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AIM OF GREEN PRACTICES

To sustain all-Natural resources by creating an Eco- friendly environment on the campus there by adapting the Engineering Technologies and Energy conservation methods.

Green Campus is an initiation from the GRIET staff and students which runs as an active body of organization. It focuses on keeping the campus environment healthy and pledges to provide a greener tomorrow.

OBJECTIVES OF GREEN PRACTICES

- Water conservation by Rainwater Harvesting using Recharge pits, Recharge Bore wells
- Adopting the alternative energy conservative system like solar plant
- Reusing the energy by wastewater and recycling of water using the sewerage treatment plant
- Solid waste management using the Management and recycling by solid waste compost methods
- To maintain the green and healthy environment in the campus developing the greenery
- To develop healthy society and prevent water diseases, supply clear drinking water in the campus by means RO (reverse osmosis) system
- To maintain clean and fresh air in the campus by using electric vehicles and by cycles
- To develop the fruit plantation to Improve Biodiversity.

OVERVIEW

Green Campus GRIET's environment makes an aesthetic impression on those who step into the campus while simultaneously presenting the pedagogical/academicals mission. Consequently, students along with faculty learn and live on and around campus to gain a new dimension to their learning and teaching experience and an increased appreciation of the natural world. GRIET has undertaken a "Green Campus" initiate and focused on campus flora fauna, rainwater harvesting, solar energy resources, recycle the wastewater from the sewage treatment plant etc.

The following green activities are executed in the Academic Year GRIET campus has divided in to six sector and each sectors A, B, C, D, E, and F. The various Activity s of green campus such as

1. Plantation drives in house campus and outside the campus is allocated to each Departments in the campus. Students and faculty coordinators are involving by Haritha Haram Programme
2. Eco friendly Environment in the campus by green day
3. Conducting and spreading the green awareness among the community
4. Protecting the environment from pollution and contamination by effective solid waste management
5. Conducting the seminars and debate and site visits to generate the ideas and awareness

Among all student community

WATER MANAGEMENT

Rainwater Harvesting Pits in GRIET

Rainwater harvesting structures and utilization in the campus

Rainwater harvesting is a technique of collection and storage of rainwater into natural reservoirs or tanks or the infiltration of surface water into subsurface aquifers. The endeavour is to collect and make use of every drop of water which falls on the GRIET campus. Measures are taken for rainwater harvesting which includes construction of four rainwater storage pits of 2.65Lakh litres capacity. Natural existing site for check dam construction and other harvesting structures like recharge tank, contour bunding also planning in the campus.

Huge quantity of the rainwater collecting tanks are constructed in the campus to effective reuse of rainwater. Students and other community people visiting the harvesting pits and obtaining knowledge about the rainwater recharge.

Awareness program is conducted for staff and students regarding the use of alternative source of water and conservation of energy. GRIET has four recharge pits One among them is Bore well recharge. Recharge pits has each capacity of the 17000 litters (Total 51000 litters) for Onetime rain. One bore well recharge about one lac litters. Through recharging pit's it is observed that ground water levels has increased for the season Our best practices in rain harvesting awarded the best paper, presented at a National Conference organized at Affiliating University JNTUH, Civil Engineering Department. GRIET's environment makes an aesthetic impression on those who step into the campus while simultaneously presenting the pedagogical/academic mission. Consequently, students along with faculty learn and live in and around campus to gain a new dimension to their learning and teaching experience and an increased appreciation of the natural world. GRIET has a green carpet wherever provision is available with lush green campus environment with many trees and plants along with nursery.

Apart from the greenery measures GRIET also doing water conservation and solid waste management. Solid waste is managing in terms of Dry waste, Wet waste and liquid waste is in terms of STP (Sewerage Treatment Plant)

Rainwater Harvesting Pits in GRIET Campus

First Rain in the Season will be collected in these Recharge Pit's

Borewell Recharge Pit and recharge pit through Soil Bund


Monitoring of Recharging pits


Rainwater Harvesting Percolation Pits

Recharge Tank

RO (reverse osmosis) drinking water system

Entire campus is serving with filtered drinking water through RO (Reverse Osmosis) system with a capacity of consumption of 60,000 litter per day. RO systems treats the Bore Well Water by reducing the hardness to the Quality Standards of 2ppm. It also removes the suspended and dissolved solids from the drinking water. The total capacity of Borewell is 1,20,000 liters/day and an average of 60,000 liters is utilized by the RO system for drinking purposes. Absence of the bore water tankers are catering to the needs of drinking and other utilities.

RO Water Plant setup within the Campus

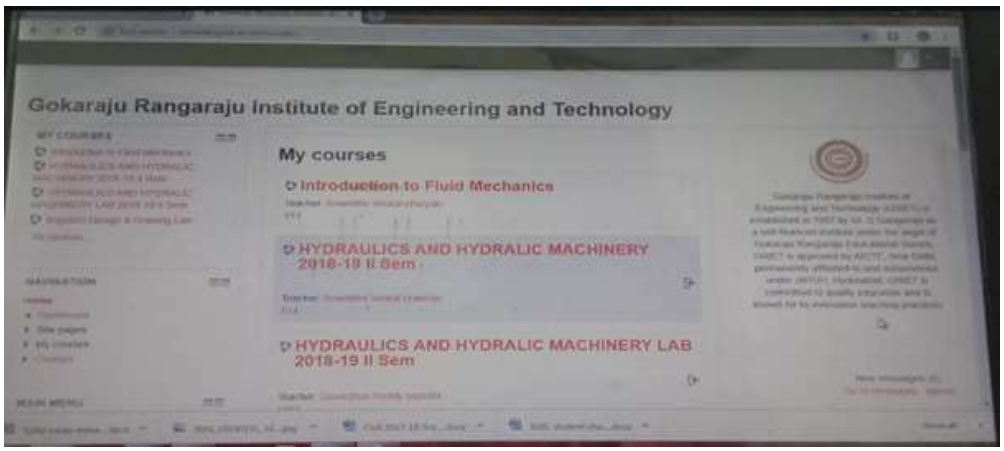
Sewerage Treatment Plant (STP)

The Wastewater is recycled and reused in the campus by Sewage Treatment Plant with a capacity of 1,00,000 liters. Every day it is treating around 40,000 liters of sewage water by the Bacterial Method. The BOD (Bio-Oxygen Demand) and COD (Chemical-Oxygen Demand) type of treatment is implemented. The treated water is used for the gardening purposes and therefore

minimizing the wastage of water. Institution washrooms are provided with effective plumbing system to minimize the water wastage using the automatic flushing system. GRIET is maintaining this effective water management by means of water conservation and Rainwater Harvesting, reusing the wastewater by means of STP (Sewage Treatment Plant). GRIET institute is collecting the wastewater from the washrooms and is conveyed to treatment plant.

Sewage Treatment Plant (STP) setup within the Campus

Paperless Activitie thorugh Moodle



Solid Waste Copost Pit prvodeid in the campus to create manue for Plants, Solid waste and E-waste collected separtely in the Campus. Old books collection drive with a name of “Big Book

Week" is held every two times in Year in the campus, so that the collected books are given to ITC for recycling.

Pictures showing the books collected and bio decompost availablility in the campus

Type of waste generated in the campus is been placed in the respective dustbins, which are placed in the corridors of every block. These wastes are cleaned on regular basis, so that the surroundings of the campus can be made safe from dust

Availability of dust bins

POWER MANAGEMENT

Solar Power:

As part of Green Campus Initiatives to make GRIET a sustainable and Environment friendly institution GRIET has initially commissioned 10kWp rooftop off grid and fixed tilt solar power plant in the campus with the local support of students and staff of Electrical and Electronics Engineering department in the year 2012. With the experience gained from the 10kWp project, another 100kWp grid tied seasonal tilt Solar Power plant was installed on 26 Jan 14 catering one third energy needs of the institute at that time. It is truly a significant milestone. The power generated during holidays, Sundays and also excess power during working days is fed into the National Grid. 110kWp solar power plant generates 176398kWh units of electrical energy annually that is equivalent to reduction in 180 Tons of CO2 emission. As electrical demand increases day by day 113kWp solar plant augmented with 300kWp seasonal tilt solar power plant from 17-6-2019making it a total of 413kWp.A true green initiative by Electrical and Electronics Engineering department and by the college.

LED Lighting: All buildings Block1, Block2, Block 3, and Block 4 solar panels are installed

Annual power requirement met by renewable energy sources (in KW H) – 1,22,325.8 KWH

Annual power requirement of the institution (in KW H) – 6,48,000 KWH

Total % of the solar energy – 22.9%

LED bulbs:

Annual lighting power requirement met through LED bulbs (in KW H) – 68.148 KWH

Annual lighting power requirement (in KW H) 11.95% Led bulbs – 570.456 KWH

Solar Streetlight:

All streetlights in the campus are 20 watts power rating

Effective gadgets: Street lighting in the campus is installed with auto lighting system. Streetlight functioning off in daytime and on during the night automatically.

Solar Plant and Solar Streetlighting availability in the Campus

IGBC Certification:

About IGBC:

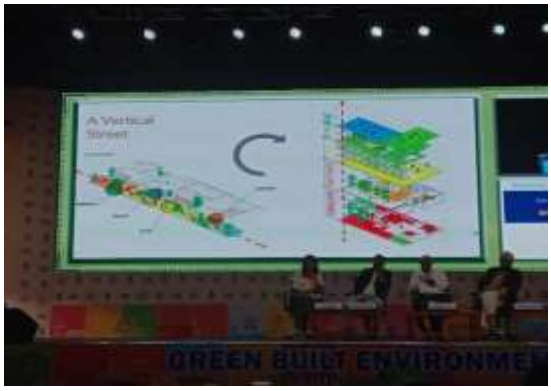
The Indian Green Building Council (IGBC), part of the Confederation of Indian Industry (CII) was formed in the year 2001. The vision of the council is, "To enable a sustainable built environment for all and facilitate India to be one of the global leaders in the sustainable built environment by 2025".

The council offers a wide array of services which include developing new green building rating programmes, certification services and green building training programmes. The council also organises Green Building Congress, its annual flagship event on green buildings.

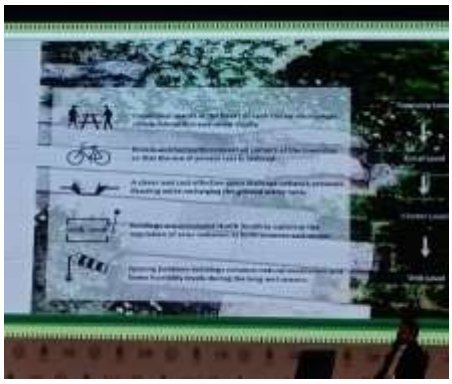
The council is committee-based, member-driven and consensus-focused. All the stakeholders of construction industry comprising of architects, developers, product manufacturers, corporate,

Government, academia and nodal agencies participate in the council activities through local chapters. The council also closely works with several State Governments, Central Government, World Green Building Council, bilateral multi-lateral agencies in promoting green building concepts in the country.

Activities held under IGBC:



Certification issued after Training of green initiatives



IGBC program conducted quiz program related in IGL Indian green league

Certification issued after Training of green initiatives

GREEN PRACTICES

Distribution of saplings for Haritha Haram program in GRIET

Every year GRIET – NSS distributes saplings to students and faculty for the greenery development. In this program, students involved from the NSS & SC & GGC (National Social Services, Street Cause, GRIET Green Campus. Saplings collection is done from Forest Academy, Kukatpally, Hyderabad. Haritha Haram Program initiated by Telangana state government which involve plaion drive

Unloading of saplings and distribution is done in the Campus

Haritha Haram plantation program outside the Campus

A Plantation program “Haritha haram program was conducted by Telangana state government at Keesara, Hyderabad on 31/08/19. This event was 6 hours long in the empty lands of Keesara. The main aim was to spread awareness on forestation and plantation of samplings. Students from various engineering colleges in Hyderabad have participated in this event. Chief Guests were C. MALLA REDDY, MLA of Medchal assembly constituency and JOGINAPALLY SANTOSH KUMAR, MP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Plantation drive held in empty land

Green Ganesha:

To promote and motivate pollution free environment, GRIET – Green Campus volunteers organizes Eco Friendly Ganesh competitions to the students

Demonstration of the Green Gansh idols prepared by GRIET Students

Training on Green Practices:

IGBC provided training on Green practices to the Faculty of GRIET and the possible ways of developing the Green corridor explored

IGBC team provided training to the GRIET Faculty

Plastic Free Drive:

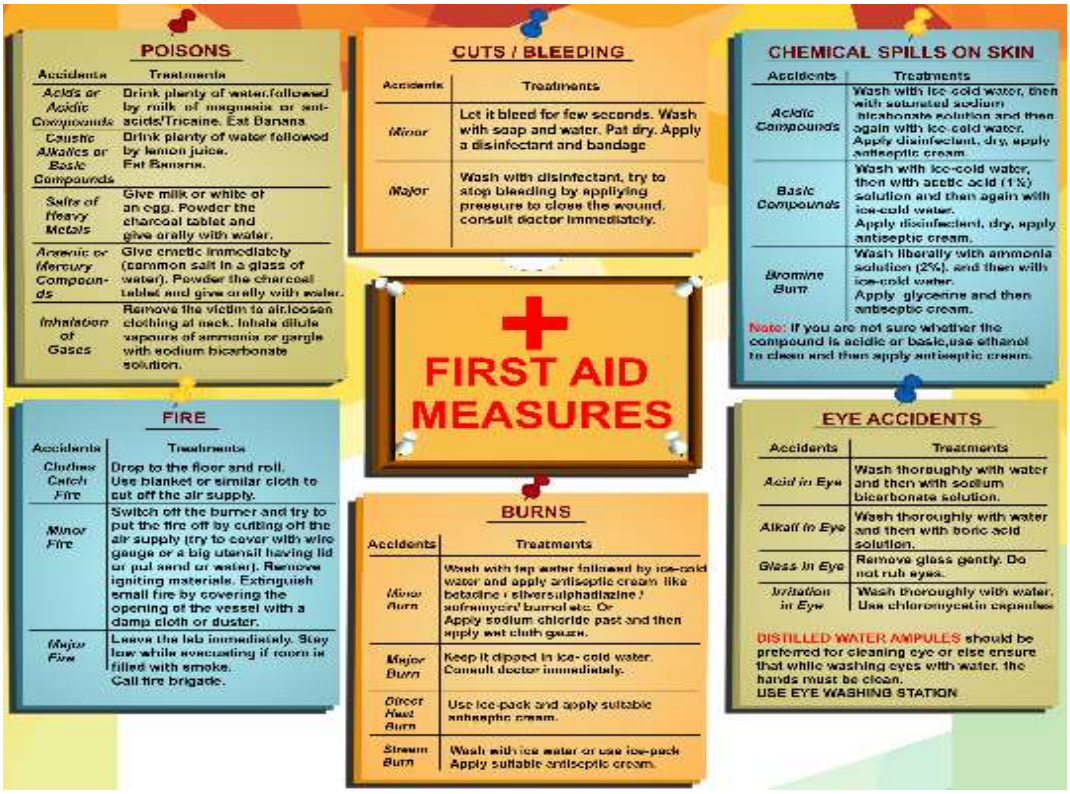
GRIET – Green Campus organizes plastic free drive in the campus every year and motivates the students to avoid plastic usage

Plastic drive held in and outside the college campus

CHEMICAL WASTE

Guidelines to be followed:

First-Aid Measures provided in chemistry Lab:



Chemical Waste Disposal:

- GRIET campus has an inbuilt Sewage Treatment Plant (STP) installed on the site that treats the wastewater of about 100KLD generated within the campus with the help of multi graded and activated carbon filter.
- Grey Water is a wastewater from non-toilet plumbing fixtures such as showers, sinks/ basins, and taps. The wastewater from chemistry laboratory was sent directly to STP. The chemistry Laboratory discharges neutralized acid base solution and dissolved salts which are treated in STP. The treated water parameters (TDS, Chloride, pH, hardness, etc.) monitored continuously and found to be in permissible limits.
- Treated water is currently used for garden watering. The new buildings developed inside the campus are equipped with dual plumbing lines to use treated grey water indoors for toilet flushing. The campus is enjoying huge benefits through treated water.

Wastes generated in Engineering Chemistry Laboratory:

Different types of Waste Generated in Chemistry Lab

Type	Discharges	Remarks	Permissible limits
Hazardous	Nil		
Corrosive	Nil	HCl is used but neutralised wastes are drained to the GRIET STP.	
Ignitable	Nil		
Reactive	Nil	All the inorganic salt solutions are in permissible limits and disposed to GRIET STP	
Toxic	Nil	Silver as chloride in permissible limits (1g /L)	< 5mg/L (CAS No.7440-22-4), treated in GRIET STP

Organic solvents

1. Ethanol
2. Acetic acid

These waste products are distilled through distillation apparatus and reused for determination of Viscosity and Surface Tension.

Dissolved Salt Products

All dissolved salts are in permissible limits and drained in to GRIET STP

Acids and Bases

Hydrochloric Acid (0.01N)

Sodium Hydroxide (0.02N)

- After Titration Neutralised mixture which contains NaCl was drained into Sink which are later treated in GRIET STP.

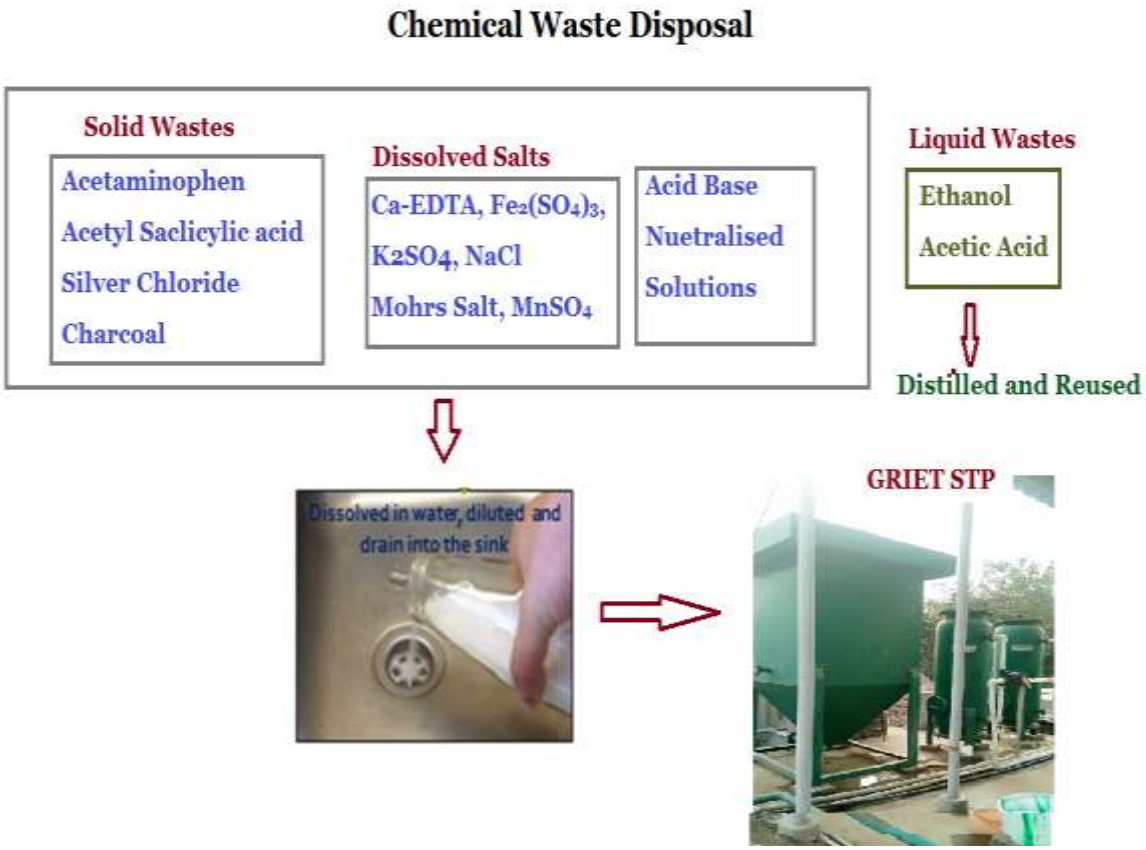
Dissolved EDTA Chelating Solution

Calcium and Magnesium salts complexed with EDTA are present in dissolved state with diminished activity, Ca-EDTA/Mg-EDTA solution is drained into sink and treated in GRIET STP .

Test Report of Treated Water

S.No	Parameters	Method	Permissible Limits
1	Colour		Colourless
2	Odour		Odourless
3	Turbidity	Turbido meter	5 (NT Units)
4	Total hardness	EDTA - Complexometric	<500 ppm
5	Total Dissolved Salts	TDS Meter	500 mg/L
6	PH	PH Meter	6.5 - 8.5
7	Alkalinity	Acid Base Titration	200mg/L
8	Chlorides	Argentometry	200mg/L

Types of Chemical Waste processed to STP



Process flow diagram in STP: