



MEENAKSHI SUNDARARAJAN ENGINEERING COLLEGE

#363, ARCOT ROAD, KODAMBAKKAM, CHENNAI - 24



ENVIRONMENTAL & GREEN AUDITREPORT

2022-2023

Executive Summary

MSEC is implemented the concept of eco campus which is mandatory to maintain the cleanliness of the campus. By analyzing all the possible solutions for converting this entire campus as eco campus, green auditing was carried out. This audit was mainly focused on the consumption of energy in terms in terms of electricity and fossil fuel, quality of soil and water, vegetation, waste management practices and carbon foot print of the campus etc. A survey was conducted by issuing the questionnaire to the students and staff about the existing resources in the campus. The parameters of the water samples were collected from different locations. The collected data were grouped, tabulated and analyzed. The report is submitted by analyzing the strength and weaknesses and few suggestions are given. The environmental committee is taken possible steps to ensure that all the suggestions given by the report is properly executed. MSEC strongly believes that the eco campus

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concept makes the environment green and clean in the future.

OBJECTIVES OF GREEN AUDIT

The green audits' main objectives are to assess the quality of the environment and the management strategies being implemented in the College. The specific objectives are:

1. To assess the quality of the water in the college campus
2. To monitor the energy consumption pattern of the college
3. To quantify the liquid and solid waste generation and management plans in the campus.
4. To assess the carbon foot print of the college
5. To impart environment management plans in the college
6. Providing a database for corrective actions and future plans.
7. To assess whether extracurricular activities of the Institution support the collection, recovery, reuse and recycling of solid wastes.
8. To identify the gap areas and suggest recommendations to improve the Green Campus status of the College.

TARGET AREAS OF GREEN AUDITING

Green audit forms part of a resource management process. Although they are individual events, the real value of green audit is the fact that they are carried out, at defined intervals, and their results can illustrate improvement or change over time. Target areas included in this green auditing are water, energy, waste, green campus. Green audit mainly focused on the efficient use of energy and water; minimize waste generation or pollution and also economic efficiency.

All these indicators are assessed in the process of "Green Auditing of this educational institute". Eco-campus focuses on the reduction of contribution to emissions, procures a cost effective and secure supply of energy, encourage]The audit enhances energy use conservation, promotes personal action, the institute's energy and water consumption, wastes to landfill, and integrate environmental considerations in all contracts and services considered to have significant environmental impacts.

a Water Management:

As such, wise use of water is a general practice in the college. Rainwater harvesting is been followed for all the blocks in the premises.

b. **Water Quality:** In general, water testing is carried out in the Water and Waste Water analysis Laboratory of the college and the samples were checked with the standards.

c. Water conservation**d. Waste Minimization and Recycling :**

Our Institution has taken many initiatives towards waste management. The Institute follows the principle of 3R (Reduce, Reuse and Recycle) to meet its objective of Sustainable Development by bringing ecological balance. The institution's key operations have very little impact on the environment as the college is very conscious of generating less waste. However, waste is generated by all sorts of routine activities carried out in the College that includes paper, plastics, glass, metals, foods, etc. The college believes its utmost responsibility to remove all waste not only for the safety of the students but also for the harm it causes to the environment. Adequate number of trash cans and dust bins are placed all over the campus. The collected waste is disposed of with the help of Municipal Corporation on a daily basis. Waste generated in the college is segregated in the premises. Blue, Yellow, Green covered dustbins are placed in the premises. Composting facility is available for managing biodegradable/horticulture waste. Recyclable waste, dry waste and biodegradable/wet waste are processed and recycled. The paper-recycling unit, which has been operational in the college, generates fine quality paper which is used for various activities. The institute promotes minimal plastic usage; it also encourages staff and students to reduce the plastic waste. Various awareness campaigns are organized on waste management. To sustain eco-friendly and green enabled campus, various NSS programs like Swachh Bharat, Clean & Green activities and plantation in campus are regularly conducted.

e. **Greening the campus:** The garden in the campus is greener with fair biodiversity around and gardens maintained by all the departments.

f. **Clean Air:** Majority of the students in the campus rely on public transport, indicating lesser carbon foot print of the student community.

g. **Environmental Legislative Compliance:** Green agenda form part of the curriculum in many departments and eco/nature clubs remain active for the cause of environmental protection, though it is not a common practice in all the departments in the campus.

METHODOLOGY ADOPTED

The methodology adopted to conduct the Green Audit of the Institution had the following components

Onsite Visit

Four day field visit was conducted by the Green Audit Team . The key focus of the visit was on assessing the status of the green cover of the Institution, their waste management practices and energy conservation strategies etc. The sample collection (water) was carried out during the visits. The water samples from two open wells and two tap water sources were taken and soil samples from three different places of the campus was collected. The sample collection, preservation, and analysis were done in the scientific manner as prescribed by the standard procedures.

Energy, waste management and Carbon foot print analysis Survey

With the help of teachers and students, the audit team has assessed the energy consumption pattern and waste generation, disposal and treatment facilities of the college. The monitoring was conducted with a detailed questionnaire survey method.



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SURVEY FORMS**a. Water management**

SL.NO	PARAMETERS	Response
1	Source of water	Bore Well
2	No of Wells	5
3	No of motors used	5
4	Horse power – Motor	1 Hp-1 1.5HP-2 2Hp-1
5	Depth of well –Total	350 ft- 1 180 ft- 4
6	Water level	15ft
7	Number of water tanks	8
8	Capacity of tank	10000 L - 1 3000 L- 2 50000 L-2
9	Quantity of water pumped every day	30000 L
10	Any water wastage/why?	NO
11	Water usage for gardening	500 l/day
12	Waste water sources	Lab, Canteen
13	Use of waste water	Nil
14	Fate of waste water from labs	After neutralization waste water is kept in a large covered pit
15	Whether waste water from labs mixed with ground water	No
16	Any treatment for lab water	“Micro scale analysis “is implemented for chemistry students

17	Whether any green chemistry method practiced in labs	yes
18	No of water coolers	-
19	Rain water harvest available?	yes
20	No of units and amount of water harvested	10 units
21	Any leaky taps	Nil
22	Amount of water lost per day	Nil
23	Any water management plan used ?	Water management audit conducted
24	Any water saving techniques followed ?	Nil
25	Are there any signs reminding peoples to turn off the water?	Yes

b. Water Quality assessment

Water samples from four different locations were collected and analyzed for its quality parameters. The samples includes two well water which are the main water source of the college campus and two tap water samples which is used for canteen and drinking water cum cooler systems. The samples were collected, preserved and analyzed for various physio-chemical parameters. The major parameters analyzed include dissolved oxygen, acidity, alkalinity, chloride, hardness, pH, conductivity, total dissolved solids and salinity. The results are presented in the Table 1 The results are comparable with the values of drinking water standards.

Table 1. Results of water quality

Parameters	Well water	Well water	Tap water	Tap	Standard value (BIS)
	1	2	1	water2	
Dissolved Oxygen (mg/l)	6.72	6.6	7.1	7.8	6-8
Alkalinity (mg/l)	16	24	18	13	200
Chloride (mg/l)	27.7	21.83	35.4	32.6	250
Flouride (mg/l)	0.5	0.4	0.2	0.3	1-1.5

Hardness (Total)	Nil	Nil	Nil	Nil	200
Conductivity (µs)	112.2	98	175	100	
pH	4.7	5.09	5.13	5.46	6.5-8.5
Total Dissolved Solids (ppm)	102	85	127	88	500
Turbidity	1	2	1	1	5
Total coliform	Nil	Nil	Nil	Nil	0
Fecal coliform	Nil	Nil	Nil	Nil	0

c. WATER CONSERVATION

1	List uses of water in your institute	Basic usage of water in campus are; Drinking, Gardening, Kitchen & Toilets, and Others. And total consumption is 300000 l/day
2	How does your institute store water? Are there any water saving techniques followed in your institute?	Underground Water tank installed for storage of water. Avoid overflow of water controlled valves are provided in water supply system.
3	If there is water wastage, specify why and How can the wastage be prevented / stopped?	No
4	Locate the point of entry of water and point of exit of waste water in your institute.	Entry- Water comes from bore well supply at campus Exit- From Water Drainage System to the MBA block of campus
5	Write down few ways that could reduce the amount of water used in your institute	By Following ways: 1. Water Conservation awareness for new students 2. Maintenance and monitoring of valves in supply system to avoid overflow, leakage and spillage 3. Close the taps after usage

6	Does your institute harvest rain water?	Six number of Modern rain water harvesting system are available.
7	Is there any water recycling System.	Yes, RO waste water is stored in tank and is attached to toilet supply

d. Waste Minimization and Recycling

1	Does your institute generate any waste? If so, what are they?	Yes, Solid waste, Canteen waste, paper waste, plastic waste, toiletry waste, e-waste, etc.			
2.	What is the approximate amount of waste generated per day? (in Kilograms/month) (approx.)	Bio Degradable 30kg	Non-Biodegradable 4kg	Hazardous -	others <4kg
3	How is the waste generated in the institute managed? By 1 Composting 2 Recycling 3 Reusing	2 composting pits are there in campus, Reuse of one side printed Paper for internal communication. Sewage water is discharged to public Sewer. Domestic Waste is given to Municipal Corporation. Three types of Waste bins are provided at campus for biodegradable and non-biodegradable waste. Canteen waste is converted to organic rich manure .			
4	Do you use recycled paper in institute?	Yes, in academic evaluation works			
5	Do you use reused paper in institute?	Yes			
6	How would you spread the message of recycling to others in the community? Have you taken any initiatives? If yes, please specify.	Yes, Green Society carried out numerous activities. Recycling campaigns, e waste management, Anti-plastic campaigns, Swach bharath Programme and through NSS activities.			
7	Can you achieve zero garbage in your institute? If yes, how?	Yes, as per new waste management rules all kind of waste is managed in an adequate manner without any deviation.			

e. GREENING THE CAMPUS

1	Is there a garden in your institute?	Yes, about 1.5 Acre is the Green Area.			
2	Do students spend time in the garden?	1 Hour is included in their timetable on daily basis.			
3	Total number of Plants in Campus	Plant type	More than 200		
		Trees	More than 25		
		Grass Cover	1.3 Acre		
4	Trees from your campus. (Trees, vegetables, herbs, etc.)	Neem, Royal poinciana, Pongam oil tree, Indian almond tree.			
5	Is the College campus have any Horticulture Department	No			
	Number of Staff working in Horticulture Department	Four Gardeners			
6	Number of Tree Plantation Drives organized by College per annum. (If Any)	Yes, Three Tree Plantation Drives are Organized Annually. Trees are planted through NSS drive.			
7	Number of Trees /Plants Planted in Last FY.	15			
	Survival Rate	90%			
8	Plant Distribution Program for Students and Community	Yes, Seed Bank is developed and, Saplings are distributed to Students and visitors at various Occasions.			
9	Plant Ownership Program	Yes			

f. CLEAN AIR

1	Are the Rooms in Campus are Well Ventilated?	Yes				
2	Window Floor ratio of the Rooms	Very Good				
3	Provide details of campus –owned motorized vehicles?	Buses	Cars	Vans	Other	Total
	No. of vehicles	--	1 Non-operational	--	--	--
	No. of vehicles more than five years old	--	--	--	--	--

	No. of Air conditioned vehicles	--	--	--	--	1
4	Specify the type of fuel used by your College vehicles:					
	Diesel	1				
	Petrol	--				
	CNG	--				
	LPG	--				
	Electric	--				
5	Air Quality Monitoring Program (If Any)	“No vehicle day” is followed twice in a academic year				
6	Students suffer from respiratory ailments? (If Any)	No				

TOTAL STRENGTH OF STUDENTS, TEACHERS, AND NON-TEACHING STAFFS

No of Students	1480
No of Teachers	98
No of Non teaching staffs	10

CARBON FOOT PRINT ANALYSIS

1	Total number of vehicles used by the stakeholders of the college	710
2	No of cycles used	9
3	No of two wheelers used	232
4	No of cars used	35
5	No of persons using public transportation	780
6	No of generators used per day	Nil
7	Number of LPG cylinders used in canteen/labs	4
8	Use of any other fossil fuels in the college	Nil


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g. ENVIRONMENTAL LEGISLATIVE COMPLIANCE

1	Are you aware of any environmental Laws pertaining to different aspects of environmental management?	Yes
2	Does your institute have any rules to protect the environment? List possible rules you could include.	They have banned single use plastic. Their environment policy includes awareness, and environmental conservation efforts through Green club of the campus . All under graduates are studying the paper of Environmental Sciences, prescribed by UGC.
3	Does Environmental Ambient Air Quality Monitoring conducted by the Institute?	NA
4	Does Water and Wastewater Quality monitoring conducted by the Institute?	Yes
5	Is any warning notice, letter issued by state government bodies?	No
6	Does any Hazardous waste generated by the Institute?	No
7	Does any Bio medical waste generated by the Institute? If yes explain its category and disposal method	No



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GENERAL

1	Are you aware of any environmental Laws pertaining to different aspects of environmental management?	Yes
2	Does your institute have any rules to protect the environment? List possible rules you could include.	Yes, there are some rules like e banned single use plastic. Their Environmental Policy includes awareness and environmental conservation.
3	Does housekeeping schedule in your campus?	Yes, Swatch Bharat movement
4	Are students and faculties aware of environmental cleanliness ways? If Yes Explain	Yes, Periodically pollution reduction, plantation, energy conservation awareness campaigns carried out by the institute.
5	Does Important Days Like World Environment Day, Earth Day, and Ozone Day etc. eminent in Campus?	Yes
6	Does Institute has any Recognition/certification for environment friendliness?	No
7	Does Institute using renewable energy?	Yes
8	Does Institution conducts a green/environmental audit of its campus?	Yes, This is fifth environmental audit done by the College.
9	Has the institution been audited / accredited by any other agency such as NBA NAAC etc.?	Yes, NBA & NAAC



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BEST PRACTICES/ INITIATIVES FOR ENVIRONMENT

1	<p>Renewable Energy</p> <p>Solar panel installed at college.</p> <p>A clean source of energy is utilized at campus.</p> <p>Efforts towards Carbon Neutrality</p> <p>The capacity of KW Solar plant on building roofs is commissioned and will be operational in a month that will supply approx. 30% of total power in campus.</p>	Solar panel pic
2	<p>Tree Plantation Drives</p> <p>Two Drives Annually as well as Every Guest is honored by Tree Plantation at Campus.</p>	Yes, periodically the plantation drives by students and staff of campus.
3	<p>Ground Water Recharge</p> <p>15 units of Rain Water Harvesting System.</p>	Yes, 100% recharge of the rain water
4	<p>Pollution Reduction</p> <p>No vehicle day is followed twice every year</p>	Reduction in Air Pollution through vehicular emission.
5	<p>E Waste Management</p> <p>Collection of e-waste by staff</p>	E waste is sent to the authorized recyclers for adequate disposal
6	<p>Solid Waste Management</p> <p>Lifting of garbage from campus on alternate day by Municipal Corporation.</p>	Yes, different mechanisms for proper disposal and recycling of e-waste, recycling of canteen waste plastic waste, biodegradable waste and MSW
7	<p>Adoption of Village/society CSR</p>	
8	<p>Water Conservation</p>	Yes, water saving push taps fitted in the drinking water zone and the toilets to avoid the wastage. They are re-using RO waste water in their washrooms.



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RECOMENDATIONS

- Formation of Environment Policy and communicated to all faculties and other staff members.
 - Environmental Monitoring i.e. (Ambient Air Quality monitoring, Stack Monitoring of DG sets, Water monitoring need to be conducted by Delhi State Pollution Control Committee, approved laboratory with frequency of six month.
 - Reduction in use of paper work by go digital system.
 - Water Meter should be installed at institute for monitoring of water consumption for landscape.
 - Increase in Environmental promotional activities for spreading awareness at campus.
 - As practically feasible avoid use of personal vehicles inside the campus.
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CONCLUSION

- This audit involved extensive consultation with all the campus team, interactions with key personnel on wide range of issues related to Environmental aspects. The Meenakshi Sundararajan Engineering College College has Environmental Committee for sustainable use of resources. Overall 60% of university campus is for landscaping. The audit has identified several observations for making the campus premise more environmental friendly. The recommendations are also mentioned with observations for campus team to initiate actions.
- The team monitored different facilities at the college, determined different types of appliances and utilities (lights, taps, toilets, fridges, etc.) as well as measuring the usage per item (Watts indicated on the appliance or measuring water from a tap) and identifying the relevant consumption patterns (such as how often an appliance is used) and their impacts. The staff and learners were interviewed to get details of usage, frequency or general characteristics of certain appliances. Data collection was done in the sectors such as Energy, Waste, Greening, Carbon footprint and Water use. College records and documents were verified several times to clarify the data received through survey and discussions. The environment samples including water were from various location of the campus were collected and analyzed at Water and Waste Water analysis Laboratory of the college.
- The audit team opines that the overall site is maintained well from environmental perspective. There is no major observations but few things are important to initiate urgently are waste management records by monthly inventory of hazardous waste, rainwater harvesting recharge; water balance cycle and periodic inspection of environment policy .

SUMMARY OF GREEN SOCIETY

The Environment Society of MSEC, The Green Society, aims to spread awareness amongst students regarding the natural environment that they are a part of, and the impact of their everyday actions on it. We aim to protect the environment by spreading awareness to save energy, water, reducing use of disposable plastics, promoting reusable materials, planting saplings, etc. We believe that better world is not only within reach, but is being built today. We conduct environment friendly events which are not only intellectual, but also interactive and fun to attend. These include workshops, tree plantation drives, rallies, and online awareness campaigns, competitions such as Slam Poetry, Poster Making-online and offline and so on. The Society has also taken pride in being eco-friendly in every little way possible, starting from our paper free, online council elections. The Green Society currently has over 300 students under its wing.

REFERENCE

- The Environment [Protection] Act – 1986 (Amended 1991) & Rules-1986 (Amended 2010)
- The Petroleum Act: 1934 – The Petroleum Rules: 2002
- The Central Motor Vehicle Act: 1988 (Amended 2011) and The Central Motor Vehicle Rules: 1989 (Amended in 2005)
- Energy Conservation Act 2010.
- The Water [Prevention & Control Of Pollution] Act – 1974 (Amended 1988) & the Water (Prevention & Control of Pollution) Rules – 1975
- The Air [Prevention & Control Of Pollution] Act – 1981 (Amended 1987) The Air (Prevention & Control of Pollution) Rules – 1982
- The Gas Cylinders Rules – 2016 (Replaces the Gas Cylinder Rules – 1981
- E-waste management rules 2016
- Electrical Act 2003 (Amended 2001) / Rules 1956 (Amended 2006)
- The Hazardous Waste (Management and Handling and Trans-boundary Movement) Rules, 2008 (Amended 2016)
- The Noise Pollution Regulation & Control rules, 2000 (Amended 2010)
- The Batteries (Management and Handling) rules, 2001 (Amended 2010)
- Relevant Indian Standard Code practices
- Internal Records of the Campus

7.1.6.1. The institutional environment and energy initiatives

“Energy Audit”

The energy audit was carried out by faculty of Electrical and Electronics Engineering Department to reduce energy consumption and also for improving the energy efficiency. A detailed analysis and a survey report was submitted by the department (energy consumption in laboratory, instrument, Fans, air conditioners, Computers etc.) The audit report also suggested to take possible action to conserve the available sources and saving the resources for the future.

Electrical Power Supply

The electrical power to MSEC fed from 11 KV TANGEDCO, 11KV/440V, 800 KVA distribution transformer located in college premises. A Diesel Generator(DG) set is available for uninterrupted power supply(UPS) during power shutdown. The computers in the campus are connected to UPS.

Electrical Load

Major electrical consumption of the college is from Classrooms, Library, different laboratories of each department, various seminar halls and auditoriums. The list of equipments and electrical loads installed in the campus are given below:

LIST OF EQUIPMENTS**Table 1. THREE PHASE LOADS**

S. No.	Equipment no.	Description	No. of Units	Voltage (V)	Fed from	Load (KW)
1	1/1 to 1/8	Split A/C Unit (10 KW)	8	415	A/C DB-1	80
2	3/1 to 3/8		8		A/C DB-3	80
3	4/1 to 4/8		8		A/C DB-4	80
4	6/1 to 6/6		6		A/C DB-6	60
5	2/1 to 2/8		8		A/C DB-2	80
6	5/1 to 5/6		6		A/C DB-5	60
7	L1	Lift motor	1		Sub Panel - 3	10
8	P1	Water pump	1		PDB-P	3.6
9	C/1		1		SSB-C	3.6
10	H/1		1		SSB-D	1.5
11	W/1 to W/5	Lathe (2 HP)	5		PDB-W	7.35
12	W/6	Sharper	1			1.47
13	W/7	Wood Planner	1			2.2
14	W/8	Wood Cutter	1			2.2
15	W/9	Grinder	1			0.73
16	W/11	Cutting machine	1		1.47	
17	F1	Firefighting pump	1		Sub Panel - 2	9.3
Total loads						483.42



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Table 2. SINGLE PHASE LOADS

S. No.	Equipment no.	Description		No. of Units	Voltage (V)	Fed from	Load (KW)
1	P2	Water Pump		1	230	PDB-P	1.1
2	P3			1			1.1
3	W/12	Grinding machine		1		PDB-W	0.37
4	F1	A/C unit	2.2 KW	11		PDB'S	24.2
5			1.6 KW	16			25.6
6			1.62 KW	6			9.72
7			2.6 KW	1			2.6
8		Computer Sockets	5 A, 100 W	190		UPS - PDB'S	19
9		Sockets	15 A, 100 W	28		PDB'S	2.8
10			15 A	3			2.7
11			15 A	3			1.5
12			5 A, 100 W	240			24
13			5 A, 100 W	70			7
Total loads							121.69

Table 3. KVA LOADS

S. No.	Equipment no.	Description	No. of Units	Voltage (V)	Fed from	Load (KW)
1	W/10	Welding Set	1	415	PDB-W	6
2	MCW	UPS	1		Sub Panel - 3	10
3	1		1	230	UPS-MDB	2
4	2		11		UPS-MDB	2
5	C/1		16		SSB-C	5
6			6		PDB-G/1	5
7			1		PDB-G/1	5
Total loads						35

Table 4. KVAR LOADS

S. No.	Equipment no.	Description	No. of Units	Voltage (V)	Fed from	Load (KVAR)
1	C/1 to C/8, 25 KVAR each	Capacitor	8	415	Capacitor Panel	200
2	C/1		1		MDB-II	15
3	W/13		1		MDB-1	35
Total loads						250

LIGHTING LOADS

The various lighting loads connected in MSEC are shown in Table 5. Figures 1 and 2 shows the power consumption share of each load connected in various location of the MSEC. The comparison shows that the main block has major load connections. Men Hostel has more electrical loads followed by main block and other locations.

Table 5. LIGHTING LOADS

S. No.	Fed from	Load (KW)	S. No.	Fed from	Load (KW)
1	LDB-5	6.725	15	LDB Main Block	18
2	LDB-1	8.727	16	LDB Canteen Block	12.5
3	LDB-2	7.75	17	LDB Common	6.4
4	LDB-4	6.23	18	LDB Main Block	24.75
5	LDB-6	6.23	19	LDB-TC	14.4
6	LDB-P1	2			
7	LDB-3	6.565			
8	LDB-E	10			
9	LDB-E/1	1			
10	LDB-11 ET	9			
11	Common Lighting	1			
12	LDB-W	1			
13	LDB-RH	2			
14	LDB Hostel Block	16			
Total loads					160.277

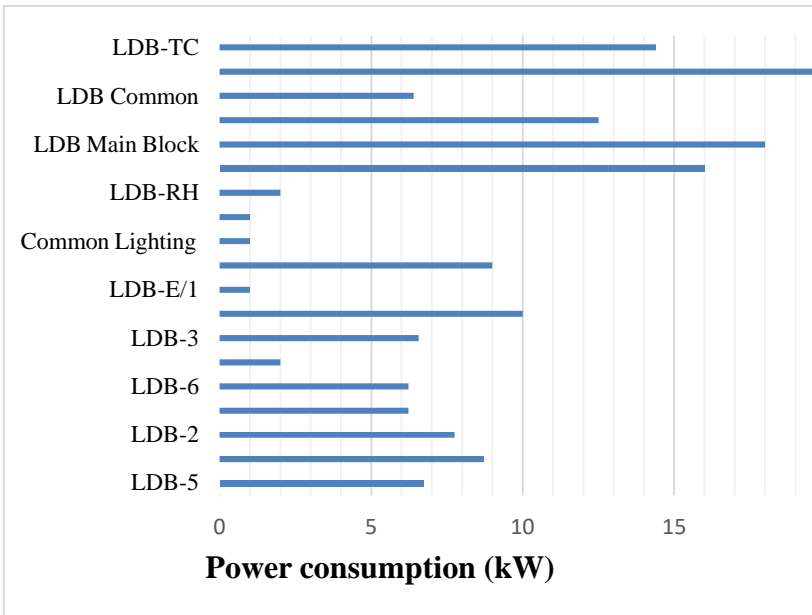


Figure. 1

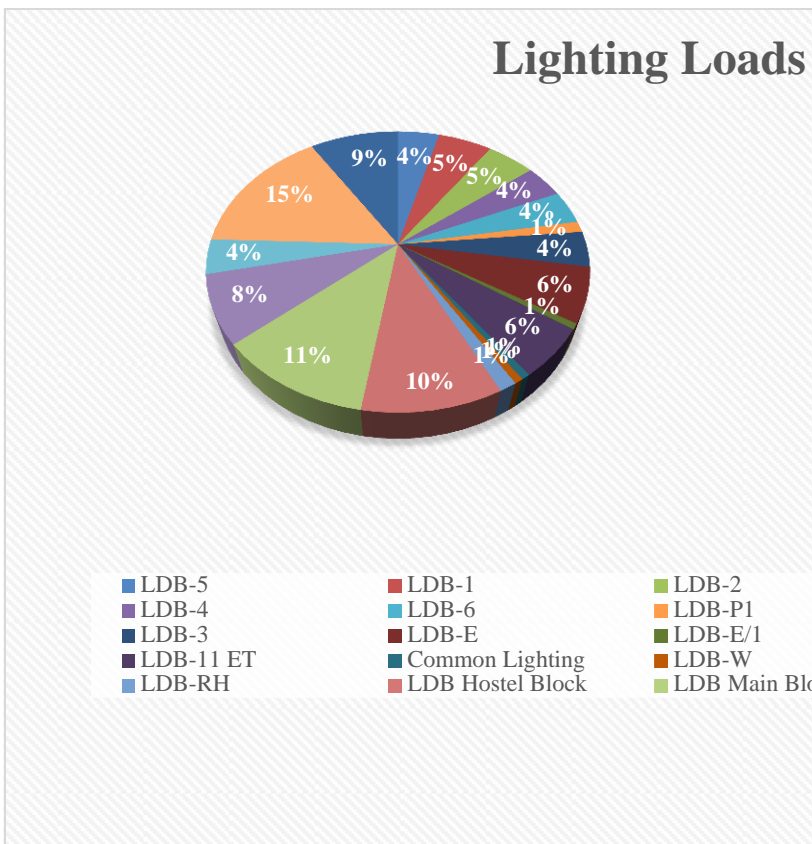


Figure. 2

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Table 6. Common electrical loads installed in each department laboratories

S.No	Area installed	Fluorescent Lamp (FL) (36 watt)	Compact Fluorescent Lamp (CFL) (20 watt)	LED (36 watt)	Air Conditioner (AC)	FAN (75 watt)
Main building block						
KRS seminar hall						
1	KRS seminar hall	0	42	21	6	6
CSE						
1	Lab 1 & 2	0	21	18	4	12
2	Project and research lab	0	21	18	4	12
3	Lab 6	0	10	8	2	4
4	Lab 7	0	12	8	2	4
5	Lab 8	0	12	10	2	3
ECE						
6	Lab 1 & 2	20	0	0	0	13
7	Lab 3 & 4	34	0	0	3	12
8	Simulation lab	0	24	18	3	12
9	Digital signal processing and microprocessor lab	0	24	19	2	13
CSE & ECE SEMINAR HALL						
10	Seminar hall	0	18	21	4	14
EEE						
11	Lab 1 & 2 (Electrical machines lab 1&2)	72	0	0	0	21
12	Lab 3, 4 & 5 (C&I lab, RES lab, ED / LIC lab)	31	0	0	0	16
13	Lab 7 (Power Electronics lab)	28	0	0	3	8
14	Lab 8 (Power System Simulation lab)	28	1	0	4	7

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IT						
15	Lab 1 to 6	0	72	54	6	18
Mechanical & Civil building block						
MECHANICAL						
16	CAD lab	0	36	0	Multi split ac (3.5 Kw, 8 cassettes)	20
17	Lab 3, 4, 5 (28-watt FL)	42	0	0	0	24
CIVIL						
18	CAD lab (First floor)	0	20	0	Multi split ac (3.5 Kw, 6 cassettes)	12
19	Lab 1, 2, 3 (SM Lab - Ground floor)	30	0	0	0	24
20	Lab 4	8	0	0	0	2
21	Lab 5	48	0	0	0	17
22	Soil lab	8	0	0	0	12
23	Lab 7 (Geology lab - First floor)	8	0	0	1	2
24	Lab 8, 9 (Environment lab)	24	0	0	0	14
25	Lab 11	17	0	0	1	4
IET building block						
26	Chemistry lab (Ground floor)	16	0	0	0	17
27	Physics lab (First floor)	10	0	0	0	8
28	Communication lab (Second floor)	6	0	0	2	6
Total		429	271	175	45	331



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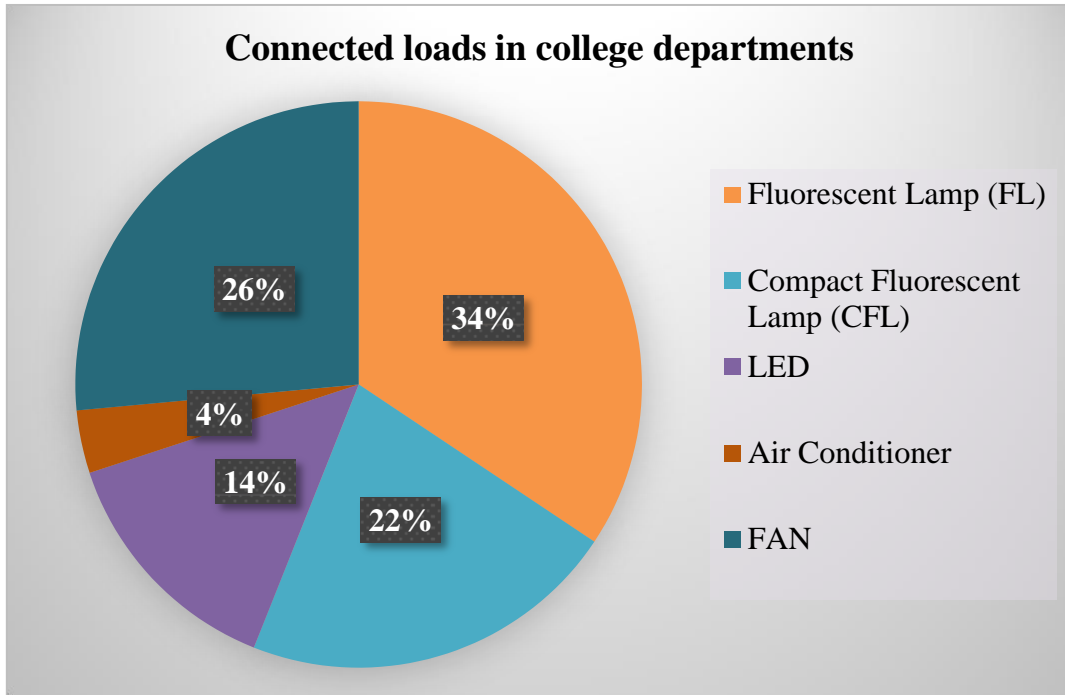
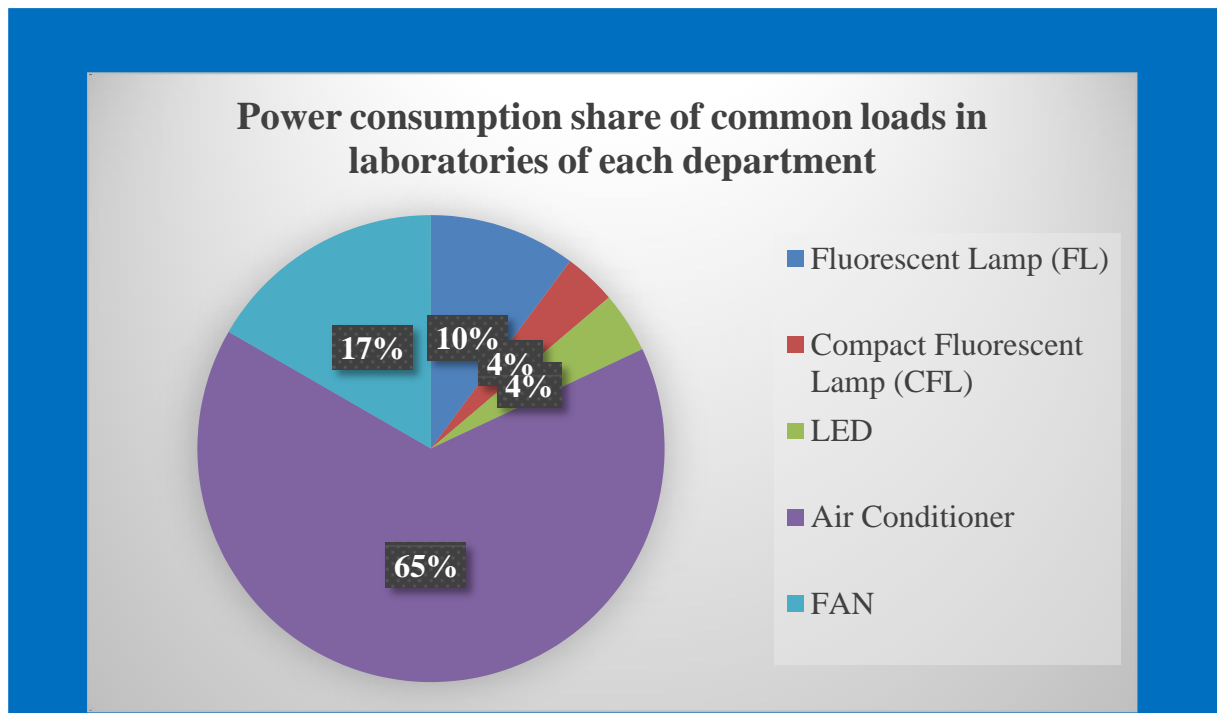


Figure. 3




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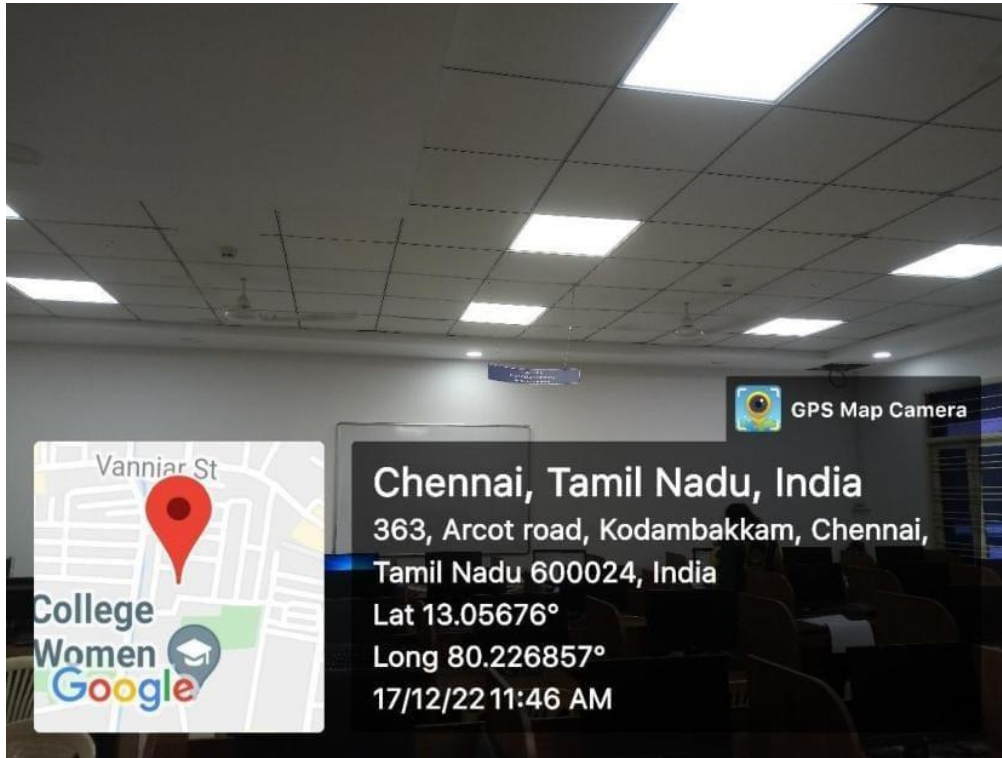


Figure 4. CSE LAB 1

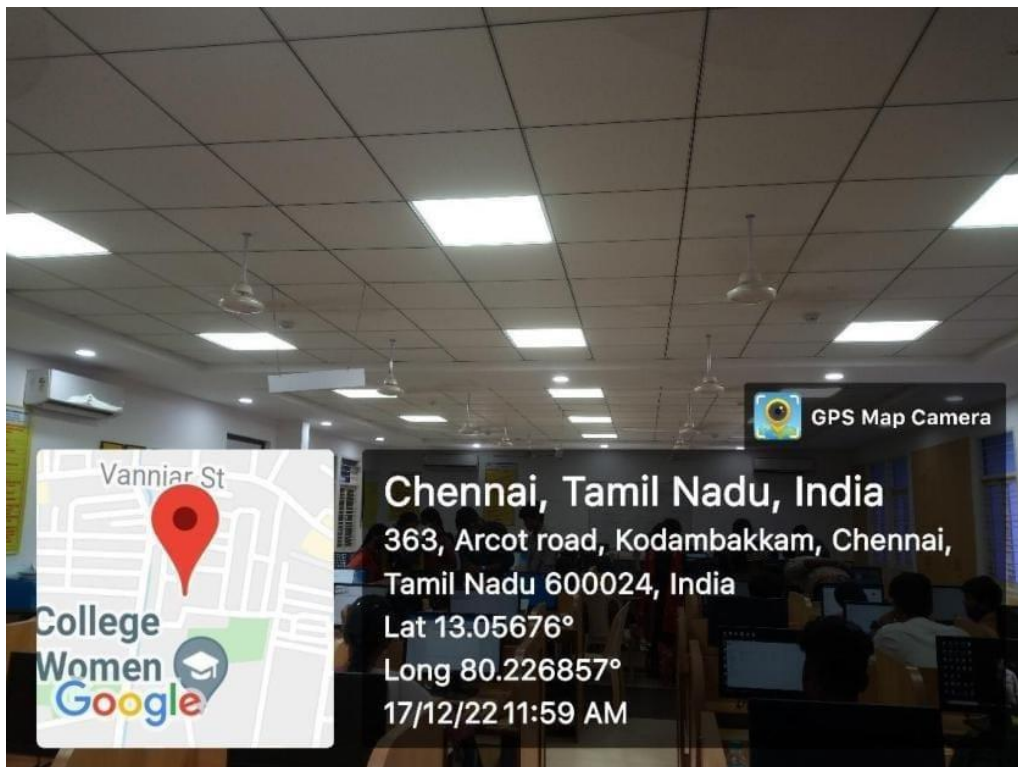


Figure 5. CSE LAB 2

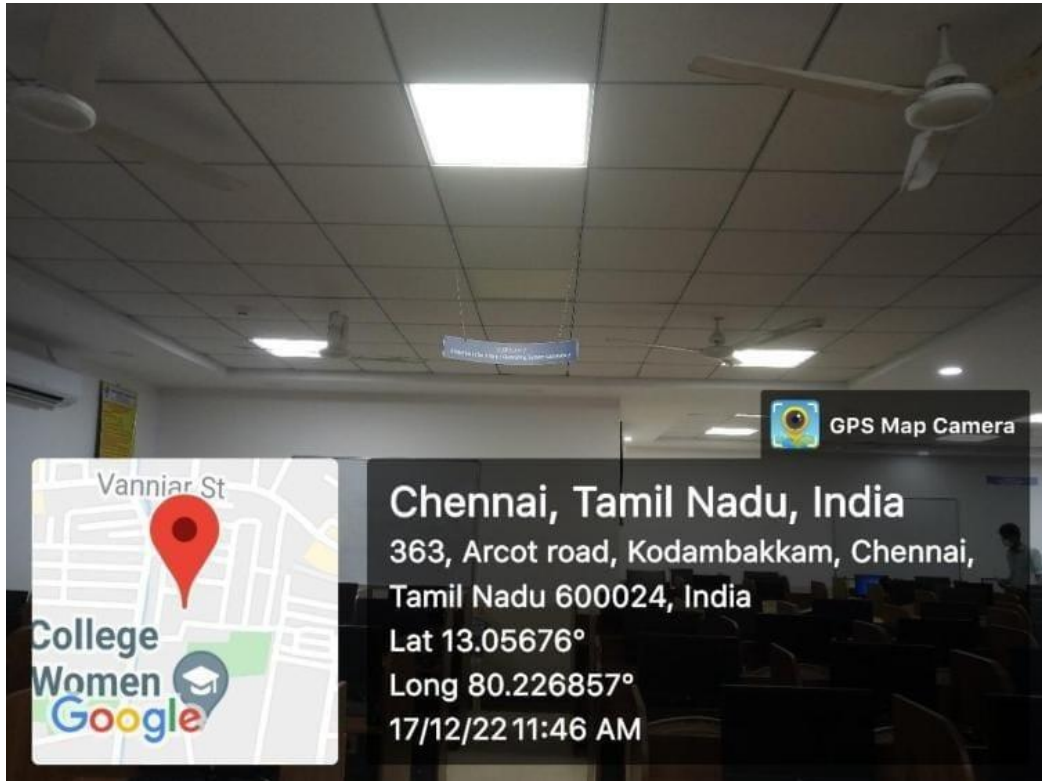


Figure 6. CSE LAB 7

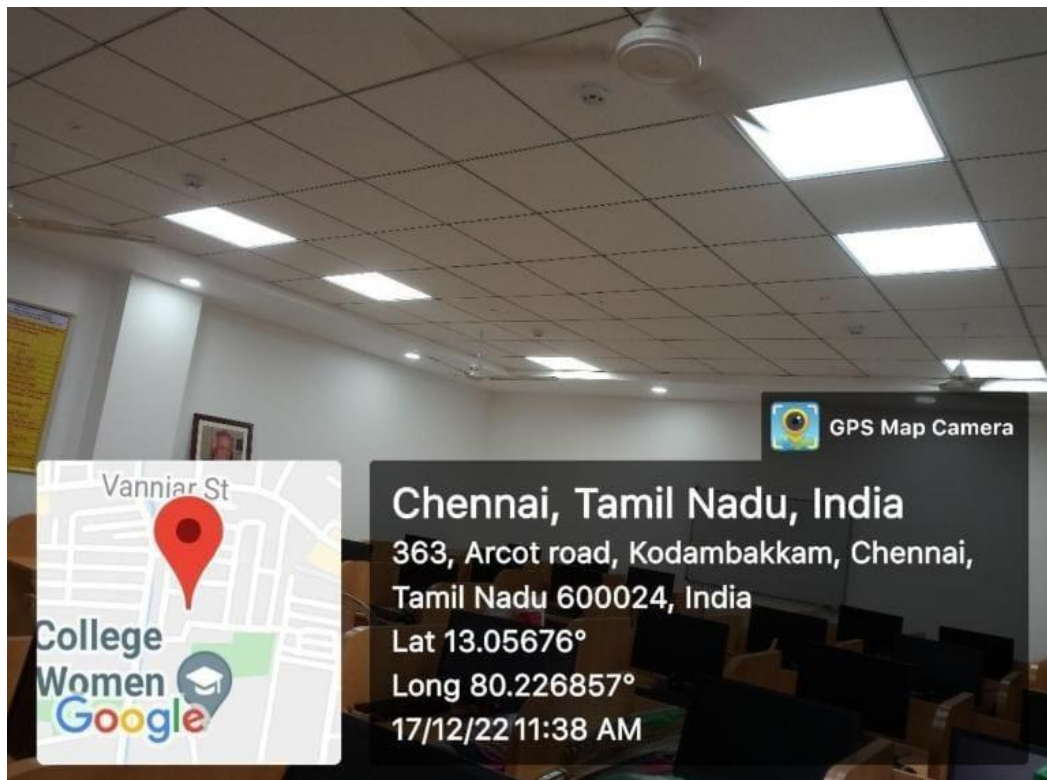


Figure 7. CSE LAB 8

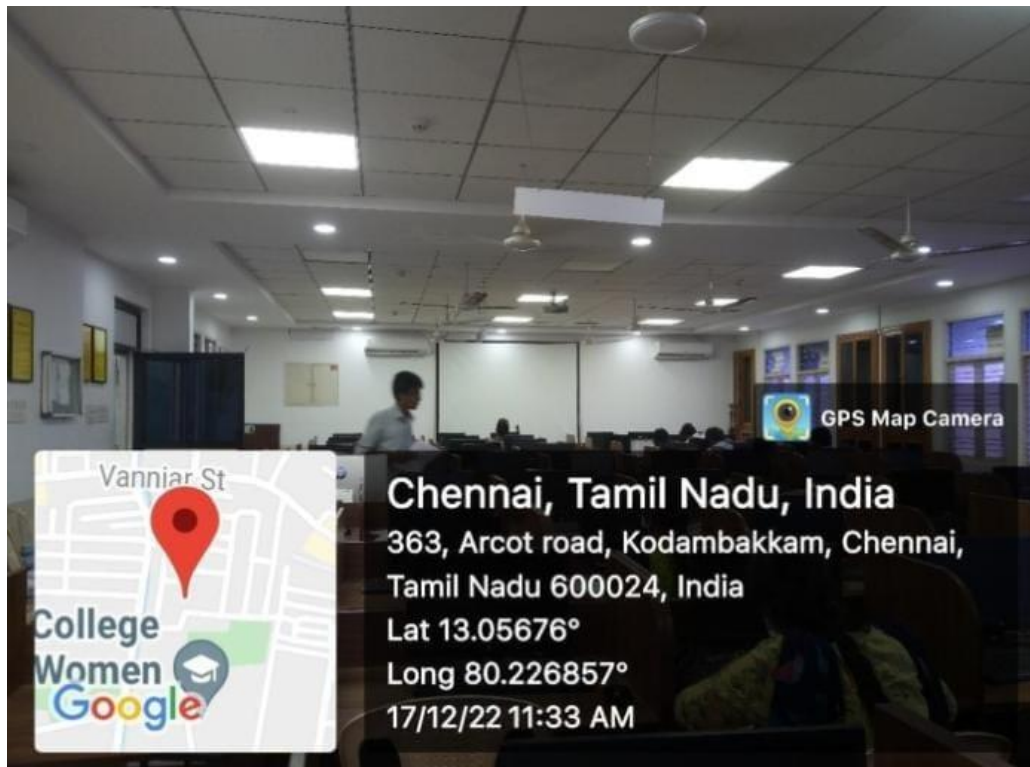


Figure 8. CSE LAB 6

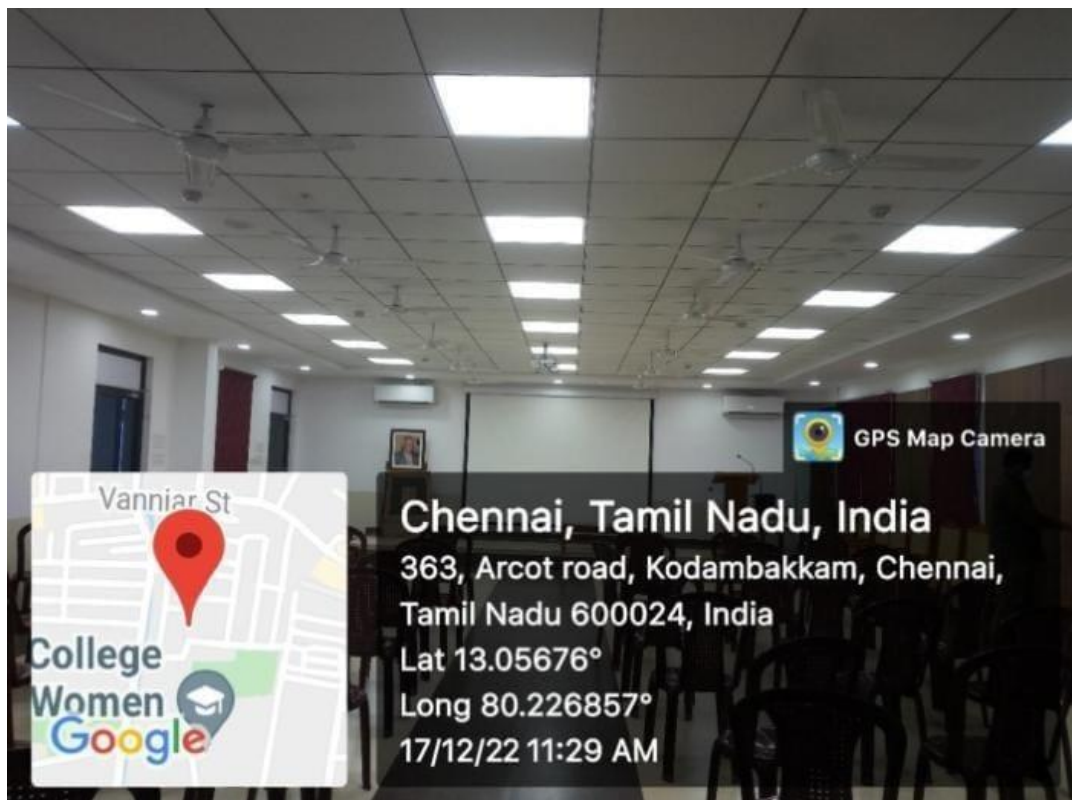


Figure 9. SEMINAR HALL (ECE)

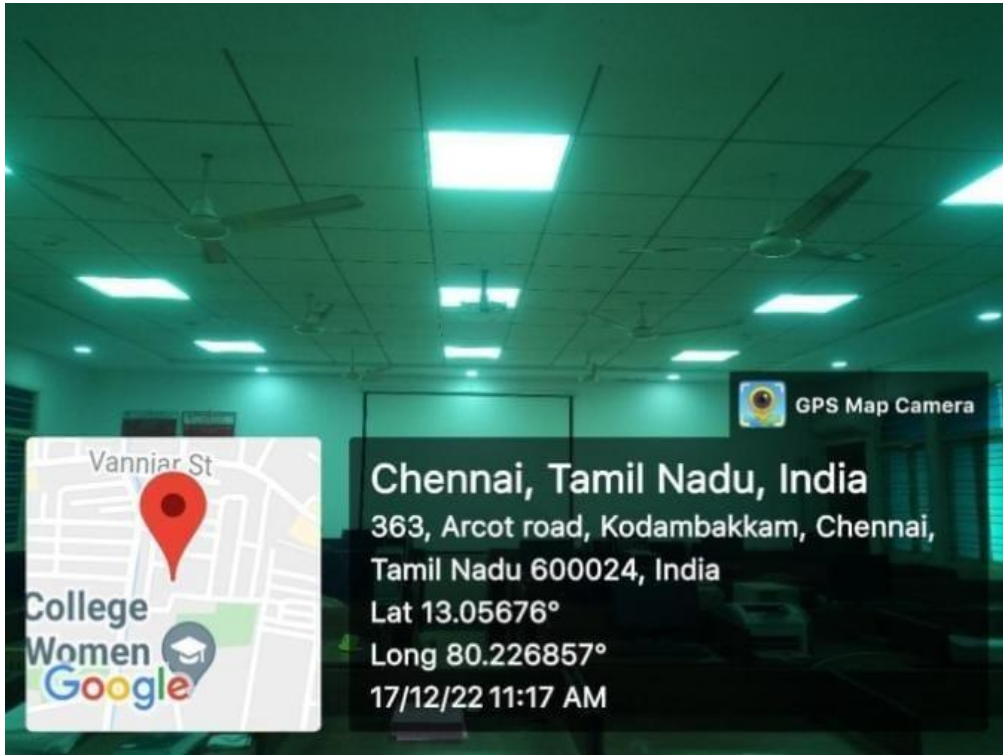


Figure 10. SIMULATION LAB (ECE)

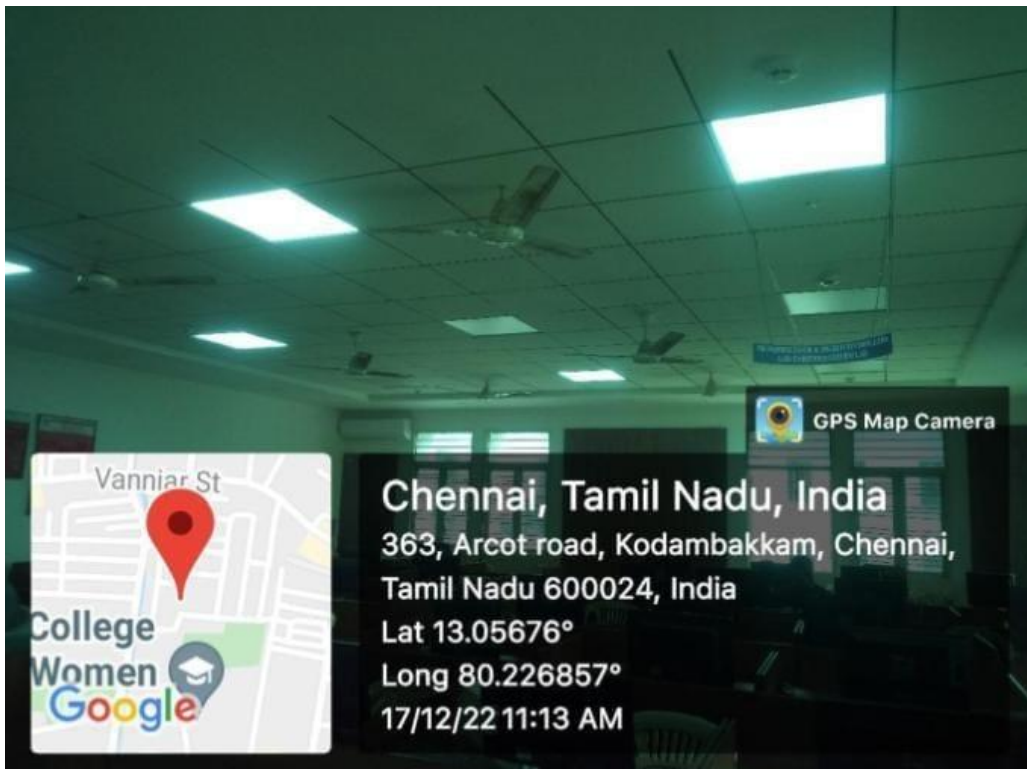


Figure 11. Microprocessor and Microcontroller LAB (ECE)

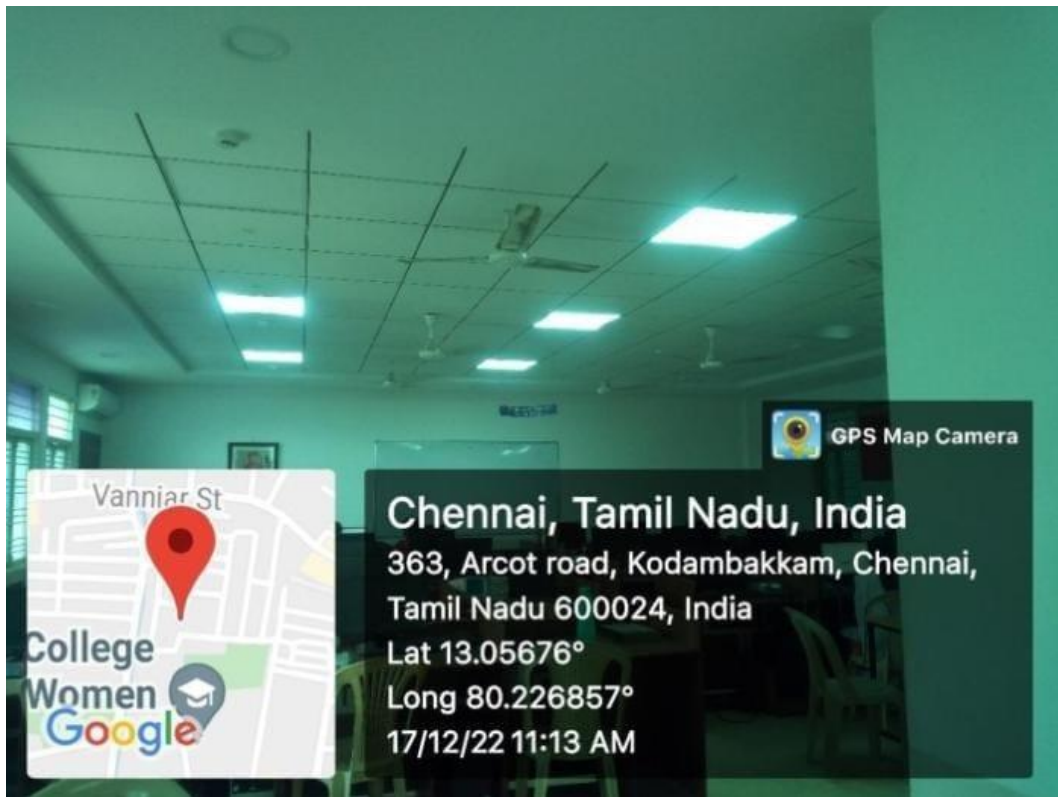


Figure 12. Digital signal processing LAB (ECE)

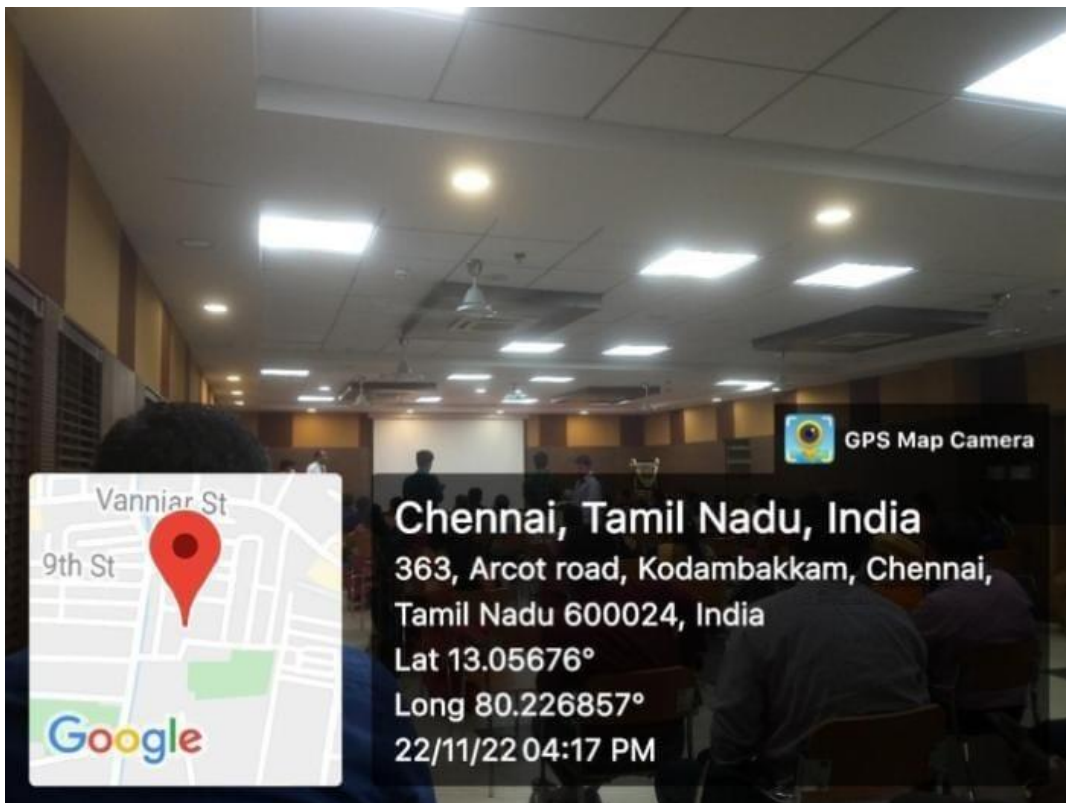


Figure 13. KRS SEMINAR HALL

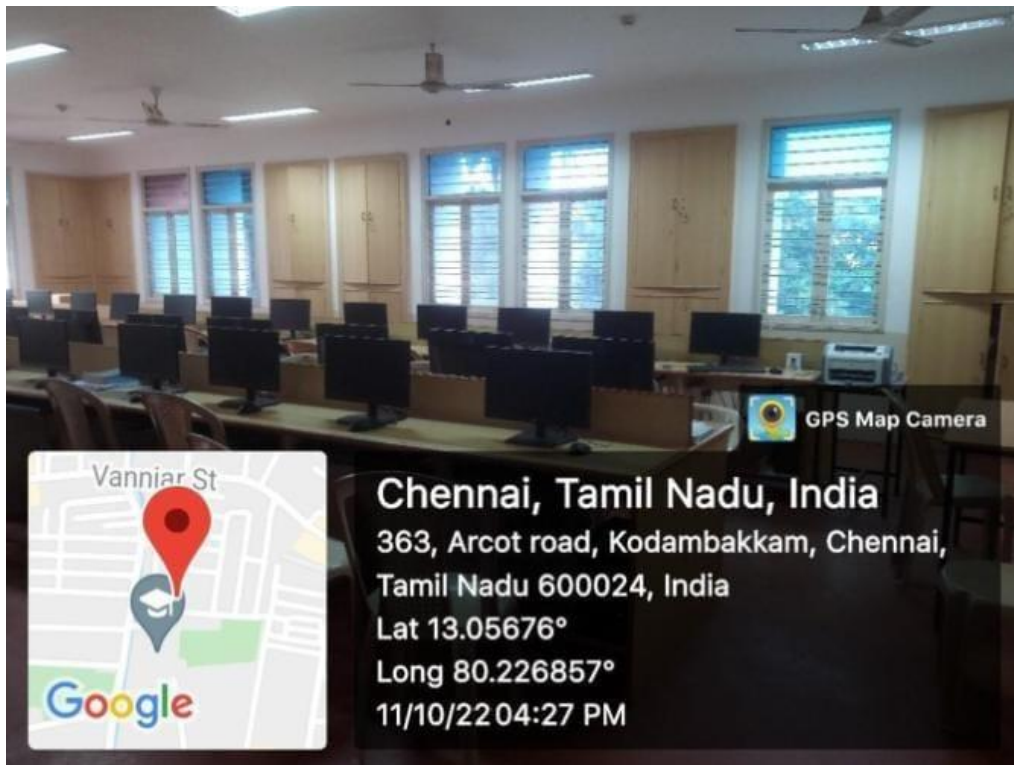


Figure 14. Power System Simulation LAB (EEE)

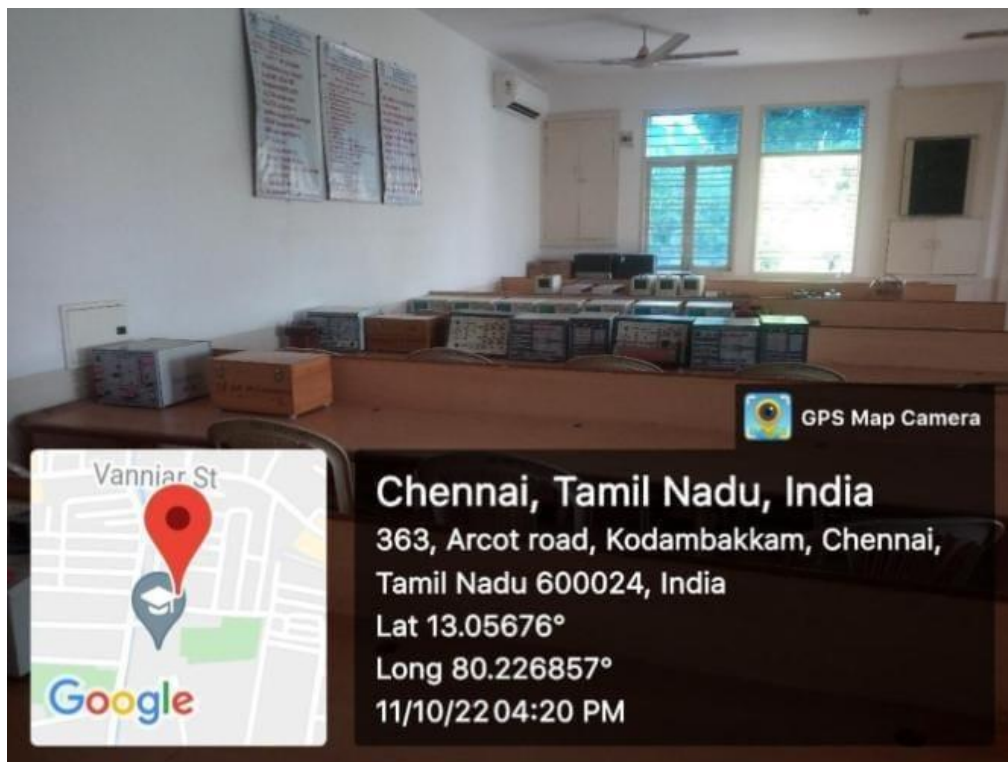


Figure 15. Power Electronics LAB (EEE)



Figure 16. EPL LAB (EEE)

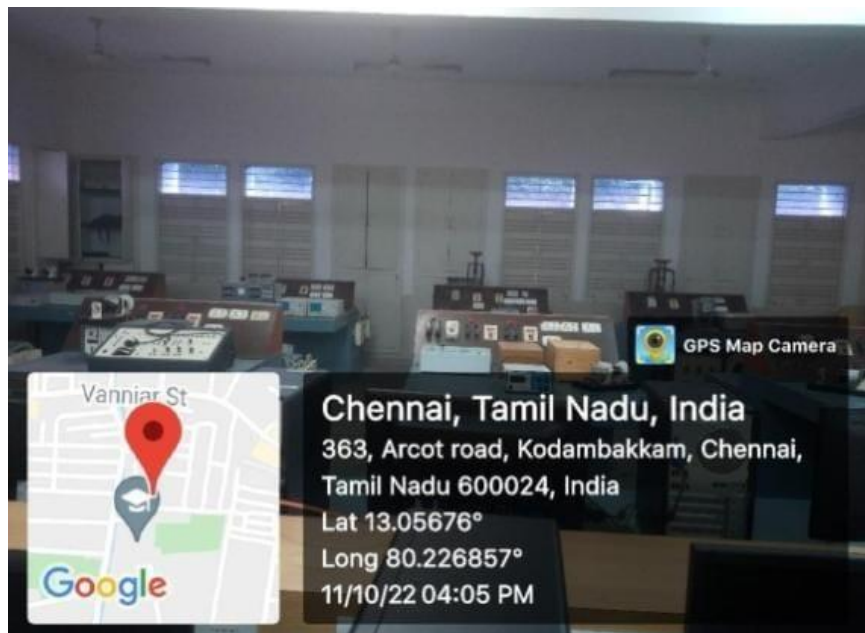


Figure 17. Control System LAB (EEE)

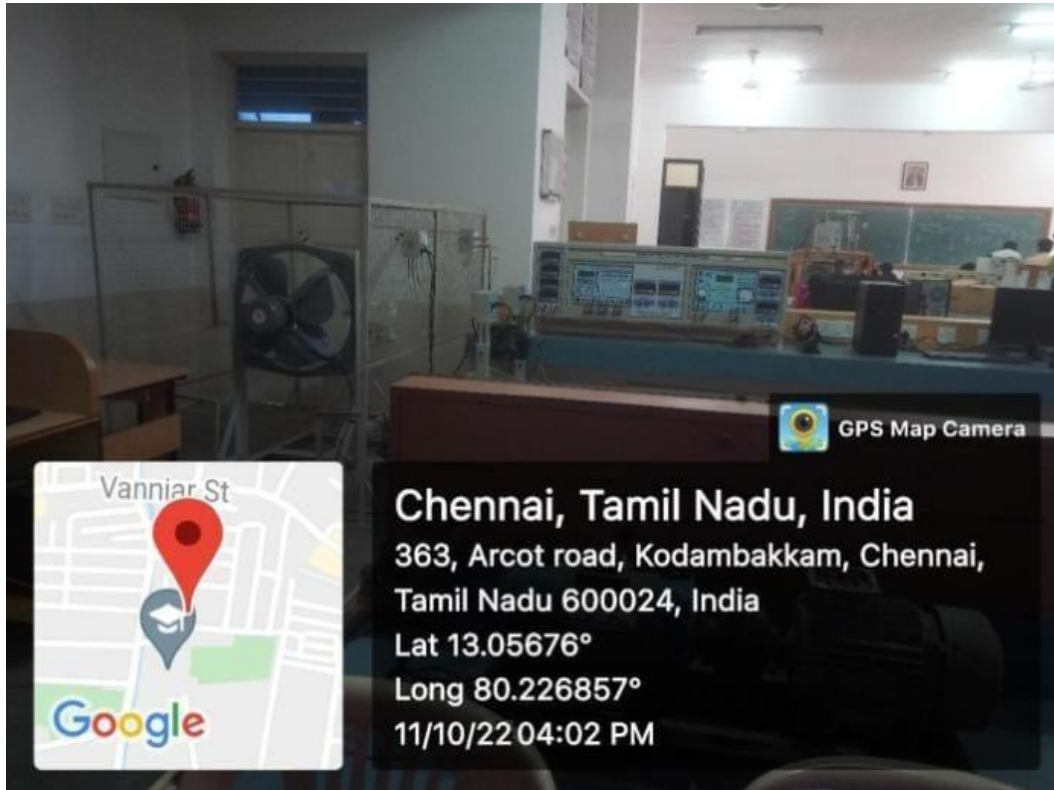


Figure 18. RES LAB (EEE)

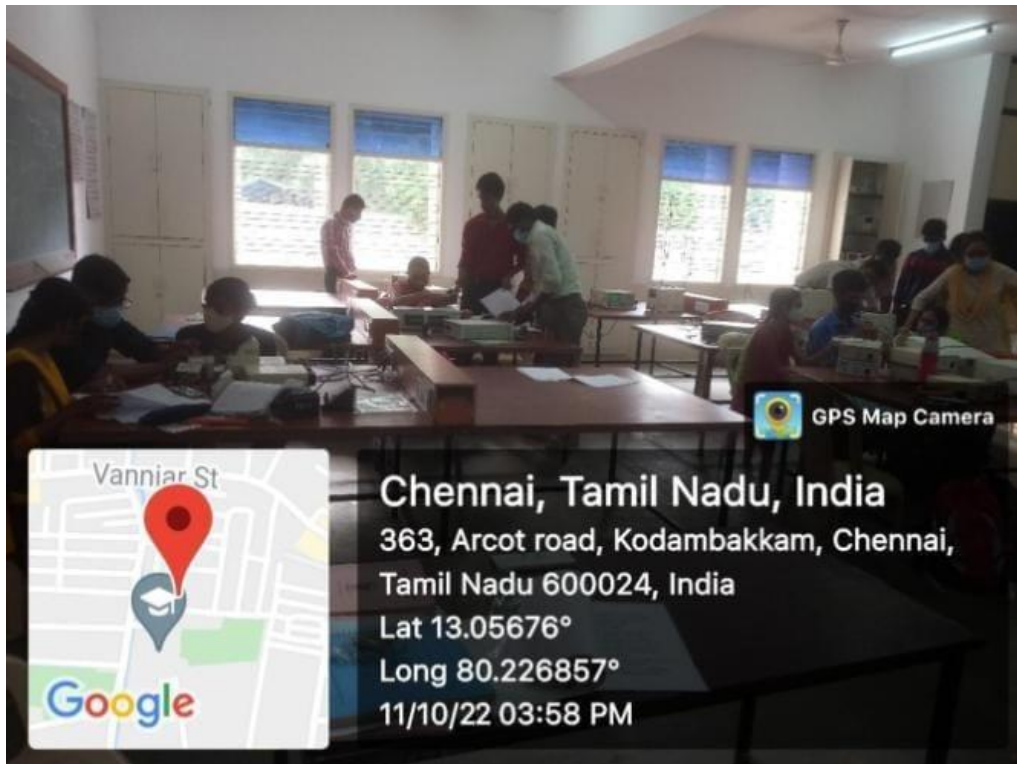


Figure 19. LIC LAB (EEE)



Figure 20. Electrical Machines II LAB (EEE)

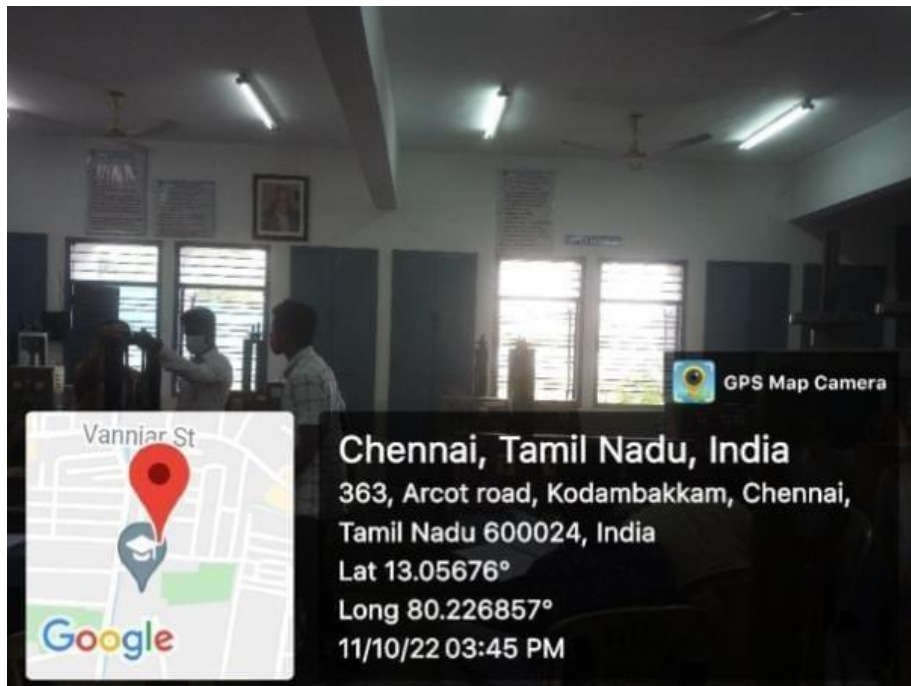


Figure 21. Electrical Machines I LAB (EEE)

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The following table shows month wise energy consumption in MSEC which includes data from TNEB electricity bill and internal audit of each block. The main block of MSEC utilizes 60% of the total power usage in the institution. From the Table and Figure 22, the average energy consumption of MSEC from February 2019 to January 2020 varies between 20000 and 25000 kWhr.

After March 2019, when pandemic started due to covid-19, government-imposed lockdown of several places which comprises of public gathering including college institutions throughout the state as a measure to curb virus spread. Lockdown for institutions lasted until the end of 2019. During this period, the usage of electrical supply in the campus is reduced to 5000 kWhr. The government started to allow students for direct class from August 2021, since the number of infected persons are much lower at that time. From august onwards, the electricity consumption of college increased to normal average consumption (i.e., consumption rate before March 2019).



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ENVIRONMENTAL AND GREEN AUDIT REPORT

Year	Month	Energy consumed (kWhr)									Total energy consumption (kWhr)
		Main block	Civil block	Mechanical block	C block	Canteen	IJET block	Xerox shop	Workshop	Men hostel	
2018	September	25241.15	3897.17	4319.88	2505.30	2098.70	3290.80	583.10	295.80	5702.50	47934.40
	October	19475.20	2960.88	3337.26	2109.20	2128.00	2981.10	507.70	387.50	5734.10	39620.94
	November	10421.70	1844.10	2084.79	1629.90	1739.80	2573.80	464.30	264.20	5314.70	26337.29
	December	14870.70	2700.00	2752.00	1996.00	2010.10	2280.00	553.60	182.50	4068.00	31412.90
2019	January	11569.80	2550.33	5585.87	1364.40	1901.70	2220.00	352.10	224.00	4593.40	30361.60
	February	19064.32	3593.43	2179.81	1937.00	1847.70	2831.70	520.60	405.50	5009.30	37389.36
	March	24062.56	3573.39	1663.06	2195.30	2152.90	2597.60	1268.2	495.90	6196.70	44205.61
	April	25803.82	4738.15	973.07	1714.01	2004.98	2065.43	716.06	220.39	1982.00	40217.92
	May	19359.60	3348.50	433.60	1196.93	1449.68	1954.38	315.57	154.28	1571.48	29784.00
	June	20632.94	3846.21	499.22	1558.61	1462.66	1873.27	358.81	183.84	3503.45	33919.02
	July	27592.22	5063.05	733.03	2119.61	1785.77	2427.14	514.14	261.76	2275.28	42772.00
	August	26858.15	4685.30	1224.87	2541.46	1837.18	3112.92	774.79	410.22	3095.99	44540.88
	September	24011.00	4447.00	872.00	2076.00	1876.00	2945.00	448.00	389.00	2494.00	39558.00
	October	27463.37	6910.04	872.95	1949.20	2100.00	3218.50	556.60	493.60	2494.00	46058.26
	November	21519.78	4775.25	872.95	1638.60	1825.40	2764.60	514.00	481.90	2494.00	36886.48
	December	20443.78	4088.68	3211.80	1303.60	2066.00	2000.20	496.70	304.50	2494.00	36409.26
2020	January	17809.00	3895.00	3212.00	978.00	1744.00	2243.00	379.00	354.00	2494.00	33108.00
	February	27701.55	4585.88	3211.80	1803.71	2051.80	3112.02	510.70	619.46	2494.00	46090.92
	March	15891.50	2338.97	1676.14	395.85	100.80	497.23	574.47	223.90	1289.00	22987.84
	April	6227.52	947.63	744.77	136.35	39.71	262.34	196.78	102.49	348.24	9005.82
	May	3633.76	556.09	503.15	69.15	23.16	91.65	122.77	47.02	148.78	5195.54
	June	4142.63	646.69	463.69	66.67	28.37	188.94	148.90	48.48	250.37	5984.74
	July	4200.78	638.56	532.91	74.45	28.54	199.14	176.92	53.44	133.46	6038.20
	August	4029.05	630.95	469.35	89.21	28.49	108.29	124.83	60.80	222.21	5763.19
	September	4911.16	748.24	573.28	129.05	33.81	230.34	209.22	77.56	150.73	7063.37
	October	5603.49	881.41	719.51	131.26	34.87	158.29	222.11	85.63	210.95	8047.52
	November	7130.35	1086.27	959.03	195.05	42.84	277.52	167.08	107.37	241.12	10206.63
	December	8695.35	1376.53	946.89	183.00	54.54	392.05	263.92	130.77	482.67	12525.71


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2021	January	8967.39	1324.95	1284.20	171.50	61.47	250.37	227.08	129.04	449.69	12865.70
	February	11437.07	1899.42	1482.25	191.54	68.11	453.92	299.67	154.41	370.97	16357.36
	March	12594.00	1809.00	1500.00	330.00	82.00	488.00	539.00	147.00	600.00	18089.00
	April	10501.89	1775.69	1393.85	248.03	64.15	369.62	352.14	146.21	346.53	15198.10
	May	5657.66	885.88	733.43	122.35	33.37	244.78	227.30	90.17	172.60	8167.54
	June	5766.39	919.18	767.22	129.15	38.93	223.87	188.52	88.05	216.46	8337.76
	July	9675.48	1481.68	1052.48	161.17	64.83	363.77	418.97	159.64	527.53	13905.55
	August	11514.65	1680.65	1638.62	259.88	67.05	331.11	353.37	137.36	506.87	16489.54
	September	23620.74	2089.87	558.30	2775.00	1122.40	1634.00	380.10	453.50	2999.74	35633.65
	October	21571.83	2255.06	2857.32	2756.70	1312.10	1621.30	346.60	468.90	1191.23	34381.04
	November	16101.87	2124.60	855.16	2199.20	1095.10	1712.40	258.90	487.40	1159.89	25994.52
	December										

Table 7. Month wise energy consumption for each block of MSEC

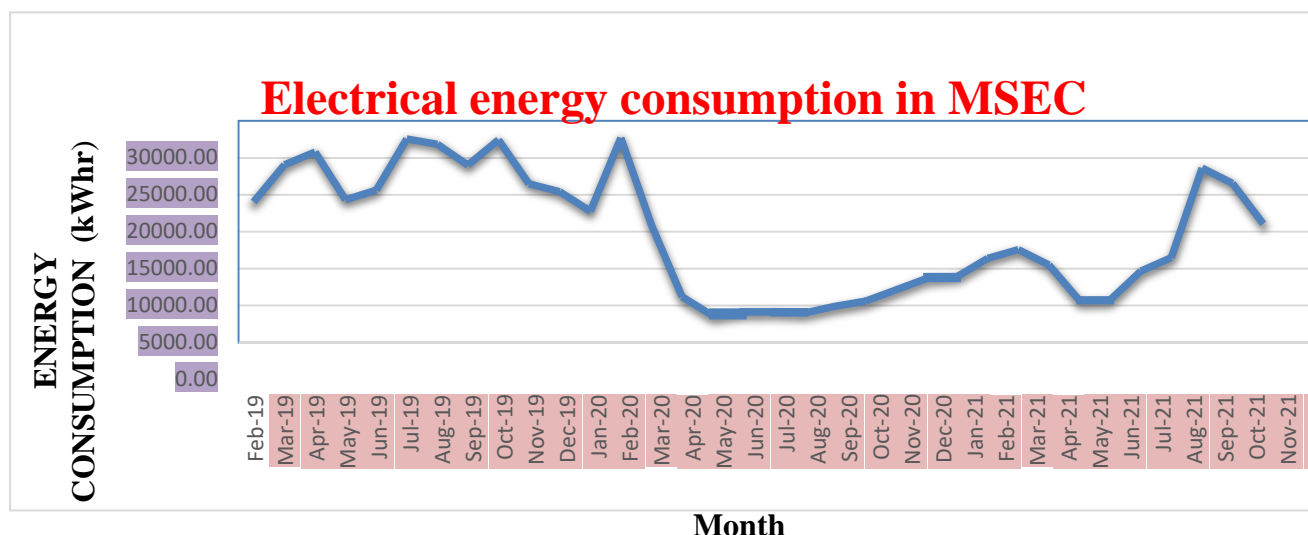


Figure 22. Energy consumption in MSEC from 2019 to 2021


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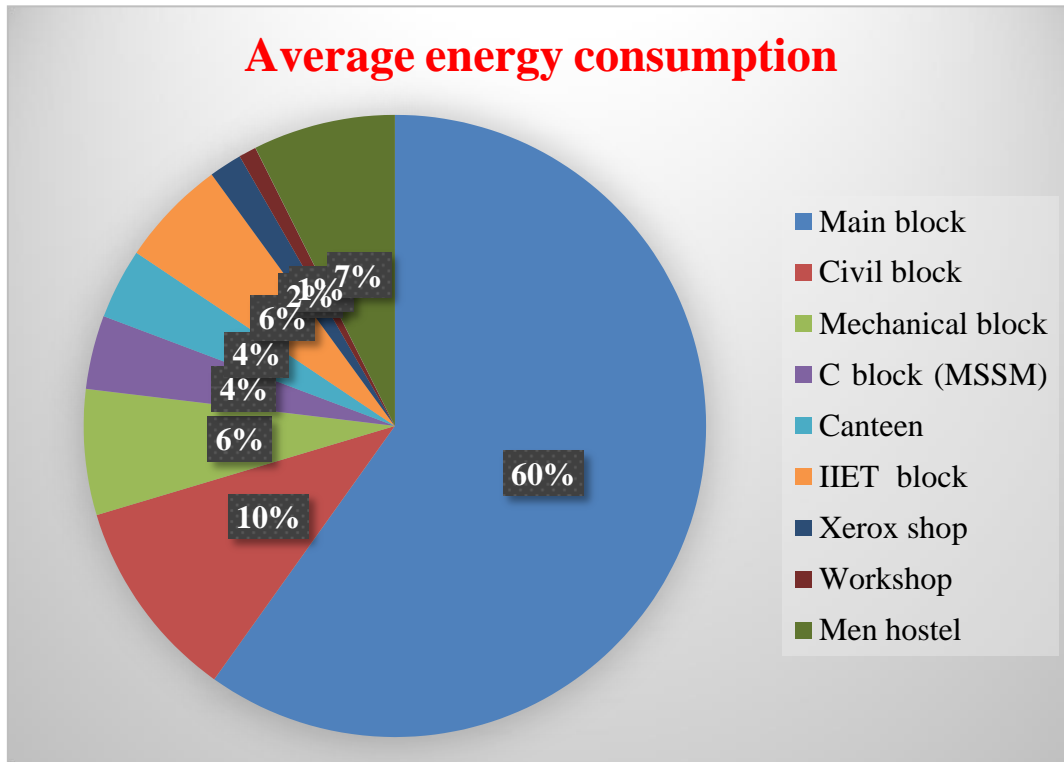


Figure 23. Average energy consumption in each region of MSEC campus

AUDIT RECOMMENDATIONS:

Power saving measures are taken by:

1. Switching off electrical equipment and loads in campus when not in use.
2. Energy efficient Air conditioners are installed by replacing old air conditioners.
3. Fluorescent lamps are replaced with low power consumable CFL and LED lamps in key areas especially in seminar halls and laboratories where light illuminance is required even during day time.
4. Computers are either switched off or put in power saving mode when not in use.
5. Master switch (MCB) is available in each location for an individual person to switch off all the electrical equipment in that location if they are not in use or in case of faults.

Future measures to save energy:

1. Replacing every incandescent lamps and fluorescent tubes with LED lamps.
2. Installing new solar power plant with enough power capacity to power a block in the college campus.
3. Motion sensor-controlled Fan and light loads for effective energy saving.

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