VEMU INSTITUTE OF TECHNOLOGY

P.Kothakota, Chittoor District -517112

CRITERION 7.1.6

Quality audits on environment and energy are regularly undertaken by the institution

The institutional environment and energy initiatives are confirmed through the following

Green Audit

VEMU Institute of Technology is

an Accredited Green Institute in

Platinum Ranking

GREEN MENTORS
Powered by Law of Nature

Date : 20/04/2022

To,
Dr. Naveen Kilari
Principal,
Vemu Institute of Technology
Chittor, Andra Pradesh

Sub: Accreditation of Vemu Institute of Technology as an Accredited Green Institute in Platinum Ranking.

Dear Sir,

Green Mentors is pleased to inform you that, we have evaluated the Green Audit Report of Vemu Institute of Technology, along with supportive documentary evidences.

We are proud to announce that, Vemu Institute of Technology has achieved the standards for Accredited Green Institute and hereby accredited as Green Institute in Platinum Ranking.

Regards

Virendra Rawat
Founder | Director
Green Mentors

B-802, Mondeal Heights, Near Wide Angle Cinema, S.G. Highway, Ahmedabad, India - 38 00 15.
Email: info@greenmentors.in | Website: www.greenmentors.in | Phone: +91 79 49 00 01 60

ACCREDITATION CERTIFICATE

ACCREDITED GREEN UNIVERSITY

PLATINUM

2021-2024

EARTH WATER AIR LIGHT SPACE

TRANSPORT HYGIENE EDUCATION SAFETY INNOVATION

VEMU INSTITUTE OF TECHNOLOGY

Chittor, Andra Pradesh

has successfully achieved the Green Institute Accreditation Standards, designed & defined by Green Mentors, & hereby Accredited as a

GREEN INSTITUTE

in Platinum Ranking.

Virendra
20-04-2022
Virendra Rawat
Director, Green Mentors

GREEN MENTORS
Powered by Law of Nature

GREEN MENTORS

GM/GA/2022/011/G1

This Certificate is issued on 20th April, 2022 & Valid till the Academic Year 2024

Energy Audit

Certificate

ENERGY AUDIT

Academic Year 2021 - 2024

This is to certify that

VEMU INSTITUTE OF TECHNOLOGY

Chittor, Andra Pradesh

has achieved the energy uses standards for the learning spaces with least impact on environment during the Green Institute Audit - 2021-24.

This Certificate is issued on the bases of Green Institute Audit Report 2021-24

GREEN MENTORS
Powered by Law of Nature

20-04-2022
Virendra Rawat
Director, Green Mentors

GREEN MENTORS

GM/EYA/2022/011/E1

Environment Audit

EARTH WATER AIR LIGHT SPACE

ENVIRONMENT AUDIT 2021- 24

TRANSPORT HYGIENE EDUCATION SAFETY INNOVATION

Certificate

This is to certify that

VEMU INSTITUTE OF TECHNOLOGY

Chittor, Andra Pradesh

has achieved the global standards for environmental responsibility with academic accountability for the Universities during the Green Institute Audit - 2021-24.

This Certificate is issued on the bases of Green Institute Audit Report 2021-24

GM/EA/2022/11/E

GREEN MENTORS

GREEN MENTORS
Powered by Law of Nature

20-04-2022
Virendra Rawat
Director, Green Mentors

Green Institute Audit report by GREEN MENTORS

GREEN AUDIT REPORT

Academic Year 2021 - 2024

EARTH WATER AIR LIGHT SPACE

VEMU INSTITUTE OF TECHNOLOGY

Chittor, Andra Pradesh

Prepared by

GREEN MENTORS

Powered by Law of Nature

Special Consultative Status with the
Economic and Social Council of United Nations from 2021

AUDITOR'S VIEW

A Green Institute is an educational institution that meets its need for natural resources – such as energy, water, and materials – without compromising the ability of people as well as future generations to meet their own needs.

Green Mentors have special consultative status with the Economic and Social Council (ECOSOC) of the United Nations, is proud to Present the Green Institute Audit Report & Green Institute Accreditation Certificate to the Vemu Institute of Technology, Chittoor Andhra Pradesh

This report is prepared based on information provided by the VEMU Green Auditing Team, in the view of addressing the Five Elements of Nature and minimizing the impact on the local environment through education and incorporating sustainability in the teaching-learning Practices.

- **PRITHVI (Earth)** - Biodiversity Landscaping & Built-up Space
- **JAL (Water)** - Water Management Practices
- **VAYU (Air)** - Air Quality Level within the Campus
- **AKASH (Sky)** - Application of Sustainable Technologies
- **AGNI (Energy)** - Energy Management Practices

Green Institute Auditing and Accreditation is a Set of Global Sustainability Indicators containing Governance & Academic, Building Design and Landscaping, Water Management Practices, Energy Uses & Saving Practices, Air Quality Level, Health & Hygiene Practices & Sustainable Resource Utilization for the Green Learning Spaces.

Each Green Institute Auditing & Accreditation Indicator is in turn measured against a set of the Global Standard for sustainable learning spaces auditing, and accreditation.

Green Mentors is proud to inform you that, the VEMU Institute of Technology has achieved **421** Points out of **500** Points & earned Platinum Ranking in the Global Green Institute Accreditation Standards for the Period of Academic Year 2021-2024.

I am confident that VEMU Institute of Technology, will emerge as a Green engine for the new paradigm of the "green economy" in short; VEMU will contribute to the overall sustainability of the planet.

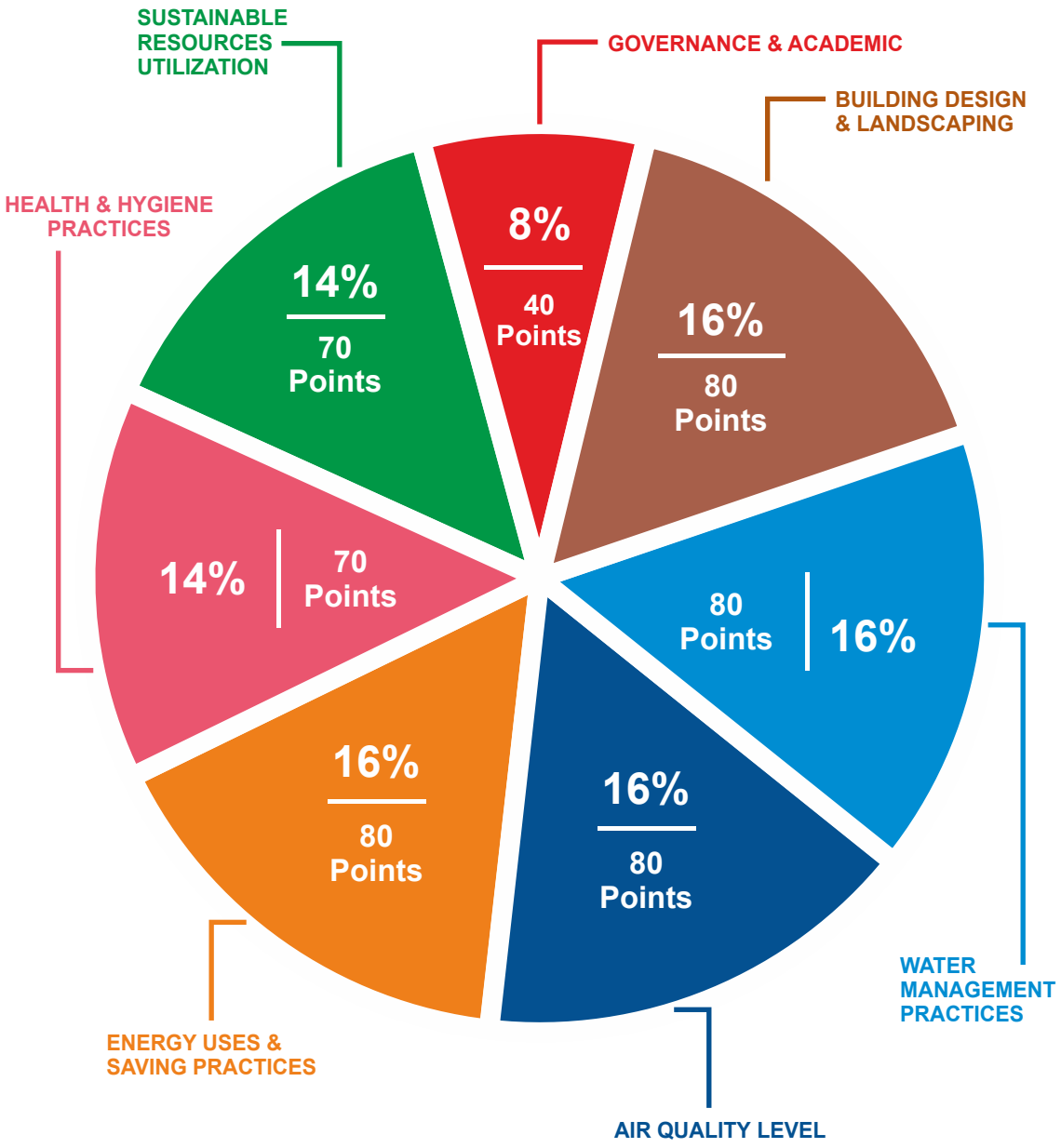
20-04-2022

Virendra Rawat
Director,
Green Mentors

GREEN MENTORS

GOOD FOR PUPIL & GOOD FOR PLANET

Sustainability Weightage of Assessment Areas



Certification Level

Rejection	Certification	Silver	Gold	Platinum
000-100 Points	100-200 Points	200-300 Points	300-400 Points	400-500 Points

ACCREDITATION CERTIFICATE

ACCREDITED GREEN UNIVERSITY

PLATINUM

2021-2024

EARTH WATER AIR LIGHT SPACE

TRANSPORT HYGIENE EDUCATION SAFETY INNOVATION

VEMU INSTITUTE OF TECHNOLOGY

Chittor, Andra Pradesh

has successfully achieved the Green Institute Accreditation Standards,
designed & defined by Green Mentors, & hereby Accredited as a

GREEN INSTITUTE

in Platinum Ranking.

20-04-2022

Virendra Rawat

Director, Green Mentors

GREEN MENTORS

Powered by Law of Nature

GREEN MENTORS

GM/GA/2022/011/G1

This Certificate is issued on 20th April, 2022 & Valid till the Academic Year 2024

Brief Introduction of VEMU

VEMU Institute of Technology is a leading Engineering College in the State of Andhra Pradesh founded by a great visionary and renowned academician Dr.K.Chandrasekhar in the year 2008

VEMU Institute of Technology offers a range of career-oriented learning opportunities for students who are aspiring to see their careers in the Technology and Management sectors.

Affiliations & Recognitions

- All India Council for Technical Education, New Delhi
- JNTUA, Anantapuramu
- NBA Accreditation in CSE, ECE, and EEE programs
- NAAC
- ISO 9001 - 2015 for Quality Management.
- Ranked as 'A' Grade College by Department of Technical Education, Government of Andhra Pradesh.
- Listed Under 2(f) and 12(B) of UGC Act 1956.
- PERFORMER Ranking by ARIIA) – 2021
- Careers360 Rating in 2021 is 'AAA'
- Ranked 82nd in “The Week-Hansa Research Survey 2021” - Best Engineering Colleges Rankings –South Zone.

1. Governance

Governance at VEMU Institute of Technology is driven by its Statutes.

Governing body is committed to its purpose, dedicated to serving the interests of all stakeholders including the environment.

Governing Body also follows well-informed decision-making, transparency in teaching- learning practices & accountability in the performance and use of human potential.

Managing Body

Sr. No.	Name	Profession Occupation	Designation	Official Address
1	Dr. K Chandrasekhar Naidu	Chairman	Chairman	VEMU Institute of Technology, P. Kothakota, Chittoor District.
2	Sri. K Guruswamy Naidu	President	President	VEMU Society, Door No 3-419/7, Greamspet, Chittoor-517002.
3	Sri. T.K. Raghuram	Secretary	Secretary	VEMU Society, Flat No 20, Door No 3/11, 2nd Street, Shakthi Nagar, Chennai,
4	Sri. K. Praveen Kamath	Industry Expert	Member	General Manager & HR Head Global Delivery & WIPRO Ltd., Bangalore.
5	Sri. Subramanya Raj	Industrialist	Member	Founder Director, Destination Technologies, Bangalore.
6	Dr .B. Durga Prasad	College Nominee	Member	Professor, Dept of Mechanical Engineering, JNT College, Ananthapur
7	Dr. H. Sudarsana Rao	Educationalist	Member	Professor, Dept of Civil Engineering, JNTU College, Ananthapuramu.
8	Dr. S.Varadharajan	Educationalist	Member	Professor, Dept of ECE, SVU college of Engineering. SVU, Tirupati.
9	Dr. M. Bupathi Naidu	Educationalist	Member	Professor, Dept of Distance Education, SVU, Tirupati.
10	Dr. B. Amarnath	Educationalist	Member	Professor, Dept of MBA, SVU, Tirupati.
11	Dr. S. Munirathnam	Faculty Representative	Member	Professor & Head, Department of ECE, VEMU Institute of Technology.
12	Mr. P. Ramesh	Faculty Representative	Member	Asst. Professor, Department of CSE, VEMU Institute of Technology.
13	Dr. Naveen Kilari	Principal	Member Secretary	VEMU Institute of Technology.

2. Leadership

The Chairman of VEMU Institute of Technology Dr. K Chandrasekhar Naidu plays a pivotal role in making the VEMU a Responsible Center for learning opportunities.

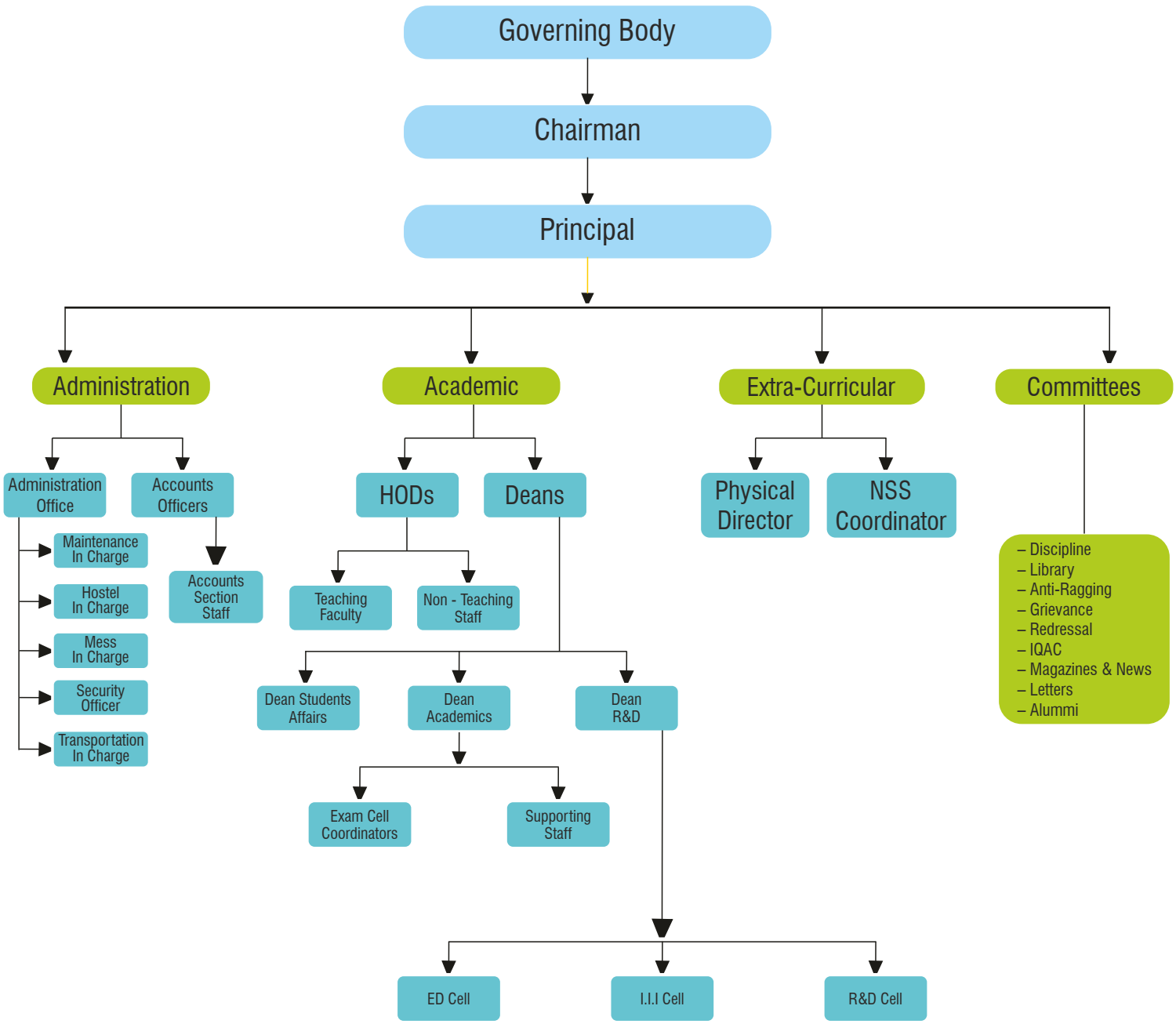
He has nurtured many successful leaders through quality & responsible education.

He is a lifelong learner and constantly makes efforts toward building the nation through responsible education.

Dr. Naveen Kilari (B.Tech, MBA, M.Tech, Ph.D.), a Professor in Mechanical Engineering is popularly known as Institution Builder and architect of quality Education and Training in the region is leading the Institute as Principal.

- Dr.Kilari is having rich experience in academic administration and statutory obligations.
- Dr.Kilari served as Principal Technical Officer for C-DAC, Department of Information Technology, Government of India. At C-DAC, as the Head of the Advanced Computing Training School (ACTS), he was instrumental in the design and development of diploma programs in cutting edge technologies such as Embedded Systems Design (DESD), ystem Software Design (DSSD), and Advanced Business Computing (DABC) in collaboration with CDAC R&D and Industry.
- Dr.Kilari has two patents to his credit, authored two books, and published around 20 research papers in various national and international journals.
- He is a Fellow of the Institution of Engineers (FIE – India). He holds life memberships in the Indian Society for Training and Development (ISTD), Indian Society for Technical Education(ISTE), Quality Circle Forum of India (QCFI)

Organization Chart



3. Sustainability Commitment

VEMU strongly accepts the ”accountability to the future"—a special role and a special responsibility in confronting the challenges of climate change and sustainability.

Vision of VEMU is rooted in its shared responsibility to build and operate a campus that contributes to the well-being of every member of its community and ultimately to the health of the planet.

Sustainable Practices

Academic Year: 2017-18

Dept	Title of the Project	Name of the Student	Name of the Faculty
EEE	A novel technique in precision agriculture for Spraying pesticides and fertilizers	M. B. Fathima H.Yuvaraj N. Dilli Babu	Mr. Delhi Prasad
EEE	Integration of wind power and wave power generation system using a DC micro grid.	A. Poorna Chandra Rao G. Ashok, D. Pushpa Raj P. Sasi Kiran	T. Raja Sekhar
CE	Production of Methane gas by using Waste organic materials	G. Pavankalyan G. Naveen, J. Durga prasath P. Ganesh	Mr. Ram Prasath
ECE	Intelligent Irrigation System An GSM Based Approach	K. Lavanya R. Thamil Selvi, K. Hemadri	Mr. P. Lokesh

Academic Year: 2018-19

Dept	Title of the Project	Name of the Student	Name of the Faculty
EEE	Control of wind energy conversion system typhoon landed conditions	N Lokesh Pandigunta Venkatesh A Kiran Kumar	V Geetha
EEE	Rainwater Harvesting by incorporating pervious concrete as surface cover	S. Lakshmipriya N. Daivaprasad, S. Lakshmipriya N. Daivaprasad	Mr. M. Vinothkumar
CE	Defluoridation of Water by using Holy basil as an adsorbent	V Kumar, T Venu D Balachandra Naidu T Varaprasad	Dr CM Vivek Vardhan
ECE	Agriculture Crop Monitoring Using IOT	G M Akhila, M Deepika Sharmila A, P Kalpana	Mr. T. Muni Reddy

Academic Year: 2019-20

Dept	Title of the Project	Name of the Student	Name of the Faculty
EEE	Implementation of Solar Pv-Battery & Diesel Generator Based Electrical Vehicle Charging Station	Princey, K.Reshma Mahesh, K.V.Kishore	Dr. D. Chandra Sekhar
EEE	Modelling Traffic Congestion Based On Air Quality For Greener Environment	Y. Susmitha, Mohammad Bilal S.Sai Neeraj, C.Hema Sundar	Mr. M. Murali
CE	Utilizing Waste Plastic bottles as a Construction Materials	S Muneesh, V Malini M Vanaja, V Roopesh	Mr M Vinod Kumar
ECE	Defluoridation of Water by using rice husk char coal	G Sasikumar, A Santhoshkumar C Yaswanth, M Ranjithkumar	Dr. CM Vivek Vardhan

Academic Year: 2020-21

Dept	Title of the Project	Name of the Student	Name of the Faculty
EEE	Design of Water Distribution System	B. Manasa M. Siva Prasanna, P. Premchand K. Jayasree Priya	Mr. Omkar G
EEE	Development of Eco friendly self resisting crop offsetting the usage of pesticides	C Tulasi, K Harika K Greeshma, T Aravind	Dr. CM Vivek Vardhan
CE	BLDC Motor driven solar PV array fed water pumping system employing ZETA converter	M Sujatha P Lokanadha Reddy K Hariprasad	Dr. A. Hemasekhar
ECE	Solid waste Management for Sustainable Environment (case study)	B. Siddartha, M. Vishnu Vardhan M. Bhuvaneshwar, G. Pavan	Mrs. Nohitha

Integration of Environment in the Curriculum

Academic Year: 2017-18

Course Code	Title of the Course	Dept	No. of students Studied
9ABS303	Environmental Science	CE	50
9ABS303	Environmental Science	EEE	58
9ABS303	Environmental Science	ME	104
9ABS303	Environmental Science	ECE	120
9ABS303	Environmental Science	CSE	118
15A01101	Environmental Studies	CSE	129
15A01703	Environmental Engineering	CE	68
15A01712	Environmental Engineering Lab	CE	64

Academic Year: 2018-19

Course Code	Title of the Course	Dept	No. of students Studied
13A01403	Environmental Science	CE	47
13A01403	Environmental Science	EEE	59
13A01403	Environmental Science	ME	120
13A01403	Environmental Science	ECE	120
13A01403	Environmental Science	CSE	84
15A01703	Environmental Engineering	CE	68
15A01712	Environmental Engineering Lab	CE	64

Academic Year: 2019-20

Course Code	Title of the Course	Dept	No. of students Studied
19A99301	Environmental Studies	CE	20
19A99301	Environmental Studies	EEE	57
19A99301	Environmental Studies	ME	60
19A99301	Environmental Science	ECE	128
19A99301	Environmental Studies	CSE	129
19A99302	Biology For Engineers	CE	20
19A99302	Biology For Engineers	EEE	57
19A99302	Biology For Engineers	ME	60
19A99302	Biology For Engineers	ECE	128
19A99302	Biology For Engineers	CSE	129
19A99301	Environmental Engineering	CE	68
19A99301	Environmental Engineering Lab	CE	64

Programme Offered

Name of Programmes	Programme Specialization
B.Tech	ECE
	CSE
	EEE
	ME
	CE
Master in	ES & VLSI
	CSE
	PEED
	MD
	Business Administration

No. of Students (2019 / 20)

Name of the Programme	Students Enrolled
B.Tech.(ECE)	509
B.Tech.(CSE)	471
B.Tech.(EEE)	236
B.Tech.(ME)	369
B.Tech.(CE)	193
M.Tech.(CSE)	24
M.Tech.(ES)	21
M.Tech. (VLSID)	22
M.Tech. (PEED)	20
M.Tech. (MD)	31
MBA	206

Teaching Staff

Designation	Name
Principal / Director	Naveen Kilari
HOD (07)	Satish Reddy Musaddigari, Sundaramoorthy Rajanand Devalla Chandra Sekhar, Shamugam Munirathnam, Konteti Venkata Rao Ummaleti Sasikala, Sambaiah Chintala
Professor (14)	Udaya Rajkumar, Paleti Sunil Gavaskar, Hema Sekhar Ammapalli Endala Kirankumar, Gandhi Elaiyaraja, Sri Ramula Mohan, Nandarapu Reddy Venkataramana Veeramgari, Sudarsana Gopavaram, Arumugam Mahamani Suguna Madhala, Kalpalatha Nidavanoor, Bangalore Nagabhushanam Reddy Asifalisha Shaik
Associate Professor (54)	Kamdala Panduranga Naidu, Chandrasekharaacharineelakanta Chandra Babu Jadda, Pallavi Vorugu, Prathap Sathyavedu Sujitha Pannapalli, Pavitra Kothapati, Jakkula Prabhu Kiran Panabakam Nirupama, Balaji Vuppala, Nageswara Putta Venkata Kathi, Siva Balaji Yadav Chitveli, Lokesh Gudivada Yerrasani Nagarjun Reddy, Mondi Murali, Dhanaraj Thavanampalli Kotta Bhavani, Mahesh Yarraballi, Narayana Revala, Bhagya Cherukuru Munikrishna Arun Kumar, Gattugudi Sankarappa, Madana Mekala Karnam Jayasree, Rani Rami Reddy, Prakash Babu Namoori Chintala Manikanta, Kiran Neerugatti, Matavalam Dora Babu, Suresh Ganta Munaswami Venkatesulu, Thrivikram Alur, Yepirala Bhargavi Mark Sudarsanam, Bathala Winstonkumar, Ramesh Ganugapenta Sivaji Vemula, Chaitanya Mallakuntla, Dhulipalla Venkata Sai Sireesha Feroz Begum Shaik, Devalla Manjula, Thejovathi Esther Sandhya Kiran Rayachoti Viswanadam, Naveen Prabakar, Aligapati Prakash Kamdala Panduranga Naidu, Neelakanta Chandrasekharaachari Sai Yadav, Bhupathi Challagundla, Chinthagumpala Sukumar Bhanu Krishna Lekkala, Praveenmandhala, IkuttiVenugopal
Asst Professor (121)	Macha Nohitha, Hema Latha Reddy Jettigundla, Bangalore Ramu Yugandhar Bandi, Konapa Reddy Gari Lokeswari, K Sarumathi, Giraka Omkar Murugesan Vinothkumar, Santhanakumar Ramprasath, Karanam Devarajulu Hemanth Chella, Syed Rizwan, Yaseen Sameer Baig, Muneesh Subramanyam Sangeetham Priya, Bhaskar Vardi Prasad, Shaik Akhila, Ramesh Peramalasetty

	Srilakshmi Renati, Bhanuprakash Pakala, Pulicheri Praveen Kumar Dhanamjay Kanipakam, Reddamma Kalavakunta, Bharathi Boyapati Perumal Kadirvelu, Pantapalle Murali, Jayaraj Sujatha, Chintati Veeranagaiah Sathiyamoorthy Mohanalingam, Masilamani Samundeeswari Jabbar Muzeeb, Venkatalakshmi Sibbala, Vavilthota Reddeppa Bandaru Gamya, Kusam Sruthi, Geetha Veerala, Anilkumar Balaji Sravani Bayya, Gurram Konda Mallikarjuna, Hindupur Aiesha Siddikha Chaitanya Theja Palur, Basyam Arun Kumar, Yacham Babuyadav Chinna Dastagiri Duttaluru, Rajareddy Sindhu, Delhi Prasad Kamasani Ragimakula Priyanka, Gopichand Bayanagari, Darla Janani Nandimandala Devasena, Aragonda Haritha, Kattamanchi Sumalatha Saladagu Chandana, Jalli Pesha, Pulikinti Chandramouli, Bhargavi Muddam SirishaPappu, Punaku Vemaiah, Bharathi Vijayakumar, Mallepula Chitraja Kodavakanti Guraiah, Praveen Barik, Nandarapu Gangadharam Madhirala Tulasiram, Sivakoteswarao Gudi, Putchala Tejaswini Dhourjanyam Bhanu Prakash, Muni Namalu, Vidhyasagar Lalapeta Venkiteela Umamaheswar Rao, Kusuma Kumari Aragonda Mounika Bothkuri, Marisetty Gopi, Thirumahapale Kavya, Ramya Kolan Sarath Kanchi Vivekananda, Manjunatha Manjunatha, Bhaskara Palamandha Giri Annem, Vepambattu Ananthachakravarthy, Parasuraman Kalai Selvi Merkathi Jeevanprasad, Mekala Sankar, Ramu Pothula Nagarajan Sandeeprajan, Komma Hemamahesh Babu, Thangavelu Elamaran Balagangadhar Pagadala, Bharath Narisetti, Challagundla Babu Sreekanth Vadhyar, Ajay Kumar Pasala, Kumar Penumuru, Ravi Muppala Mamatha Patti, Sruthi Mannuru, Mittapalli Sunitha, Swarupa Chintala Bheemappa Kodandapani, Kuppala Raja Sekhar, Janne Surya Sekhar Koonapalli Chaitanyakumar, Baby Koneti, Talari Ramachandra Naidu Hemakumar Narayana, Konapa Reddy Gari Lokeswari, Bangalore Kirankumar Naramalli Subramanyam, Dhanuja Penugonda, Veligaram Sudhakar Balla Kavitha, Sailaja Arkkonam, Muppiri Nirmala, Madhavaram Neelima Kokkinti Umera Begam, Madamaneri Haritha, Lalithya Velakaturi Neelakantam Gundlapalli, Puthalapattu Prathibha, Dilli Prasad Paturu Chittibabu Boppa
Total	197

4. Innovative Practices

Innovation is an application and implementation of creativity; thus, creativity and innovation are inseparably related, which reflects their complementarities in providing what is new and adding value. Post Graduate & Research Programs of VEMU are driven by the innovation

Deans and HoDs of various academic departments bring innovation into learning opportunities through collaboration with exceptional researchers, innovators & entrepreneurs.

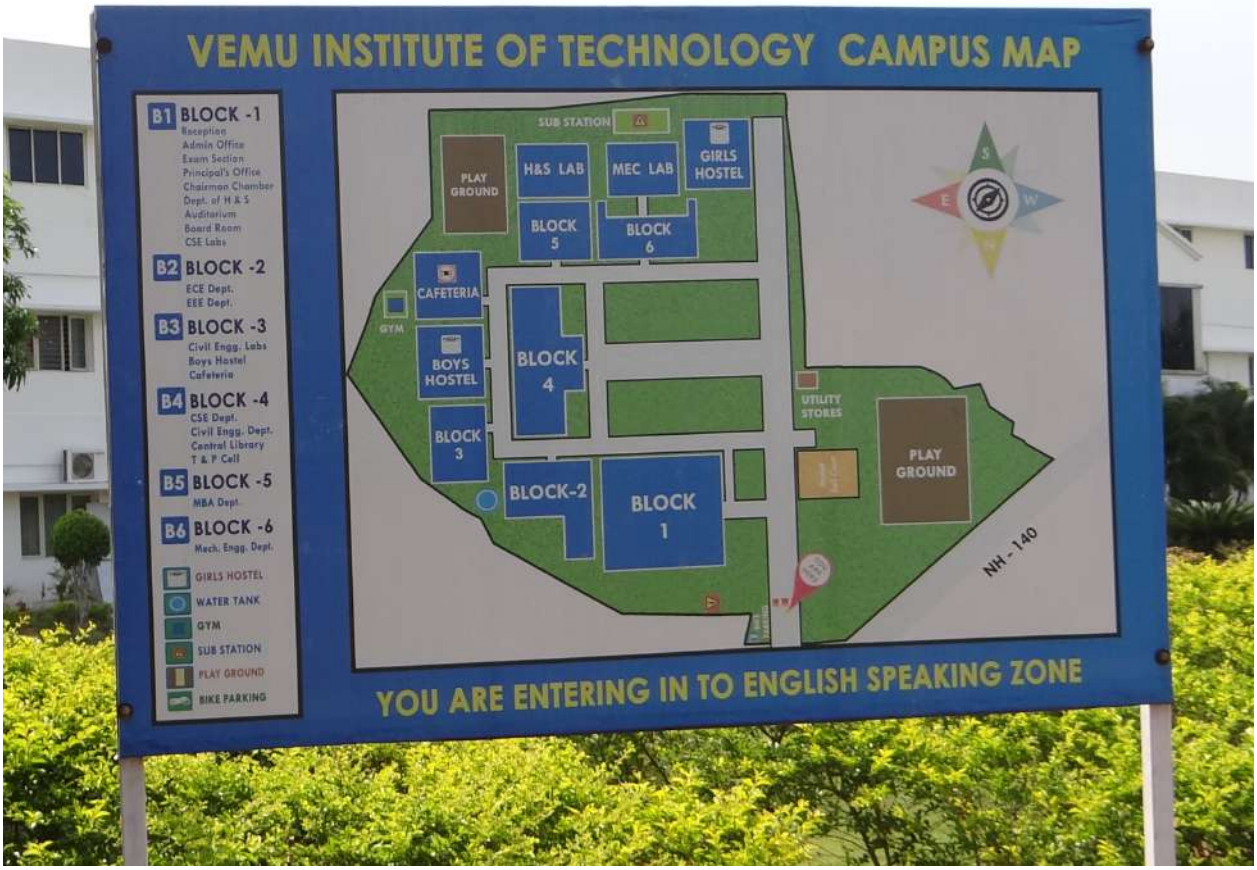
Cumulative Score	37/40

BUILDING DESIGN & LANDSCAPING

1. Local Building Regulations

Green building laws and codes in our country are voluntary. A green building is one which uses less water, optimizes energy efficiency, conserves natural resources, generates less waste and provides healthier spaces for occupants, as compared to a conventional building.

Built-up learning spaces of VEMU Institute of Technology meet all local building laws.



2. Top-Soil Preservation

Top-soil is the uppermost layer of soil capable of growing and supporting vegetation.

Soil conservation is the prevention of loss of the top most layer of the soil from erosion or prevention of reduced fertility caused by over usage, acidification, salinization or other chemical soil contamination.

VEMU have taken proactive measures towards top-soil conservation in the campus, through regular aeration that allows nutrient to reach the roots of plants, filling the holes created by aeration, indigenous gardening, building wind barriers, mulching and placing stepping stones for walkers on top soil.

3. Eco-Friendly Commuting Practices

1 2 3 4 5 6 7 8 9 10

VEMU encourages its students & professors to adopt environment friendly transport to minimize environmental impact from automobile use.

VEMU also offers residential facilities to its students and non teaching staff that minimizes to impact on environment

	Walking	Bicycle	Motorcycle	Car	College Transport	Bus Public
Staff	32	14	33	7	112	50
Students	616	9	164	00	1114	199

4. Parking Facility

1 2 3 4 5 6 7 8 9 10

VEMU is having sustainable shaded parking space that include sustainable paving materials, energy-efficient or natural lighting, renewable energy sources and improved pedestrian walkways.

Car	Motorcycle	Bicycle	College Transport	Bus Public
10	200	40	50	05

BUILDING DESIGN & LANDSCAPING

5. Greenery in Campus

1 2 3 4 5 6 7 8 9 10

Maintaining a rich diversity of plants is vital to stable and healthy ecosystems as they provide food, shelter and other important components of habitat for wildlife.

Interaction with greenery can be beneficial for human stress reduction, emotional states and improved cognitive function.

VEMU has maximized Greenery in its campus including community gardens, parks, meadows, green roofs, playing fields and wetland that supports well-being and education outcomes.

BUILDING DESIGN & LANDSCAPING

6. Minimize Heat Exposure to Sun: Non-Roof

1 2 3 4 5 6 7 8 9 10

VEMU Campus is housing 1444 trees and plants speared in 10.6 acres of land area that is restricting impervious surfaces being exposed to sun, to minimize impact on microclimate in the campus.

BUILDING DESIGN & LANDSCAPING

7. Minimize Heat Exposure to Sun: Roof

1 2 3 4 5 6 7 8 9 10

VEMU has planted trees in a strategically way that provide shade to the roof in summer, when the leaves fall, the trees allows the sun to shine through, creating a desired solar heat gain effect during the winter.

Most of the roof areas are covered with solar panels and remaining areas are covered with tiles & paint to reduce the concrete surface that was exposed to the Sun that minimizes impact on the microclimate in the campus.

8. Universal Design

Universal Design for Learning (UDL) is an approach to teaching and learning that gives all students equal opportunity to succeed.

The goal of UDL is to use a variety of teaching methods to remove barriers to learning.

It's about building flexibility that can be adjusted for every person's strengths and needs.

Learning spaces at VEMU are designed to facilitate to differently abled pupils. Rest Rooms are also designated for differently abled Students; Hindrance-free movement's facility is available in common area.

Cumulative Score	70/80

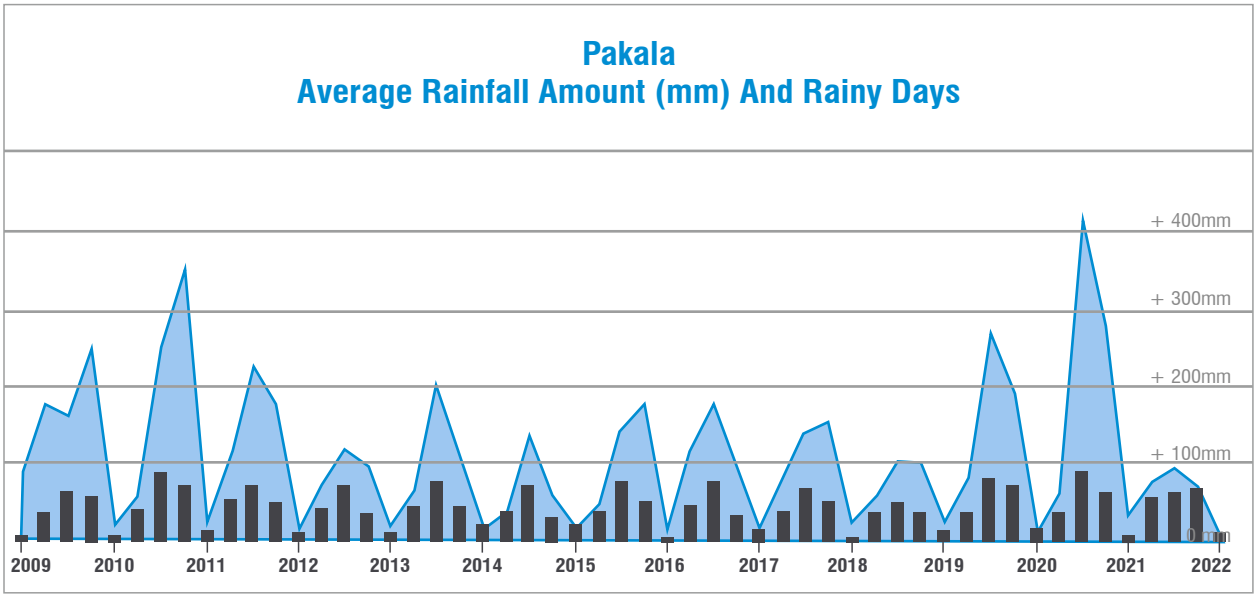
WATER MANAGEMENT PRACTICES

1. Rainwater Harvesting: Roof & Non-Roof

1 2 3 4 5 6 7 8 9 10

The Earth's surface is acquired by 71%with water but only 3% of water can be used as potable water. Nowadays conservation of water is one of the basic principles of green University.

VEMU is having a well designed rainwater harvesting system in the campus that enhance ground water table and reduces potable water usage. VIT captures maximum run off volume of rain water from Roof & Non-Roof areas.



WATER MANAGEMENT PRACTICES

Average NORMAL Rainfall/Day

LOCATION	YEAR	PEAK RAINFALL MONTH	TOTAL RAINFALL (mm)	NO OF RAINY DAYS	NORMAL RAIN FALL /DAY (mm)
VEMUIT, PAKALA	2009	OCT	243.67	62	4
VEMUIT, PAKALA	2010	OCT	344.883	75	5
VEMUIT, PAKALA	2011	SEP	220.643	75	3
VEMUIT, PAKALA	2012	SEP	115.23	72	2
VEMUIT, PAKALA	2013	SEP	195.503	78	3
VEMUIT, PAKALA	2014	SEP	131.09	72	2
VEMUIT, PAKALA	2015	OCT	180.7	53	4
VEMUIT, PAKALA	2016	SEP	181.74	76	3
VEMUIT, PAKALA	2017	OCT	150.09	51	3
VEMUIT, PAKALA	2018	SEP	99.117	51	2
VEMUIT, PAKALA	2019	SEP	261.83	83	4
VEMUIT, PAKALA	2020	SEP	410.8	88	5
VEMUIT, PAKALA	2021	SEP	92.43	65	2
Average normal rainfall/day(mm)					3.29
Average normal rainfall/day(m)					0.00329

WATER MANAGEMENT PRACTICES

Runoff Volumes

DESCRIPTION	Catchment AREA(sq .m)	RUNOFF COEFFICIENT	Average Rainfall (mm/day)	RUNOFF VOLUMES (Litres)
BLOCK-I	3182.01	0.75	0.00329	7851.61
BLOCK-II	1312.91	0.75	0.00329	3239.605
BLOCK-III	207.25	0.75	0.00329	511.3894
BLOCK-IV	1269.38	0.75	0.00329	3132.195
BLOCK-V	410.82	0.75	0.00329	1013.698
BLOCK-VI	1249.02	0.75	0.00329	3081.957
BLOCK-VII	424.23	0.75	0.00329	1046.788
GIRLS HOSTEL	1277.41	0.75	0.00329	3152.009
BOYS HOSTEL	809.27	0.75	0.00329	1996.874
CANTEEN	657.74	0.75	0.00329	1622.973
ROAD(CC)	1299.16	0.6	0.00329	2564.542
ROAD(BITUMEN)	2589.59	0.7	0.00329	5963.826
FOOT PATH	1201.6	0.85	0.00329	3360.274
GARDEN	21839.2	0.15	0.00329	10777.65
PLAY GROUND	5167.09	0.2	0.00329	3399.945
Total	42896.68	RUN OFF VOLUME		52715.33

WATER MANAGEMENT PRACTICES

Rain Water Harvesting Capacity

DESCRIPTION	Catchment AREA(sq .m)	RUNOFF COEFFICIENT	Average Rainfall (mm/day)	RUNOFF VOLUMES (Litres)
BLOCK-I	2914.87	0.75	0.00329	7192.44
BLOCK-II	408.12	0.75	0.00329	1007.04
BLOCK-III	201.07	0.75	0.00329	496.14
BLOCK-IV	1350.11	0.75	0.00329	3331.40
BLOCK-V	382.63	0.75	0.00329	944.14
BLOCK-VI	1242.3	0.75	0.00329	3065.38
BLOCK-VII	383.32	0.75	0.00329	945.84
GIRLS HOSTEL	2211.22	0.75	0.00329	5456.19
BOYS HOSTEL	1967.01	0.75	0.00329	4853.60
CANTEEN	1541.07	0.75	0.00329	3802.59
ROAD(CC)	988.188	0.6	0.00329	1950.68
ROAD(BITUMEN)	3331.14	0.7	0.00329	7671.62
FOOT PATH	1086.55	0.85	0.00329	3038.54
GARDEN	2203.898667	0.15	0.00329	1087.62
PLAY GROUND	14298.89333	0.2	0.00329	9408.67
Total	34510.39	RUN OFF VOLUME		54251.88

WATER MANAGEMENT PRACTICES

DESCRIPTION	Catchment AREA(sq.m)	RUNOFF VOLUMES(litres)	% RUN OFF VOLUMES
ROOF AREAS	12601.72	31094.74	57.32
NON ROOF AREAS	21908.67	23157.13	42.68
TOTAL	34510.39	54251.88	100

- iltering system and stored in Under Ground (UG) tanks for usage. Over flowing rainwater from UG tanks is diverted to rainwater Harvesting pits and inactive bore wells for ground water level filling.

- 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 endeavor is to collect and make use of every drop of rain water which drops on the campus.

- VEMU has an area of 10.6 acres buildings, gardens, plantations, play grounds, lawns etc., and situated in average rainfall region it is imperative that proper rain harvesting system is installed on the campus for preserving water, which is scarce in this region.

- Two types of rain harvesting systems are installed in the campus. A comprehensive plan for rain water harvesting system is being followed and implemented within the campus. They are,

- Soak pits – for rain water from roof tops
- Harvesting pits and ridges– in open area

Soak pits – for rain water falling from roof tops: Rooftop rain water collected on the terrace of institute buildings is collected through adequate pipe system from different parts of the terrace.

All the rain water thus collected is diverted to soak pits constructed at various places around the buildings.

This helps to recharge the ground water in the campus. It will increase the ground water table of the college premises.

Soak pits – in open area: The rain water, which flows down from the higher surface areas, i.e. in the open field and ground, is collected in a particular area by building soil ridges surrounding the area, so that the water does not flow away but stands in that area and soaks into the ground through Harvesting pits (3' wide and 10' deep) constructed at various places in open area and through low

WATER MANAGEMENT PRACTICES

lying area dips.

This helps in raising the level of the ground water table. Thus if the water table rises, it creates more availability of the water in the wells.

This also helps in avoiding soil erosion. Thus the availability of water for the various purposes increases.

- Separate points for hand wash and drinking water has fixed to reduce the usage of portable water.
- Installed aerators in all wash basins to minimize water consumption.
- Hostels are following buckets with tumblers process.

WATER MANAGEMENT PRACTICES

2. Water Efficient Plumbing Fixtures

VEMU have initiated responsible uses of fresh water practices in academic and hostel areas to reduce the consumption of potable water in drinking Water Points, face washing points, urinals, toilets to reduce water flow rate in the daily use.

Most of plumbing fixtures are low flow without hammering the performance.
Plumbing fixtures have achieved water efficiency standards for Green Academic Campus, and are working properly with no leaks or drips.

Baseline Flow Rates for Plumbing Fixtures

Fixture type	Maximum Flow Rate	Duration	Daily uses per person/day
Water Closets	8 Litre per flush	1 flush	2
Urinals	2.41 Lpm	1 flush	2
Faucet/Taps	2 Lpm	0.25	4
Kitchen Taps	20Lpm	As per requirements	As per requirements

Calculations showing the percentage reduction in the amount of potable water utilized, by using efficient plumbing fixtures.

Fixture Type	Duration	Dailyuses per Person / day	Number of Students & Teachers (n)	Baseline	
				Flow Rate / Capacity (fb)	Total water use (litres) Tb = (nxfb)
Water Closet	1 Flush (Full Flush)	1 for male	1000	8 Liter per flush	8000
		1 for female	250	8 Liter per flush	2000
	1 Flush (Half Flush)	02 for female	250	4 Liter per flush	2000
Urinals	1 Flush	2 for male	1000	2.4 Liter per flush	4800

WATER MANAGEMENT PRACTICES

3. Turf Design

Turf is a major component of whole landscape in VEMU, which meets functional and aesthetic expectations for teaching learning community, while at the same time minimizing the impact of natural resources and the greater environment.

Turf area of VEMU is having many drought tolerant species in its total vegetated area that minimizes water consumption.

Type of Vegetation	on Ground (sq.m)
Turf	11342.77
Native species	7740
Drought Species	350.97
Other Plant species	2405.46
Total	21839.2

Total Landscaped area (Sq.Mtr)	21839.2
Total Turf area (Sq.Mtr)	11342.77
Percentage of vegetated area with turf	51.94%

WATER MANAGEMENT PRACTICES

4. Water Efficient Landscaping

1 2 3 4 5 6 7 8 9 10

Most of the learning spaces in India use its maximum water for landscape and lawns irrigation, while water efficient landscape is one of that is functional, attractive, and easily maintained in its natural surroundings.

Whole Landscaping in VEMU campus is water efficient that reduces the water consumption through responsible irrigation practices and mulching.

Vegetated area of campus contains drought tolerant plant species including trees, shrubs, herbs, climbers and grass that required less water than other Species.

Calculations demonstrating the percentage of landscape area

Type of Vegetation	on Ground (sq.m)
Turf	11342.77
Native species	7740
Drought Species	350.97
Other Plant species	2405.46
Total	21839.2

Total Landscaped area (Sq.Mtr)	21839.2
Total area with native/drought species area	350.97
Percentage of vegetated area with native and drought tolerant species	37.04%

WATER MANAGEMENT PRACTICES

Details of plant species in the institute

Sr. No.	Botanical Name	Common name
Garden Plants		
1	Ixoracoccinia	Ixora
2	I. pavetta	Ixora
3	I.calycina	Ixora
4	I.chinensis	Ixora
5	Ficusbenjamina	Weeping pig
6	Ficusbenjamina variety alba	Eztectficus plant
7	Areca palm	RK palm
8	Roystonearegia	Rayal palm
9	Foxtail palm	Foxtail palm
10	Cycasrevoluta	Cycos green
11	Bougainvillea glabra	Paper flower
12	Bougainvillea spectabilis	Paper flower
13	Bougainvillea arborea	Paper flower
14	Bougainvillea peruviana	Paper flower
15	Bougainvillea buttiana	Paper flower
16	Thujaoccidentalis	Thuja/ceder
17	Durantaerecta yellow	Golden dewdrop
18	Durantaerecta white	Pigeon berry
19	Tabernaemontanadivaricata	Crape jasmine
20	Tabernaemontana species	Pin wheel
21	Stipatenuissima	Mexican gross

WATER MANAGEMENT PRACTICES

22	Cyanodondoctylon	Bermuda grass
23	Cambretummalabaricum	Rangoon creeper
24	Lagerstroemia speciosa	Queen crepe
25	Tabebuiaheterophylla	Pink turbet tree
26	Acalyphahispida	Chenille plant
27	Acalyphawilkesiana	Copper leaf
28	Codiaeumvariegatum	Petra croton
29	Hibiscusrosasinensis	China rose
30	Tradescantiaspathacea	Oyster plant
31	Jasminumofficinale	Jasmine
32	Datura metal	Angels trumpet
33	Dracaena marginata	Dracaena plant
34	Dracaena reflexa	Dragon tree
35	Haemanthussps	Football lily
36	Neriumindicum	Nerium
37	Epipremnumaureum	Money plant Ceylon creeper
38	Rosa alba	Rose
39	Asparagus officinalis	Asparagus
Tree Flora		
40	Tectonagrandis	Teak
41	Spathodeacampanulata	African tulip tree
42	Azadirachtaindica	Neem tree
43	Tecomastans	Yellow yelder
44	Eugenia jambolana	Jaman/Black plum

WATER MANAGEMENT PRACTICES

45	Terminaliacatappa	Almond
46	Moringaoleifera	Drumstick
47	Elaeocarpusangustifolius	Rudraksha
48	Bauheniapurpurea	Purple orchid
49	Pterocarpussantalinus	Red sandal
50	Bambusa vulgaris	Bamboo
Fruit Bearing Plants		
51	Punicagranatum	pomegranate
52	Manilkarazapota	Sapota
53	Psidiumguajava	Guava
54	Cocosnucifera	Coconut
55	Musa paradisiaca	Banana
56	Phyllanthusemblica	Emblic ndian gooseberry
57	Citrus limon	Lemon
58	Mangiferaindica	Mango
59	Carica papaya	Papaya
Medicinal Plants		
60	Andrographispaniculata	Cheat
61	Aeglemarmelos	Bael
62	Bryophyllumpinnatum	Air plant/Miracle leaf
63	Piper betle	Betel leaf
64	Tinosporacordifolia	Gurlo/Guduchi
65	Gymnemasylvestre	Gurmar Sugar destroyer

WATER MANAGEMENT PRACTICES

66	Ocimum sanctum	Tulasi/Holy basil
Hydrophyte plant		
67	Nymphaea pubescence	Water lily
Desert plants		
68	Aloe vera	Aloe
69	Graptopetalumparaguayense	Ghost plant
70	Carnegieagigantea	Saguaro
71	Fouquieriasplendens	Ocotillo
72	Cactus sps	cactus

WATER MANAGEMENT PRACTICES

5. Water Efficient Irrigation System

VEMU uses sprinkle irrigation is an efficient irrigation system that keeps landscape plants healthy and beautiful.

Instead of wetting the whole landscape, water is applied only to the plant root zone.

The primary goal of sprinkle irrigation is to apply water at the time when plants need it most and in rates needed for proper plant growth.

WATER MANAGEMENT PRACTICES

6. Waste Water Treatment

VEMU follows minimum water discharge and zero waste of water campus, which means minimized water, is discharged outside the campus and maximum water is harvested within the campus through many recharging wells.

The water from sewage plant is used for gardening activities and diverted to the fields as it increases crop yielding.

WATER MANAGEMENT PRACTICES

7. Use of Treated Waste Water

1 2 3 4 5 6 7 8 9 10

VEMU has initiated gray water treatment to be used for flushing toilets and irrigation of vegetated areas that reduces dependence on fresh water.

Institute uses its 100% treated Water for gardening that reduce dependence on fresh water.

Water Balance sheet

Total volume of waste water generated (l/d)	34600
Capcity of sewage treatment plant (l)	40,000
Efficiency of STP	85%
Total volume of waste water treated & available for reuse (l/d)	29410
Number of working days	315
Total volume of waste water available annually (l/d)	9264 KL

WATER MANAGEMENT PRACTICES

ENVIROS INDIA

THEME: THE TECHNO-COMMERCIAL PROPOSAL FOR STP

BASIS: TREATMENT & DISCHARGE

INDUSTRY TYPE: EDUCATIONAL INSTITUTE - SEWER WATER

CONCEPT: ELECTRO PRECIPITATION TECHNOLOGY

INSTALLED CAPACITY: 25 KLD

TURN-KEY SCOPE OF: ENVIROS INDIA PRIVATE LIMITED
(#1, PAINTHAMIZH NAGAR, RAJAS GARDEN ROAD, CHENNAI-600 095)

INDUSTRY CLIENT: VEMU INSTITUTE OF TECHNOLOGY, CHITOOR

February 2022

ENVIROS INDIA PRIVATE LIMITED
Corporate Office: #1, Painthamizh Nagar, Rajas Garden Main Road, Venugopalapuram
Chennai – 600 095. E-mail: info@envirosindia.com Ph: +914424762284.

ENVIROS INDIA

OVERVIEW OF PROPOSAL

The present proposal would demonstrate the technological perspectives of sewage water treatment. The proposal would illustrate in detail both technical and commercial aspects of a 'Novel Sewage Treatment Process' based on **'Electro Precipitation'** technologies.

It is stipulated that **VEMU INSTITUTE OF TECHNOLOGY** reckons **ENVIROS INDIA** to offer the best of the technologies for implementation of 'Sewage Treatment Plant' practice towards better management of environmental parameters and conserve the pristine environment.

ENVIROS INDIA, the Chennai based environmental consulting firm is being known to the industry as the pioneer company having state-of-art & technologies in the domains of *'Advanced Electro Oxidation Process Technologies'* developed through relentless efforts of in-house R&D.

VEMU INSTITUTE OF TECHNOLOGY will carry out the entire purchases that would fall under their scope **vis-à-vis** site related activities like civil construction of tanks, sludge management and loading or unloading operations etc.,

ENVIROS INDIA remains to be the strategic partner and responsible supplier of **'Core & Key Equipment'** with necessary and relevant auxiliary equipments.

ENVIROS INDIA

Part-1: PROJECT OVERVIEW

1.1. Project Activity

Name of the Unit:	VEMU Institute of Technology
Unit Location:	Chitoor
Type of Activity:	Educational Institute - Sewer Water

1.2. Source Inventory of Sewer Water

Design Plant Capacity:	25 KLD
Design Flow rate:	3 KL/Hr
Operating Hours:	8 hours
Point-of-Intake:	Collection/Equalization tank
Point-of-Outfall:	Discharge

1.3. Derived Pollution Parameters of Sewer Water

S. No	Parameter	Raw Sewer Water (Inlet to STP)
1	Color	Objectionable
2	Odor	Objectionable
3	pH	6.5 to 8.5
4	TDS (mg/l)	< 1000
5	TSS (mg/l)	< 300
6	COD (mg/l)	< 800
7	BOD (mg/l)	< 200

ENVIROS INDIA

1.4. Skeletal Basis of Treatment

The treatment process consists of modular units of Electro-Oxidation reactors in order to address TSS, COD and BOD. The reactor modules are,

a. Electro Preci Tech (e-PT)
b. Aeration Tank
c. Clarification system
d. Pressure Sand Filter (pre-filtration)
e. Activated carbon filter
f. Micron filter

WATER MANAGEMENT PRACTICES

ENVIROS INDIA

Part-2: TECHNOLOGICAL PERSPECTIVES OF PROPOSED ETP

2.1 Merits of Proposed Technology:

- ***Primary Treatment*** is accomplished by ***'Electro precipitation mechanism'*** rendered by **e-Preci Tech (e-PT)** reactors.
- ***Treatment*** generates minimal sludge much insignificant compared to other process. The quantum of dry sludge will be of the order 0.20 – 0.30 ***kg/KL.***

2.2. Benefits of e-PT treatment

- e-PT initiates co-precipitation and removes color, TSS and COD
- e-PT is an eco-friendly approach to wastewater treatment
- Freedom from bacteria and high sludge issues
- Minimal footprint with low risk of waste management

2.3. Description of Treatment Process:

The effluent water from collection/equalization tank shall be taken through physical screening and subjected to e-PT for complete removal of color, TSS and COD. The treated outlet passes through Pressure Sand Filter, Activated Carbon Filter & Micron filter to remove coarse suspended and particulate matter.

ENVIROS INDIA

2.4. Treatment Schematics:

ENVIROS INDIA

2.6 Treatability Data

Parameter	Raw Effluent	TREATED WATER
Color	Objectionable	Colorless & Transparent
Odor	Objectionable	Odorless
pH	6.5 to 8.5	7.0
TDS (mg/l)	< 1000	< 1000
TSS (mg/l)	< 400	< 5
COD (mg/l)	< 800	< 50
BOD (mg/l)	< 250	< 20

ENVIROS INDIA

3. MACHINERY & EQUIPMENT SCOPE

3.1 VEMU INSTITUTE OF TECHNOLOGY SCOPE OF SUPPLIES

ITEM	SIZE	QTY	SPECIFICATION
Bar Screen chamber with screen	2 KL	01	Civil Tanks (RCC)
Collection Tank	15 KL	01	
Sludge dry beds	2.25 sq.m	02	
Electrical connections	***	01 unit	Incomer cable upto the panel board, and earthing connection for STP plant
Civil beds & supports	***	01 unit	RCC/Civil supports for equipments, pumps and floating (as required)

3.2 ENVIROS INDIA SCOPE OF SUPPLIES FOR STP (TANKS)

ITEM	SIZE	QTY	SPECIFICATION
Aeration Tank	10 KL	01	HDPE
Chemical preparation tank	0.5 KL	02	
PSF Feedtank	1.5 KL	01	
Treated water tank	1.5 KL	01	

3.3 ENVIROS INDIA SCOPE OF SUPPLIES FOR STP (SERVICE PROVIDER)

ITEMS	SPECIFICATION
Technology – Components & Equipment	Complete modules of Electro-precipitation reactor with DC power source for reactors
Air Blowers & Air Grids	50 Cu.M (1 nos) with air grid accessories

ENVIROS INDIA

Clarifier tank	MS Fabricated tank with capacity of 5 – 6 KL attached with chemical mixing tanks
Mixing & Dosing Systems	All kinds of mixers & Dosing units; Dosing system
Pumping Equipment	All kinds of pumps such as Transfer pump, Sludge transfer pump, etc.
Filtration Equipments	All kinds of pre-filtration and components like PSF, Micron filters and Activated carbon filters, etc.
Electrical Cabling	Electrical Cabling for all kind of motor, Blower & rectifiers, etc.,
Inter-Connecting Pipes	Inter-connection pipes for pumps and equipment's based on site requirement

WATER MANAGEMENT PRACTICES

8. Water Use Monitoring

1 2 3 4 5 6 7 8 9 10

VEMU has standard water monitoring system in place with flow meters which indicates daily, weekly and monthly water uses in various facilities.

Water lose is prevented through real time alert of water overflow, leakages and dripping that ensures judicious use of Water Consumption.

Institute has standard water monitoring system at Over head tank which indicates daily, weekly and monthly water uses.

Metre reading of water inlet

Days	Bore Well 01 & 02 Cons in KL	Over Head Tank Cons in KL
365	4745	4745

Metre Reading of water Consumption

Days	Bore Well 01 & 02 Cons in KL	Over Head Tank Cons in KL
315	2520	3153

Cumulative Score	65/80

AIR QUALITY LEVEL

1. Tobacco Smoke Control

1 2 3 4 5 6 7 8 9 10

VEMU is totally Smoke Free Campus, Anti Smoking Policies are strictly implemented that eliminates exposure of students & teachers to tobacco smoke & reduce health impacts caused due to passive smoking.

2. Day Lighting

1 2 3 4 5 6 7 8 9 10

Indoor environmental conditions in classrooms and namely day lighting conditions also influence student's health, well-being and performance.

The conscious use of daylight in Classrooms has a great potential for improving the comfort and the academic performance of users, contributing, simultaneously for the rational use of energy in building.

Maximum regular occupied spaces at VEMU Campus are daylit, & average daylight factor is maintained.

List of regularly occupied and non-regularly occupied spaces along with the daylight factor Designed.

Minimum Day light Factor				
No.	VISUAL TASK	PRESCRIBED DAY LIGHT FACTOR		
		Average	Minimum	Actual
1	Classroom desk top (4310)	5%	2.0%	4.2%
2	Classroom Chalk boards	5%	2.0%	4.2%
3	Laboratory (4302)	5%	2.5%	4.5%
4	Workshops	5%	2.5%	4.5%
5	Drawing Hall (1117)	5%	2.5%	4.5%
6	Library reading tables	5%	1.5%	1.5%
7	Staff room (4305)	5%	2.0%	2.0%
8	Office (1001)	5%	2.0%	2.0%

AIR QUALITY LEVEL

Illumination level chart				
Space	Carpet area in sq.m(a)	illumination level prescribed (lux)	illumination level monitored by lux meter (lux)	Achieved / Not achieved
Class room (300-500 lux)				
1012	81.89	300	320	Achieved
1013	81.06	300	320	Achieved
1014	90.83	300	320	Achieved
1101	79.25	300	320	Achieved
1102	81.52	300	320	Achieved
1109	82.17	300	320	Achieved
1115	77.74	300	325	Achieved
1118	81.60	300	325	Achieved
1119	81.40	300	325	Achieved
1120	80.97	300	325	Achieved
2004	69.21	300	365	Achieved
2005	69.44	300	365	Achieved
2007	34.30	300	365	Achieved
2102	35.33	300	372	Achieved
2106	68.70	300	372	Achieved
2107	69.42	300	372	Achieved
2204	69.50	300	375	Achieved

AIR QUALITY LEVEL

2205	69.03	300	375	Achieved
2206	69.26	300	375	Achieved
2210	69.01	300	375	Achieved
2303	40.10	300	375	Achieved
2306	67.90	300	375	Achieved
4106	33.51	300	325	Achieved
4107	33.51	300	325	Achieved
4108	70.96	300	325	Achieved
4109	70.25	300	325	Achieved
4110	70.73	300	325	Achieved
4111	69.70	300	325	Achieved
4204	70.68	300	375	Achieved
4205	71.24	300	375	Achieved
4303	71.04	300	375	Achieved
4308	71.07	300	375	Achieved
4309	70.98	300	375	Achieved
4310	70.98	300	420	Achieved
4311	70.98	300	420	Achieved
5002	66.17	300	420	Achieved
5101	66.17	300	420	Achieved
5102	66.66	300	420	Achieved
5202	66.20	300	420	Achieved

AIR QUALITY LEVEL

5203	66.13	300	420	Achieved
5301	67.54	300	420	Achieved
5302	67.21	300	420	Achieved
5303	67.04	300	420	Achieved
5304	66.45	300	420	Achieved
6103	66.01	300	415	Achieved
6104	66.01	300	415	Achieved
6106	66.83	300	415	Achieved
6107	66.41	300	415	Achieved
6204	66.57	300	415	Achieved
6205	67.14	300	415	Achieved
6206	68.72	300	415	Achieved
6207	35.06	300	415	Achieved
6303	67.24	300	415	Achieved
6304	66.66	300	415	Achieved
6305	67.65	300	415	Achieved
6306	66.58	300	415	Achieved
6307	71.08	300	415	Achieved
7201	67.73	300	425	Achieved
7202	70.12	300	425	Achieved
7203	67.98	300	425	Achieved
7204	68.31	300	425	Achieved

AIR QUALITY LEVEL

Laboratory (500- 750 lux)				
1008	99.88	500	520	Achieved
1009	99.88	500	520	Achieved
1017	104.84	500	520	Achieved
1018	104.84	500	520	Achieved
1103	81.28	500	535	Achieved
1104	80.92	500	535	Achieved
1108	129.18	500	535	Achieved
1109	82.17	500	535	Achieved
1110	155.89	500	535	Achieved
1111	123.28	500	535	Achieved
1112	103.53	500	535	Achieved
1115	77.74	500	535	Achieved
1116	121.90	500	535	Achieved
1117	168.47	500	535	Achieved
1122	180.39	500	535	Achieved
2101	71.21	500	560	Achieved
2002	152.45	500	525	Achieved
2003	69.75	500	525	Achieved
2008	69.19	500	525	Achieved
2008A	132.15	500	525	Achieved
2103	75.50	500	560	Achieved

AIR QUALITY LEVEL

2104	75.50	500	560	Achieved
2111	67.08	500	560	Achieved
2112	68.17	500	560	Achieved
2113	72.49	500	560	Achieved
2211	66.92	500	585	Achieved
2212	67.00	500	585	Achieved
2301	73.75	500	585	Achieved
2302	73.87	500	585	Achieved
2304	73.66	500	585	Achieved
2305	67.90	500	585	Achieved
3001	77.86	500	630	Achieved
3002	123.21	500	630	Achieved
4003	73.75	500	630	Achieved
4004	214.39	500	630	Achieved
4102	70.49	500	645	Achieved
4103	70.65	500	645	Achieved
4104	70.49	500	645	Achieved
4105	69.54	500	645	Achieved
4302	69.62	500	645	Achieved
5201	151.79	500	535	Achieved
4304	70.25	500	645	Achieved
6001	137.35	500	620	Achieved

AIR QUALITY LEVEL

6001A	67.49	500	620	Achieved
6002	92.58	500	620	Achieved
6003	66.11	500	620	Achieved
6004	77.74	500	620	Achieved
6005	66.74	500	620	Achieved
6006	153.69	500	620	Achieved
6108	66.22	500	635	Achieved
7001	102.88	500	650	Achieved
7002	102.96	500	650	Achieved
7003	102.96	500	650	Achieved
7101	137.44	500	675	Achieved
7102	87.57	500	675	Achieved
7103	87.57	500	675	Achieved
Library	567.36	500	550	Achieved

AIR QUALITY LEVEL

3. Fresh Air Ventilation

1 2 3 4 5 6 7 8 9 10

A good ventilation system helps to expel a build-up of pollutants, bacteria, moisture and unpleasant odors, such as body odor from classroom.

Maximum regularly occupied spaces like Classrooms, Laboratories, Libraries & Indoor Game Facilities of VEMU Campus are adequately ventilated, and that improves health and well-being of Students & Faculties.

AIR QUALITY LEVEL

Space	Carpet area in sq.m(a)	Openable area in sq.m(b)	Prescribed percentage of openable area (10% of floor area)	Percentage of openable area (b/a)*100	Achieved / Not achieved
Class room					
1012	81.89	9.35	8.19	11.42	Achieved
1013	81.06	9.35	8.11	11.54	Achieved
1014	90.83	11.56	9.08	12.72	Achieved
1101	79.25	9.35	7.93	11.80	Achieved
1102	81.52	9.35	8.15	11.48	Achieved
1109	82.17	13.78	8.22	16.77	Achieved
1115	77.74	18.18	7.77	23.39	Achieved
1118	81.60	8.24	8.16	10.10	Achieved
1119	81.40	8.24	8.14	10.13	Achieved
1120	80.97	13.76	8.10	16.99	Achieved
2004	69.21	9.92	6.92	14.33	Achieved
2005	69.44	9.92	6.94	14.28	Achieved
2007	34.30	3.86	3.43	11.25	Achieved
2102	35.33	3.86	3.53	10.92	Achieved
2106	68.70	9.92	6.87	14.44	Achieved
2107	69.42	9.92	6.94	14.29	Achieved
2204	69.50	9.92	6.95	14.27	Achieved
2205	69.03	9.92	6.90	14.37	Achieved
2206	69.26	9.92	6.93	14.32	Achieved
2210	69.01	12.67	6.90	18.36	Achieved
2303	40.10	3.86	4.01	9.62	Achieved
2306	67.90	10.45	6.79	15.39	Achieved
4106	33.51	9.92	3.35	29.60	Achieved

AIR QUALITY LEVEL

4107	33.51	8.26	3.35	24.66	Achieved
4108	70.96	10.47	7.10	14.75	Achieved
4109	70.25	10.47	7.03	14.90	Achieved
4110	70.73	10.47	7.07	14.80	Achieved
4111	69.70	10.47	6.97	15.01	Achieved
4204	70.68	10.47	7.07	14.81	Achieved
4205	71.24	10.47	7.12	14.69	Achieved
4303	71.04	10.47	7.10	14.73	Achieved
4308	71.07	12.12	7.11	17.06	Achieved
4309	70.98	12.12	7.10	17.08	Achieved
4310	70.98	12.12	7.10	17.08	Achieved
4311	70.98	12.12	7.10	17.08	Achieved
5002	66.17	9.90	6.62	14.96	Achieved
5101	66.17	9.90	6.62	14.96	Achieved
5102	66.66	9.90	6.67	14.85	Achieved
5202	66.20	9.90	6.62	14.96	Achieved
5203	66.13	9.90	6.61	14.97	Achieved
5301	67.54	9.90	6.75	14.66	Achieved
5302	67.21	9.90	6.72	14.73	Achieved
5303	67.04	9.90	6.70	14.77	Achieved
5304	66.45	9.90	6.65	14.90	Achieved
6103	66.01	13.76	6.60	20.84	Achieved
6104	66.01	8.24	6.60	12.49	Achieved
6106	66.83	13.76	6.68	20.59	Achieved
6107	66.41	8.24	6.64	12.41	Achieved
6204	66.57	13.76	6.66	20.67	Achieved
6205	67.14	8.24	6.71	12.28	Achieved

AIR QUALITY LEVEL

6206	68.72	8.23	6.87	11.97	Achieved
6207	35.06	8.24	3.51	23.52	Achieved
6303	67.24	9.90	6.72	14.72	Achieved
6304	66.66	8.24	6.67	12.37	Achieved
6305	67.65	8.24	6.77	12.19	Achieved
6306	66.58	8.24	6.66	12.38	Achieved
6307	71.08	8.24	7.11	11.60	Achieved
7201	67.73	8.24	6.77	12.17	Achieved
7202	70.12	8.24	7.01	11.76	Achieved
7203	67.98	8.24	6.80	12.13	Achieved
7204	68.31	8.24	6.83	12.07	Achieved
Laboratory					
1008	99.88	12.67	9.99	12.68	Achieved
1009	99.88	10.47	9.99	10.48	Achieved
1017	104.84	10.47	10.48	10.50	Achieved
1018	104.84	13.76	10.48	13.12	Achieved
1103	81.28	17.62	8.13	21.68	Achieved
1104	80.92	11.58	8.09	14.30	Achieved
1108	129.18	15.98	12.92	12.37	Achieved
1109	82.17	13.78	8.22	16.77	Achieved
1110	155.89	24.24	15.59	15.55	Achieved
1111	123.28	18.18	12.33	14.75	Achieved
1112	103.53	18.18	10.35	17.56	Achieved
1115	77.74	8.26	7.77	10.63	Achieved
1116	121.90	14.87	12.19	12.20	Achieved
1117	168.47	29.72	16.85	17.64	Achieved
1122	180.39	33.58	18.04	18.61	Achieved

AIR QUALITY LEVEL

2101	71.21	22.02	7.12	30.92	Achieved
2002	152.45	23.68	15.25	15.53	Achieved
2003	69.75	19.27	6.98	27.63	Achieved
2008	69.19	6.06	6.92	8.76	Achieved
2008A	132.15	17.64	13.21	13.35	Achieved
2103	75.50	9.37	7.55	12.41	Achieved
2104	75.50	6.06	7.55	8.03	Achieved
2111	67.08	8.26	6.71	12.32	Achieved
2112	68.17	9.92	6.82	14.55	Achieved
2113	72.49	8.26	7.25	11.40	Achieved
2211	66.92	8.26	6.69	12.35	Achieved
2212	67.00	10.47	6.70	15.62	Achieved
2301	73.75	10.47	7.38	14.19	Achieved
2302	73.87	12.12	7.39	16.41	Achieved
2304	73.66	10.47	7.37	14.21	Achieved
2305	67.90	10.47	6.79	15.41	Achieved
3001	77.86	16.53	7.79	21.22	Achieved
3002	123.21	16.53	12.32	13.41	Achieved
4003	73.75	12.12	7.38	16.43	Achieved
4004	214.39	47.39	21.44	22.11	Achieved
4102	70.49	12.12	7.05	17.20	Achieved
4103	70.65	16.53	7.06	23.39	Achieved
4104	70.49	19.84	7.05	28.14	Achieved
4105	69.54	14.32	6.95	20.60	Achieved
4302	69.62	12.12	6.96	17.41	Achieved
5201	151.79	23.64	15.18	15.58	Achieved
4304	70.25	8.83	7.03	12.57	Achieved

AIR QUALITY LEVEL

6001	137.35	28.57	13.74	20.80	Achieved
6001A	67.49	6.61	6.75	9.79	Achieved
6002	92.58	14.31	9.26	15.45	Achieved
6003	66.11	17.04	6.61	25.77	Achieved
6004	77.74	17.62	7.77	22.66	Achieved
6005	66.74	6.61	6.67	9.90	Achieved
6006	153.69	24.21	15.37	15.75	Achieved
6108	66.22	11.52	6.62	17.40	Achieved
7001	102.88	30.79	10.29	29.93	Achieved
7002	102.96	23.08	10.30	22.41	Achieved
7003	102.96	23.08	10.30	22.41	Achieved
7101	137.44	19.24	13.74	14.00	Achieved
7102	87.57	19.26	8.76	21.99	Achieved
7103	87.57	9.90	8.76	11.31	Achieved
Library	567.36	38.55	56.74	6.79	Achieved

AIR QUALITY LEVEL

4. Area of Class Room

1 2 3 4 5 6 7 8 9 10

All learning spaces including classrooms of VEMU campus are well designed according to statuary standard and norms that follows appropriate occupant density, which enhances Student's Productivity.

Details on Area & Strength of the Students per Class Room

S. No.	Category	No. of students per classroom	Minimum gross area of class rooms (in m2) / student
1.	Diploma	60	1.1
2.	Under Graduate	66	1.0
3.	Post Graduate	18	3.67

5. Anthropometric Dimensions in spaces

Anthropometry has a considerable importance in optimizing the design of buildings.

The underlying principle of anthropometrics is that building designs should adapt to suit the human body, rather than people having to adapt to suit the buildings.

Anthropometric dimensions of learning spaces aims to create safe, comfortable and productive learning spaces by bringing human abilities and limitations into the designing of building, including the individual's body size, strength, skill, speed, sensory abilities (vision, hearing) and even attitudes.

Maximum learning spaces of VEMU campus including Classrooms, Laboratories, Libraries & Indoor Game Facilities, Toilets, and Hostels & Canteen are designed according to standard anthropometric dimension norms that allow comfort to the students.

Anthropometric dimension for classroom furniture

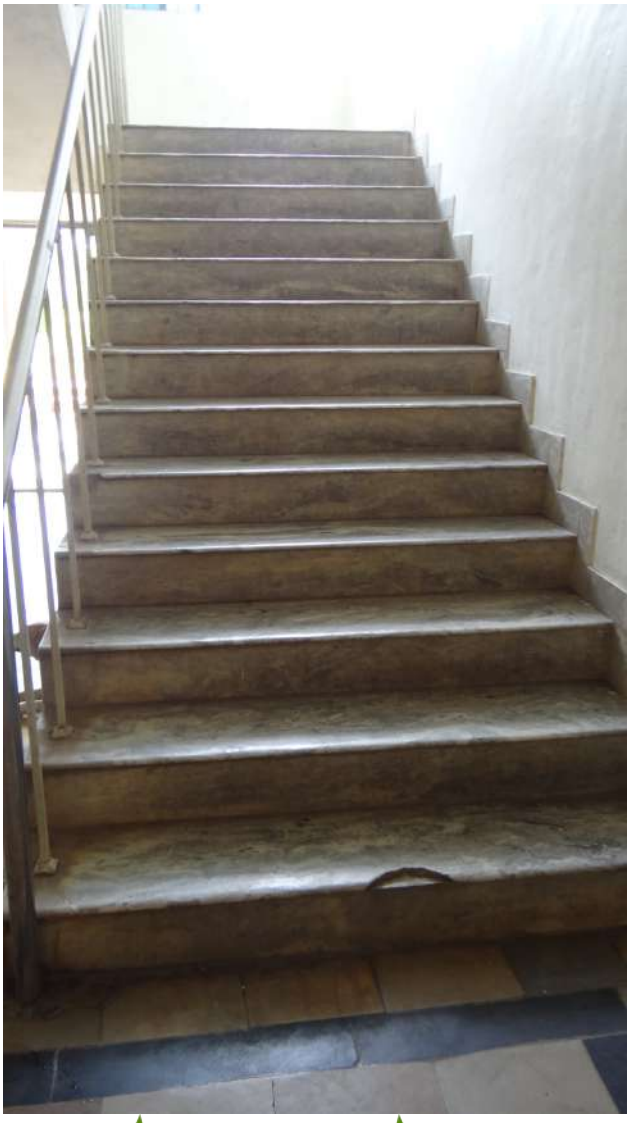
Anthropometric dimension	H (Standing height of a student, in m)		
	Diploma	Under Graduate	Post Graduate
Position with Furniture	0.914	0.914	0.914

Toilet Fixtures for students

Anthropometric dimension	H (Standing height of a student, in m)		
	Diploma	Under Graduate	Post Graduate
Squatting position	0.548	0.548	0.548
Wash basin	0.914	0.914	0.914

Sill height, Parapet wall & Riser of stairs

Aechitectural Element	Height (H), in m
Parapet Wall	0.914
Sill height	1.067
Riser of the stairs	0.198



AIR QUALITY LEVEL

6. Toxin-free Environment

1 2 3 4 5 6 7 **8** 9 10

Governing body of VEMU has declared the policy to use material with low emissions especially Paints to reduce adverse health impacts on the students and teachers.

S. No	Product Type	Coating Type	VOC in grams/liters
1	Tractor Acrylic Distemper (Snow white)	Flat	28.22
2	Royal Aspira (AR2)	Non - Flat	28
3	Tractor Emulsion smooth Wall Finish	Flat	24.14
4	Ace Exterior Emulsion (White)	Flat	22.22

7. Dust-free Environment

1 2 3 4 5 6 7 8 9 10

Governing body of VEMU Institute of Technology has declared the policy to use Dust Free Products including Chalks & other material to reduce adverse health impacts on the Students and Faculties.

8. Exhaust Systems

1 2 3 4 5 6 7 8 9 10

Exhaust Fans are installed in all Toilets, Urinals, Canteens & Laboratories of VEMU campus, that maximize airflow & enhance the Indoor Air Quality.

Cumulative Score	71/80

1. Ozone Depleting Substances

Ozone depleting substances are chemicals that destroy the earth's protective ozone layer.

VEMU has procured refrigerators and air conditioners, fire extinguishers, foam, aerosol propellants that have minimum impact on Ozone Layer Depletion.

2. Energy Efficient Lighting Fixtures

It has been proven time and time again that natural light is the best solution for reading or studying.

VIT has as much natural light as possible to get the best learning outcome.

Energy efficient lighting includes the use of more illumination from less power lights by replacing high power consumption lights like incandescent, high discharge lamps.

LED lighting provides a safe, secure & energy-efficient environment on campus at all times.

LEDs also reduce the cost of operation while satisfying the needs of faculty members and students who can appreciate the benefits of eco-friendly solutions.

LEDs also provide outstanding durability in the environments that can place an incredible amount of stress on light bulbs and lighting fixtures, such as a university campus.

Due to the high-quality energy efficiency, LED lighting allows universities to save a significant amount of money on repairs, operating costs, and maintenance costs. When compared to a traditional light bulb, LED light bulbs consume less than half the energy that the traditional light bulb.

VEMU has installed LED Lightening & Fixtures instead of old Lightning that reduces the environmental impacts associated with energy use

The list of LED lighting fixtures available in the institute:

S.NO	Name of the Block	No. of LEDS	Rating(W)	Total Rating(W)	Total Rating(kW)
1	1	47	2Feet(80)	3760	3.76
		54	1Feet(40)	2160	2.16
		132	9	1188	1.188
2	2	26	2Feet(80)	2080	2.08
		12	1Feet(40)	480	0.48
3	4	6	2Feet(80)	480	0.48
		27	9	243	0.243
4	5	16	9	144	0.144
5	6	10	9	90	0.90
6	Hostels	23	9	207	0.207
7	Street Lights	30	90	2700	2.70
Total		23	–	13530	13.53

3. Energy Efficient Fans

1 2 3 4 5 6 7 8 9 10

VEMU has installed Energy efficient Fans and Air Conditioners instead of High Energy Consuming Fans and Air conditioners that reduces the environmental impacts associated with energy use.

ENERGY USES & SAVING PRACTICES

4. Energy Efficiency in Appliances & Equipment

Modern electronic appliances, such as, freezers, ovens, stoves, dishwashers, clothes washers and dryers, use significantly less energy than older appliances. Installing STAR rated electronic appliances significantly reduces energy consumption.

VEMU has replaced energy efficient Electronic Appliances &Equipments instead of High Energy Consuming Appliances that reduces the environmental impacts associated with energy use.

5. Energy Sub-Metering

VEMU practices continuous monitoring of energy uses through sub metering and aspirate metering of each learning spaces, residential and open spaces throughout the year towards achieving judicious use of energy, which inspire teaching learning community to save the energy in their day to day uses.

6. On-Site Renewable Energy

1 2 3 4 5 6 7 8 9 10

VIT has installed an 200 kWp Roof Top Solar Power Plant producing 21500 units per month as on-site Renewable Energy Source; however it encourages student community to save energy to minimize environmental impacts of using fossil fuels.

SALIENT DETAILS OF PLANT

Type of Renewable Energy	Solar Power
Installed Capacity of Plant	200 KWp
Total number of modules and make	630, SWELECT
Mode of execution	RESCO MODEL
Rating of each panel	230W, 37V, 8.65A
Configuration of panels	18 panels per 1 structure,1 string for 2 structures
No of roofs used	5 ROOFS
Inverters	5 (MAKE – DELTA)
Inverter	50KVA-3nos, 30KVA-1nos, 20KVA-1nos
Inverter configuration	Inverter 1 connected to 8 strings with 144 panels Inverter 2 connected to 8 strings with 144 panels Inverter 3 connected to 6 strings with 108 panels Inverter 4 connected to 9 strings with 162 panels Inverter 5 connected to 4 strings with 72 panels
Average monthly generation	21,500 Units

Solar Energy Details for 2018

Month & Year	Solar Energy Generated (KWH)-1	Energy exported to SPDCL from Solar (KWH) (2)	Energy consumption from Solar(3)= (1)- (2) (KWH)	Energy consumption from SPDCL (KWH) (4)	Total Energy consumption (5)=(3)+(4) (KWH)	Surplus/deficit energy (6)=(1) -(5) (KWH)
Jan-18	19803	7655	12148	10750	22898	-3095
Feb-18	14005	8550	5455	11050	16505	-2500
Mar-18	16083	4992	11091	10250	21341	-5258
Apr-18	24287	6008	18279	12336	30615	-6328
May-18	20525	6822	13703	12844	26547	-6022
Jun-18	23619	8280	15339	9732	25071	-1452
Jul-18	21577	11214	10363	7294	17657	3920
Aug-18	23001	8606	14395	12986	27381	-4380
Sep-18	27209	7244	19965	15630	35595	-8386
Oct-18	24741	10774	13967	13628	27595	-2854
Nov-18	22172	13184	8988	11764	20752	1420
Dec-18	22928	10952	11976	11236	23212	-284
Total	259950	104281	155669	139500	295169	-35219
Average	21663	8690	12972	11625	24597	-2935

Solar Energy Details for 2019

Month & Year	Solar Energy Generated (KWH)-1	Energy exported to SPDCL from Solar (KWH) (2)	Energy consumption from Solar(3)= (1)- (2) (KWH)	Energy consumption from SPDCL (KWH) (4)	Total Energy consumption (5)=(3)+(4) (KWH)	Surplus/deficit energy (6)=(1) -(5) (KWH)
Jan-19	17149	13760	3389	9086	12475	4674
Feb-19	23394	7880	15514	10158	25672	-2278
Mar-19	31805	10180	21625	11604	33229	-1424
Apr-19	21698	9268	12430	13782	26212	-4514
May-19	22490	6828	15662	15646	31308	-8818
Jun-19	26432	8178	18254	16346	34600	-8168
Jul-19	23467	9982	13485	10610	24095	-628
Aug-19	18690	7582	11108	12324	23432	-4742
Sep-19	21218	5430	15788	15028	30816	-9598
Oct-19	21040	7120	13920	15918	29838	-8798
Nov-19	21741	7534	14207	15362	29569	-7828
Dec-19	18945	8208	10737	16344	27081	-8136
Total	268069	101950	166119	162208	328327	-60258
Average	22339	8496	13843	13517	27361	-5022

Solar Energy Details for 2020

Month & Year	Solar Energy Generated (KWH)-1	Energy exported to SPDCL from Solar (KWH) (2)	Energy consumption from Solar(3)= (1)- (2) (KWH)	Energy consumption from SPDCL (KWH) (4)	Total Energy consumption (5)=(3)+(4) (KWH)	Surplus/deficit energy (6)=(1) -(5) (KWH)
Jan-20	24407	9074	15333	11814	27147	-2740
Feb-20	21489	12284	9205	10266	19471	2018
Mar-20	69949	38806	31143	32892	64035	5914
Apr-20						
May-20						
Jun-20	19742	14806	4936	4036	8972	-10770
Jul-20	20609	15020	5589	3650	9239	-11370
Aug-20	19454	16702	2752	3492	6244	-13210
Sep-20	18494	11456	7038	4275	11313	-7181
Oct-20	21558	11350	10208	4588	14796	-6762
Nov-20	16277	14670	1607	5220	6827	-9450
Dec-20	16800	9234	7566	8576	16142	-658
Total	248779	153402	95377	88809	184186	-54209
Average	20732	12784	7948	7401	15349	-4517

Consolidated Solar Energy Generation Details for the Period 2018-2020

Year	Solar Energy Generated (KWH)-1	Energy exported to SPDCL from Solar (KWH) (2)	Energy consumption from Solar(3)= (1)- (2) (KWH)	Energy consumption from SPDCL (KWH) (4)	Total Energy consumption (5)=(3)+(4) (KWH)	Surplus/deficit energy (6)=(1) -(5) (KWH)
2018	259950	104281	155669	139500	295169	-35219
2019	268069	101950	166119	162208	328327	-60258
2020	248779	153402	95377	88809	184186	-54209
Avg/ year	258933	119878	139055	130172	269227	-10294.7
Avg/ month	21578	9990	11588	10848	22436	-858

7. Solar Water Heating Systems

1 2 3 4 5 6 7 8 9 10

VEMU has installed solar water heating System in its all hostel facilities that minimize the environmental impacts of using fossil fuels.

8. Distributed Power Generation

VEMU has well designed power distribution system in place that allows power supervisor to monitor power supply according to judicious need of the users.

Cumulative Score	73/80

1.Toilet Facilities

1 2 3 4 5 6 7 8 9 10

VEMU has outsourced Hygiene & Cleanliness work to the local external cleaning agency, which maintains Hygiene & Cleanliness standards in all toilets regularly that reduces the infections risk on Students and Teacher's Health & well-being.

2. Drinking Water Facility

1 2 3 4 5 6 7 8 9 10

Water Quality of all Drinking Water stations & Tapes are maintained at VEMU Campus.

Water Quality Reports are checked by Government Authorized Laboratories in regular interval of time to ensure Clean & Safe Drinking Water at all the time to everyone.

3. Access to Healthy Food

1 2 3 4 5 6 7 8 9 10

Healthy food plays an important role in the optimal growth, development, health and well-being of individuals in all stages of life.

Healthy and nutritious Food is accessible to all students & teaching staff at the Canteen of VEMU that maintain the fitness of teaching learning community.

Catering facility of VEMU is outsources to the local food making agency. Junk Food is strictly prohibited in the Campus.

4. Sports Amenities

1 2 3 4 5 6 7 8 9 10

VEMU offers various sporting opportunities to its diploma undergraduate and post graduate students.

All Indoor & Outdoor sports amenities at VEMU are designed to achieve excellence in sports to enhance growth and health of students.

5. Dedicated Playground

1 2 3 4 5 6 7 8 9 10

VEMU is having dedicated Sports Amenities for Basketball, Volley ball,Throw ball, Tennis Court Shuttle Badminton and Cricket, while facilities for other sports are shared to minimize impact on environment

Sr. No.	Name of the Area	Open Ground / Plinth Area in Sq. Mtrs.
1	Basketball	443.52
2	Volley ball	212.72
3	Throw ball	223.26
4	Tennis Court	175.33
5	Shuttle Badminton	282.00
6	Cricket	3510.00

6. Organic Fertilizers and Pesticides

1 2 3 4 5 6 7 **8** 9 10

VEMU uses Organic Fertilizers and Pesticides to reduce Health impacts on Students and Faculties.

Composting pits prepares enough fertilizers for entire vegetated area.

7. Green Housekeeping

1 2 3 4 5 **6** 7 8 9 10

VEMU uses environment friendly cleaning products to clean its Learning & residential spaces.

Eco friendly Cleaners are also used to clean the toilets and drinking water Stations to prevent chemical related Health hazards.

Cumulative Score	58/70

1. Waste Segregation

Waste Segregation Mechanism is well placed at VEMU Campus. Waste generated through various sources and practices is being segregated in the safe manner & sent to recycling & composting sites or authorized recyclers in the safe manner, which prevents the waste being sent to the landfills.

Dry Waste

There are blue bins which are used to collect dry waste. Dry waste includes plastic (pet bottles, pouch, cups, covers, wrappers), paper (cardboard, newspaper, notebooks, scrape paper, tetrapack), metal (foil container, cans, lids) and other dry waste (rubber, thermocol, ceramics, glass, wood)

Garden waste

Garden Waste (fallen leaves, twigs, puja flowers, garlands, weeds) is composted in Leaf Composters. The compost produced at the campus is used as manure for the huge landscape of trees and plants in Institute. The excess manure is also given to the staff and faculty for their home gardens.

Reject Waste

There are red bins which are used to collect reject waste. This includes reject waste (contaminated waste, badly soiled dry waste, sweeping waste, dusters, sponges, cosmetics), sharp items (razors, blades, used syringes, injection vials), medical / bio waste (Bandages, nails, hairs, used tissues, medicines) and construction debris (rubber, silt from drains, cement powder, bricks and power pots)

Sanitary Waste

For proper disposal of sanitary waste units are installed in the women's washroom across the campus. all units every fortnightly and replace with new.

Liquid waste management

(i) Sewage waste
(ii) Laundry and cafeteria effluent waste

- All the effluent from Kitchen is passed through “Grease Trap” for alteration of oil before entering the sewage plant.
- All the washing machines are placed in appropriate locations and are manned while operation.
- All the water discharged in the campus is sent to the sewage treatment plant and is treated for reuse.
- Monthly testing of treated water is done through authorized testing laboratories.
- Water test reports are evaluated by facility team every month and carry out preventive/corrective actions on water treatment.
- Treated water is used for watering the plants and trees in the campus. The silt generated from the STP is disposed off from time to time through authorized vendor.
- 100% of the treated water is used internally, except during the rainy days.

E-waste management

- Computers, laptops, printers etc are sold as scrap or exchange options are used.
- The other e-waste which cannot be reused or recycled are being collected and disposed off.
- Apart from this, the electronic and electrical instruments under repair are given to the students during the lab sessions to dismantle and reassemble, which help in application oriented learning. The low configured computers are donated to nearest schools

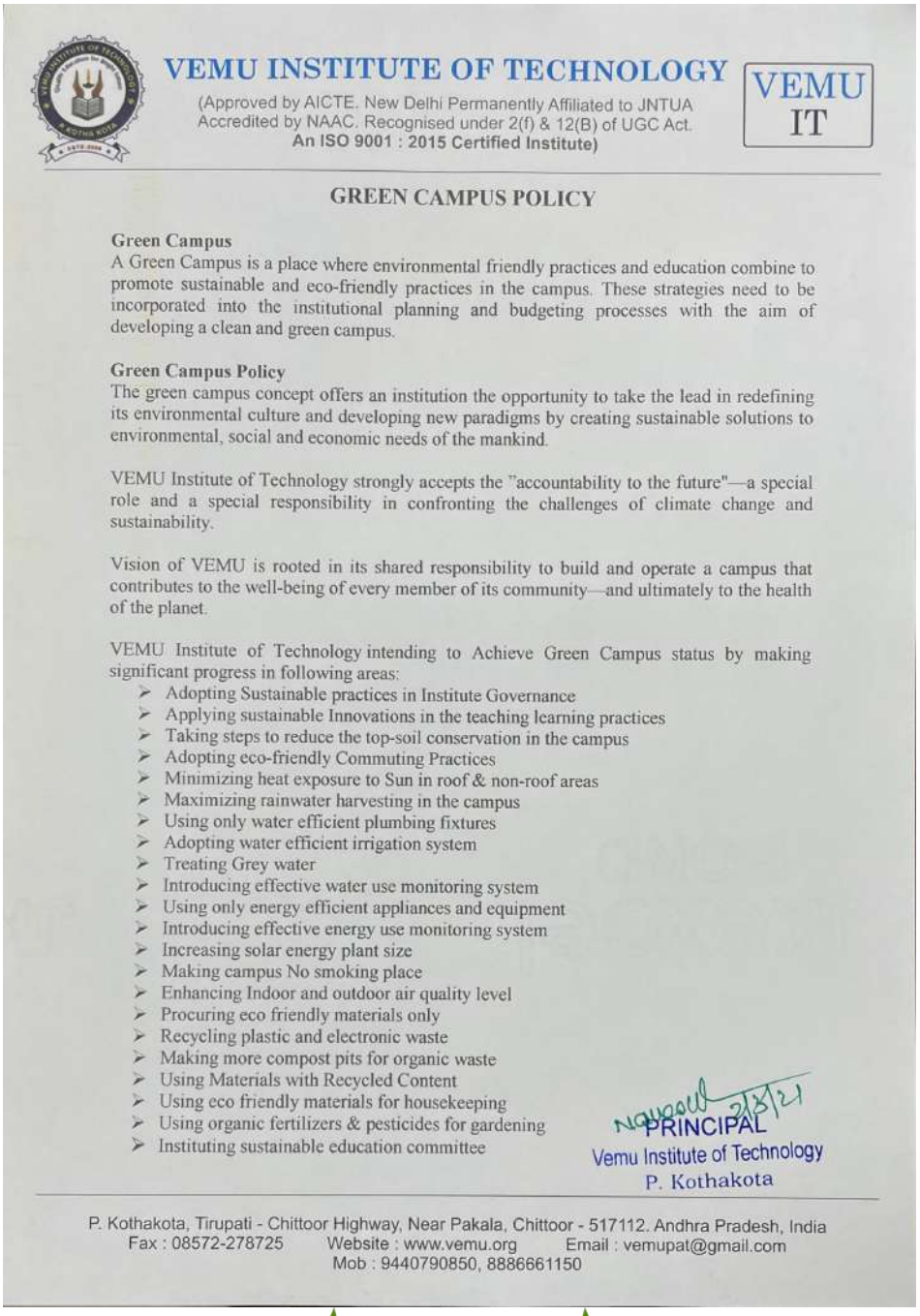
2. Organic Waste Management

1 2 3 4 5 6 7 8 9 10

Since VEMU has adopted the philosophy of “reduce - reuse – recycle”, therefore all organic waste sent to various, composting and Vermi composting Facilities that makes waste into resource and prevents the waste being sent to landfills.

3. Green Policy

VEMU framed broader Green Policy that inspires its teaching learning community to take responsibility for future through their behavior with nature and natural resources.



VEMU INSTITUTE OF TECHNOLOGY

(Approved by AICTE. New Delhi Permanently Affiliated to JNTUA
Accredited by NAAC. Recognised under 2(f) & 12(B) of UGC Act.
An ISO 9001 : 2015 Certified Institute)

VEMU IT

GREEN CAMPUS POLICY

Green Campus

A Green Campus is a place where environmental friendly practices and education combine to promote sustainable and eco-friendly practices in the campus. These strategies need to be incorporated into the institutional planning and budgeting processes with the aim of developing a clean and green campus.

Green Campus Policy

The green campus concept offers an institution the opportunity to take the lead in redefining its environmental culture and developing new paradigms by creating sustainable solutions to environmental, social and economic needs of the mankind.

VEMU Institute of Technology strongly accepts the "accountability to the future"—a special role and a special responsibility in confronting the challenges of climate change and sustainability.

Vision of VEMU is rooted in its shared responsibility to build and operate a campus that contributes to the well-being of every member of its community—and ultimately to the health of the planet.

VEMU Institute of Technology intending to Achieve Green Campus status by making significant progress in following areas:

- Adopting Sustainable practices in Institute Governance
- Applying sustainable Innovations in the teaching learning practices
- Taking steps to reduce the top-soil conservation in the campus
- Adopting eco-friendly Commuting Practices
- Minimizing heat exposure to Sun in roof & non-roof areas
- Maximizing rainwater harvesting in the campus
- Using only water efficient plumbing fixtures
- Adopting water efficient irrigation system
- Treating Grey water
- Introducing effective water use monitoring system
- Using only energy efficient appliances and equipment
- Introducing effective energy use monitoring system
- Increasing solar energy plant size
- Making campus No smoking place
- Enhancing Indoor and outdoor air quality level
- Procuring eco friendly materials only
- Recycling plastic and electronic waste
- Making more compost pits for organic waste
- Using Materials with Recycled Content
- Using eco friendly materials for housekeeping
- Using organic fertilizers & pesticides for gardening
- Instituting sustainable education committee

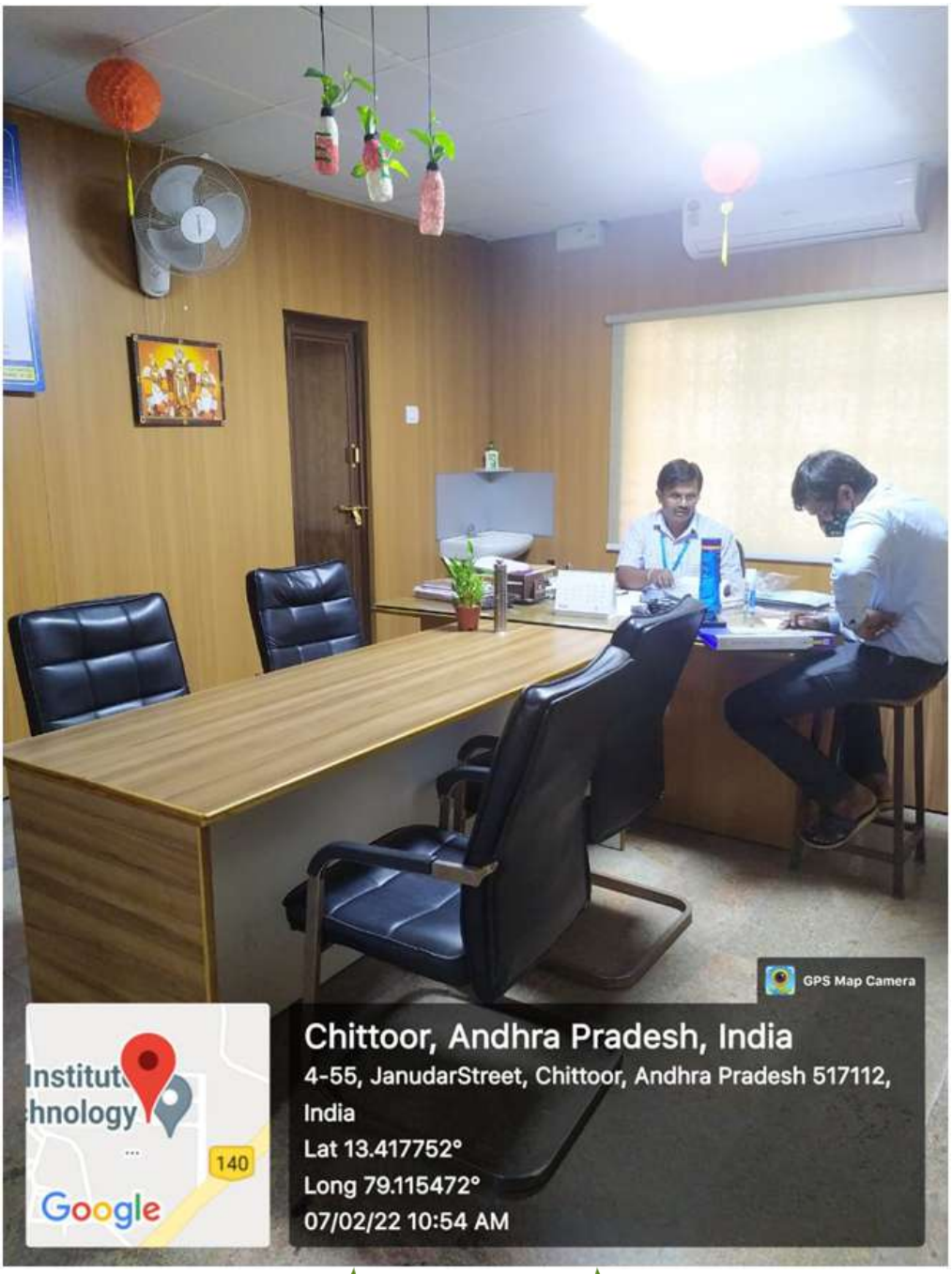
PRINCIPAL
Vemu Institute of Technology
P. Kothakota

P. Kothakota, Tirupati - Chittoor Highway, Near Pakala, Chittoor - 517112. Andhra Pradesh, India
Fax : 08572-278725 Website : www.vemu.org Email : vemupat@gmail.com
Mob : 9440790850, 8886661150

4. Salvaged Materials

1 2 3 4 5 6 7 8 9 10

VEMU makes new furniture & fixtures by using salvaged materials towards reducing the dependence on virgin materials.



SUSTAINABLE RESOURCES UTILIZATION

5. Eco-friendly Wood Based Materials

1 2 3 4 5 **6** 7 8 9 10

VEMU encourages using Certified Composite Wood to encourage use of Eco-friendly Wood Based Materials towards conserving Forest Resources and reducing the dependence on virgin materials.

6. Materials with Recycled Content

1 2 3 4 5 6 **7** 8 9 10

VEMU uses materials in its new construction sites and repairing spaces, which have recycled content like Concrete, Bricks, Fly ash Bricks, Aluminum Windows and Glass & Tiles to reduce environmental impacts associated with the use of virgin materials.

SUSTAINABLE RESOURCES UTILIZATION

7. Local Materials

1 2 3 4 5 6 7 8 9 10

VEMU uses Building Materials available locally to minimize the associated environmental impacts resulting from transportation to build its new facilities.

Cumulative Score	50/70

SUSTAINABILITY EVALUATION CHART

Sr. No.	Assessment Areas	Cumulative Score
1.	GOVERNANCE & ACADEMIC	37/40 ✓
2.	BUILDING DESIGN & LANDSCAPING	70/80 ✓
3.	WATER MANAGEMENT PRACTICES	65/80 ✓
4.	AIR QUALITY LEVEL	71/80 ✓
5.	ENERGY USES & SAVING PRACTICES	70/80 ✓
6.	HEALTH & HYGIENE PRACTICES	58/70 ✓
7.	SUSTAINABLE RESOURCES UTILIZATION	50/70 ✓
	Total	421/500

Certification Level

Rejection	Certification	Silver	Gold	Platinum
000-100 Points	100-200 Points	200-300 Points	300-400 Points	400-500 Points

GREEN MENTORS

Powered by Law of Nature

Special Consultative Status with the
Economic and Social Council of United Nations from 2021

For more details:

B-802, Mondeal Heights, Near Wide Angle Cinema,
S.G. Highway, Ahmedabad - 380 015, Gujarat, India

+91 79 49000160 | info@greenmentors.in | www.greenmentors.in

Listed as Global Solution on GLOBAL INNOVATION EXCHANGE

eauc The Alliance for Sustainability Leadership in Education Educational Member

GREEN UNIVERSITY

naaee North American Association for Environmental Education

ASU Prep Digital Arizona State University

Energy Audit report by involving one External Person

Energy Audit Report

(Upto 31-12-2020)

For

VEMU INSTITUTE OF TECHNOLOGY

Department of Electrical and Electronics Engineering

VEMU INSTITUTE OF TECHNOLOGY

Tirupati–Chittoor Highway, P.Kothakota, Near Pakala, Chittoor-517112.

Energy Audit Assessment Team

S.NO	Name and Designation	Position	Signature
1	Dr. Naveen. Kilari Principal, Vemu IT	Chairman	
2	Dr. D.Chandra Sekhar Vice-Principal, Vemu IT	Member	
3	Dr. A.Hema Sekhar, Professor & Head, Dept of EEE Vemu IT	Member	
4	Mr.M.Murali, Associate Professor, Dept of EEE Vemu IT	Member	
5	Mrs M.Sujatha, Lab Technician, Vemu IT	Member	
6	Sri M.Devendranath Reddy Retired Superintending Engineer APSPDCL, Tirupati	External Member	
7	Dr. S.Mallikarjunaiah, Professor , Dept of EEE, Vemu IT	Member-Secretary	

INDEX

Preface

Data collection for Energy audit of the Vemu Institute of Technology, P.Kothakota, Near Pakala, Chittoor district, Andhra Pradesh was conceded by team for the period of January 2018 to December 2020.

This audit was over sighted to inquire about convenience to progress the energy competence of the campus. Energy audit survey was completed by B.Tech, M.Tech and MBA students under the guidance of their faculty members. All the data was collected from each classroom, laboratory, seminar halls and every room. The work is completed by considering how many tube lights, fans, AC's, electronic instruments and lab equipments in each room. How much was participation of each component in total electricity consumption.

We really appreciate the effort put by Vemu Institute of Technology management for creating awareness of Energy Audit, use renewable energy such as solar energy and their signification use for efficient energy saving and our nature among the all of us. We really appreciate the honorable Chairman Sir for encouraging us by providing this wonderful opportunity to do the energy audit. Through this, we have been cleared the vision of the Institution towards the Green Campus and save our green nature. We really appreciate to develop good quality weather station in house of the college.

ACKNOWLEDGEMENT

We are very thankful to our honorable Chairman Dr.K.Chandra Sekhar Naidu sir, Principal Dr Naveen Kilari Garu, Vice-Principal Dr.D.Chandra Sekhar for motivating us and giving the opportunity for energy audit. We would like to express our sincere thanks to Dr A.Hemasekhar, Head of the Department of Electrical and Electronics Engineering, faculty members of EEE Dept., non teaching staff and students those who have taken part in this audit survey for each department, laboratories, offices etc of Vemu Institute of Technology, P.KothaKota, Chittoor (Dt), Andhra Pradesh. We tried our best to present this energy report as per requirements of college and our work.

Summary

The objective of the audit was to study the energy consumption pattern of the facility, identify the areas where potential for energy/cost saving exists and prepare proposals for energy/cost saving along with investment and payback periods.

The salient observations and recommendations are given below.

1. Vemu Institute of Technology, P.Kothakota, Chittoor (Dt). Andhra Pradesh uses energy in the following forms:
   a. From APSPDCL, AndhraPradesh
   b. Solar Energy plant (200 kWp)
   c. Two Diesel Generators with a capacity of 160&40KVA
2. The average cost of energy around **Rs 53076** per month
3. After the measurement and analysis, we propose herewith the following Energy Efficient Improvement measures for energy saving.

Energy Efficiency Improvement

S.NO	Recommendations	Annual Saving Potential (Rs)	Estimated Investment (Rs)	Pay Back Period (Years)	Remarks
1	Replacing all Fluorescent Lamps with LED Lamps	400033	366300	1	Mid Term
2	Replacing all existing Fans with 5 star rating fans	370781	1814000	4.8	Long Term
Total Amount		770814	2180300	2.8	

Chapter: 1

INTRODUCTION TO ENERGY AUDIT

- **General:**

The VEMU Institute of Technology, P.Kothakota, Chittoor Dist., and Andhra Pradesh entrusted the work of conducting a detailed Energy Audit of campus with the main objectives are as bellows:

- ✓ To study the present pattern of energy consumption
- ✓ To identify potential areas for energy optimization
- ✓ To recommend energy conservation proposals with cost benefit analysis.

- **Scope of Work, Methodology and Approach:**

Scope of work and methodology were as per the proposal .While undertaking data collection, field trials and their analysis, due care was always taken to avoid abnormal situations so as to generate normal/representative pattern of energy consumption at the facility.

- **Approach to Energy Audit:**

We focused our attention on energy management and optimization of energy efficiency of the systems, sub systems and equipment. The key to such performance evaluation lies in the sound knowledge of pelformance of equipment and system as a whole.

- **Energy Audit**:

The objective of Energy Audit is to balance the total energy inputs with its use and to identify the energy conservation opportunities in the stream. Energy Audit also gives focused attention to energy cost and cost involved in achieving higher performance with technical and financial analysis. The best alternative is selected on financial analysis basis.

- **Energy Audit Methodology:** Energy Audit is divided into following steps

1. **Historical Data Analysis:**

The historical data analysis involves establishment of energy consumption pattern to the established base line data on energy consumption and its variation with change in production volumes.

2. **Actual measurements and data analysis:**

This step involves actual site measurement and field trials using various portable measurement instruments. It also involves input to output analysis to establish actual operating equipment efficiency and finding out losses in the system.

3. **Identification and evaluation of Energy Conservation Opportunities:**

This step involves evaluation of energy conservation opportunities identified during the energy audit. It gives potential of energy saving and investment required to implement the proposed modifications with payback period.

- **Benefits of Energy Conservation:**
  - ➢ Individual consumer or industry can save energy cost
  - ➢ Grid can increase Capacity without increasing capital investment.
  - ➢ Natural resources can be saved for the betterment of next generation.
  - ➢ Due to reduction in the emission of greenhouse gases helps protecting the environment for controlling the global warming.
  - ➢ Nation can develop faster and Gives Energy security.

Chapter: 2

ABOUT THE COLLEGE

VEMU Institute of Technology is one of the well known and finest technical institutions in Chittoor District, Andhra Pradesh (A.P).

VEMU Institute of Technology founded and established by a true academician Prof.(Dr.) K. Chandra Sekhar Naidu, Retired Professor, Andhra University. It is located in P. Kothakota, on the Tirupathi-Chittoor Highway in a beautiful 16-acre campus.

Beginning its quality inputs in 2008, VEMU Institute of Technology has become one of the top engineering colleges in Chittoor District, Andhra Pradesh for quality management within a short span of time.

AFFILIATIONS & RECOGNITIONS:

- Established in the year 2008 .
- Approved by All India Council for Technical Education, New Delhi
- Permanently Affiliated to JNTUA, Anantapuramu
- Certified by ISO 9001 - 2015 for Quality Management.
- Ranked as A Grade College by Department of Technical Education Government of Andhra Pradesh.
- Recognized under 2(F) and 12(B) UGC Act.
- Accredited by NAAC.
- Accredited by NBA - Three B.Tech programs CSE, ECE & EEE upto 2023-24
- Careers360 Rating in 2020 is AAA.
- 84th rank in The Week-Hansa Research Survey 2020 - Best Engineering Colleges Rankings –South Zone.

Chapter: 3

INDENTATIONS AND DATA

Energy Consumption Profile:

Source of Energy:

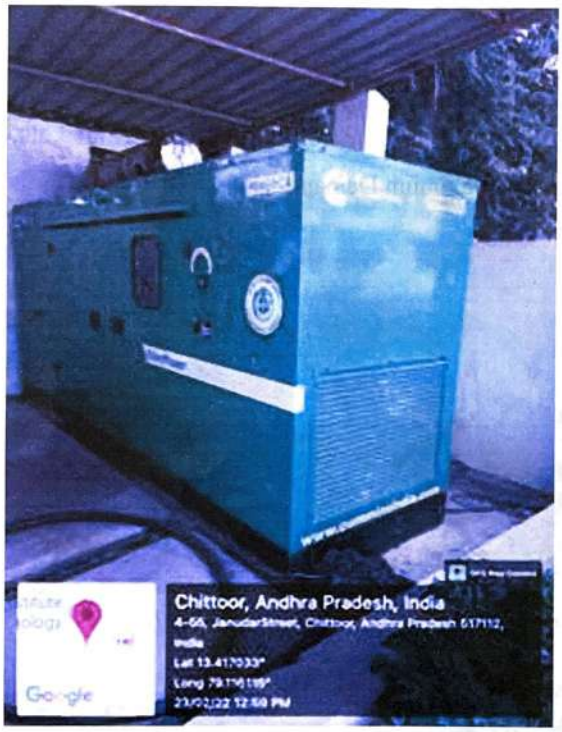
VEMU Institute of technology, P.Kothakota, Chittoor Dist., Andhra Pradesh uses Energy in the following forms:

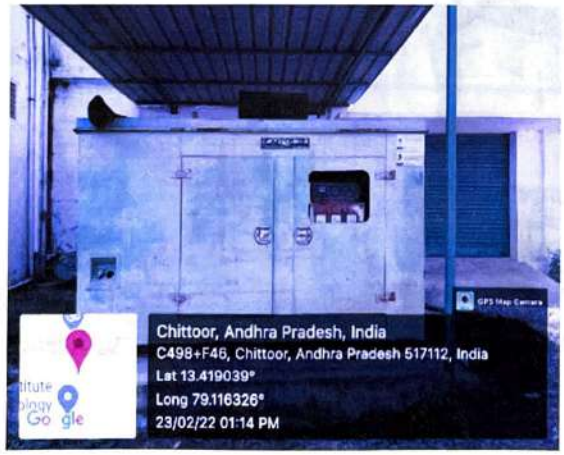
a. Electricity from APSPDCL:

VEMU Institute of Technology receives electricity from APSPDCL,P.Kothakota,Chittoor with capacity of 11KV and 90 KVA Maximum Demand

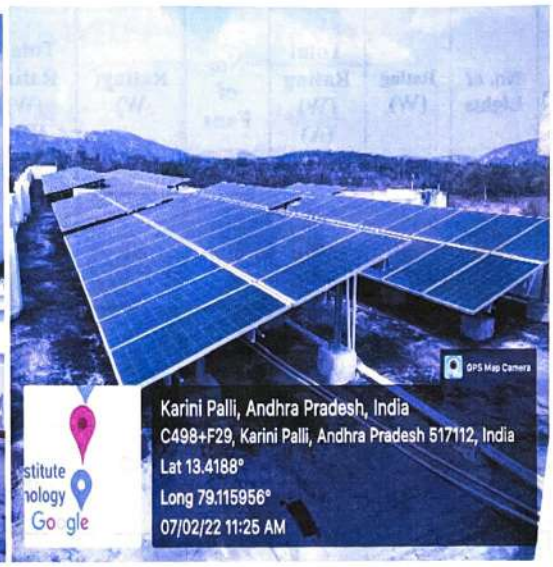
b. High Speed Diesel Generator(HSDG):

HSD is used as a fuel for Diesel Generator which is run whenever power, supply from APSPDCL is not available. We have two Generators with a capacity of 160KVA and 40KVA.





c. Electricity from SOLAR Grid connected plant of capacity 200KW



Following are the major consumers of electricity in the facility:

- Computers
- Lighting Loads
- Air Conditioning
- Fans
- UPS

Energy Consumption:

The electrical devices which are connected in college Campus are not energy saving devices. These devices can be changed by electrical efficient appliances. The appliances are of high watt equipment so the electrical consumption is high in college campus.

Total power requirement of various blocks in the campus

S. No	Name of the Block	No. of Lights	Rating (W)	Total Rating (W) (A)	No. of Fans	Rating(W)	Total Ratin g(W) (B)	No. of UPS's (KVA)	Rating (KVA)	Total Rating (KVA) (C)	No.of A.Cs (Ton)	Raitng (W)	Total Rating(W) (D)	Total Rating (W) (A+B+C+D)
1	I-Block	209	40	8360	194	80	1552 0	4	30+2 0+20 +10	80	27	2000	54000	15788 0
2	II-Block	102	40	4080	146	80	1168 0	1	20	20	11	2000	22000	57760
3	III-Block	12	40	480	10	80	800	0	0	0	0	2000	0	1280
4	IV-Block	166	40	6640	167	80	1336 0	2	10+2 0	30	16	2000	32000	82000
5	V-Block	55	40	2200	61	80	8480	1	20	20	8	2000	16000	46680
6	VI-Block	71	40	2840	129	80	1032 0	1	10	10	5	2000	10000	33160
7	VII-Block	35	40	1400	36	80	2880	0	0	0	0	2000	0	4280
8	*Boys Hostel*	66	40	2640	105	80	8400	0	0	0	0	2000	0	11040
9	Girls Hostel	62	40	2480	52	80	4160	1	3.5	3.5	0	2000	0	10140
10	Canteen	8	40	320	6	80	480	1	2.2	2.2	0	2000	0	3000
11	Street Lights	26	40	1040	0	80	0	0	0	0	0	2000	0	1040
12	Main Gate	2	40	80	1	80	80	0	0	0	0	2000	0	160
Total		814	40	32560	907	80	76160	11		165.7	67	24000	134000	408420

Power Consumption of Electricity Board

S.No	Month	Consumption Units(KWH)	Consumption (Rs.)
1	Jan-2020	11814	60081
2	Feb-2020	10266	52412
3	March-2020	14214	79716
4	April-2020	13860	55882
5	May-2020	4818	31956
6	June-2020	4036	51210
7	July-2020	3650	50568
8	August-2020	3492	50550
9	September-2020	3554	51650
10	October-2020	4588	50836
11	November-2020	5220	50110
12	December-2020	8576	51936
Total Power Consumption in 12 months		88088	636907
Average Power Consumption Per Month		7341	53076

Chapter: 4

ENERGY EFFICIENT LIGHTING SYSTEM

By efficient lighting system we shall reap monetary & environmental benefits such as energy savings, reduced electricity bills, and coal consumption.

Day Lighting: Indoor environmental conditions in classrooms and namely day lighting conditions also influence student's health, well-being and performance. The conscious use of daylight in Classrooms has a great potential for improving the comfort and the academic performance of users, contributing, simultaneously for the rational use of energy in building. Maximum regular occupied spaces at college Campus are daylight & average daylight factor is maintained.

Thus, in its pursuit towards an energy efficient campus, all the external lighting fixtures are LED based. The management team has reduced lighting consumption by over 80% by using LED lights. The campus team has also taken efforts in the interior lighting as well. Around 30% of the total lighting energy consumption is met through highly efficient LED lighting. LED lighting load is around 13.53 kW. The campus management is continuously taking measures to phase out the old fixtures with highly efficient LED fixtures.

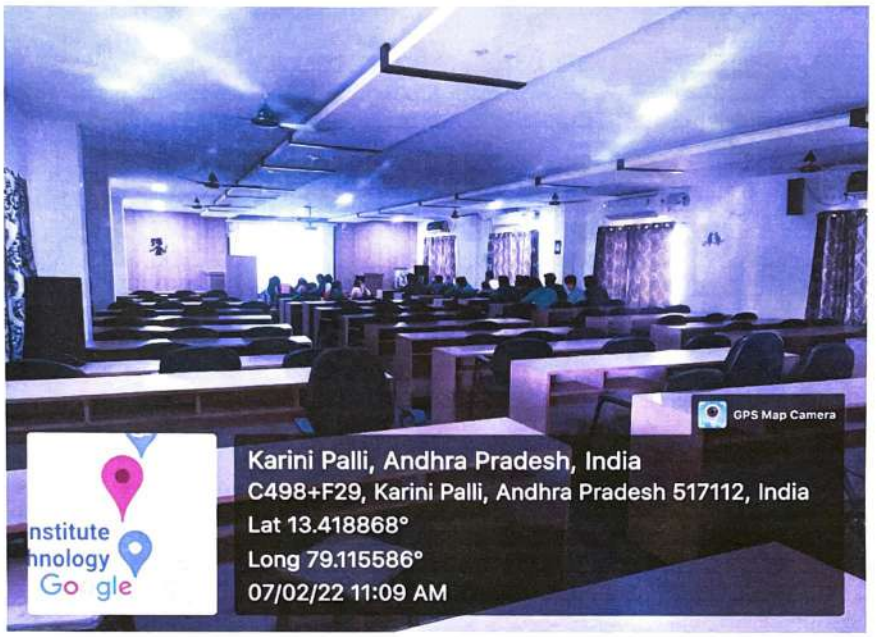
The list of LED lighting fixtures available in the institute:

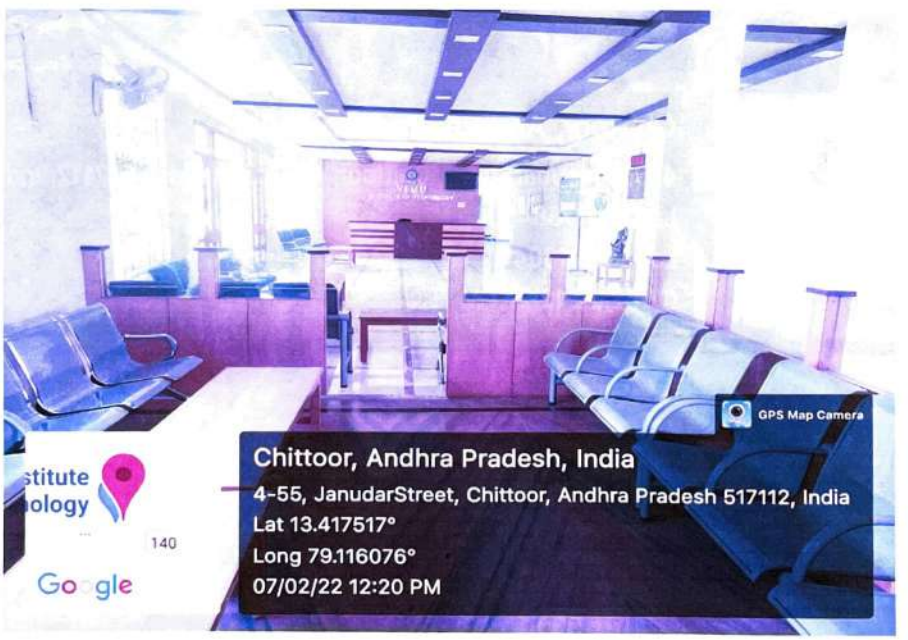
S.NO	Name of the Block	No. of LEDS	Rating(W)	Total Rating(W)	Total Rating(kW)
1	1	47	2 Feet (80)	3760	3.76
		54	1 Feet (40)	2160	2.16
		132	9	1188	1.188
2	2	26	2 Feet (80)	2080	2.08
		12	1 Feet (40)	480	0.48
3	4	6	2 Feet (80)	480	0.48
		27	9	243	0.243
4	5	16	9	144	0.144
5	6	10	9	90	0.09
6	Hostels	23	9	207	0.207
7	Street Lights	30	90	2700	2.70
Total		383		13530	13.53

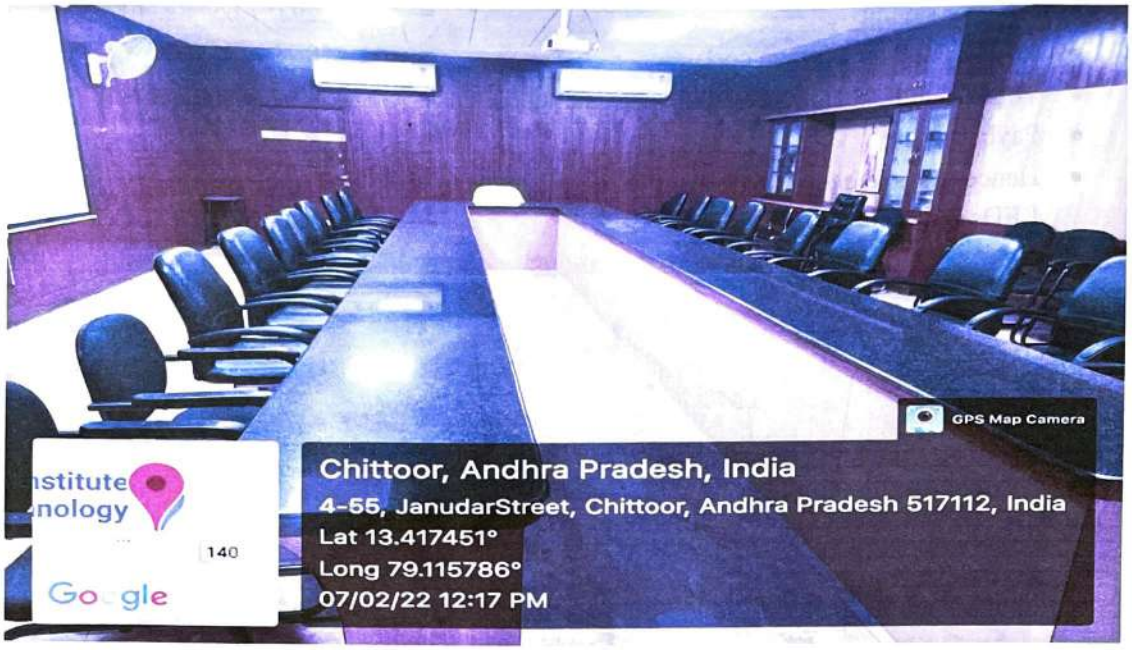
Energy Saving Calculations: The institute contains 814 CFL Tubes and 383 LED lights
Cost Analysis of LED light with Conventional tube light.

- Total No. of conventional Tube Lights in Campus = 814
- Conventional Tube Light average power = 40W
- LED Tube Light average power = 18W
- Difference in power saved per Tube Light = 22W
- Total Power saving = 814*22=17.908KW
- Average use of Tube Light per Year = 365*8H=2920H
- Energy saved per year(814*22*8H*365Days) = 52292KWh

- Per year saving = 52292*7.65=Rs. 400033
- LED Tube light average cost = 450
- Total Cost of Replacing all Conventional tube lights= 450*814=Rs. 366300
- Payback time = 1 yrs.
- Hence, the payback time for replacing all conventional tube lights of the campus with LEDs is around 1 year.





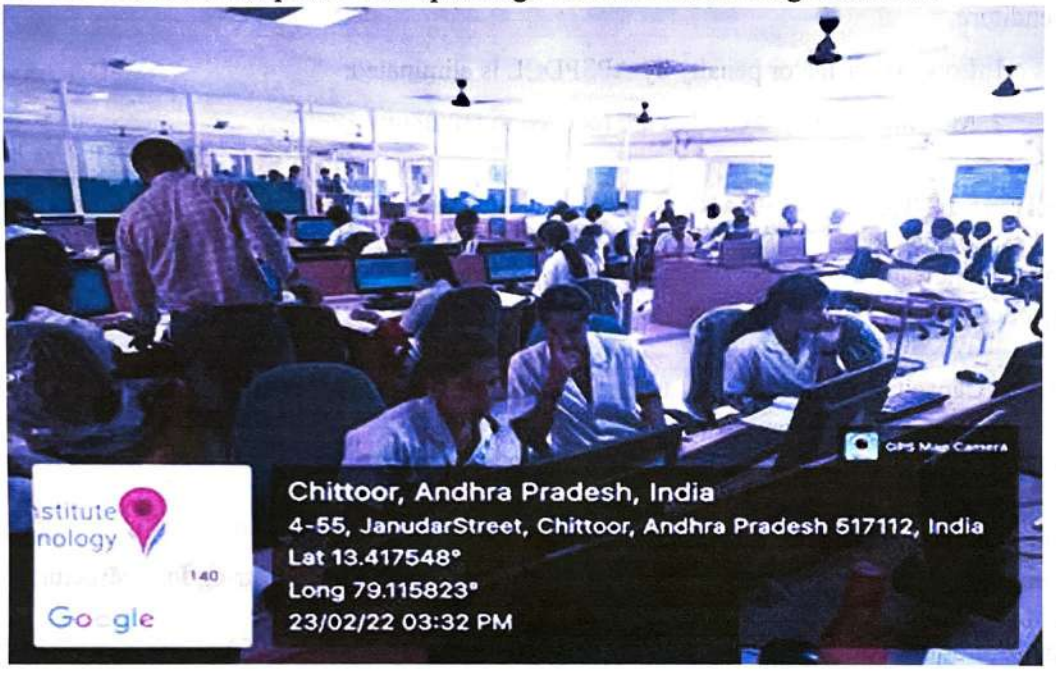

GPS Map Camera
Chittoor, Andhra Pradesh, India
4-55, JanudarStreet, Chittoor, Andhra Pradesh 517112, India
Lat 13.417451°
Long 79.115786°
07/02/22 12:17 PM


GPS Map Camera
Chittoor, Andhra Pradesh, India
4-55, JanudarStreet, Chittoor, Andhra Pradesh 517112, India
Lat 13.417584°
Long 79.11604°
07/02/22 12:27 PM

Chapter: 5

ENERGY EFFICIENT COMPUTING FACILITIES

Vemu Institute of Technology, P.Kothakota is mainly focused on the Computing facilities to the students and staff with latest technologies. The management always encourages the departments to install the Computer laboratories with LED or LCD monitors and low power consumption power supplies. Hence, all the laboratories are maintained with latest configuration with LED/LCD monitors with power back up through UPS.The details are given below.



S.No	Name of the Dept	Number of Systems
1	Administration	17
2	H&S	72
3	CSE	421
4	ECE	125
5	EEE	39
6	Mechanical	37
7	Civil	33
8	MBA	62
9	Library	32
10	Hostels & others	7
TOTAL		**845**

The College also installed a separate computer laboratory with 30 Laptops in Skill development centre to save the power

Chapter: 6

ENERGY EFFICIENT SOLAR PV SYSTEM

The college is having 200 kWp capacity roof-top solar plant producing 21600 units of electric power generation per month on average. Solar power plant is contributing 100% supply to the demand of the college during day time. We are exporting solar power generation to the grid (APSPDCL) during holidays. The solar power generation saved the following energy expenditure.

1. Low power factor penalty by APSPDCL is eliminated.
2. Maximum demand charges are reduced to minimum.

SALIENT DETAILS OF PLANT

Plant established in	:	2017
Type of Renewable Energy	:	Solar Power
Project cost	:	1.10 CRORES (APPROX.)
Installed Capacity of Plant	:	200 KWp
Total number of modules and make	:	630, SWELECT
Mode of execution	:	RESCO MODEL
Rating of each panel	:	230W, 37V, 8.65A
Configuration of panels	:	18 panels per 1 structure,1 string for 2 structures
No of roofs used	:	5 ROOFS
Total rooftop solar area	:	2100 SQ. MTRS (APPROX.)
Inverters	:	5 (MAKE – DELTA)
Inverter	:	50KVA-3nos 30KVA-1nos 20KVA-1nos
Inverter configuration	:	Inverter 1 connected to 8 strings with 144 panels Inverter 2 connected to 8 strings with 144 panels Inverter 3 connected to 6 strings with 108 panels Inverter 4 connected to 9 strings with 162 panels Inverter 5 connected to 4 strings with 72 panels
Average monthly generation	:	21,600 Units

Project cost recovery period including O&M : 25 years

Solar energy details for 2018

MONTH & YEAR	Solar Energy Generated (KWH)-1	Energy exported to SPDCL from Solar (KWH) (2)	Energy consumption from Solar(3)= (1)- (2) (KWH)	Energy consumption from SPDCL (KWH) (4)	Total Energy consumption (5)=(3)+(4)(KWH)	Surplus/deficit energy (6)=(1) - (5) (KWH)
Jan-18	19803	10644	9159	9890	19049	754
Feb-18	14005	11398	2607	8118	10725	3280
Mar-18	16083	4992	11091	10250	21341	-5258
Apr-18	24287	6008	18279	12336	30615	-6328
May-18	20525	6822	13703	12844	26547	-6022
Jun-18	23619	8280	15339	9732	25071	-1452
Jul-18	21577	11214	10363	7294	17657	3920
Aug-18	23001	8666	14335	12986	27321	-4320
Sep-18	27209	7244	19965	15630	35595	-8386
Oct-18	24741	10774	13967	13628	27595	-2854
Nov-18	22172	13184	8988	11764	20752	1420
Dec-18	22928	10952	11976	11236	23212	-284
Total	259950	110178	149772	135708	285480	-25530
Average	21663	9182	12481	11309	23790	-2128

Solar energy details for 2019

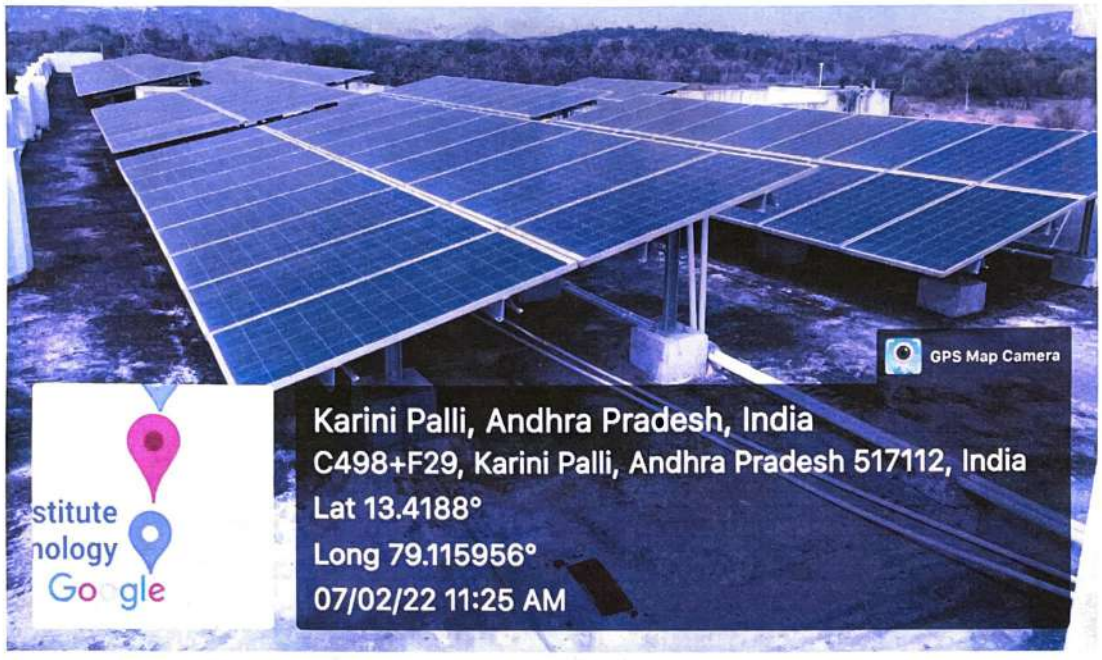
MONTH & YEAR	Solar Energy Generated (KWH)-1	Energy exported to SPDCL from Solar (KWH) (2)	Energy consumption from Solar(3)= (1)- (2) (KWH)	Energy consumption from SPDCL (KWH) (4)	Total Energy consumption (5)=(3)+(4)(KWH)	Surplus/deficit energy (6)=(1) - (5) (KWH)
Jan-19	17149	13760	3389	9086	12475	4674
Feb-19	23394	7880	15514	10158	25672	-2278
Mar-19	31805	10180	21625	11604	33229	-1424
Apr-19	21698	9268	12430	13782	26212	-4514
May-19	22490	6828	15662	15646	31308	-8818
Jun-19	26432	8178	18254	16346	34600	-8168
Jul-19	23467	9982	13485	10610	24095	-628
Aug-19	18690	7582	11108	12324	23432	-4742
Sep-19	21218	5430	15788	15028	30816	-9598
Oct-19	21040	7120	13920	15918	29838	-8798
Nov-19	21741	7534	14207	15362	29569	-7828
Dec-19	18945	8208	10737	16344	27081	-8136
Total	268069	101950	166119	162208	328327	-60258
Average	22339	8496	13843	13517	27361	-5022

Solar energy details for 2020

MONTH & YEAR	Solar Energy Generated (KWH)-1	Energy exported to SPDCL from Solar (KWH) (2)	Energy consumption from Solar(3)= (1)- (2) (KWH)	Energy consumption from SPDCL (KWH) (4)	Total Energy consumption (5)=(3)+(4) (KWH)	Surplus/deficit energy (6)=(1) - (5) (KWH)
Jan-20	24407	9074	15333	11814	27147	-2740
Feb-20	21489	12284	9205	10266	19471	2018
Mar-20	23416	8992	14424	14214	28638	-5222
Apr-20	23216	11772	11444	13860	25304	-2088
May-20	23316	18042	5274	4818	10092	13224
Jun-20	19742	14806	4936	4036	8972	10770
Jul-20	20609	15020	5589	3650	9239	11370
Aug-20	19454	16702	2752	3492	6244	13210
Sep-20	18494	14798	3696	3368	7064	11430
Oct-20	21558	11350	10208	4588	14796	6762
Nov-20	16277	14670	1607	5220	6827	9450
Dec-20	16800	9234	7566	8576	16142	658
Total	248778	156744	92034	87902	179936	68842
Average	20732	13062	7670	7325	14995	5737

Consolidated solar energy generation details for the period 2018-2020

YEAR	Solar Energy Generated (KWH)-1	Energy exported to SPDCL from Solar (KWH) (2)	Energy consumption from Solar(3)= (1)- (2) (KWH)	Energy consumption from SPDCL (KWH) (4)	Total Energy consumption (5)=(3)+(4) (KWH)	Surplus/deficit energy (6)=(1) - (5) (KWH)
2018	259950	110178	149772	135708	285480	-25530
2019	268069	101950	166119	162208	328327	-60258
2020	248778	156744	92034	87902	179936	68842
Avg/ year	258932	122957	135975	128606	264581	-5649
Avg/ month	21578	10246	11331	10717	22048	-471


GPS Map Camera
Karini Palli, Andhra Pradesh, India
C498+F29, Karini Palli, Andhra Pradesh 517112, India
Lat 13.4188°
Long 79.115956°
07/02/22 11:25 AM


GPS Map Camera
Karini Palli, Andhra Pradesh, India
C498+F29, Karini Palli, Andhra Pradesh 517112, India
Lat 13.418821°
Long 79.115988°
07/02/22 11:24 AM


INVERTER-4
50KW
GPS Map Camera
Karini Palli, Andhra Pradesh, India
C498+F29, Karini Palli, Andhra Pradesh 517112, India
Lat 13.418314°
Long 79.115506°
07/02/22 11:38 AM


GPS Map Camera
Karini Palli, Andhra Pradesh, India
C498+F29, Karini Palli, Andhra Pradesh 517112, India
Lat 13.418221°
Long 79.115342°
07/02/22 11:43 AM

Conclusion:

In conclusion, data generated in Energy audit are useful to understand the energy distribution and utilization for college. The connected load of the institute is **408.42 kW**.

The institute is using several energy efficient practices such as all computing systems with LED monitors, effective renewable energy generation and consumption through solar power plant, most of the air conditioners are of 5 star rating, 30% of the lighting system with LED lights etc.

Recommendation:

1) Replace all fluorescent lights with LED lights, to save more power.
2) Separate connection to Office, Computer Lab and classroom.
3) Replace all Fans with 5-star energy saving or BLDC Fan
4) Replace the existing 3 star air conditioning with 5 star rating.

Results and Discussion:

As per concerning the energy audit, Electricity audit is main concern regarding Educational institution. We have collected data by considering the tube light, fan, computer, Printer, A.C and instruments.

The total connected load is **408. 42 kW**.

Energy Consumption by all devices is **22000 Units /Month** and

Renewable energy Generated **21600 Units/Month.**

Dr. Naveen Kilari
Principal

EXTERNAL MEMBER

PRINCIPAL
Vemu Institute of Technology
P. Kothakota