



COMPENDIUM ON SUSTAINABLE DEVELOPMENT GOALS 2023

SDG 6



**Ensure availability
and sustainable
management of water
and sanitation for all**

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ABOUT THE SDG 6

Goal 6 calls for access to safe and affordable drinking water, sanitation facilities, and hygiene for all by 2030. Water resources are also critical for agriculture and industrial use, and therefore protecting and restoring water-related ecosystems is essential. The goal is aimed at -improving water quality by reducing pollution, substantially increasing water-use efficiency across all sectors, and strengthening the participation of local communities in improving water and sanitation management.

Access to clean water and sanitation facilities is a basic human right. Over 2 billion people in the world lack access to clean water that is free of health risks. Ending open defecation will require the provision of toilets and sanitation for 2.6 billion people as well as behavioral change in the population. Safe drinking water and hygienic toilets protect people from disease and enable societies to be more economically productive and attend school and work without disrupting support education and employment. Goal 6 is closely linked with other SDGs, like progress in SDG 6 will improve health (SDG3) and improve school attendance, both of which contribute to alleviating poverty.

JSS Academy of Higher Education and Research (JSSAHER) actively engages in various initiatives aligned with Sustainable Development Goal 6 (SDG 6) - Clean Water and Sanitation. The institution demonstrates a commitment to ensuring access to clean water and sanitation facilities. This includes the implementation of sustainable water management practices across its campuses, periodic water audits, and the use of technology to monitor and conserve water resources. Furthermore, JSSAHER conducts awareness campaigns and educational programs to promote water conservation and hygiene practices among its community members. Through these multifaceted efforts, JSSAHER contributes significantly to achieving SDG 6 and addressing the global challenges related to water and sanitation.

POLICY ON GREEN CAMPUS & SANITATION



JSS AHER has a structured policy for green campus and maintenance of sanitation in the college and hospital premises.

Water conservation program

- Sensitizing the staff and students
- The students arriving on campus and at the hostels are sensitized about water conservation in their orientation meetings. Printed stickers/labels with the slogan 'Save Water' are fixed in strategic places of the college and hostels.
- Cutting back on car washing
- The vehicles on the campus are washed based on the real needs rather than regular washing to save water.
- Irrigation Techniques and Dual Flushing Systems
- The gardens are irrigated with sprinkler systems to save the wastage of water in plantations.

Recycle programs

- Green wastes, like tree and bush trimmings, are composted and reused for fertilizer and preparation composts.
- Food waste is also cut down by implementing self-serving of food by the students, so they aren't tempted to waste food. Further, the food remains are collected systematically and used for preparing composts manure in the dig wells which is used for gardening purposes. Hazardous solvent systems are recycled/disposed of safely.
- The wastewater from the utility areas of the hostels and the college are subjected to treatment before being flushed into the public drainage system.

Green Policy for the use of papers

- The college encourages the practices like double-sided printing and the usage of one-side papers for taking printouts.
- All the internal notifications and circulars are communicated in electronic formats (e-Tapaal).

INFRASTRUCTURE SUPPORTING SDG 6

For Undergraduates:

- **Visit Water purification plant:** Students of MBBS Phase III Part I are taken for a visit to a large-scale water purification center during their Community Medicine department posting. They learn about the purification techniques of water on a large scale, chlorination of water, and distribution of safe drinking water on a large scale. They also visit the Public Health laboratory on the premises of water works, where they learn about water quality surveillance.
- **Public Health laboratory at the Department of Community Medicine:** the MBBS students are taught about the identification of chlorine demand in water, different disinfectants used in water disinfection at the household level, and identification of the amount of residual chlorine using a chloroscope.
- **Hand Hygiene technique:** In the department of Microbiology the undergraduates are taught about hand washing techniques and the importance of hand hygiene.
- **Biomedical Waste Management:** In the department of Community Medicine and Microbiology, the students are taught practical skills of disposal, segregation, transport, and treatment of biomedical waste
- **Environment and Health:** The BSc Allied Health sciences students are taught for one complete semester on different aspects of environment affecting the health. Includes water purification, solid and liquid waste management, Biomedical Waste Management, Sewage treatment, Excreta disposal, etc.

For Postgraduates:

- i. **Water Surveillance:** the MD Postgraduates, Master in Public Health(MPH), and MSc Microbiology students are trained in regular water surveillance for detection of water quality assessment, fecal contamination of water, chlorine content, chlorine demand etc.
 - ii. **Outbreak investigation:** investigation and reporting of water borne disease outbreaks, i.e. Typhoid, GE, etc is taught to the Community Medicine and Public Health post graduates.
 - iii. **Stool examination:** the postgraduates are taught and assessed about stool examination techniques to identify the ova and cyst in the stool.
- **MTech in Health Science and Water Engineering:** Students from the Master of Technology are taught about water and related diseases



Vanivilas Water Works



Horrocks Apparatus

SUSTAINABLE WATER EXTRACTION TECHNOLOGY

Rainwater Harvesting

- Rainwater harvesting collection tank of 30,000 liters storage capacity.
- 10 no's of Groundwater & bore well recharge pits and infiltration tank of about 15,000 liters capacity.
- STP of 25 KLD capacity by using SWR technology has been installed for treating sewage & kitchen wastewater of PG Guest Hostel & the treated water is used for the gardening area developed surrounding the building.
- One tank of 10,000 liters capacity is made for reuse of RO rejected water for gardening purposes
- Water sprinklers are in place



The small-scale sewage treatment plant



Facility for Reverse Osmosis (RO)

SAFE DRINKING WATER SUPPLY SYSTEM

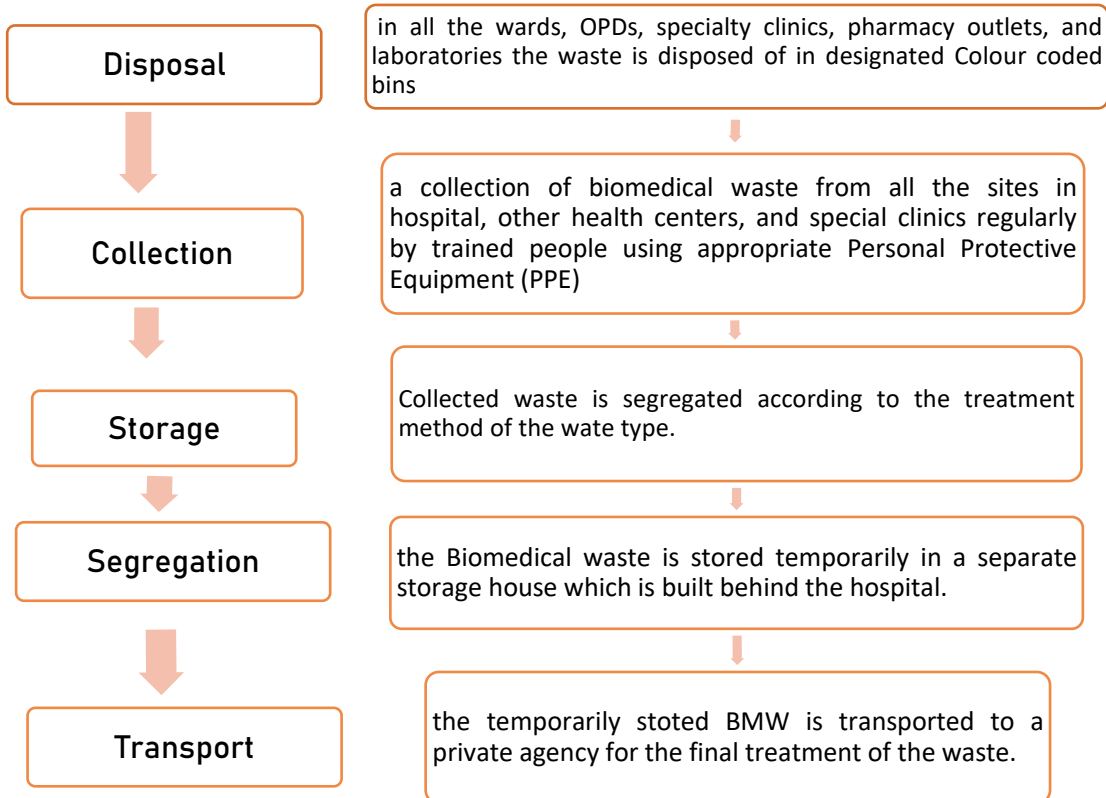


Safe drinking water supply at various places in Medical College and Hospital premises.

WASTE MANAGEMENT & POLICIES OF JSS MEDICAL COLLEGE

Biomedical waste management

Biomedical waste management in the JSS hospital, Medical College, and allied health centers follows the Biomedical Waste Management Rules 2016. Generated Biomedical waste in health centers follows the following step before it is treated.



The BMW waste treatment services are availed from a private agency M/s. Shree Consultants since 2003.

The JSS Hospital website displays month-wise how much BMW is generated from the hospital.

BIO-MEDICAL WASTE STATUS JANUARY TO DECEMBER 2022				
Month	Yellow Bags in Kgs/Month	Red Bags in Kgs/Month	White Bags in Kgs / Month	Blue Bags Kgs / Month
January 2022	5504	3699	215	1572
February 2022	4919	3329	271	1114
March 2022	4101	3050	210	1070
April 2022	4087	3094	160	1577
May 2022	5025	3896	242	1214
June 2022	4627	3224	191	1268
July 2022	4479	3395	277	1107
August 2022	4282	2909	321	899
September 2022	3990	2847	278	1171
October 2022	3754	2645	205	804
November 2022	4002	2458	274	1041
December 2022	3594	2749	236	824
Total	52364	37295	2880	1366

BIO-MEDICAL WASTE STATUS JANUARY TO DECEMBER 2023				
Month	Yellow Bags in Kgs/Month	Red Bags in Kgs/Month	White Bags in Kgs / Month	Blue Bags Kgs / Month
January 2023	3436	2529	140	701
February 2023	3019	2360	161	799
March 2023	3426	2937	223	1219
April 2023	3695	2581	302	1162
May 2023	3772	2432	253	1220
June 2023	3609	2444	331	1114
July 2023	3853	2422	227	810
Total	24810	17705	1637	7025

Month-wise Update and display of BMW waste of different category in JSS Hospital website

General waste

- Segregation and collection of dry and wet garbage are in practice.
- Color-coded dustbins are provided across the campus.
- Waste collection by municipal lorries regularly from all the sites.
- Swachh Sarvekshan posters are put up in various places in the hospital, medical college, and hostel premises.

a. Sanitary napkin disposal

At the girl’s hostels of JSS Medical College, there is provision for safe disposal and treatment of sanitary napkins. Installed sanitary napkin incinerator in the hostels.



Color-coded dustbins and covers



Display of waste categories to the respective bins



Sign-board with instructions on using dustbin



Swatch Sarwkhsh Abhiya poster



Separate colour-coded dustbins for wet and dry waste

b. Liquid waste from laboratories.

The liquid waste generated from the clinical laboratories is disposed of safely by the hospital. there is an Effluent Treatment Plant (ETP) in the hospital to make wastewater from the hospital safe to dispose of in the general drainage system.

INFRASTRUCTURE SUPPORTING SDG 6

Smart Campus – Detailed Project Report Jan 2023 (pg. 17-18)

Waste management practices at our campus are focused on ensuring proper handling and disposal of different types of waste. The following measures are implemented:

Existing Facility:

- Bio-medical waste management: Since May 2003, we have been availing the services of M/s. Shree Consultants for the efficient management of bio-medical waste. This ensures that medical waste generated on the premises is appropriately handled, segregated, and disposed of in accordance with the relevant regulations and guidelines.
- Segregation and collection: We emphasize the segregation of waste into dry and wet categories. This allows for better management and appropriate treatment or disposal methods for each type of waste. By separating recyclable and non-recyclable materials, we promote a more sustainable waste management system.
- Colour coded dustbins: Across the campus, we provide colour-coded dustbins to facilitate easy and effective waste segregation. These bins are designated for specific types of waste, such as paper, plastic, organic waste, and general waste. The colour coding system helps individuals identify the appropriate bin for their waste disposal, further promoting proper waste management practices.

By implementing these waste management initiatives, we aim to minimize the environmental impact of waste generation and promote sustainable practices within our campus community.

- **Water management:** - **Water** sprinklers are in place.

Through these initiatives, we aim to foster a culture of sustainable water management and environmental stewardship within our campus community, contributing to the broader goals of water conservation and sustainability outlined in Sustainable Development Goal 6.

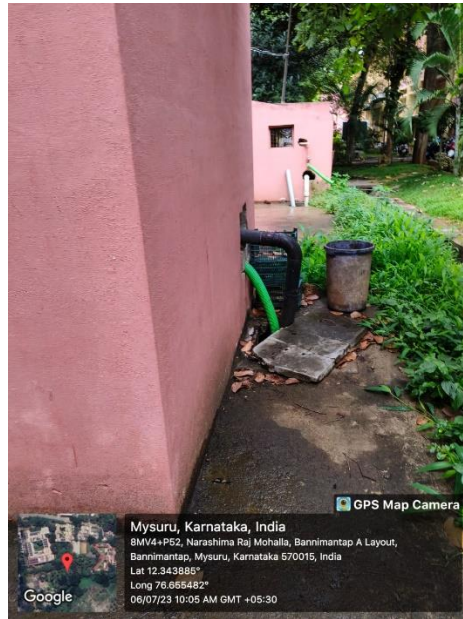
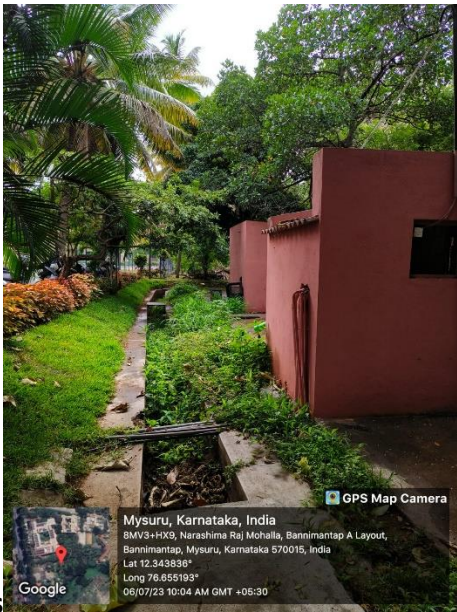
Components	Already existing facilities	Proposed new facilities	Priority	Remarks
Rainwater	Rainwater harvesting	New and improved facility for increasing the ground water level	Very essential	5 Lakhs 2022-23
Sewage water	No sewage treatment plant	Wastewater treatment plant for use in gardening	Very Essential	50 Lakhs 2022-23
Sanitization	Soap and water	Hand sanitization solutions throughout the campus	Essential	1 Lakh

3. Existing facility for disposal of polluted and waste water

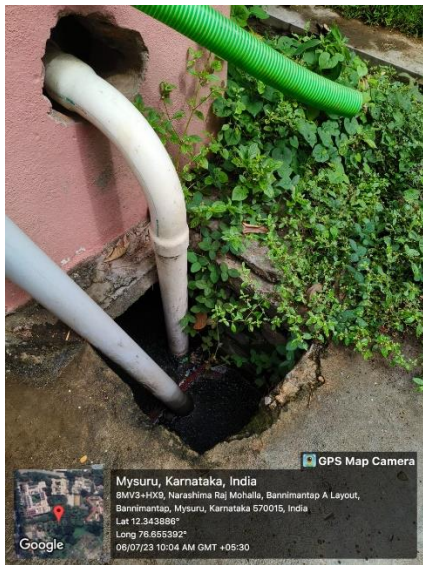
We are pleased to inform you that we have a dedicated facility for wastewater disposal on our premises. This facility is designed to ensure that polluted water does not enter nearby water bodies. It consists of a storage tank with a capacity of 30,000 litres, equipped with two high-pressure pumps. These pumps effectively dispose of the wastewater into the designated sewage line of the Mysuru City Corporation.

Furthermore, we have also created a dedicated facility within the campus to address the issue of wastewater generated by the local community residing near our campus. In areas where no provision for drainage has been made, this facility plays a crucial role in managing and treating wastewater. By providing this facility, we aim to improve sanitation conditions both inside the campus and in its immediate surroundings.

These initiatives demonstrate our commitment to proper wastewater management, sanitation, and the protection of local water bodies. By effectively disposing of wastewater and providing facilities for wastewater treatment, we contribute to a cleaner environment and promote the well-being of our campus community and the surrounding areas.



Waste water storage facility



Storage tank (30,000 Litre)



Pumps for disposing waste water into the sewage line

4. Availability of free clean drinking water to students, staff and visitors:

The campus is well-equipped with RO (Reverse Osmosis) water systems to provide drinking water facilities to students, staff, and visitors. We have two 500 liters per hour (LPH) RO water systems installed in the college campus and three 300 liters per day (LPD) RO water systems installed in the boys' hostel and girls' hostel.

To ensure the quality and safety of the drinking water produced by the RO plants, we follow a rigorous maintenance and testing schedule. Periodic maintenance is carried out on the RO water plants to ensure their optimal functioning, and regular quality testing is conducted to ensure the potability of the water produced.

For this purpose, we have engaged an external agency called CADD Solutions Technologies Pvt. Ltd. to perform water testing from all sources. The testing is conducted as per the APHA (American Public Health Association) 23rd edition guidelines for chemical parameters, and microbiological sampling is also carried out to ensure the potability of the water.


All sources of potable water on the campus, including water from the RO plants and borewells, undergo testing twice a year. This comprehensive testing process ensures that the water provided to the campus community meets the required quality standards and is safe for consumption.

We prioritize the health and well-being of our students, staff, and visitors, and by implementing these measures, we strive to provide them with clean and safe drinking water throughout the campus.



In 2023, various RO tests were conducted, and a detailed report has been attached below. The results are as follows:

In 2023, multiple RO tests were performed, and the results indicate that the water from the Girls' hostel, Boys' hostel, and College premises is all drinkable. For more detailed information, please refer to the attached report.


AVISON ENVIRO SYSTEMS LLP
 No.80, 7th Cross Street, Santhosh Nagar, Puthagaram,
 Teachers Colony, Kolathur, Chennai 600 099.
 E-mail: lab@avison.in | www.avison.in
 ☎ +91 84 4860 0077, 3559 2582
 An ISO 9001:2015, ISO 45001:2018 Certified Organization

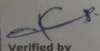
TEST REPORT
 Job No. 391/22-23 Report No. TC50742200002372F Report Date 26.10.2022


Sample Description : Bore Well Water (Near Main Gate)
 Customer Name : M/s. Sri Lakshmi Venkateshwara Enterprises
 Customer Address : #160/1, Ground Floor, 2nd Main Road, 2nd Stage, Gokulam, Mysore - 570 002.


Sample Drawn by : Customer Sampling Method : NA
 Sample Name : Water Qty Sample Received : 1000ml
 Sample Code : AES2210219 Sample Condition : Clear Liquid
 Sample Received On : 19.10.2022 Sample Completed On : 26.10.2022
 Sample Details (if any) : Sampling Location - JSS College of Pharmacy, Mysore

S.No	Description	Method of Reference	Units	Results
1.	pH @25°C	IS:3025 (Part-11)1983	---	7.14
2.	Electrical Conductivity @25°C	IS:3025 (Part-14)2013	µs/cm	1449
3.	Color	IS:3025 (Part-4)2021	Hazen	10
4.	Odor	IS:3025 (Part-5)2018	---	Agreeable
5.	Turbidity	IS:3025 (Part-10)1984	NTU	BDL (DL:0.5)
6.	Total Dissolved Solids	IS:3025 (Part-16)1984	mg/L	948
7.	Total Alkalinity as CaCO ₃	IS:3025 (Part-23)1986	mg/L	407
8.	Total Hardness as CaCO ₃	IS:3025 (Part-21)2009	mg/L	564
9.	Calcium as Ca	IS:3025 (Part-40)1991	mg/L	112
10.	Magnesium as Mg	IS:3025 (Part-46)1994	mg/L	69
11.	Chloride as Cl	IS:3025 (Part-32)1988	mg/L	160
12.	Sulphate as SO ₄	APHA 23 rd Edition 4500 SO ₄ -E 2017	mg/L	48
13.	Nitrate as NO ₃	APHA 23 rd Edition 4500 NO ₃ -B 2017	mg/L	20
14.	Iron as Fe	IS:3025 (Part-53)2003	mg/L	BDL (DL:0.05)
15.	Silica as SiO ₂	IS:3025 (Part-35)1988	mg/L	70
16.	Chlorine Residual	IS:3025 (Part-26)2021	mg/L	BDL (DL:0.1)
17.	Magnesium Hardness as CaCO ₃	IS:3025 (Part-46)1994	mg/L	284
18.	Fluoride as F	APHA 23 rd Edition 4500 F D 2017	mg/L	2.6
19.	Total Suspended Solids	IS:3025 (Part-17)1984	mg/L	BDL (DL:1.0)
20.	Calcium Hardness as CaCO ₃	IS:3025 (Part-40)1991	mg/L	280
21.	Non Carbonate Hardness as CaCO ₃	IS:3025 (Part-21)2009	mg/L	157
22.	Phenolphthalein Alkalinity as CaCO ₃	IS:3025 (Part-23)1986	mg/L	BDL (DL:1.0)
23.	Carbonate Hardness as CaCO ₃	IS:3025 (Part-21)2009	mg/L	407

For AVISON ENVIRO SYSTEMS LLP


 Verified by


 1 of 2


 Authorized Signatory
U. ANBARASAN
 DEPUTY MANAGER - TECHNICAL

Perfection in Service is our motto...

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5. Standards to minimise the usage of water: We have taken proactive measures to minimize water usage across the campus by assessing the flow rates of water closets and urinals. A detailed evaluation was conducted, and based on the findings, recommendations were made to reduce the flow rate of water from taps and flushes. We have implemented (Figure) to achieve significant water conservation across the campus. Reducing the flow rate of water in taps and flushes helps to optimize water usage without compromising on functionality or convenience.

Through these efforts, we are implemented to promoting sustainable water management practices and reducing our environmental footprint. By conserving water resources, we contribute to the broader goals of water sustainability and responsible resource utilization outlined in Sustainable Development Goal 6. We continually monitor and review our water usage practices to ensure that we are maximizing efficiency and minimizing waste. sustainable practices

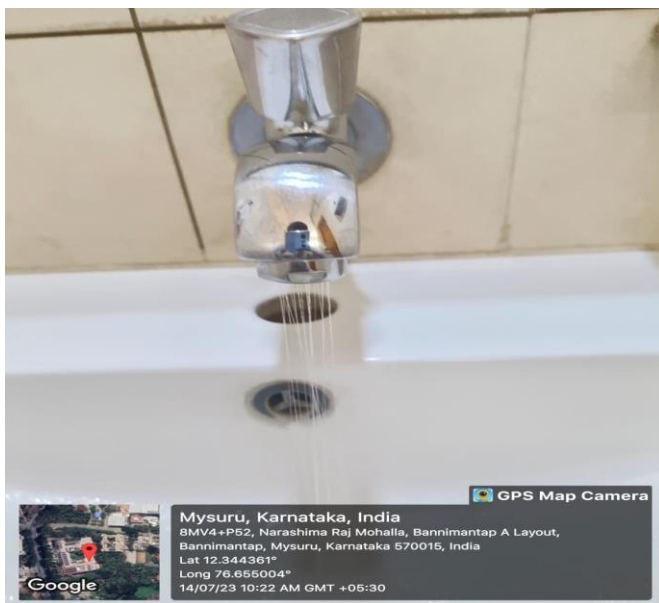
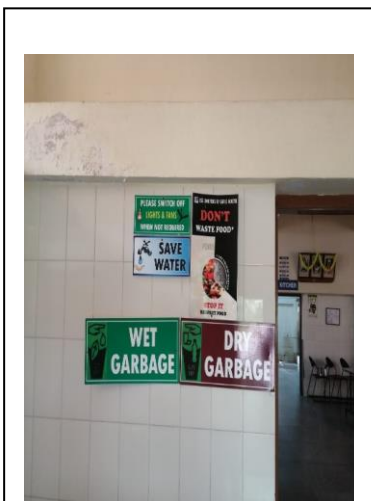


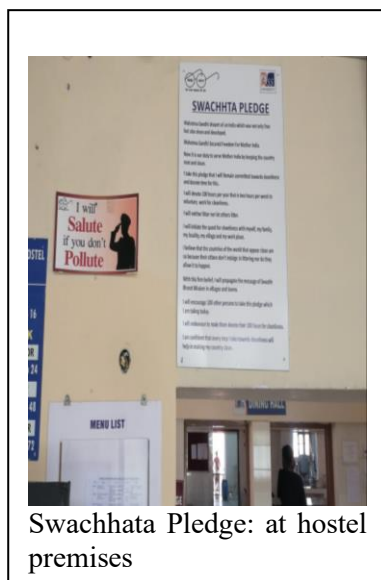
Figure shows reduced water utilization by installing faucets to taps

HAND HYGIENE

- i. Hand sanitizers are placed at various places in hospital, Medical College, and hostels with appropriate sanitizer dispensers placed.



Sign board to indicate to segregate waste as Wet and Dry waste in Hostel dining hall



Swachhata Pledge: at hostel premises



Sanitary Incinerator napkin



Hand Sanitizer Dispensers at various places in hospital, Medical College & Hostel premises.

- ii. Hand washing technique: this is a skill taught to the undergraduate students and assessed on the appropriate technique of hand washing and the importance of hand hygiene in the prevention of the disease spread.

PROGRAMMES AND ACTIVITIES ALIGNING TO SDG 6

World Hand Hygiene Day 2023

World Hand Hygiene Day (WHHD) was observed every year on 5th May 2023. On account of this, the Hospital Infection Control Committee (HICC) of JSS Hospital on 5th May 2023 organized various activities to generate awareness about the importance of Hand Hygiene among health care professionals. The dignitaries for the event were Principal, JSS Medical College, Medical Superintendent of JSS Hospital, Chairman & member secretary of HICC, Nursing superintendent, Administrative Officer.

The event was witnessed by members of HICC, faculties and students of JSS medical college & Hospital, JSS College of Nursing, JSS School of Nursing, Staff nurse of JSS Hospital, Administrative staff of JSS Hospital, etc.

- Poster competition was organized for the students. The best posters were given the prizes.
- The Hand Hygiene Rolling Trophy was awarded to Neurosurgery ICU and Pediatric ward based on one year hand hygiene audit data.
- Hand hygiene dance was performed by students of the JSS School of Nursing



Teaching Hand washing steps through dance- by school of Nursing students

OUTREACH ACTIVITIES

<https://jssuni.edu.in/jssa/activities-and-events/ActivityAndEventList.aspx?CATCODE=NSS&OPTION=0>

Awareness talk on Water Conservation in Annual NSS camp

In association with the faculty of Life sciences, The Department organized seven days annual NSS camp at Balenahalli village, Srirangapatna Taluka, Mandya District from 24.03.2023 to 30.03.2023. During the camp, a special talk was arranged where students with placards highlighted the importance and ways of preserving and safeguarding water resources available. Students also interacted with the villagers to have an understating of their perspective about water conservation.



One in three people live without sanitation. This is causing unnecessary disease and death. Although huge strides have been made with access to clean drinking water, lack of sanitation is undermining these advances. If we provide affordable equipment and education in hygiene practices, we can stop this senseless suffering and loss of life.

Status in India

- 4 % of Average global runoff in rivers
- Nearly people are affected by drought in India
- Over 20% of the population lives in status which are not yet declared open defecation free
- 1/5 child death are due to severe diarrhoea in India
- Each year nearly 102813 children die due to severe diarrhoea

Water is an essential nutrient which plays an important role in digestion, absorption of food and elimination of waste products by urine. Drinking water for Mysore was sourced from the Cauvery via the KRS reservoir for a number of years. A few years ago, certain areas of the city began receiving water from the Kabani dam, however over 50% of it still gets its water primarily from the river. Due to the KRS dam's water level dropping almost to dead storage, Mysore experienced a serious water shortage last summer. Even cities like Ramanagaram, Bangalore, and Mandya experienced a water problem. Four powerful emergency pumps were used to pump water from the riverbed once the water level had decreased to 65 feet in order to maintain supplies. The contaminating effects of organic micro pollutants on water bodies are a persistent concern for international regulations, and this issue is always being researched. Nevertheless, one of humanity's most effective public health initiatives has been the supply of clean drinking water. It is a defining feature of a poor country's understanding of the risks and inadequate training of the employees and managers working on drinking water systems, which still leads to needless outbreaks of waterborne disease in affluent communities. Domestic trash disposal in lakes is changing these waters' physiochemical and biological makeup in an unfavourable way. In today's aquatic habitats, diseases are mostly caused by microbes including bacteria, viruses, and protozoa. Typhoid, cholera, various diarrheal illnesses, poliomyelitis, and viral hepatitis A and E are only a few examples of the many serious human diseases that are water borne. sewage and faecal contamination are the means by which these diseases enter water sources. In natural ecosystems, microorganisms play highly particular functions in the recycling of resources and water purification. Bacteria and fungus predominate in aquatic systems, where they are primarily responsible.

The principal human pathogens that contaminate water are Salmonella, Acinetobacter, Chromobacterium, Alcaligenes, Flavobacterium, Staphylococcus aureus, Pseudomonas aeruginosa, Clostridium botulinum, Vibrio cholerae, and Escherichia coli. Students of final year B.Sc Biotechnology carried out the project work under the guidance of Dr. Gopenath TS, Associate Professor, Department of Biotechnology and Bioinformatics. The project entitled “

Isolation Of Bacteria from Water Samples Collected in And Around Mysore City for Quality and Contamination Analysis for Domestic Purpose:(General Health Survey) was carried out. This investigation was to gather water samples from various sources in and around Mysore City, examine the quality and level of contamination of the samples by isolating and cultivating bacteria, and undergoing certain tests including morphological test, biochemical test. In addition, a general health assessment of the neighbourhood residents near the sources from which the samples were taken is part of this investigation.



Isolation Of Bacteria from Water Samples Collected in And Around Mysore City for Quality and Contamination Analysis for Domestic Purpose:(General Health Survey)

Awareness is created among the community through Hygiene and sanitation model

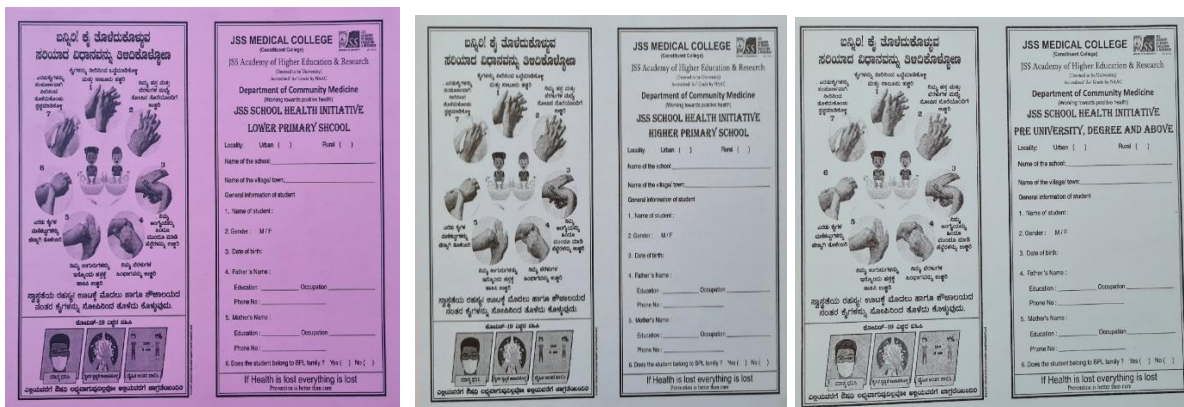
A hexagon model is prepared which depicts the sanitation, personal hygiene, and steps of hand washing techniques. The model can be rotated and visualize different aspects of environmental sanitation and the method of sanitation barriers to prevent many communicable diseases. This model will be used in all the outreach activities where the community is educated about the importance of sanitation.



Hexagon Hygiene and Sanitation model for educating the community

School Health Appraisal program

- Every year around 12,000-15,000 school and college students' health appraisal is conducted by the Department of Community Medicine, JSS Medical College. During this appraisal program, there are separate health cards for primary school, middle and high school, and college students. These health cards also depict the pictorial message about hand washing techniques and personal hygiene methods.
- The students are also educated about personal hygiene, menstrual hygiene, and environmental hygiene (school & domestic).



Handwashing picture is depicted in School Health Appraisal cards

In the schools along with health check up, children were educated about hand washing technique and importance of hand hygiene.



Educating school children about hand washing technique

Medical Exhibition at Sri Suttur Jathra Mahotsava 2023

Various departments of JSS Medical College and Hospital took part in medical exhibition at Sri Suttur Jathra Mahotsava 2023. Health education was given through various modes. Videos display, display of charts, models, puppet show, shadow art, street play, interaction with public, etc.

- Department of Physiology displayed poster to educate the public regarding menstrual hygiene.
- Department of Microbiology created awareness about hand hygiene and hand washing practice to the public through video and poster display. Public were educated on food hygiene practices through street play.



SPOORTHY

ladies wing of the builders' association of "**Builder's Association of India**" (BIA) has conducted a health check-up camp at Dattagalli, Mysuru. under the aegis of JSS Medical College, Academy of Higher Education and Research, NSS wing, Mysuru on the 26th of July 2022 where apart from health checkup., addressing the female participants health education on the importance of menstrual hygiene, and the nutrition, was conducted by the lady physician

“MY LIFE AND MY CLEAN CITY”



Mysuru City Corporation (MMC) took the initiative to clean Mysuru city and create awareness about the concept of a “Clean and Green City.” JSS Medical College, Mysuru, has been invited to take part in this cleanliness program. The event was organized under the aegis of Mysuru City Corporation (MMC) with the supervision of corporation medical officer Dr. D.G. Nagaraj. The sole agenda of the event was “MY LIFE AND MY CLEAN CITY.” The cleanliness drive was carried out on 1st June

2023 with the sole intention of plogging the nondegradable waste materials like plastic, fibre, metal, wax-coated disposables, etc. Thirty-one (31) NSS student volunteers from 1st year MBBS graduate students actively and enthusiastically participated in the event. The plogging activity was performed in the streets around the JSS medical college campus and Cauvery Nagar. The collected waste material was loaded into the waste carriage accompanying the participants. The program was coordinated by Ms. Tejaswini S.P. health inspector city corporation, Mysuru.

RESEARCH

Projects undertaken related to SDG 6

- a. Ongoing research on the Evaluation & comparison of serum calcium, Magnesium, Phosphate, Alkaline Phosphatase, Vitamin-D, and Bone Mineral Density in children consuming reverse osmosis (RO), Non-RO and High Fluoride drinking water by Dr. Devananda D. Paediatrics, JSSMC in collaboration with JSS Dental College, funded by ICMR. Funding amount of 20.41 lakh, for 2 yrs from Dec 2020
- b. A Cross-sectional study on the relationship between dental fluorosis and fluoride level in water among school children in private schools of Chamarajanagar district, Karnataka funded by JSSAHER is ongoing from Sept 2022 by Ms. Midhuna Iype, MPH Student, JSSMC, Mysuru under the guidance of Dr. Praveen Kulkarni, prof of community medicine and Vice principal, JSS Medical college.
- c. ICMR-STC granted a student research project on a Multi-modal capacity-building strategy to improve Biomedical waste management practices at Primary health care centers completed by Ms. Dhamini under the guidance of Dr. Sowmya G S with grants of 50k, for a period of 2 months was sanctioned.
- d. Relevance of water quality index for groundwater quality evaluation in areas surrounding stone crusher: Siruguppa, Karnataka, India
- e. Response surface modelling for electrocoagulation of seawater - an optimization tool
- f. Application of Response Surface Modelling for the Landfill Leachate treatment by Electrocoagulation Method
- g. Moringa oleifera: a sustainable method to treat fluoride contaminated water
- h. "Evaluation of Efficacy of Natural coagulant Moringa oleifera Seeds and Bark in Treatment of Domestic sullage"
- i. Exploring the Biodegradability Potential of Sporosarcina Bacterial Isolates From Municipal Waste Management For Sustainable Waste Treatment
- j. "Evaluation of Efficacy of Natural coagulant Moringa oleifera Seeds and Bark in Treatment of Domestic sullage"
- k. Rakshitha R, Chethan R, B M Gurupadayya, Sake Hridas Kameshwari Devi, Pallavi N, A response surface modeling and optimization of photocatalytic degradation of 2,4-dichlorophenol in water

using hierarchical nano assemblages of CuBi₂O nanoparticles, Environmental Science and Pollution Research, Vol.1, Issue 1, May 2023

- i. Chethan R, Rakshitha R, Pallavi N, Response Surface Methodology (RSM) modelling for the photocatalytic optimization study of benzophenone removal using CuWO₄/NiO nanocomposite, Journal of Environmental Health Science and Engineering, Vol.1, Issue 1, Feb 2023.
- m. Phyla C, Chethan R, Rakshitha R, Pallavi N, Moringa Oleifera: A sustainable method to treat fluoride-contaminated water, Water Supply, vol.1, Issue 2, February 2023.

Research projects Presented

Dr. Ranjith Raj on 23RD NOVEMBER 2022 at the international forum, presented a study on Sample collection and concentration methods -- impact on wastewater-based surveillance for multi-pathogen panels

Research Collaborations

A program organised by GRAAM in the area of Urban Youth Governance, with objective to Build the Capacity of the MPH students on Urban Governance issues including Urban Health and Sanitation challenges. In this regard seven MPH students were awarded with fellowship programs.

PUBLICATIONS RELATED TO SDG 6

1. Krishnamoorthi S, Rajshekar D, Sastry A S et al. Impact of conducting hand hygiene audit in COVID-19 care locations of India—A large scale national multicentric study – HHAC study. Indian Journal of Medical Microbiology. 2022 Sep.
2. Madigubba H, Sastry AS, Dhandapani S et al. Comparison of hand hygiene compliance among healthcare workers in Intensive care units and wards of COVID-19: A large scale multicentric study in India. American Journal of Infection Control. 2023 Mar;51(3):304-312.
3. Rakshitha R, Chethan R, B M Gurupadayya, Sake Hridas Kameshwari Devi, Pallavi N, A response surface modeling and optimization of photocatalytic degradation of 24 dichlorophenol in water using hierarchical nano assemblages of CuBi₂O nanoparticles, Environmental Science and Pollution Research, Vol.1, Issue 1, May 2023
4. Shyla C, Chethan R, Rakshitha R, Pallavi N, Moringa Oleifera: A sustainable method to treat fluoride-contaminated water, Water Supply, vol.1, Issue 2, February 2023.
5. Chethan R, Rakshitha R, Pallavi N, Response Surface Methodology (RSM) modelling for the photocatalytic optimization study of benzophenone removal using CuWO₄/NiO

- nanocomposite, Journal of Environmental Health Science and Engineering, Vol.1, Issue 1, Feb 2023.
6. Rakshitha R, Chethan R, B M Gurupadayya, Sake Hridas Kameshwari Devi, Pallavi N, A response surface modeling and optimization of photocatalytic degradation of 24 dichlorophenol in water using hierarchical nano assemblages of CuBi₂O nanoparticles, Environmental Science and Pollution Research, Vol.1, Issue 1, May 2023
 7. Shyla C, Chethan R, Rakshitha R, Pallavi N, Moringa Oleifera: A sustainable method to treat fluoride-contaminated water, Water Supply, vol.1, Issue 2, February 2023.
 8. Chethan R, Rakshitha R, Pallavi N, Response Surface Methodology (RSM) modelling for the photocatalytic optimization study of benzophenone removal using CuWO₄/NiO nanocomposite, Journal of Environmental Health Science and Engineering, Vol.1, Issue 1, Feb 2023.
 9. Shakamma Kalikeri & Vidya shetty Kodialbail (2023) "Visible light active Bismuth ferrite embedded TiO₂ nanocomposite structures for mixed dye mineralization by photocatalysis: A strategy to harness solar energy for remediation of wastewater", Surfaces and Interfaces, (IF-6.2). <https://doi.org/10.1016/j.surfin.2022.102492>.
 10. Supreeth M, Lingaraju H G and Shankamma Kalikeri (2023), "Decontamination of pollutants present in total environment using microorganisms", Waste Recovery and Management 1st Edition, CRC Publication (Taylor & Francis). ISBN-9781003359784.
 11. Dr, Sunita C Mesta, Analysis of Hydrochemical Characteristics and Assessment of Groundwater Quality in Areas surrounding Municipal Solid Dumping Yards in Southern Parts of Bengaluru Karnataka". 2022 International Journal of Creative Research Thoughts, 10(11): 896-911.
 12. Dr, Sunita C Mesta, A preliminary study on antifungal activity of marine actinomycetes from estuaries of Uttara Kannada district, Karnataka". Contemporary Research in Biomedicine and Biotechnology. JPS Scientific Publications, Tamil Nadu, India 2022, pp 18-25

JSS Academy of Higher Education and Research (JSSAHER) and Sustainable Development Goal 6 (SDG 6): Nurturing Clean Water and Sanitation Initiatives

In alignment with the United Nations' Sustainable Development Goal 6, JSS Academy of Higher Education and Research (JSSAHER) has undertaken a multifaceted approach to contribute to the global agenda of ensuring clean water and sanitation for all. Recognizing the crucial role water plays in public health, economic development, and environmental sustainability, the institution has implemented a comprehensive set of initiatives across its campuses.

Water Management Practices:

JSSAHER has adopted sustainable water management practices to ensure efficient utilization of water resources. At the institutional level, the installation of solar panels has significantly reduced power dependency, resulting in a 50% decrease in electricity consumption compared to previous years. A pioneering step, the institution shares surplus electricity generated through solar energy with the local electricity board, fostering a sustainable energy ecosystem.

Proactive measures extend to infrastructure considerations, with all buildings, including academic, residential, laboratories, and amenities, designed to maximize natural lighting and ventilation. This approach optimizes natural resources and instills a culture of responsibility among stakeholders towards water conservation.

Water Audits and Monitoring:

In the pursuit of water sustainability, JSSAHER conducts regular water audits to identify consumption patterns and areas for potential savings. The Electrical Department maintains area-wise power usage statistics, ensuring judicious use and prompt rectification of abnormalities. The institution emphasizes a zero-carbon footprint across its campuses, a commitment underscored by a pilot study conducted at JSS College of Pharmacy Mysuru. The pilot study's report, enclosed as evidence, served as a foundation for an actionable plan that prioritized and implemented recommendations judiciously.

Moreover, the institution has undertaken a broader energy audit across all its constituent units, with the resultant report guiding the formulation of plans for successful implementation. The

Campus Development Committee is actively engaged in addressing gray areas and ensuring the sustainable development of the institution.

Government and Community Collaboration:

JSSAHER's commitment to SDG 6 extends beyond campus boundaries. The institution actively supports the Swachh Bharat Mission, aligning with the government's clean energy and energy-efficient technology policy development. This collaboration reflects JSSAHER's dedication to national initiatives aimed at promoting cleanliness, hygiene, and sustainable practices.

In a laudable move, JSSAHER extends its support to start-ups fostering a low-carbon economy and technology. The institution provides invaluable assistance through incubation and acceleration programs, funding opportunities, technical support, access to networks, mentorship, education, and training. By nurturing these start-ups, JSSAHER contributes to the development of innovative solutions for clean energy and sustainable practices, aligning with the broader goals of SDG 7.

Conclusion:

In conclusion, JSS Academy of Higher Education and Research stands as a beacon of sustainable development, actively contributing to SDG 6 by prioritizing clean water and sanitation initiatives. From internal campus practices to broader collaborations with government initiatives and support for start-ups, JSSAHER showcases a holistic commitment to water sustainability. As the institution continues to innovate and collaborate, its efforts serve as a model for institutions seeking to make a positive impact on water resources and sanitation, ultimately contributing to the global pursuit of a sustainable and equitable future.

JSSAHER SMART CAMPUS POLICY

SMART CAMPUS POLICY

I. INTRODUCTION:

JSS Academy of Higher Education & Research, Mysuru has established its state of art Campus using cutting edge technology. Smart campus theme is adopted and realigned with the Sustainable Development Goal of UNO under the broad 10 elements for smart campus initiative with the commitment of our social responsibility to our **environment** and for **our city and community** carved out in '**TOUCHING THE LIVES OF MILLIONS**'

For our environment

1. Ensure that the developments in JSS AHER are sustainable and do not have a negative impact on the environment.
2. Promote the concepts of the 3Rs of Reduction, Reuse and Recycling and eliminate, where possible, the use of non-degradable materials.
3. Aim for a continuous reduction of the carbon footprint of the Institution.
4. Provide equipment, training and other resources to ensure a healthy and safe environment for the students and staff.
5. Continuously work and evolve environmental improvements in the way we manage our transport, waste, and energy

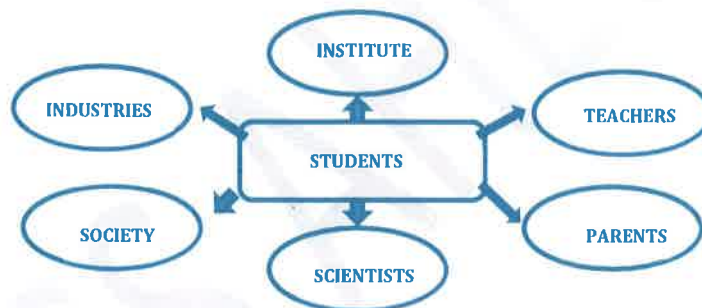
For our City and our Community

1. To work with the City of Mysore and regional partners to raise the health profile of the city and neighboring districts; and in partnership to help secure the economic, health, social and cultural regeneration of the City and region.
2. Make significant and major contributions through our Faculty to the Social Responsibility agenda including:
 - ✓ the training of the future health professional workforce
 - ✓ The ongoing support for health professionals
 - ✓ Support JSS Hospital to provide access to quality healthcare at affordable costs
 - ✓ Nurture and contribute to research that impacts healthcare and health policies and makes significant contribution to national and global health.
3. Working with young people in local schools: - to discuss health and science and its relevance to their everyday lives
 - ✓ to inspire them to consider careers in science and health
 - ✓ to devise creative and fun activities to help engage them
4. By involving the public/patients in our work to improve the quality of our teaching and healthcare delivery.

II. OBJECTIVE:

- ✓ Embed the use of smart technology into daily life of the campus; providing an opportunity for the development and application of innovation and technology to support a smart campus.
- ✓ Integrate an enhanced process and Programme focused on materials, security, health, transport, energy and environmental management.
- ✓ Focus on maintaining “Eco friendly institution” through best practices.
- ✓ Provide world class facilities and enabling nationally and internationally renowned industrial/institutional partners have to meaningful collaboration.
- ✓ To Provide value base education and to create responsible & responsive citizens.
- ✓ To ensure good health & wellbeing of the campus inmates & stakeholders.
- ✓ To Provide & ensure uninterrupted service.
- ✓ To maintain high standards of academic, education & research pursuit.
- ✓ Ensure to use resource Judiciously to Align/integrate smart campus elements with SDG's.
- ✓ To ensure reduced carbon “footprint” in all its Campuses and to achieve zero carbon footprint by 2030 as far as possible.

III. Our Stake Holders:



IV. Need assessment:

- ❖ Set clear strategies and goals
- ❖ Comprehensive approach
- ❖ Integrate students, faculty, staff and external partners
- ❖ Initiate pilot projects in areas required involving stakeholders & students.
- ❖ Plan policies, financial resources, facilities management, curriculum, sustainability literacy, ecosystems, land use, energy resources, etc.

V. Smart Campus elements:

1. Building & infrastructure
2. Education, learning & digitalization
3. Sports & recreation
4. Safety & security
5. Waste, water & air management
6. Utilities
7. Green environment resilience
8. Food & health
9. Services & connectivity
10. Governance

VI. Sub Parameters for Smart Campus Initiatives

Building & Infrastructure

- Accessibility
- Safety and Security
- Energy efficient
- Rain Water Harvesting
- Walkable campus
- Bicycle
- Sustainable Transport
- Road network
- Signage

Sports & Recreation

- Playgrounds
- Sport facilities-Indoor and Outdoor
- Recreational space
- Open Gym
- Yoga facilities
- Amusement park
- Open air theatre
- Swimming pool

Waste, Water & Air Management

- Sanitation and cleanliness
- STP
- Solid waste management
- Plastic waste management
- E-waste management
- Automatic sensor taps
- Air monitoring system

Green Environment Resilience

- Green Campus
- Landscaping
- Preserving open space
- Soil erosion control
- Ground water recharging

Services & Connectivity

- Online services
- Amenities- Bank, Food court, Stationery, pharmacy
- Wi-Fi Services
- LAN

Education, Learning & Digitization

- Smart Classroom
- E-Resources
- Wi-Fi Connectivity
- ICT Enabled services
- Modular Laboratories
- Innovation Centre
- Virtual Class and Laboratories
- Outreach Programmes

Safety & Security

- CCTV surveillance
- Fire alarms
- Fire fighting
- Peripheral safety
- Visitor management system
- Biometric system
- Anti-ragging
- Women safety/ICC
- Student counselling

Utilities

- Solar Projects
- Smart lighting System
- Emergency power backup
- Smart micro grids
- Bio-gas plant
- Kiosks

Food & Health

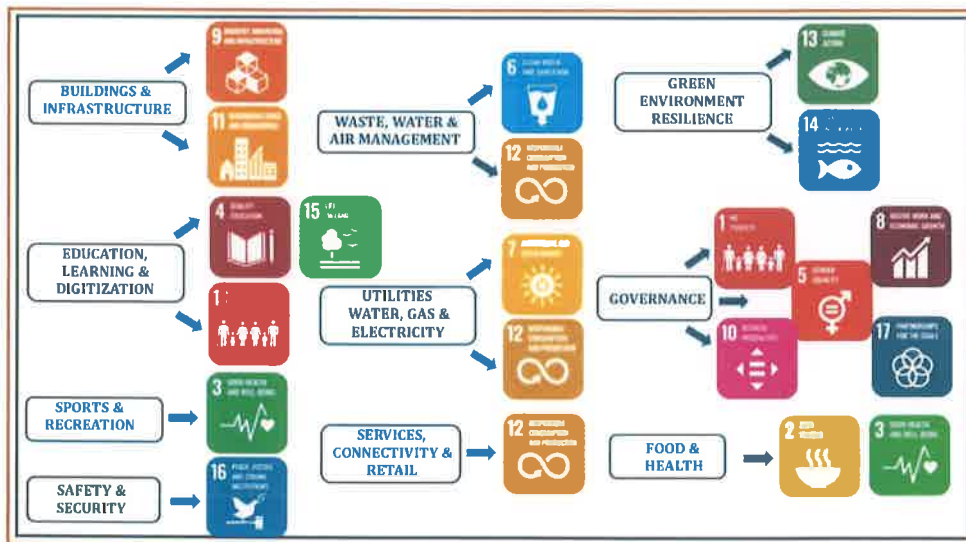
- Wellness Centre
- Health Centre
- Potable water facility
- Personal Hygiene
- Nutritional Values
- Dietary Components

Governance

- ERP
- Less paper Office
- Training and Development
- ART- Accountability, Responsibility, Transparency

INTEGRATION OF SDGs INTO KEY ELEMENTS OF SMART CAMPUS		
No	KEY ELEMENTS	SDGs
1	BUILDINGS & INFRASTRUCTURE	SDG 9 (Industry, Innovation & Infrastructure), SDG 11 (Sustainable Cities & Communities)
2	EDUCATION, LEARNING & DIGITISATION	SDG 4 (Quality Education), SDG 15 (Life on Land), SDG 1 (No Poverty)
3	SPORTS & RECREATION	SDG 3 (Good Health & Well- Being)
4	SAFETY & SECURITY	SDG 16 (Peace, Justice & Strong Institutions)
5	WASTE, WATER, AIR MANAGEMENT	SDG 6 (Clean Water & Sanitation), SDG 12 (Responsible Consumption & Production)
6	UTILITIES - WATER, GAS, ELECTRICITY	SDG 7 (Affordable & Clean Energy),SDG 12 (Responsible Consumption & Production)
7	SERVICES, CONNECTIVITY & RETAIL	SDG 12 (Responsible Consumption & Production)
8	GREEN ENVIRONMENT RESILIENCE	SDG 13 (Climate Action), SDG 14 (Life Below Water)
9	GOVERNANCE	SDG 1 (No Poverty), SDG 5 (Gender Equality), SDG 8 (Decent Work & Economic Growth), SDG 10 (Reduced Inequalities), SDG 17 (Partnerships for the Goals)
10	FOOD & HEALTH	SDG 2 (Zero Hunger), SDG 3 (Good Health & Well-Being)

VII. SMART CAMPUS INITIATIVES IN LINE WITH SUSTAINABLE DEVELOPMENT GOALS (SDGs OF THE UN)



VIII. Best practices: -

JSS Academy of Higher Education & Research emphasize on creation of a world-changing, connected, healthy and vibrant, ecofriendly, value-based campuses.

a. **Governance:**

- ✓ Create Healthy environment to support the mental, physical, and social wellbeing of the students and staff.
- ✓ Evaluate, understand, and improve the physical environment
- ✓ Develop new practices for workplace wellbeing.
- ✓ Develop the technology, to measure and influence health related behavior.

b. Students Centric:

- ✓ Safe and secure campus with homely atmosphere monitored round the clock.
- ✓ Dedicated band width with high-speed internet across its campuses and facilities to pursue their academic goals.
- ✓ Data-driven services and spaces for an improved student experience.
- ✓ Technology-enabled learning & teaching (including active learning, interactive teaching, flexible study).

c. ICT enabled:

- ✓ Open, flexible, integrated, interoperable, secure, and scalable ICT architecture.
- ✓ Physical security challenges in the campus be monitored through CCTV surveillance.
- ✓ Smart Portal for always establishing connectivity with students from entry to exit.

d. Environment Friendly:

- ✓ Resilient infrastructure systems and Innovation in infrastructure design and delivery.
- ✓ Ensure optimal utilization of resources with 3R's integral part of JSS and adopt safe/time-tested waste management protocols.
- ✓ Consumption pattern be observed through the meters/ registers provided for ease of monitoring its facilities for optimization & improvement to evolve suitable measure for ethical use of resources to the extent possible.
- ✓ Low carbon, low impact energy in a complex urban environment, focusing on generation, storage, distribution, and management.
- ✓ Adopt an energy / resources conservation and ensure cost-effective, energy-efficient approach with consideration given for flexibility of use and future remodeling convenience to achieve the lowest feasible life cycle costs.
- ✓ Encourage recycling efforts across the Institution/department at all levels.
- ✓ Follow the related policies and relevant guideline in place like Campus Maintenance Policy, Transport Policy, Infrastructure Policy, Energy Conservation & Recycling Policy, Waste Management Policy....

IX. Reference Document:

- The Swachh Bharat Mission (Urban) guidelines, Government of India.
- National conservation strategy and policy statement on environment and development, Government of India.
- National Cyber Security Policy, Ministry of Communication and Information Technology, Government of India.

X. AUTHORITY:

The Vice-Chancellor, Registrar & Deputy Registrar (Sr. Grade) of the Academy holds delegated authority and is responsible for overseeing and implementation of all aspects of the JSS Academy of Higher Education & Research's "SMART CAMPUS POLICY".

- The Campus Facilities Maintenance & Management Authority shall be the Principal coordinator & Constituent units are responsible for implementation of this policy.

XI. Date of implementation:

This policy will come into immediate effect from 01.01.2022

XII. Date of revision:

01.01.2024



REGISTRAR

REGISTRAR

JSS Academy of Higher Education & Research

Sri Shivarathreeswara Nagara

Mysuru-570015, Karnataka, India

JSSAHRD