


Green Audit Certificate & Report

Green Audit Certificate


2020-2021

This is to certified that a "Green Audit" for **Guru Ghasidas Vishwavidyalaya, Koni, Bilaspur, Chhattisgarh-495009** has been conducted in 2020-21 to assess the green initiative planning and efforts implemented in the University. The activity and measures carried out by the University has been verified based on the report submitted and was found to be satisfactory. The effort taken by the faculty members, administration and students towards environmental and sustainability is highly appreciated and commendable.



19/04/2022

Dr. M. P. Mishra, Chief Chemist
Chhattisgarh Environment Conservation
Board, Bilaspur (Regional Office)
Member of Green Audit Committee




19/2/2022

Prof. R. V. Shukla
Retired Professor, Botany Department,
CMP Degree College, Bilaspur
Member of Green Audit Committee




19/02/2022

Er. Devvrat Mishra
Regional Officer
Chhattisgarh Environment Conservation
Board, Bilaspur (Regional Office)
Member of Green Audit Committee



19/2/2022

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Dean, Barrister Thakur Chhedilal College of
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Convener of the Green Audit Committee



19/2/2022

Er. Laxmikant Jaiswal
GGV University Engineer
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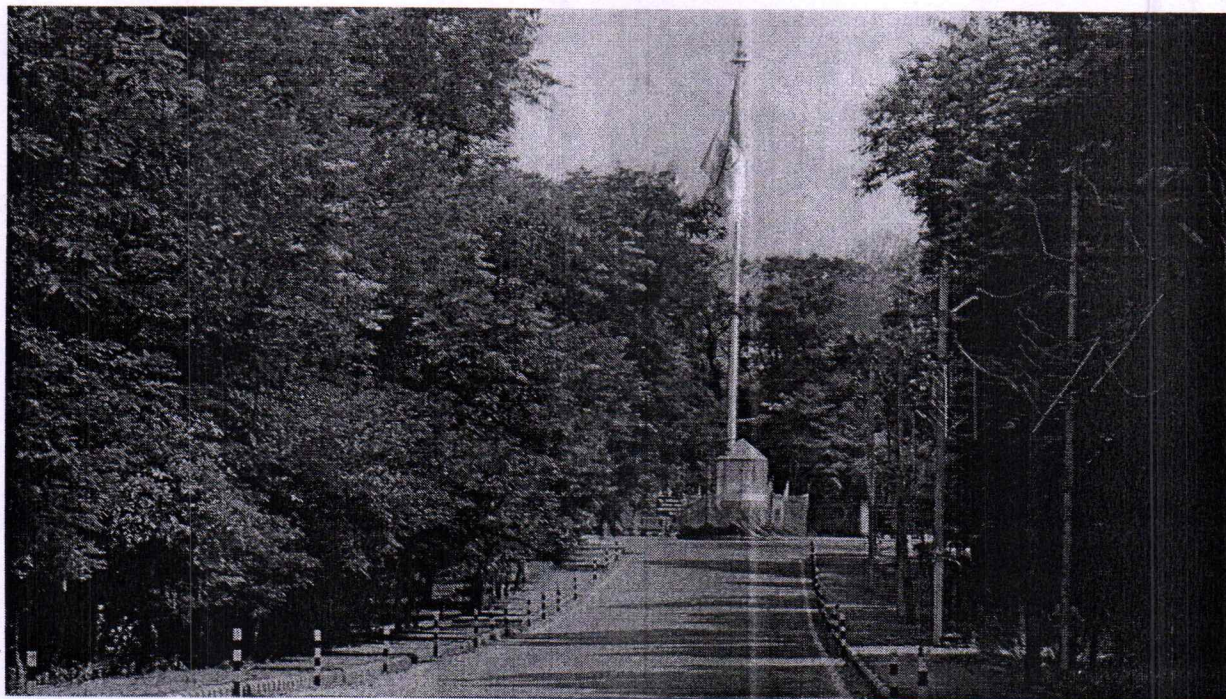


19/2/2022

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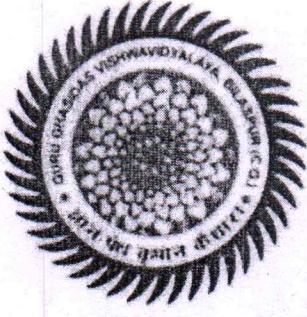
GREEN AUDIT REPORT

2020-2021



**Guru Ghasidas Vishwavidyalaya,
Bilaspur**





आंतरिक गुणवत्ता आश्वासन प्रकोष्ठ

INTERNAL QUALITY ASSURANCE CELL

गुरु घासीदास विश्वविद्यालय, बिलासपुर (छ0ग0)

GURU GHASIDAS VISHWAVIDYALAYA, BILASPUR (CG)

(केन्द्रीय विश्वविद्यालय अधिनियम 2009 क. 25 अंतर्गत स्थापित केन्द्रीय विश्वविद्यालय)

(A CENTRAL UNIVERSITY ESTABLISHED BY THE CENTRAL UNIVERSITY ACT 2009 NO. 25 OF 2009)

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क्रमांक 225 /आई.क्यू.ए.सी. /2021

दिनांक - 07.12.2021

आदेश

डॉ0 एस0के0 शाही, सदस्य सचिव, Green Audit द्वारा दो सदस्य नामित किये जाने का प्रस्ताव प्रस्तुत किया गया है। आंतरिक गुणवत्ता आश्वासन प्रकोष्ठ द्वारा पूर्व में जारी आदेश क्रमांक 198/आई.क्यू.ए.सी./2021 दिनांक 22.11.2021 में आंशिक संशोधन उपरान्त समिति में निम्नलिखित दो सदस्यों को नामित किया जाता है।

1. प्रो0 आर0के0एस0 तिवारी, अधिष्ठाता, ठाकुर छेदीलाल वैरिस्टर, कृषि महाविद्यालय, सरकंडा, बिलासपुर (छ0ग0) समन्वयक
 2. डॉ0 आर0व्ही0 शुक्ला, सेवानिवृत्त प्राध्यापक, सी0एम0डी0 महाविद्यालय, बिलासपुर (छ0ग0) सदस्य बिलासपुर (छ0ग0)
 3. प्रभारी अधिकारी, पर्यावरण संरक्षण मंडल, बिलासपुर (छ0ग0) सदस्य
 4. डॉ0 एम0पी0 मिश्रा, चीफ केमिस्ट, पर्यावरण संरक्षण मंडल, बिलासपुर (छ0ग0) सदस्य
 5. श्री एल0के0 जायसवाल, विश्वविद्यालय यंत्री (प्रभारी) सदस्य
 6. डॉ0 एस0के0 शाही, सह-आचार्य, वनस्पतिशास्त्र विभाग, सदस्य सचिव
- उपरोक्त Green Audit हेतु समय-सारिणी एवं विस्तृत विवरण पृथक से प्रेषित किया जावेगा।



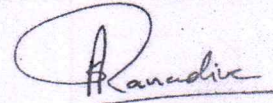
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पृ.क्र./226 /आई.क्यू.ए.सी. /2021

दिनांक - 07.12.2021

प्रतिलिपि :-

1. कुलपति के निजी सचिव को माननीय कुलपति महोदय के सूचनार्थ।
2. कुलसचिव के निज सहायक को कुलसचिव जी के सूचनार्थ।
3. समन्वयक, नैक की ओर सूचनार्थ।
4. विशेष कर्तव्यस्थ अधिकारी, विकास विभाग की ओर सूचनार्थ।
5. अध्यक्ष, छत्तीसगढ़ पर्यावरण संरक्षण मंडल, बिलासपुर (छ0ग0)
6. सदस्य सचिव, छत्तीसगढ़ पर्यावरण संरक्षण मंडल, बिलासपुर (छ0ग0)
7. समिति के सम्माननीय सदस्यों की ओर सूचनार्थ एवं आवश्यक कार्यवाही हेतु।
8. डॉ0 एस0के0 शाही को यथाशीघ्र Green Audit की प्रक्रिया पूर्ण किये जाने हेतु प्रेषित।
9. कार्यालय प्रति।



निदेशक
आई.क्यू.ए.सी.

Green Audit

at Guru Ghasidas Vishwavidyalaya, Bilaspur

The policy of most of the Governments world over is to have a policy which can enhance labour productivity and economic growth through accumulation of human capital. The development of the work force can largely be influenced by improving the knowledge and skills of the work force which in turn influence the future well-being of the nation with considerable gains in GDP. This has led governments to devote huge resources in improving the educational standards of its Citizens and Guru Ghasidas Vishwavidyalaya has also meticulously worked in on these lines to bring about a change. With the increasing cutting-edge research experiences in different science and technology disciplines there has been development and growth of Guru Ghasidas Vishwavidyalaya also which has led to increasing carbon footprints. The policy of the Government of India under the leadership of our Honourable PM Shri. Narendra Modi Ji has also been in this direction, by declaring the mission of 'Swachh Bharat Abhiyan', whose voice resonates with the message of "Green Campus, Clean Campus" mission launched by the University Grants Commission for all higher educational institutes. The National Assessment and Accreditation Council (NAAC), which is an autonomous body funded by the University Grants Commission of Government of India, has made 'Environmental Consciousness' mandatory criterion (Criterion VII) for grading educational institutes. At present Guru Ghasidas Vishwavidyalaya has been pursuing the policy of Sustainable development and at this juncture green audit becomes part and parcel of management of the campus with due scope to take up academic activities within the close circles of environmental conservation and management.

Green auditing is the process of identifying and determining whether the practices taken up at Guru Ghasidas Vishwavidyalaya are eco-friendly and sustainable. It is an effective ecological tool that helps to create a culture of sustainability by implementing it through regular identification, quantification, documenting, reporting and monitoring of environmentally important components. Green auditing will thus help in preserving the rich floral and faunal diversity in and around the campus; garnering interest and creating awareness among the stakeholders in future. Guru Ghasidas Vishwavidyalaya is committed to responsible stewardship of resources and to demonstrate leadership in sustainable academic practices. The University supports the climate neutrality goals as outlined by the Government of India and thus will monitor the sustainability of the research and education mission through the Green Audit Committee.

The policy goals of the Guru Ghasidas Vishwavidyalaya Green Audit are:

- a) Identification and documentation of the strengths and areas of improvement within sustainable operations of administrative, academic and research laboratories via gap analysis, and outlining actions that can be implemented to further targets.
- b) Increase environmental awareness throughout campus and motivate all stakeholders for

optimized sustainable use of available resources.

- c) The importance of the program is to collect baseline data of environmental parameters and resolve the environmental issue before they become a problem.

To achieve the aforementioned goals, Guru Ghasidas Vishwavidyalaya Green Audit Committee endeavours towards the following objectives:

- a) To identify current and emerging environmental issues.
- b) To monitor environmental management practices.
- c) To examine the current practices that can impact the environment.
- d) To create awareness among the various stakeholders of the University.
- e) To prepare a Green Audit Report on green practices followed by different Departments, support services and administration.

METHODOLOGY ADOPTED

The methodology adopted to conduct the Green Audit of Guru Ghasidas Vishwavidyalaya will have the following components:

- a) Onsite field visits were conducted by the Green Audit Team as and when necessary.
- b) Enquiries were conducted amongst different stakeholders to know about the various components in connection with water use, energy consumption and waste disposal, etc.
- c) The water quality analysis was done using standard protocols.
- d) Air quality analyses of the University campus were carried out using standard protocol.
- e) The noise levels were measured using a Sound Level Meter at selected sampling stations during the day and night time within the campus. ❖ Different standard protocols were followed to document and estimate the floral and faunal diversity.

AUDIT STAGE

Guru Ghasidas Vishwavidyalaya started its green audit by assessing the green cover followed by looking into all the aspects which have been a part of the green audit viz. recording the land use and land cover (LULC), water availability and usage, waste generate and their management practices, recording of the environmental parameters, energy consumption and conservation strategies, etc.

The members of the audit team recorded the different facilities at the Guru Ghasidas Vishwavidyalaya, determined different types of appliances and utilities (Water cooler, taps, toilets, lights, fan, ACs etc.) as well as measured the usage per item (Watts indicated on the appliance or measuring water from a tap) and identified the relevant consumption patterns (such as how often an appliance is being used) and their impacts. The staffs, students and other stakeholders were interviewed through structured questionnaires to get details of

usage, frequency or general characteristics of different appliances. Data collection was done by onsite visit and also through questionnaires in different sectors such as water, energy, waste, biodiversity status. The ambient quality of the campus was recorded to monitor the environmental status within the University campus using standard protocols. The data obtained were collated and analyzed to prepare this audit report of Guru Ghasidas Vishwavidyalaya.

POST AUDIT STAGE

Land use and land cover

The topography of Guru Ghasidas Vishwavidyalaya campus is undulating with a wetland (lake) towards the centre that drains to the south eastern boundary. The water body is rain fed and has water almost throughout the year. The whole campus is interspersed with scattered trees at few places thus, making it a picturesque landscape suitable for a wide spectrum of flora and fauna. The Academic Departments and residential quarters/hostels have come up over the area which were highlands or in gradually filled lowlands. The present study revealed that the Guru Ghasidas Vishwavidyalaya campus has a total of 653.76 Acre of land. The GGV campus occupy an area of 491.93 acres under forest green area, 49.58 acres under wetland (Lake area), 6.77 acres under Botanical garden, 16.77 acres of playground. The large wetland is a home to a wide diversity of aquatic flora and fauna. It is a matter of concern that the wetland has been observed to be silted up and presently some of the area of the lake is under a thick cover of grass and aquatic weeds.



Fig 1: The Map of Guru Ghasidas Vishwavidyalaya campus

It is found that a total of about 71.24 acres are under the built-up category, of which residential quarters, hostels, academic departments and administrative units form a significant part. In absence of available high ground, the wetland is being filled up for new constructions. The campus is dispersed with roads connecting each building and along the

boundary of the main area which covered an estimated area of approximately 38.33 acres and the playgrounds covering an area of nearly 16.77 acres of land.

Table 1: Land use categories in Guru Ghasidas Vishwavidyalaya Campus

| SI.NO. | LAND USE CATEGORY | AREA (IN APPROX. ACRES) |
|--------|----------------------------------|--------------------------|
| 1 | BOTANICAL GARDEN AND FOREST PARK | 1.05 |
| 2 | WETLAND (LAKE AREA) | 49.58 |
| 3 | PLAY GROUND | 16.77 |
| 4 | ROADS | 38.33 |
| 5 | FOOT PATH | 1.44 |
| 6 | PUMP STATION | 0.85 |
| 7 | PROTECTION WALL | 0.58 |
| 8 | DRAIN | 3.6 |
| 9 | RETAINING WALL | 0.95 |
| 10 | CULVERT | 0.076 |
| 11 | BUILDING UNDER CONSTRUCTION | 8.53 |
| 12 | OVERHEAD TANK | 0.09 |
| 13 | CAR PARKING | 22.46 |
| 14 | GARAGE | 0.15 |
| 15 | BUILDING | 71.24 |
| 16 | TRANSFORMER | 1.05 |
| 17 | GENERATOR | 0.05 |
| 18 | SECURATIES HOUSE | 3.59 |
| 19 | WATER PUMP | 0.06 |
| 20 | SEPTIK TANK | 0.12 |

| | | |
|----|-------------------|--------|
| 21 | JUNGLE AREA | 491.93 |
| 22 | TIN SHED | 0.95 |
| 23 | POWER SUB STATION | 1.45 |
| 24 | TOILET | 1 |
| 25 | GARDEN | 6.77 |
| 26 | STATUE | 0.008 |

Observations

- The vegetation areas are found to be reducing over the years due to the coming up of new buildings.
- Occurrence of dense weed growth is a common feature after the rains and so the area is being cleaned every year in order to give an aesthetic look of the campus.
- Roadside avenue trees lack attention.
- Drainage links were found to be missing.

Suggestions and Recommendations

- Future plans of construction and activities should be based on the Landscape.
- Forest area, Wetland (Lake area), needs to be conserved as carbon sink.
- The trees planted needs to be managed regularly and more diversified plant to be planted instead of *Acacia*.
- To establish the Medicinal Plant Garden, Botanical Garden for awareness of students towards importance of medicinal plants and various other species of Plants for local people understanding.

Water

Water is an important natural resource and is available naturally depending on the climate and topographic features. All organisms are dependent on water for their living. Although water is available in nature, portable water is not available freely for human consumption. There have been many practices to conserve water so that it can be readily available for human use. It has been noticed that due to unsustainable use of water resources there is contamination and depletion of the ground water and also water which is available in various reservoirs like lakes, ponds, streams etc which is becoming more alarming. Therefore it becomes increasingly important to conserve protect and manage the water resources availability and usage so that it is sustainably used within the university campus. Water auditing is conducted to evaluate the quality, availability and usage of water; the facilities available and methods adopted to revitalize and use it so that the resources are intact without leading to deterioration.

Uses and management

A total of 800000 L of water is pumped every day for the university dwellers as well to meet the daily demands of the academic and administrative Departments (Table 2). The daily use of the water during 2020-21 was approx. 772700 L per day.

Table 2: Source and uses of water in the GGV campus

| Sl. NO. | PARAMETERS | INFORMATION |
|--|----------------------------------|--|
| 1 | No of well | Nil |
| 2 | No of motor pump used | 30 NOS |
| 3 | Horse power - motor | 2HP-02 NOS, 3HP-6NOS, 5HP-19NOS, 7.5HP- 3NOS |
| 4 | Capacity of tank (overhead tank) | 3,80,000 L |
| WATER USED IN DIFFERENT SECTION OF THE CAMPUS | | |
| | SECTIONS | WATER USES (L/DAY) |
| 6 | Hostel | 148500 |
| 7 | Residential quarter | 169200 |
| 8 | Administrative block | 15000 |
| 9 | Construction work | 200000 |

| | | |
|----|---|--|
| 10 | Canteen | 10000 |
| 11 | Urinals and toilets | 75000 |
| 12 | Departments | 80000 |
| 13 | Gardens | 25000 |
| 14 | Laboratories | 12000 |
| 15 | Drinking | 26000 |
| 16 | Leakages | 12000 |
| 17 | Main purpose of water uses in campus | Drinking, cooking, laboratories, gardens, toilets, construction |
| 18 | Nos of water tap excluding household and residential quarter | 1000 nos |
| 19 | Water cooler and drinking water filtration facilities | 55 |
| 20 | Nos of urinals and toilets (excluding household and residential quarter) | 115 |
| 21 | Nos of waterless / bio toilets | Nil |
| 22 | Any water wastage /why | Yes, leakage from pipe and tank leaving of taps open at times |
| 23 | Waste water sources | Leakage from pipe and tanks, overflow of tanks from residential quarter, toilets, laboratories, hostels. |
| 24 | Uses of waste water | Nil |
| 25 | The fate of wastewater from labs | Discharge into soak pit in case of contamination and natural discharge |
| 26 | Any waste water treatment for lab water | No |

| | | |
|----|--|--|
| 27 | Whether any green chemistry method practiced in labs | No |
| 29 | Rain water harvesting | Rain water harvesting is maintained by the water body within the premises which also help in maintaining the ground water level and there is no reusable rainwater which is harvested. Lake serves the main purpose of rain water harvesting |

The stake holders of the residential quarters of Guru Ghasidas Vishwavidyalaya not utilizing the grey water which is obtained from the various domestic activities. Guru Ghasidas Vishwavidyalaya is blessed with a natural large water body (lake) inside its premises. Naturally, this large lake serves the main purpose of rain water harvesting.

Water Quality assessment

The water requirements of Guru Ghaida Vishwavidyalaya, Bilaspur are met from underground tube wells. The water used by various section/Department given in the table 2. Water samples from different sources were collected and analysed for its quality parameters and the results are presented in Table 3. Heavy metals of two ponds were analyzed by Ultimate Environmental solution (Third party evaluation) and the data were recorded in the table.

Table 3: Water quality analysis report of the water samples obtained from different sources within GGV.

| S N | Sample | Temperature | pH | Turbidity (NTU) | Total Dissolved solids (mg/l) | Dis solved Oxygen (mg /l) | BOD (mg/l) | CO D (mg /l) | Chloride (mg/l) | Total Alkalinity (mg/l) | Electrical conductivity (µs/cm) |
|--------|--------------|-------------|-----|-----------------|-------------------------------|---------------------------|------------|--------------|-----------------|-------------------------|---------------------------------|
| 1 | Pond water 1 | 25.2 | 7.8 | 46 | 180 | 7.6 | 1.4 | 26 | 30 | 124 | 342 |
| 2 | Pond water 2 | 25.0 | 8.0 | 52 | 186 | 7.2 | 1.8 | 28 | 36 | 144 | 250 |
| 3 | Pond water 3 | 25.9 | 7.2 | 50 | 190 | 7 | 1.2 | 29 | 32 | 76 | 167.6 |

Observations

- GGV does not have a reusable water treatment facility for wastewater generated from Academic buildings, Administrative buildings, library, residential quarters, guest houses,

hostels, laboratories, canteen, etc.

- b) At times there is overflowing of overhead water tanks.
- c) Water consumption is not properly monitored within the campus as there are no systems to record it.
- d) There is accumulation of sediments in the GGV lake area especially during the rains.
- e) Water from the buildings is discharged into the lake.

Suggestions and Recommendations

- a) Rainwater harvesting systems could be improved so that there is a facility available in every building for reusing of water.
- b) A water conservation drives should be initiated by involving all the stake holders.
- c) Automated sensors can be installed to prevent the overflow from water tanks.
- d) Automated taps could be used so that usage of water can be reduced.

Solid Waste Management

Management of solid waste is one area where all stakeholders are more-or-less aware of the issues involved. Each of these sections/ stakeholders has appropriated their own set of solid waste management practices as per their convenience, requirements, and availability of resources. Investigations revealed that 32 Academic Departments of the University have a total of about 100 numbers of indoor dustbins installed for solid-waste disposals. On an average, each of these departments has a provision of about 3 dustbins. At present none of the Departments had facility of segregating the waste.

The teacher's quarters maintain on an average one personal dustbin for solid-wastes disposals and a pit for the dumping of organic wastes. 10% of the Academic Departments and 1% of residential quarters maintain separate disposal systems for dry and wet waste. The practice of separating bio-degradable waste from non-biodegradable ones is prevalent in the teacher's quarters, Guest House and 20% of Academic Departments but is absent in hostels. For all the academic departments, administrative office, residential quarter/hostels/guest house and canteens 90 % of the accumulated solid waste excluding the ones which are dumped in the pits is lifted by Bilaspur Municipal Corporation (BMC) every two days, which is then segregated and land filled while for the rest is composted. However, the need for a formal and centralized system for segregating the waste generated ought to be adopted in the University which will then followed by composting. Solid-waste recycling and composting is not practiced in the campus. Moreover, the practice of recycling is another avenue that requires immediate operationalization. The organic wastes filled in the pits are subjected to composting which forms a best practice in the campus. In addition to the organic waste generated from different units, large sources of organic wastes other than kitchen wastes (University canteen, house hold) like leave litter, terrestrial weeds etc that are generated from maintain and cleaning the campus are collected during different periods of the year. These organic wastes are hard to degrade in the soil due to high content of lignin.

Vermicomposting is the technology where with the use of locally available appropriate species of composting earthworms (*Perionyx excavatus*), huge amount of plant biomass produced in the University campus is reduced into available plant nutrient rich organic manure within a short time span. In our University some places we e using vermicomposting to manage the solid waste.

Liquid waste management: Liquid waste is generated from Science laboratories, Hostels, Residential quarters and canteen. Liquid wastes generated by the University are of two types:

1. Sewage waste

2. Laboratory, residential washing and canteen effluent.

The laboratory liquid is sent to soak pit and other liquid wastes are mainly drained to improve the ground level of water. University does not have any sewage treatment plant yet.

Biomedical waste management: In GGV University only few faculties use animal for their

research purpose from where some biomedical waste is produced. Though the amount of waste is very negligible amount

E-waste management

GGV 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 equipments 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 BuyBack option is preferred for technology upgradation. Hazardous Waste In India, the Ministry of Environment, Forest and Climate Change, Government of India; is the agency to promulgate the Hazardous Waste (Management and Handling) Rules, 1989, under the provision of the Environment Protection Act, 1986. These rules were amended and new rules entitled "Hazardous waste (Management, Handling, and Trans-boundary Movement) Rules, 2008" were promulgated, which was further amended in the years 2009 & 2010 for proper management and handling of hazardous waste in the country (CPCB, 2010-2011). These regulations sometimes require detailed knowledge of the constituents and properties of waste streams so they can be managed properly. GGV, like other entities that generate and manage hazardous wastes, is faced with a range of problems. The following features create hazardous waste management problems unique to the University:

- ❖ Most departments do not generate large quantities of hazardous waste and can be classified as conditionally exempt small quantity generators (generators of less than 100 grams of hazardous waste per month)
- ❖ Stakeholders are not adequately aware of the regulations that may apply to them, or they may have chosen to ignore the regulations, believing they do not have to comply. During the study it was noticed among the faculty members of GGV by the Green Audit Committee, that majority of the stakeholders (> 90%) were confident about their understanding of hazardous waste and their obligation in disposing of materials. Ideally, Handling, collection, and transportation and proper handling of chemicals begin with understanding the potential hazards related to their use. All stakeholders, especially from Academic Departments and laboratories should be responsible for disseminating information on hazardous materials being used in the facility. The dissemination of information can involve discussions on reactivity and possible health effects. The survey carried out by GGV Green Audit Committee revealed that despite having an understanding of hazardous waste; a majority of the respondents were uncertain of disposal of hazardous waste. Many respondents were not aware of the green initiatives which can be taken to manage hazardous waste. It is evident that hazardous wastes which though is generated in very small quantity requires transportation off the university property, to an approved treatment facility. It is evident that there is no

collection and management of waste across the campus, but improvements in the overall liquid waste is required to manage the handling and transportation of the generated waste to a treatment facility off the campus. The university faces several obstacles to ensuring the disposal of hazardous wastes in an appropriate manner. These include the need for funds to pay for an outside handler and on-site coordinator to manage the waste management program. The large variety and small quantities of wastes produced by the Academic Departments and the residential is also a manner of concern. Data from the survey indicates that household batteries such as alkaline batteries were most frequently disposed of as compared to household and office cleaners such as tiles and floor cleaners, pesticides, wood preservatives such as varnishes and paint products which are disposed in very low quantity. Caution must be taken while moving hazardous waste materials through campuses along public streets.

Observations

- a) Disposal of biomedical waste generated in the GGV laboratories is not streamlined.
- b) The liquid hazardous waste generated in the laboratories required transportation to off campus disposal facility.

Suggestions and Recommendation

- a) The GGV campus is to be declared as a plastic-free campus.
- b) The practice of using biodegradable materials should be encouraged as alternatives.
- c) Vermi-composting facilities could be expanded.
- d) A centralized system of recycling paper could be adopted.
- e) The incinerator can be installed in the campus.

Environmental quality

Air quality assessment

For air quality monitoring three parameters namely Particulate Matter (PM₁₀), was considered for measurement in the University campus. PM₁₀ is suspended particulate matter, either solid or liquid, with a diameter of 10 micrometers or less, including smoke, dust, soot, salts, acids, and metals. Particulate matter can also be formed indirectly when gases emitted from motor vehicles and industries undergo chemical reactions in the atmosphere. There is no air quality monitoring station is set up at the University premises. The air quality monitoring was conducted for 24 hour schedule by Environmental pollution Board, Bilaspur in 4 different location of the university. The sampling procedures for measurement of PM₁₀ was made according to the internationally accepted standard technique through use of Respirable Dust Sampler (RDS) manufactured by M/s Environtech Instruments PVT. LTD., New Delhi. The Particulate matter PM₁₀ was observed to be 84 µg/m³ Table, in the GGV campus which is lower than the permissible limits of CPCB Ambient Air Quality Standards of 100 µg/m³. In the

University Campus, the major source of PM₁₀ might be the dust from Vehicular traffic, construction, and burning.

Table : Status of ambient air quality in the campus of GGV

| Monitoring location | Time weighted | Particulate matter (PM ₁₀) µg/m ³ | Standards (CPCB, 2009) | Method Used |
|-------------------------|---------------|--|------------------------|-------------|
| Near Zoology Department | 24 Hours | 97.70 | 100 | Gravimetric |
| Near Professor colony | 24 Hours | 76.0 | 100 | Gravimetric |
| Near HRDC | 24 Hours | 80.0 | 100 | Gravimetric |
| Near Cafeteria | 24 Hours | 84.0 | 100 | Gravimetric |

In indoor environments people require fresh air because people spent most of the time inside the dwelling (Lingnel 2008, Ayanbimpe et al. 2010). According to Chadeganipour et al. (2010), all atmospheric air, whether indoor or outdoor, contains certain varieties of some fungal spores. Generally, outdoor air is the dominant source of indoor fungi (Shelton et al. 2002). Fungal spore concentration in outdoor environments consistently differs from indoor environments. Many aerobiological studies have been conducted for airborne fungal spores (Khandelwal 2008) but mainly from outdoor environments (Almina et al. 2019) but indoor environments are equally important because people spend most of their time indoor, punctuated by physicians (Portnoy et al. 2005). Nowadays fungal allergy is very common to people mainly those who spend most of the time indoor but it is difficult for diagnosis from the other type allergy due to fungi which are many and antigenically variable than the other allergens. The assessment of airborne fungal concentration was performed by Dr. SK Shahi, Botany Department, GGV and his team of Scholars using sedimentation plate technique (Karmakar et al 2020). Saboraud Dextrose Agar (SDA), Czapek-Dox Agar (CDA), Potato Dextrose Agar (PDA) and Malt Extract Agar (MEA) was prepared. The plates were exposed in indoor and outdoor environments of the Library, Canteen, Newly Constructed Building and Class Room. These plates were exposed for 5 minutes during the time in between hour 11 am to 5 pm after which they are sealed, labeled and transported to the laboratory. The culture plates were incubated at room temperatures (25°C) until growth appeared. Isolates were identified based on the standard texts and keys (Ellis 1971, Domsch et al. 1980, Watanabe 2002). A total of 132 colonies (Table 9) were found comprising of 10 genera. The dominant fungal genera were *Alternaria* sp. (10.0%), *Aspergillus* sp (32.87 %), *Fusarium* sp (4.06%), *Penicillium* sp (40.18%) and *Trichoderma* sp (12.79%). In this present study it was found that the number of fungal isolate was maximum in outdoor (85) compare than indoor (45).

It was concluded that proper and periodic maintenance of working environments involving

frequent cleaning, disposal of accumulated wastes, setting up of modern infrastructure facilities, application of fumigants/fungicides and use of dust masks while working can certainly help to improve the air quality and reduce the allergic incidence to people who work in such environments

Vehicular movements

It was estimated that on an average around 500 nos. of two wheelers and 150 nos of four wheeler vehicles visited GGV Campus in general days per month during 2020-21 excluding the vehicles of campus dwellers. The University has two designated parking places. Except 40 percent of the vehicles, rest are visiting for a while. Ambient Noise Levels Under the Air (Prevention and Control of Pollution) Act, 1981, noise is regarded as a pollutant. There are two major settings where noise mostly occurs; these are - community noise and industrial noise. Community noise is also called environmental noise and is defined as the noise emitted from all the sources except the noise from the industrial sources. As far as community noise is concerned the WHO guidelines recommend less than 30 dB(A) in bedrooms during the night which is essential for good quality sleep. Again, it should be less than 35 dB(A) in classrooms which is important for good teaching and learning conditions. The noise level monitoring was carried out to assess the equivalent noise level (Leq) around the GGV campus both in the day time and night time. Mobile based Sound Level Meters application was used for monitoring of noise levels. The noise levels were monitored at least for 20 minutes at each location. The noise monitoring was carried out at the different location of the University.

Table 10: Ambient Noise Levels within GGV. Campus

| Sl. No. | Location Measured | Noise Level at Day Time Leq dB(A) | Standard at Day Time for Sensitive Zone Leq dB(A) | Measured Noise level at Day Time Leq dB(A) | Standard at Night Time for Sensitive Zone Leq dB(A) |
|---------|---------------------------------------|-----------------------------------|---|--|---|
| 1 | Biotechnology Department | 41 | 50 | 34 | 40 |
| 2 | Canteen | 61 | 50 | 45 | 40 |
| 3 | Central Library out side | 49 | 50 | 34 | 40 |
| 4 | Engineering and Technology department | 48 | 50 | 33 | 40 |
| 5 | Chemistry | 48 | 50 | 37 | 40 |

| | | | | | |
|----|------------------------------|----|----|----|----|
| 6 | Prof. Colony | 46 | 50 | 23 | 40 |
| 7 | Kali Mandir | 48 | 50 | 32 | 40 |
| 8 | HRDC | 48 | 50 | 23 | 40 |
| 9 | PNB ATM | 50 | 50 | 23 | 40 |
| 10 | Main gate | 46 | 50 | 34 | 40 |
| 11 | Main road outside the campus | 69 | 50 | 65 | 40 |

Due to the reduced population on the campus, the community noise levels at most locations are within the permissible levels. However, it is important to note that the average noise level, considering all sampling stations within the campus, was higher than the maximum permissible limit of 50db(A) as recommended by the CPCB for all the location nearing the boundary. Although the Leq levels are high outside the atmosphere of the classrooms are quite calm and should be below the WHO recommended value of 35 dB(A) which is suitable for classroom teaching-learning environment.

Observations

- It is estimated that > 60 percent of campus dwellers walk within the campus.
- Noise is a disturbing factor on campus, particularly along the national highway, and within the campus during all India Examinations and Admission periods.

Suggestions and Recommendations

- Students and staff should be encouraged to use bicycle.
- The vehicular account should be maintained for the campus dwellers and staff members.
- Stop the entry of vehicle in to the campus to maintain the noise and pollution.
- Noise attenuation has to be done by planting vegetation around buildings and along Highway.
- Govt. authorities are requested to monitor the use of loudspeaker and noise producing sources within the 100m radius outside the University campus in compliance with prescribed rules.

Biodiversity

Biodiversity audit of GGV University is a continuous process and efforts of the faculty members, researchers, and the students to assess the living biota and its conservation have been going on for many years. Regularly many conservation practices are taken up by the University so that anthropogenic impact on the biodiversity components and ecosystems are

minimized. The scientific information and existing database are based on various studies as well as research work done by Botany, Zoology and Forestry and Biodiversity departments of GGV University. Despite various limitations, data have been compiled to prepare authentic documentation that provides an insight into the status of the biodiversity and natural ecosystem in the campus. Different conservation practices also have been applied for a better and sustainable campus ecosystem. The main objective of biodiversity audit is to provide documentation of biodiversity components within the institutional area, to observe ecosystem structures and functions along with regular biodiversity monitoring of the different components of biodiversity. A lake is located within the campus and maintained by GGV University to enrich the beauty of the campus. Many migratory birds are often observed and some of the fishes are available during the rainy seasons. Spread over approximately 700 acres of land, the GGV University campus is home to different varieties of fauna as well as flora.

Observations

- a) Fascinating characteristic of the GGV University Campus is its lush green environment with rich floral and faunal diversity.
- b) The trees existing are not managed properly and even are axed at times for construction activity.
- c) Growth of weeds and other invasive species is a cause of concern after the rains.

Suggestions and Recommendations

- a) The ecosystem of the campus should be managed properly for a better environment.
- b) The lake which forms the wetland of the campus should be conserved and maintained.
- c) Proper landscape and long-term plan of the vegetational distribution/area is required for sustainable management of the trees and other vegetation in the campus.

Overall Suggestions and Recommendations

Committee member suggested for audit for next year audit to incorporate some other experts like person of energy, health and pharmacy.



क्षेत्रीय कार्यालय,
छत्तीसगढ़ पर्यावरण संरक्षण मण्डल,
व्यापार विहार पं. दीनदयाल उपाध्याय पार्क के पास, बिलासपुर (छ.ग.)

e-mail: cecb.robilaspur@gmail.com, Ph. No. 07752-261172

क्रमांक 2/27 /क्षेका/छ.ग.प.सं.मं./2022

बिलासपुर, दिनांक: 07/01/2022

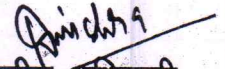
प्रति,

✓ रजिस्ट्रार,
गुरुघासीदास विश्व विद्यालय,
कोनी, बिलासपुर (छ.ग.)

विषय:- जल विश्लेषण एवं वायु मॉनिटरिंग रिपोर्ट के सम्बंध में।

उपरोक्त विषयांतर्गत आपके गुरुघासीदास विश्व विद्यालय परिसर के 02 तालाबों से एकत्रित जल नमूनों का विश्लेषण परिणाम एवं 04 स्थानों में किये गये वायु मॉनिटरिंग रिपोर्ट संलग्न कर प्रेषित है।

संलग्न:-उपरोक्तानुसार।


क्षेत्रीय अधिकारी,
क्षेत्रीय कार्यालय
छ.ग.पर्यावरण संरक्षण मण्डल
बिलासपुर



Ultimate
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HDD-272, Phase III - Near JP Chowk
Ring Road No.-2, Kabir Nagar, Raipur (C.G.) - 492099
Ph : 0771 - 4027777 | Email : ultimatenviro@gmail.com

Recognized by Ministry of Environment Forest and Climate Change under EP act 1986

Name & Address Of The Customer

To,
THE DEPARTMENT OF BOTANY
C/o PRINCIPAL
GURU GHASIDAS VISHWAVIDYALAYA
KONI, BILASPUR - 495009

| | |
|------------------|--|
| Report No. | UES/TR/21-22/04909 |
| Lab Ref No. | UES/21-22/W/08720 |
| Date of Sampling | 22/12/2021 |
| Date of Receipt | 22/12/2021 |
| Date of Report | 27/12/2021 |
| Date of Analysis | START: 22/12/2021 END: 27/12/2021 |

SAMPLE DETAILS

| | | | |
|-------------------|-----------------------------------|-----------------------------|----------------|
| Sampling Location | 1. SW - 3 GGU | | |
| Customer Ref. No. | Mail Received, dated : 21/12/2021 | | |
| Sample Type | Surface Water | Sample Condition At Receipt | Ok |
| Packing Of Sample | Plastic Bottle | Sample Collected By | Customer |
| Other Details | Sealed | Quantity Received | Approx. 2 Ltr. |

TEST REPORT

| SR. NO. | PARAMETER | UNIT | METHOD OF TEST | RESULT |
|---------|-----------------|------|--------------------|------------|
| | | | | SW - 3 GGU |
| 1 | Nickel (as Ni) | mg/l | IS:3025: (Part-54) | N.D. |
| 2 | Arsenic (as As) | mg/l | IS:3025: (Part-37) | N.D. |
| 3 | Lead (Pb) | mg/l | IS:3025: (Part-47) | N.D. |
| 4 | Mercury (Hg) | mg/l | IS:3025: (Part-48) | N.D. |
| 5 | Fluoride (as F) | mg/l | IS:3025: (Part-60) | 0.11 |

Note: mg/lit.:milligram per liter, N.D. - Not Detection

REMARKS: RESULTS ARE AS ABOVE

Terms & conditions

- The report for publication, arbitration or as legal dispute is forbidden.
- Test sample will be retained for 15 days after issue of test report unless otherwise agreed with customer.
- This is for information as the party has asked for above test(s) only

REVIEWED BY

Thakur
27/12/2021



For ULTIMATE ENVIROLYTICAL SOLUTIONS

Phadp
27/12/21

AUTHORIZED SIGNATORY

-----End of the test report-----



Ultimate
ENVIROLYTICAL SOLUTIONS

HDD-272, Phase III - Near JP Chowk
Ring Road No.-2, Kabir Nagar, Raipur (C.G.) - 492099
Ph : 0771 - 4027777 | Email : ultimatenviro@gmail.com

Format No. UES/FORM/

Recognized by Ministry of Environment Forest and Climate Change under EP act 1986

| | | | | | |
|---|--|--------------------------|--|--------------------------------------|--|
| Name & Address Of The Customer | | REPORT NO | | UES/TR/21-22/04910 | |
| To, THE DEPARTMENT OF BOTANY C/o PRINCIPAL GURU GHASIDAS VISHWAVIDYALAYA KONI, BILASPUR - 495009 | | LAB REF NO | | UES/21-22/S/08721-08724 | |
| | | DATE OF SAMPLING | | 22/12/2021 | |
| | | DATE OF RECEIPT | | 22/12/2021 | |
| | | DATE OF REPORT | | 27/12/2021 | |
| | | DATE OF ANALYSIS | | START: 22/12/2021 END: 27/12/2021 | |
| SAMPLE DETAILS | | | | | |
| MONITORING FOR | SOIL | CUSTOMER REF. NO. & DATE | | MAIL RECEIVED, DATED : 21/12/2021 | |
| SAMPLING LOCATION | 1. S-1 GGU | | | | |
| | 2. S-2 GGU | | | | |
| | 3. S-3 GGU | | | | |
| | 4. S-4 GGU | | | | |
| SAMPLE COLLECTED BY | CUSTOMER | | | | |
| SAMPLING PROCEDURE | MANUAL ON SOIL, PLANT & WATER ANALYSIS | | | | |
| SAMPLE QUANTITY/PACKING | 500 GM (APPROX) EACH | | | | |

TEST REPORT

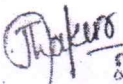

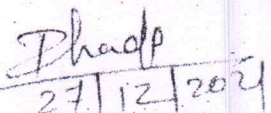
| Sr. No. | Parameter | Unit | Method Reference | Result | | | |
|---------|---------------------|-------|--------------------------------------|---------|---------|---------|---------|
| | | | | S-1 GGU | S-2 GGU | S-3 GGU | S-4 GGU |
| 1 | pH Value | - | IS: 2720: (PART-26): 1987 RA 2011 | 7.63 | 7.72 | 7.19 | 6.12 |
| 2 | Nitrogen (as N) | kg/ha | AGRICULTURE SOIL MANUAL | 146.3 | 168.9 | 176.4 | 180.2 |
| 3 | Phosphorus (as P) | kg/ha | AGRICULTURE SOIL MANUAL | 9.77 | 7.92 | 9.53 | 8.29 |
| 4 | Potassium (as K) | kg/ha | AGRICULTURE SOIL MANUAL | 224.9 | 369.9 | 409.2 | 494.8 |
| 5 | Organic Carbon (OC) | % | AGRICULTURE SOIL MANUAL | 0.46 | 0.53 | 0.58 | 0.62 |

N.D.: NOT DETECTED

REMARKS: RESULTS ARE AS ABOVE

Terms & conditions

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- > This is for information as the party has asked for above test(s) only.

| | | |
|--|---|---|
|  27/12/2021 REVIEWED BY |  | For ULTIMATE ENVIROLYTICAL SOLUTIONS  27/12/2021 AUTHORIZED SIGNATORY |
|--|---|---|

-----End of the test report-----



Ultimate
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Format No. : UES/FORM

HDD-272, Phase III - Near JP Chowk
Ring Road No.-2, Kabir Nagar, Raipur (C.G.) - 492099
Ph : 0771 - 4027777 | Email : ultimatenviro@gmail.com

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| | | | |
|--|--|--------------------------|--------------------------------------|
| Name & Address Of The Customer | | REPORT NO | UES/TR/21-22/04911 |
| To, THE DEPARTMENT OF BOTANY C/o PRINCIPAL GURU GHASIDAS VISHWAVIDYALAYA KONI, BILASPUR - 495009 | | LAB REF NO | UES/21-22/S/08725 |
| | | DATE OF SAMPLING | 22/12/2021 |
| | | DATE OF RECEIPT | 22/12/2021 |
| | | DATE OF REPORT | 27/12/2021 |
| | | DATE OF ANALYSIS | START: 22/12/2021 END: 27/12/2021 |
| SAMPLE DETAILS | | | |
| MONITORING FOR | SOIL | CUSTOMER REF. NO. & DATE | MAIL RECEIVED, DATED : 21/12/2021 |
| SAMPLING LOCATION | 1. S-5 GGU | | |
| SAMPLE COLLECTED BY | CUSTOMER | | |
| SAMPLING PROCEDURE | MANUAL ON SOIL, PLANT & WATER ANALYSIS | | |
| SAMPLE QUANTITY/PACKING | 500 GM (APPROX) | | |

TEST REPORT

| Sr. No. | Parameter | Unit | Method Reference | Result |
|---------|------------------------|-------|-----------------------------------|--------|
| 1 | pH Value | - | IS: 2720: (PART-26): 1987 RA 2011 | 7.66 |
| 2 | Nitrogen (as N) | kg/ha | AGRICULTURE SOIL MANUAL | 171.6 |
| 3 | Phosphorus (as P) | kg/ha | AGRICULTURE SOIL MANUAL | 9.45 |
| 4 | Potassium (as K) | kg/ha | AGRICULTURE SOIL MANUAL | 382.8 |
| 5 | Organic Carbon (as OC) | % | AGRICULTURE SOIL MANUAL | 0.49 |
| 6 | Nickel (as Ni) | mg/kg | AGRICULTURE SOIL MANUAL | N.D. |
| 7 | Lead (as Pb) | mg/kg | AGRICULTURE SOIL MANUAL | N.D. |
| 8 | Zinc (as Zn) | mg/kg | AGRICULTURE SOIL MANUAL | 0.31 |
| 9 | Chromium (as Cr) | mg/kg | AGRICULTURE SOIL MANUAL | N.D. |
| 10 | Copper (as Cu) | mg/kg | AGRICULTURE SOIL MANUAL | 0.20 |

N.D.: NOT DETECTED

REMARKS: RESULTS ARE AS ABOVE

Terms & conditions

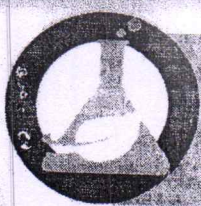
- > The report for publication, arbitration or as legal dispute is forbidden.
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- > This is for information as the party has asked for above test(s) only.

Thapan
24/12/2021



For ULTIMATE ENVIROLYTICAL SOLUTIONS

Phad
27/12/21



Ultimate
ENVIROLYTICAL SOLUTIONS

272-HDD, Phase - III
Kabir Nagar, Ring Road-2
Raipur, Chhattisgarh

TAX INVOICE

ORIGINAL FOR RECEIPT

Ultimate Envirolytical Solutions

HDD - 272, Phase - III, Near JP Square,
Kabir Nagar, Ring Road No. - 02,
Raipur (C.G.) - 492099
Email - ultimatenviro@gmail.com

| | |
|---------------------|-----------------|
| GSTIN Number | 22AAEFU4612N2Z4 |
| State Code | 22 |
| SAC Code | 9983 |
| PAN NO. | AAEFU4612N |

Party Details :

To,
The Registrar,
Guru Ghasidas Vishwavidyalaya,
Koni, Bilaspur - 495009 (C.G.) (India)

| | |
|-----------------------|----------------|
| Invoice Number | UES/21-22/0731 |
| Invoice Date | 30/12/2021 |
| Ref. No. | Mail Received |
| Ref. Date | 21-12-2021 |

| Sr. No. | Description | Qty | Rate (Rs.)/Sample | Amount (Rs.) |
|---------|-----------------|-----|-------------------|--------------|
| 1 | Water Analysis. | 2 | 1,250.00 | 2,500.00 |
| 2 | Water Analysis. | 1 | 4,000.00 | 4,000.00 |
| 3 | Soil Analysis. | 4 | 2,175.00 | 8,700.00 |
| 4 | Soil Analysis. | 1 | 6,175.00 | 6,175.00 |

Charges 21,375.00

Discount @ 40% 8,550.00

Amount 12,825.00

CGST @ 9% 1,154.25

SGST @ 9% 1,154.25

Total Amount 15,133.50

R/O(+) 0.50

Payable Amount 15,134.00

Rupees in words:

(Fifteen Thousand One Hundred Thirty Four Only.)

Our A/c Detail:

Name: State Bank of India
Address: SME Pandri Raipur
Branch Code: 63712
A/c No. 35728362295
IFSC Code-SBIN0063712

For, Ultimate Envirolytical Solutions

Julia
30/12/2021
Authorized Signatory

Clean & Green Campus recognitions / awards



Certificate

This certificate is awarded to

Guru Ghasidas Vishwavidyalaya

as The 673rd World's Most Sustainable University
in 2021 UI GreenMetric World University Rankings

Jakarta, 14 December 2021



Prof. Ari Kuncoro, S.E., M.A., Ph.D.
Rector of Universitas Indonesia



Prof. Rini Fitri Sari, M.M., M.Sc.
Chairperson of UI GreenMetric
World University Rankings

Beyond the Campus Environmental Promotion Activities



Plantation inside ggv campus



WORLD FORSTRY DAY CELEBRATION



Senior Faculty Dr.S.S.Dhuria presenting on Biodiversity Conservation Assessment and Management Plan at Amarkantak to Villagers and students of the Workshop

Unnaat Bharat Abhhiyan

Under Unnaat Bharat Abhhiyan inspired for the vision of transformational Change among the village was conducted by the ggu and the Tribal dominated villagers learned about the process of growing medicinal plants like giloy and importance cleanliness in the village. Nodal officer Dr. K.K.Chandra also carried many environmental awareness program, Corona awareness for adopted villages(Pudu, Ringwr,Umariyadadar,and Tendubhata)2021



Financial Information to Villagers

Financial management and its detailed information was conducted through organizing camp at the village Pudu 29 December 2021. In this regard detailed information was given like Govt Scheme for Woman and its funding detailed provided by the bank. Guidance for the establishment of cottage industry was given to rural people for the benefited. In this event more than 150 villagers had participated and got benefitted



Finacial Information to Villagers



Instructions about financial Management at pudu village

ग्रामीणों को दी गई वित्तीय जानकारी

पत्रिका न्यूज नेटवर्क

patrika.com

खैरा. गुरु घासीदास विश्वविद्यालय के द्वारा गोद ग्राम पुडू में एक जिला स्तरीय वित्तीय साक्षरता शिविर का आयोजन किया गया। मुख्य अतिथि मुख्य कार्यपालन अधिकारी जनपद पंचायत कोटा ललिता भगत ने ग्रामीणों से आह्वान किया कि अर्थ व्यवस्था के संवर्धन के लिए रोजगारोन्मुखी जीविका प्रणाली को अपनाये एवं स्वयं रोजगार दाता बनें।

उन्होंने कहा कि महिला समूहों को सरकार के द्वारा एवं बैंक द्वारा उनके प्रकार की सुविधाएं प्रदान की जाती हैं, जिसके तहत वे कई प्रकार के उत्पाद जैसे अगरबत्ती, पापड़, मशरूम, कंचुआ व खाद आदि तैयार कर घर बैठे ही अच्छी आय प्राप्त कर सकती हैं। जिले के अग्रणी बैंक भारतीय स्टेट बैंक के प्रबंधक देवदास चटर्जी ने धन एवं उसको बढ़ाने हेतु अनेक सुझाव दिए। उन्होंने कहा कि अब सभी लोगों



खाता बैंक में खुल चुका है, लेकिन मिनिमम धनराशि नहीं होने के कारण अटल पेंशन योजना, दुर्घटना बीमा आदि का लाभ लोगों को नहीं मिल पाता है। अतः कुछ रकम बैंक में जरूर रखें एवं बीच-बीच में उसकी जानकारी बैंक से लेते रहें। तभी खाताधारकों को सरकार की सभी योजनाओं का लाभ मिल सकेगा।

वित्तीय साक्षरता काउंसलर देशधर ने बैंक द्वारा संचालित अनेक ऋण सुविधाओं के बारे में जानकारी दी। उन्नत भारत अभियान के नोडल अधिकारी डॉ. केके चंद्रा ने केन्द्रीय विश्वविद्यालय के द्वारा गोद ग्रामों में

चलाये जा रहे जनजागरण एवं अन्य कार्यक्रमों के बारे में जानकारी दी। पंजाब नेशनल बैंक छपोरा शाखा के प्रबंधक विनीत ने किसान क्रेडिट कार्ड बनाने के लिए जरूरी कागजात के बारे में जानकारी देते हुए अपील किया कि किसान इसका लाभ अवश्य लें। कार्यक्रम को पंचायत इंस्पेक्टर एसके यादव, सुनील मिश्रा, धन सिंह पैकरा, डॉ. एसके शाही ए.डॉ. सुबल दास प.डॉ. डीके पटेल ने भी संबोधित किया। इस दौरान सरपंच पावे टोप्पो, पूर्णिमा पैकरा, दुबराज सिंह, आनंद जायसवाल, पतराम सिंह, राजेश्वर टोप्पो व ज्ञान सिंह आदि मौजूद रहे।



World Nature Conservation Day 28 July Ratanpur 2019 the students of forestry department



Pond Cleanliness campaign kota 2019



Students of Forestry department during the cleanliness drive ad water conservation Awareness



Distribution of cloth bag to the students beyond the single use plastic at kota Block Bilaspur



Environmental awareness to the school children at the village level



Plant sapling distribution from the students of forestry department outside the main campus of ggvt



National Web Conference

Theme: Tiger Conservation in India: Status and Future Strategies

INTERNATIONAL TIGER DAY



29th JULY 2021 | 12 PM- 3 PM | SAVE FORESTS | SAVE THE TIGER

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|  |  |  |  |
| Prof. S.S. Singh Dean, SoS, NR, GGV, Bilaspur Keynote Speaker | Kedar Gore Director, TCF Invited Speaker | S. Jagdishan, IFS CCF Wildlife & Field Director, ATR Invited Speaker | Prof. Yogesh Dubey IIFM, Bhopal Invited Speaker |
|  |  |  |  |
| Dr. S.C. Tiwari Head, Dept. of Forestry Welcome Note & About the Conference | Dr. Garima Tiwari Assistant Prof., Dept. of Forestry Details of the Program | Upendra Dubey SPO, WWF-CIL Tiger Corridors | Dr. Brijendra Pratap Singh Assistant Prof., Dept. of Forestry Vote of Thanks |

Competitions for College/University Students
Open for UG & PG Students only
Painting Competition
Extempore Competition
Tiger Quiz

Academic Partners





WWF, India (CIL) Achanakmar Tiger Reserve The Corbett Foundation



Registration



One Day National Seminar

on

Environmental Conservation and Human Life

(पर्यावरण संरक्षण और मानव जीवन)



आज़ादी का अमृत महोत्सव

July 02nd, 2022



Prof. Alok Kumar Chakrawal
Hon'ble VC, GGV

Convener

Prof S S Singh, Dean, School of Natural Resources, GGV



Shri Gopal Ji Arya
National Convener
Paryavaran Sanrakshan Gati Vidhi
Surat Gujarat





Theme: Ecosystem Restoration




World Environment Day

5th June, 2021



Dr. S.C. Tiwari
Head, Dept. of Forestry, Wildlife and Environmental Sciences, Guru Ghasidas Vishwavidyalaya



Dr. Pranab J. Patar
Chief Executive, Global Foundation For Advancement of Environment



Dr. Brijendra Pratap Singh
Asst. Prof. Guru Ghasidas Vishwavidyalaya
WED- Coordinator 5 June 2021
Contact No: +91 9815385888

[meeting link](https://meet.google.com/mzp-isoa-wmk)
<https://meet.google.com/mzp-isoa-wmk>

World Environment Day

Webinar details

Welcome speech (10:30 am)
Dr. S.C. Tiwari, Head, Dept. of Forestry, Wildlife and Environmental Sciences

About the programme (10:45 am)
Dr. Pranab J. Patar, Chief Executive, Global Foundation For Advancement of Environment

Speech (11:00 am)
Prof. S.S. Singh, Dean, School of Natural Resources GGV

Lecture (11:30 am)
Shri. Kedar Gore, Director, The Corbett Foundation.


Lecture (12:30 am)
Dr. Abdhesh Kumar Gangwar, Former Sr. Programme Director, CEE Coordinator, RCE, Srinagar, Kashmir

Vote of Thanks (2:00 pm)
Dr. Brijendra Pratap Singh, Asst. Prof. Dept. of Forestry, Wildlife and Environmental Sciences


Announcement of the Winners (1:30 pm)

Jointly Organized By

Dept. Of Forestry, Wildlife and Environmental Sciences, Guru Ghasidas Central University, Koni Bilaspur, Chhattisgarh.
&
Global Foundation for Advancement of Environment & Human Wellness, Nehru Place, New Delhi



INVITATION



Guru Ghasidas Vishwavidyalaya

Patron
Prof Alok Kumar Chakrawal
Hon'ble VC, GGV, Bilaspur

Chief Guest
Gopal Jee Arya
National Convener Paryavaran Sanrakshan Gatividhi, Surat, Gujarat

One Day National Seminar

On
Environmental Conservation and Human life
(पर्यावरण संरक्षण और मानव जीवन)

Date:- 2nd July 2022
Time: 11:00 am
Venue
Smart Class Room, Dept. of Biotechnology

We Cordially invite Your gracious Presence

Convener
Prof S S Singh
Dean, School of Natural resources
GGV

Department of Forestry, Wildlife & Environmental Sciences
Bilaspur, Chhattisgarh, India- 495009

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| <p>BEST PRACTICE I</p> | <p>Title of the Practice: Green and Environmentally Sustainable Practices</p> <p>Towards sustainable Renewable Energy based campus</p> <p>Water Conservation Practices (Rain Water Harvesting System and Water Storage Tanks-Ponds)</p> <p>Plantation Drives</p> <p>Net Zero carbon foot print campus</p> <p>Nature Conservation</p> <p>Objective of Practice</p> <p>Create renewable energy-based electricity generation to meet out energy demand of the campus</p> <p>Utilize every drop of rain water through water harvesting structures in all buildings and water bodies to recharge and improve the groundwater level.</p> <p>Special plantation efforts to increase the green cover and biodiversity to create oxy-zone area and protect rare and endangered species.</p> <p>To sustain efforts for Net Zero carbon foot print campus</p> <p>The context</p> <p>GGV is a lush green campus having 74% forest cover including 11% through plantation. This has been made possible by adopting and inculcating the nature conservation practices among the learners. Students are encouraged and involved in these activities through awareness/extension programs on environmental protection/conservation practices such as water conservation, energy conservation, flora and fauna conservation. This is done through activities such as nature trails, plantation drives, bird watching, butterfly counts, and wild animal rescue etc.</p> <p>With regard to preservation of rare and endangered species as well as developing innovative technologies, massive plantation drives are carried out to plant indigenous, rare and endangered species, bamboo plantation (five acres) miyawaki forest (2 acres), mango orchards (1 acre), rare endangered species plantation (17 acres). Students' involvement is ensured by adopting one student-one plant scheme under which intense</p> |
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| | <p>road side plantation, plantation around water bodies, near academic buildings, in botanical garden and herbal garden has been conducted. This enhanced the richness of biodiversity in the campus. Another important measure in this direction is notifying sensitive areas as restricted vehicle zone providing a safe habitat for various wild species.</p> <p>The context of plantation activities includes the upliftment of the local environment by introducing more green cover to the area which can help in maintaining ecosystem services like water conservation, air regulation, pollution control as well as habitat availability to various species. Various resources will also be obtained in future through these plantation units for income generation and to make students self-employed.</p> <p>Water conservation efforts have been carried out by rain harvesting on roof and on ground as well as recycling of used water. Three natural water bodies existing on the campus have been converted into water storage ponds on the natural inlet location of the University. Rainwater harvesting systems have been implemented on almost all possible buildings.</p> <p>The solar panel has been installed to reduce pressure on coal-based power generating systems and protecting environment for future generations. Estimated produced energy is surplus in the credit of the university and may be used as an income generating system. Solar panels have been installed on the rooftop of university buildings on campus.</p> <p>In our efforts of introducing green practices, the use of e-vehicles and bicycles to reduce carbon emissions has been promoted among the students, research scholars, university staff, and faculty within the campus. As a result 1000+ bicycles and e-rickshaws are operating routinely in the campus. University also organizes Conferences, Seminars, and Workshops to sensitize society and bring awareness on climate change, environment, and sustainability. Roadside pedestrian-friendly pathways provide pedestrians with a safe walk-through on the campus.</p> <p>University has put a ban on the utilization of single-use plastic on campus. Students are discouraged to use plastic on campus and are sensitized to make the campus plastic free. Slogans and posters are put on the walls of common places like canteens, play areas, etc., to educate students about the dangers of using plastic.</p> |
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The Practice

Solar Panel: Guru Ghasidas Vishwavidyalaya took initiative to cut down the conventional energy use on campus. For this purpose, the university has installed 2 MW rooftop solar power plant to harness solar energy. The university is also promoting the use of energy-efficient appliances on the university campus. More than 86% of the university's appliances are energy efficient. The total electricity usage of Guru Ghasidas Vishwavidyalaya Campus during 2021-2022 was 1429004 Kwh. The University utilizes the demanded electricity for research, lighting, cooling, laboratory appliances, and other digital appliances. This is easily met out by the renewable energy generated through solar plant. We aim to attain net Zero electricity usage through conventional sources at the earliest. In addition energy produced from three bio-gas plants installed and operated on the campus using generated waste also helps in enhancing green coverage and green practices.

Rainwater Harvesting System: University has a built up area of 258132 square meters. All the fifty two buildings belonging to academic departments and administrative/support system have rain water harvesting systems as per the standard procedures. More than two hundred twenty-five staff quarters are also discharge their water through connected discharge line into the water bodies. As per the official meteorology data, considering the average rainfall of Bilaspur 1292 mm, the total water 309758.40 cubic meters is charged in the ground through the rain water harvesting efforts. In addition, 655.78 acres of the campus land has topology in such a manner that the three major water bodies/ponds collects rain water from catchment area of approximately 20 sq. km. The water bodies are inter-connected and supported by anicuts and at appropriate places for the storage of rain water.

Plantation Drive: The plantation activities are planned in a systematic manner through a number of steps, including selection of sites with better soil and selecting the right species for each area. Plantation areas are appropriately fenced for protection measures and pits of suitable depth are dig to support plants. Fruiting species like Mango, Jamun, Imli, Amla, Badam, Jack Fruit etc. are planted and the soil is mixed with organic manures.

In order to achieve better outcomes, regular irrigation procedures are carried out. Similar planting practices have been performed in the bamboo plantation unit of campus to introduce a variety of bamboo species for diversity enhancement on campus. Plantations have also been performed under extension activities by students on the university campus. About 15000+ plants have been planted in recent years throughout the university campus. The university has 291024 m² (11%) area under plantation of various species such as Peltophorum, Eucalyptus, Mango, Syzygium, Ficus, Pongamia, Cassia, Acacia, Bauhinia, Bamboo, Albizia, Embelica, Anthocephalus, *Mimosa Terminalia*, *Azadirachta*, etc. established as Miyawaki and miscellaneous forests.

Nature Conservation: University Campus is located in suburban area of Bilaspur City, Chhattisgarh, India having lush green forest cover with more than 74 % (1954065.09 m²) forest area of its total terrestrial land. The campus has a natural and man-made forest with a wide range of floral and faunal diversity. Due to various sustainability practices adopted by the university the campus of Guru Ghasidas Vishwavidyalaya has been awarded as the 503th World's Most Sustainable University and 17th among Indian Universities in 2022 UI Green metric World University Rankings. A total of 1050 universities from 85 countries participated in this event.

Evidence of Success

- On the rooftops of all the buildings, a power plant of 2 MW has been installed.
- In the years 2021 and 2022, Guru Ghasidas Vishwavidyalaya has performed various plantation activities which include the development of Fruit orchard, a Bamboo plantation unit and other plantations throughout the university campus. The primary objective of these plantations is to increase the tree biodiversity and green cover of the area for creating a beautiful ambiance and a better environment.

Geo-tag photographs of the facility

Green & Environmentally Sustainable Campus Initiatives



Solar Energy

