as much as 12 tonnes of carbon dioxide per hectare per year, giving the plant a potentially crucial role in stabilising our planet's atmosphere.

(https://www.theguardian.com/environment/2003/mar/20/research.science#:~:text=Research%20in%20Japan%20and%20elsewhere,in%20stabilising%20our%20planet's%20atmosphere) and https://www.nelda.org.in/15-indian-trees-that-produce-the-most-oxygen

v. Teak – The highest capacity for carbon sequestration among trees in India. This is the finding of a study conducted by the Gujarat Ecological Education and Research (GEER).

(https://timesofindia.indiatimes.com/city/ahmedabad/teak-absorbs-max-co2-from-air-helps-check-global-warming/articleshow/51721842.cms)

- **Plant as an extension of 'Green motto'**
  - External resource persons visiting the premises can share the goal of green environment in the following ways:
    i. Plant a sapling within the premises
    ii. Handover a sapling as a gesture
- **Nutrition pits**
  - Certain pits (mound of earth covered in green grass/ shrubs) can be demarcated as 'Nutrition pits' where the organic food from the kitchen and Canteen fruit peels and fruits or vegetables can be degraded for making nutrition-rich soil.

Section 2 – Documentation

- **Messages on the beam area**
  - Include quotes and messages from eminent personalities all over the premises on beam for inspiration and beautification.
- **Awareness**
  - Introduce zone wise display boards at relevant locations

Section 3 – Amenities

- **Facilities**
  - Speed limit signage
  - Speed breakers
  - Zebra crossing
  - First aid box near the administrative area
  - Suggestion box every floor of the premises

Section 4 – Environmental management systems

- **Heat island control measures**
  - *Cool rooftops*
    i. Keep terrace areas free of any kind of storage materials
    ii. Terrace rooftops can be painted with Cooltop (Reflective material) to reflect the harsh sun rays and reduce the heat absorption in the top most floor and surrounding areas of the building.
    iii. Introduce signboards about 'No students are allowed to enter'
    iv. Undertake feasibility study of before - after temperature reading.

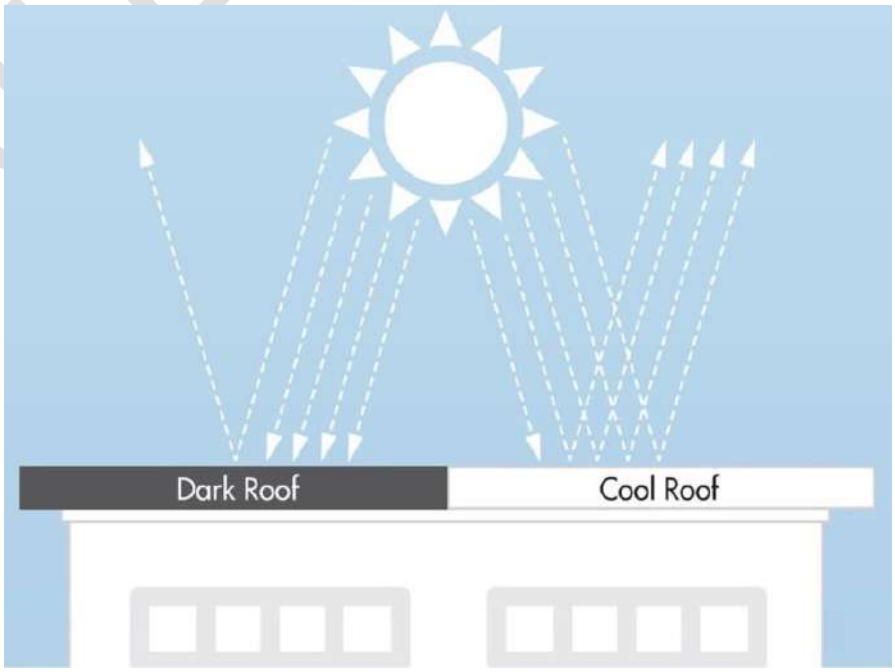

Plate 1: Cool roof comparative analysis (For reference purpose only)

Source: Image by https://www.gaf.com/en-us/blog/six-truths-about-cool-roofs-281474980105387

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➲ Pollution control measures

- *Vehicle usage -* Restricting the speed limit of vehicles on the premises to 10 km per hour, not horning on the premises will help in maintaining the sound in control and emphasis on a silent zone.
- *Avoid burning waste -* The waste produced on the premises should not be burned as it is dangerous to the health of students and staff

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National references

- IGBC Green Existing Buildings – Operation & Maintenance (O&M) Rating system, Pilot version, Abridged Reference Guide, April 2013
- IGBC Green Landscape Rating system, March 2013

International references

- The city of Cheyenne, Streetscape/ Urban Design elements - Wyoming Planning Association, Gillette, Wyoming, United States
- Streetscape elements – Chapter 6 on San Francisco
- American lung association https://www.lung.org/
- Study related to air pollution https://www.airgle.com/
- Exploring the light pollution https://education.nationalgeographic.org/
- Urban heat island effect https://www.epa.gov/heatislands/what-you-can-do-reduce-heat-islands

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