SUSTAINABILITY REPORT

MEHRAN UNIVERSITY OF ENGINERING & TECHNOLOGY, PAKISTAN

UIGreen Metric

The UIGreenMetric is a comprehensive evaluation framework developed to assess the environmental sustainability efforts of higher education institutions. This metric focuses on key areas critical to achieving sustainable development within campus settings. The metric encompasses six main fields:

1. Settings and Infrastructure: This category examines the foundational aspects of an institution's physical and organizational setup. It includes factors like the type of institution, climate, campus settings, and facilities. Additionally, it looks into areas dedicated to vegetation and water absorption, the ratio of open spaces, and the availability of facilities for health, safety, disability, and conservation. The budget allocations for sustainability and building maintenance are also analyzed to understand the institution's commitment to sustainable infrastructure.

2. Energy and Climate Change: This field evaluates energy consumption and the implementation of eco-friendly technologies. Key metrics include the use of energy-efficient appliances, renewable energy sources, carbon footprint reduction, and smart building initiatives. The university's program for climate change impact and greenhouse gas mitigation highlights its active role in climate stewardship.

3. Waste Management: This section focuses on the institution's practices in waste reduction, recycling, and treatment. The metric includes programs to decrease paper and plastic usage, as well as the treatment of organic, inorganic, and toxic waste. A comprehensive waste management strategy is essential to minimize environmental impact, and the Green UI Metric evaluates the success and scope of these efforts.

4. Water Conservation: Addressing water efficiency, this category considers water conservation programs, recycling initiatives, and the use of efficient appliances. It assesses the consumption of treated water and strategies to control water pollution, emphasizing the importance of sustainable water use practices within the campus.

5. Transportation: This area focuses on minimizing transportation-related emissions and congestion. Metrics include the number of vehicles on campus, availability of shuttle services, and policies promoting zero-emission vehicles. Additionally, the metric assesses the campus's pedestrian pathways and programs to reduce private vehicle usage, supporting a greener campus commute.

6. Education and Research: This field examines how institutions contribute to sustainability through academic offerings and research. It evaluates the proportion of sustainability-related courses, funding for sustainability research, and the impact of published works. Community engagement through events, collaborations, and programs related to sustainability are also measured, along with initiatives aimed at promoting green career paths for graduates.

The UIGreen Metric provides a structured approach for universities to measure and improve their sustainability efforts across these domains. By fostering a data-driven evaluation, it enables institutions to implement effective, environmentally friendly practices and become active contributors to sustainable development.

TABLE OF CONTENT

26	1.24 Planning and implementation of all programs related to settings and infrastructure
27	2 Energy and Climate Change (EC)
28	2.1 Energy efficient appliances usage
29	2.2 Total campus smart building area
30	2.3 Smart building implementation
31	2.4 Number of renewable energy sources
32	2.5 Renewable energy sources and amount of energy produced
33	2.6 Electricity usage per year
34	2.7 Total electricity usage divided by total campus population
35	2.8 Ratio of renewable energy production divided by total energy usage
36	2.9 Elements for green building implementation
37	2.10 Greenhouse gas emission reduction program
38	2.11 Total carbon footprint
39	2.12 Total carbon footprint divided by total campus population
40	2.13 Number of innovative programs in energy and climate change
41	2.14 Impactful university program for climate change
42	2.15 Planning and implementation of all programs related to energy and climate change
43	3 Waste
44	3.1 TR programs for university based
45	3.2 Program to reduce the use of paper and plastic
46	3.3 Volume of organic waste produced
47	3.4 Volume of organic waste treated
48	3.5 Organic waste treatment
49	3.6 Volume of inorganic waste produced
50	3.7 Volume of inorganic waste treated
51	3.8 Inorganic waste treatment
52	3.9 Volume of toxic waste produced

53	3.10 Volume of toxic waste treated
54	3.11 Toxic waste treatment
55	3.12 Sewage disposal
56	3.13 Planning and implementation of all programs related to waste management
57	4 Water
58	4.1 Water Conservation Program Implementation
59	4.2 Water Recycling Program Implementation
60	4.3 Water Efficient Appliances Usage
61	4.4 Consumption of treated water
62	4.5 Water pollution control in campus area
63	4.6 Planning and implementation of water management programs
64	5 Transportation
65	5.1 Number of cars actively used
66	5.2 Number of cars entering university
67	5.3 Number of motorcycles entering university
68	5.4 Total number of vehicles by total campus population
69	5.5 Shuttle service
70	5.6 Number of shuttles operated in university
71	5.7 Average number of passengers in each shuttle
72	5.8 Total trips of shuttle services each day
73	5.9 Zero emission vehicle policy on campus
74	5.10 Average number of zero emission vehicle on campus per day
75	5.11 Total number of zero emission vehicle divided by total campus population
76	5.12 Total ground parking area

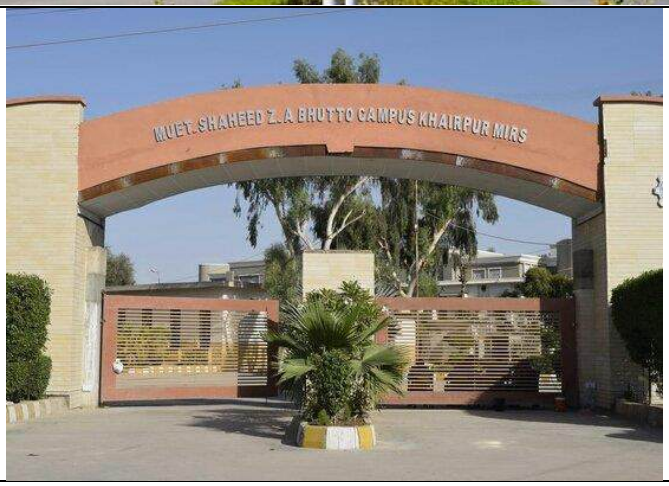
77	5.13 Ratio of parking area to total campus area
78	5.14 Transportation program designed to limit parking area on campus
79	5.15 Number of initiatives to decrease private vehicles on campus
80	5.16 Pedestrian path on campus
81	5.17 Approximate travel distance of vehicles inside campus
82	5.18 Planning and implementation of all programs related to transportation
83	6 Education and Research
84	6.1 Number of courses related to sustainability
85	6.2 Number of courses offered
86	6.3 Ratio of sustainability courses to total courses
87	6.4 Total research funds dedicated to sustainability
88	6.5 Total research funds
89	6.6 Ratio of sustainability research funding to total research funding
90	6.7 Number of publications on sustainability
91	6.8 Number of events related to sustainability
92	6.9 Number of activities related to sustainability
93	6.10 University sustainability website
94	6.11 University sustainability website URL
95	6.12 University sustainability Report
96	6.13 University sustainability Report link address
97	6.14 Number of cultural activities on campus
98	6.15 Number of university programs with international collaboration
99	6.16 Number of community services related to sustainability
100	6.17 Number of startups related to sustainability

101	6.18 Total number of graduates with green jobs
102	6.19 Availability of offices that coordinate with sustainability
103	6.20 Planning and implementation of university governance

1. Settings and Infrastructure

Mehran University of Engineering and Technology (MUET), located in Jamshoro, is committed to sustainability through its campus design and infrastructure. The university incorporates green building practices, such as energy-efficient designs, the use of sustainable materials, and the integration of natural landscapes to promote biodiversity. The campus layout facilitates easy access to educational facilities and promotes a pedestrian-friendly environment. Furthermore, MUET has invested in renewable energy sources, such as solar panels, to power its buildings, reducing reliance on non-renewable resources and minimizing its carbon footprint.

[1.3] Number of Campus Sites

	Mehran University of Engineering and Technology, Jamshoro
	Mehran University of Engineering and Technology Shaheed Zulfiqar Ali Bhutto Campus, Khairpur Mir's.

Description:

Mehran University of Engineering and Technology is a Public Sector University, catering to the future engineering Professional's demand of Sindh province in particular and Pakistan in broader sense. It was

initially established as Sindh University Engineering College of University of Sindh in 1963, later upgraded to the level of full-fledged independent university on 1st March 1977.

Mehran University of Engineering and Technology, Jamshoro offers Undergraduate, Postgraduate Research and Doctoral Research Programs in various Engineering, Science and Technology fields. Mehran University is situated on an ideal place from each perspective because it can be accessed through three main districts of Pakistan, namely Jamshoro, Hyderabad and Karachi.

MUET SZAB Campus was established in 2010 as a constituent college of Mehran University. The college has been upgraded as a Campus and renamed as "Mehran University of Engineering & Technology, SZAB Khairpur Mir's Campus".

The primary mission of Mehran University SZAB Campus Department is the education of professionals who can define and deliver utmost Professionalism at its very high.

Additional evidence link:

1. https://www.muet.edu.pk/university/brief-history
2. http://muetkhp.edu.pk

[1.4] Campus Setting

Campus Setting - Rural (Jamshoro)

Description:

Mehran University of Engineering and Technology, Jamshoro is in **Rural area** of Jamshoro District. The total geographical area of the district is 11,517 square kilometers. It is about 220 kilometers from north to south and about 100 kilometers wide from east to west. A 2 to 6 kilometers wide belt of the west bank

of River Indus is cultivated and irrigated and the remaining land of the district is either hilly or cultivated. Agriculture is the main source of income.

Hence the correct option would be **[1] Rural.**

[1.5] Total Campus Area (meter^2)

Mehran University of Engineering & Technology, Jamshoro

Description:

Total Area of the MUET, Jamshoro is highlighted and shown as the outlined boundary line (in white color) in the above image (Academic Area).

Total area: **1.661 km² = 1697825 m²**

[1.7] Total campus buildings area

Department of Civil Engineering	Central Library & Online Information Centre
	

Area: **8005** m2	Area: **3,292** m2

Description:

Building name	Total Area
Information Communication Processing Centre (ICPC) (Data Center of the Mehran UET) - Irrigation W. R	230
Department of Chemical Engineering	2,002
Two Classrooms for the Department of Chemical Engineering	208
Department of Industrial Management Engineering	1,109
Department of Mining Engineering i/c extension lab	1,228
Department of Metallurgy & Materials Engineering	1,300
Remaining Work of Classrooms of Ind. Min. & Met. Engineering Department	858
Department of Electronic Engineering	1,976
Department of Computer System Engineering	1,976
Department of Architecture	1,724
Department of Textile Engineering	4,109
Extension of Knitting Lab at Textile Engineering Department	315
Two Add. Classrooms for Textile Engineering Department	140
Institute of Petroleum & Natural Gas Engineering	2,540
Auditorium Building	989
Mechanical Workshop Building I & II	1,720
Central Cafeteria	465
Central Library (OLD)	567
Old Administration Building	4,182
English Language Development Centre (OLD) Building	845
Electrical Engineering Department (Old civil)	1,386
Electrical Engineering Department (Old) + classrooms	1,722
Mechanical Engineering Department (Old) + classrooms	1,722
Basic Science & Related Studies Department	1,852
Central Library & Online Information Centre	3,292
Administration Block (New)	7,195
Transport Directorate (Bus Parking Shed)	156
Sports Complex	2,404
Department of Telecommunication Engineering (ICT)	3,472

Department of Civil Engineering	8,005
Department of Software Engineering	2,748
Deptt. of City & Regional Planning (CRP)	2,040
Bio-Medical Engineering Department	2,116
Mehran University Institute of Science Technology & Development (MUISTD) - IIEC	1,975
Institute of Information Technology (IIT)	2,385
Environmental Engineering Department	1,586
ORIC	1,155
Student Teachers Centre	1,912
Innovation Centre	465
Project Directorate (Old)	706
English Language Development Center (NEW)	1,395
Institute of Water Resource Engineering & Management	1,058
U.S.-Pakistan Center for Advanced Studies in Water (USPCAS-W)	3,721
Hill Top Canteen	97
Main Gate	179
Science & Technology Park	1,046
R & D I	2,605
R & D II	1,674
Mehran University Higher Secondary Public School	1,851
Pre-Nursery/Baby Dare Care Hall	331
Total Area (m^2)	90,736

[1.8] The ratio of open space area to total area

Description:

Ratio of open space area to total = (Total Campus Area –Total campus Buildings area/Total Campus Area) *100

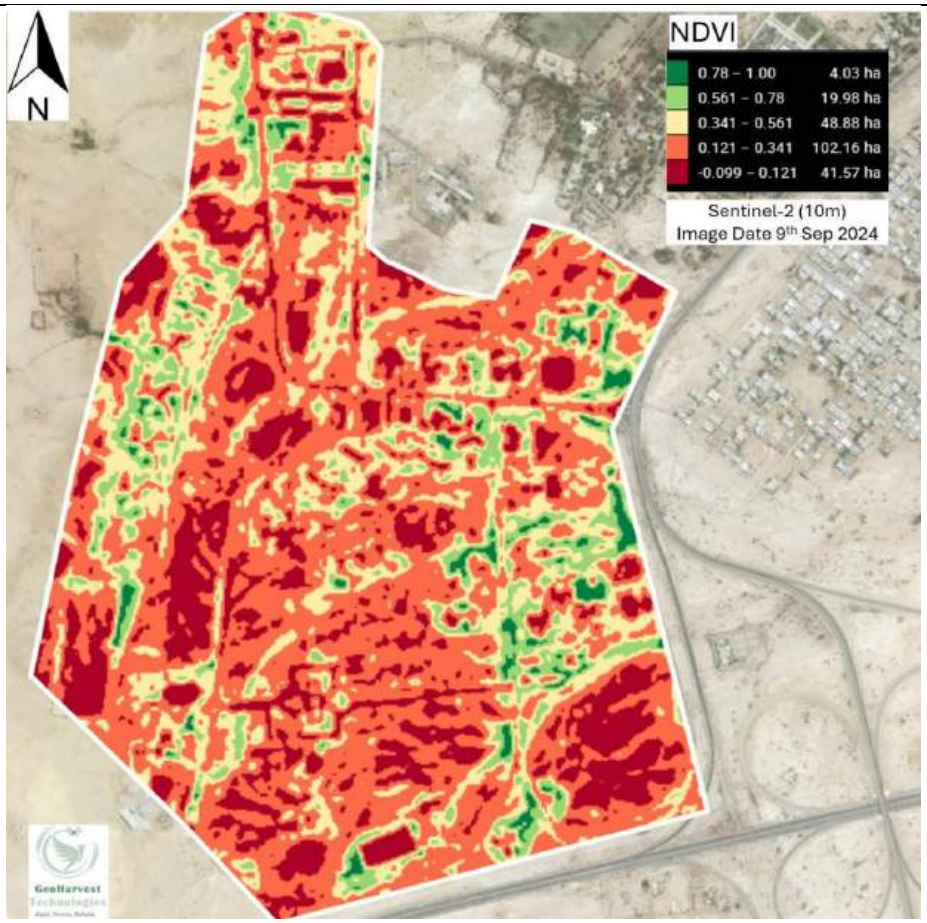
{(1697825 m^2 – 90736 m^2) / 197825 m^2} * 100

Ratio of open space towards total area: 94.6%

Hence the correct option would be [4] > 90 - 95%.

[1.9] Total area on campus covered in forest vegetation (meter^2)

Real drone-based pictures of forest Vegetation Area (Mehran UET, Jamshoro)



	Forest Vegetation
	Planted Vegetation
	Barren Soil

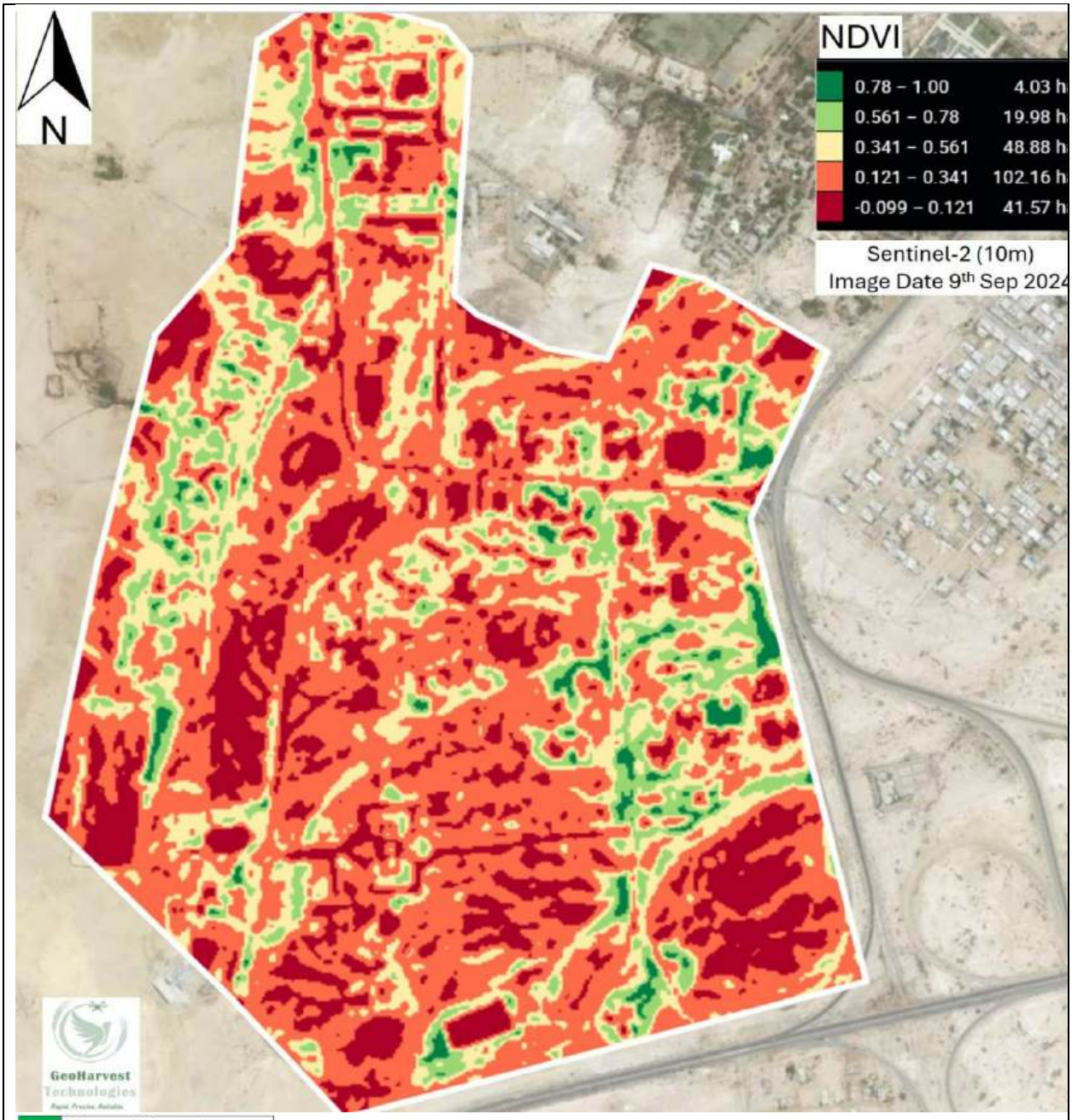
GIS based realtime data calculated on 09th September, 2024

Description:
Total planted vegetation area: 24.01 hectare= 240,000m^2
Total Area= 216.62 hectare= 2,166,200 m^2
Percentage area: 11 %

Hence the correct option would be **[3] > 9 - 22%.**

[1.10] Total area on campus covered in planted vegetation (meter^2)

Real pictures of forest Vegetation Area (Mehran UET, Jamshoro)



GIS based realtime data caculated on 09th September, 2024

Description:

Total planted and vegetation area: 48.88 ha= 488,800 m^2

Total Area= 216.62 hectare= 2,166,200 m^2

Percentage area: 22.56%

Hence the correct option would be **[3] > 20 - 30%.**

[1.11] Total area on campus for water absorption besides the forest and planted vegetation (meter^2)

Images showing area on campus for water absorption besides the forest and planted vegetation
(Mehran UET, Jamshoro)

Description:
Total **water absorption** area: 1423146 m^2
Total Area: 1,661,825 m^2
Percentage area: 14%
Hence the correct option would be **[3] > 10 - 20%.**

[1.17] Percentage of university budget for sustainability efforts

Description:

The evidence is made available as a signed document from the Finance Department of MUET (please turn overto the next page)

1.16. Total University Budget (in US Dollars)

Campus	Average Rs in Millions	USD Rs in Millions Doller Rate in Pak Rs.278.34 as on 28-6-24
MUET Main Campus Jamshoro (Including Development Budget)	3,978.541	14.294
(USPCAS-W)	69.284	0.249
SZAB Campus Khairpur Mir's	613.994	2.206
TOTAL	**4,661.818**	**16.749**

1.17. University Budget for Sustainability (in US Dollars)

Campus	Average Rs in Millions	USD Rs in Millions Doller Rate in Pak Rs.278.34 as on 28-6-24
MUET Main Campus Jamshoro (Including Development Budget)	415.353	1.492
(USPCAS-W)	263.326	0.946
SZAB Campus Khairpur Mir's	279.530	1.004
TOTAL	**958.210**	**3.443**

1.18. Percentage of University Budget for Sustainability efforts within a year (in US Dollar

		%age
		20.55%

12/09/24
Director Finance
Mehran University of Engg
& Tech Jamshoro.

MEHRAN UNIVERSITY OF ENGINEERING & TECHNOLOGY, JAMSHORO

Main Campus Jamshoro

Rupees im Million

Code No.	Budget Heads	Revised Budget Estimates 2021-22	Revised Budget Estimates 2022-23	Revised Budget Estimates 2023-24	Total of last Three Years Budget	Percentage	Net Amount
A03801	Training - Domestic	0.100	0.293	1.451	1.844	100	0.615
A03903	Conferences / Seminars / Workshops / Symposia	1.955	2.105	0.685	4.745	100	1.582
A03919	Payments to Other services rendered -Security Service	89.637	89.933	81.589	261.159	100	87.053
A13801	Maintenance of Gardens	0.842	0.530	0.235	1.607	100	0.536
A06202	Contribution to International Agencies	0.337	0.205	0.505	1.047	100	0.349
A09409	Medical Books / Library Books	8.046	7.989	18.816	34.851	100	11.617
A1247002	Others - Civil Works Construction of Building and Structures (SF)	1.446	0.308	0.934	2.688	100	0.896
A0220101	Research and Surveys	29.396	39.007	-	68.403	100	22.801
A0220102	Research and Survey (SF)	19.634	10.578	39.197	69.409	100	23.136
A09412	Specific Utility Chemicals and Glassware	0.918	0.399	0.873	2.190	100	0.730
A09601	Purchase of Plant & Machinery	8.518	2.958	1.310	12.786	100	4.262
Total							153.576
	Development	59.469	35.127	428.957	523.553	100	261.777
Total							415.353

12/09/24

Director Finance
Mehran University of Engg
& Tech Jamshoro.

MEHRAN UNIVERSITY OF ENGINEERING & TECHNOLOGY, JAMSHORO
USPCAS MUET Jamshoro

Rupees im Million

Code No.	Budget Heads	Revised Budget Estimates 2021-22	Revised Budget Estimates 2022-23	Revised Budget Estimates 2023-24	Total of last Three Years Budget	Percentage	Net Amount
A03801	Training - Domestic	0.067	0.180	-	0.247	100	0.082
A03903	Conferences / Seminars / Workshops / Symposia	0.503	1.829	0.271	2.603	100	0.868
A03919	Payments to Other services rendered -Security Service		-	-	-	100	-
A13801	Maintenance of Gardens		-	-	-	100	-
A06202	Contribution to International Agencies	0.006	-	-	0.006	100	0.002
A09409	Medical Books / Library Books	-	-	-	-	100	-
A1247002	Others - Civil Works Construction of Building and Structures (SF)	-	-	-	-	100	-
A0220101	Research and Surveys	0.530	0.390	0.874	1.794	100	0.598
A0220102	Research and Survey (SF)	-	-	-	-	100	-
A09412	Specific Utility Chemicals and Glassware	-	-	-	-	100	-
A09601	Purchase of Plant & Machinery		-	-	-	100	-
Total							1.550
	Development	59.469	35.127	428.957	523.553	100	261.777
Total							263.326

Mehran University of Engg
& Tech Jamshoro.

MEHRAN UNIVERSITY OF ENGINEERING & TECHNOLOGY, JAMSHORO
SZAB Campus Khairpur Mir's

Rupees im Million

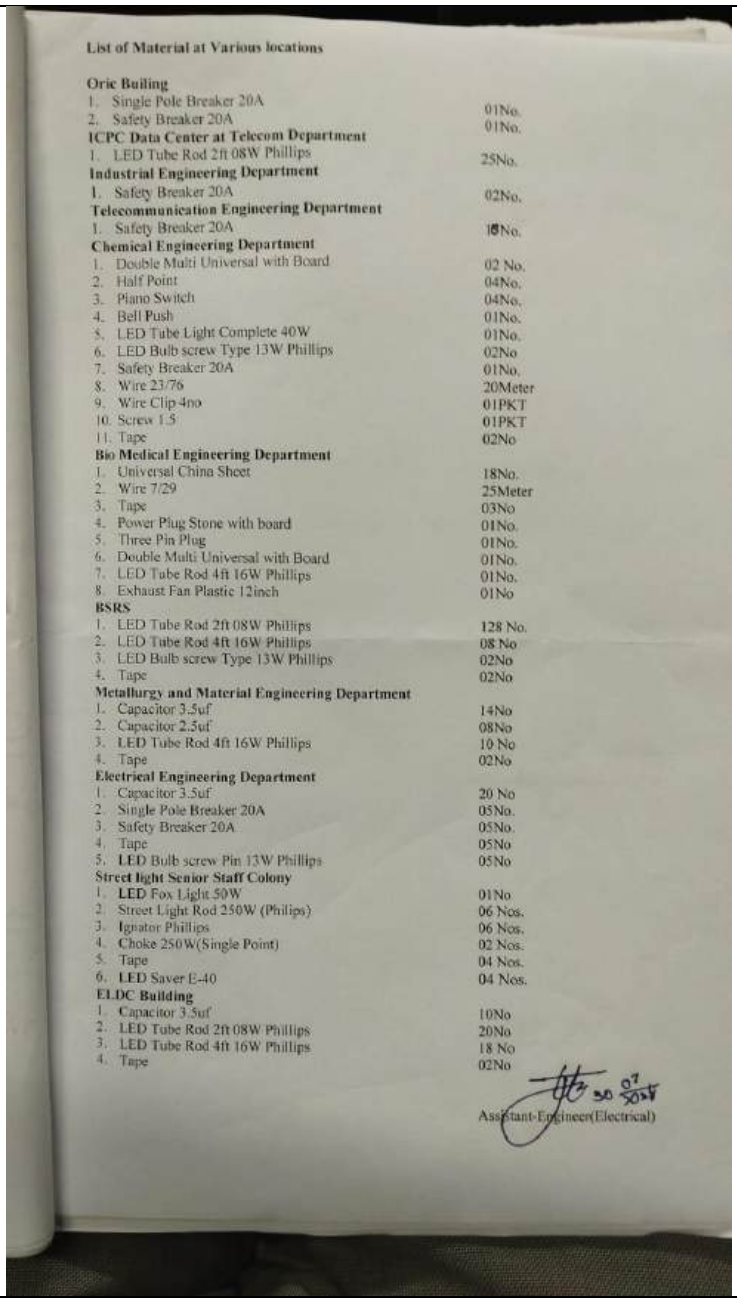
Code No.	Budget Heads	Revised Budget Estimates 2021-22	Revised Budget Estimates 2022-23	Revised Budget Estimates 2023-24	Total of last Three Years Budget	Percentage	Net Amount
A03801	Training - Domestic	0.019	0.025	-	**0.044**	100	0.015
A03903	Conferences / Seminars / Workshops / Symposia	1.270	0.097	0.060	**1.427**	100	0.476
A03919	Payments to Other services rendered -Security Service	16.829	16.282	15.533	**48.644**	100	16.215
A13801	Maintenance of Gardens	0.048	0.010	0.038	**0.096**	100	0.032
A06202	Contribution to International Agencies	-	-	-	-	100	-
A09409	Medical Books / Library Books	-	-	-	-	100	-
A1247002	Others - Civil Works Construction of Building and Structures (SF)	-	-	-	-	100	-
A0220101	Research and Surveys	2.120	0.154	-	**2.274**	100	0.758
A0220102	Research and Survey (SF)	-	-	-	-	100	-
A09412	Specific Utility Chemicals and Glassware	-	-	-	-	100	-
A09601	Purchase of Plant & Machinery	0.486	0.291	-	**0.777**	100	0.259
Total							**17.754**
	Development	59.469	35.127	428.957	**523.553**	100	**261.777**
Total							**279.530**

12/09/24

Mehran University of Engg. & Tech. Jamshoro

[1.19] Percentage of operation and maintenance activities of building in one year period

Events	
Energy Efficient Appliances Usage: Use of LED lighting and lamps (MUET, Jamshoro)	
Preventive maintenance of street lamps	

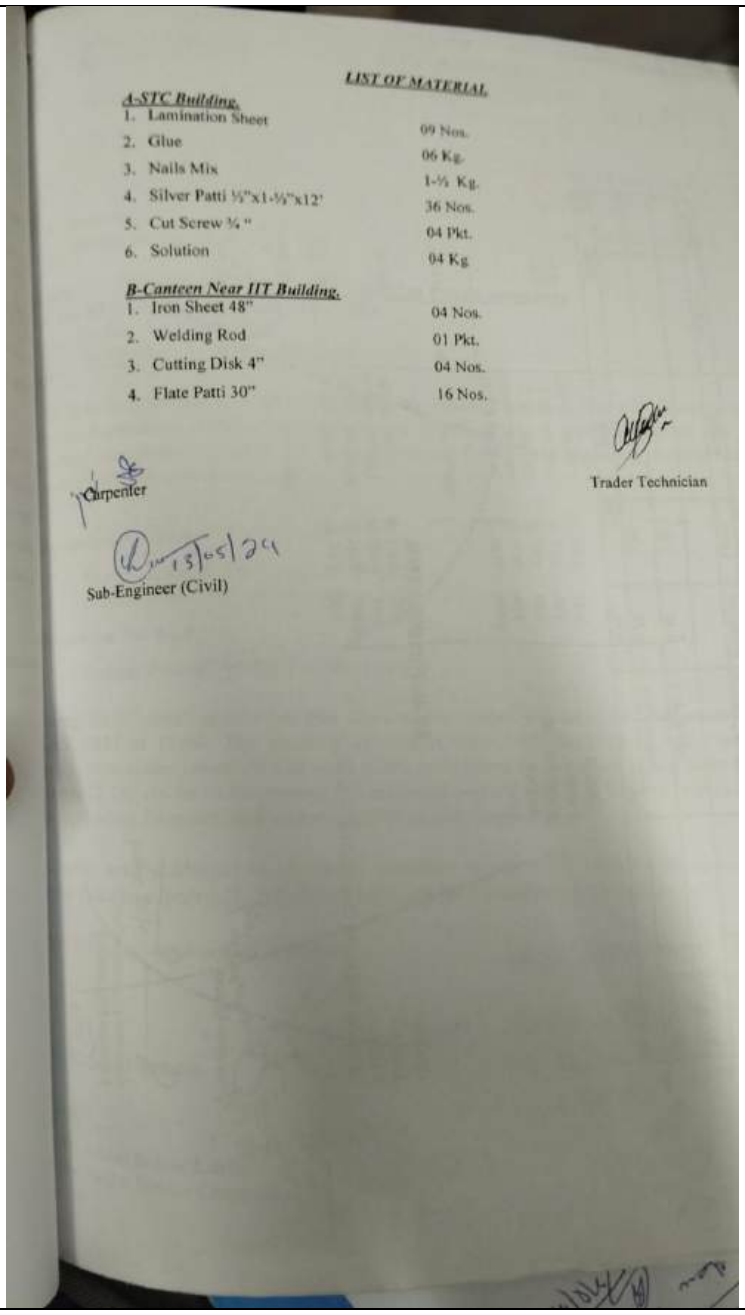
List of materials at various locations of the university	

List of Material at Various locations

Oric Builing	
1. Single Pole Breaker 20A	01No.
2. Safety Breaker 20A	01No.
ICPC Data Center at Telecom Department	
1. LED Tube Rod 2ft 08W Phillips	25No.
Industrial Engineering Department	
1. Safety Breaker 20A	02No.
Telecommunication Engineering Department	
1. Safety Breaker 20A	01No.
Chemical Engineering Department	
1. Double Multi Universal with Board	02 No.
2. Half Point	04No.
3. Piano Switch	04No.
4. Bell Push	01No.
5. LED Tube Light Complete 40W	01No.
6. LED Bulb screw Type 13W Phillips	02No
7. Safety Breaker 20A	01No.
8. Wire 23/76	20Meter
9. Wire Clip 4no	01PKT
10. Screw 1.5	01PKT
11. Tape	02No
Bio Medical Engineering Department	
1. Universal China Sheet	18No.
2. Wire 7/29	25Meter
3. Tape	03No
4. Power Plug Stone with board	01No.
5. Three Pin Plug	01No.
6. Double Multi Universal with Board	01No.
7. LED Tube Rod 4ft 16W Phillips	01No.
8. Exhaust Fan Plastic 12inch	01No
BSRS	
1. LED Tube Rod 2ft 08W Phillips	128 No.
2. LED Tube Rod 4ft 16W Phillips	08 No
3. LED Bulb screw Type 13W Phillips	02No
4. Tape	02No
Metallurgy and Material Engineering Department	
1. Capacitor 3.5uf	14No
2. Capacitor 2.5uf	08No
3. LED Tube Rod 4ft 16W Phillips	10 No
4. Tape	02No
Electrical Engineering Department	
1. Capacitor 3.5uf	20 No
2. Single Pole Breaker 20A	05No.
3. Safety Breaker 20A	05No.
4. Tape	05No
5. LED Bulb screw Pin 13W Phillips	05No
Street light Senior Staff Colony	
1. LED Fox Light 50W	01No
2. Street Light Rod 250W (Philips)	06 Nos.
3. Ignator Phillips	06 Nos.
4. Choke 250W(Single Point)	02 Nos.
5. Tape	04 Nos.
6. LED Saver E-40	04 Nos.
ELDC Building	
1. Capacitor 3.5uf	10No
2. LED Tube Rod 2ft 08W Phillips	20No
3. LED Tube Rod 4ft 16W Phillips	18 No
4. Tape	02No

30 07 2018

Assistant-Engineer(Electrical)



LIST OF MATERIAL

A-STC Building.

1.	Lamination Sheet	09 Nos.
2.	Glue	06 Kg.
3.	Nails Mix	1-½ Kg.
4.	Silver Patti ½"x1-½"x12'	36 Nos.
5.	Cut Screw ¾ "	04 Pkt.
6.	Solution	04 Kg

B-Canteen Near IIT Building.

1.	Iron Sheet 48"	04 Nos.
2.	Welding Rod	01 Pkt.
3.	Cutting Disk 4"	04 Nos.
4.	Flate Patti 30"	16 Nos.

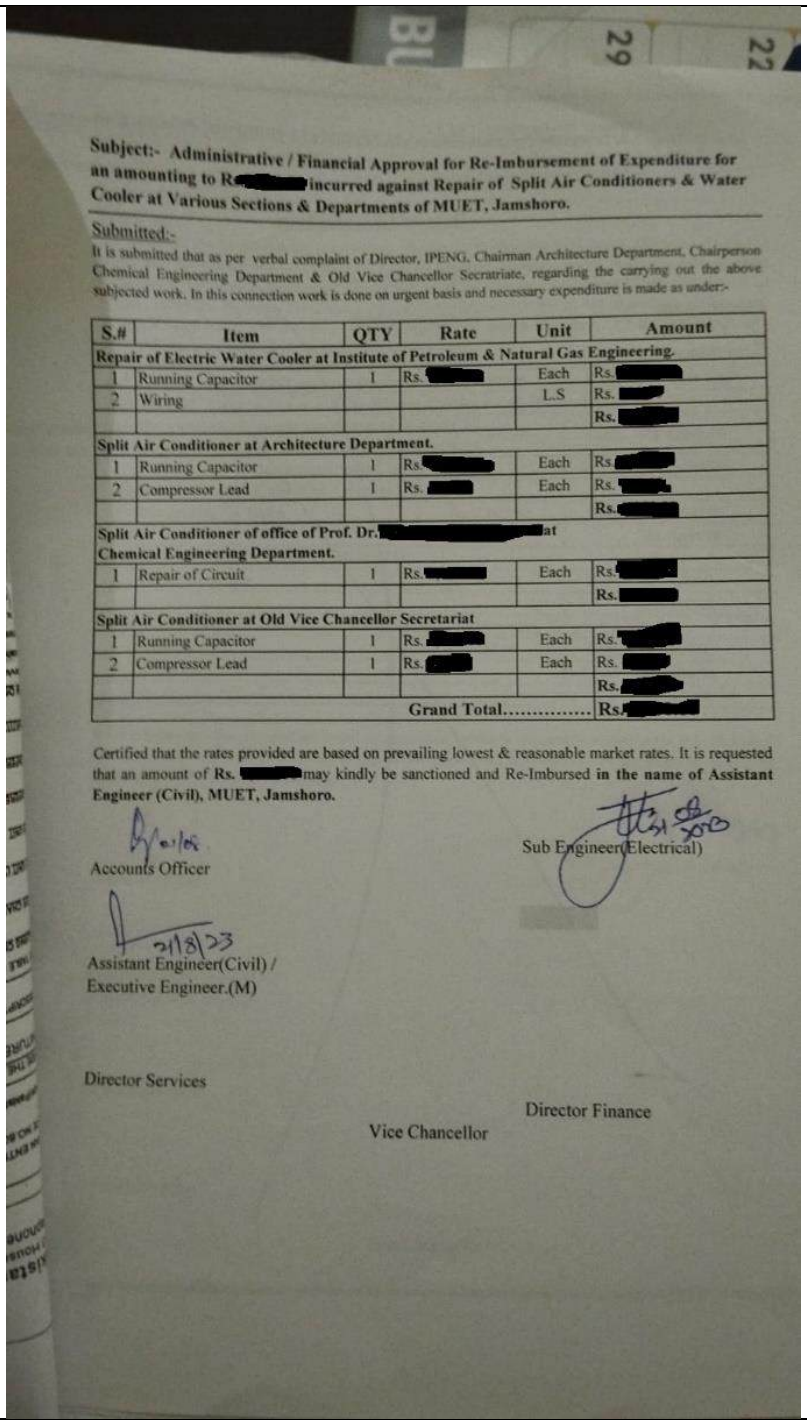
Carpenter

Trader Technician

13/05/24

Sub-Engineer (Civil)

Maintenance of fire safety equipment		

Split Air Conditioners and Water Coolers at various sections and departments	

Subject:- Administrative / Financial Approval for Re-Imbursement of Expenditure for an amounting to R[redacted] incurred against Repair of Split Air Conditioners & Water Cooler at Various Sections & Departments of MUET, Jamshoro.

Submitted:-

It is submitted that as per verbal complaint of Director, IPENG, Chairman Architecture Department, Chairperson Chemical Engineering Department & Old Vice Chancellor Secratriate, regarding the carrying out the above subjected work. In this connection work is done on urgent basis and necessary expenditure is made as under:-

S.#	Item	QTY	Rate	Unit	Amount
Repair of Electric Water Cooler at Institute of Petroleum & Natural Gas Engineering.					
1	Running Capacitor	1	Rs.[redacted]	Each	Rs.[redacted]
2	Wiring			L.S	Rs.[redacted]
					Rs.[redacted]
Split Air Conditioner at Architecture Department.					
1	Running Capacitor	1	Rs.[redacted]	Each	Rs.[redacted]
2	Compressor Lead	1	Rs.[redacted]	Each	Rs.[redacted]
					Rs.[redacted]
Split Air Conditioner of office of Prof. Dr.[redacted]at Chemical Engineering Department.					
1	Repair of Circuit	1	Rs.[redacted]	Each	Rs.[redacted]
					Rs.[redacted]
Split Air Conditioner at Old Vice Chancellor Secretariat					
1	Running Capacitor	1	Rs.[redacted]	Each	Rs.[redacted]
2	Compressor Lead	1	Rs.[redacted]	Each	Rs.[redacted]
					Rs.[redacted]
			Grand Total.....		**Rs.[redacted]**

Certified that the rates provided are based on prevailing lowest & reasonable market rates. It is requested that an amount of **Rs.[redacted]** may kindly be sanctioned and Re-Imbursed **in the name of Assistant Engineer (Civil), MUET, Jamshoro.**

Accounts Officer

Sub Engineer(Electrical)

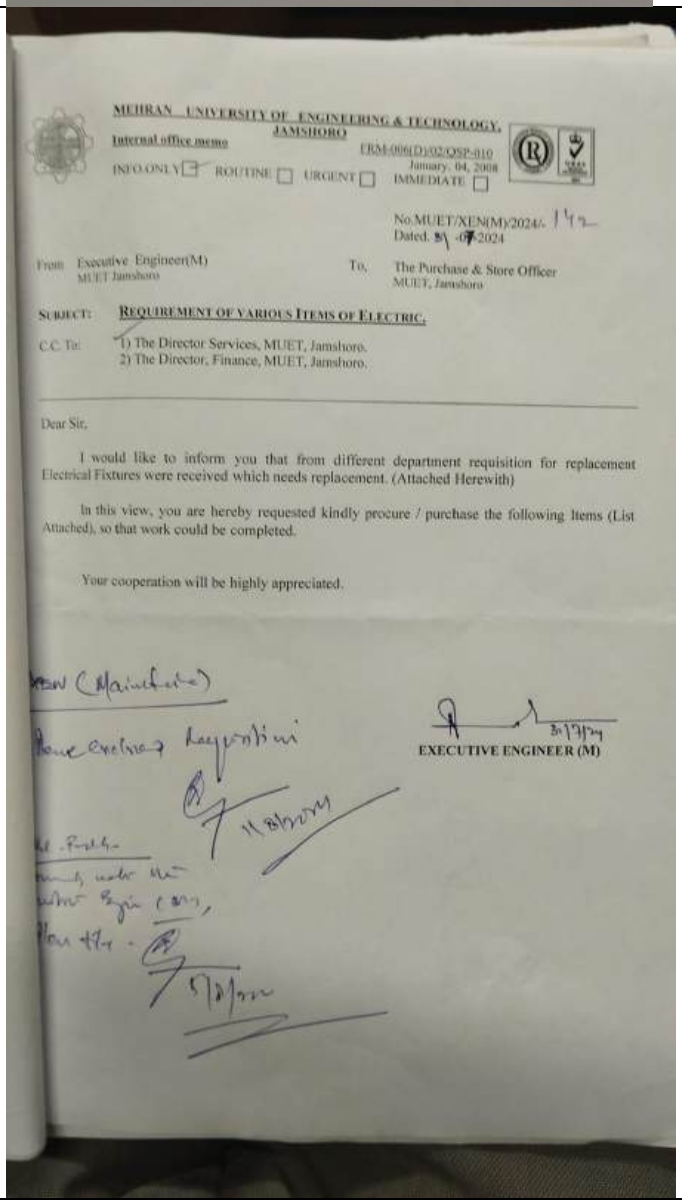
21/8/23

Assistant Engineer(Civil) /
Executive Engineer.(M)

Director Services

Director Finance

Vice Chancellor

		
Electrical equipments		

MEHRAN UNIVERSITY OF ENGINEERING & TECHNOLOGY, JAMSHORO

Internal office memo

FRM-006(D)/02/QSP-010
January, 04, 2008

INFO ONLY ☑ ROUTINE ☐ URGENT ☐ IMMEDIATE ☐

No.MUET/XEN(M)/2024/ 142
Dated. 31-07-2024

From: Executive Engineer(M)
MUET Jamshoro

To, The Purchase & Store Officer
MUET, Jamshoro

SUBJECT: REQUIREMENT OF VARIOUS ITEMS OF ELECTRIC.

C.C. To: 1) The Director Services, MUET, Jamshoro.
2) The Director, Finance, MUET, Jamshoro.

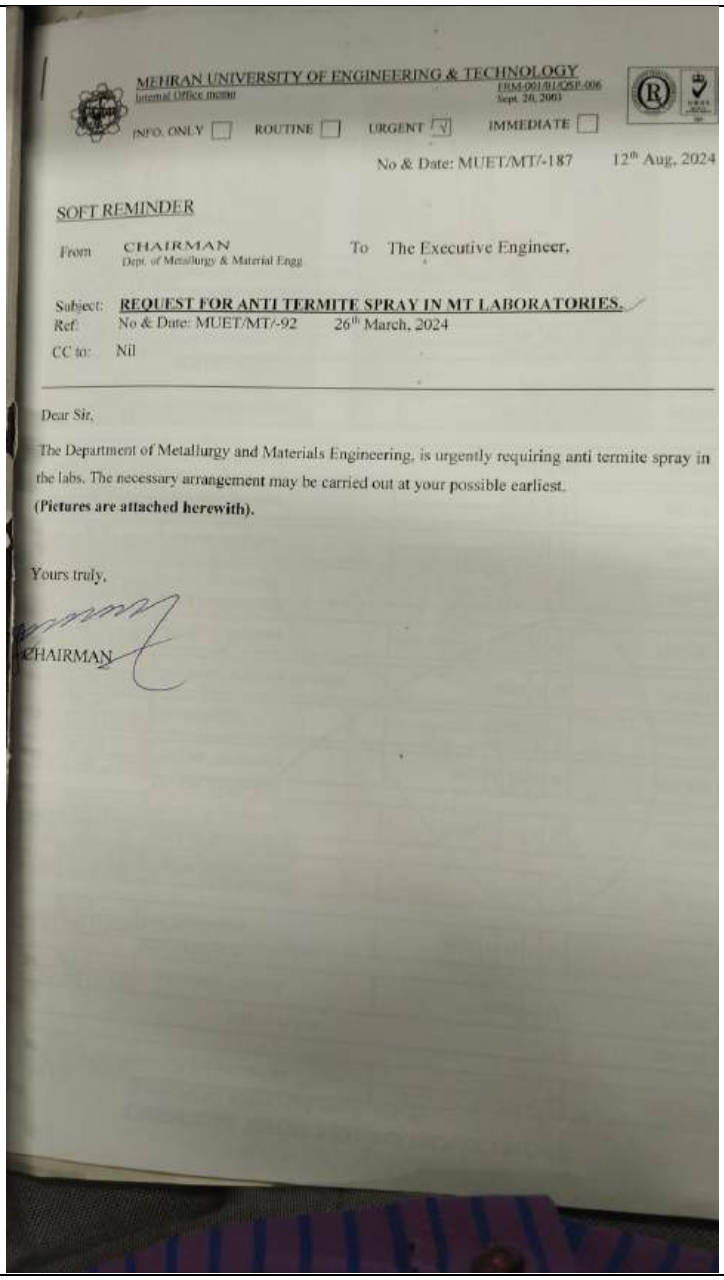
Dear Sir,

I would like to inform you that from different department requisition for replacement Electrical Fixtures were received which needs replacement. (Attached Herewith)

In this view, you are hereby requested kindly procure / purchase the following Items (List Attached), so that work could be completed.

Your cooperation will be highly appreciated.

EXECUTIVE ENGINEER (M)

Anti Termite spray	

MEHRAN UNIVERSITY OF ENGINEERING & TECHNOLOGY
Internal Office memo
FRM-001/01/OSP-006
Sept. 26, 2003

INFO. ONLY ☐ ROUTINE ☐ URGENT ☑ IMMEDIATE ☐

No & Date: MUET/MT/-187 12th Aug, 2024

SOFT REMINDER

From CHAIRMAN
Dept. of Metallurgy & Material Engg

To The Executive Engineer,

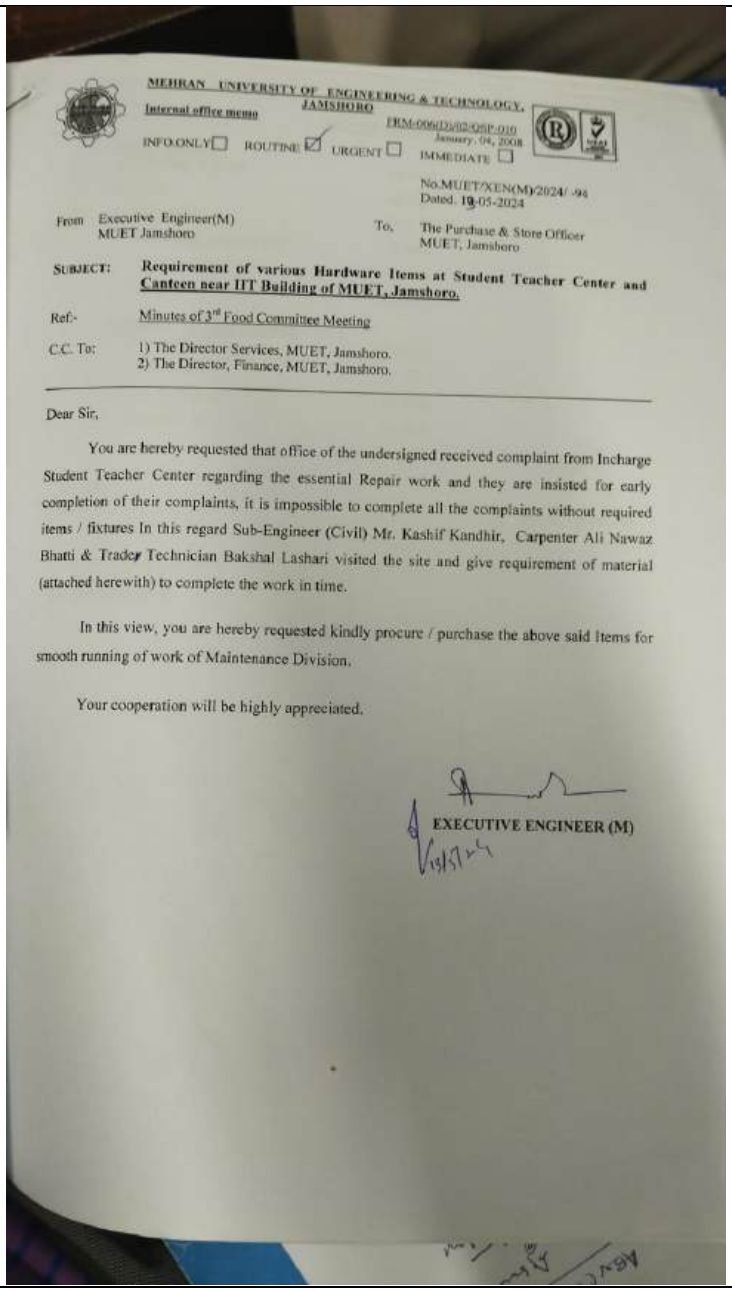
Subject: **REQUEST FOR ANTI TERMITE SPRAY IN MT LABORATORIES.**
Ref: No & Date: MUET/MT/-92 26th March, 2024
CC to: Nil

Dear Sir,

The Department of Metallurgy and Materials Engineering, is urgently requiring anti termite spray in the labs. The necessary arrangement may be carried out at your possible earliest.
(Pictures are attached herewith).

Yours truly,

CHAIRMAN

Repair and Maintenance Record – Action Taken	

MEHRAN UNIVERSITY OF ENGINEERING & TECHNOLOGY, JAMSHORO

Internal office memo

FRM-006(D)/02-QSP-010 January, 04, 2008

INFO.ONLY ☐ ROUTINE ☑ URGENT ☐ IMMEDIATE ☐

No.MUET/XEN(M)/2024/ -94
Dated. 10-05-2024

From Executive Engineer(M)
MUET Jamshoro

To, The Purchase & Store Officer
MUET, Jamshoro

SUBJECT: **Requirement of various Hardware Items at Student Teacher Center and Canteen near IIT Building of MUET, Jamshoro.**

Ref:- Minutes of 3rd Food Committee Meeting

C.C. To: 1) The Director Services, MUET, Jamshoro.
2) The Director, Finance, MUET, Jamshoro.

Dear Sir,

You are hereby requested that office of the undersigned received complaint from Incharge Student Teacher Center regarding the essential Repair work and they are insisted for early completion of their complaints, it is impossible to complete all the complaints without required items / fixtures In this regard Sub-Engineer (Civil) Mr. Kashif Kandhir, Carpenter Ali Nawaz Bhatti & Trader Technician Bakshal Lashari visited the site and give requirement of material (attached herewith) to complete the work in time.

In this view, you are hereby requested kindly procure / purchase the above said Items for smooth running of work of Maintenance Division.

Your cooperation will be highly appreciated.

EXECUTIVE ENGINEER (M)

Complaint Management System – Reported Maintenance Issues	

Description:

In the past year, the university has conducted routine operation and maintenance activities across various building types, including administrative offices, laboratories, classrooms, and other campus facilities, ensuring adherence to health, safety, and sustainability protocols. The total percentage of these activities for the period is calculated as: Total building area operated and maintained/ Total campus buildings area) × 100% = 100%

As per health and safety measures routine operation and maintenance activities were carried out for all the building area. Moreover, regular maintenance is also carried out for non-building areas such as plantations, landscaping, and streetlamps.

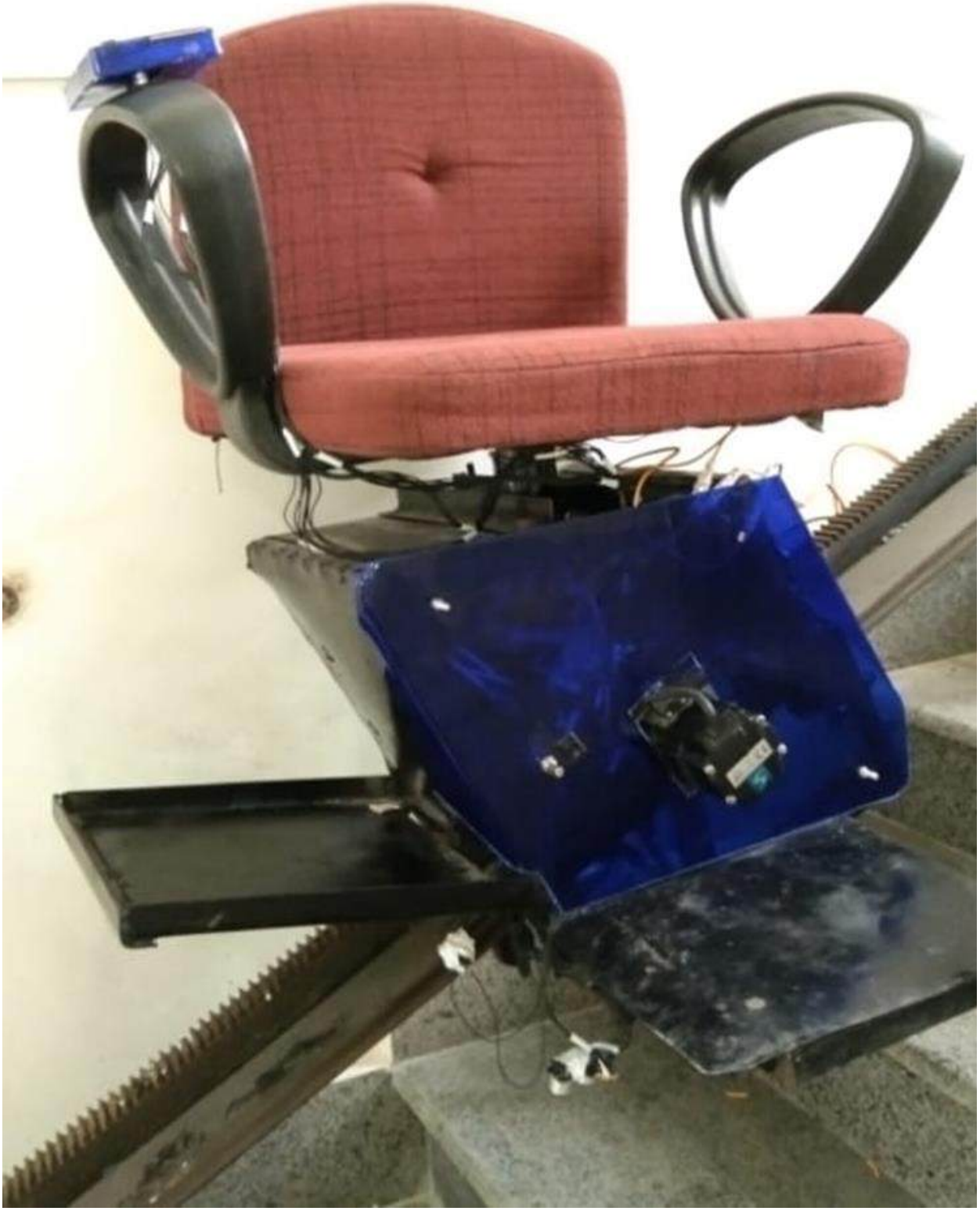
Key maintenance efforts have focused on compliance with health and safety standards, energy efficiency, and sustainability, aligned with the categories from the Green Metrics guidelines. These efforts include regular inspections, HVAC system maintenance, electrical checks, energy-efficient appliance usage, and fire safety compliance.

We have provided sample evidence, including letters, logbook excerpts, and images from Sustainable Maintenance activities. Additionally, the Compliance Maintenance section includes a picture of the fire extinguisher inspection from the Technical and Logistics Department.

Hence the correct option would be option **[5] 100%.**

[1.20] Campus facliities for disable, special needs and or maternity care

<table>
<tr><td>  </td><td>  </td></tr>
<tr><td>Ramp for Wheelchair at entrance of building (MUET, Jamshoro)</td><td>Ramp for Wheelchair at entrance of building (MUET, Jamshoro</td></tr>
<tr><td> 
</td><td>  </td></tr>
<tr><td>Baby Day Care Center at Mehran University Public School (image 1)</td><td>Baby Day Care Center at Mehran University Public School (image 2)</td></tr>
</table>



1. Chair lift facility for disable special needs persons

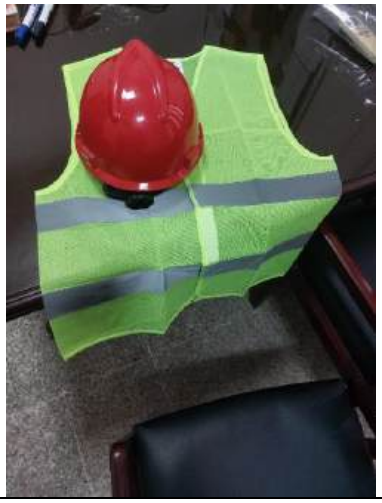
Description:

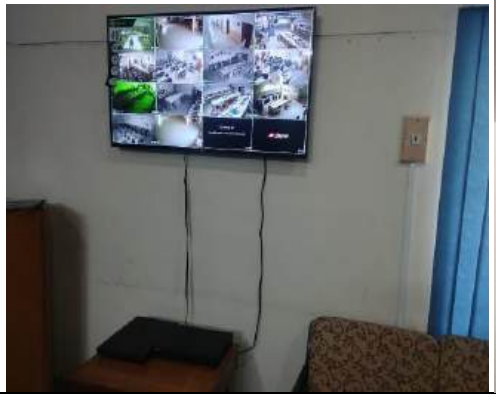
Facilities for disabled/special persons are partially available and operated.

1. Ramp for Wheelchair at entrance of buildings of Mehran University of Engineering & Technology, Jamshoro.
2. Baby Day Center is available at Mehran University Public School.
3. Mehran University of Engineering & Technology, Jamshoro. Provide Chair lift facility for disable special needs persons to get easily access to 2nd floor.

[1.21] Security and safety facilities

Events	
Entry/Exit guards	 

Security vehicle	
Emergency Exit and Incidence Response Plan to deal emergencies	
Fire extinguisher and fog lights in case of fire conditions at campus building. Each department has two staff members who have been provided First Aid and basic fire warden training.	 

	 
CCTV cameras that monitor the compound through control room	 
CCTV in campus buildings	 

Description:

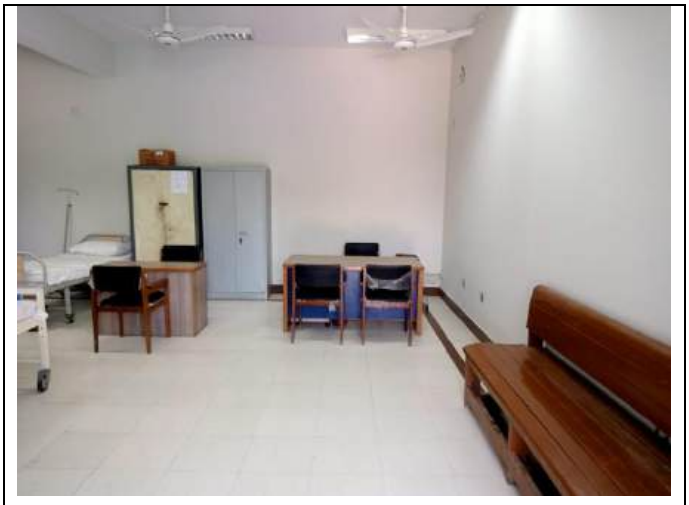
The campus building of MUET in equipped with all the **Security and safety** facilities required for any emergency conditions as mentioned below,

1. CCTV at University gates and corridors
2. Fire extinguishers at halls and corridors
3. Fog light at stairs
4. Emergency exits
5. There are 182 security guards in total hired by the university.
6. Compound wall for university campus of 8 ft height. Security posts around the wall.
7. 147 digital CCTV cameras that monitor the compound, picture of control room attached. This excludes cameras within each building.

Hence the correct option would be option **[5] Security infrastructure is available and fully functions and security responding time for accidents, crime, fire, and natural disasters is less than 10 minutes**.

[1.22] Health infrastructure facilities for students, academics and administrative staffs' wellbeing

1. Dispensery (MUET, Jamshoro)



2. Internal View of the dispensary (MUET, Jamshoro)

3. OPD by Medical Expert (MUET, Jamshoro)

4. Health Care Beds inside the dispensary (MUET, Jamshoro)

5. First Aid kit with essential medicines (MUET, Jamshoro)

6. Nearby medical facilities (Lumhs, Jamshoro)

7. Ambulance Service for Emergency (MUET, Jamshoro)

MEHRAN UNIVERSITY OF ENGINEERING AND TECHNOLOGY, JAMSHORO
Dated: - 31-10- -2023

Reference:

This office notification No.Estt:(Teach:)/-578 of 2023 Dated 13.04.2023.

NOTIFICATION

No.Estt:(Teach:)/- 1674 of 2023. In supersession of above, it is notified for the general information of all concerned that the Vice Chancellor, Mehran University of Engineering & Technology, Jamshoro is pleased to re-constitute the Medical Monitoring & Scrutinizing Committee (MM&SC) of the University with immediate effect, as under:

1. Prof. Dr. Rizwan Ali Memon, Dean, Faculty of Architecture and Civil Engineering, MUET, Jamshoro.	Convener
2. Dr. Amir Mehmood Soomro, Associate Professor / Focal Person (SFAO), MUET, Jamshoro.	Member
3. The Medical Doctor of the University.	Member
4. Mr. Mir Muhammad Shaikh, Sr. I.T Assistant, Directorate of Finance, MUET, Jamshoro.	Member / Secretary

REGISTRAR

COPY TO ALL CONCERNED:

8. Medical Board (MUET, Jamshoro)

Description:

Mehran University of Engineering & Technology provides first aid within the campus. The university also has a small facility where a certified medical practitioner deals with emergency cases and offers medical advice. On the other hand, first aid kit with essential medicines is also available at the laboratories in the university for staff and students. Additionally, Another facility of the nearest hospital is also available at a distance of 3.9kms from Mehran University. Ambulance service is also available at the university premises for the emergency and university has its own medical board to deal with the cases of faculty and students.

[1.23] Conservation: plant (flora), animal (fauna), or wildlife, genetic resources for food and agriculture secured in either medium or long- term conservation facilities

Description:

MUET has various plants conservation especially for fruit / vegetables trees to produce fruits and vegetables. These trees are conserved for long time to produce fruits and vegetables on the campus area. Few examples are given below.

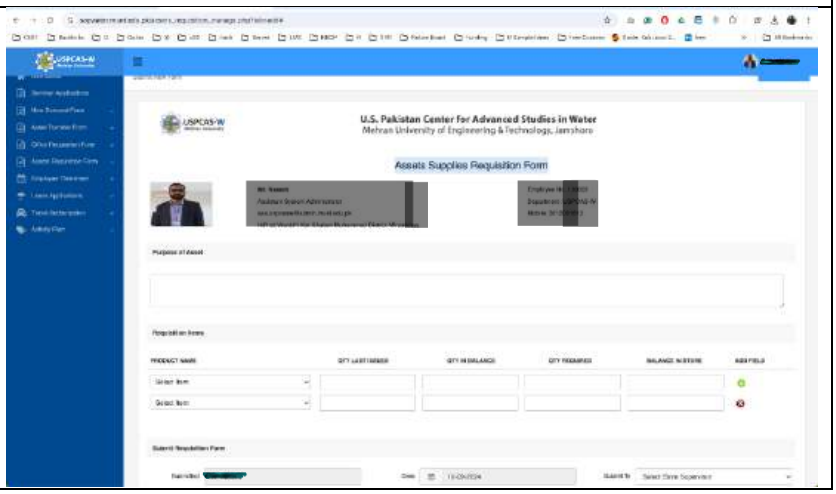
Chiku tree conservation

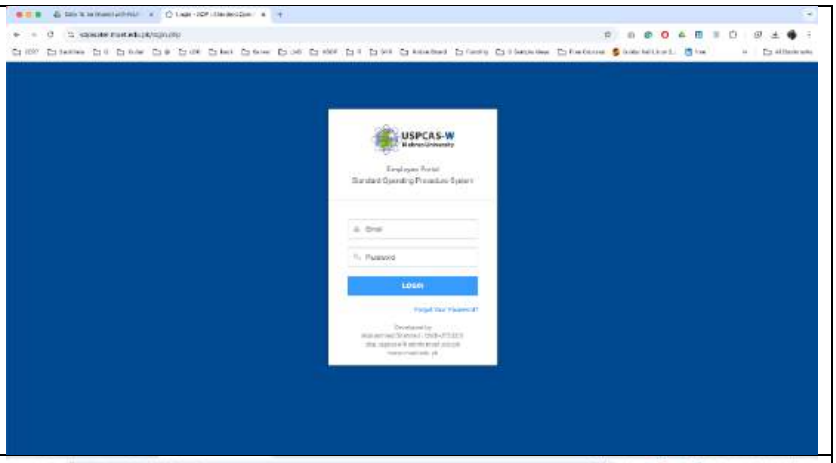
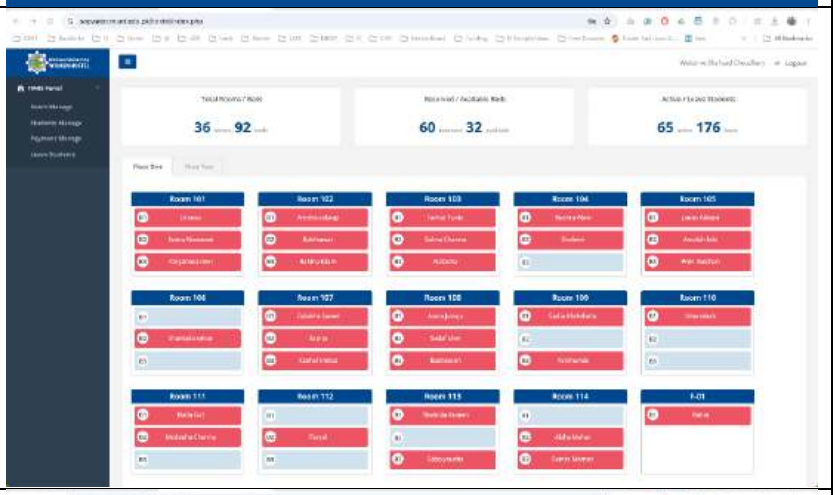
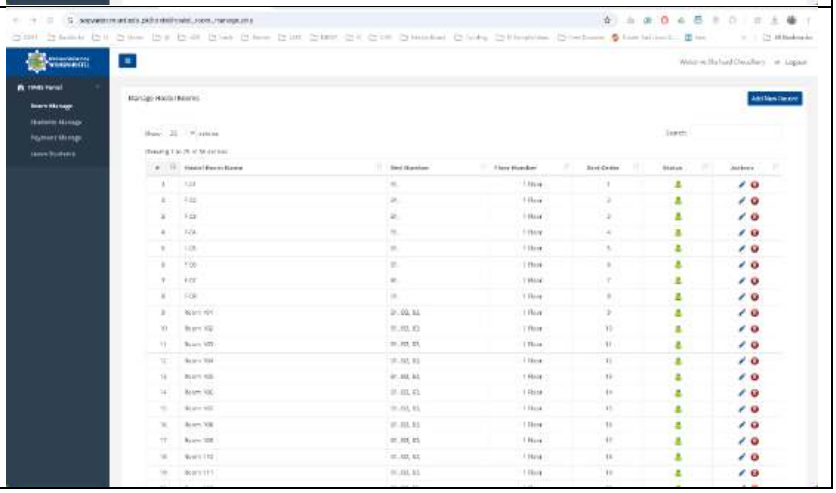
Mango tree conservation

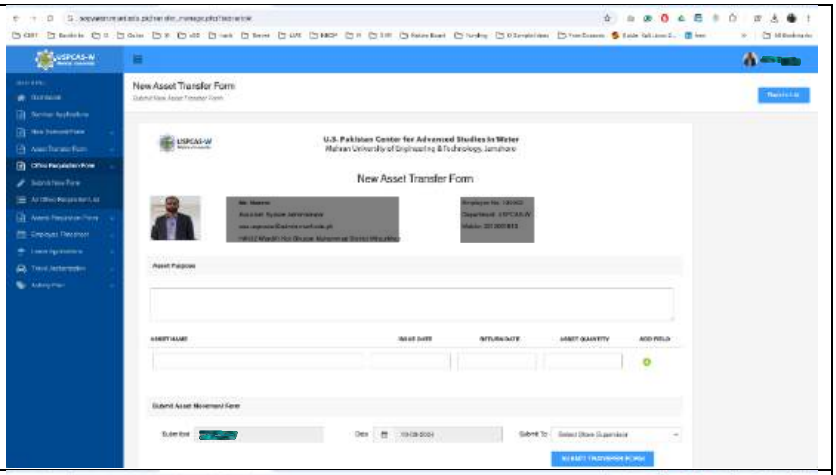
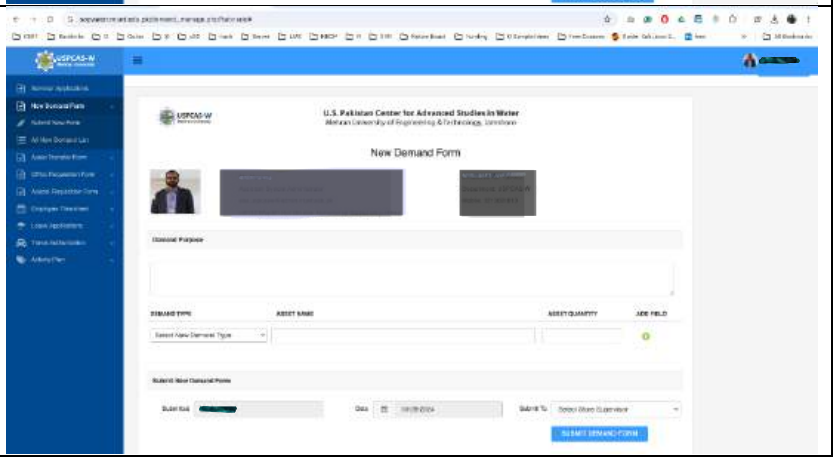
Lemon tree conservation

Moringa tree conservation

[1.24] Planning, implementation, monitoring and/or evaluation of all programs related to Setting and Infrastructure through the utilization of Information and Communication Technology (ICT)

Events	
SoP - Assets Supplies Requisition Form	

SoP - Employee Portal - Login Page	
SoP - Hostel Dashboard	
SoP - Hostel Room Manage	

SoP - New Asset Transfer Form	
SoP - New Demand Form	

Description:

MUET has successfully implemented ICT programs to manage its setting and infrastructure, including systems like the Assets Supplies Requisition Form, Employee Portal, and Hostel Dashboard. These systems have been evaluated based on stakeholder feedback collected during Management Review Meetings by the Quality Enhancement Cell (QEC), leading to continuous revisions and improvements. Evidence includes screenshots from the SOP portal, through continuous feedback from all stakeholders i.e. students and staff, the university considers to optimize ICT programs during Management Review meetings conducted by Quality Enhancement Cell (https://www.muet.edu.pk/quality-enhancement-cell/qec-activities.

Hence the correct option would be option **[5] Program has been implemented, evaluated, and is currently revised.**

2. Energy and Climate Change (EC)

MUET actively engages in energy management practices to combat climate change. The university has implemented energy-saving measures, including the use of LED lighting and energy-efficient appliances throughout its facilities. Additionally, it conducts regular energy audits to identify areas for improvement and ensure compliance with sustainability goals. Educational initiatives aim to raise awareness about climate change among students and staff, fostering a culture of conservation. Through research projects, MUET explores innovative solutions to energy challenges, contributing to a sustainable future.

[2.1] Energy Efficient Appliances Usage

Energy Efficient Appliances Usage: Use of LED lighting and lamps (MUET, Jamshoro)

Energy Efficient Appliances Usage: DC Inverter Air Conditioning system (MUET, Jamshoro)

Description:
The application of energy efficient appliences has een used in almost every department and campus building to promote sustainability and efficiency.
The timely expansion in the infrastructure soars the energy demands, requires by this university . The university realizes that, to meet the energy demands by conventional means becomes expansive and is un-healthy for the environment.

The university is gradually converting to Alternative Energy Sources, as they are cost effective and good for the environment. In coming few years, the University aims to replace all conventional lighting sources and air-conditioning systems with the Energy efficient appliances.

There are 2000 fans, 1500 fans are energy efficient fans.
There are 1100 Acs, conventional split Acs: 460, conventional window Acs: 40, energy efficient Acs = remaining ones.

Energy efficient lighting was implemented more than a decade ago.

Appliance	**Total number**	**Total number energy Efficient appliances**	**Percentage**
Fans	2000	1500	75.00
Air conditioners	1100	600	54.55%
Light bulbs	10000	10000	100.00%
Total	13100	12100	92.37 %

[2.3] Smart Building Implementation

***Min. at least five requirements for each building**

No.	Name	Place	automation		safety				energy		water		Indoor environment				lighting				Building Area (m^2)
			B1	B2	S1	S2	S3	S4	E1	E2	A1	A2	I1	I2	I3	I4	L1	L2	L3	L4	
1	MUET, Jamshoro; United States Pakistan Centre for Advanced Studies in Water	Jamshoro, Pakistan	X		X	X	X	X	X		X	X	X	X	X		X	X		X	3,721
2	MUET, Jamshoro; Central Library	Jamshoro, Pakistan	X		X	X	X	X	X		X		X	X	X		X	X		X	3,292
3	MUET, Jamshoro; Main Administration Building	Jamshoro, Pakistan	X		X	X	X	X	X		X		X	X	X		X	X		X	7,195
4	MUET, Jamshoro; Civil Engineering Department	Jamshoro, Pakistan	X		X	X	X	X	X		X		X	X	X		X	X		X	8,005
5	MUET, Jamshoro; Innovation & Entrepreneurship Centre	Jamshoro, Pakistan	X		X	X	X	X	X		X		X	X	X		X	X		X	465
6	MUET, Jamshoro; Extension to Academic Building - I	Jamshoro, Pakistan	X		X	X	X	X	X		X		X	X	X		X	X		X	2,605
7	MUET, Jamshoro; Extension to Academic Building - II	Jamshoro, Pakistan	X		X	X	X	X	X		X		X	X	X		X	X		X	1,674
8	MUET, Jamshoro; Science & Technology Park	Jamshoro, Pakistan	X		X	X	X	X	X		X		X	X	X		X	X		X	1,046
	Total																				28,003

Smart building implementation

$$\frac{\boldsymbol{total\ smart\ building\ area}}{\boldsymbol{total\ building\ area}} \times \mathbf{100\%}$$

Total Building Area: 28,003 m^2

$$\frac{\mathbf{28,003\ m^2}}{\mathbf{90,736\ m^2}} \times \mathbf{100\%} = \mathbf{30.86\%}$$

Centre for Advanced Studies in Water, MUET, Jamshoro	Central Library, MUET, Jamshoro
	
Main Administration Building, MUET, Jamshoro	Civil Engineering Department, MUET, Jamshoro
	
Innovation & Entrepreneurship Centre, MUET, Jamshoro	
	

Hence the correct option would be **[3] > 25 -50%.**

[2.5] Renewable Energy Sources in Campus

Solar Panels installed at Central Library Building of Mehran University of Engineering & Technology, Jamshoro

Solar Panels installed at Main Administration Building of Mehran University of Engineering & Technology, Jamshoro

Description:

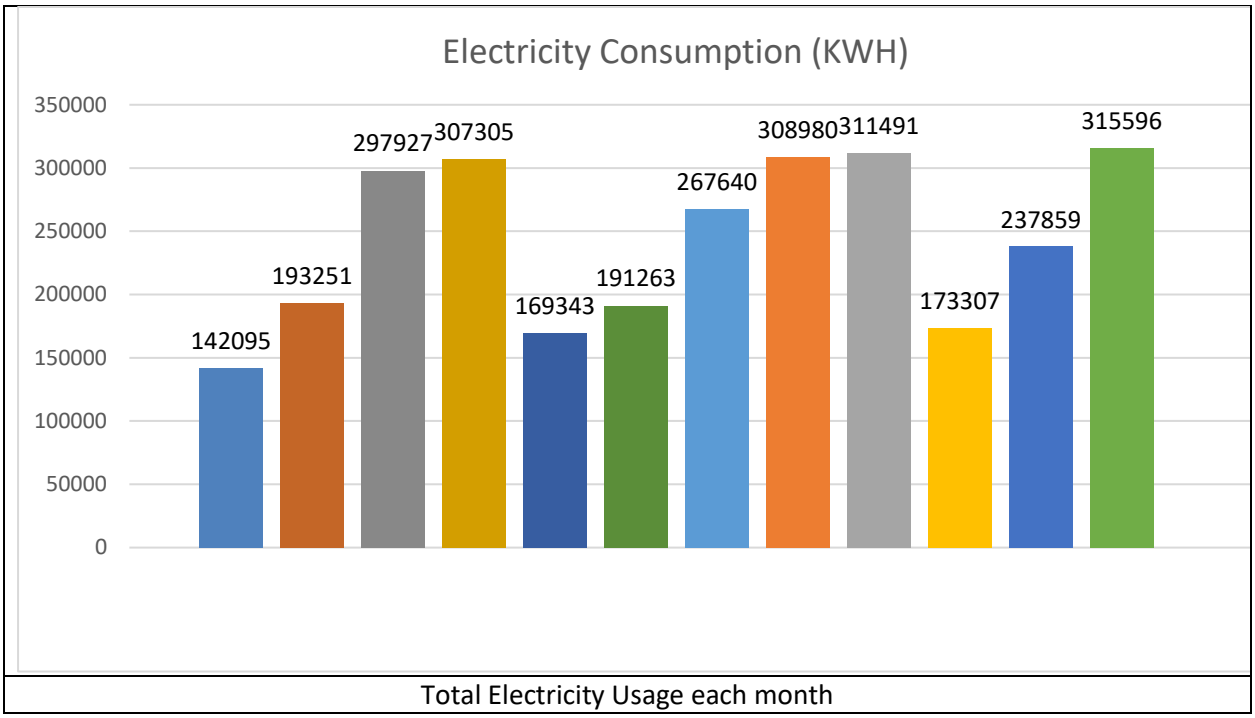
Mehran University of Engineering and Technology, Jamshoro has already installed Solar Panels of capacity 1295 KW and is moving forward towards renewable energy sources to meet its energy demands.

Total renewable energy produced this year (summer season) = 30*7*1295*4.5= 1,223,775 KWH (electricity units)
Total renewable energy produced this year (winter season) = 30*5*1295*3.5= 679,875 KWH (electricity units)
Total renewable energy produced this year = 1,903,630 KWh

Where;
30= average number of days
7= summer months in a year

5= winter months in a year
1295= Installed Capacity of solar
4.5= Generation factor in summer
3.5= Generation factor in winter

[2.6] Electricity Usage per Year (in Kilowatt hour)

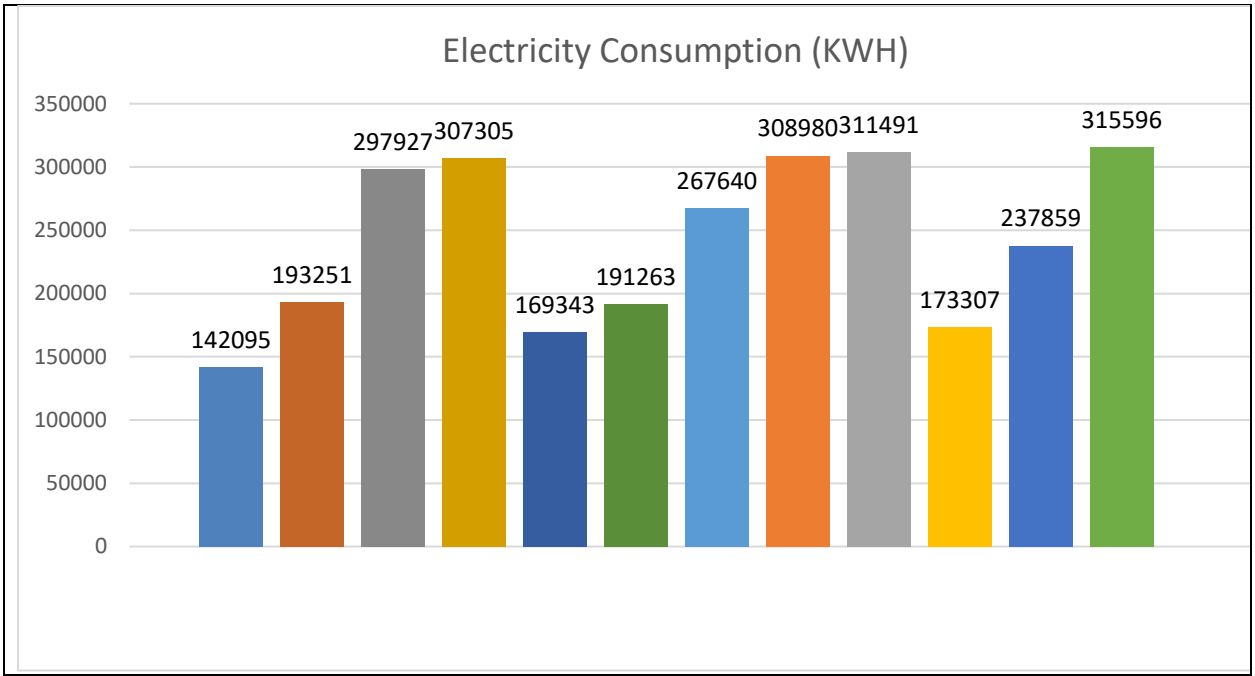


Total Electricity Usage each month

Description:

The total electricity usage of Jamshoro Campus in 2023-24 is 4688642 kWh. On the main campus area of Mehran University of Engineering & Technology in Jamshoro electricity is used for lighting, cooling, heating and laboratory appliances.

[2.6] Electricity Usage per Year (in Kilowatt hour)



Total Electricity Usage each month

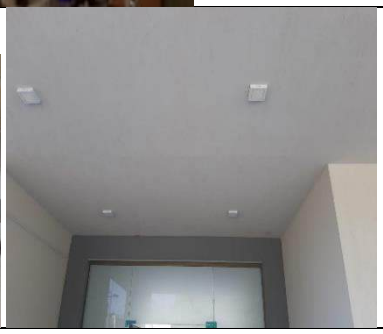
Description:

The total electricity usage of Jamshoro Campus in 2023-24 is 4688642 kWh. On the main campus area of Mehran University of Engineering & Technology in Jamshoro electricity is used for lighting, cooling, heating and laboratory appliances.

[2.9] Elements of Green Building Implementation as Reflected in All Construction and Renovation Policies

Events	
Plantation of trees around buildings to provide shade and reduce the need for air conditioning	 

Installation of renewable solar energy supply for buildings as part of Green revolution	
Green Building Implementation – Natural Ventilation & Day lightening (MUET, Jamshoro)	
Green Building Implementation – Day lightening through windows and sky-lights (MUET, Jamshoro)	 

	
Power efficient electric appliances such as intervertor AC and LED lights	 

Description:

Mehran University of Engineering and Technology, Jamshoro, since inception has adopted the policy of considering environment in design, construction, renovation and operation of the buildings. Two of the most prominent elements are Natural Ventilation in the buildings and Natural Day Lighting.

Hence the correct option would be option **[5] > 3 elements.**

[2.10] Greenhouse gas emission reduction program

renewable energy (**Mehran University of Engineering & Technology, Jamshoro**)

Description:

1. Using renewable energy for electricity that reducing purchased electricity and promote green energy .
2. The use of bicycle promote the GHG emission and reduce carbon emission through conventional cars and busses.
3. The 3KW solar panel system has installed around the university in different department and central liberary

Description of Scope 1.2.3.

	Emission data	Definition

Scope 1	Stationary combustion	The Mehran university avoid the combustion of waste produced through the different department and canteens to mitigate the environment effect and reduce GHG emission.
	Mobile combustion	The Mehran university promote the mass transit system by implementing the point bus service for the students to reduce the mobile combustion from individual vehicles.
	Process emissions	The GHG emission through Mehran university has potentially decreased after implementation of bicycle program for students, around 20 bicycles are provided to students to reduce carbon emission from conventional vehicles.
	Fugitive emissions	Mehran University properly maintains all appliances including refrigerators and air conditioners. Our team ensures the zero-release of HFC from appliances.
Scope 2	Purchased electricity	The Mehran university installed the solar powered panel system of 3MW, that reduce the electricity purchasing from government authority (WAPDA) and MUET become independent and will be shifted to green energy in coming years.
Scope 3	Waste	Mehran university dispose off their waste in large landfill areas around the university and avoid the combustion the waste that ultimately reduces GHG and carbon emission.
	Purchased waste	Mehran university does not purchase water, even MUET has its own filtration plant to purify the water daily consumption, so it promotes the reduction of waste produces by water.
	Commuting	The Mehran university has a well organize point busses system that provide the good commuting along the students and reduced the individual vehicle use.
	Air travel	Mehran university has no policy to provide air travel expense that promote the less GHG emission and promotes sustainability.

Hence the correct option would be **[5] Program(s) aims to reduce all three scopes emissions (Scope 1, 2, and 3).**

[2.11] Please Provide The Total Carbon Footprint (CO_2 emission in the last 12 months, in metric tons)

Option 2: Recommended by UI GreenMetric

CO_2 (electricity)

$$= \frac{electricity\ usage\ per\ year\ (kWh)}{1000} \times 0{,}84$$

$$= \frac{4688642\ kWh}{1000} \times 0{,}84$$

= 3938.459 metric tons

CO_2 (bus)

$$= \frac{number\ of\ shuttle\ bus\ in\ your\ university \times total\ trips\ for\ shuttle\ bus\ service\ each\ day \times approximate\ travel\ distance\ of\ vehicle\ each\ day\ inside\ campus\ only\ (KM) \times 240}{100} \times 0{,}01$$

$$= \frac{4 \times 6 \times 8 \times 240}{100} \times 0{,}01$$

= 4.60 metric tons

CO_2 (cars)

$$= \frac{\text{number of cars entering your university} \times 2 \times \text{approximate travel distance of vehicle each day inside campus only (KM)} \times 240}{100} \times 0{,}02$$

$$= \frac{1758 \times 2 \times 8 \times 240}{100} \times 0{,}02$$

= 1350.144 metric tons

CO_2 (motorcycle)

$$= \frac{\text{number of motorcycle entering your university} \times 2 \times \text{approximate travel distance of vehicle each day inside campus only (KM)} \times 240}{100} \times 0{,}01$$

$$= \frac{1638 \times 2 \times 8 \times 240}{100} \times 0{,}01$$

= 628.99 metric tons

CO_2 (total)

= 3938.459 + 4.60 + 1350.144 + 628.99

= 5922.193 metric tons

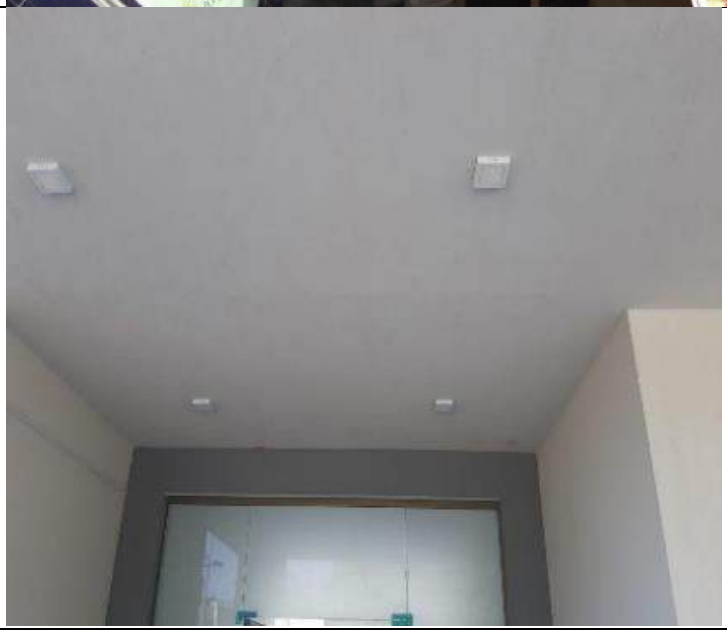
Carbon footprint = 5922.193 metric tons

Total Carbon Footprint (Mehran University of Engineering & Technology, Jamshoro, Pakistan)

Description:

Total Carbon Footprint is **5922.193 Metric Ton per year**

[2.13] PROGRAMS

Events	
Solar Energy Initiative	
Sensor-Based Lighting System	

Gradual Replacement of Conventional Acs by Energy Efficient ACs	
Plantation Drive and monitoring through drone.	

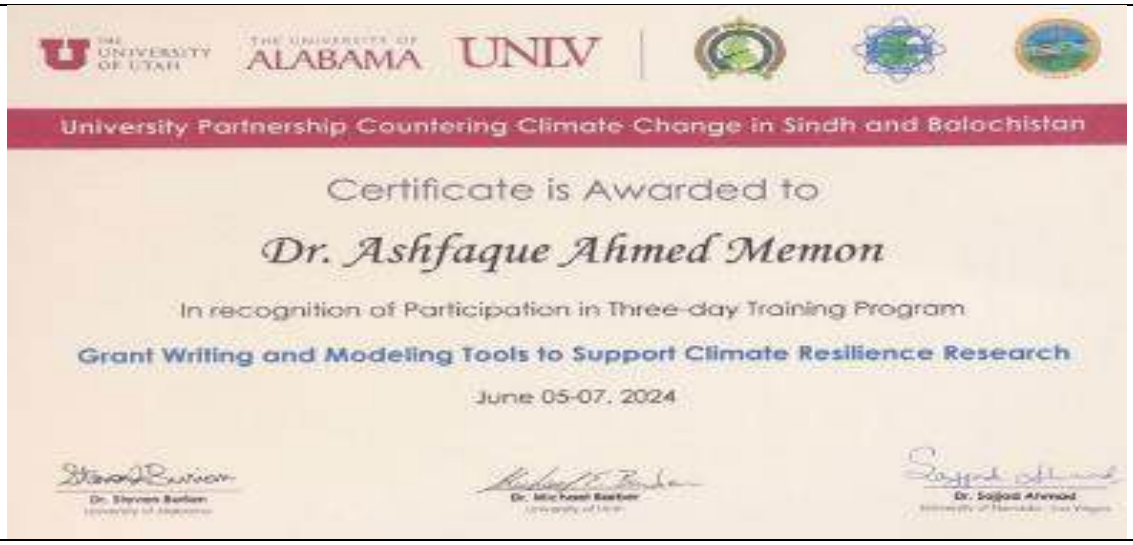
Description:

Mehran University of Engineering & Technology Jamshoro has successfully implemented multiple innovative initiatives focused on energy conservation and climate change mitigation. These programs utilize advanced technologies and sustainable practices, demonstrating the university's commitment to environmental sustainability through more than three active projects. Even though MUET is in an Arid climate zone, extensive plantation drives over the past decade have been conducted as part of the green initiative.

Hence the correct option would be option **[5] more than 3 programs.**

[2.14] Impactful university program(s) on climate change

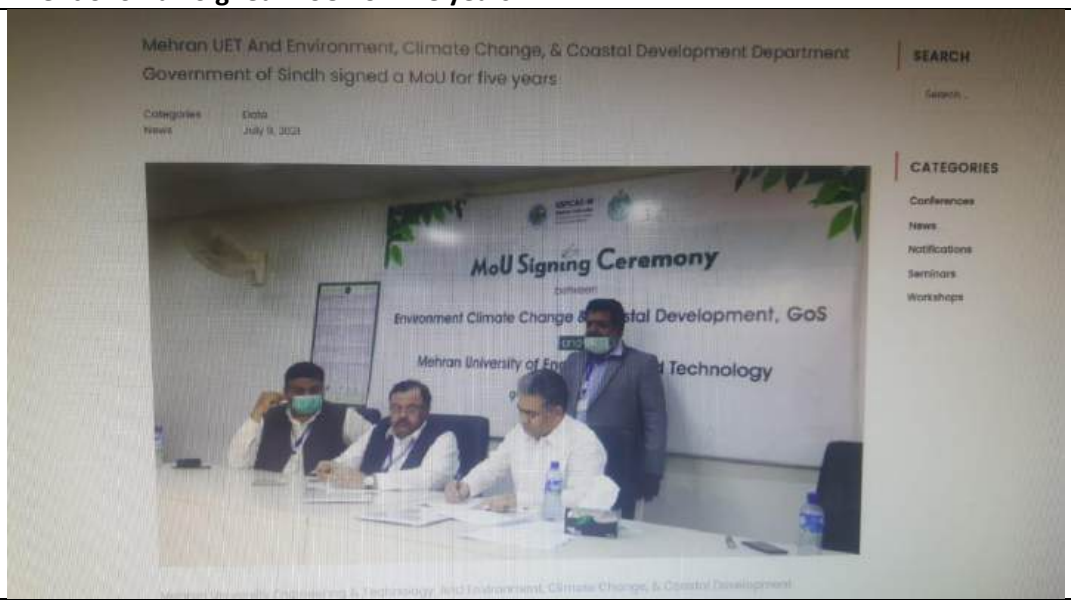
Program Title: 3 Days training program on grant writing and modelling tools to support climate resilience research 2024.



Short Description

This trainning program helped the participants to enhance thier writting and modelling skills to support the climate resillience research moreover, it provides the wide scope of climate research programs for the faculty members.

Program Title: Mehran UET AND Environment, climate change, & Coastal Development Department Government of Sindh Signed MoU For five years.



Short Description:

The Institute of Environmental Engineering and Management (IEEM) signed an MoU was signed with Shelter Participatory Organization (SPO) on 21-Oct-2021. SPO is an NGO is working on different projects in different areas such as Environment, social Development, Climate Action and Sustainable

Development Goals. The Main purpose this MoU was to engage students of IEEM in different their climate change and community-based project

Program Title: Seminar/workshops GHAR: Green Housing, Affordable, Resilient: Challenges and Opportunities

Short Description: This GHAR program organized by United Nations Offices for Project Services (UNOPS) in collaboration of Civil Engineering Department, MUET. This seminar focused on various climate change issues and challenges and in the light of these challnegs this seminar suggested variou pathways to mitigate climate change issues in Paksitan with context of housing sector.

Progaram Title: International Conference on Sustainble Developments in Civil Engineering

Short Description: ICSDC has organized three international conferences from 2017 to 2023 and also organizing in 2025. This international conference exclusively focuse on climate change and assosiated challenges.

[2.15] PROGRAMS

	Events	
Weather Station	A weather station is connected to the IoT dashboard, providing real-time data on weather conditions. This system assists in monitoring climate patterns, which helps inform climate-related decisions on campus.	 
Soil Sensors for Nutrient Analysis (NPK)	ICT is used to monitor the impact of climate on soil nutrients through soil sensors connected to the IoT dashboard.	

Dust Sensor for Workplace Safety	A dust sensor is installed to measure dust exposure at various workplaces on campus, ensuring a safe environment and compliance with climate safety standards.	

Description:

Mehran University of Engineering & Technology Jamshoro has effectively integrated ICT for the planning, implementation, monitoring, and evaluation of all its energy and climate change programs. The university utilizes an advanced IoT dashboard to manage and track various environmental and climate-related parameters, ensuring continuous improvements through data-driven decisions. The Quality Enhancement Cell (QEC) is responsible for the regular evaluation of these programs. Based on the collected data from the IoT systems, QEC evaluates the effectiveness of the programs and makes necessary revisions to enhance their impact. This ensures that the programs are continuously improved and adapted to changing conditions (https://www.muet.edu.pk/quality-enhancement-cell/qec-activities.)

Hence the correct option would be option **[5] Program has been implemented, evaluated, and is currently revised.**

3. Waste

At MUET, waste management is a priority to minimize environmental impact. The university promotes a waste segregation policy, encouraging the separation of recyclable, organic, and non-recyclable materials across the campus. Regular awareness campaigns educate the university community about the importance of recycling and responsible waste disposal. MUET also collaborates with local authorities to ensure proper waste treatment and disposal. Initiatives such as composting organic waste and reducing single-use plastics further demonstrate the university's commitment to sustainable waste management practices.

[3.1] 3R (Reduce, Reuse, and Recycle) Program for University Waste

Example of 3R Program for University Waste

Description:

- **3R Program: Reduce, Recycle, Reuse:**

  MUET is committed to minimizing its environmental footprint through the 3R Program, a comprehensive initiative aimed at reducing waste, promoting recycling, and encouraging reuse on campus.

- **Reduce:**

  - Minimize single-use plastics and paper products

  - Implement sustainable practices in daily campus life

- **Recycle:**

  - Expand recycling facilities and programs for paper, plastic, glass, and metal

  - Ensure proper waste sorting and disposal

- **Reuse:**

  - Arrange awareness seminars for the 3R initiative.

  - Encourage donation and repurposing of gently used items

  - Promote sustainable consumption and waste reduction

- **Benefits:**

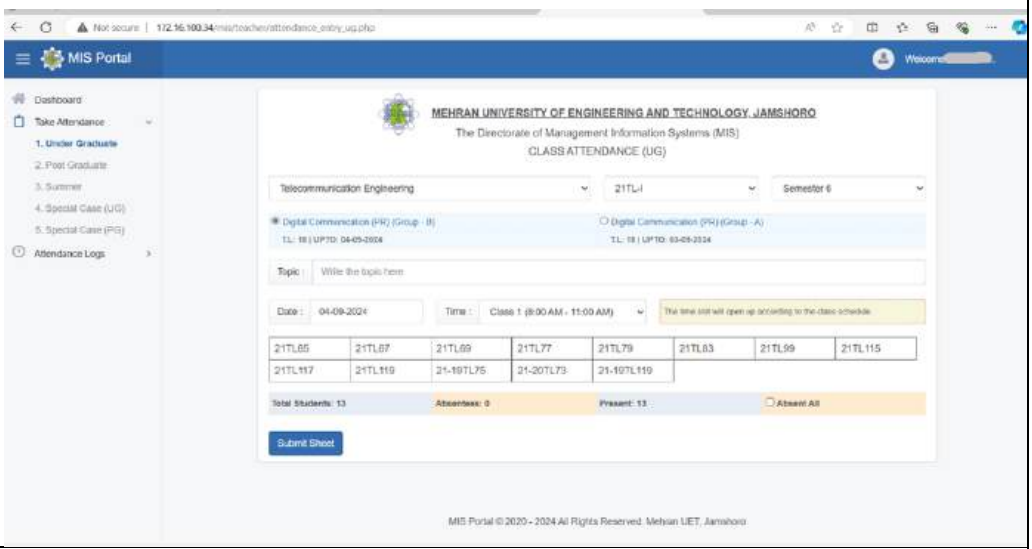
  - Conservation of natural resources and reduction of greenhouse gas emissions

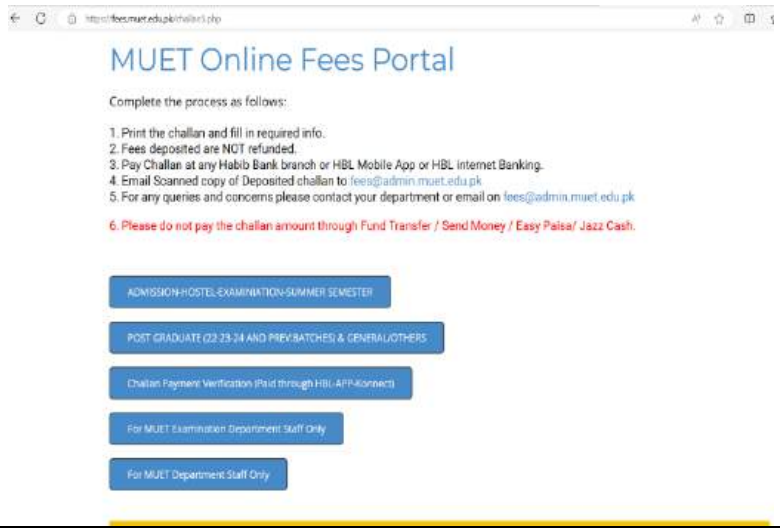
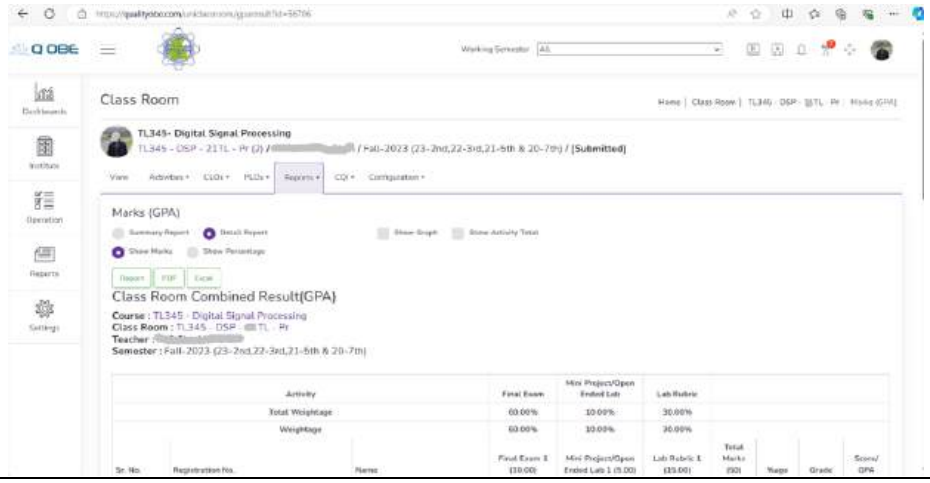
  - Cost savings through reduced waste disposal and recycling costs

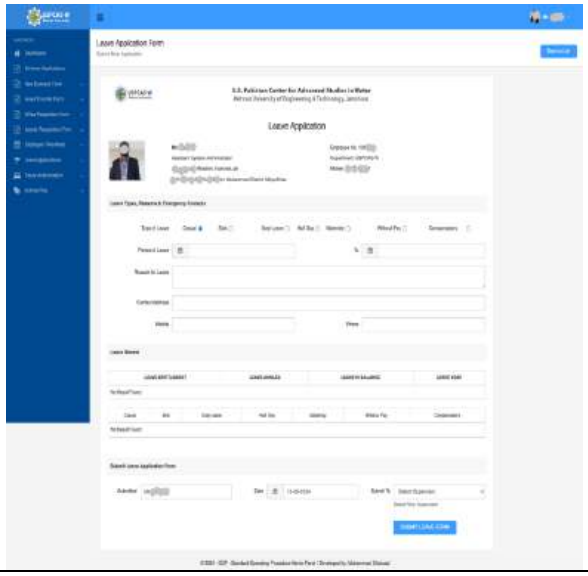
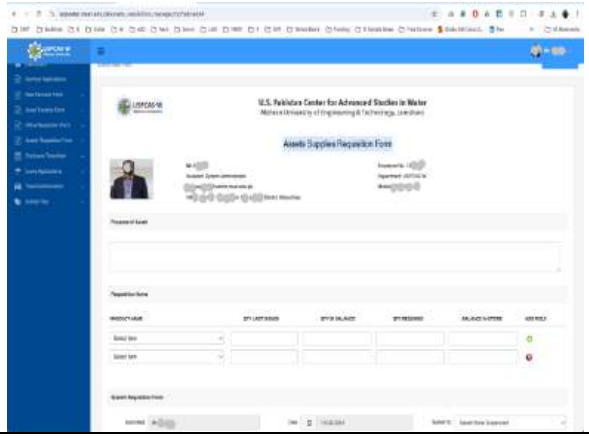
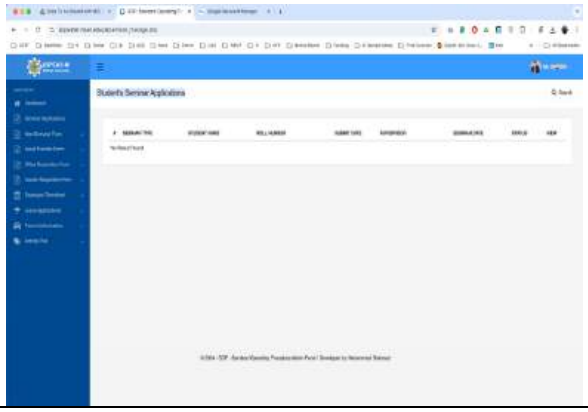
  - Enhanced campus sustainability reputation and leadership

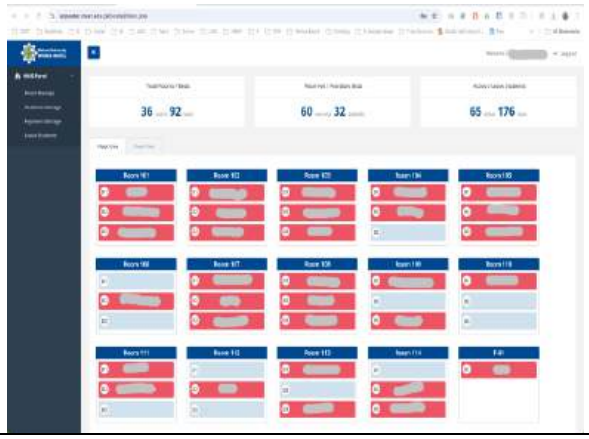
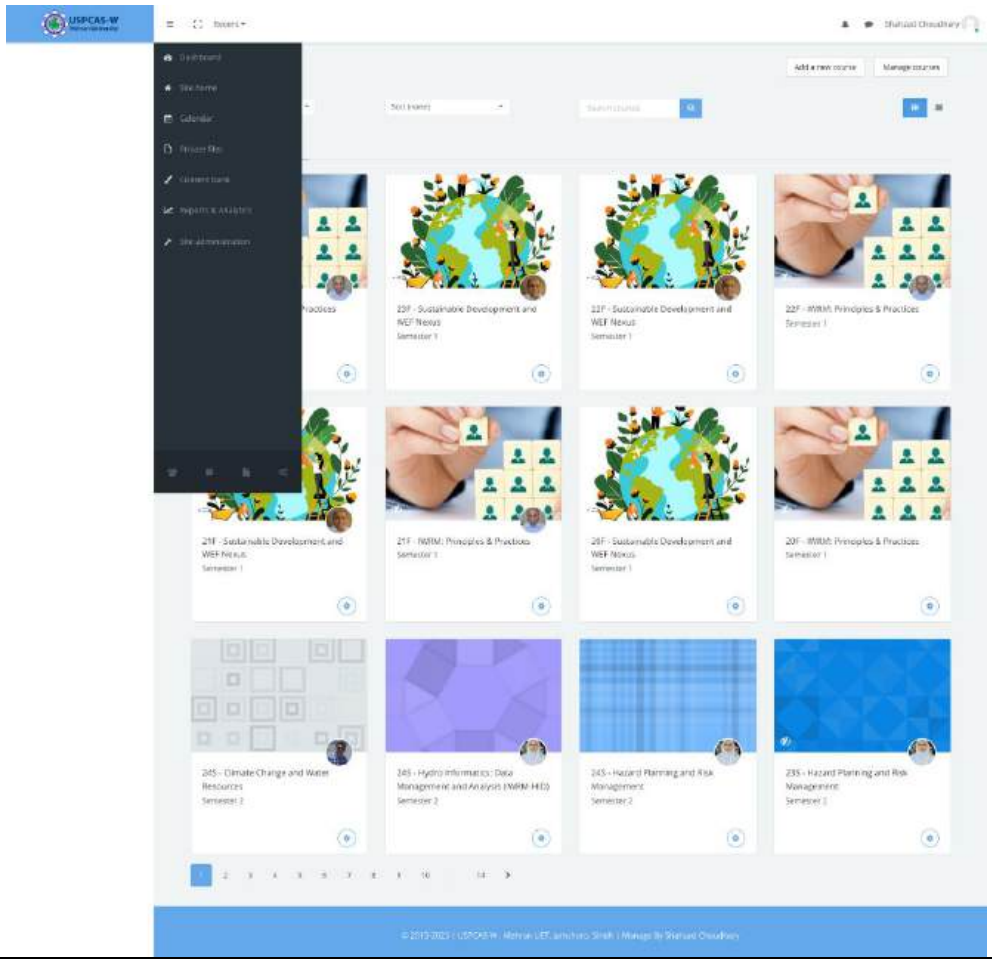
  - Education and awareness about sustainable practices

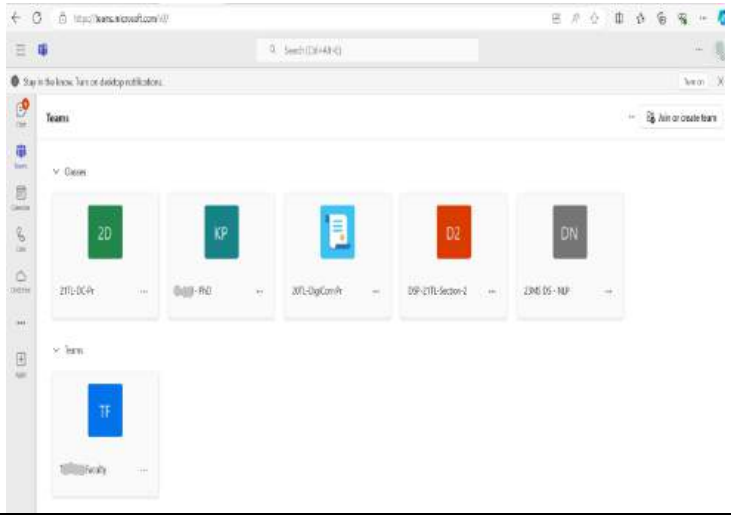
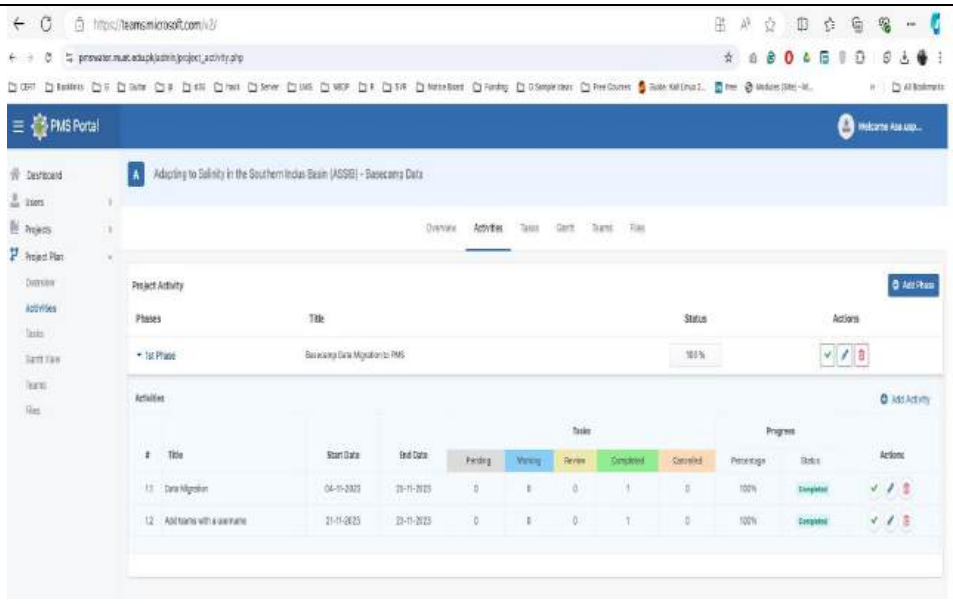
[3.2] Program to Reduce the Use of Paper and Plastic on Campus

Programs	Evidence
Online Attendance	
Paperless meetings	

Online payment of fees	
Online compilation of results through QOBE	
Online result submission portal	

Online portal for staff/faculty to request leave	
Online portal for staff/faculty to request equipment	
Online portal for students to apply for postgraduate examination seminars	

Online management of hostels	
LMS and Teams used to share lecture notes online without the need to print them.	

	
Double-side printing has been the default standard at MUET for more than a decade	-
Research Project Management is conducted through an online portal, ensuring a paper free method of research management .	

Description:

- As part of our commitment to sustainability and environmental responsibility, MUET aims to

minimize paper usage across campus. This initiative seeks to reduce our ecological footprint, promote digital documentation, and foster a culture of sustainability among students, staff, and faculty.

- Following the above evidence correct option is: [5] More than 10 programs

[3.3] Total volume of organic waste produced

Type of organic waste	Total Produced (tons)
- food waste	50.62
- leaf, etc.	34.3
- etc	19.13
-Total	104.05

Description:

- MUET produced a total of 104.05 tons of organic waste in the form of food waste, leaves, etc from different university areas. This waste generation has been reduced over the years and MUET is working to reduce these numbers as much as possible to promote environmental sustainability, human health, and well-being.

[3.4] Organic Waste Treatment

<table>
<tr>
<td> 
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<td>  </td>
</tr>
<tr>
<td>Waste collection and transportation</td>
<td>Box composting method</td>
</tr>
</table>

Organic Waste Treatment by vermicomposting, Mehran University of Engineering & Technology, Jamshoro

Description:

- Mehran Univesity of Engineering and Technology, Jamshoro has implemented an organic waste (fruit, vegetable, and yard waste) treatment on its campus. The organic waste is collected, segregated, and converted into biocompost through the box composting process under aerobic conditions. Composting is one of the most important biological methods. By composting, compost product is produced which is also known as organic fertilizer. Compost contains various micro as well as macronutrients which are helpful for the improvement of soil fertility.
- The process offers two main advantages: enhancing soil fertility through the use of compost and reducing overall waste volume.

[3.5] Organic waste treatment (WS.3)

Type of organic waste	**Total Produced (tons)**
- food waste	50.62
- leaf, etc.	34.3
- etc	19.13
-Total	104.05

Organic Waste Treatment Process

Waste collection and transportation

Box composting method

Organic Waste Treatment by vermicomposting, Mehran University of Engineering & Technology, Jamshoro

Description:

- Based on the evidence provided, the university produced a total of 104.05 tons of organic waste, including food waste, leaf litter, and other organic materials.
- MUET treated 11 tons of waste using organic waste treatment methods, including box composting and vermicomposting.
- Percentage of organic waste treated = (Amount of organic waste treated / Total organic waste produced) × 100

  Percentage of organic waste treated = (11 tons / 104.05 tons) × 100 = 10.57%
- Therefore, 10.57% of the organic waste is treated, which falls under the category of "**[2] Partial (1 - 35% treated)**".

[3.6] Total volume of inorganic waste produced

Type of inorganic waste	Total Produced (ton)
- paper	2.6
- plastic	2.9
- Misc.	4.8

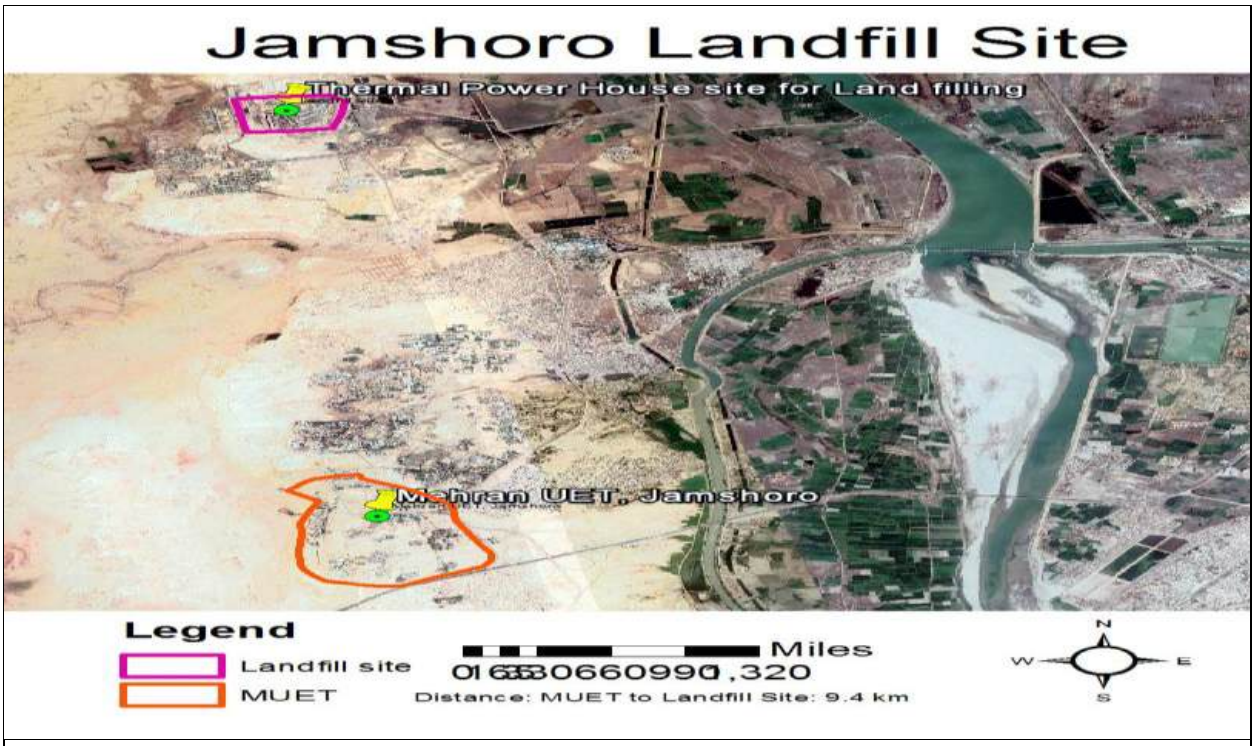
Description:

- MUET produced around 10.3 tons of inorganic waste in the form of plastic, paper, etc from different areas of the university. This waste generation has been reduced over the years and MUET is working to reduce these numbers as much as possible to promote environmental sustainability, human health, and well-being.

[3.7] Inorganic Waste Treatment

Partial landfill site at MUET campus

Jamashoro landfill site near thermal power station



Inorganic waste treatment: MUET partial landfill site and Jamshoro landfill site near thermal power station

Description:

- Inorganic Waste at Mehran University of Engineering & Technology, Jamshoro, is initially treated in the MUET landfill site. The inorganic waste is to be collected, segregated, and transported to the Jamshoro engineered landfill site which is located near the thermal power house. The construction work of the Jamshoro landfill site is in progress and now a boundary wall is given to protect the landfill from happening of any unpleasant event. The selected landfill site for disposal of inorganic waste is at a distance of 9.4 km from MUET. Note that all inorganic waste is eventually sent to the Jamshoro landfill site.

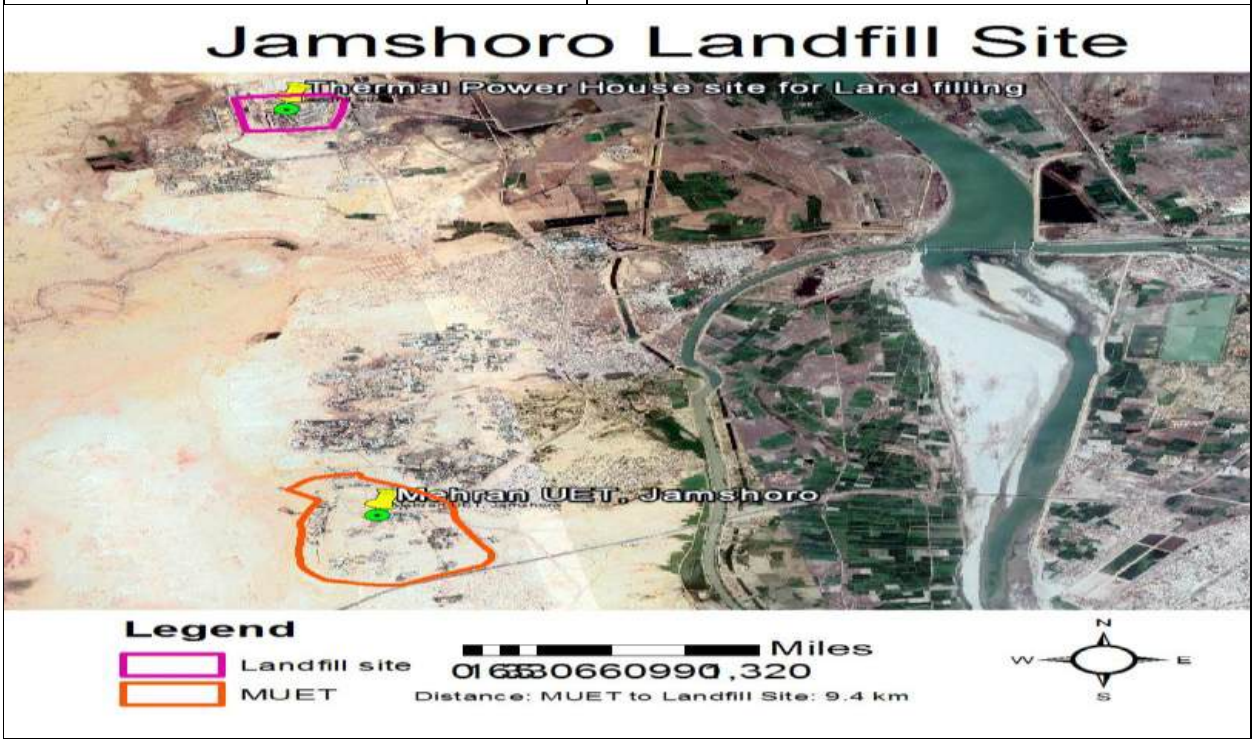
[3.8] Inorganic waste treatment (WS.4)

Type of inorganic waste	Total Produced (ton)
- paper	2.6
- plastic	2.9
- Misc.	4.8
-Total	10.3

Inorganic waste treatment process

Partial landfill site at MUET campus

Jamashoro landfill site near thermal power station



Inorganic waste treatment: MUETpartial landfill site and Jamshoro landfill site near thermal power station

Description:

- Mehran University of Engineering & Technology, Jamshoro produced around 10.3 tons of inorganic waste, including plastic and paper, from various areas of the university. Over the years, this waste generation has been reduced, and MUET is working to minimize it as much as possible to promote environmental sustainability and support human health and well-being.
- Percentage of inorganic waste treated = (Amount of inorganic waste treated / Total inorganic waste produced) × 100

  Percentage of inorganic waste treated = (10.3 tons / 10.3 tons) × 100 = 100%
- Therefore, 100% of the inorganic waste is treated, which falls under the category of "**Extensive (> 85% treated)**".

[3.9] Total Volume toxic waste Produced

Toxic waste collection at Mehran Univesity of Engineering and Technology, Jamshoro

Description:
The toxic waste at Mehran Univesity of Engineering and Technology, Jamshoro is collected and transporated to marketable commodities for further treatment. The total amount of toxic waste generated at Mehran University is 0.2 tons (200 kg) per annum. The toxic waste is being collected by the local government/ environmental agencies/ external agencies to prevent mishandling. The toxic waste is collected in a biohazard bag in a special way following all SOPs and the waste treatment cost is being paid to the external agencies.

[3.10] Total volume toxic waste treated

Toxic waste collection at Mehran Univesity of Engineering and Technology, Jamshoro

Description:
The toxic waste at Mehran Univesity of Engineering and Technology, Jamshoro is collected and transporated to marketable commodities for further treatment. The total amount of toxic waste generated at Mehran University is 0.2 tons (200 kg) per annum out of which 0.15 tons (150 kg) per annum while other is disposed off safety. The toxic waste is treated by the local government/ environmental agencies/ external agencies to prevent any risks / hazards.

[3.11] Toxic Waste Treatment

Toxic waste collection at Mehran Univesity of Engineering and Technology, Jamshoro

Description:

The Toxic waste is treated by external agencies. The treatment process can be conducted by physical chemical biological and thermal methods. The most adopted treatment method for poisonous waste is by thermal means in which high-temperature incinerators are used. Incineration not only detoxifies the waste but also stops the waste from dispersing.

[3.12] Sewage Disposal

Septic Pit, Mehran University of Engineering & Technology, Jamshoro

Sedimentation pit, Mehran University of Engineering & Technology, Jamshoro

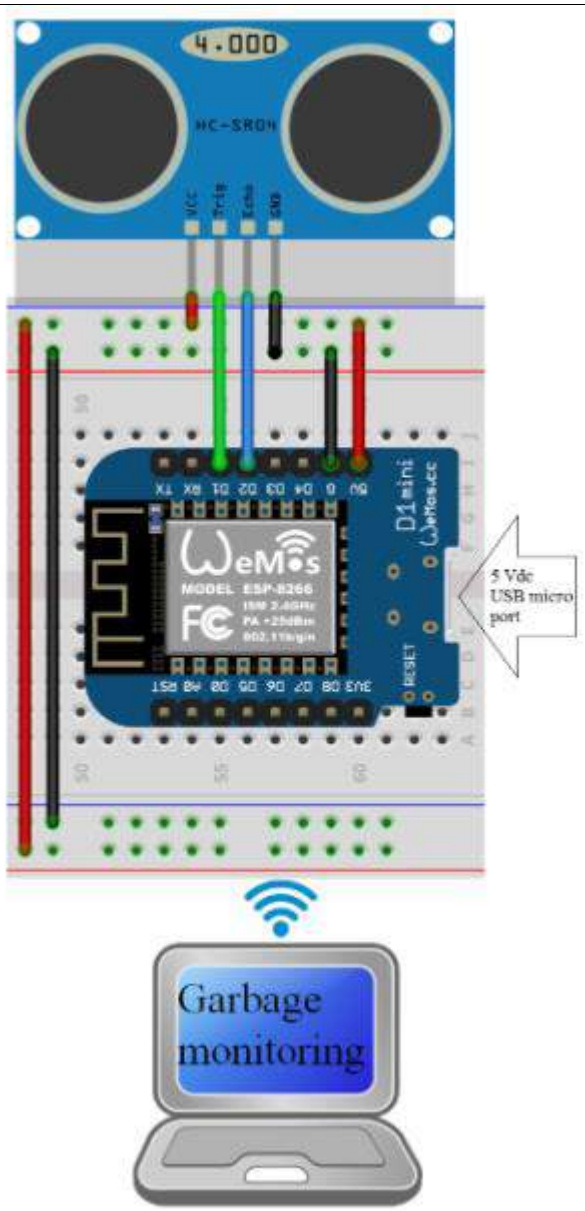
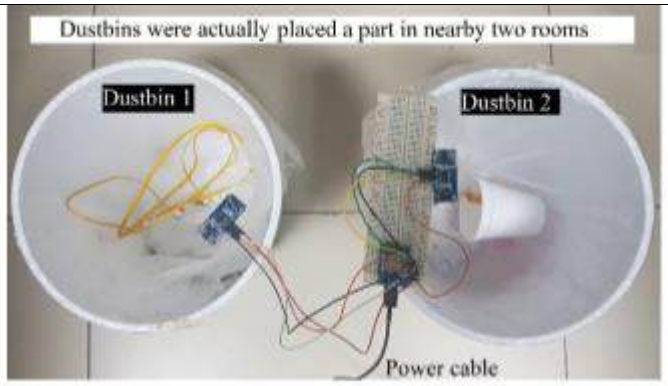
Soak pit, Mehran University of Engineering & Technology, Jamshoro.

Description:

- The sewage disposal at Mehran University of Engineering & Technology, Jamshoro comprises of septic pit, sedimentation pit, and soak pit. The sewage collected from all sources is discharged to a septic pit, then discharged to a sedimentation pit for settling of suspended and colloidal particles.

[3.13] Planning, implementation, monitoring and/or evaluation of all programs related to Waste Management through the utilization of Information and Communication Technology (ICT)

Proposed System Architecture	

WeMos and connection with HC-SR04 and monitoring system	
Garbage Monitoring System	

Wirelessly connected smartphone showing monitoring results for two dustbins	

Description:

- MUET IoT lab is conducting a feasibility study to explore the potential integration of Information and Communication Technology (ICT) into waste management programs. This initiative aims to enhance the efficiency and effectiveness of waste management processes through digital solutions. By leveraging ICT, the program seeks to improve the planning, implementation, monitoring, and evaluation of waste management strategies.
- Hence, the correct option would be : [2] The program is currently in the planning stage.

4. Water

Water conservation is a key focus at Mehran University, where sustainable practices are implemented to manage water resources effectively. The university utilizes rainwater harvesting systems to collect and reuse rainwater for irrigation and non-potable purposes, reducing dependence on municipal water supplies. Water-efficient fixtures and appliances are installed in campus buildings to minimize water consumption. Additionally, educational programs raise awareness about the importance of water conservation, encouraging students and staff to adopt responsible water usage habits.

[4.1] Water Conservation Program Implementation

Sprinkle System

Drip System

Description:

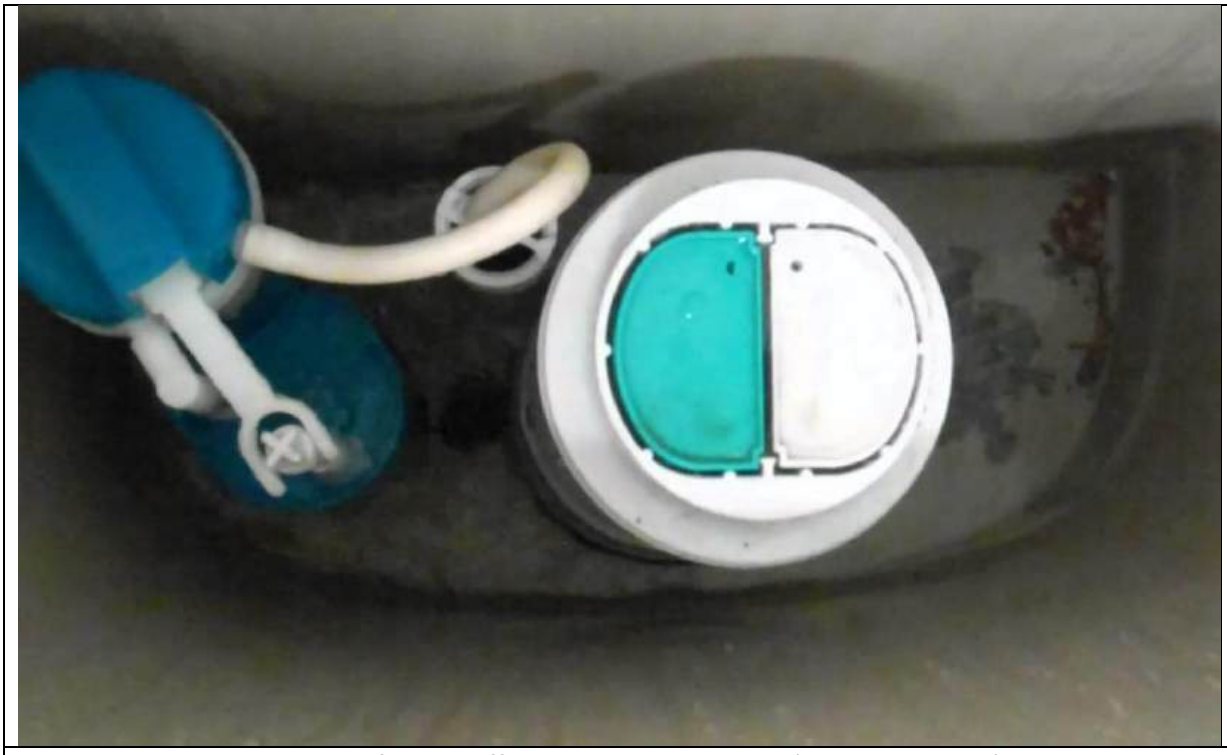
- Rainwater is collected from building roofs through separate drains, and the campus is equipped with a sprinkler system covering a lawn area of 20,000 square feet and a drip irrigation system designed to irrigate around 100 trees.

[4.2] Water Recycling Program Implementation

Description:

- Mehran University has a state-of-the-art water treatment plant, specifically designed to purify both rainwater and river water. This advanced facility ensures that the treated water meets the highest standards for drinking purposes. As a result, the university contributes to the availability of clean and safe water for the entire community.
- https://www.facebook.com/share/v/RoWcBPyP6ZB2XegZ/

[4.3] Water Efficient Appliances Usage



Example of Water Efficient Appliances Usage (Dual Flash Tank)

Description:

- Dual Flash Tank are installed at Water Department, Civil Engineering Department, Administration Block

Appliance	**Total Number**	**Total number water Efficient appliances**	**Percentage**
Toilet	150	0	0
Dual Flash tank	150	30	20%
Etc.	…	**…**	**…**
		Average Percentage	**10%**

[4.4] Consumption of treated water

Example of **Consumption of treated water** (MUET RO Plant)

Description:

- Mehran University has a state-of-the-art water treatment plant, specifically designed to purify both rainwater and river water. This advanced facility ensures that the treated water meets the highest standards for drinking purposes. As a result, the university contributes to the availability of clean and safe water for the entire community.
- **https://www.facebook.com/105110577875668/videos/819669968884525/**

[4.6] Planning, implementation, monitoring and/or evaluation of all programs related to WaterManagement through the utilization of Information and Communication Technology (ICT)

Water Management ICT Policy

Purpose: This policy outlines the planning, implementation, monitoring, and evaluation of all programs related to water management through the utilization of Information and Communication Technology (ICT) on campus.

Policy Statement: We are committed to leveraging ICT to enhance the efficiency, effectiveness, and sustainability of our water management programs. This policy ensures that all water management activities aresystematically planned, implemented, monitored, and evaluated using advanced ICT tools and methodologies.

Key Points:

Planning:

- Utilize ICT tools for comprehensive water management planning, including data collection, analysis,and forecasting.
- Develop strategic plans that incorporate ICT solutions to address water management challenges andopportunities.

Implementation:

- Deploy ICT-based systems for real-time monitoring and control of water resources.
- Implement smart water management technologies such as sensors, automated irrigation systems, andwater quality monitoring devices.

Monitoring:

- Use ICT to continuously monitor water usage, quality, and distribution across the campus.
- Establish a centralized data management system to store and analyze water-related data.Evaluation:
- Conduct regular evaluations of water management programs using ICT tools to assess performanceand identify areas for improvement.
- Generate reports and dashboards to provide insights into water management effectiveness andefficiency.

Education and Training:

- Provide training for staff and students on the use of ICT in water management.
- Promote awareness of the benefits of ICT in sustainable water management practices.Collaboration:
- Collaborate with local and international organizations to stay updated on the latest ICT advancementsin water management.
- Engage with stakeholders to share knowledge and best practices in ICT-enabled water management.Compliance:
- Ensure all ICT-based water management activities comply with relevant regulations and standards.
- Regularly review and update the policy to reflect technological advancements and regulatory changes.Conclusion: By integrating ICT into our water management programs, we aim to achieve greater

efficiency, sustainability, and resilience in managing our water resources. Thank you for yourcooperation and commitment to innovative water management practices.

Warm regards,

Prof. Dr. Kamran Ansari Director, USPCAS-W

Mehran University of Engineering and Technology (MUET) Jamshoro, Sindh, Pakistan

[4.5] Water pollution control in campus area

Water Pollution Control Policy

Purpose: As part of our ongoing commitment to sustainability and environmental stewardship, this Water Pollution Control Policy aims to protect our precious water resources and ensure a healthier campus for everyone.

Policy Statement: We are dedicated to implementing comprehensive measures to control water pollution and promote sustainable practices within our campus community.

Key Points:

1. Regular Water Testing:
   Conduct regular tests on water sources to monitor pollution levels and ensure safety.
2. Green Solutions:
   Introduce rain gardens and permeable pavements to manage stormwater runoff and reduce pollution.
3. Wastewater Treatment:
   Upgrade and maintain wastewater treatment facilities to efficiently remove contaminants.
4. Education and Awareness:
   Educate the campus community on pollution prevention, proper disposal of chemicals, and reducing the use of harmful substances.
5. Use of Native Plants and Organic Fertilizers:
   Utilize native plants and organic fertilizers to reduce chemical use and prevent runoff pollution.
6. Water-Saving Practices:
   Promote water-saving practices such as fixing leaks, installing low-flow fixtures, and using recycled water for irrigation.
7. Hazardous Materials Management:
   Establish protocols for the safe storage, handling, and disposal of hazardous materials to prevent spills and contamination.
8. Community Participation:
   Encourage participation in water conservation and pollution prevention activities through workshops, campaigns, and volunteer programs.
9. Incident Response Plan:
   Develop a clear plan for responding to water pollution incidents, with defined communication channels and responsibilities.
10. Collaboration with Environmental Agencies:
    Work with local environmental agencies and organizations to stay updated on best practices and regulatory requirements.

Warm regards,

Prof. Dr. Kamran Ansari Director,
USPCAS-W

Mehran University of Engineering and Technology (MUET) Jamshoro,
Sindh, Pakistan

5. Transportation

MUET promotes sustainable transportation solutions to reduce carbon emissions and traffic congestion around the campus. The university encourages the use of public transport, carpooling, and cycling by providing adequate infrastructure such as bicycle racks and safe pathways. Awareness campaigns highlight the environmental benefits of using eco-friendly transportation methods. Furthermore, MUET is exploring the implementation of an electric vehicle charging station to support the growing adoption of electric vehicles among students and staff.

[5.4] The total number of vehicles (cars and motorcycles) divided by total campus' Population

No.	Vehicle	Total Number
1	Car managed by the university	18
2	Cars entering the university	1758
3	Motorcycles entering the university	1638
	Total	3414

5.4 = 3414 / 10065 (population) = 0.339

Description:

University is providing regular shuttle services for Students and Staff within the premises of university. Shuttle is more convenient facility to move from one department to another. It is free of cost

Hence the correct option would be **[3] > 0.125 - 0.5.**

[5.5] Shuttle Services

Example of Shuttle Services

Description:

The university offers a fleet of four shuttle buses that operate consistently throughout each day, ensuring convenient and efficient transportation within the campus vicinity. These shuttles are provided free of charge to all students, faculty, and staff, supporting smooth and timely movement across different areas of the campus. To further enhance accessibility, the shuttles run on a regular schedule, making rounds after every working hour, ensuring that everyone on campus can easily reach their destinations

[5.9] Zero Emission Vehicles (ZEV) availability on campus

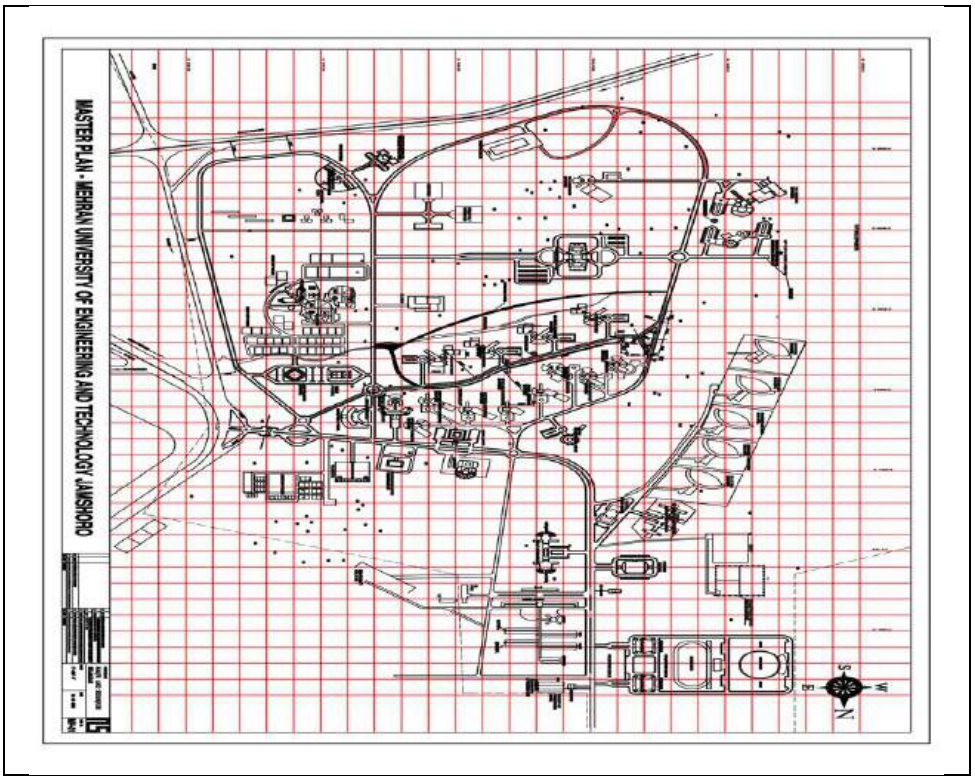
	

Description:

Zero-emission vehicles, such as bicycles and electric bikes, are utilized exclusively by students and staff within the campus. There are 105 such zero-emission vehicles in the university. Most areas of MUET are designed to be cyclist- and pedestrian-friendly, with all sites equipped with covered cycle racks. The university promotes cycling by offering bicycles to both students and staff free of cost. Additionally, it supports cycling through various services, events, and groups, even providing free bicycles to students to further encourage this eco-friendly mode of transportation.

Hence the correct option would be **[5] Zero-Emission Vehicles are available and provided by the university for free.**

[5.13] Ratio of Parking Area to Total Campus Area



Example of Ratio of Parking Area to Total Campus Area (Mehran University of Engineering Technology)

Description:

Total main campus area: 1661825 m^2
Total parking area = 6577.064 m^2
Ratio = 0.00395

[5.14] Program to limit or decrease the parking area on campus for the last 3 years (from 2021 to 2023)

The university has a large area available at its campus, so there is no need to decrease parking area in case it is needed in future when more departments and faculties are added.

[5.15] Number of Transportation Initiatives to Decrease Private Vehicles on Campus

	
Campus Bus	Free Bicycle Service within Campus

Description:

1. The university provides shuttle bus services to all students within the campus, significantly reducing the need for students to use their own vehicles.
2. Additionally, the university offers a bicycle service on campus.

[5.16] Pedestrian Path Policy on Campus

Description:

1. Separate roads are available for vehicles, and designated pedestrian pathways are provided.
2. Shades are installed above the pedestrian pathways for pedestrians.
3. Streetlights are provided to illuminate pedestrian paths at night.
4. Ramps are provided at the entrance of the MUET building for the handicaps.

Hence the correct option would be **[5] Pedestrian paths are available, designed for safety and convenience, and in some parts provided with disabled-friendly features.**

[5.18] Planning, implementation, monitoring and/or evaluation of all programs related to Transportation through the utilization of Information and Communication Technology (ICT)

Description:

Mehran University of Engineering & Technology (MUET) has implemented a sustainable and efficient transportation management system, leveraging innovative solutions from its IoT Lab. The lab monitors vehicle movement patterns across the campus, optimizing traffic flow and supporting data-driven decisions for enhanced mobility.

The IoT Lab also contributes to future sustainability initiatives, such as managing electric vehicle charging stations and promoting eco-friendly transportation options like bicycles and pedestrian pathways. This approach aligns with MUET's commitment to integrating smart technologies for improved campus operations.
Further details on the IoT Lab's initiatives are available on their official Facebook page.

Hence the correct option would be **[2] The program is currently in the planning stage.**

6.Education

Mehran University is dedicated to advancing education and research in sustainability. The curriculum integrates sustainability concepts across various disciplines, equipping students with the knowledge and skills needed to address environmental challenges. MUET actively supports research projects focused on renewable energy, waste management, and sustainable engineering practices. Collaborative initiatives with local and international organizations enhance research capabilities, fostering innovation and promoting sustainable development within the community. Through seminars, workshops, and student-led projects, MUET nurtures a culture of sustainability, empowering future leaders to drive positive change.

[6.1] Number of courses/subjects related to Sustainability Offered:

S.No	Departments	Subjects
01	Environmental Engineering and Management	1. Introduction to Environmental Engineering
		2. Environmental Physics
		3. Environmental Chemistry
		4. Environmental Microbiology
		5. Ecological Management
		6. Engineering Materials and Environment
		7. Water Supply Engineering and Treatment
		8. Environmental Economics
		9. Soil Mechanics for Environmental Engineering
		10. Wastewater Engineering and Treatment
		11. Environmental Biotechnology
		12. Climate Change and Disaster
		13. Renewable and Emerging Energy Technologies
		14. Solid Waste Engineering and Management
		15. Air and Noise pollution
		16. Cleaner Production Techniques
		17. Hazardous Waste Risk Assessment and Management
		18. Environmental Impact Assessment
		19. Occupational Health Safety and Environment
		20. Waste Resources Engineering and Management
		21. Community Service 22. Engineering drawing practices 23. Fluid mechanics for environmental engineer 24. Entrepreneurship 25. Natural resource management

		26. GIS and remote sensing
02	Department of Architecture Engineering	1. Building material-I 2. Building material-II 3. Physical environmental studies 4. Building construction-I 5. Building Construction-II 6. Building economics 7. Urban planning and design 8. Energy efficient architechture 9. Sustainable architecture 10. Disaster management 11. Sociology 12. Model making 13. Building service-I 14. Building service-II 15. Building economics 16. Energy efficient architecture
03	Department of Civil Engineering	1. Engineering geology 2. Railways and waterways engineering 3. Architechture and town planning 4. Geoinformatics 5. Construction engineering 6. Hydrology 7. Environmental engineering-I 8. Geotechnical engineering 9. Irrigation and drainage engineering 10. Environmental engineering-II 11. Construction planning and management 12. Civil engineering material 13. Fluid mechanics and hydraulics 14. Traffic engineering and pavement design 15. Engineering economics 16. Community service
04	Department of city and regional planning	1. Public participation and community development 2. Environmental engineering 3. Urban geography 4. Infrastructure planning and management 5. Land use and building control 6. Environmental planning and management 7. Hazards and disaster risk management 8. Introduction to town planning 9. Technical drawing 10. Model making 11. Transportation planning 12. Building construction 13. Social town planning 14. Urban design and landscape planning

		15. Site planning 16. Rural planning 17. Planning of new towns 18. Public participation and community development 19. Planning legislations 20. Urban economics 21. Planning theory 22. Architecture design for planners 23. Housing 24. Regional planning 25. Introduction to GIS 26. Project planning and management 27. Professional planning practices 28. Estate management 29. History of cities and urban planning 30. Planning data analysis 31. Communication skills 32. GIS application in planning 33. Project planning and management 34. Professional planning practice 35. Master planning-I 36. Master planning-II
05	Biomedical Engineering	1. Healthcare information system and hospital management 2. Radiation and environment 3. Biomaterials 4. Economics for technopreneurs 5. Principles of food processing and preservation
06	Telecommunication engineering	1. Entrepreneurship 2. Telecom policies and standards 3. Engineering Management
06	Software engineering	1. Software economics and management 2. Software design and architecture 3. Software construction and development 4. Introduction to entrepreneurship and creativity 5. Software project management
08	Electronics engineering	1. Entrepreneurship 2. Electronics workshop 3. Engineering Management 4. Sociology for Engineers 5. Robotics and mechatronics system design
09	Computer System Engineering	1. Engineering economics and project management 2. Community service

		3. Entrepreneurship 4. Organizational Behavior
10	Electrical engineering	1. Electrical Workshop Practices 2. Power generation system 3. Power economics and management 4. Power system protection 5. Power distribution and utilization
11	Chemical engineering	1. Pollution Control engineering 2. Process safety and maintenance 3. Fuel and energy 4. Petroleum refinery 5. Chemical plant design 6. Industrial management 7. Engineering materials 8. Chemical engineering fluid mechanics-I 9. Chemical engineering fluid mechanics-II 10. Entrepreneurship 11. Food Technology 12. Engineering economics 13. Chemical process technology 14. Basic electrical technology 15. Heat transfer operations 16. Engineering thermodynamics 17. Chemical engineering thermodynamics 18. Particulate technology 19. Bio-chemical engineering 20. Fuel and energy 21. Transport Phenomenon 22. Industrial management
12	Industrial Engineering & Management	1. Production, planning and control 2. Environmental management 3. Industrial maintenance and safety 4. Industrial economics and management 5. Materials and processes 6. Production planning and control 7. Fluid mechanics 8. Machine design 9. Quality control and reliability 10. Human resource management 11. Entrepreneurship 12. Production system design
13	Mechanical Engineering	1. Safety health and environment 2. Thermal power plants 3. Solar energy systems 4. Renewable and emerging energy technologies 5. Maintenance engineering

		6. Engineering materials 7. Fluid mechanics-I 8. Fluid mechanics-II 9. Machine design-I 10. Machine design-II 11. Engineering management and entrepreneurship 12. Engineering economics and project management 13. Engineering law
14	Mechatronics Engineering	1. Safety health and environment 2. Engineering materials 3. Fluid mechanics 4. Engineering economics and project management 5. Entrepreneurship
15	Metallurgy and materials engineering	1. Industrial safety and environmental engineering 2. Corrosion and protection 3. Advanced materials and nanotechnologies 4. Design of materials 5. Entrepreneurship and marketing
16	Mining engineering	1. General geology 2. Structural geology 3. Mine water and dewatering design 4. Planning and design of underground mines 5. Mine rescue and safety 6. Surface mine design and practice 7. Fluid mechanics 8. Mine economics 9. Workshop Practices
17	Petroleum and natural gas engineering	1. Applied geology 2. Petroleum geology and geophysical prospecting 3. Environment and safety management 4. Fluid mechanics 5. Petroleum refinery engineering 6. Natural gas engineering 7. Petroleum economics
18	Textile engineering	1. Environmental health and safety 2. Textile raw materials 3. Thermodynamics and fluid mechanics 4. Workshop Practices 5. Fabric preparatory 6. Textile industry and utility services 7. Textile pretreatment 8. Textile colorant and coloration

		9. Textile testing and quality control 10. Engineering project management 11. Textile sales and marketing 12. Entrepreneurship 13. Engineering economics
19	Bachelor of Science in Mathematics	1. Environmental science 2. Economics 3. Sociology 4. Fluid mechanics 5. Econometrics
20	BBA	1. Pakistan economics 2. Agribusiness 3. Globalization and business development 4. Brand management 5. New product development 6. Personnel management 7. Personal selling 8. Career management and planning 9. Entrepreneurial finance and marketing 10. Financial management 11. Social entrepreneurship 12. Financial risk management 13. Career management and planning 14. Job analysis and performance appraisal 15. Social psychology and personal development 16. Micro Economics 17. Macro Economics 18. Web design and application development 19. Organization behavior 20. Advertising and promotion
21	Bachelor of Studies in English	1. Environmental science 2. Entrepreneurship
22	BSES	1. Introduction to Environmental Science 2. Sociology 3. Environmental pollution 4. Climatology 5. Environmental informatics 6. Watershed management 7. Energy and environment 8. Applied hydraulics environmental monitoring and management 9. Land degradation, restoration and management 10. Water and climate change 11. Solid waste management 12. Environmental impact assessment

		13. Hydrology 14. Occupational safety health and environment 15. Public health and environment 16. Water and wastewater treatment processes 17. Soil and water conservation
23	BS in civil engineering technology	1. Occupational ealth and safety and management 2. Soil mechanics 3. Water supply and wastewater management 4. Hydrology 5. Environmental engineering and management 6. Geology and earthquake engineering 7. Irrigation and hydraulic structures 8. Steel structures 9. Fluid mechanics 10. Civil engineering drawing 11. Applied mechanics 12. Communication skills 13. Material and method of building construction 14. Introduction to architecture and town planning 15. Mechanics of solids 16. Transportation engineering 17. Theory of structures 18. Construction and hydraulic machinery 19. Computer aided building modeling and design foundation engineering 20. Project management 21. Highway engineering
24	BS in electrical engineering technology	1. Power generation system 2. Total quality management 3. Electrical power distribution and utilization 4. Control technology 5. Basic mechanical technology 6. Engineering drawing 7. Communication skills 8. Electrical network analysis 9. Electrical machines-I 10. Electrical machines-II 11. Total quality management 12. Control technology 13. Power system analysis

		14. Project management 15. Switchcare and protective devices
25	BS in mechanical engineering technology	1. Total quality management 2. Machine design 3. Material handling and safety 4. Fluid mechanics 5. Industrial materials 6. Engineering economics 7. Workshop technology 8. Communication skills 9. Mechanics of materials 10. Industrial material 11. Instrumentation and control 12. Project management 13. Refrigerator and air conditioning
26	BS garments engineering technology	1. Product development 2. Sustainable garment production 3. Entrepreneurship 4. Leadership and personal grooming 5. Technical drawing and CAD 6. Workshop Practices 7. Garment design fundamental 8. Compliances in the garment industry 9. Supervised industrial training 10. Introduction to textile and garment technology 11. Communication and presentation skills 12. Fundamentals of fabric manufacturing 13. Leadership and personal grooming
27	BSCS	1. Entrepreneurship 2. Mobile application development 3. Principles of management 4. Organizational Behavior
28	BS in cyber security	1. Network security 2. Secure software design and development 3. Professional Practices 4. Information assurance 5. Information security

TOTAL: 322

Description:

- Mehran University provides 322 courses related to sustainability to undergraduate programs to provide students with the information, skills, and resources to enhance their capabilities to solve current environmental, social, and economic issues responsibly.

[6.2] Total Number of Courses/Subjects Offered:

S.No	Departments	No: of subjects
01	Civil Engineering	46
02	Architechtural Engineering	50
03	City and Regional Planning	45
04	Environmental Engineering and Management	44
05	Biomedical	42
06	Computer systems	40
07	Electrical engineering	39
08	Electronics Engineering	41
09	Telecommunication engineering	41
10	Software engineering	39
11	Chemical engineering	40
12	Industrial engineering	41
13	Mechanical engineering	55
14	Metallurgy engineering	45
15	Mechatronics engineering	46
16	Mining engineering	41
17	Petroleum and Natural Gas engineering	42
18	Textile engineering	43
19	BS in Mathematics	51
20	Bachelor in Business Administration	63
21	BS in English	45
22	BS in Computer System	40
23	BS in Environmental Science	44
24	BS in Cyber Security	39
25	BS in Civil Engineering Technology	36
26	BS in Electrical Engineering Technology	37
27	BS in Mechanical Engineering Technology	34
28	BS in Garments Engineering Technology	41
		TOTAL: 1210

Description:

- Mehran University offers 1210 courses to the undergraduate programs comprising technical, sustainable, statistical, and analytical subjects to provide systematic field Knowledge to the students and elevate their computational skills.

[6.4] Total research funds dedicated to sustainability research (in US Dollars)

Description:

As per international norm, all research conducted at MUET addresses at least one of the Sustainable

Development Goal of the UN. Please visit URL (https://sdgs.un.org/goals) for details.

- Research funding for year 2020-2021: PKR 28,271,671
- Research funding for year 2021-2022: PKR 137,587,927
- Research funding for year 2022-2023: PKR 98,713,166
- Research funding Average over past three years: PKR 88,190,921 per year
- Conversion to USD (using rate of Rs 278.34 on 28-06-24): $ 316,846 per year

Following table lists projects that align with UN's Sustainable Development Goals.

SNo	Title of Research Project	Name of Principal Investigator	Department	SDG
1	Hybrid Wind Solar Power Generation with DC Micro Grid System for Off Grid Consumers	Dr. Pervez Hameed Shaikh Department of Electrical Engineering	Electrical Engineering	7,9,11,13
2	Modeling of Renewable Energy Penetration in Energy Mix of Pakistan	Prof. Dr. Khanji Harijan	Department of Mechanical Engineering	7,9,13
3	Reconfigurable Frequency Tunable Liquid Metal Antennas and digital Phase Sifters for Microwave Frequencies MUET Jso.	Prof. Dr. B. S. Chowdhry Department of Electronic Engineering	Electronic Engineering	9,12
4	Assessment & Forecasting of Drougt in Tharparkar Sindh	Dr. Syed Feroz Shah, Department of B.S.R.S	B.S.R.S	6,13,15
5	Equivalent Model Development and Performance Analysis of Small Scale Concentrated Solar Parabolic Dish System	Dr. Zubair Ahmed Memon, Department of Electrical Engg:	Electrical Engineering	7,9,13
6	Dynamic Performance Analysis and Control	Dr. Mazhar Hussain Baloch,	Electrical	7,9

		Deptt: of Electrical Engg:MUSZABKHP		
7	Development of transparent and Conductive Textile Composite for Fabric Solar Energy Application	Dr. Sheeraz Ahmed Memon, Associate Prof.	Environmental Engineering	7,9,12
8	Para-Metric Investigation of Arsenic Adsorption in Modified Polyacronitrile Packed Bed Column through Dynamic Simulations	Dr. Khadija Qureshi, Professor	Chemical Engineering	3,6,9
9	Establishment of National Center in Robotics & Automations (NCRA)	Prof: Dr. BS Chowdhry	Electronic Engineering	4,9
10	Fabrication of Flexible dye sensitized solar cells based on textile coated with carbon nanocomposite as counter	Dr. Naveed Mengal	Textile Engineering	7,9
11	CovScan Development of Smart Non-Contact IR-Temprature Scanning and online Database System intgegrated with RFID Authentication(Sindh HEC)	Dr. B S Chowdhry	Electronic Engineering	3,9
12	Point of Care Testing and IoT System for Real Time Cotton Crop Disease Detection Sind HEC	Dr. Shoaib Rehman Soomro	Electrical Engineering	2,9
13	Metering the aquifer using smart monitoring and data-driven approach to assist in devising adaptive groundwater management strategy in Balochistan	Dr. Abdul Latif Qureshi	USPCAS-W MUET	6,13
14	Coloration of Polyester Fabric at Room Tempreature using advace stru 6339	Dr. Zeeshan Khatri	Textile Engineering	9,12
15	Mechanism of Situational Judgment Text for appointment of Faculty in Higher Education Institution in Sindh	Dr. Arabella Bhutto	MUISTD	4,16
16	Training of garment Industry Personnel using Scientific Training methods	Prof: Dr. Samander Ali malik	Textile Engineering	8,9
17	Developing Sustainable Burnet Clay Bricks incorporation Agro-Industrial Waste	Prof: Dr. Aneel Kumar	Civil Engineering	9,12,13
18	Trackside Wheel Tread Checker	Prof: Dr. Muhammad Aslam Uqaili	Electrical Engineering	9,11
19	Condition Monitoring of High Voltage Line Insulators using Deep Learning	Prof: Dr. Tanveer Hussain	Mechnical Engineering	9

20	Standalone Autonomous DC Microgrid for Future DC Home A Sustainable Solution with net zero energy Building (NZEB) for Rural Electrificatio Dr Zubiar Memon	Prof: Dr. Zubair Memon	Electrical Engineering	7,11,13
21	Production of Paper from Waste Plastic Bottles and Eggshells	Dr. Muhammad Shoaib Shaikh	Chemical Engineering	12,13
22	Sythesis of printable and Conductive Nano ink and its potential application in Textile structured solar cells	Dr. Anam Memon	Textile Engineering	
23	National Freelancing Training Center (Punjab Information Technology Board GOPujab)	Dr. Qasim Arain	Software Engineering	4,8
24	Design and Development of Solar Hybrid Multilevel Inverter for Photovoltaic System	Dr. Abdul Sattar Larik	Electrical Engineering	7,9
25	GHEEG - Geothermal Heat Extraction for Electrical Generation	Dr. Amir Soomro	Electrical Engineering	7,9
26	Development of Antimicrobial PP Mesh Devices for Hernia Repair	Dr. Noor Ahmed Sanbhai	Textile Engineering	7,9
27	Ultrafast photo-catalytic degradation of the organic dyes by using metal/metal oxide nanoparticle	Dr. Syeda Sara Hassan, Assistant Professor	USPCAS-W MUET	6,13
28	Bio-sensing platform based on nanoparticles for waterborne bacterial pathogens	Dr. Syeda Sara Hassan, Assistant Professor	USPCAS-W MUET	3,6,9
29	Development And Upscaling Of Indigenized Anaerobic Digester For The Biotransformation Of Textile Sludge Into The Production Of Biogas And Biocompost	Prof. Dr. Rasool Bux Mahar; Professor	USPCAS-W MUET	7,12,13
30	Development and Upscaling of Combined Adsorption Distillation Technique for Saline-Water Treatment and Fresh Water Production on Industrial-Scale (CAD-WATER)	Dr. Tanveer Ahmed, Assis. Professor, USPCASW, MUET, Jamshoro	USPCAS-W MUET	6,9
31	Indus River Flow Monitoring using Satellite Radar Altimetry Data and 2D Flood model.	Dr. Arjumand Zaidi, Senior Research Fellow, USPCAS-W, MUET, Jamshoro	USPCAS-W MUET	6,11,13

32	Eco-Innovation for Sustainable Industrail Growth of Major Industrial Sectors in Special Economic Zones (ECZs) under CPEC-75	Dr. Zubair Ahmed, Professor, USPCAS-W, MUET, Jamshoro	USPCAS-W MUET	9,12
33	Pesticides Removal by Point of Use Nanofiltration Membrane and their Rapid Detection in Water Using Liquid Chromatography Mass Spectrometry	Dr. Muhammad Riwan, Assistant Professor, USPCAS-W, MUET, Jamshoro	USPCAS-W MUET	3,6,9
34	COE	Dr. Zubair Ahmed, Professor, USPCAS-W, MUET, Jamshoro	USPCAS-W MUET	9,17
35	Molecular Source Tracking of Salmonella Species at Different Stages of Poultry Slaughtering	Dr. Naveed	USPCAS-W MUET	3,9,12
36	Green Investments for a Cleaner Pakistan: Analyzing the Link between Green Finance, Renewable Energy, and Greenhouse Gas Emissions	Dr. Faheemullah Shaikh	Electrical	7,13
37	Identifying Challenges and Solutions to the Implementation of Sindh Climate Change policy	Prof. Dr. Muhammad Aslam	Eletrical	13
38	Evaluating Waste to Energy LCOE Potential: A Business Case for Water Desalination in Karachi	Dr. Sheeraz Ahmed Memon	IEE&M	6,7,12
39	Environment Friendly Coloration of Cellulose Fabrics with Antimicrobial Eucalyptus Extracted Natural Dyes for Hospital Applications	Dr. Noor Ahmed Sanbhal	Textile	3,12
40	ACTIVE (https://pk.linkedin.com/company/activeclimateaction)	Prof: Dr. BS Chowdhry	Electronic Engineering	7,9,11, 12,13,17
41	Adopting to Salinity in Southern Indus Basin	Dr. B.K Lashari	USPCAS-W MUET	2,6,13
42	Assess the health impacts of solid waste management on residents living in six selected UCs of Karachi and Hyderabad	Dr. Rasool Bux Mahar, Professor, USPCAS-W, MUET	USPCAS-W MUET	3,6,11,12

The evidence of funds is made available as a signed document from the Finance Department of MUET (please turn over to the next page).

THE DETAILS OF RESEARCH PROJECTS APPROVED / ONGOING

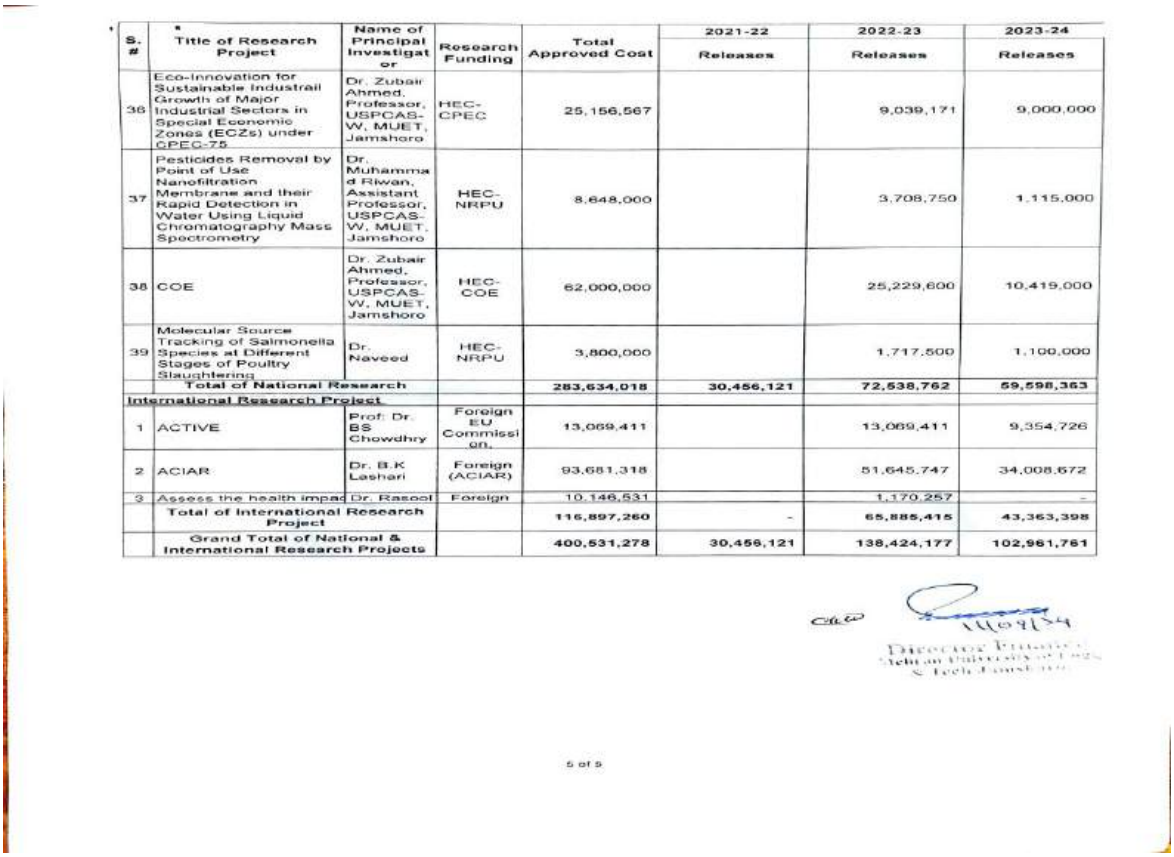
National Research Project

S. #	Title of Research Project	Name of Principal Investigator	Research Funding	Total Approved Cost	2021-22	2022-23	2023-24
					Releases	Releases	Releases
1	Modeling of Renewable Energy Penetration in Energy Mix of Pakistan	Prof. Dr. Khanji Harijan	14-01-2016	3,139,090	476,380		
2	Reconfigurable Frequency Tunable Liquid Metal Antennas and digital Phase Sifters for Microwave Frequencies MUET Jso.	Prof. Dr. B. S. Chowdhry Department of Electronic Engineering	HEC-NRPU	11,367,602	584,841	167,450	
3	Assessment & Forecasting of Drougt in Tharparkar Sindh	Dr. Syed Feroz Shah, Department of B.S.R.S	HEC-NRPU	2,141,876		485,541	
4	Hybrid Wind Solar Power Generation with DC Micro Grid System for Off Grid Consumers	Dr. Pervez Hameed Shaikh Department of Electrical Engineering	HEC-NRPU	2,167,386	437,392	19,318	
5	Equivalent Model Development and Performance Analysis of Small Scale Concentrated Solar Parabolic Dish System	Dr. Zubair Ahmed Memon, Department of Electrical Engg:	HEC-NRPU	2,117,222	391,526	104,772	
6	Dynamic Performance Analysis and Control	Prof: Dr. Mazhar Hussain Pirzda	HEC-NRPU		60,020		
7	Development of transparent and Conductive Textile Composite for Fabric Solar Energy Application	Dr. Sheeraz Ahmed Memon, Associate Prof.	HEC-NRPU	3,809,547.00	578,576		
8	Para-Metric Investigation of Arsenic Adsorption in Modified Polyacronitrile Packed Bed Column through Dynamic Simulations	Dr. Khadija Qureshi, Professor	HEC-NRPU	3,174,138	356,892	356,892	

S. #	Title of Research Project	Name of Principal Investigator	Research Funding	Total Approved Cost	2021-22	2022-23	2023-24
					Releases	Releases	Releases
9	Establishment of National Center in Robotics & Automations (NCRA	Prof: Dr. BS Chowdhry	HEC-NCRA	41,768,400	11,207,000	2,503,253	
10	Fabrication of Flexible dye sensitized solar cells based on textile coated with carbon nanocomposite as counter	Dr. Naveed Mengal	HEC-NRPU	11,849,066		2,392,155	2,391,816
11	CovScan Development of Smart Non-Contact IR- Temprature Scanning and online Database System intgegrated with RFID Authentication(Sindh HEC)	Dr. B S Chowdhry	SHEC	4,368,900.00	2,184,450		
12	Point of Care Testing and IoT System for Real Time Cotton Crop Disease Detection Sind HEC	Dr. Shoaib Rehman Soomro	SHEC	3,278,100	1,639,050	1,639,050	
13	Metering the aquifer using smart monitoring and data-driven approach to assist in devising adaptive groundwater management strategy in Balochistan	Dr. Abdul Latif Qureshi Co-PI USPCAS-W MUET, Jamshoro	HEC-LCF	21,345,231	8,538,000	6,363,633	6,403,569
14	Coloration of Polyester Fabric at Room Tempreature using advace stru 6339	Dr. Zeeshan Khatri	HEC-LCF	2,854,356		796,306	796,307
15	Mechanism of Situational Judgment Text for appointment of Faculty in Higher Education Institution in Sindh	Dr. Arabella Bhutto	SHEC	1,169,000	584,500	584,500	
16	Training of garment Industry Personnel using Scientific Training methods	Prof: Dr. Samander Ali malik	SHEC	1,686,000	843,000	843,000	843,000
17	Developing Sustainable Burnet Clay Bricks incorporation Agro-Industrial Waste	Prof: Dr. Aneel Kumar	SHEC	1,800,000	900,000	900,000	
18	Trackside Wheel Tread Checker	Prof: Dr. Muhammad Aslam Uqaili	SHEC	1,500,000	750,000	750,000	
19	Condition Monitoring of High Voltage Line Insulators using Deep Learning	Prof: Dr. Tanveer Hussain	SHEC	1,520,000	760,000	000,000	760,000

S. #	Title of Research Project	Name of Principal Investigator	Research Funding	Total Approved Cost	2021-22	2022-23	2023-24
					Releases	Releases	Releases
20	Standalone Autonomous DC Microgrid for Future DC Home A Sustainable Solution with net zero energy Building (NZEB) for Rural Electrificatio Dr Zubiar Memon	Prof: Dr. Zubair Memon	SHEC	2,275,000		1,137,500	1,137,500
21	Production of Paper from Waste Plastic Bottles and Eggshells	Dr. Muhammad Shoaib Shaikh	SHEC	2,568,250		1,284,125	1,284,125
22	Synthesis of printable and Conductive Nano inkand its potential applicationin Textile Structured Solor Cells	Dr. Anam Memon	HEC-NRPU	8,565,414			4,282,707
23	Development of Antimicrobial PP Mesh Devices for HerniaRepair	Dr. Noor Ahmed Sanbhal	HEC-NRPU	3,703,000			1,851,500
24	National Freelancing Training Center (Punjab Information Technology Board GOPujab)	Dr. Qasim Arain	'Punjab I.T Board	5,000,000		836,250	4,248,595
25	Design and Development of Solar Hybrid Multilevel Inverter for Photovoltaic System	Dr. Abdul Sattar Larik		1,900,000			950,000
26	Indentifying Challenges and Solutions to the Implementation of Sindh Climate Change Policy	Prof: Dr. Muhammad Aslam Quaili		2,300,000			1,150,000
27	Evaluating Waste to Energy LCOE Potential: A Business case for water desalination in Karachi	Prof: Dr. Sheeraz Memon		1,600,000			800,000
28	GHEEG - Geothermal Heat Extraction for Electricity Generation	Dr.Amir Soomro		2,860,000			1,430,000
29	Environment friendly coloration of cellulose fabrics with antimicrobial eucalyptus extracted natural dyes for hospital application	Dr. Noor Ahmed Sanbhal		1,560,000			780,000

S. #	Title of Research Project	Name of Principal Investigator	Research Funding	Total Approved Cost	2021-22	2022-23	2023-24
					Releases	Releases	Releases
30	Green Investment for a Cleaner Pakistan: Analyzing eh link between green finance, renewable Energy, and green house gas emissions	Dr. Faheemullah Shaikh		1,300,000			650,000
31	Ultrafast photo-catalytic degradation of the organic dyes by using metal/metal oxide nanoparticle (HEC/R&D/NRPU/2017/10113)	Dr. Syeda Sara Hassan, Assistant Professor, USPCAS-W, MUET, Jamshoro	HEC-NRPU	955,245		337,239	
32	Bio-sensing platform based on nanoparticles for waterborne bacterial pathogens (HEC/R&D/NRPU/2017/9240)	Dr. Syeda Sara Hassan, Assistant Professor, USPCAS-W, MUET, Jamshoro	HEC-NRPU	978,264	164,494	109,512	
33	TDF03-037-Development And Upscaling Of Indigenized Anaerobic Digester For The Biotransformation Of Textile Sludge Into The Production Of Biogas And Biocompost	Prof. Dr. Rasool Bux Mahar; Professor, USPCASW, MUET, Jamshoro	HEC-TDF	13,717,000		5,199,627	
34	TTSF-76- Development and Upscaling of Combined Adsorption Distillation Technique for Saline-Water Treatment and Fresh Water Production on Industrial-Scale (CAD-WATER)	Dr. Tanveer Ahmed, Assis. Professor, USPCASW, MUET, Jamshoro	HEC-NRPU	9,385,150		2,850,515	6,535,444
35	Indus River Flow Monitoring using Satellite Radar Altimetry Data and 2D Flood model.	Dr. Arjumand Zaidi, Senior Research Fellow, USPCAS-W, MUET, Jamshoro	HEC-NRPU	7,645,304		2,413,103	1,700,000



S. #	Title of Research Project	Name of Principal Investigator	Research Funding	Total Approved Cost	2021-22 Releases	2022-23 Releases	2023-24 Releases
36	Eco-Innovation for Sustainable Industrail Growth of Major Industrial Sectors in Special Economic Zones (ECZs) under CPEC-75	Dr. Zubair Ahmed, Professor, USPCAS-W, MUET, Jamshoro	HEC-CPEC	25,156,567		9,039,171	9,000,000
37	Pesticides Removal by Point of Use Nanofiltration Membrane and their Rapid Detection in Water Using Liquid Chromatography Mass Spectrometry	Dr. Muhammad Riwan, Assistant Professor, USPCAS-W, MUET, Jamshoro	HEC-NRPU	8,848,000		3,708,750	1,115,000
38	COE	Dr. Zubair Ahmed, Professor, USPCAS-W, MUET, Jamshoro	HEC-COE	62,000,000		25,229,600	10,419,000
39	Molecular Source Tracking of Salmonella Species at Different Stages of Poultry Slaughtering	Dr. Naveed	HEC-NRPU	3,800,000		1,717,500	1,100,000
	Total of National Research			**283,634,018**	**30,456,121**	**72,538,762**	**59,598,363**
International Research Project							
1	ACTIVE	Prof. Dr. BS Chowdhry	Foreign EU Commission	13,069,411		13,069,411	9,354,726
2	ACIAR	Dr. B.K Lashari	Foreign (ACIAR)	93,681,318		51,645,747	34,008,672
3	Assess the health impac	Dr. Rasool	Foreign	10,146,531		1,170,257	-
	Total of International Research Project			**116,897,260**	-	**65,885,415**	**43,363,398**
	Grand Total of National & International Research Projects			**400,531,278**	**30,456,121**	**138,424,177**	**102,961,761**

5 of 5

[6.5] Total research funds (in US Dollars)

Description:

Research funding for year 2020-2021: PKR 28,271,671

Research funding for year 2021-2022: PKR137,587,927

Research funding for year 2022-2023: PKR 98,713,166

Research funding Average over past three years: PKR 88,190,921 per year

Conversion to USD (using rate of Rs 278.34 on 28-06-24): $ 316,846 per year

The evidence of funds is made available as a signed document from the Finance Department of MUET (pleaseturn over to the next page).

THE DETAILS OF RESEARCH PROJECTS APPROVED / ONGOING

National Research Project

S. #	Title of Research Project	Name of Principal Investigator	Research Funding	Total Approved Cost	2021-22	2022-23	2023-24
					Releases	Releases	Releases
1	Modeling of Renewable Energy Penetration in Energy Mix of Pakistan	Prof. Dr. Khanji Harijan	14-01-2016	3,139,090	476,380		
2	Reconfigurable Frequency Tunable Liquid Metal Antennas and digital Phase Sifters for Microwave Frequencies MUET Jso.	Prof. Dr. B. S. Chowdhry Department of Electronic Engineering	HEC-NRPU	11,367,602	584,841	167,450	
3	Assessment & Forecasting of Drougt in Tharparkar Sindh	Dr. Syed Feroz Shah, Department of B.S.R.S	HEC-NRPU	2,141,876		485,541	
4	Hybrid Wind Solar Power Generation with DC Micro Grid System for Off Grid Consumers	Dr. Pervez Hameed Shaikh Department of Electrical Engineering	HEC-NRPU	2,167,386	437,392	19,318	
5	Equivalent Model Development and Performance Analysis of Small Scale Concentrated Solar Parabolic Dish System	Dr. Zubair Ahmed Memon, Department of Electrical Engg:	HEC-NRPU	2,117,222	391,526	104,772	
6	Dynamic Performance Analysis and Control	Prof: Dr. Mazhar Hussain Pirzda	HEC-NRPU		60,020		
7	Development of transparent and Conductive Textile Composite for Fabric Solar Energy Application	Dr. Sheeraz Ahmed Memon, Associate Prof.	HEC-NRPU	3,809,547.00	578,576		
8	Para-Metric Investigation of Arsenic Adsorption in Modified Polyacronitrile Packed Bed Column through Dynamic Simulations	Dr. Khadija Qureshi, Professor	HEC-NRPU	3,174,138	356,892	356,892	

S. #	Title of Research Project	Name of Principal Investigator	Research Funding	Total Approved Cost	2021-22	2022-23	2023-24
					Releases	Releases	Releases
9	Establishment of National Center in Robotics & Automations (NCRA	Prof: Dr. BS Chowdhry	HEC-NCRA	41,768,400	11,207,000	2,503,253	
10	Fabrication of Flexible dye sensitized solar cells based on textile coated with carbon nanocomposite as counter	Dr. Naveed Mengal	HEC-NRPU	11,849,066		2,362,155	2,361,616
11	CovScan Development of Smart Non-Contact IR- Temprature Scanning and online Database System intgegrated with RFID Authentication(Sindh HEC)	Dr. B S Chowdhry	SHEC	4,368,900.00	2,184,450		
12	Point of Care Testing and IoT System for Real Time Cotton Crop Disease Detection Sind HEC	Dr. Shoaib Rehman Soomro	SHEC	3,278,100	1,639,050	1,639,050	
13	Metering the aquifer using smart monitoring and data-driven approach to assist in devising adaptive groundwater management strategy in Balochistan	Dr. Abdul Latif Qureshi Co-PI USPCAS-W MUET, Jamshoro	HEC-LCF	21,345,231	8,538,000	6,363,633	6,403,569
14	Coloration of Polyester Fabric at Room Tempreature using advace stru 6339	Dr. Zeeshan Khatri	HEC-LCF	2,654,356		796,306	796,307
15	Mechanism of Situational Judgment Text for appointment of Faculty in Higher Education Institution in Sindh	Dr. Arabella Bhutto	SHEC	1,169,000	584,500	584,500	
16	Training of garment Industry Personnel using Scientific Training methods	Prof: Dr. Samander Ali malik	SHEC	1,686,000	843,000	843,000	843,000
17	Developing Sustainable Burnet Clay Bricks incorporation Agro-Industrial Waste	Prof: Dr. Aneel Kumar	SHEC	1,800,000	900,000	900,000	
18	Trackside Wheel Tread Checker	Prof: Dr. Muhammad Aslam Uqaili	SHEC	1,500,000	750,000	750,000	
19	Condition Monitoring of High Voltage Line Insulators using Deep Learning	Prof: Dr. Tanveer Hussain	SHEC	1,520,000	760,000	800,000	760,000

S. #	Title of Research Project	Name of Principal Investigator	Research Funding	Total Approved Cost	2021-22	2022-23	2023-24
					Releases	Releases	Releases
20	Standalone Autonomous DC Microgrid for Future DC Home A Sustainable Solution with net zero energy Building (NZEB) for Rural Electrificatio Dr Zubiar Memon	Prof: Dr. Zubair Memon	SHEC	2,275,000		1,137,500	1,137,500
21	Production of Paper from Waste Plastic Bottles and Eggshells	Dr. Muhamma d Shoaib Shaikh	SHEC	2,568,250		1,284,125	1,284,125
22	Synthesis of printable and Conductive Nano inkand its potential applicationin Textile Structured Solor Cells	Dr. Anam Memon	HEC-NRPU	8,565,414			4,282,707
23	Development of Antimicrobial PP Mesh Devices for HerniaRepair	Dr. Noor Ahmed Sanbhal	HEC-NRPU	3,703,000			1,851,500
24	National Freelancing Training Center (Punjab Information Technology Board GOPujab)	Dr. Qasim Arain	'Punjab I.T Board	5,000,000		836,250	4,248,595
25	Design and Development of Solar Hybrid Multilevel Inverter for Photovoltaic System	Dr. Abdul Sattar Larik		1,900,000			950,000
26	Indentifying Challenges and Solutions to the Implementation of Sindh Climate Change Policy	Prof: Dr. Muhamma d Aslam Quaili		2,300,000			1,150,000
27	Evaluating Waste to Energy LCOE Potential: A Business case for water desalination in Karachi	Prof: Dr. Sheeraz Memon		1,600,000			800,000
28	GHEEG - Geothermal Heat Extraction for Electricity Generation	Dr.Amir Soomro		2,860,000			1,430,000
29	Environment friendly coloration of cellulose fabrics with antimicrobial eucalyptus extracted natural dyes for hospital application	Dr. Noor Ahmed Sanbhal		1,560,000			780,000

S. #	Title of Research Project	Name of Principal Investigator	Research Funding	Total Approved Cost	2021-22	2022-23	2023-24
					Releases	Releases	Releases
30	Green Investment for a Cleaner Pakistan: Analyzing eh link between green finance, renewable Energy, and green house gas emissions	Dr. Faheemullah Shaikh		1,300,000			650,000
31	Ultrafast photo-catalytic degradation of the organic dyes by using metal/metal oxide nanoparticle (HEC/R&D/NRPU/2017/10113)	Dr. Syeda Sara Hassan, Assistant Professor, USPCAS-W, MUET, Jamshoro	HEC-NRPU	955,245		337,239	
32	Bio-sensing platform based on nanoparticles for waterborne bacterial pathogens (HEC/R&D/NRPU/2017/9240)	Dr. Syeda Sara Hassan, Assistant Professor, USPCAS-W, MUET, Jamshoro	HEC-NRPU	978,264	164,494	109,512	
33	TDF03-037-Development And Upscaling Of Indigenized Anaerobic Digester For The Biotransformation Of Textile Sludge Into The Production Of Biogas And Biocompost	Prof. Dr. Rasool Bux Mahar; Professor, USPCAS W, MUET, Jamshoro	HEC-TDF	13,717,000		5,199,627	
34	TTSF-76- Development and Upscaling of Combined Adsorption Distillation Technique for Saline-Water Treatment and Fresh Water Production on Industrial-Scale (CAD-WATER)	Dr. Tanveer Ahmed, Assis. Professor, USPCAS W, MUET, Jamshoro	HEC-NRPU	9,385,150		2,850,515	6,535,444
35	Indus River Flow Monitoring using Satellite Radar Altimetry Data and 2D Flood model.	Dr. Arjumand Zaidi, Senior Research Fellow, USPCAS-W, MUET, Jamshoro	HEC-NRPU	7,645,304		2,413,103	1,700,000

S. #	Title of Research Project	Name of Principal Investigator	Research Funding	Total Approved Cost	2021-22	2022-23	2023-24
					Releases	Releases	Releases
36	Eco-Innovation for Sustainable Industrail Growth of Major Industrial Sectors in Special Economic Zones (ECZs) under CPEC-75	Dr. Zubair Ahmed, Professor, USPCAS-W, MUET, Jamshoro	HEC-CPEC	25,156,567		9,039,171	9,000,000
37	Pesticides Removal by Point of Use Nanofiltration Membrane and their Rapid Detection in Water Using Liquid Chromatography Mass Spectrometry	Dr. Muhammad Riwan, Assistant Professor, USPCAS-W, MUET, Jamshoro	HEC-NRPU	8,648,000		3,708,750	1,115,000
38	COE	Dr. Zubair Ahmed, Professor, USPCAS-W, MUET, Jamshoro	HEC-COE	62,000,000		25,229,600	10,419,000
39	Molecular Source Tracking of Salmonella Species at Different Stages of Poultry Slaughtering	Dr. Naveed	HEC-NRPU	3,800,000		1,717,500	1,100,000
	Total of National Research			**283,634,018**	**30,456,121**	**72,538,762**	**59,598,363**
International Research Project							
1	ACTIVE	Prof: Dr. BS Chowdhry	Foreign EU Commission,	13,069,411		13,069,411	9,354,726
2	ACIAR	Dr. B.K Lashari	Foreign (ACIAR)	93,681,318		51,645,747	34,008,672
3	Assess the health impac	Dr. Rasool	Foreign	10,146,531		1,170,257	-
	Total of International Research Project			**116,897,260**	**-**	**65,885,415**	**43,363,398**
	Grand Total of National & International Research Projects			**400,531,278**	**30,456,121**	**138,424,177**	**102,961,761**

11/09/24

Director Finance
Mehran University of Engg.
& Tech. Jamshoro

[6.7] Number of scholarly publications on sustainability

Year	Title of Research Papers	Published by	Authors	Num of Publications
2023	A Food Waste-Derived Organic Liquid Fertiliser for Sustainable Hydroponic Cultivation of Lettuce, Cucumber and Cherry Tomato	Foods: MPDI	Prof. Dr. Sheeraz Ahmed Memon	26
	A four-step method based on sequential solution of relevant model equations to predict condensation risk for a radiant cooling system	Journal of Building Engineering	Prof. Dr. Rizwan Memon	
	A green perspective: Investigating the optical effects of e-commerce, renewable energy demand, and services trade on carbon emissions	OPTIK	Dr. Muhammad Moinuddin Qazi	
	A review on pillared clay-based catalysts for low-temperature selective catalytic reduction of NOx with hydrocarbons	Applied Clay Science, 0169-1317, Netherlands	Muhammad Kashif, Minhao Yuan, Yaxin Su, Philippe M. Heynderickx, Asadullah Memon	
	A System Dynamics Costing Model for The Refurbishment of Electric Vehicle Batteries	Jordan Journal of Mechanical & Industrial Engineering	Muhammad Ali Khan	
	Analyzing the Impact of Ungauged Hill Torrents on the Riverine Floods of the River Indus: A Case Study of Koh E Suleiman Mountains in the DG Khan and Rajanpur Districts of Pakistan	Resources	Maaz Saleem, Muhammad Arfan, Kamran Ansari, Daniyal Hassan	
	Arsenic contamination and potential health risk to primary school children through drinking water sources	Human and Ecological Risk Assessment: An International Journal	Jamil Ahmed, Li Ping Wong, Najeebullah Channa, Waqas Ahmed, Yan Piaw	

			Chua, Muhammad Zakir Shaikh	
	Assessing glacial lake outburst flood potential using geospatial techniques: a case study of western part of Gilgit-Baltistan, Pakistan	Arabian Journal of Geosciences (Springer Netherlands)	Imran Khan, Asmat Ullah, Arjumand Zehra Zaidi, Vengus Panhwar	
	Civic Habitus and the Challenges of Depoliticized Participatory Irrigation Management Reforms: Insights from Pakistan	Authorea Preprints	Muhammad Arfan, Mercedes Ward, Muhammad Ali, Asmat Ullah, Kamran Ansari	
	Constraining Mountain Streamflow Constituents by Integrating Citizen Scientist Acquired Geochemical Samples and Sentinel-1 SAR Wet Snow Time-Series for the Shimshal Catchment in the Karakoram Mountains of Pakistan	Waste and Biomass Valorization (Springer Netherlands)	Jewell Lund, Richard R Forster, Yusuf Jameel, Summer B Rupper, Elias J Deeb, Ghulam Hussain Dars, Azhar Zaheer, Masood Ali, Abdul Ghafoor, Garee Khan, Muhammad Arfan, Glen E Liston, Javed Akhter Qureshi, Gregory Carling, Steven J Burian	
	Drought stage Prediction from remote sensing based vegetation and water indexes using Machine Learning	Journal of Xi'an Shiyou University, Natural Sciences	Mohsin Memon, Sania Bhatti	
	Evaluating the Feasibility of Fly Ash-Based Geopolymer as an Alternative to Portland Cement for Oil Well Cementing Operations	Journal of Xi’an Shiyou University, Natural Science Edition	Ghulam Abbas, Abdul Haque Tunio, Aftab Ahmed Mahesar, Khalil Rehman Memon, Faisal Hussain Memon	
	Evaluation of sedimentary aquifers for the future settlement of population in Northern Quetta valley using	Research square	Abdul Latif Qureshi, Shahzad Hussain, Zahid Rauf, Zia u din Abro, Arjumand Zaidi, Farhad Ali	

	vertical Electrical Sounding		Memon, Abdul Qayyum Habib	
	Generation of Green Renewable Energy Through Anaerobic Digestion Technology (ADT): Technical Insights Review	Waste and Biomass Valorization (Springer Netherlands)	Asim Ali, Rasool Bux Mahar, Sallahuddin Panhwar, Hareef Ahmed Keerio, Nadar Hussain Khokhar, Fatihah Suja, Li Rundong	
	Medaiting Role of Environmental Education for Sustainable Supply Chain Performance: Empirical Evidence from Chemical Companies in Pakistan	ETIKONOMI (Universitas Islam Negeri Syarif Hidayatullah Jakarta, Indonesia) JCI 2022: 0.20	Muhammad Ali Khan	
	Municipal Solid Waste Landfill Leachate Treatment by Phragmites australis, Typha latifolia and Scirpus validus through Constructed Wetlands	Journal of Ecological Engineering	Taufique Ahmed Sial, Abdul Majid Teewno, Sheeraz Ahmed Memon, Rasool Bux Mahar, M Safar Korai	
	Oxygenated terminals of milky sap of Calotropis procera transformed 1D ZnO structure to 0D nanoparticles for enhanced photocatalytic degradation of malachite green and methylene blue	Journal of Materials Science: Materials in Electronics (Springer)	Umair Aftab	
	PdO@CoSe2 composites: efficient electrocatalysts for water oxidation in alkaline media	RSC Advances (Royal Society of Chemistry)	Muhammad Ishaque Abro, Umair Aftab, Muhammad Yameen Solangi, Abdul Jaleel Laghari	
	Photocatalytic Denitrification of Nitrate Using Fe-TiO2-Coated Clay Filters	Catalysts	Tanveer A Gadhi, Imtiaz Ali Bhurt, Tayyab A Qureshi, Imran Ali, Anira Latif, Rasool Bux Mahar, Najeebullah	

			Channa, Barbara Bonelli	
	Physiochemical characteristics and methane yield of pretreated rice straw, canola straw, and banana plant substrate with buffalo dung by anaerobic co-digestion: sustainable future for Pakistan	Biomass Conversion and Biorefinery (Springer Netherlands)	Altaf Alam Noonari, Muhammad Hassan, Rasool Bux Mahar	
	Prediction of groundwater quality index in the Gaza coastal aquifer using supervised machine learning techniques	Water Practice and Technology	Dr. Waqar A. Sethar	
	Surface modification of Co3O4 nanostructures using wide range of natural compounds from rotten apple juice for the efficient oxygen evolution reaction	International Journal of Hydrogen Energy (ELSEVIER)	Muhammad Ishaque Abro, Umair Aftab, Muhammad Yameen Solangi, Abdul Jaleel Laghari	
	The impact of the wall insulation material and variable refrigerant flow system on building energy consumption and cost	Journal of Mechanical Engineering and Sciences	Prof. Dr. Rizwan Memon	
	Treatment of Anaerobically Digested Distillery Spent Wash Using Electrocoagulation with Al-SS-Al Electrode Configuration	Water, Air, & Soil Pollution (Springer Netherlands)	Waheed Ali Khokhar, Muhammad Rizwan, Naveed Ahmed Qambrani	
	Turbidity removal through the application of powdered'azadirachta indica'(neem) seeds	Mehran University Research Journal Of Engineering & Technology (Address: Editorial office, Publications Divison, Mehran University of Engineering and Technology	Qandeel Khan, Uzma Imran, Jeffrey L Ullman, Waheed Ali Khokhar	

		Jamshoro - 76060, Sindh, Pakistan)		
	What Socio-Technical and Institutional Determinants Explain the Farm-Level Economic Divergence?	Water Resources Management	Muhammad Arfan, Kamran Ansari, Asmat Ullah	
2022	A Combined CFD-Response Surface Methodology Approach for Simulation and Optimization of Arsenic Removal in a Fixed Bed Adsorption Column.	Processes	Prof. Dr Khadija Qureshi	42
	A critical review for formulation and conceptualization of an ideal building envelope and novel sustainability framework for building applications	Cleaner Engineering and Technology	Prof. Dr. Rizwan Memon	
	An Exploratory Study of Software Sustainability at Early Stage of Software Development	Sustainability	Hira Noman, Dr.Naeem Ahmed Mahoto, Dr.Sania Bhatti	
	Analyzing Drought Trends over Sindh Province, Pakistan	Research Square	Mansoor Ahmed, Ghulam Hussain Hussain Dars, Suhail Ahmed, Nir Y Krakauer	
	Assessing the sustainability and cost-effectiveness of concrete incorporating various fineness of eggshell powder as supplementary cementitious material	Environmental Science and Pollution Research (Springer Nature)	Prof. Dr. Aneel Kumar	
	Assessment of municipal solid waste management in the city of Dadu, Sindh, Pakistan	International Journal of Environment and Sustainable Development	Dr. Saima Kalwar ,Dr. Irfan Ahmed Memon	
	Assessment of physicochemical parameters in groundwater quality of	Case Studies in Chemical and Environmental Engineering	Prof. Dr. Sheeraz Ahmed Memon	

	desert area (Tharparkar) of Pakistan			
	Association between Objectively MeasuredNeighbourhood Built Environment and Walkability	Mehran University Research Journal of Engineering and Technology (ISSN: 0254-7821, 2413-7219)	Dr. Irfan Ahmed Memon, Dr. Mir Aftab Hussain Talpur	
	Bioremediation of real textile wastewater with a microalgal-bacterial consortium: an eco-friendly strategy	Biomass Conversion and Biorefinery Biomass Conversion and Biorefinery	Nayab Raza, Muhammad Rizwan, Ghulam Mujtaba	
	Challenges of Climate Change and Its Impact on Crop Farmers in Funtua Local Government Area in Katsina	Performance of Green Revolution Technology and Agricultural Development in South Asia	Dr. Kamleshwer Lohana	
	Co2FeO4@rGO composite: Towards trifunctional water splitting in alkaline media	International Journal of Hydrogen Energy (Elsevier)	Muhammad Ishaque Abro, Umair Aftab, Muhammad Yameen Solangi, Abdul Jaleel Laghari	
	Development of a Wireless Track Recording Vehicle with a Low Environmental Impact: An Approach for Enhancing Railway Track Safety Standards	IEEE	Prof. Dr. Tanweer Hussain	
	Development of cost-effective solar water desalination unit for the arid regions of rural areas of Sindh	Mehran University Research Journal of Engineering & Technology	Abdul Aziz Chan, Engr. Kundan Kumar	
	Effect of Crushed Coconut Shell and Over Burnt Brick on the Mechanical Behaviour of Green Concrete as a Partial Replacement of Coarse Aggregate	Journal Kejuruteraan, Malaysia	Dr. Ali Raza Khoso	
	Effect of Metakaolin Developed from Natural Material Soorh on Fresh	Innovative Infrastructure Solution (Springer Nature)	Prof. Dr. Aneel Kumar	

	and Hardened Properties of Self-Compacting Concrete			
	Electrochemical Monitoring of Trace-level Mercury in water sample using ZnO/GCE Modified Electrode	Research Square	Ijaz Ramsha, Hassan Syeda Sara, Panhwar Sallahuddin, Talpur Muhammad Younis, Uddin Salah, Ahmed Zubair	
	Emerging Water Pollutants: Concerns and Remediation Technologies	Emerging Water Pollutants: Concerns and Remediation Technologies. Bentham Science Publishers	Shaukat Ali Mazari, Nabisab Mujawar Mubarak, Nizamuddin Sabzoi	
	Enhancement of Biogas Production from Fixed Dome Biogas Plant through Recycling of Digested Slurry	International Journal of Environmental Sciences & Natural Resources	Prof. Dr. Sheeraz Ahmed Memon, Engr. Barkatullah	
	Estimation of single crop co-efficient for wheat crop using spectral indices	Journal of Neutron Research	Irfan Ahmed Shaikh Syed Muhammad Saleh, Abdul Latif Qureshi	
	Evaluation of deep learning approaches for classification of drought stages using satellite imagery for Tharparkar	Sir Syed University Research Journal of Engineering & Technology	Dr. Sania Bhatti, Mohsin Ali Memon	
	Evaluation of operational parameters for the removal of turbidity and total coliform from wastewater using fabricated electrocoagulation treatment unit	Mehran University Research Journal of Engineering & Technology	Engr. Kundan Kumar	
	Fabrication of Disposable Electrodes Based on Green Synthesized Iron Oxide Nanoparticles for Enumeration of Bacteria in Water	Journal of The Electrochemical Society (Add: IOP Publishing Ltd. No.2 The Distillery Glassfields Avon Street Bristol BS2 OGR United Kingdom	Ramsha Ijaz, Syeda Sara Hassan, Sallahuddin Panhwar, Muhammad Younis Talpur, Salah Uddin, Zubair Ahmed	

		Tel: +44 (0)117 929 7481)		
	Facile synthesis of a luminescent carbon material from yogurt for the efficient photocatalytic degradation of methylene blue	RSC Advances (Royal Society of Chemistry)	Umair Aftab	
	Forecasting Energy Consumption Using Calculation of CDDs in Pakistan Using Two Different Methods	Journal of Applied Engineering & Technology (JAET)	Prof. Dr. Rizwan Memon	
	Hourly forecasting of solar photovoltaic power in Pakistan using recurrent neural networks	International Journal of Photoenergy	Prof. Dr. Tanweer Hussain	
	Hydrate as a by-product in CO2 leakage during the long-term sub-seabed sequestration and its role in preventing further leakage	Environmental Science and Pollution Research	Dr. Ubedullah Ansari	
	Hydrogen peroxide–assisted ozonation enhanced methane production from molasses-based anaerobically digested spent wash	Biomass Conversion and Biorefinery (Springer Netherlands)	Naveed Ahmed Qambrani, Zeeshan Ali Abro, Asad Ayub Rajput, Rasool Bux Mahar	
	Impact assessment of watercourse rehabilitation programs in Sindh, Pakistan using geospatial techniques	Arabian Journal of Geosciences (Springer Netherlands)	Arjumand Z Zaidi, Sumaira Zafar, Muhammad Arslan, Saad Malik, Sana Ullah Shah, Asmat Ullah	
	Impact of Energy Consumption, Economic Growth, and FDI through Environmental Kuznets Curve: Perspective from Belt and Road Initiative and Pakistan	Mathematical Problems in Engineering	Dr. Qasim Ali	

	Integrated Processes for Removal of Emerging Water Pollutants	Emerging Water Pollutants: Concerns and Remediation Technologies	Muhammad Saud Baig, Siraj Ahmed, Ghulam Mujtaba, Muhammad Rizwan, Naveed Ahmed, and Sheeraz Ahmed	
	Modified and pristine biochars for remediation of chromium contamination in soil and aquatic systems	Chemosphere	Ali El-Naggar, Ahmed Mosa, Naveed Ahmed, Nabeel Khan Niazi, Balal Yousaf, Binoy Sarkar, Jörg Rinklebe, Yanjiang Cai, Scott X Chang	
	Multi-objective whale optimization approach for cost and emissions scheduling of thermal plants in energy hubs	Energy Reports	Engr. Um-E-Habiba	
	NiCo2O4 nanostructures loaded onto pencil graphite rod: An advanced composite material for oxygen evolution reaction	International Journal of Hydrogen Energy	Dr. Muhammad Ishaque Abro,Dr. Umair Aftab	
	Parametric study of adsorption column for arsenic removal on the basis of numerical simulations	Waves in Random and Complex Media	Prof. Dr Khadija Qureshi, Dr. Masroor Ahmed Abro, Dr. Sikandar Almani, Dr. Imran Nazir Unar	
	Public parks accessibility analysis through GIS: a case study of Tando Allahyar City	International Journal of Environment and Sustainable Development (ISSN: 1478-7466,1474-6778)	Dr. Saima Kalwar ,Dr. Irfan Ahmed Memon, Dr. Noman Sahito	
	Quantifying the effects of land use change and aggregate stormwater management practices on fecal coliform dynamics in a temperate catchment	Science of The Total Environment	Prof. Dr. Sheeraz Ahmed Memon	
	Rapid adsorption of selenium removal using	Scientific Reports	Prof. Dr. Sheeraz Ahmed Memon	

	iron manganese-based micro adsorbent			
	Renewable and eco-friendly ZnO immobilized onto dead sea sponge floating materials with dual practical aspects for enhanced photocatalysis and disinfection applications	Nanotechnology (IOP Science)	Umair Aftab	
	Seasonal variation in biogas production in reinforced concrete dome biogas plants with buffalo dung in Pakistan	Biomass Conversion Biorefinery	Engr. Barkatullah	
	Subsurface depleting aquifers in the sedimentary terrain of Quetta Valley in Balochistan: a review	Arabian Journal of Geosciences (Springer Netherlands)	Abdul Latif Qureshi, Muhammad Afzal Jamali, Shahzad Hussain, Farhad Ali Memon, Arjumand Zahra Zaidi, Sumaira Zafar, Waqas Ahmed	
	Subsurface groundwater aquifer mapping and quality characterization in Matiari district, Sindh, Pakistan	Springer International Publishing (Springer Netherlands)	Rabia Dars, Abdul Latif Qureshi, Muhammad Afzal Jamali, Hafiz Abdul Salam Memon, Shafi Muhammad Kori, Shamotra Oad	
	Synergistic and sustainable utilization of coconut shell ash and groundnut shell ash in ternary blended concrete	Environmental Science and Pollution Research (Springer Nature)	Dr. Ali Raza Khoso	
2021	A Comparative Performance Analysis between Serpentine-flow Solar Water Heater and Photovoltaic Thermal Collector under Malaysian Climate Conditions	International Journal of Photoenergy	Dr. Laveet Kumar	64
	A comprehensive review of nocellulosic biomass and potential production	Journal of Chemistry and Nutritional Biochemistry	Dr. Suhail A Soomro	

	of bioenergy as a renewable resource in Pakistan.			
	A quest for the indicators for profitable and sustainable industrial clusters in developing countries -a case of pakistan's industrial sector	Pakistan Journal of Humanities and Social Science Research	Dr. Iffat Batool Naqvi	
	A systematic indoor and outdoor study of effect of particle size and concentration of TiO2 to improve solar absorption for solar still application	Frontiers in Materials	Dr. Laveet Kumar	
	Advanced microbial fuel cell for waste water treatment—a review	Environmental Science and Pollution Research	Prof. Dr. Suhail A. Soomro, Prof Dr. Shaheen Aziz	
	An Investigation on Fresh and Hardened Properties of Concrete Blended with Rice Husk Ash as Cementitious Ingredient and Coal Bottom Ash as Sand Replacement Material	Silicon, (Springer Nature)	Prof. Dr. Aneel Kumar	
	Analysis of energy consumption and forecasting sectoral energy demand in Pakistan.	Int. J. Energy Technology and Policy	Dr. Laveet Kumar	
	Analysis of multi-objective optimization: a technical proposal for energy and comfort management in buildings.	International Transactions on Electrical Energy Systems	Dr. Muhammad Shoaib Shaikh	
	Arsenic (III) removal from aqueous water by indigenous iron ore adsorbent from Balochistan Province of Pakistan	Mehran University Research Journal of Engineering & Technology	Prof. Dr Khadija Qureshi , Prof. Dr Inamullah Bhatti ,Dr Zulfiqar Bhatti	
	Artificial Intelligence Best Practices in Smart Agriculture	In IEEE Micro.	Dr. Mohsin Memon ,Dr. Naeem Ahmed Mahoto, Faisal Karim Shaikh	

	Assessment of Environmental and Operational Performance of Thermal Powerhouses in Pakistan by Employing Data Envelopment Analysis Technique	Journal of Computer and Mathematics Education (TURCOMAT)	Dr. Laveet Kumar	
	Assessment of soil quality parameters for agricultural purpose in the area of Lakhra Coal Field	Engineering Science and Technology International Research Journal	Dr. Munawar Ali Pinjaro	
	Bio-assisted treatment of hazardous spent wash via microbial fuel cell. Environmental friendly approach.	Biomass Conversion and Biorefinery	Prof. Dr. Suhail A. Soomro, Prof Dr. Shaheen Aziz	
	Biological assisted organic sulfur removal from low rank indigenous coal using airlift bioreactor.	Bioprocess and Biosystems Engineering	Prof. Dr. Suhail A. Soomro, Prof Dr. Shaheen Aziz	
	Biological assisted treatment of buffalo dung and poultry manure for biogas generation using laboratory-scale bioreactor	Biomass Conversion and Biorefinery	Prof. Dr Khadija Qureshi	
	Carbon Footprint Analysis & Prediction: A Case Study of Mehran University of Engineering & Technology, Pakistan	Engineering Science and Technology International Research Journal	Dr. Areej Fatemah Maghji,Dr. Mohsin Ali Memon	
	Choice Modelling of a Car Traveler towards Park-and-Ride Services in Putrajaya to Create Green Development	Sustainability (ISSN: 2071-1050)	Dr. Irfan Ahmed Memon, Dr. Saima kalwar, Dr. Noman Sahito	
	Comparison of conventional and drip irrigation system on productivity, saving and cost consumption of water. (Case Study)	Engineering Science and Technology International research Journal	Prof. Dr. Khalifa Qasim Laghari	
	Decline of Jute Industry in Pakistan: An Analysis through Historical	Journal of Historical Studies	Dr. Iffat Batool Naqvi	

	Perspective and a Future Direction			
	Design and Simulation of a Control Model for the Energy-Saving Management of Buildings	International Research Journal of Innovations in Engineering and Technology	Engr. Samiullah Qureshi	
	Double Channel CNN Based Tomato Plant Leaf Disease Detection	Quaid-E-Awam University Research Journal of Engineering, Science & Technology, Nawabshah	Naveen Kumar,Ahsan Ansari,Shahnawaz Talpur,Sameer Zai,Madiha Memon	
	Effect of temperature and feed rate on pyrolysis oil produced via helical screw fluidized bed reactor	Korean Journal of Chemical Engineering	Dr. Khan Muhammad Qureshi	
	Energy savings comparison of two energy saving options	International Journal of Electrical Engineering & Emerging Technology	Engr. Samiullah Qureshi	
	Experimental and numerical investigation of DBT degradation via Rhodococcus spp.(SL-9) through the use of biological assisted method.	Biomass Conversion and Biorefinery	Prof. Dr. Suhail A. Soomro, Prof Dr. Shaheen Aziz	
	Experimental Investigation on Fresh and Hardened Properties of Concrete mixed with Magnetically Treated Water	International Journal of Engineering Science Invention (IJESI)	Prof. Dr. Fareed Ahmed Memon	
	Experimental investigations of arsenic adsorption from contaminated water using chemically activated hematite (Fe 2 O 3) iron ore.	Environmental Science and Pollution Research	Dr. Zulfiqar Ali Bhatti	
	fluid-structure interaction analysis of vertical axis hydrokinetic turbine	International Journal on Emerging Technologies	Engr. Intizar Ali Tunio	
	Forecasting of Drought	A Case Study of Water-Stressed Region of Pakistan. Atmosphere	Dr. Laveet Kumar	

	Fresh and Mechanical Properties of Concrete Made of Binary Substitution of Millet Husk Ash and Wheat Straw Ash for Cement and Fine Aggregate	Journal of Materials Research and Technology (Elsevier)	Prof. Dr. Aneel Kumar	
	Global Trends In Research on Carbon Footprint of Buildings During 1971 2021: A Bibliometric Investigation	Environmental Science and Pollution Research (Springer Nature)	Prof. Dr. Sheeraz Ahmed Memon, Prof. Dr. Tauha Hussain Ali, Prof. Dr. Nafees Ahmed Memon, Engr. Muhammad Saleem Raza	
	Highly dispersed Cu nanoparticles decorated on MOF-5: development of highly efficient noble metal-free electrocatalyst.	Nano Futures	Dr. Muhammad Shoaib Shaikh	
	How to select ionic liquids as extracting agents systematically: a special case study for extractive denitrification processes	RSC Advances	Dr. Masroor Ahmed Abro	
	Image-based onion disease (Purple Blotch) detection using deep convolutional neural network	International Journal of Advanced Computer Science and Applications (IJACSA)	Muhammad Ahmed Zaki,Sanam Narejo,Muhammad Ahsan,Sammer Zai,Muhammad Rizwan Anjum,Naseer u din	
	Integrated model of municipal solid waste management for energy recovery in Pakistan	Energy (Elsevier)	Dr. Korai Muhammad Safar	
	Internal Mode Control based Coordinated Controller for Brushless Doubly Fed Induction Generator in Wind Turbines During Fault Conditions	Indonesian Journal of Electrical Engineering and Computer Science	Dr.Shadi Khan Baloch	

	Is Coal Power Generation a Sustainable Solution for Energy Needs of Pakistan: A Delphi-SWOT Paradigm	International Journal of Energy Economics and Policy	Prof. Dr. Khanji Harijan	
	Knowledge Discovery from Healthcare Electronic Records for Sustainable Environment	Sustainability	Dr. Naeem Ahmed Mahoto	
	Long- term optimal power generation pathways for Pakistan	Energy Science and Engineering	Prof. Dr. Khanji Harijan, Dr. Laveet Kumar	
	LVRT Enhancement of a Grid-tied PMSG-based Wind Farm using Static VAR Compensator.	Engineering, Technology & Applied Science Research	Engr. Shafqat Hussain Memon	
	Mn/Ni As Effective Catalyst for Photo-degradation of Diclofenac in Aqueous Media	Russian Journal of Physical Chemistry A	Prof. Dr. Khan Muhammad Brohi, Prof. Dr. Sheeraz Ahmed Memon	
	Modeling and Simulation of Solar Flat Plate Collector for Energy Recovery at Varying Regional Coordinates	Environmental Science and Pollution Research	Prof. Dr. Sheeraz Ahmed Memon, Dr. Imran Nazir Unar	
	Modeling, simulation and outdoor experimental performance analysis of a solar-assisted process heating system for industrial process heat	Renewable Energy	Dr. Laveet Kumar	
	Modelling and experimental performance investigation of a transpired solar collector and underground heat exchanger assisted hybrid evaporative cooling system	Journal of Building Engineering	Dr. Laveet Kumar	
	Multi-step rainfall forecasting using deep learning approach	PeerJ Computer Science	Sanam Narejo, Muhammad Moazzam Jawaid, Shahnawaz Talpur, Rizwan Baloch	
	One way fluid-structure interaction analysis of	International Journal on Emerging Technologies	Engr. Intizar Ali Tunio	

	vertical axis hydrokinetic turbine			
	Onion Crop Monitoring with Multispectral Imagery using Deep Neural Network	International Journal of Advanced Computer Science and Applications 12 (5)	Waqar Ahmed, Naseer U Din, Bushra Naz, Samer Zai, Bakhtawer	
	Operational performance evaluation and efficiency assessment of thermal power sectors of Pakistan using data envelopment analysis.	Int. J. Operational Research	Dr. Laveet Kumar	
	Optimization of palm shell pyrolysis parameters in helical screw fluidized bed reactor: Effect of particle size, pyrolysis time and vapor residence time	Cleaner Engineering and Technology	Dr. Khan Muhammad Qureshi	
	Optimizing Economic Load Dispatch Problem using Genetic Algorithm: A Case Study of Thermal Power Station Jamshoro	International Journal of Grid and Distributed generation	Dr.Irfan A Halepoto	
	Overview of bioelectrochemical approaches for sulfur reduction: current and future perspectives.	Biomass Conversion and Biorefinery.	Dr. Zulfiqar Ali Bhatti	
	Pyrolysis of Palm Shell using Helical Screw-Fluidized Bed Reactor: Effect of Heating Rate	Brazilian Journal of Chemical & Engineering	Dr. Khan Muhammad Qureshi	
	Rainfall Prediction Using Time Series Nonlinear Autoregressive Neural Network	SSRG International Journal of Computer Science and Engineering 8 (01), 30-38	Dr.Sanam Narejo, Urooj Kaimkhani,Bushra Naz	
	Real time experimental performance investigation of a NePCM based photovoltaic thermal system	An energetic and exergetic approach. Renewable Energy	Dr. Laveet Kumar	
	Real-Time Experimental Performance Assessment of a Photovoltaic Thermal System Cascaded with	Journal of Solar Energy Engineering	Dr. Laveet Kumar	

	Flat Plate and Heat Pipe Evacuated Tube Collector			
	Recent trends and future perspectives of lignocellulose biomass for biofuel production: a comprehensive review	Biomass Conversion and Biorefinery	Dr. Zulfiqar Ali Bhatti	
	Rice husk ash as green and sustainable biomass waste for construction and renewable energy applications: a review.	Biomass Conversion and Biorefinery.	Prof. Dr. Suhail A. Soomro, Prof Dr. Shaheen Aziz	
	Selection of ionic liquid for extraction processes: Special case study of extractive desulfurization	Chemical Engineering Research and Design	Dr. Masroor Ahmed Abro	
	Stress and fatigue life prediction of the H-type Darrieus vertical axis turbine for micro hydropower applications	Journal Of Mechanics Of Continua And Mathematical Sciences	Engr. Intizar Ali Tunio	
	Sustainable Higher Education Reform Quality Assessment Using SWOT Analysis with Integration of AHP and Entropy Models: A Case Study of Morocco	Sustainability 13 (07)	Asma Fahim,Bushra Naz,Qingmei Tan	
	Synthesis of Bio-Adsorbent for Removal of Fluoride from Groundwater: A column study	QUEST Research Journal	Prof. Dr Khadija Qureshi, Dr Khan Muhammad Qureshi, Dr. Imran Nazir Unar	
	Thermal Performance Simulation of Eco-Friendly Lightweight Foamed Concrete Incorporating Palm Oil Fuel ash and Eggshell Powder Using ABAQUS	Silicon, (Springer Nature)	Prof. Dr. Aneel Kumar	
	Type Darrieus vertical axis turbine for micro hydropower applications	Journal Of Mechanics Of Continua And Mathematical Sciences	Engr. Intizar Ali Tunio	
	Utilization of crude oil sludge and saw dust for preparation of the	Journal of Applied and Emerging Sciences 11 (2), 185-189	Prof.Dr.Suhail A Soomro, Dr. Abdul Haque Tunio,Engr. Irshad Ali	

	briquettes and its emission analysis			
	Wind Energy Integration: Dynamic Mcxleling and Control of DFIG based on Super Twisting Fractional Order Terminal Sliding Mode Controller	Elsevier Energy	Mansoor Ahmad Soomro, Zubair Ahmad Memon, Mahesh Kumar, Mazhar Hussain Baloch	

Description:

- There are a total 132 number of publications on sustainability: 26 in 2023,42 in 2022 and 64 in 2021, with an annual average of 44 over the past three years.
- The correct option would be : **[3] 21 - 83**

[6.8] Number of events related to sustainability (environment)

Events		Date
Cleaner Production Techniques For Sustainable Industrial Growth		Nov 04,2024
Mental Health and Academic Stress Seminar		Oct 22,2024

Integrating Clean Safe Water and Well-being through Sustainable Initiatives (ICSWW)		Oct 09-11,2024
Erasmus+ ACTIVE: Dissemination Seminar and Technical Conference on ICT Based Climate Actions held on 3rd to 6th July 2024 at Munster Technological University, Bishopstown, Cork, Ireland		July 3-6,2024
Two-Day RO Operation & Maintenance Training for Male & Female Community RO Operators		May 11, 2024

USPCAS-W hosted a Quality Assurance and Accreditation Awareness Seminar for Environmental Science, delivered by Dr. Abdul Ghaffar, Secretary NAEAC, HEC, Islamabad		Apr 25, 2024
USPCAS-W Empowers Municipal Corporation Jacobabad (MCJ) Officials with Two-Day Training on Occupational Health and Safety		Jan 27, 2024
USPCASW Seminar: PAUL Filter Technology for Drinking Water Treatment		Jan 18, 2024

Inception and Stakeholders Workshop for Salinity Management in the Southern Indus Basin		Jul 29, 2024
Workshop of Hydro-Agro Informatics Program Held Under Sindh Water & Agriculture Transformation Project		May 2, 2024
Workshop on Solid Waste Management in Jacobabad		Jan 26, 2024

USPCAS-W Training Workshop: Learning to Live with Salinity		Jan 24, 2024
USPCAS-W, MUET, organized the first virtual seminar to share outcomes of the HEC-funded project on Eco-innovation for sustainable industrial growth in SEZs under CPEC		July 10, 2023
Training Sessions by Renowned Experts from the University of Alabama and the University of Nevada, USA		Dec 11, 2023

Description:

- MUET organized 67 events over the last 3 years: 19 in 2024, 25 in 2023 and 23 in 2022.
- Note that 2024 is not yet complete and more events have been planned till 31st December 2024.
- Hence the correct option would be option **[4] 20-50**.
- For further event details, please visit the links mentioned below.

Additional evidence link:

- https://www.youtube.com/watch?v=hCUyzevty1I
- https://water.muet.edu.pk/about-us/press-releases/
- https://water.muet.edu.pk/capacity-building/conference-and-workshop/
- https://trainingwater.muet.edu.pk/courses.php
- https://ieem.muet.edu.pk/index.php/trainings/
- https://www.facebook.com/muet.pk/ (Please see MUET Facebook page where signature events information is uploaded)

[6.12] Sustainability report (ED.7)

Vision

Mehran University of Engineering and Technology, Jamshoro is dedicated to fostering a sustainable future through comprehensive environmental stewardship. We aim to integrate sustainable practices into all aspects of university life, from academic research to campus operations. We aim to contribute to global efforts in achieving the United Nations Sustainable Development Goals (SDGs) and set a benchmark for sustainable higher education institutions.

Strategy

Our sustainability strategy is designed to foster a culture of environmental responsibility and innovation. It focuses on three main areas:

1. **Campus Sustainability**: Implementing sustainable practices in campus operations, reducing carbon footprint, and enhancing resource efficiency.
2. **Education and Research**: Integrating sustainability into the curriculum and promoting research that addresses environmental and social challenges.
3. **Community Engagement**: Encouraging student, staff, and community participation in sustainability initiatives and fostering partnerships with local and global organizations.

Policy

Our sustainability policy outlines the commitment of the university to environmental stewardship and sustainability. Key components include:

1. **Energy Efficiency**: Commitment to reducing energy consumption through the use of energy-efficient technologies and practices.
2. **Waste Management**: Aiming for a zero-waste campus by implementing comprehensive recycling and composting programs.
3. **Water Conservation**: Reducing water usage through conservation practices and efficient water management systems.
4. **Sustainable Transportation**: Promoting the use of public transportation, cycling, and carpooling to reduce greenhouse gas emissions from commuting.
5. **Sustainable Procurement**: Prioritizing the purchase of environmentally friendly products and services in university operations.

Programs

1. **Green Campus Initiative**: A program focused on improving campus infrastructure with green technologies, such as solar panels, green roofs, and energy-efficient lighting.
2. **Sustainability in Curriculum**: Integration of sustainability principles into academic programs and offering specialized courses on environmental science and sustainable development.
3. **Research for Impact**: Supporting research projects that address critical environmental and social issues, including climate change, water management, and renewable energy.
4. **Student Engagement**: Organizing workshops, seminars, and events to raise awareness about sustainability among students and encourage active participation.
5. **Community Outreach**: Partnering with local organizations and businesses to promote sustainability and engage in collaborative projects.

Implementation

1. **Infrastructure Upgrades**: Upgrading campus buildings to meet green building standards, implementing energy-efficient systems, and enhancing waste management facilities.
2. **Monitoring and Reporting**: Establishing metrics and benchmarks to track progress towards sustainability goals, including energy and water consumption, waste generation, and greenhouse gas emissions.
3. **Policy Enforcement**: Ensuring compliance with sustainability policies through regular audits and assessments.
4. **Training and Education**: Providing training programs for staff and faculty on sustainability practices and integrating sustainability into employee performance evaluations.

5. **Continuous Improvement**: Regularly reviewing and updating sustainability policies and programs based on feedback and emerging best practices.

Achievements

- **Energy Efficiency**: Implemented energy-efficient appliances and renewable energy sources, including solar energy and sensor-based lighting. Replaced conventional air conditioning units with energy-efficient models to significantly enhance energy savings and overall efficiency. The tree plantation program has also been implemented to further contribute to environmental sustainability

Installation of renewable solar energy supply for buildings as part of the Green Revolution

Plantation of trees around buildings to provide shade and reduce the need for air conditioning

- **Waste Management**: Implemented a 3R (Reduce, Reuse, Recycle) program for the university's waste, including initiatives to reduce paper and plastic use on campus. Organic waste is treated through box composting and vermicomposting, while inorganic waste is managed with treatment at the MUET partial landfill site and the Jamshoro landfill site near the thermal power station. Toxic waste is also treated to ensure proper disposal and environmental protection.

Organic waste treatment through the Box composting method

Inorganic waste treatment: MUETpartial landfill site and Jamshoro landfill site near thermal power station

- **Water Conservation**: Reduced water usage through the implementation of water-saving fixtures and conservation initiatives.

Water Recycling Program

Water Conservation through Sprinkle System

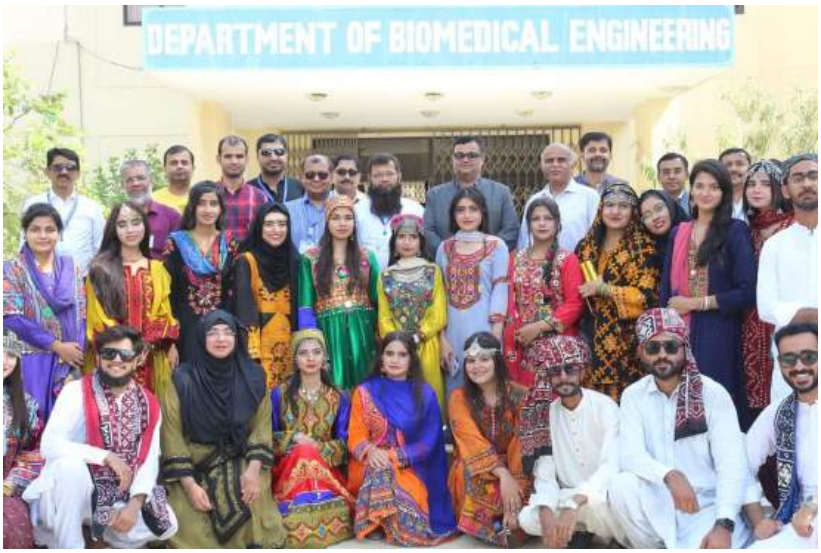
- **Sustainable Transportation**: Increased the use of public transportation, cycling, and zero-emissions vehicles among staff and students to reduce campus-related vehicle emissions.

Shuttle services for Students and Staff

Bicycles for students

Through these efforts, our university is making significant strides toward becoming a more sustainable and responsible institution, aligned with global sustainability goals and committed to making a positive impact on the environment and society.

[6.14] Cultural Activities




Department Of Metallurgy & Materials Engineering


DEPARTMENT OF CIVIL ENGINEERING


DEPARTMENT OF
CITY & REGIONAL PLANNING


PMENT CENTRE

Cultural activities at the university level play a crucial role in fostering inclusivity, celebrating diversity, and promoting cultural awareness. These events highlight the rich variety of traditions and languages within the university. Through activities such as cultural days, language festivals, cultural showcases, and international student days, the university actively promotes the celebration of diversity.

The following events are held every year:

1. Cultural day to celebrate the diversity of Pakistani culture where all students dress in their traditional clothes and attend university

2. Independence day of Pakistan, where we celebrate the cultural diversity of Pakistan, sing patriotic national songs, and distribute sweets.
3. Ramzan Dastarkwan where free food is distributed to the needy people in the local Jamshoro town community

4. Eid ul Fitr celebrations where sweets are distributed
5. Eid ul Azha celebrations where sweets are distributed
6. Holi celebrations were sweets are distributed by non-Muslims to celebrate the cultural and religious diversity of Pakistan. Students also apply colour onto each other for festival of colours.
7. Deevali celebrations were sweets are distributed by non-Muslims to celebrate the cultural and religious diversity of Pakistan.
8. Christmas celebrations to celebrate the birth of Jesus Christ and celebrate the cultural and religious diversity of Pakistan.
9. Kashmir Day, to celebrate the cultural of affinity with the people of Kashmir
10. Labour Day, to increase awareness of the rights of labour and blue colour workers of Pakistan
11. Human Rights Day, to increase awareness about human rights
12. Mental Health Day, to raise awareness about the key role of mental health in life especially in the context of Pakistani culture.

These are just fixed events, there are several other events which are organized by student bodies as well as staff and teacher associations.

The celebration of cultural diversity is equally vibrant, with students showcasing their unique heritage through traditional music, dance, attire, and cuisine. These events provide an opportunity for students from diverse backgrounds to come together, share their customs, and appreciate the richness of various cultures. By fostering dialogue and mutual understanding, these activities contribute to a more inclusive and globally aware academic community, where the value of both language and cultural diversity is deeply appreciated and embraced. Few evidences are given above.

[6.15] Number of university sustainability program(s) with international collaborations

Events		Date
Erasmus+ ACTIVE: Dissemination Seminar and Technical Conference on ICT Based Climate Actions held on 3rd to 6th July 2024 at Munster Technological University, Bishopstown, Cork, Ireland		July 3-6,2024
Inception and Stakeholders Workshop for Salinity Management in the Southern Indus Basin		July 29, 2024

Launch Workshop of Hydro-Agro Informatics Program Held Under Sindh Water & Agriculture Transformation Project (Greg Browder, Dr. Kamran Jan Ansari, and Md Motaleb Hossain Sarker)		May 2, 2024
Mr. Conrad Tribble, the Consul General of the U.S. Consulate General Karachi, visited the USPCAS-W		April 22, 2024
USPCASW Seminar: PAUL Filter Technology for Drinking Water Treatment		Jan 18, 2024

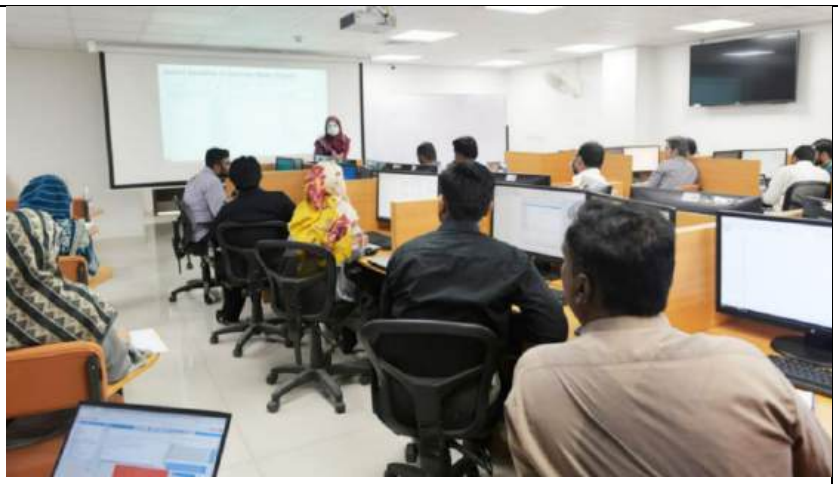
Experts from the Food and Agriculture Organization (FAO) visited the USPCAS-W		Dec 15, 2023
A World Bank delegation explores collaboration opportunities with USPCAS-W on climate resilience infrastructure at village level		July 19, 2023
Training Sessions by Renowned Experts from the University of Alabama and the University of Nevada, USA		Dec 11, 2023

USPCAS-W, MUET, organized the first virtual seminar to share outcomes of the HEC-funded project on Eco-innovation for sustainable industrial growth in SEZs under CPEC		July 10, 2023
Seminar Series Talk on "Glaciers Covered in Rocks- Where Unsaturated Zone Hydrology Meets Glaciology" (Dr. Jacob Steiner from the University of Graz and ICIMOD)		Apr 27, 2023
Three days "International Conference on Integrated Flood Management Under Changing Climate Scenario (IFMCC 2023)" organised by the USPCAS-W, Mehran UET Jamshoro **(**in collaboration with the Institute of Ecology and Geography, Chinese Academy of Sciences)		March 3, 2023

USPCAS-W hosted a workshop aimed at consolidating insights gained from the engagement of the Adapting to Salinity in the Southern Indus Basin (ASSIB) project (Dr. Michael Searle Mitchell from Charles Sturt University, Australia; Dr. Sandra Heaney-Mustafa from the University of Canberra; and Dr. Jehangir Framroze Punthakey from Ecoseal, Australia)		Aug 3, 2023
Workshop on Use-Inspired Climate Resilience Research in Sindh and Balochistan at USPCAS-W, Mehran UET **(**organized by Dr Steve Burian, University of Alabama (UA), Dr. Michael Barber, University of Utah (UU), and Dr. Sajjad Ahmad, University of Nevada, Las Vegas (UNLV))		July 3-7, 2023
A distinguished German delegation from Medico International and HANDS, Pakistan, visited the USPCASW		Dec 15, 2023

The World Bank delegation visits USPCAS-W for the Sindh Water and Agriculture Transformation Project		Oct 24, 2023
British Deputy High Commissioner Karachi, Ms. Sarah Mooney visited Mehran UET, Jamshoro		Sep 19, 2023
U.S. Ambassador to Pakistan, Mr Donald Blome, was at Mehran University of Engineering and Technology, Jamshoro, and visited the U.S.-Pakistan Center for Advanced Studies in Water (USPCAS-W)		May 24, 2023
Dr. Emma Rendle, a renowned International Consultant specializing in Marine Coast and Climate Change, paid a visit to the USPCAS-W		May 10, 2023

USPCAS-W has organized two days International Conference on Environmental Sustainability 2022 **(**collaborations with HANDS, Medico International, NESPAK, eCosol, Tearfund, and Archroma)		Mar 3, 2022
Four-day International Training on "Bridging the Critical Data Gap" Sustainable Water Resource Management using Satellite Altimetry Data		Nov 22, 2022
International Workshop on Salinity Policy Review – Adapting to Salinity in the Southern Indus Basin (ASSIB) Project held at PCRWR HQ, Islamabad.		May 12, 2022

Four days of an online training module on Water Resources Management using Geo-Spatial Techniques **(**Dr. Marco Restano, Dr. Jerome Benveniste from ESA, and GeoHECRAS technical team led the online session, while the physical module featured demonstrations by Dr. Arjumand Zaidi and other experts.)		March 18, 2022
The Project Launch Stakeholder Consultation meeting "University Partnership Countering Climate Change in Sindh and Balochistan" held at the U.S.-Pakistan Center for Advanced Studies in Water, Mehran UET Jamshoro		Dec 5, 2022
Mr Jiro Ariyama, International Technical Advisor (Water Management) of FAO, GFC Project and Dr Ashfaque Ahmed Nahiyoon, Provincial Coordinator, PPIU Sindh-GCF Project, visited the USPCAS-W		March 7, 2022

Country Director, NCA Pakistan, Ms. Anne Masterson visited the US-Pakistan Center for Advanced Studies in Water		Feb 24, 2022
Dr. Christopher J. Garnier, Executive Direct AIT Extension – Asian Institute of Technology (AIT), paid a visit to the US-Pakistan Center for Advanced Water		March 28, 2022

Description:

- Following the above evidence, 5 events in 2024, 13 events in 2023, and 8 events in 2022 were arranged involving international collaboration. Note that 2024 is not over and there are more programs in the pipeline which are to be held till 31st December 2024.
- Therefore the correct option is : **[4] 7 - 10 programs per year**

Additional evidence link:

- https://www.youtube.com/watch?v=hCUyzevty1I
- https://water.muet.edu.pk/about-us/press-releases/

[6.16] Number of sustainability community services project organised and/or involving students

Following list of events are organized annually, however more events are also organized by student bodies and teachers/staff association.

Project name	Participants	Project duration (days)	Location
Big Event	350	3	Hyderabad and Jamshoro
Aspire	150	3	Jamshoro SOS Village
Ramzan Ration Drive	200	30	Jamshoro City
Traffic Averness Program	30	2	Hyderabad-Jamshoro
White wash program at Hyderabad	50	3	Hospital buildings in Hyderabad
Flood Relief Program	150	90	District Jamshoro
Plantation drives	250	7	MUET Campus Auditorium
Cleaning drives	40	3	MUET Campus, Almanzar Jamshoro
Awareness session on clean and affordable energy	100	1	MUET Campus Auditorium
Awareness session on liquid waste	100	1	MUET Campus Auditorium
Blood Camps on campus	150	1	MUET Campus Auditorium
Mental Health Awareness	250	1	MUET Campus Auditorium
Awareness Session on Clean and Safe Water	250	1	USPCAS-W Building, MUET Campus
Awaremess Seminar on Road Safety	600	1	USPCAS-W Building, MUET Campus

University organizes various community services event such as mentioned in above table. These events are conducted in the campus every year.

Some of the data can be found here: https://www.facebook.com/BigEvent18?mibextid=LQQJ4d
https://www.facebook.com/share/SRVdQbRfCzUTjJyd/?mibextid=WC7FNe

Flood Relief activities

Ration Distribution

Plantation Drive at MUET Jamshoro

Cleaning Drive by MUET at Hospital Jamshoro

Awareness session on clean and affordable energy and liquid & solid waste

Please also see MUET's Facebook page which is updated regularly with event information:

https://www.facebook.com/muet.pk/

[6.17] Number of sustainability related start-ups

Mehran University of Engineering and Technology encourage students and faculty to initiate the sustainability start-ups in order to promote entrepreneurship in the field and contribute to the green economy. MUET Jamshoro has about 30 sustainability start-ups. The list is given below:

Startup Name	LOGO	Idea Briefs	Website	Category	Facebook	Twitter	Instagram	Linkedin	Intro Video Youtube	Email	Team Size	Founders
AgriClik		AgriClik is a user-friendly mobile app connecting landlords and retailers for buying and selling agricultural products. It facilitates daily transactions, record maintenance (Khata), and provides monthly, quarterly, and yearly reports, streamlining the agricultural marketplace.	https://agriclik.z10.web.core.windows.net/#home	Agri Tech	https://www.facebook.com/profile.php?id=61552317578417&mibextid=ZbWKwL	https://twitter.com/AgriClik	https://www.instagram.com/agriclik/	https://www.linkedin.com/company/agriclic/		saddarudin338@gmail.com thaheemzohaibali705@gmail.com	5	Saddar U Din Babar (Founder) Zohaib Ali & Hassan Ahmed (Co Founder)
Beauty Book		Beautybook Pakistan is evolutionizing beauty and grooming services in Pakistan. It emphasizes convenience, transparency, and accessibility, streamlining bookings for customers and optimizing salon operations.	N/A	SAAS	https://www.facebook.com/profile.php?id=61553862996865&mibextid=ZbWKwL	N/A	https://www.instagram.com/p/C01BjWUCst40/?igshid=ZTcxMWMzOWQ1	https://www.linkedin.com/company/beauty-book-pakistan/		shefiqueahmedshujrah357@gmail.com beautybookpakistan@gmail.com	5	ed (Founder) Amna Soomro (Co Founder)
Sevona Enterprises		The company manufactures helical two-bladed vertical-axis wind turbines (VAWT) for residential and street lighting. It also provides servicing facilities to ensure optimal performance and longevity of the installed turbines.	N/A	Others	https://www.facebook.com/profile.php?id=61553944588932&mibextid=ZbWKwL	https://x.com/SevonaE41695?rjsAskxoDX9dRXGThIcY2A&s=09	https://www.instagram.com/sevonaenterprises?igsh=MWg2eDhhNzdpd3hyda==	https://www.linkedin.com/company/sevona-enterprises/		benazirmemon8@gmail.com Jatinkumarrathor6@gmail.com Sevonaenterprises@gmail.com	5	Benazir Memon (Founder) Jatin Kumar (Co Founder)
Liftup AI		LiftUp is an AI-powered low-code tool transforming software development by enabling individuals without extensive coding knowledge to quickly create functional web apps. It embodies inclusivity in software creation and aims to redefine the industry, allowing millions worldwide to unlock their potential and shape the future of software innovation.	liftupai.xyz	AI	https://www.facebook.com/profile.php?id=61554554768564	https://twitter.com/liftupai	https://www.instagram.com/liftupai/	https://www.linkedin.com/company/liftupai		reelaliarain@gmail.com delstali1@gmail.com aliarain.com	4	Ali Arain (Founder) Khurram Ali (Co Founder)
MEDWE Colors		Ditch toxic dyes and embrace cost-effective, color-rich pigments from indigenous iron ore. These pigments reduce water pollution and offer superior properties compared to organic alternatives, harnessing nature's palette for a more		Others	https://www.facebook.com/people/Med-we-Colors/61554001450984/	https://twitter.com/medwecolors	https://www.instagram.com/medwecolors5/	https://www.linkedin.com/in/med-we-colors-a9a6a02a3/		emaanshaikh666@gmail.com medwe004@gmail.com	5	Emaan (Founder) Co Founder : Syeda Esha Fatima, Wasif Raza, Maryam Khan, Muhammad Daniyal
Meta Smile		Wheat straw hair brush: Ditch plastic, detangle sustainably, and embrace the green revolution.	https://metasmile.000webhostapp.com/	Others	https://www.facebook.com/profile.php?id=61554754021859&mibextid=ZbWKwL	https://twitter.com/_MetaSmile	https://www.instagram.com/business.metasmile/	https://www.linkedin.com/company/meta-smile		business.metasmile@gmail.com soomrojunaid431@gmail.com	5	Junaid Ahmed (Founder) Dua Fatima (Co Founder)
TactiLearn		The company is developing a device for visually impaired children to learn and play. This device opens a world of possibilities, ensuring each touch sparks the joy of discovery for blind children.	N/A	Ed Tech	https://www.facebook.com/profile.php?id=61552285862281&mibextid=ZbWKwL	N/A	https://www.instagram.com/tactilearn?igshid=OGQ5ZDc2ODk2ZA==	https://www.linkedin.com/company/tactilearn/		teamtactilearn@gmail.com yasheafridi@gmail.com	5	Yasha Azmat khan (Founder) Amanullah, Rabia (Co Founder)
ASAR Apparel		ASAR APPAREL offers affordable, high-quality fashion to women in Interior Sindh, blending style with substance. Beyond clothing, it empowers women through eco-friendly materials and skills development programs, creating a positive impact on both fashion and communities.	https://asarapparel.store/	E-Commerce	https://www.facebook.com/profile.php?id=61553199993522&mibextid=ZbWKwL	https://x.com/bhutto_par36491?t=Mo1dcOjov1i0bKWnyOMevA&s=08	https://instagram.com/asar_apparel?igshid=NGVhN2U2NjQ0Yg==	https://www.linkedin.com/company/asar-apparel/		asarapparel82@gmail.com	5	Asma Parveen Bhutto (Founder)
Void Essence		VOID Essence is a revolutionary fragrance brand offering eco-friendly perfume wax. It aims to redefine personal fragrance by combining delightful scents with sustainable practices.	https://voidessence.pk/	E-Commerce	https://www.facebook.com/profile.php?id=61552136000537	N/A	w.instagram.com/voidessence23?igshid=OGQ5ZDc2ODk2ZA==	https://www.linkedin.com/in/void-essence-a6a6a92a1/		Aliabbasss0311@gmail.com saba.shah992@gmail.com	4	Ali Abbas (Founder)
BidBuyy		BidBuy is a virtual marketplace for auction-style buying and selling. Users can bid on a diverse range of items, including collectibles, electronics, art, and antiques. The platform offers various auction formats, including timed and live auctions, providing a thrilling		E-Commerce	https://www.facebook.com/share/FsgtYy7h8kEb8nL7/	https://x.com/buy_bid96333?s=20	https://www.instagram.com/bidbuy2023?igshid=YzVkODRmOTdmMw==	https://www.linkedin.com/company/bidbuy2023/		bidbuy2023@gmail.com kaifmohammad03@gmail.com	5	Kaif khawaja (Founder)

		EventuAlly is a mobile application that consolidates all vendors involved in			https://www.fa								
Startup Name	LOGO	Idea Briefs	Website	Category	Facebook	Twitter	Instagram	Linkedin	Intro Video Youtube URL	Email	Team Size	Founders	
AasanBooking		Aasanbooking is a Service-based Startup. In which, we will provide online bus tickets booking service through Web Application. Where people will find multiple Bus Services on one platform and book their tickets as per their choice from anywhere and anytime.	https://www.aasanbooking.com/	Travel	https://www.facebook.com/AasanBooking	N/A	https://www.instagram.com/aasanbookingofficial/	https://www.linkedin.com/company/86368423/admin/	https://www.youtube.com/watch?v=gobsy0FSOBU	muhammadd7899@gmail.com	5	Muhammad Danish Siddiqu	
EventXPress		company founded by a team of well qualified professionals , to provide branding marketing ,planning and event coverage facilities for institutions and business.	https://eventx.press/	Other	https://www.facebook.com/EventXpress-1068686585751267	N/A	https://www.instagram.com/eventx_press/	https://www.linkedin.com/company/eventxpress/	https://youtu.be/kCXULa1mDKA	saira.mustafa13te64@gmail.co	5	Saira Sidhu	
Megaz Solution		MegazSolution is a leading online and onsite digital marketing agency who delivers quality marketing services of Social media Marketing/Management, Website creation, Website management, Content writing, Copywriting, Blog writing, Adcopy writing etc. by complying National and International standards, in order to uplift and digitized traditional business respectively.	www.megazsolution.com	Saas/other	https://www.facebook.com/megazsolution	com/MegazSo	https://www.instagram.com/megazsolution/	https://www.linkedin.com/company/megaz-solution/	https://www.youtube.com/watch?v=7dnR-D4f1j0	mehtabmqaimi@gmail.com	5	Muhammad Mehtab Zulfiqar	
Hostelin.pk		This is the web application where students can see the information of all hostels based on Jamshoro and Hyderabad. They can see the availability and the facilities provided by hostels. They can compare and book hostels online.	hostelin.pk	Saas	https://www.facebook.com/profile.php?id=100065882712254	N/A	https://instagram.com/hostelinpk?igshid=YmMyMTA2M2Y=	https://www.linkedin.com/company/hostelin-com/	https://www.youtube.com/watch?v=YpZeRJbSUYU	anoshkhanakb123@gmail.com	5	Anosh Khan	
TradBot		Create their own customized trading bot.	/frameraf/	FinTech	adbot0	@tradbot090	tradbot12/	ot/	Eu	m	5	Yaseen Ali Burro	

Rentpayy		RentPayy is a multi-category service that caters the purpose of renting properties, hostels, hotels, transportation and even people who are skilled in their respective fields. RentPayy provides a platform for the owners to list in their places for rent and its users to find a desired one in no time.	www.rentpayy.com	Saas	https://www.facebook.com/rentpayy	/twitter.com/re	https://www.instagram.com/rentpayy/	https://www.linkedin.com/company/rentpayy/	https://www.youtube.com/watch?v=vCssfplp3JM	engr.malikghaffar@gmail.com	5	Abdul Ghaffar
She-Guard		She-Guard is a biodegradable, eco-friendly, and herbal treated sanitary napkins that has the potential to cater solid waste, serious health issues and	N/A	HealthTech	https://www.facebook.com/sheguardpk?_rdc=1&_rdr	itter.com/she_	https://www.instagram.com/sheguardpk/	https://www.linkedin.com/company/she-guard/	https://www.youtube.com/watch?v=r5bdeoQPFIQ	rmehreen503@gmail.com	5	Mehreen Raza
Stitch and Sew		Stitch and sew is a SaaS based company which provides stitching services at the doorsteps of the customer. We pick the clothes from customers, get it stitched by professional tailors and deliver it to them within the committed time at their doorsteps. Furthermore, the app provides variety of designs and customization options to choose from.	www.Stitchandsew.com.pk	SaaS	https://www.facebook.com/profile.php?id=100088621032697	N/A	https://www.instagram.com/stitchandsewapp/?fbclid=IwAR2JxySigD21UBYsIiX0HfrWrQswL86IRj-vqziOVSNM0Vp1yDn0A6DGLE	N/A	https://www.youtube.com/watch?v=MqKY9n74xjo	araineman73@gmail.com	5	Eeman
Evolvve		Evolvve is the solution for the change to bring up the skills, community building, branding and marketing of the ed-events. Platform is basically to market the educational & knowledge based events in order to reach the right audience. At the same time it connects the learners to their favorite speakers and	N/A	Ed-Tech	https://www.facebook.com/Evolvve-103961932474895	/twitter.com/Ev	https://instagram.com/evolvve5646?igshid=YmMyMTA2M2Y=	https://www.linkedin.com/company/85633956/admin/	https://www.youtube.com/watch?v=oQnlO5u7ZnA	farwahshaikhofficial@gmail.co	5	Farwah Shaikh
Clothiex		Clothiex is a start-up in which we provide the E-laundry service at your door-step to reduce your time and efforts to deliver the washing clothes to the laundry shop.	http://clothiex.com/	Saas	https://www.facebook.com/clothiex.com1	X?t=c2qMSbSy	https://instagram.com/washoo.pk_?igshid=YmMyMTA2M2Y=	https://www.linkedin.com/company/clothiex/	https://youtu.be/Ay4damRZR3I	abhanan.675@gmail.com	5	Abdul Hanan
ASAR Apparel		ASAR APPAREL offers affordable, high-quality fashion to women in Interior Sindh, blending style with substance. Beyond clothing, it empowers women through eco-friendly materials and skills development programs, creating a positive impact on both fashion and communities.	https://asarapparel.store/	E-Commerce	https://www.facebook.com/profile.php?id=61553199935228&mibextid=ZbWKwL	https://x.com/bhutto_par36491?t=Mo1dcOjpv1l0bKWnyOMevA&s=08	https://instagram.com/asar_apparel?igshid=NGVhN2U2NjQ0Yg==	https://www.linkedin.com/company/asar-apparel/		asarapparel32@gmail.com	5	Asma Parveen Bhutto (Founder)
Void Essence		VOID Essence is a revolutionary fragrance brand offering eco-friendly perfume wax. It aims to redefine personal fragrance by combining delightful scents with sustainable practices.	https://voidessence.pk/	E-Commerce	https://www.facebook.com/profile.php?id=61552136000537	N/A	w.instagram.com/voidessence23?igshid=OGQ5ZDc2ODk2ZA==	https://www.linkedin.com/in/void-essence-a6a5a92a1/		Aliabbasss0311@gmail.com saba.shah992@gmail.com	4	Ali Abbas (Founder)
BidBuyy		BidBuy is a virtual marketplace for auction-style buying and selling. Users can bid on a diverse range of items, including collectibles, electronics, art, and antiques. The platform offers various auction formats, including timed and live auctions, providing a thrilling		E-Commerce	https://www.facebook.com/share/FsqtYy7h8kEb8nLZ/	https://x.com/buy_bid96333?s=20	https://www.instagram.com/bidbuy2023?igshid=YzVkODRmOTdmMw==	https://www.linkedin.com/company/bidbuy2023/		bidbuy2023@gmail.com kaifmohammad03@gmail.com	5	Kaif khawaja (Founder)

Startup Name	LOGO	Idea Briefs	Website	Category	Facebook	Twitter	Instagram	Linkedin	Intro Video Youtube URL	Email	Team Size	Founders
smyle.pk		smyle.pk is solving multiple problems in the fashion industry by promoting affordability, sustainability, accessibility, and convenience, which makes it an attractive option for fashion enthusiasts and buyers.	smyle.pk	Ecommerce	https://www.facebook.com/profile.php?id=100093372657046&mibextid=ZbWKwL	In-progress	https://instagram.com/smyle.pk?igshid=MzNlNGNkZWQ4Mg==	In-progress	https://youtu.be/KPOKr0LyHfo	alimemon.business@gmail.c	5	Ali Memon
Roz Services		Roz Services is a Mobile Application Service-Based platform that connects users with skilled labor and various demanded services in their area. The platform offers a convenient way for people to find and hire professionals such as electricians, carpenters, plumbers, water tanker services, and tuition teachers. Through the Roz Services mobile application, users can browse through a database	In-progress	Technology/Software	https://www.facebook.com/profile.php?id=100091262969316&mibextid=ZbWKwL	https://twitter.com/RozServices?t=xt1E98oM-BN1dNDvW2Qg&s=08	https://instagram.com/roz_services.001?igshid=MzNlNGNkZWQ4Mg==	https://www.linkedin.com/in/roz-services-084672272/	https://fb.watch/[illegible]?mibextid=ZbWKwL	kashifturk014@gmail.com, rozservices142@gmail.com	5	Kashif Ali
Printifyz		Printifyz is SaaS company it provides an online printing service that specializes in creating high-quality wedding cards, business cards, and more.Our platform offers convenient and affordable solution for customers who are looking for premium-quality printing services. With Printifyz, you can easily Designs and customize your own wedding cards or business cards, choosing from a wide range of designs and templates. We also offer fast and reliable shipping options, ensuring that our customers receive their orders in a timely manner.	In-progress	Industry, Innovation and Infrastructure		https://twitter.com/printifyz?fbclid=IwAR3F7Z[illegible]	https://www.instagram.com/printifyz/	https://www.linkedin.com/company/printifyz/	https://youtu.be/m7LOWw81veY	printifyzz@gmail.com	5	Sajid Habib
Mehran Stairlift		Mehran Stairlift is an initiative to install stairlifts for people having locomotive disorders, disabilities and are old aged. According to World health organization, there are 785M people in the world and 32 million in Pakistan who have disabilities. Due to high costs and extensive space requirements, installing elevators, escalators, and stairlifts is not feasible in Pakistan. We are pleased to present the Mehran Stairlift, which is cost efficient and can be made from local materials in Pakistan. It has features like step counter, luggage carrier, digital	mehranstairlifts.com	Social Impact	https://www.facebook.com/[illegible]	https://twitter.com/MehranStairlift?t=[illegible]&s=09	https://instagram.com/mehranstairlift46?igshid=NTc4MTIwNjQ2YD==	https://www.linkedin.com/company/mehranstairlift/	https://youtu.be/auYP-_XVDg	muhammadsaleemu@gmail.com saadatsyed512@gmail.com	5	Muhammad Saleem
TradBot		TradBot is software as a service company where by new traders trade on the company's tested and automated bots and expert traders use our AI model to create their own customized trading bot.	https://tradbotframer.ai/	FinTech	https://www.facebook.com/Tradbot0	@tradbot090	https://www.instagram.com/tradbot12/	https://www.linkedin.com/company/tradbot/	https://www.youtube.com/watch?v=[illegible]EU	yaseenburiro090@gmail.com hamadmemon946@gmail.com	5	Yaseen Ali Buriro

[6.18] Total number of graduates with green jobs

Following table provides a list graduates with “green” jobs, that is jobs which focus on aspects of sustainability in particular, from the last graduate survey.

S. No.	Domain	Number of Alumni
1	Construction (highways/buildings)	325
2	Manufacturing industry	150

3	Agriculture	83
4	City and regional planning	75
5	Environment	65
	Total	**698**

[6.19] Availability of units or offices that coordinate or are related to sustainability

MEHRAN UNIVERSITY OF ENGINEERING AND TECHNOLOGY, JAMSHORO

Dated: - 30-05-2024

NOTIFICATION

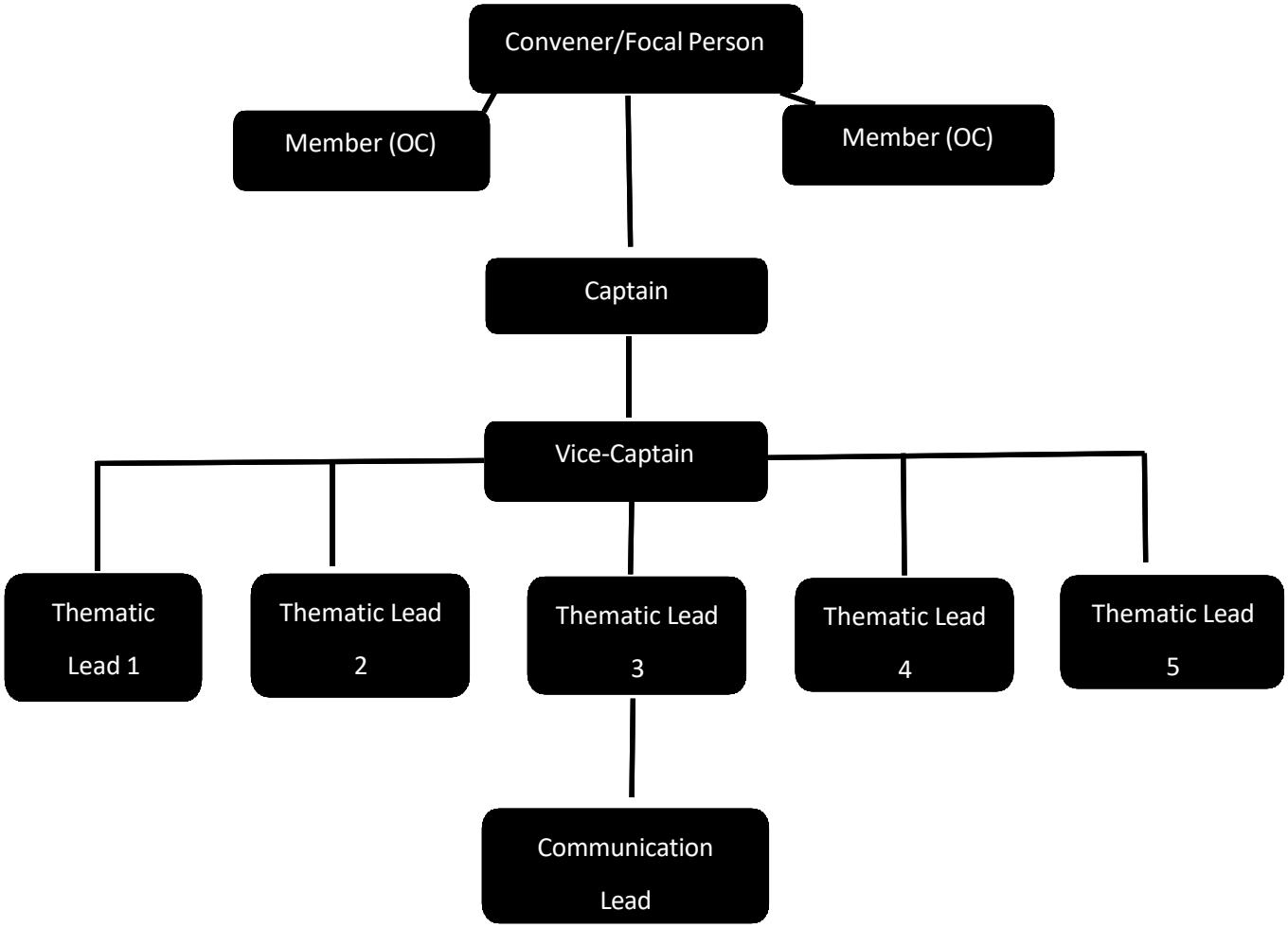
No.Estt:(Teach:)/- 888 of 2024. It is notified for the general information of all concerned that, the Vice Chancellor, Mehran University of Engineering & Technology, Jamshoro is pleased to re-constitute Green Youth Movement (GYM) Club and its oversight committee of the University with immediate effect consisting of the following members:

1.	Dr. Muhammad Shuaib Shaikh, Deputy Advisor Students' Affairs, Associate Professor, Department of Chemical Engineering.	Convener & Focal Person
2.	Dr. Naveed Mengal, Deputy Advisor Students' Affairs, Associate Professor, Department of Textile Engineering.	Member
3.	Dr. Sahib Khatoon, Deputy Advisor Students' Affairs, Assistant Professor, Center of English Language and Linguistics.	Member
4.	Mr. Imran Ali Memon, Assistant, Advisor Students' Affairs Office.	Secretary

REGISTRAR

COPY TO ALL CONCERNED.

Green Youth Movement (GYM) Club

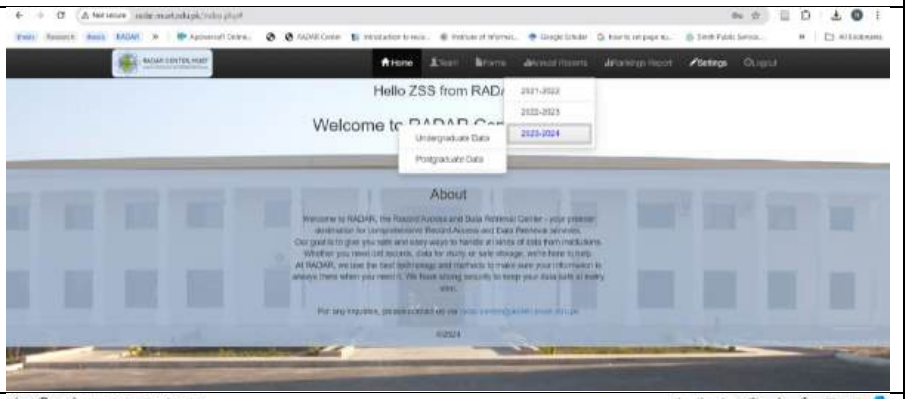
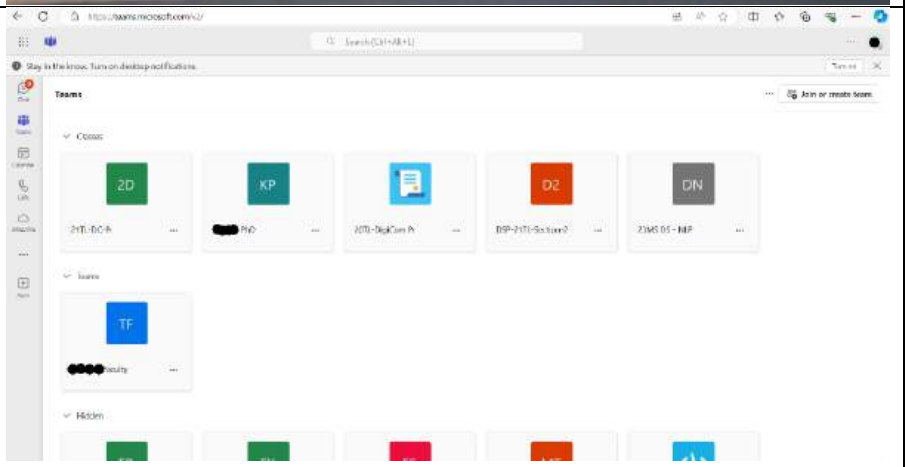


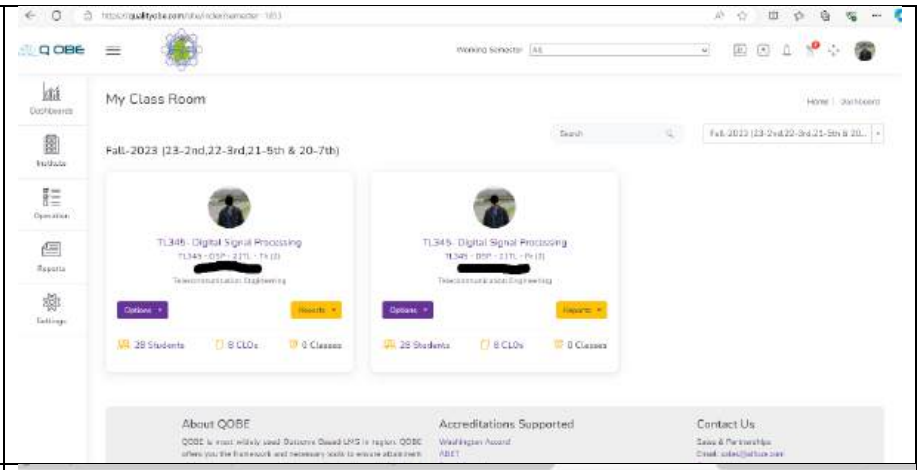
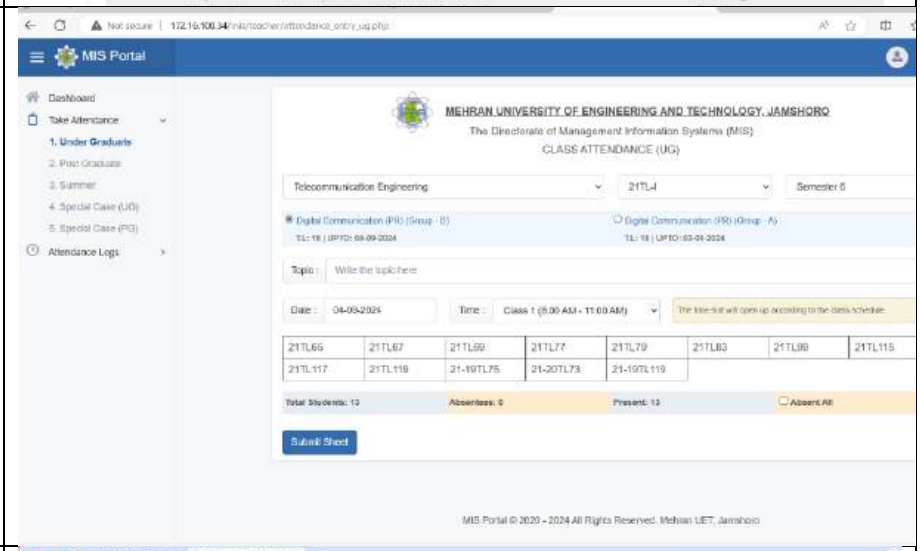
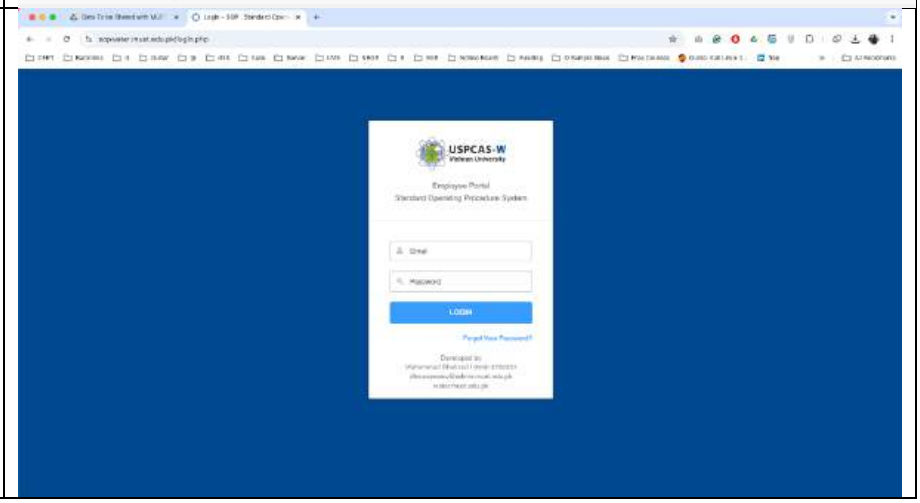
The Green Youth Movement (GYM) Club outlines a structured and efficient framework for managing and executing various tasks within the organization. At the core of this structure is the Convenor, who leads the body and is responsible for overseeing all major activities. The Convenor is supported by two side members, who assist in decision-making and provide input for the overall direction of the team.

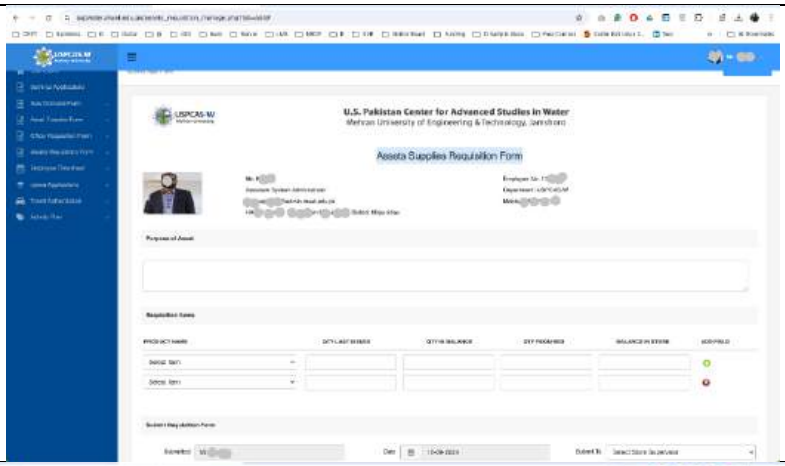
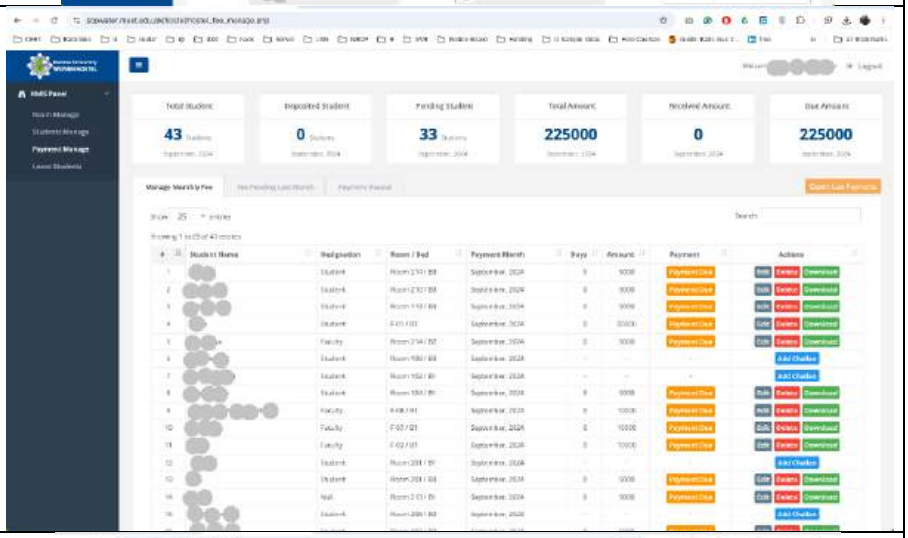
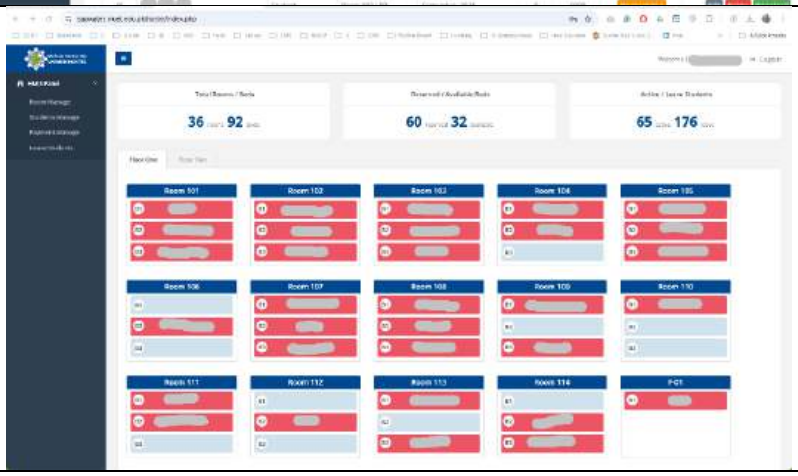
Within this structure, there is also a Captain and a Vice Captain. The captain oversees the team's operations, ensuring that goals are met, while the Vice Captain manages more detailed aspects of the execution. The Vice Captain supervises five thematic leads, each of whom is responsible for a specific thematic area of the organization's work, ensuring specialization and efficiency in task delivery.

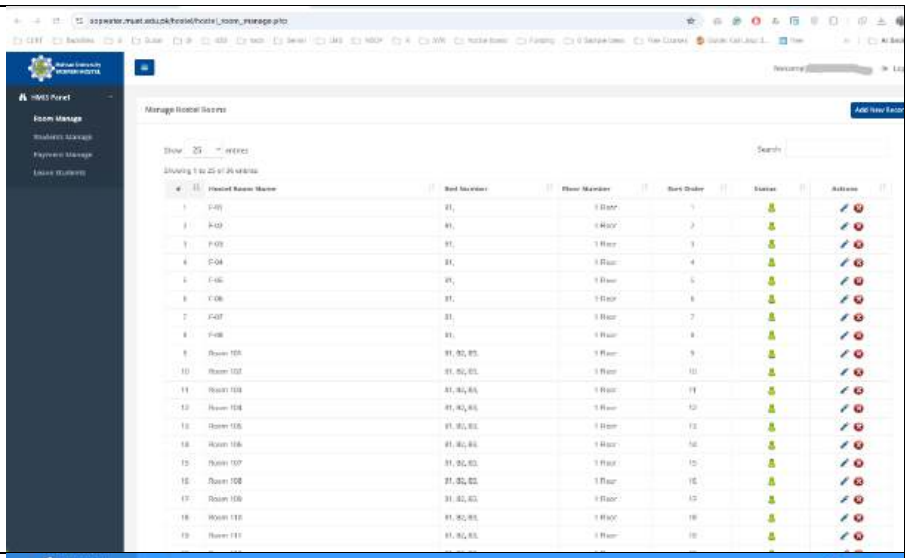
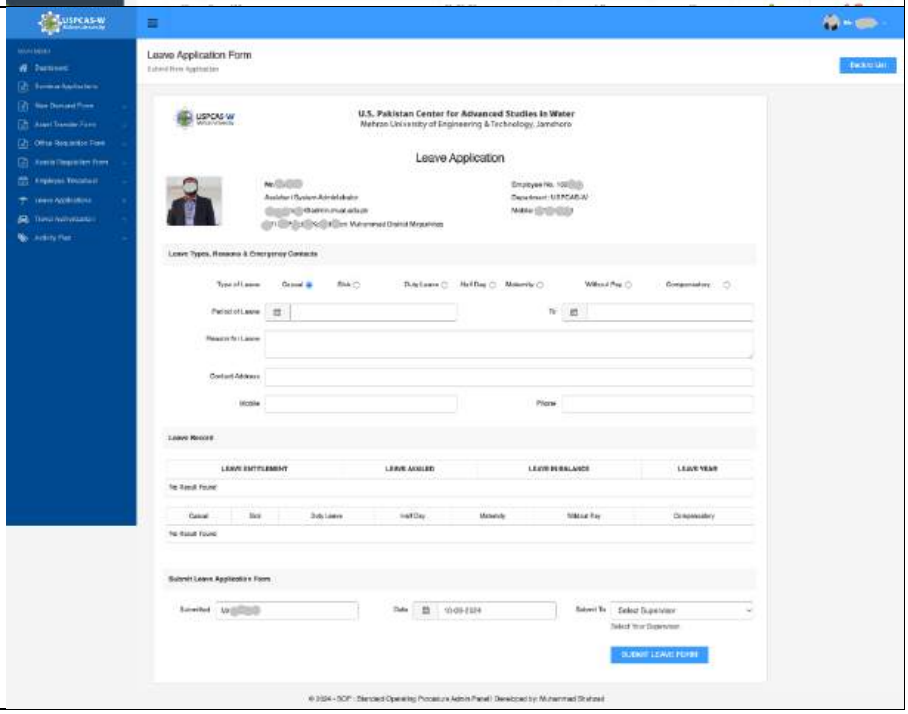
Additionally, the team includes a Spokesperson, who serves as the communication bridge. The Spokesperson is responsible for sharing information about all activities carried out within the organization, ensuring transparency and effective communication both internally and externally. This structure allows for clear delegation of responsibilities and smooth coordination across various levels.

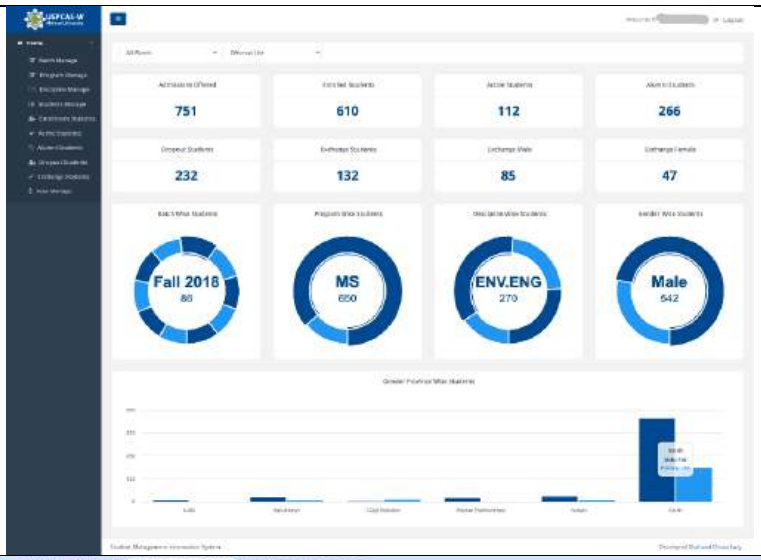
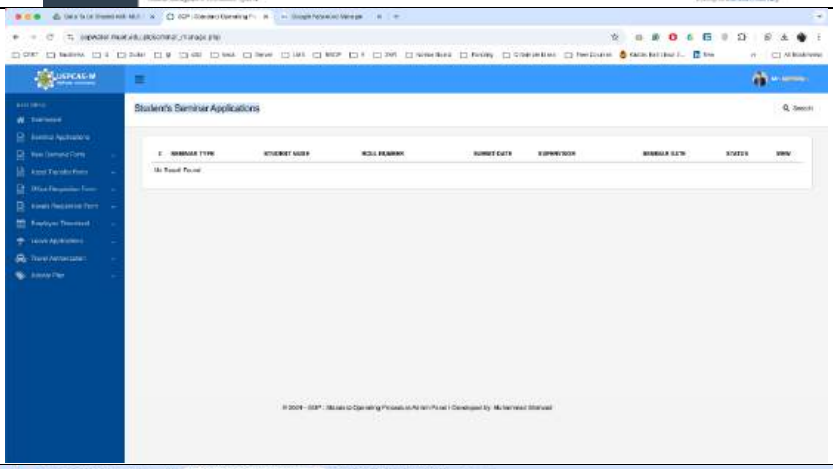
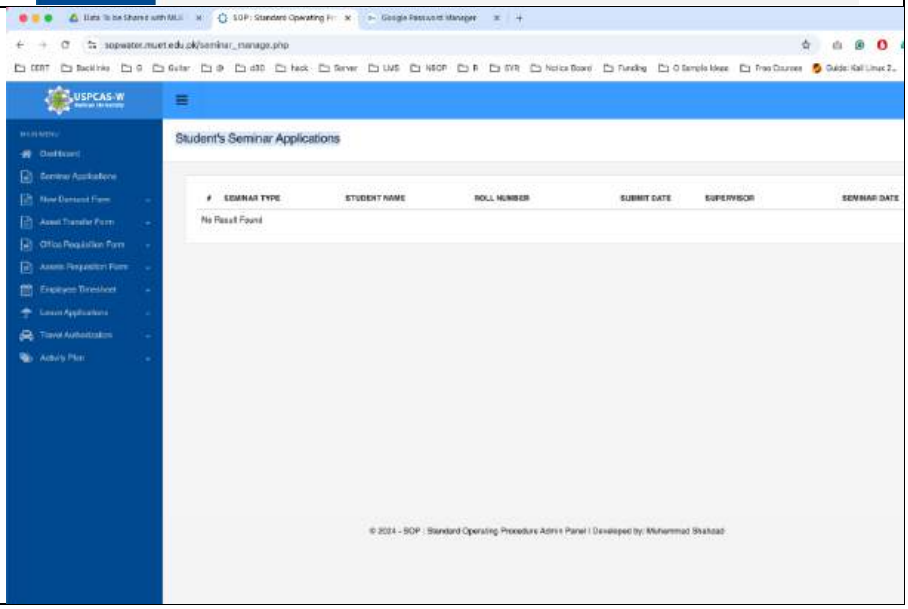
[6.20] Planning, implementation, monitoring and/or evaluation of university governance through the utilization of Information and Communication Technology (ICT)

Title	Evidence
Record Access and DAta Retrieval (RADAR),Center Portal	
MS-Teams	

	
Online attendance portal	
SoP - Employee Portal - Login Page	

SoP - Assets Supplies Requisition Form	
SoP - Hoste Payment Manage	
SoP - Hostel Dashboard	

SoP - Hostel Room Manage	
SoP - Leave Application	

SoP - SIS - Dashboard	
SoP - Students Seminar Applications	
SoP - Travel Authorization Form	

Description:

- RADAR portal has been implemented to streamline academic processes by collecting annual reports, MS Teams classrooms for virtual learning and assignment submission, a student hostel dashboard for room allocation and fee management, a travel authorization form, and a portal for submitting seminar applications. All these platforms have been carefully developed, evaluated, and revised timely following the quality assurance procedures established by the Quality Enhancement Cell (QEC).
- The correct option following the above evidence is :

  [5] Program has been implemented, evaluated, and is currently revised

Additional evidence link:

- https://www.muet.edu.pk/quality-enhancement-cell/qec-activities