GREEN AUDIT REPORT
FOR
MALLIGE COLLEGE OF PHARMACY
#71, Silvepura, Chikkabanvara Post,
Bangalore, 560090

Carried For
Academic Year 2022-2023

Carried Out By

ELION TECHNOLOGIES & CONSULTING PVT LTD
307, 3rd Floor Local Shopping Centre, Lal Market,
H Block, Vikas Puri, New Delhi - 110018
Tel: +91-11-28531884, +91-11-28541888
Web: www.elion.co.in, Email: safety@elion.co.in

MALLIGE COLLEGE OF PHARMACY IQAC CELL BANGALORE

MALLIGE COLLEGE OF PHARMACY BANGALORE

PRINCIPAL,
Mallige College of Pharmacy
Bangalore-560 090

CONTENT

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1. INTRODUCTION

Mallige College of Pharmacy is managed by Mallige Education Foundation. The Foundation is established in the year 2003 to provide quality education in the field of health sciences. The trustees of Mallige Education Foundation are already serving the community through two multi speciality hospitals in Bengaluru. With an aim to promote quality education on pharmaceutical sciences and to fulfil the health care needs of the society, Mallige Education Foundation started the Mallige College of Pharmacy in the year 2006.

VISION
To create ethical, knowledgeable and professional pharmacists in the field.

MISSION
To become a "Centre of excellence" by providing quality and research oriented Pharmacy education to meet the need of the industry, community and other stake holders through continuous training and up-gradation of infrastructure of learning and practicing Pharmacy profession.

Our facilities includes a library, hostels, a student cafeteria serving multiple cuisines to satisfy different palates, laboratories for all the branches of science, a gym and a fitness center with state of the art equipment, sports arena with facilities for various games, a digital library as well as transport facilities for our students and staff. We has a wi-fi campus allowing the students flexibility and luxury of working from any part of the campus at any time. Our facilities are built to ensure and encourage all round development of its students, nurturing the world of tomorrow.

List of courses offered by the institute:

- D-Pharm
- B-Pharm
- Pharm D
- M. Pharm
- PhD

Details of the infrastructure of Mallige College of Pharmacy is as per below:

Total Area: 2 Acres
Green Area: 1 Acre

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Building Name	Areas	Size
Mallige College of Pharmacy	Total build up area	4369 sq. ft
	Carpet area & administrative area	466 sq. ft
	Instruction area	2789 sq. ft
	Amenities	1114 sq. ft

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2. ENVIRONMENTAL SETTING

The land use around the campus is mixed area with Schools and Temples.

Mallige College of Pharmacy

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Location of Mallige College of Pharmacy

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3. GREEN AUDIT

For Green Audit following 13 major areas (including their subsections) were covered and compliance/ initiatives under these areas were verified/ validated.

a) Good Daylight Design and Ventilation
b) Water Efficiency
c) Wastewater Management
d) Indoor Air Quality
e) Energy Efficiency
f) On-site Energy Generation
g) Temperature and Acoustic Control
h) Paper Waste Management
i) E-Waste Management
j) Canteen and Solid Waste Management
k) Universal Access and Efficient Operation and Maintenance of Building
l) Green Belt
m) Green Programs (Green initiatives)

3.1 Good Daylight Design and Ventilation

a) Corridors are wide with good ceiling height. All the corridors receive good daylight.
b) Classrooms, Labs and Library have large windows. Windows are kept open to adequate daylight.
c) Classroom walls, corridors and labs are white-washed, this enhances the daylight received.
d) Curtains are provided on some of the windows to avoid glare.
e) Laboratories are provided with exhaust fans to disperse heat, fumes and odors.
f) Stair cases receive daylight through windows provided at various levels.

Daylight in Classrooms

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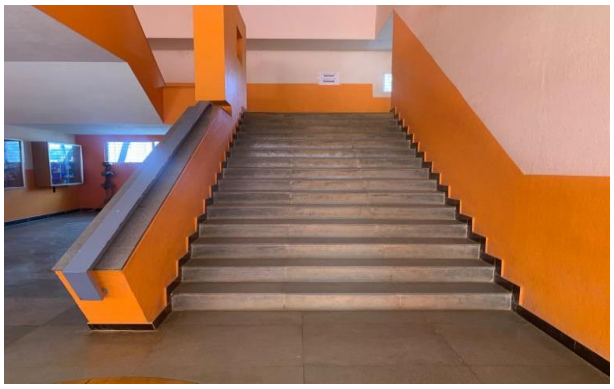
Daylight in Labs



Staircases

3.2 Water Efficiency:

a) Submersible pump is used for water supply in the campus.
b) Water from submersible is stored in underground and overhead tanks.
c) Water coolers & purifiers are installed at drinking water supply points.
d) Normally mops are used for floor cleaning and hose is used for cleaning once a week
e) Dual flushing system is provided in the washrooms.
f) Signages are provided in washrooms emphasizing water conservation.
g) Water from air conditioning unit and reject water from water purifiers is used for watering plants within premises.
h) Rain water harvesting system is installed.

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Water Coolers & RO System

Rainwater Harvesting System

3.3 Wastewater Management:

a) Sanitary wastewater generated from washrooms is discharged into sewage of local municipality.

3.4 Indoor Air Quality:

Indoor Air Quality (IAQ) refers to the air quality within and around buildings and structures, as it relates to the health and comfort of building occupants. Some common indoor pollutant are listed as below:

- Molds and other allergens – This may arise from water seeping into the building envelope or skin, plumbing leaks, condensation due to improper ventilation, or from ground moisture penetrating a building part.
- Carbon monoxide – Sources of carbon monoxide are incomplete combustion of fossil fuels.

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- Volatile organic compounds (VOCs) – VOCs are emitted by paints and lacquers, paint strippers, pesticides, office equipment such as copiers and printers, correction fluids and carbonless copy paper, graphics and craft materials including glues and adhesives, permanent markers, and photographic solutions etc.
- Carbon dioxide – Due to human respiration
- Particulate matter – Due to construction and maintenance activities

Major observations under indoor air quality are as below:

a) In classrooms the mode of ventilation is natural (through windows) and is enhanced by fans. Air conditioners are used in some of rooms/ labs e.g. computer labs, computer server room.
b) Heating Ventilation and Air Conditioning (HVAC) system does not exist. Split and Windows Air conditioner are used.
c) Indoor plants are seen in the College. Indoor plants can be plotted not only for the aesthetic appearance but also for health benefits. Refer **Annexure 1** for details.
d) Green belts have been set up in campus area.

3.5 Energy Efficiency:

Electricity:

Power is supplied by Bangalore Electricity Supply Company Limited. The major electricity consuming equipment installed in the campus are Windows and Split AC, Submersible Motor, Motors, Air Cooler, RO Plant, Desktop, Printer, Fan, Tube light, LED Bulb etc.

Following is details of energy consumption:

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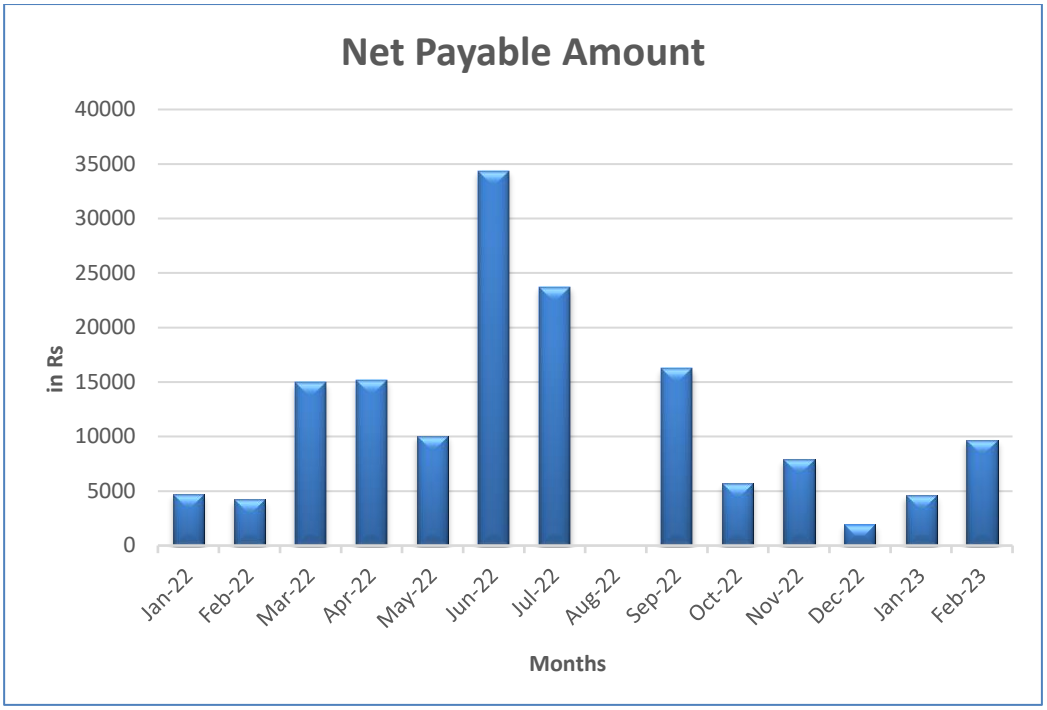

It was observed that:

a) LED tube lights & fans are installed in classrooms and labs. CFL and conventional tube lights are also used. College is in the process of replacing periodically the dysfunctional conventional tube lights with LED lights.
b) Mallige College of Pharmacy has air conditioner which are in good working condition.
c) It was found that the college is generating energy more than its consumption and is net positive.

3.6 On Site Energy Generation (usage of LPG/ Natural Gas):

a) Canteen facility is present in Mallige College of Pharmacy.
b) LPG is provided in the canteen for cooking.
c) Back Up diesel generators are available.

3.7 Temperature and Acoustic Control

a) White washed rooms & corridors and white/ off-white flooring improve the lighting conditions.
b) The entire campus has green area

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Green Campus

c) Mallige College of Pharmacy has done tree plantation all around the building which helps in reducing temperature.

3.8 Paper Waste Management:

Being academic institution, waste paper is the main solid waste generated in the premises. The College has taken steps to minimize and avoid paper usage. It was observed that:

a) Prints and photocopies are taken on both sides of the pages to avoid excess paper usage. Rather than photocopy, digitalization (scanning) is practiced.
b) Internal notices and communications are through E-mail/SMS.
c) Faculty and administration staff uses old papers and envelops for internal usages as rough work, file markers, page separators etc.
d) Paper notices are displayed on the notice boards. Most of the storage is in library and staff room. After couple of years, old submissions and answer papers will be archived and stored in record room.
e) Old papers are given to vendor in exchange of new papers, in the ratio.

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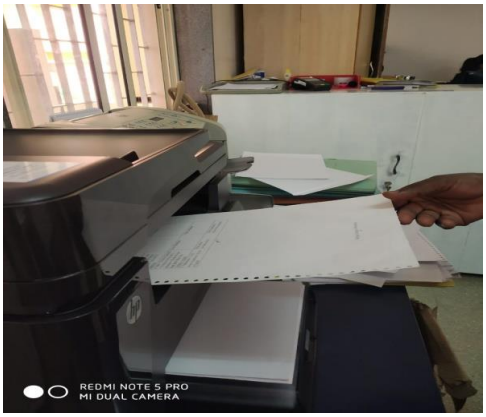

3.9 E-Waste Management:

a) System for disposal of e-waste is present in the campus.

3.10 Solid Waste Management:

It was observed that:

a) Wet waste and dry waste segregation are practiced in the premises. Separate bins are provided for wet biodegradable and dry recyclable waste.
b) Non Hazardous Waste – Daily garbage, canteen waste, carton papers, plastic and civil construction waste generated from premise on regular basis. The regular collection is done by Municipal Corporation for further dispose of at dumping site. There is designated garbage yard inside premise for the same.
c) Biodegradable waste is mainly generated in canteen.

Waste Segregation

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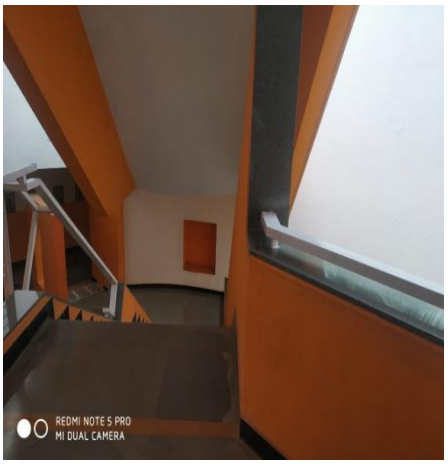
3.11 Universal Access and Efficient Operation and Maintenance of Building:

It was observed that:

a) College is easily accessible. Staircase and ramps are provided for staff and students.
b) Since the access and staircases are wide and uncluttered, it is possible to have a safe evacuation during emergency.
c) Fire extinguishers are provided for emergency. They are inspected and serviced by fire protection Service Company annually.
d) Regular Fire Safety Trainings are given to staff and students.



Staircase

Fire Extinguishers

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Ramps

3.12 Green belt/ Landscaping:

a) Large trees are planted in the premises. Plantation also helps maintaining lower temperatures of the area.

3.13 Green Initiatives:

College is regularly celebrating Environment Day, and Earth Day.

Cultural Programs

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4. RECOMMENDATIONS/ SUGGESTIONS

4.1 For Improving Energy Consumption:

a) Every classroom and lab with central switch board can have a diagram linking location of a tube light, fan etc. with corresponding switch. This will ensure that correct fitting is switched on/ off and can save time & unnecessary operation.
b) Installation of automatic lights with sensors can be considered.
c) Standard Operation Procedures (SOPs) should be prepared and followed for green purchasing. Equipment with star rating, using eco-friendly materials; with safe disposal policy to be preferred. Policy of returning equipment at the end of life span to the supplier to be preferred.
d) For purchasing new electronic appliances, star rating provided by Bureau of Energy Efficiency (BEE) should be considered. The equipment which has maximum star ratings could be purchased, which will consume less energy, ensure environmental sustainability and also operate at low cost.
e) Usage of light reflectors is recommended as the reflectors can spread light to relatively large areas.
f) If possible, computers should be switched off from main power connections.
g) Notices/signages can be put up/displayed near switches and on notice boards, informing students and staff to switch off all electricals when not in use.
h) Control sensors can help to reduce consumption by automatically dimming lights when people are not around, and keeping blinds open to use natural light & reduce energy consumption.
i) Raise awareness:
   - Encourage students to help in monitoring energy consumption & implement corrective actions
   - Integrate energy education into classroom learning.

4.2 Water Conservation:

a) Provide information on water usage and savings to students/ staff through notices, screen savers in computer labs.
b) Dry sweep or use a sponge broom when possible, instead of using a hose to clean floors, sidewalks, or other hard surfaces.
c) Minimize/ reduce water usage by installing water saving faucets such as pressmatic taps, tap aerators, jet sprays etc.

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d) Installation of waterless urinals can be considered to reduce water consumption.
e) Water balance diagram can be prepared to quantify the water consumption by installing water meters at key points. Based on data gathered, appropriate measures can be taken to reduce the water consumption.

4.3 Paper and other Solid Waste Reduction:

a) Inventories of all solid waste generated in the premises must be maintained.
b) Enhance recycling. This can be done by creating a group where students can recycle books, personal clothes and other material to needy students. This can be an initiative under green program.
c) Standard Operating Procedures (SOP) for Solid and E-waste management and for recycling of waste should be prepared & practiced. The SOP's may include collection, segregation and reuse of different types of wastes, if any (e.g. biodegradable waste for composting). This will help in safe disposal of waste to recycle agencies.
d) Training as well as awareness programs should be organized on segregation of biodegradable waste and recycling of waste. Efforts should be taken to inform students about recycling options and signs should be posted on appropriate bins indicating what could be dumped in each bin.
e) The college can introduce online app, which can be useful for conducting internal exams, assignment/ reports submission. This system can also be used for displaying important notices, timetables.
f) Paper usage shall be monitored to understand the impact of digitization in the facility.

4.4 Others:

a) Environmental advisory committee could be formed. The discussions/ information sharing among different departments can generate lot of ideas and awareness on green issues.
b) Maintain minutes of meetings of environmental committees; evaluate the effectiveness of various environmental programs conducted by the institutes. Set annual targets for Green Initiatives & monitor them closely. Create 'Green Champions'.
c) Since each student uses computer lab, the screen savers can be set up for creating environmental awareness. (Ergonomics, water conservation etc.).

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Short 30 second pop up can be displayed on computer screens when they are on standby mode. Or wallpapers informing students about environment conservation can be created.

d) Consider detailed energy audit (energy consumption, thermal emission, visual comfort) and water audit.

e) Adopt environmentally responsible purchasing policy, and work towards creating and implementing a strategy to reduce environmental impact of its purchasing decision.

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ANNEXURE 1
INDOOR GARDENING DETAILS

Indoor plants are commonly used for their aesthetics benefits but they also have vital role reducing airborne pollution. The right choice of plants can be an excellent way of improving indoor air quality and general health. Local landscape contractor can be contacted for supply and rotation of these plants.

Plants	VOC it removes	Indoor source of VOC's	Plant care
 **Aloe Vera**	Formaldehyde, Trichloroethylene and Benzene	Chemical based cleaners and paints	Easy to grow with enough sunlight
 **Bamboo Plant**	Formaldehyde, Trichloroethylene and Benzene	Paints, Plastics, Wood products etc.	Thrives under low light conditions as well as easy to maintain
 **Chinese Evergreen**	Benzene	Paints	Low maintenance plant that prefers low light conditions.
 **English Ivy**	Formaldehyde, Benzene, Air borne fecal matter particles	Wood, Paper products, Air borne fecal – matter particles from pests	Easy to maintain

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 **Janet Craig**	Formaldehyde, Benzene and Trichloroethylene	Paints, Plastics, Wood products etc.	Medium to low light tolerant plant. Requires little water for growth.
 **Golden Pothos or Devils Ivy**	Formaldehyde, Cleanses air	Exhaust fumes, carpeting materials, panelling and furniture products made with particle board	Extremely easy to maintain under low to bright light conditions. Fast growing and grows well under Fluorescent light.
 **Mass Cane**	Formaldehyde, benzene and trichloroethylene	Paints, Plastics, Wood products etc.	Medium to low light tolerant plant. Requires little water for growth.
 **Snake plant**	Formaldehyde and trichloroethylene	cooking fuels, wood products, facial tissues, personal care products and waxed papers	Drought resistant and Tolerates a variety Of light conditions. Hard to damage or kill.

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 **Peace Lily**	Formaldehyde, benzene and trichloroethylene	Paints, Plastics, Wood products etc.	Relatively easy to maintain. Survives in low light conditions.
 **Red-edged Dracaena**	Formaldehyde and trichloroethylene	cooking fuels, wood products, facial tissues, personal care products and waxed papers	Drought resistant and Tolerates a variety of light conditions. Hard to damage or kill.
 **Spider Plant**	Formaldehyde, benzene, carbon monoxide and xylene	cooking fuels, wood products, Printing	Easy to maintain under medium to bright light condition.
 **Parlor Palm**	Purifies indoor air	-	Easy to maintain

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