

# ENVIRONMENTAL AUDIT REPORT

For

**GITAM UNIVERSITY**



**Rudraram, Hyderabad**

By



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Document number	Rev.	Date	Done by	Checked by	Approved by
CCPL/Cx/GITAM- Hydb/Environment Audit	00	28.02.22	RKA	KGB	SVK

## ACKNOWLEDGEMENT

**Conserve Consultants Private Limited** wishes to thank all the staff, Management & Technical Team of **GITAM UNIVERSITY, Hyderabad** for the kind co-operation and assistance extended to our Auditor during the course of the Environmental audit.

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## 1. EXECUTIVE SUMMARY

Environmental Audit for M/s GITAM University, Hyderabad was carried out by Conserve Consultants during February 2022.

The approach taken in this facility included different tools such as preparation of questionnaire, physical inspection of the campus, observation and review of the documentation, interviewing key persons and associated systems & equipment,

## 2. PROJECT BACKGROUND

GITAM Hyderabad campus was established in 2009, with modern infrastructure supported by dedicated faculty and administrative staff. The campus is located in an ideal environment in Rudraram on the Mumbai highway NH 65, about 45 minutes travel by Road to Rajiv Gandhi International Airport and a nearest Railway Station is Shankarpalli. The campus is provided with smart classrooms, laboratories, auditorium, seminar halls, play fields, student hostels and other student support services.

Hyderabad campus consists of six schools: GITAM School of Technology, Hyderabad Business School, School of Pharmacy, School of Architecture, School of Science and School of Humanities and Social Science, Kautilya School of Public School to impart high quality training in the fields of Technology and Management in the City of Pearls of India.

The campus is located around the GITAM University's Plantations and Horticulture Nursery. The campus has Nine academic blocks with spacious library building, an administrative block and Five hostels for both Boys & Girls and Guest Houses. All the academic departments have adequate number of smart classrooms, staff rooms, seminar halls well- equipped laboratories, central library, and other facilities.

### **3. ENVIRONMENTAL AUDIT**

The main objective of the environmental audit is to promote the Environment Management and Conservation in the GITAM University Campus. The purpose of the audit is to identify, quantify, describe and prioritize framework of Environment Sustainability in compliance with the applicable regulations, policies and standards.

The main objectives of carrying out the Audit are:

- To introduce and aware students to real concerns of environment and its sustainability
- To secure the environment and cut down the threats posed to human health by analyzing the pattern and extent of resource use on the campus.
- To establish a baseline data to assess future sustainability by avoiding the interruptions in environment that are more difficult to handle and their corrections requires high cost.

## 4. LIGHTING ANALYSIS

Good lighting is necessary to enable work to be done well and in comfort. A facility with bad lighting is an inefficient one, though it may look attractive. Poor lighting can be combated by good eyesight and by keenness on work but at the eventual expenses of efficiency, wellbeing and comfort. Hence, the designer of the building should pay sufficient attention to the need for good lighting.

The lighting details of the facility were studied. The various type of light fitting used are 27W CFL Tube Lights and 36W LED Square type Lights

### 4.1 Lux Level Analysis

S No.	Area	Lux Levels Measured at multiple spots	Baseline Lux as per NBC
1	Digital Manufacturing Lab – B001 - B block – Stilt Floor	211, 245, 262	300
2	Seminar Hall – B block- Stilt Floor	235, 245, 248	300
3	Hitachi Solution Lab – C015- Stilt Floor	243, 273, 231, 66	300
4	DBMS Lab- C block – Stilt Floor	133, 170, 228, 275	300
5	CISCO Networking Academic Lab- C block – Stilt Floor	164, 191, 240, 233, 215	300
6	IBM Software Lab – C012- C block – Stilt Floor	143, 155, 159, 164	300
7	Electrical Workshop – D block – Stilt Floor	158, 175, 147, 182	300
8	Mechanical Workshop- D002 – D block – Stilt Floor	187, 163, 169, 175	300
9	Physics Lab- D012- D block	185, 201, 193, 189	300
10	Physics Dark Room Lab – D015- D block	94, 131, 90	300
11	Pharmaceutics Lab- 1- E018- E block	282, 261, 273	300
12	Pharmaceutics Library – E block	228, 225, 263	300

S No.	Area	Lux Levels Measured at multiple spots	Baseline Lux as per NBC
13	Pharmacognosy Lab – E block- Ground Floor	245, 258, 249, 265	300
14	Chemistry Lab -2 – D block- 3 <sup>rd</sup> Floor	195, 179, 171, 186	300
15	Chemistry Lab -1 – D block	210, 197, 191, 201	300
16	Highway Engineering Lab (Civil) – H block	165, 181, 168, 177	300
17	Electrical Machines Lab – J block	176, 184, 161, 189	300
18	Fuel Lab- J Block – Stilt Floor	210, 192, 214	285
19	Metrology Lab	219, 241, 244	300
20	Flight Systems Lab – J block- Stilt Floor	197, 186, 181	300
21	Aircraft maintenance & Aerospace materials Lab – H Block- Stilt Floor	213, 211, 199	300
22	Surveying Lab/ Mechanics Of Solid Lab – G Block – Stilt Floor	94, 83, 102, 109	300
23	Aerodynamics Lab – BO1	83, 91, 107	300
24	Health care room – H Block- Stilt Floor	185, 191, 195	300
25	Principal Room – A block- 2 <sup>nd</sup> Floor	275, 289, 235	300
26	Accounts Office	210, 192, 234	300
27	Administrative Office – A block- 1 <sup>st</sup> Floor	225, 217, 229	300
28	Conference Hall – A block – 1 <sup>st</sup> Floor	198, 207, 203	300
29	Knowledge Resource Center (Central Library) – G Block – Ground Floor – Level 1	228, 291, 285, 303	300
30	Knowledge Resource Center (Central Library) – G Block – Ground Floor- Level 2	248, 267, 269, 287	300
31	Class Room –H Block- Ground Floor	257, 276, 291	300

S No.	Area	Lux Levels Measured at multiple spots	Baseline Lux as per NBC
32	Class Room – J Block	222, 197, 235	300
33	Class Room – A Block -5 <sup>th</sup> Floor	213, 219, 225	300
34	Class Room – A block	224, 238, 231	300
35	Class Room – B block – 4 <sup>th</sup> Floor	291, 289, 293	300
36	Staff Room – B block – 4 <sup>th</sup> Floor	285, 281, 287	300
37	Operating Systems Labs/ Java Programming – B503	211, 313, 315	300
38	GITAM Canteen -4A	198, 207, 191, 219	200
39	GITAM Canteen -4B	196, 185, 197, 193	200
40	Living Room - Boys Hostel – 4 <sup>th</sup> Floor - Block C	98, 103	50
41	Living Room 1– Boys Hostel – 5 <sup>th</sup> Floor – Block C	88, 96	50
42	Living Room 2– Boys Hostel – 5 <sup>th</sup> Floor- Block C	83, 87	50
43	Living Room 1- Girls Hostel- Ground Floor	105, 93	50
44	Living Room 1- Girls Hostel- Second Floor	91, 89	50
45	Living Room 1- Girls Hostel – Third Floor	111, 103	50
46	Living Room 2- Girls Hostel – Third Floor	97, 105	50
47	Living Room 1– Boys Hostel – Ground Floor – Block A	105, 103	50
48	Living Room 1– Boys Hostel – Second Floor – Block A	101, 95	50

**Comments:-**

Girls and boys hostel sharing room general lux Level can be explored for the reduction, if the reading lights are available separately. It is better to provide the lighting only where it's required like general lighting for the whole room and task lighting for the reading spots/tables.



## 4.2 Lighting Power Density Analysis

S No.	Area	Lamp	Lamp wattage	No of lamps	Total Wattage, W	Area Sq. ft.	LPD W/Sq. ft.	ASHRAE Baseline LPD W/Sq. ft.
1	Digital Manufacturing Lab – B001 - B block – Stilt Floor	1X27	27	9	243	1307.1	0.18	1.24
2	Hitachi Solution Lab – E Block-C015- Stilt Floor	1X36	36	6	216	703.3	0.30	1.24
3	Seminar Hall – B block- Stilt Floor	1X36	36	4	144	550.2	0.26	1.24
4	DBMS Lab- C block – Stilt Floor	1X36	36	4	144	540.8	0.26	1.24
5	CISCO Networking Academic Lab- C block – Stilt Floor	1X36	36	12	432	1218.4	0.35	1.24
6	IBM Software Lab – C012- C block – Stilt Floor	1X27	27	9	243	1167.8	0.20	1.24
7	Electrical Workshop – D block – Stilt Floor	1X27	27	10	270	1732	0.15	1.24
8	Mechanical Workshop- D002 – D block – Stilt Floor	1X27	27	13	351	2828	0.12	1.24
9	Physics Lab- D012- D block	1X27	27	10	270	1739	0.15	1.24
10	Physics Dark Room Lab – D015- D block	1X27	27	2	54	563.5	0.09	1.24

11	Pharmaceutics Lab- 1- E018- E block	1X27	27	14	378	1192	0.31	1.24
12	Pharmaceutics Library – E block	1X27	27	16	432	2127	0.20	0.93
13	Pharmacognosy Lab – E block- Ground Floor	1X27	27	4	108	860	0.12	1.24
14	Chemistry Lab -2 – D block- 3 <sup>rd</sup> Floor	1X27	27	16	432	1737	0.24	1.24
15	Chemistry Lab -1 – D block	1X27	27	16	432	1721	0.25	1.24
16	Highway Engineering Lab (Civil) – H block	2X36	72	9	648	1429	0.45	1.24
17	Electrical Machines Lab – J block	2X36	72	27	1944	2889	0.67	1.24
18	Fuel Lab- J Block – Stilt Floor	2X36	72	18	1296	1860	0.69	1.24
19	Metrology Lab	2X36	72	18	1296	1364	0.95	1.24
20	Flight Systems Lab – J block- Stilt Floor	2X36	72	18	1296	1201	1.07	1.24
21	Aircraft maintenance & Aerospace materials Lab – H Block- Stilt Floor	2X36	72	16	1152	2307	0.49	1.24
22	Surveying Lab/ Mechanics Of Solid Lab – G Block – Stilt Floor	1X36	36	8	288	2775	0.10	1.24

23	Aerodynamics Lab – BO1	2X36	72	6	432	1803	0.23	1.24
24	Health care room – H Block- Stilt Floor	2X20	40	2	80	217.5	0.36	1.21
25	Principal Room – A block- 2 <sup>nd</sup> Floor	1X20	20	2	40	274.2	0.14	1.24
26	Accounts Office	1X20	20	6	120	996	0.12	1.21
27	Administrative Office – A block- 1 <sup>st</sup> Floor	1X36	36	7	252	726	0.34	1.21
28	Conference Hall – A block – 1 <sup>st</sup> Floor	1X36	36	8	288	960	0.30	1.24
29	Knowledge Resource Center (Central Library) – G Block – Ground Floor – Level 1	1X20	20	46	920	8672	0.14	0.93
		1X36	36	9	324			
30	Knowledge Resource Center (Central Library) – G Block – Ground Floor- Level 2	1X36	36	15	540	8457	0.11	0.93
		2X36	72	6	432			
31	Class Room –H Block- Ground Floor	2X36	72	9	648	910.6	0.71	1.24
32	Class Room – J Block	2X36	72	10	720	842.3	0.85	1.24
33	Class Room – A Block -5 <sup>th</sup> Floor	2X20	40	6	240	994.5	0.24	1.24
34	Class Room – A block	2X20	40	6	240	985	0.24	1.24

35	Class Room – B block – 4 <sup>th</sup> Floor	1X27	27	10	270	1106	0.24	1.24
36	Staff Room – B block – 4 <sup>th</sup> Floor	1X18	18	11	198	1924	0.10	1.21
37	Operating Systems Labs/ Java Programming – B503	1X27	27	12	324	2518	0.12	1.24
38	GITAM Canteen -4A	1X90	90	12	1080	7162	0.15	0.90
39	GITAM Canteen -4B	1X90	90	12	1080	7220	0.15	0.90
40	Living Room - Boys Hostel – 4 <sup>th</sup> Floor - Block C	1X20	20	1	20	148.5	0.26	1.24
		1X10	10	2	20			
41	Living Room 1– Boys Hostel – 5 <sup>th</sup> Floor – Block C	1X20	20	1	20	168.3	0.23	1.24
		1X10	10	2	20			
42	Living Room 2– Boys Hostel – 5 <sup>th</sup> Floor- Block C	1X20	20	2	40	256.7	0.15	1.24
43	Living Room 1- Girls Hostel- Q Block Ground Floor	1x36	36	2	72	242.1	0.29	1.24
44	Living Room 1- Girls Hostel- Second Floor	1X20	20	2	40	242	0.16	1.24
45	Living Room 1- Girls Hostel – Third Floor	1X20	20	1	20	242	0.23	1.24
		1X36	36	1	36			
46	Living Room 2- Girls Hostel – Third Floor	1X20	20	1	20	242	0.23	1.24
		1X36	36	1	36			

47	Living Room 1– Boys Hostel – Ground Floor – Block A	1X20	20	1	20	273.1	0.073	1.24
48	Living Room 1– Boys Hostel – Second Floor – Block A	1X36	36	1	36	296	0.18	1.24
		1X20	20	1	20			

**Comments:**

LPD is much within in the ASHRAE recommended limits.

## 4 INDOOR AIR QUALITY

Indoor air quality (IAQ) is a term which refers to the air quality within and around buildings and structures, especially as it relates to the health and comfort of building occupants. IAQ can be affected by various gases, volatile organic compounds etc. Source control, filtration and the use of ventilation to dilute contaminants are the primary methods for improving indoor air quality in most buildings. Determination of IAQ involves the collection of air samples at various locations of the building.

During the course of audit, the Indoor air quality survey was carried out at various locations in the building.

S No.	Area	CO <sub>2</sub> PPM	Air Temperature °C	RH %	WBT °C	DPT °C	TVOC mg/m <sup>3</sup>	HCHO mg/m <sup>3</sup>	PM 2.5	PM 10	Level of Air only based on PM2.5 & PM10
1	Digital Manufacturing Lab – B001 - B block – Stilt Floor	609	25.5	56.9	19.2	16.2	0	0	104	119	Unqualified
2	Seminar Hall – B block- Stilt Floor	540	24.3	55.5	19.6	15.9	0	0	88	102	Unqualified
3	Hitachi Solution Lab – C015- Stilt Floor	622	24.7	57.3	18.6	15.6	0.002	0.005	81	93	Unqualified
4	DBMS Lab- C block – Stilt Floor	673	24.1	58.6	18.8	24.5	0	0.002	81	95	Unqualified
5	CISCO Networking Academic Lab- C block	716	24.6	56.7	18.5	15.4	0	0	89	103	Unqualified

S No.	Area	CO <sub>2</sub> PPM	Air Temperature °C	RH %	WBT °C	DPT °C	TVOC mg/m <sup>3</sup>	HCHO mg/m <sup>3</sup>	PM 2.5	PM 10	Level of Air only based on PM2.5 & PM10
	– Stilt Floor										
6	IBM Software Lab – C012- C block – Stilt Floor	809	24.5	58.4	18.7	15.9	0	0.002	82	95	Unqualified
7	Electrical Workshop – D block – Stilt Floor	532	24.9	55.7	18.7	15.5	0	0.001	108	120	Unqualified
8	Mechanical Workshop- D002 – D block – Stilt Floor	532	24.8	55	18.5	15.2	0	0.001	85	99	Unqualified
9	Physics Lab- D012- D block	553	25.2	51.6	18.2	14.5	0	0	95	110	Unqualified
10	Physics Dark Room Lab – D015- D block	552	24.7	60.4	19.2	16.6	0	0.002	85	98	Unqualified
11	Pharmaceutic s Lab- 1- E018- E block	518	25.4	51.5	18.2	14.5	0.002	0.001	84	97	Unqualified
12	Pharmaceutic s Library – E block	788	25.3	54.4	18.8	15.4	0.004	0.037	88	102	Unqualified
13	Pharmacogno sy Lab – E block- Ground Floor	692	25.9	53.1	19.1	15.6	0.007	0.031	163	186	Pollution*

S No.	Area	CO <sub>2</sub> PPM	Air Temperature °C	RH %	WBT °C	DPT °C	TVOC mg/m <sup>3</sup>	HCHO mg/m <sup>3</sup>	PM 2.5	PM 10	Level of Air only based on PM2.5 & PM10
14	Chemistry Lab -2 – D block- 3 <sup>rd</sup> Floor	696	26.5	47.5	18.6	14.4	0	0	85	105	Unqualified
15	Chemistry Lab -1 – D block	555	26.5	44.6	18.1	13.4	0	0	89	111	Unqualified
16	Highway Engineering Lab (Civil) – H block	443	25.1	62.1	19.8	17.3	0	0	78	91	Unqualified
17	Electrical Machines Lab – J block	462	24.5	53.8	18	14.5	0	0	65	74	Unqualified
18	Fuel Lab- J Block – Stilt Floor	547	24.8	50.8	17.8	14.1	0.003	0	83	96	Unqualified
19	Metrology Lab	544	24.3	58	18.5	15.5	0.002	0.018	62	71	Unqualified
20	Flight Systems Lab – J block- Stilt Floor	501	25.1	53.9	18.5	15	0	0	76	89	Unqualified
21	Aircraft maintenance & Aerospace materials Lab – H Block- Stilt Floor	510	24.6	54.2	18.1	14.7	0	0	85	98	Unqualified
22	Surveying Lab/ Mechanics Of	511	24.1	58	18.3	15.3	0.004	0.019	104	120	Unqualified



S No.	Area	CO <sub>2</sub> PPM	Air Temperature °C	RH %	WBT °C	DPT °C	TVOC mg/m <sup>3</sup>	HCHO mg/m <sup>3</sup>	PM 2.5	PM 10	Level of Air only based on PM2.5 & PM10
	Solid Lab – G Block – Stilt Floor										
23	Aerodynamics Lab – BO1	608	27.7	43.8	19	14.3	0.003	0.001	76	88	Unqualified
24	Health care room – H Block- Stilt Floor	526	25.2	39	16.3	10.5	0	0.013	65	75	Unqualified
25	Principal Room – A block- 2 <sup>nd</sup> Floor	514	27	36	17.2	11.1	0.004	0.011	68	78	Unqualified
26	Accounts Office	510	27.2	36.9	17	10.9	0.002	0	68	77	Unqualified
27	Administrative Office – A block- 1 <sup>st</sup> Floor	579	26.5	38.7	17.1	11.4	0	0	74	85	Unqualified
28	Conference Hall – A block – 1 <sup>st</sup> Floor	534	26	44.5	17.6	12.9	0.012	0.043	79	91	Unqualified
29	Knowledge Resource Center (Central Library) – G Block – Ground Floor – Level 1	579	26	41.2	17.2	12	0	0	70	82	Unqualified

S No.	Area	CO <sub>2</sub> PPM	Air Temperature °C	RH %	WBT °C	DPT °C	TVOC mg/m <sup>3</sup>	HCHO mg/m <sup>3</sup>	PM 2.5	PM 10	Level of Air only based on PM2.5 & PM10
30	Knowledge Resource Center (Central Library) – G Block – Ground Floor- Level 2	577	25.8	41.2	17.2	12	0	0	69	80	Unqualified
31	Pro Vice chancellor Room	563	27	37.4	17.2	11	0	0	66	75	Unqualified
31	Class Room – H Block- Ground Floor	722	25.4	54.1	18.7	15.4	0	0.011	68	78	Unqualified
32	Class Room – J Block	534	25	42.1	16.6	11.3	0	0	73	83	Unqualified
33	Class Room – A Block -5 <sup>th</sup> Floor	560	26.4	40.5	17.3	12	0.002	0.010	69	80	Unqualified
34	Class Room – A block	557	25.9	41.7	17	11.9	0	0	67	79	Unqualified
35	Class Room – B block – 4 <sup>th</sup> Floor	623	26.5	48	18.7	14.6	0	0.002	66	75	Unqualified
36	Staff Room – B block – 4 <sup>th</sup> Floor	581	26.7	39.5	17.3	11.7	0	0.013	70	81	Unqualified
37	Operating Systems Labs/ Java Programming – B503	568	26.6	39.2	17.2	11.6	0	0.008	69	78	Unqualified

S No.	Area	CO <sub>2</sub> PPM	Air Temperature °C	RH %	WBT °C	DPT °C	TVOC mg/m <sup>3</sup>	HCHO mg/m <sup>3</sup>	PM 2.5	PM 10	Level of Air only based on PM2.5 & PM10
38	GITAM Canteen -4A	685	29	36	18.6	12.7	0.003	0.014	68	78	Unqualified
39	GITAM Canteen -4B	685	29	36	18.6	12.7	0.001	0.029	67	77	Unqualified
40	Living Room - Boys Hostel – 4 <sup>th</sup> Floor - Block C	664	29.2	44.7	20.3	16	0.003	0.031	61	71	Unqualified
41	Living Room 1– Boys Hostel – 5 <sup>th</sup> Floor – Block C	550	28.6	43.7	19.7	15	0	0.059	64	75	Unqualified
42	Living Room 2– Boys Hostel – 5 <sup>th</sup> Floor- Block C	546	26.4	43.1	17.3	12.2	0	0.014	73	85	Unqualified
43	Living Room 1- Girls Hostel- Ground Floor-Q104	527	25.4	53.8	18.8	15.4	0.003	0.828	164	190	Pollution
44	Living Room 1- Girls Hostel- Second Floor-Q320	542	26.4	51	19.2	15.5	0.002	0	186	218	Pollution
45	Living Room 1- Girls Hostel – Third Floor	540	26.1	52.2	19	15.1	0.002	0	169	191	Pollution

S No.	Area	CO <sub>2</sub> PPM	Air Temperature °C	RH %	WBT °C	DPT °C	TVOC mg/m <sup>3</sup>	HCHO mg/m <sup>3</sup>	PM 2.5	PM 10	Level of Air only based on PM2.5 & PM10
46	Living Room 2- Girls Hostel – Third Floor	538	26.3	52	19.3	15.6	0.002	0.011	143	151	Pollution
47	Living Room 1– Boys Hostel – Ground Floor – Block A	563	27.8	48.5	19.8	16	0	0	58	67	Unqualified
48	Living Room 1– Boys Hostel – Second Floor – Block A	551	26.8	48.9	19.1	15.2	0.002	0.025	57	64	Unqualified

**Comments:-**

To improve the indoor air quality inside the campus, site barricading through trees/other features shall be explored to reduce the particulate pollution inside the campus from the nearby roads.

## 5 PERFORMANCE ASSESSMENT ON ESTIMATION OF CO<sub>2</sub> AND NEUTRALIZATION

**Table 1:-**

SI No.	Source Of Energy	Application	Source of Procurement
1	Electricity	Electrical/Electronic Equipment	Southern Power Distribution Company of Telangana Ltd
2	Diesel	Transport Vehicles & DG sets	Authorized Distributors
3	LPG	Cooking	Authorized Distributors

### Annual Energy consumption from different source of Energy used by the University

**Table 2:-**

SI No.	Month/Year	Total Electricity Units Consumed (KWH)	Diesel Consumption (Litres)		Petrol Consumptions (litres)	LPG Consumptions (Kg)
			Transport Vehicles	DG Sets		
1	Jan-21	20455	843	1000	-	-
2	Feb-21	108619	779	-	-	-
3	Mar-21	-	1075	-	-	-
4	Apr-21	166671	0	-	-	-
5	May-21	85660	635	-	-	1254
6	Jun-21	29127	11350	1000	-	741
7	Jul-21	-	1600	-	-	646
8	Aug-21	133760	1944	-	-	1102
9	Sept-21	148,456	1656	-	-	1938

10	Oct-21	158,147	1698	-	-	1805
11	Nov-21	230503	1865	-	-	4313
12	Dec-21	235350	722	-	-	-
<b>Average =</b>		109,729	2013.9	166.6	-	983.2
<b>Total =</b>		13,16,748	24167	2000	-	11799

### Annual CO<sub>2</sub> Emission by different Sources of Energy/Fuels:-

**Table 3:-**




SI No.	Annual CO <sub>2</sub> Emission by different types of Fuels/Sources of Energy (Tons/Annum )
Electricity	<b>1079.7</b>
Diesel Vehicles	<b>63.8</b>
DG Sets	<b>5.3</b>
Petrol Vehicles	-
LPG	<b>35.4</b>

### Formula Used:-

**Table 4:-**

Description	Formula for CO <sub>2</sub> Emission Calculation
Electricity	= (kWh* 0.82 Kg of CO <sub>2</sub> Emission)
Diesel	= (Diesel in Litres * 2.64 Kg of CO <sub>2</sub> Emission)
Petrol	= (Petrol in Litres * 2.39 Kg of CO <sub>2</sub> Emission)
LPG	= (LPG in Kg * 3.0 Kg of CO <sub>2</sub> Emission)

**Table 5:-**

Total Estimated CO <sub>2</sub> Emission per Annum	Present CO <sub>2</sub> Reduction by Matured Trees planted in the University Campus	CO <sub>2</sub> To be Neutralized
1079.7 	130.8 	948.9 

From the conclusion; the management of the University has taken the steps to neutralize the CO<sub>2</sub> and to become a Net-Zero Carbon Emission buildings. Also it is recommended to take essential activities to neutralize the CO<sub>2</sub>.

- Encourage the students/Staff to plant more trees and account them all.
- Install solar PV plant as this step will reduce the electricity consumption.
- Replace Exterior lamps with solar based battery operated lamps.
- Use Electrical Vehicles at least 5%

## 7 SITE OBSERVATION REPORT

Site Observation Report (SOR)			
<b>Report No.</b>	C&A/SOR/01	<b>Date</b>	16.02.2022
<b>Location</b>	At entrance of the University Campus and in front of the Blocks.		
Observation Images			
Description			
Safety precaution awareness posters for COVID-19 are kept inside the GITAM University Campus.			
Safety Measures			
COVID -19 Safety measures protocol are followed very strictly inside the University Campus, which creates awareness among Students and Staff to maintain a social distance and wear a mask.			



**Site Observation Report (SOR)**

<b>Report No.</b>	C&A/SOR/02	<b>Date</b>	16.02.2022
<b>Location</b>	At University's Horticulture Nursery		

**Observation Images**



**Description**

University Garden's waste and Nursery plant wastes are segregated and sent to Vermi compost.

**Potential Sustainability Measures**

Nil.

**Site Observation Report (SOR)**

<b>Report No.</b>	C&A/SOR/03	<b>Date</b>	16.02.2022
<b>Location</b>	At Telangana State Vermi Compost development Centre		

**Observation Images**



**Description**

University Canteen's some of part of the Food wastes sent to Telangana State Vermi compost development Centre.

**Potential Sustainability Measures**

Nil.

**Site Observation Report (SOR)**

<b>Report No.</b>	C&A/SOR/04	<b>Date</b>	16.02.2022
<b>Location</b>	Outside of the Campus		

**Observation Images**



**Description**

Centralized dust bins are not provided for the collection of whole campus waste.

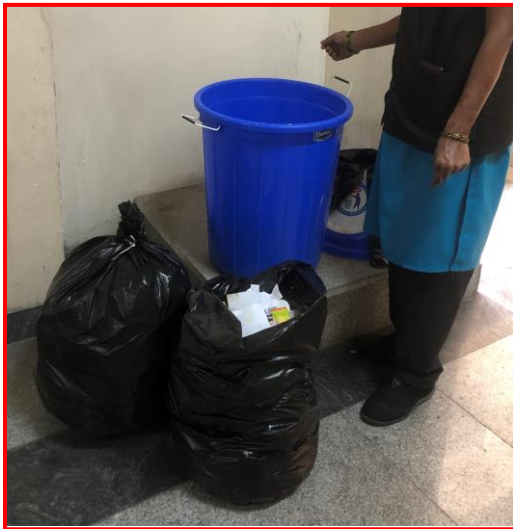
### **Potential Sustainability Measures**

Except food waste all the solid wastes are sent to Municipal landfilling (outside of the University Campus) by the Mini Tempo. It is recommended to send the waste to recyclers to reduce landfill dump yard/avoid incineration. 1. Multiple type waste bins (paper/glass/metal/plastic/e-waste) shall be kept in many places to facilitate the segregation wastes at the sources itself and then 2. Centralized waste collection area for multiple waste types so that wastes can be accumulated for period of time, which in turn will make the waste recycling economically feasible for the recycling vendors.

**Site Observation Report (SOR)**

<b>Report No.</b>	C&A/SOR/05	<b>Date</b>	16.02.2022
<b>Location</b>	Waste collection Bags at Campus		

**Observation Images**



**Description**

All type solid wastes are collected in a Waste Bags.

**Potential Sustainability Measures**

It is recommended to use Oxy Biodegradable Waste Bags.

**Site Observation Report (SOR)**

<b>Report No.</b>	C&A/SOR/06	<b>Date</b>	16.02.2022
<b>Location</b>	Construction Wastes At Boys Hostel Campus		

**Observation Images**



**Description**

Construction Wastes are sent by Tractor and dumped in the University's Premises.

**Potential Sustainability Measures**

Construction waste materials like (Cement, Solid blocks, Paint tins, steels, plywood, Aluminum, Debris etc.) to be donated to other construction sites upon approval from University's Management or sold to scrap tenders who divert the material to proper place for recycling.

**Site Observation Report (SOR)**

<b>Report No.</b>	C&A/SOR/07	<b>Date</b>	16.02.2022
<b>Location</b>	Basement – Parking Area		

**Observation Images**



**Description**

It was observed that there was no Carbon Monoxide Sensors and Jet fans installed.

**Potential Sustainability Measures**

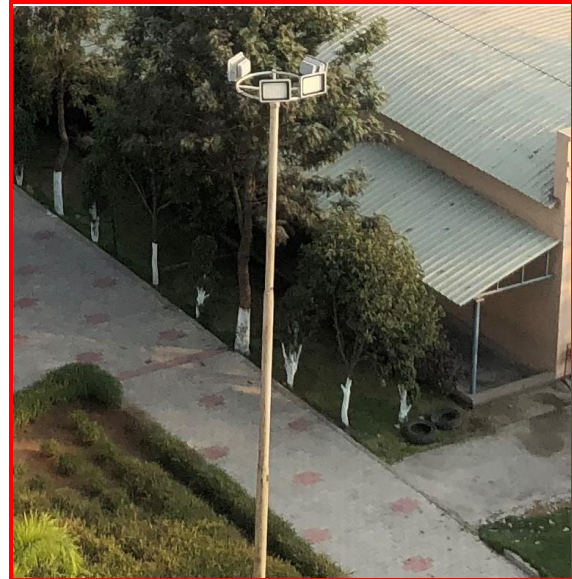
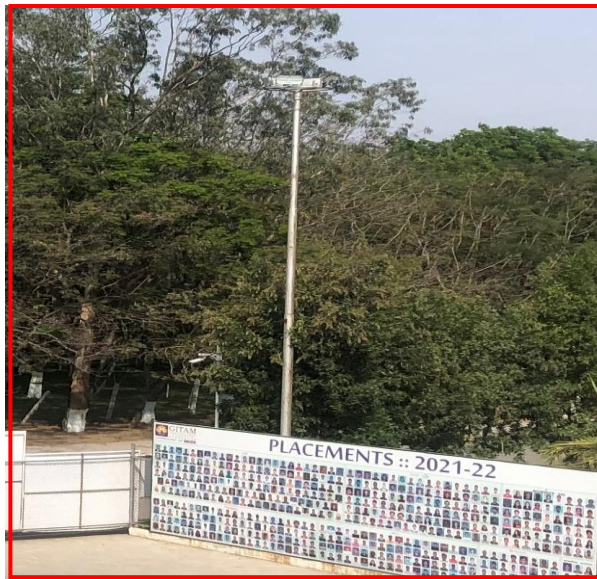
It is recommended to install CO Sensors to regular monitoring the pollutant level emitted by Petrol/ Diesel vehicles. And install Jet Fans for Proper Basement Ventilation and Smoke Extractions.



**Site Observation Report (SOR)**

<b>Report No.</b>	C&A/SOR/08	<b>Date</b>	16.02.2022
<b>Location</b>	External Lights on the Pathways inside the Campus		

**Observation Images**



**Description**

External lights power are not of solar PV type.

**Potential Sustainability Measures**

It is recommended to install Solar PV type external lights in the whole campus. It helps to reduce the energy consumption and associated carbon footprints. When the campus aims towards net zero energy/carbon, these measures could be major stepping stones.

### Site Observation Report (SOR)

**Report No.**

C&A/SOR/09

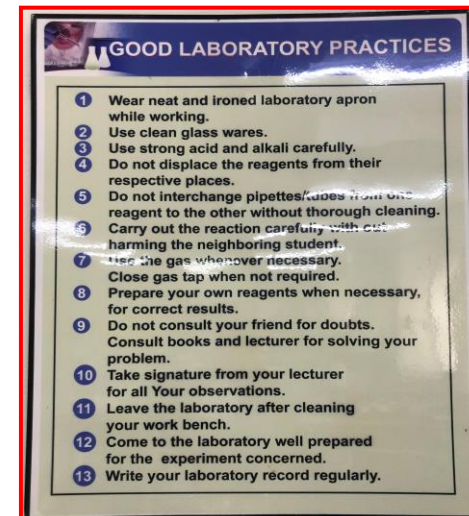
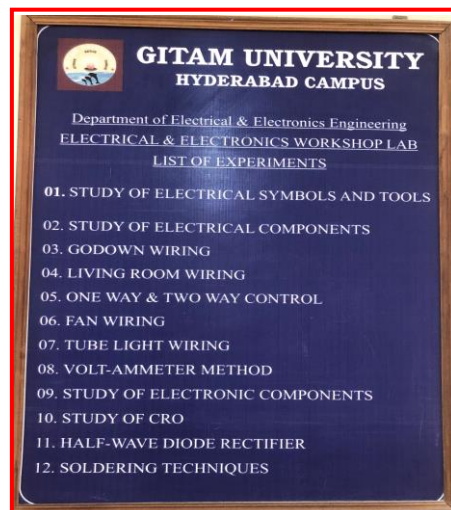
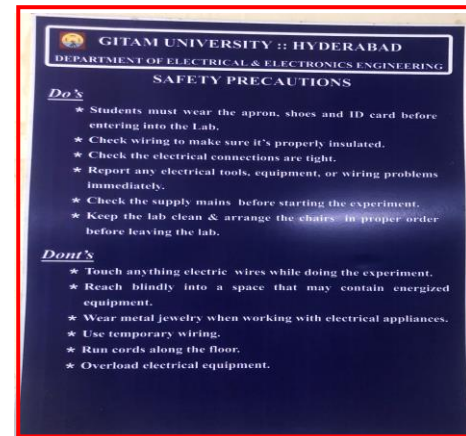
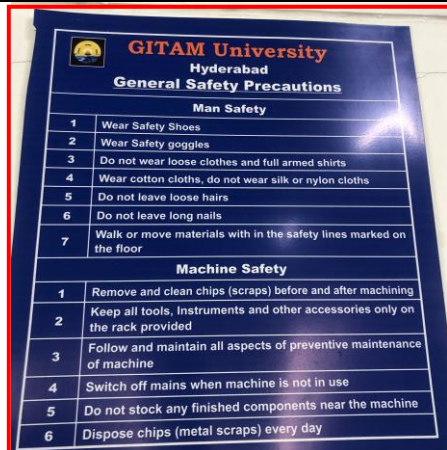
**Date**

16.02.2022

**Location**

In all the Laboratories

### Observation Images



### Description

It is observed that in all the Laboratories Safety Practices, How to use Fire Extinguisher, Do's and Do not's, List of Experiments banners are displayed on the wall.

### Potential Sustainability Measures

It is highly encouraged practices in the Laboratories, which creates awareness and safety measures on how to handle the experiments among the students.

## **8 GOOD PRACTICES AT GITAM UNIVERSITY CAMPUS**

During Conserve Consultant's Audit, it is observed that M/s GITAM University, Hyderabad Campus has already adopted the following Performance Improvement Measures in its facility;

### **1.1 Safety Measures for COVID-19 precautions**

COVID -19 safety measure protocol is followed very strictly inside the University Campus, which creates awareness among students and staff to maintain the social distance and wear the mask.

### **1.2 Flora in the University's Campus**

There nearly about 6000 nos. of Matured Trees, plants and Sapling are planted in the University Premises which contributes for CO<sub>2</sub> reductions.