



Asutosh College

Green Environmental and Energy Audit Report 2020-2021

Prepared by

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We would like to thank the administration of Asutosh College, departments of Environmental Science, Physics and Botany and also the IQAC of the college for their support and valuable inputs.

We are thankful for all the faculty and staff members of Asutosh College for their co-operation



Introduction

The definition of Environment Audit as per The International Chamber of Commerce is, "*a management tool comprising a systematic documented, periodic and objective evaluation of how well environmental organization, management and equipment are performing with the aim of contributing to safeguarding the environment by facilitating management control of environmental practices and assessing compliance with company policies which could include meeting regulatory requirements*". Green and Environmental audit is the process of meticulously identifying, computing, documenting and reporting the various environmental components of an institute. This process aims promoting a diverse and eco friendly atmosphere in and around an institute. Its objective lies in analysing the degree of environmental concern present whist aiming at inciting environmental awareness, values, and ethics. It provides staffs and students a better understanding of Green's impact on campus. It is the duty of an institute to its contributions toward a green and sustainable future.

Asutosh College green and environment audit aims at evaluating the present impact of the institute on the environment and to evaluate the efficiency of the measure taken to minimise environmental degradation. It also intends to propagate environment friendly ideas and raise social awareness towards responsibilities and conscious choice of adapting green idea by staff, students and local people alike. The college authorities take active measures to keep the area surrounding the campuses clean and green.





Background of College

Asutosh college established in 1916 in the district of Kolkata by under the stewardship of educationist Sir Ashutosh Mukherjee, who was the then vice-chancellor of the University of Calcutta. It was initially known as South Suburban College. With some 250 students on its rolls, South Suburban College with Sir Asutosh as the President of its ten-member Governing Body, began its journey. After the death of Sir Mukherjee, the college was renamed as Asutosh College in 1924. It is one of the oldest colleges of the state.

The last decade of the preceding century witnessed the effect of free economy and globalization and the days that followed the Platinum Jubilee year of the College, 1991, ushered in an era where the pursuit of knowledge had to go hand in hand with technological advancements.

Honours and Major courses were introduced in newly-emerging disciplines like Industrial Fish and Fisheries, Computer Science, Psychology, Microbiology, Biochemistry, Journalism and Mass Communication, Electronics, Environmental Science, Bachelor of Business Administration and Communicative English in course of time. In 2013, UGC-approved Add-on Courses in Industrial Chemistry, Travel & Tourism, and Hospital Waste Disposal Management were introduced free of cost to enable our students to face the challenges of the job and market confidently. In tune with this thought, the UGC-approved Community College Scheme with courses in Software Development and Mobile Communication and B. Voc (Bachelor of Vocation) courses in Software Development and Industrial Aquaculture and Fisheries were launched in 2014. The classes are being held at Bhasa, the second Campus of Asutosh College.

The Main Campus was gradually expanded to house regular Postgraduate courses in Environmental Science, Geography, Zoology, Bengali, Applied Geology and Computer and Information Science in the years between 2002 and 2014. The Postgraduate Study Centre (Distance Mode) of Vidyasagar University was inaugurated in 2013 with PG Courses in English, History, Political Science, Environmental Science and Commerce in the second campus of the College. The Postgraduate Study Centre (Distance Mode) of the Indira Gandhi National Open University (IGNOU) was started in 2019 with PG Courses in Psychology, Sociology and Public Administration.

As time passed, the stakeholders decided to supplement the classroom teaching-learning process and student-support services by forming the Placement Cell (2002), the Psychotherapy Unit (2014) and the Eco Club (2013 June). The fact that the SC-ST-OBC Cell was set up in 2012 and B. Sc.

courses were made co-educational in 2002 was also in accordance with the demands of the changing times. Central and Departmental Libraries underwent automation in 2014 to provide students better and wider facilities in borrowing books and journals from the library and accessing the comprehensive

Catalogue on line, and the College Website was first launched in 2006. In 2014, the I.T. Section was set up in the ground floor of the Humanities Block on Basanta Bose Road.

It has some of the most notable alumni in all fields of literature, arts and science. Most importantly, the academic ambience ensured and administered by the college produced a number of awardees of Premchand Roychand Studentships and Doctoral degrees from universities, at home and abroad.

Asutosh is the first college in West Bengal to undergo the process of Assessment and Accreditation by the National Assessment and Accreditation Council (NAAC) of India, in 2002, under the new scheme initiated by the UGC. Asutosh College has currently been graded as NAAC Grade A with CGPA 3.22 in 2016.

In the present time the college has two campuses with a total of five units with nearly 6000 students and 430 Staff members. It is worth mentioning that though four of the five units of the two campuses are located in an urban area, the institution has taken all possible steps to make the campus eco- friendly.

The green and environmental audit was conducted on the Asutosh College main building, Asutosh College training centre, Asutosh College Humanities, Asutosh College Centenary building and Asutosh College second campus (Bhasa).

Map of West Bengal



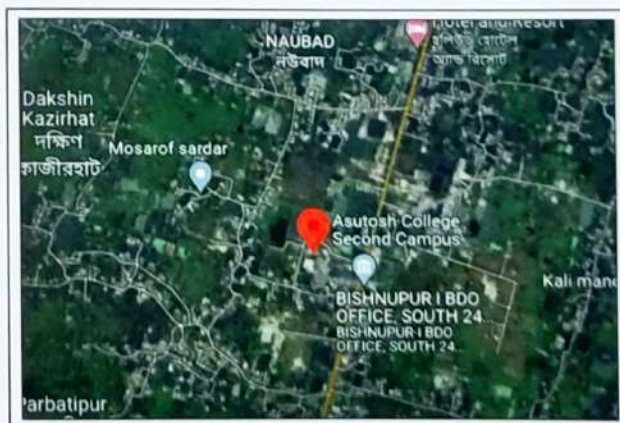
MAP: Location of Asutosh College 1st and 2nd Campus.



Locations of Asutosh College Main Campus and Second Campus.



Asutosh College Main Campus
Latitude and Longitude – 22.52530750831819°N,
88.34590314455475°E



Asutosh College Second Campus
Latitude and longitude -22.40682294733803 °N,
88.27807973068816 °E





Executive Summary

Environment audit is carried out by an institute to evaluate the overall sustainability of the various practices implemented by the authorities as well as to understand its environmental impacts. This auditing process helps in mapping any misuse of resource and to plan on circular economy and proper waste management via reuse, reduce and recycle techniques. To understand the environmental performance of any institution and to incorporate possible solutions for converting an Institution into an eco-friendly campus, the conduction of Environmental Audit is of prime importance. Asutosh College main campus situated in an urban location conducts regular plantation programme to maintain a healthy urban green space. The campus greenery survey was conducted to assess the green cover and plant biodiversity present in both the campuses. The survey was based on physical documentation of various plant species present in the campus and their identification. The college has taken active part in plantation drive after a lot of greenery was affected by the tropical cyclone "Amphun". Labelling of plants were suggested as well as plans to rehabilitate damaged green space was discussed with inclusion of native species and flower plants to enhance the aesthetic beauty and healthy ecosystem of the institute.

Waste management audit was conducted to understand the sources of waste generation and their subsequent treatment methodology. Due to closure of college canteen and kitchen due to pandemic lockdown no kitchen waste were generated. The College has proper waste disposal areas with waste segregation colour coded bind. E waste generated by the college was reduced due to closure of college premises for the major part of the year. Proper waste segregation at source and related sensitization programme for staff and students were suggested. Reduction of waste generated ideas were also discussed.

The clean campus survey was done based on observation and documentation and it was found that the college campus was cleaned regularly and the institute has a no smoking on campus policy. Mask mandate, sanitisation booths and thermal scanning was done in every college entry point. Departments were provided extra masks and sanitizers by the college. The institute also promotes no plastic policy to keep the campuses clean.

Energy audit was aimed at evaluating the power consumption pattern of the institution. The various devices present in the collage rooms along with their wattage was charted. Energy consumption reduction techniques and practices were suggested along with installation of solar panels to reduce dependability on conventional electrical sources of fossil fuels.

Water and soil quality analysis was done by collecting samples from different sites of the college campus and lab analysis of the same. All sample properties were found within the permissible limit. Regular and periodic evaluation of soil and water samples were recommended. The college faculty and students are actively involved in spreading environmental awareness. Various posters were found throughout the campus promoting eco friendly attitude. Community outreach programme were also conducted in local community to educate the masses about the contemporary environmental issues.

Methodology

In order to conduct the audit, students from the Department of Environmental Science were divided into groups for collecting data for analysis. The various tools used were physical examination of the campuses, observation and documentations, interviewing key persons and analysis. The study covered the following areas to summarise the present status of environment management in the campus:

- Campus greenery
- Waste management
- Clean Campus
- Energy Audit
- Water and Soil quality analysis



Campus Greenery



Introduction

In land-use planning, urban green space is open-space areas reserved for parks and other "green spaces", including plant life, water features -also referred to as blue spaces- and other kinds of natural environment. Most urban open spaces are green spaces, but occasionally include other kinds of open areas. The landscape of urban open spaces can range from playing fields to highly maintained environments to relatively natural landscapes. Urban green space is defined as all urban land covered by vegetation of any kind. This covers vegetation on private and public grounds, irrespective of size and function, and can also include small water bodies such as ponds, lakes or streams. Urban green space is a component of "green infrastructure". It is an important part of public open spaces and common services provided by a city and can serve as a health-promoting setting for all members of the urban community. It is therefore necessary to ensure that public green spaces are easily accessible for all population groups and distributed equitably within the city. The benefits that urban open space provides to citizens can be broken into four basic forms; recreation, ecology, aesthetic value, and positive health impacts. Psychological benefits gained by visitors to urban green spaces increased with their biodiversity, indicating that 'green' alone is not sufficient; the quality of that green is important as well. The term 'urban forest' is often used to describe greenspace that brings all the benefits of the natural environment to the heart of urban communities.

Green Space is a land that is partly or completely covered with grass, trees, shrubs, or other vegetation. It includes parks, community gardens, and cemeteries. The idea of Green Space comes from Open space which is an open piece of land that is undeveloped (has no buildings or other built structures) and is accessible to the public. Open space provides recreational areas for residents and helps to enhance the beauty and environmental quality of neighbourhoods.

Types of Green Space

- i. Park Green Space: Open to public, set aside mainly for human recreation and enjoyment, also poses environmental and ecological function.
- ii. Protection Green Space: Urban Green Space set aside for sanitation, insulation and security purposes including sanitation greenbelt, roadway protection green Space, windbreak forest and grouped greenbelts.
- iii. Institutional Green Space: Green Space in an institutional area, including school and institutional unit.
- iv. Residential Green Space: Green Space in residential area excluding residential community parks, including grouped greenbelts, house side green Space and residential subdistrict roadway green Space.
- v. Street Garden Space: Green Space in the area of roadways and porch, including street tree avenues, traffic island green space, traffic square green space and parking lot green space.
- vi. Vacant land Space: Green Space in vacant land with no definite land use.

Floral diversity of a campus is an important indicator of the environmental health. Large number of plants not only enhances the aesthetic beauty of an area but also mitigates various air pollutants and shield from too much of noise. A green campus is considered ideal for a healthy learning environment and nurturing eco-friendly ideas into students' mind. Besides providing various ecological services, plants also provide habitat for various birds, insets and small animals. Considering our firs campus is located in an urban area, where most of the trees are lost to urbanization, plantation and maintaining of greenery is one of the most important responsibilities of the institution.

Documentation of floral diversity of the college campus

Location	No. of herbs	No. shrubs	No. of Potted plants	No. of Trees	Total
Site-1 Asutosh College Training Center	-	-	44 (including 5 herb and shrub species)	7	52
Site 2- Asutosh College Main Building	-	-	150 (including 8 herb and 5 shrub species)	53	203
Site 3-Asutosh College Centenary Building	60	83	36	5	176



LOCATION: SITE 1: Asutosh College Main Building

SL. NO.	SCIENTIFIC NAME	COMMON NAME	FAMILY	SPECIES COUNT	PLANT/TREE TYPE	SIGNIFICANCE
1.	<i>Tabernaemontana divaricate</i>	Crepe Jasmine	Apocynaceae	30	Ornamental & medicinal	medicinal benefits such as an anti-epileptic, anti-mania, brain tonic, and anti-oxidant. The aim of the present study was to evaluate the effect of ethanolic extract of TD leaves on burying behavior in mice
2.	<i>Murraya paniculata</i>	Orange - Jasmine/Kamini	Rutaceae	20	Ornamental & medicinal	It is valued especially for its essential oil, cultivated in India for medicinal use, is often grown as a hedge and is widely planted in the tropics and subtropics as an ornamental, where it is valued especially for the intense orange-blossom fragrance of its flowers and its small red fruits.
3.	<i>Azadirachta indica</i>	Neem tree	Meliaceae	2	Medicinal	-
4.	<i>Mangifera indica</i>	Mango	Anacardiaceae	1	Fruit-bearing & medicinal	it has been an important herb in the Ayurvedic and indigenous medical systems for over 4000 years.
5.	<i>Psidium guajava</i>	Common Guava	Myrtaceae	1		Has been used in traditional medicine by many cultures throughout Central America, the Caribbean, Africa, and Asia used for inflammation, diabetes, hypertension, caries, wounds, pain relief, fever, diarrhea, rheumatism, lung diseases, and ulcers.
6.	<i>Typhonium flagelliforme</i>	-	Araceae	1	Medicinal herb	A prominent plant candidate from aroid family, endowing various curative properties against a variety of illness and infections.
7.	<i>Dieffenbachia seguine</i>	Dumbcane	Araceae	9	Ornamental plant	cultivated as indoor houseplant. Sap is toxic.
8.	<i>Dracaena fragrans</i>	Striped Dracaena	Asparagaceae	15	Indoor plant	
9.	<i>Codiaeum variegatum</i>	Garden Croton	Euphorbiaceae	8	Ornamental	Cultivated for beautiful foliage with varieties of colors
10.	<i>Livistona chinensis</i>	Chinese fan palm	Arecaceae	1	Indoor potted palms-	the right amount of light, warmth, and water is a must for growing a healthy plant, they require good soil drainage
11.	<i>Aglaonema commutatum</i>	Chinese Evergreen	Araceae	13		Loves humidity, tolerates dry air, thrives even without water and food
12.	<i>Rhapis excelsa</i>	Broadleaf Lady Palm	Arecaceae	5		
13.	<i>Dracaena marginata</i>	Large-leaved Dragon Tree	Asparagaceae	10	Indoor plant	grows in semi desert areas, well known for its tendency to ooze red blood like resin when cut or damaged.



14.	<i>Racenea rivularis</i>	Majesty Palm	Arecaceae	2	Indoor tree	slow-growing plant, adding no more than 1 foot per year until it reaches about 10 feet in height.
15.	<i>Dypsis lutescens</i>	Areca Palm	Arecaceae	4	Perennial	They are best planted in the spring, and they have a slow to moderate growth rate.
16.	<i>Dieffenbachia sarah</i>	-	Araceae	1		
17.	<i>Dracaena reflexa</i>	Song of India	Asparagaceae	8	Medicinal & Ornamental	cures, malaria, diarrhea, dysentery, etc.
18.	<i>Alocasia odora</i>	Elephant Ear Plant	Araceae	3	Ornamental	Alocasia is 'the tree that grows up to the heavens'. It thereby stands for seizing opportunities when they arise, even when they're risky.
19.	<i>Polyscias balfouriana</i>	Variegated Dinner-plate Aralia	Araliaceae	1	ornamental	Generally cultivated in the gardens
20.	<i>Chamaedorea elegans</i>	Parlour Palm/ Neanthe Bella Palm	Arecaceae	2	Indoor houseplant	The parlor palm is one of the most heavily sold houseplant palms in the world. It is one of several species with leaves that are harvested as xate.
21.	<i>Syngonium podophyllum</i>	Arrow-head plant	Araceae	5	Indoor plant	sap dangerous for humans and pets.
22.	<i>Aglaonema nitidum</i>	Silver Queen	Araceae	6	ornamental plants	Grown as luck-bringing ornamental plants in Asia for centuries
23.	<i>Dieffenbachia x bausei</i>	Dumb Cane	Araceae	4	Indoor Plant	herbaceous Plant, sap is toxic.
24.	<i>Spathiphyllum wallisii</i>	Peace Lily	Araceae	1	Ornamental (indoor plant)	Perennial housing plant produces white long lasting flowers, look like hood of cobra.

LOCATION: SITE 2: Asutosh College ACTC Building



SL. NO.	SCIENTIFIC NAME	COMMON NAME	FAMILY	NO. OF INDIVIDUALS	PLANT/TREE TYPE	SIGNIFICANCE
1.	<i>Dieffenbachia seguine</i>	Dumbcane	Araceae	24	Ornamental (indoor house plant)	
2.	<i>Tabernaemontana divaricata</i>	Crepe Jasmine	Apocynaceae	1		
3.	<i>Spathiphyllum wallisii</i>	Peace Lily	Araceae	1	Ornamental (indoor plant)	Perennial housing plant produces white long lasting flowers, look like hood of cobra.
4.	<i>Dracaena fragrans</i>	Striped Dracaena	Asparagaceae	2	Ornamental	Best Air Purifying Houseplant, increases Concentration and Sharpens Focus, increases humidity, has great ornamental value, Maintenance- low.
5.	<i>Rhapis excelsa</i>	Broadleaf Lady Palm	Arecaceae	1	Ornamental	probably native to southern China and Taiwan. It is not known in the wild; all known plants come from cultivated groups in China.
6.	<i>Azadirachta indica</i>	Neem tree	Meliaceae	1	Medicinal	a natural medicine, pesticide, and fertilizer. Neem extracts can be used against hundreds of pests and fungal diseases that attack food crops.
7.	<i>Strobilanthes crispata</i>	Pokok pecah kaca (Malaysia)	Acanthaceae	1	Medicinal	It has been used as an anti-diabetic, diuretic and laxative in traditional folk medicine. Furthermore, <i>S. crispata</i> has potential in treating cancer, as evidenced in previous studies.
8.	<i>Araucaria columnaris</i>	Christmas Tree	Araucariaceae	1	Ornamental	Among the most common species of <i>Araucaria</i> planted as an ornamental tree and street tree in warm temperate climates.
9.	<i>Peperomia pelucida</i>	Shiny Bush	Piperaceae	2	Medicinal	has been used for treating abdominal pain, abscesses, acne, boils, colic, fatigue, gout, headache, renal disorders, and rheumatic joint pain.
10.	<i>Polyalthia longifolia</i>	False Ashoka Tree	Annonaceae	5	Medicinal	This plant is used as an antipyretic agent in indigenous systems of medicine.
11.	<i>Pterandra elegantissima</i>	False Aralia	Araliaceae	1	houseplant	grown as a houseplant in temperate regions. It requires high humidity. Keeping the potting soil moist will benefit this plant.
12.	<i>Aglaonema commutatum schott</i>	Chinese Evergreen	Araceae	4	Ornamental	have been grown as luck-bringing ornamental plants in Asia for centuries. This tropical genus is known for its intolerance of cold temperatures. Chilling injury can begin at 15 °C (59 °F)
13.	<i>Ficus religiosa</i>	Ashwattha/Peepal tree	Moraceae	1	Medicinal	The sacred fig is considered to have a religious significance in three major religions that originated on the Indian subcontinent, Hinduism, Buddhism and Jainism. used traditionally as antiulcer, antibacterial, antidiabetic, in the treatment of gonorrhoea and skin diseases.
14.	<i>Dyopsis lutescens</i>	Areca Palm	Arecaceae	4	Indoor plant	Cleaner air and non-toxic for pets, palms (including the <i>Dyopsis lutescens</i>) was named as one of the best air purifying plants
15.	<i>Dieffenbachia bowmannii</i>	Dumb Cane	Araceae	2	Herbaceous indoor plant	The sap is used in tropical America as an antidote (counter-irritant) against snakebites, and to treat rheumatism.

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1.	<i>Dieffenbachia seguine</i>	Dumbcane	Araceae	24	Ornamental (indoor house plant)	
2.	<i>Tabernaemontana divaricata</i>	Crepe Jasmine	Apocynaceae	1		
3.	<i>Spathiphyllum wallisii</i>	Peace Lily	Araceae	1	Ornamental (indoor plant)	Perennial housing plant produces white long lasting flowers, look like hood of cobra.
4.	<i>Dracaena fragrans</i>	Striped Dracaena	Asparagaceae	2	Ornamental	Best Air Purifying Houseplant, increases Concentration and Sharpens Focus, increases humidity, has great ornamental value, Maintenance- low
5.	<i>Rhapis excelsa</i>	Broadleaf Lady Palm	Arecaceae	1	Ornamental	probably native to southern China and Taiwan. It is not known in the wild; all known plants come from cultivated groups in China.
6.	<i>Azadirachta indica</i>	Neem tree	Meliaceae	1	Medicinal	a natural medicine, pesticide, and fertilizer. Neem extracts can be used against hundreds of pests and fungal diseases that attack food crops.
7.	<i>Strobilanthes crispata</i>	Pokok pecah kaka (Malaysia)	Acanthaceae	1	Medicinal	It has been used as an anti-diabetic, diuretic and laxative in traditional folk medicine. Furthermore, <i>S. crispata</i> has potential in treating cancer, as evidenced in previous studies.
8.	<i>Araucaria columnaris</i>	Christmas Tree	Araucariaceae	1	Ornamental	Among the most common species of Araucaria planted as an ornamental tree and street tree in warm temperate climates.
9.	<i>Peperomia pelucida</i>	Shiny Bush	Piperaceae	2	Medicinal	has been used for treating abdominal pain, abscesses, acne, boils, colic, fatigue, gout, headache, renal disorders, and rheumatic joint pain.
10.	<i>Polyalthia longifolia</i>	False Ashoka Tree	Annonaceae	5	Medicinal	This plant is used as an antipyretic agent in indigenous systems of medicine.
11.	<i>Pterandra elegantissima</i>	False Aralia	Araliaceae	1	houseplant	grown as a houseplant in temperate regions. It requires high humidity. Keeping the potting soil moist will benefit this plant.
12.	<i>Aglaonema commutatum schottii</i>	Chinese Evergreen	Araceae	4	Ornamental	have been grown as luck-bringing ornamental plants in Asia for centuries. This tropical genus is known for its intolerance of cold temperatures. Chilling injury can begin at 15 °C (59 °F).
13.	<i>Ficus religiosa</i>	Ashwattha/Peepal tree	Moraceae	1	Medicinal	The sacred fig is considered to have a religious significance in three major religions that originated on the Indian subcontinent, Hinduism, Buddhism and Jainism. used traditionally as antiulcer, antibacterial, antidiabetic, in the treatment of gonorrhoea and skin diseases.
14.	<i>Dyopsis lutescens</i>	Areca Palm	Arecaceae	4	Indoor plant	Cleaner air and non-toxic for pets, palms (including the <i>Dyopsis lutescens</i>) was named as one of the best air purifying plants
15.	<i>Dieffenbachia bowmannii</i>	Dumb Cane	Araceae	2	Herbaceous indoor plant	The sap is used in tropical America as an antidote (counter-irritant) against snakebites, and to treat rheumatism.

LOCATION: SITE 3: Asutosh College Centenary Building

SL. NO.	SCIENTIFIC NAME	COMMON NAME	FAMILY	SPECIES COUNT	PLANT/TREE TYPE	SIGNIFICANCE
1.	<i>Thrinax radiata</i>	Florida thatch palm	Areceae	1	Ornamental plant	Native to Caribbean islands.
2.	<i>Carica papaya</i>	Papaya Tree	Caricaceae	2	Fruit-bearing tree	Papayas contain an enzyme called papain that aids digestion & is also high in fiber and water content that help to prevent constipation and promote regularity and a healthy digestive tract.
3.	<i>Polyscias balfouriana</i>	Variegated Dinner-plate Aralia	Araliaceae	50	Ornamental shrub	Generally cultivated in the gardens.
4.	-	Ivy Lata	-	-	Creepers (ornamental)	-
5.	<i>Zamia pumila</i>	Coontie Palm	Zamiaceae	2	Ornamental	Prefers filtered sunlight to partial shade, but hardy enough to tolerate full sun and cold weather.
6.	<i>Thaumatococcus danianum</i>	Tree Philodendron	Araceae	18	Ornamental	tropical plant usually grown in full sun, but can tolerate and adapt to deep shade. Grows best in rich, moisture-retentive soil that can be slightly alkaline.
7.	<i>Aglonema nitidum</i>	Silver Queen	Araceae	1	Ornamental	Grown as luck-bringing ornamental plants in Asia for centuries.
8.	<i>Aglonema Costatum</i>	Snow White Aglaonema/ Chinese Evergreen	Araceae	6	Ornamental plant	Poisonous due to calcium oxalate crystals. If ingested they cause irritation of the mucous membranes, and the juice can cause skin irritation and painful rash.
9.	<i>Aglonema commutatum</i>	Chinese evergreen	Araceae	1	Ornamental	Does well in diffuse sun or good indirect light and prefers high humidity but tolerate dry air, commonly grown as a houseplant and resembles dumb cane.
10.	<i>Dracaena marginata Tricolor</i>	Tricolour Dragon Tree	Asparagaceae	1	Indoor plant	Commonly known as dragon tree grow in semi desert areas. Suitable for house plants.
11.	<i>Pandanus amaryllifolius</i>	Pandan leaves	Pandanaceae	1	Indoor plants	Native to India and Bangladesh. Widely cultivated plant is sterile with rare flowers and can be propagated by cuttings. The leaves are used in Indian recipes to add aroma to rice. Leaves are either used fresh or dried.
12.	<i>Rhapis excelsa</i>	Broadleaf Lady Palm	Areceae	13	Ornamental	Grows up to 4 m in height and 30 mm in diameter in multi-stemmed clumps with glossy, palmate evergreen leaves divided into broad, ribbed segments. Non-toxic for cats, dogs.



13.	<i>Tabernaemontana divaricate</i>	Crepe Jasmine	Apocynaceae	5	Houseplant	Both single and double-flowered forms are cultivated, the flowers of both forms being white. The plant blooms in spring but flowers appear sporadically all year.
14.	<i>Syngonium podophyllum</i>	Arrow-headed plant	Araceae	61	Indoor plant	

LOCATION: SITE 4: Asutosh College 2nd (Bhasa) Campus

Sl.no	Common name	Scientific Name	Family	Plant/Tree Type	Ecological Significance
1	Gulf Leaf Flower	<i>Phyllanthus fraternus</i>	Phyllanthaceae	Medicinal	Medicinal uses: in the treatment of jaunties, fever, urinary disorders, kidney stone etc.
2	Holy Basil	<i>Ocimum tenuiflorum</i>	Lamiaceae	Medicinal	Holy basil is used for the common cold, influenza ("the flu"), H1N1 (swine) flu, diabetes, asthma, bronchitis, earache, headache, stomach upset, heart disease, fever, viral hepatitis, malaria, stress, and tuberculosis.
3.	Green chiretta	<i>Andrographis paniculata</i>	Acanthaceae	Medicine	It is mainly used for liver problems as it protects the liver against damage caused by free radicals due to its antioxidant and anti-inflammatory activity
4.	Aloe vera	<i>Aloe barbadensis</i>	Asphodelaceae	Medicinal	Aloe vera are claimed to be very effective in treatment of various ailments, such as burns, allergic reactions, rheumatoid arthritis, rheumatic fever, acid indigestion, ulcers, diabetes, skin diseases, dysentery, diarrhea, piles and inflammatory conditions of the digestive system and other
5.	Madagascar Periwinkle	<i>Catharanthus roseus</i>	Apocynaceae	Medicinal	Madagascar periwinkle is used for diabetes, cancer, sore throat, cough, insect bite, and many other conditions, but there is no good scientific evidence to support these uses.



6.	Black nightshade	<i>Solanum nigrum</i>	Solanaceae		Black nightshade has been used for stomach irritation, cramps, spasms, pain, and nervousness. Some people apply black nightshade directly to the skin for a skin condition called psoriasis, hemorrhoids, and deep skin infections (abscesses).
7.	Ashwagandha	<i>Withania somnifera</i>	Solanaceae	Medicinal	Ashwagandha contains chemicals that might help calm the brain, reduce swelling, lower blood pressure, and alter the immune system.
8.	Spearmint	<i>Mentha spicata</i>	Lamiaceae	Medicinal	Spearmint is used for digestive disorders including gas, indigestion, nausea, diarrhea, upper gastrointestinal tract spasms, irritable bowel syndrome (IBS), bile duct and gallbladder swelling (inflammation), and gallstones.
9.	Candyleaf	<i>Stevia rebaudiana</i>	Asteraceae	Medicinal/	It is used as a non-nutritive sweetener and herbal supplement. A non-nutritive sweetener is one that contains little to no calories. Stevia is used as a healthful alternative to added sugar in many meals and beverages.
10.	Liquorice	<i>Glycyrrhiza glabra</i>	Fabaceae	Medicinal	Licorice suggested uses include adrenocortical insufficiency, arthritis, bronchitis, dry cough, peptic ulcers, gastritis, infections (bacterial/viral), prostate cancer, sore throat, systemic lupus erythematosus, and upper respiratory inflammation.
11.	Henna	<i>Lawsonia inermis</i>	Lythraceae	Cosmetic	Henna is used in cosmetics, hair dyes, and hair care products. It is also used as a dye for nails, skin, and clothing.
12.	Kulekhara	<i>Hygrophila schulii</i>	Acanthaceae	Culinary, Medicinal	The leaves are often used as a daily saag on with small fish and mustard. There is a lot of anti-oil derived from the whole plant. The Khulekhara leaf extract is also used for treating diarrhoea, inflammation, stomach pain and anaemia.



13.	Veld grape	<i>Cissus quadrangularis</i>	Vitaceae	Medicinal	It has also been used for bone fractures, weak bones (osteoporosis), scurvy, cancer, upset stomach, hemorrhoids, peptic ulcer disease (PUD), painful menstrual periods, asthma, malaria, and pain.
14.	Giant calotrope	<i>Calotropis gigantea</i>	Apocynaceae	Medicinal	People use the bark and root bark for medicine. Despite serious safety concerns, calotropis is used for digestive disorders including diarrhea, constipation and stomach ulcers; for painful conditions including toothache, cramps, and joint pain, and for parasitic infections including elephantiasis and worms.
15.	Shame plant	<i>Mimosa pudica</i>	Fabaceae	Medicinal	It majorly possesses antibacterial, antivenom, antifertility, anticonvulsant, antidepressant, aphrodisiac, and various other pharmacological activities. The herb has been used traditionally for ages, in the treatment of urogenital disorders, piles, dysentery, sinus, and also applied on wounds.
16.	Chinese chastetree	<i>Vitex negundo</i>	Lamiaceae	Medicinal	Chaste tree has been used to treat menstrual cycle problems and pain, premenstrual syndrome, and menopause. Chaste tree berries may help stimulate progesterone. This is a female hormone that rises 2 weeks before menstruation. It may help normalize estrogen and progesterone.
17.	Camphor basil	<i>Ocimum kilimandscharicum</i>	Lamiaceae	Medicinal	This basil is the source of commercial camphor production. It can be considered one of the most valuable plants in the garden for its use as an insect repellent, both in the garden and in the house. Dried leaves can be placed in sachets, stored with clothing and used to keep moths at bay.



18.	Clove basil	<i>Ocimum gratissimum</i>	Lamiaceae	Medicinal	The whole plant is used in treatments for digestive issues, headache and the flu. The essential oils in Clove basil, eugenol and thymol are used to soothe sore throats, fever and skin irritants.
19.	Ayapan	<i>Eupatorium triplinerve</i>	Asteraceae	Medicinal	The herb is stimulant, tonic in small doses and laxative when taken in quantity. A hot infusion is emetic and diaphoretic. Decoction of the leaves is antiseptic and haemostatic; useful against various kinds of haemorrhage and to clean foul ulcers.
20.	Sweet flag	<i>Acorus calamus</i>	Acoraceae	Medicinal	Sweet flag is also used externally to treat skin eruptions, rheumatic pains and neuralgia. An infusion of the root can bring about an abortion whilst chewing the root alleviates toothache. It is a folk remedy for arthritis, cancer, convulsions, diarrhoea, dyspepsia, epilepsy etc.
21	Basil	<i>Ocimum basilicum</i>	Lamiaceae	Medicinal	Basil is commonly used for stomach problems such as spasms, loss of appetite, intestinal gas, diarrhea, constipation, and many other conditions, but there is no good scientific evidence to support these uses.
22.	Waterhyssop	<i>Bacopa monnieri</i>	Plantaginaceae	Medicinal	This herb contains so many healthy compounds, it is used as an anti-diabetic, liver-enhancer, anti-ulcerogenic, anti-pyretic (treats fever), carminative, analgesic, anti-asthmatic, anti-bacterial and many more.
22.	Indian sarsaparilla	<i>Hemidesmus indicus</i>	Apocynaceae	Medical	Sarsaparilla is a plant. The root is used to make medicine. Sarsaparilla is used for treating psoriasis and other skin diseases, rheumatoid arthritis (RA), and kidney disease; for increasing urination to reduce fluid retention, and for increasing sweating.



23.	Black pepper	<i>Piper nigrum</i>	Piperaceae	Medicinal, Culinary	People take black pepper by mouth for arthritis, asthma, upset stomach, bronchitis, a bacterial infection that causes diarrhea (cholera), colic, depression, diarrhea, gas, headache, sex drive, menstrual pain, stuffy nose, sinus infection, dizziness, discolored skin (vitiligo), weight loss, and cancer.
24.	Gurmar	<i>Gymnema sylvestre</i>	Apocynaceae	Medicinal	It is used for diabetes, metabolic syndrome, weight loss, and cough. It is also used for malaria and as a snake bite antidote, digestive stimulant, laxative, appetite suppressant, and diuretic.
25.	Malabar nut	<i>Justicia adhatoda</i>	Acanthaceae	Medicinal	Malabar nut is used to loosen chest congestion, open the breathing tubes (bronchi), and treat spasms. It is used for upper airway infections, common colds, cough, asthma, and tuberculosis.
26.	Indian leadwort	<i>Plumbago indica</i>	Plumbaginaceae	Medicinal	Leadwort is a potent medicinal agent used in the treatment of stubborn chronic rheumatoid arthritis, skin diseases and tumorous growths as recommended by Ayurveda. It also finds its use in correcting chronic menstrual disorders, viral warts and chronic diseases of nervous system.
27.	-	<i>Paederia scandens</i>	Rubiaceae	Medicinal	Paederia scandens has been used as a traditional medicine in Asian countries to treat jaundice, dysentery, and the pain of rheumatism.
28.	Camel grass	<i>Cymbopogon schoenanthus</i>	Poaceae	Cosmetics	lemongrass oil or camel grass oil is also used as a tonic and fragrance additive in personal care and cosmetic products such as hair dye, shampoo/conditioner, moisturizer/lotion, bath oil, exfoliant/scrub, anti-aging treatment, and acne treatment.



29.	Cathedral bells	<i>Kalanchoe pinnata</i>	Crassulaceae	Medicinal	They are eaten for diabetes, diuresis, dissolving kidney stones, respiratory tract infections, as well as applied to wounds, boils, and insect bites. It is useful for preventing alcoholic, viral and toxic liver damages.
30.	Sankar jata	<i>Urtica picta</i>	Fabaceae	Medicinal	The rhizomes of the plant are used in the Ayurvedic system of medicine as a bitter tonic, stimulant, antispasmodic, and to treat hysteria, convulsions, and epilepsy. The root has been medically used to treat insomnia and blood, circulatory, and mental disorders.
31.	Indian Thornapple	<i>Datura metel</i>	Solanaceae	Medicinal	Headache, Asthma, Stomach ache, Backache, Arthritis.
32.	-	<i>Capsicum annum</i>	Solanaceae	Culinary, Medicinal	Capsicum (<i>Capsicum annum</i>), also known as cayenne pepper, has been used orally for upset stomach, toothache, poor circulation, fever, hyperlipidemia, and heart disease prevention.
33.	Asian pigeonwings	<i>Clitoria ternatea</i>	Fabaceae		
34.	Indian pennywort	<i>Centella asiatica</i>	Apiaceae		
35.	Heart-leaved moonseed	<i>Tinospora cordifolia</i>	Menispermaceae		
36.	Indian bellium-tree	<i>Commiphora mukul</i>	Burseraceae		
37.	Black Pepper	<i>Curcuma caesia</i>	Zingiberaceae		
38.	Ginger	<i>Zingiber officinale</i>	Zingiberaceae	Culinary, Medicinal	People commonly use ginger for many types of nausea and vomiting. It's also used for menstrual cramps, osteoarthritis, diabetes, migraine headaches, and other conditions, but there is no good scientific evidence to support many of these uses.
39.	Horse Gram	<i>Macrotyloma uniflorum</i>	Fabaceae	Culinary, Medicinal	Horse gram is often used in dishes like soups, stir-fries, curries, and dals. Ayurveda suggests consumption of horsegram keep the kidneys fit.



40.	Mexican mint	<i>Coleus amboinicus</i>	Lamiaceae	Medicinal	It is a folkloric medicinal plant used to treat malarial fever, hepatopathy, renal and vesical calculi, cough, chronic asthma, hiccough, bronchitis, helminthiasis, colic, convulsions, and epilepsy
41.	Babchi	<i>Psoralea corylifolia</i>	Fabaceae	Medicinal	Babchi (<i>Psoralea corylifolia</i>) oil is an important essential oil used in several traditional medicines to cure various disorders. This phytotherapeutic agent possesses a number of pharmacological activities including antibacterial, antifungal, antioxidant, anti-inflammatory, immunomodulatory, and antitumor factors.
42.	Myrobalan	<i>Terminalia chebula</i>	Combretaceae	Medicinal	<i>Terminalia chebula</i> is used for dysentery. <i>Terminalia bellerica</i> and <i>Terminalia chebula</i> are used as a lotion for sore eyes. <i>Terminalia chebula</i> is also used topically as a mouthwash and gargle. Intravaginally, <i>Terminalia chebula</i> is used as a douche for treating vaginal infections.
43.	Bastard Myrobalan	<i>Terminalia bellerica</i>	Combretaceae	Medicinal	<i>Terminalia bellerica</i> is used to protect the liver and to treat respiratory conditions, including respiratory tract infections, cough, and sore throat. <i>Terminalia chebula</i> is used for dysentery. <i>Terminalia bellerica</i> and <i>Terminalia chebula</i> are used as a lotion for sore eyes.
44.	Kurchi	<i>Holarrhena pubescens</i>	Apocynaceae	Medicinal	Its seeds are used as anthelmintic, and its bark is reported to have antidiarrheal properties. In Ayurvedic medicine it is used for treating anemia, jaundice, dysentery, stomach pains, diarrhea, epilepsy and cholera



45.	Ashoka tree	<i>Saraca asoca</i>	Fabaceae	Medicinal	The bark is also useful in dyspepsia, fever, and burning sensation. It is also used to treat menorrhagia, leucorrhoea, internal bleeding, hemorrhoids, and hemorrhagic dysentery.
46.	Blackboard tree	<i>Alstonia scholaris</i>	Apocynaceae	Medicinal	It is used for Chest Pain, Headache, Stomach ache, Gastric problems, Fever, Skin disease, Intestinal worms.
47.	Malabar leaf	<i>Cinnamomum tamala</i>	Lauraceae	Medicinal	Malabar nut is used to loosen chest congestion, open the breathing tubes (bronchi), and treat spasms. It is used for upper airway infections, common colds, cough, asthma, and tuberculosis.
48.	Neem Tree	<i>Azadirachta indica</i>	Meliaceae	Medicinal	Neem (<i>Azadirachta indica</i>) is a tree from South and Southeast Asia now planted across the tropics because of its properties as a natural medicine, pesticide, and fertilizer. Neem extracts can be used against hundreds of pests and fungal diseases that attack food crops.
49.	Arjun tree	<i>Terminalia arjuna</i>	Combretaceae	Medicinal	Its bark decoction is being used in the Indian subcontinent for anginal pain, hypertension, congestive heart failure, and dyslipidemia, based on the observations of ancient physicians for centuries.
50.	Clove	<i>Syzygium aromaticum</i>	Myrtaceae	Medicinal	Clove essential oil and eugenol derived from <i>S. aromaticum</i> have been documented to possess useful analgesic, anesthetic, and antiseptic effects and are therefore commonly used in dentistry.
51.	True cinnamon tree	<i>Cinnamomum verum</i>	Lauraceae	Medicinal	Cinnamon aids in digestion and is effective for indigestion, nausea, vomiting, upset stomach, diarrhea and flatulence. Cinnamon also relieves acidity and morning sickness. Respiratory problems. Cinnamon helps in cold, flu, influenza, sore throat.



52.	Elephant apple	<i>Dillenia indica</i>	Dilleniaceae	Medicinal	Traditionally different parts of <i>Dillenia indica</i> are used for the relief of indigestion, asthma, influenza, dysentery, jaundice, pruritus, weakness and rheumatic pain, but recent studies reported the extractives showed significant cytotoxic, CNS depressant and free radical scavenging activity.
53.	Malabar ebony	<i>Diospyros malabarica</i>	Ebenaceae	Medicinal	It is used externally to heal sores and wounds. When ripe, the fruit is beneficial in treating diarrhoea and dysentery, blood diseases, gonorrhoea and leprosy. The fruit is also said to break fever, to be an antidote for snake poisoning, and to be demulcent.
54.	Red sandalwood	<i>Pterocarpus santalinus</i>	Fabaceae	Medicinal	It has been used in inducing vomiting and treating eye diseases, mental aberrations, and ulcers. The heartwood of Red sanders is known to have antipyretic, anti-inflammatory, anthelmintic, tonic, hemorrhage, dysentery, aphrodisiac, and diaphoretic activities. It has also been used as a cooling agent.
55.	Indian sandalwood	<i>Santalum album</i>	Santalaceae	Medicinal	Sandalwood oil has been widely used in folk medicine for treatment of common colds, bronchitis, skin disorders, heart ailments, general weakness, fever, infection of the urinary tract, inflammation of the mouth and pharynx, liver and gallbladder complaints and other maladies.
56.	Cluster fig	<i>Ficus racemosa</i>	Moraceae	Medicinal	The ancient system of Indian medicine, for various diseases/disorders including diabetes, liver disorders, diarrhea, inflammatory conditions, hemorrhoids, respiratory, and urinary diseases.



57.	Tamarind	<i>Tamarindus indica</i>	Fabaceae	Medicinal	The whole plant parts have rich nutritional value and wide usage in medicine. In traditional medicine it is used in wound healing, abdominal pain, diarrhea, dysentery, parasitic infestation, fever, malaria and respiratory problems.
58.	Sesame	<i>Sesamum indicum</i>	Pedaliaceae	Medicinal	Sesame is sometimes used for diabetes, high cholesterol, heart disease, and many other conditions, but there is no good scientific research to support these other uses. In foods, sesame oil is used as cooking oil and to make dressings and sauces. Sesame seeds are added to food for flavoring.
59.	-	<i>Swertia chirayita</i>	Gentianaceae	Medicinal	Chirata is used for fever, constipation, upset stomach, loss of appetite, intestinal worms, skin diseases, and cancer. Some people use it as "a bitter tonic." In India, it has been used for malaria, when combined with the seeds of divi-divi (<i>Guilandina bonducella</i>).
60.	White mulberry	<i>Morus alba</i>	Moraceae	Medicinal	Popularly, fruits, roots, and leaves of <i>Morus alba</i> are used for the treatment of dizziness, insomnia, premature aging, and DM2. They also have a protective effect against atherosclerosis, liver and kidney disorders, and inflammation.
61.	Nutmeg	<i>Myristica fragrans</i>	Myristicaceae	Medicinal	Nutmeg is derived from the seed of <i>Myristica fragrans</i> , and the spice, mace, is derived from the seed coat. Current uses of the plant include the treatment of gastrointestinal disturbances, such as cramps, flatulence, and diarrhea. It has been investigated as an antidiarrheal medication in calves.



62.	Fennel flower	<i>Nigella sativa</i>	Ranunculaceae	Medicinal	<i>Nigella sativa</i> has been used for centuries in herbal medicine to treat certain health conditions including asthma, bronchitis, and inflammation. It has also long been used as a spice and food preservative.
63.	Umbrella tree	<i>Pandanus odorifer</i>	Pandanaceae	Medicinal	<i>Pandanus odoratissimus</i> has been traditionally known as one of the Indian Ayurvedic medicines for a headache, rheumatism, spasm, cold, flu, epilepsy, wounds, boils, scabies, leucoderma, ulcers, colic, hepatitis, smallpox, leprosy, syphilis, cancer, dysuria, as well as a cardiotonic, antioxidant, and aphrodisiac.
64.	Blond plantain	<i>Plantago ovata</i>	Plantaginaceae	Medicinal	The psyllium in plantago has been used for GI conditions such as irritable bowel syndrome (IBS), diarrhea, constipation, and hemorrhoids. It has also been used to treat hyperlipidemia and for its anticancer effects, and it may be useful for glycemic control in patients with type 2 diabetes.
65.	Hing	<i>Ferula assa-foetida</i>	Apiaceae	Medicinal	It is widely used in India in food and as a medicine in Indian systems of medicine like ayurveda. Asafoetida has been held in great esteem among indigenous medicines, particularly in Unani system from the earliest times. of Farsi asa "resin", and Latin foetidus means "smelling, fetid".
66.	Levant cotton	<i>Gossypium herbaceum</i>	Malvaceae	Medicinal	It is also known to be used after birth to expel the placenta and to increase the lactation, as well as for gastrointestinal issues, such as hemorrhages and diarrhea, for nausea, fevers and headaches. In the Levant seeds of <i>Gossypium herbaceum</i> were also used for food, feed or oil extraction.



67.	Arabian coffee	<i>Coffea arabica</i>	Rubiaceae	Medicinal	In Arabia a fermented drink from the pulp is consumed. Coffee is widely used as a flavoring, as in ice cream, pastries, candies, and liqueurs. Source of caffeine, dried ripe seeds are used as a stimulant, nervine, and diuretic, acting on central nervous system, kidneys, heart, and muscles.
68.	Camphor tree	<i>Cinnamomum camphora</i>	Lauraceae	Medicinal	The camphor tree, <i>Cinnamomum camphora</i> , has been reported to be used traditionally for the treatment of heart conditions, colds and fevers, respiratory complaints such as pneumonia, inflammatory conditions, infections, diarrhea, and hysteria. Topical applications act as a counterirritant and antiseptic.
69.	Mango Ginger	<i>Curcuma amada</i>	Zingiberaceae	Medicinal	Ayurveda and Unani medicine have been using <i>Curcuma Amada</i> as a part of their herbal remedies for centuries as a starter, diuretic, laxative, expectorant, aphrodisiac and more. It is locally used and orally consumed to relieve cold and cough and bronchitis in some cases.
70.	False daisy	<i>Eclipta prostrata</i>	Asteraceae	Medicinal	<i>Eclipta prostrata</i> , a traditional herbal medicine, has long been used in Asia and South America for the therapy of hemorrhagic diseases (e.g. hemoptysis, hematemesis, hematuria, epistaxis and uterine bleeding), skin diseases, respiratory disorders, coronary heart disease, hair loss, vitiligo,
71.	Crepe-ginger	<i>Cheilocostus speciosus</i>	Costaceae	Medicinal	The plant has many historical uses in Ayurveda, where the rhizome has been used to treat fever, rash, asthma, bronchitis, and intestinal worms. It is mentioned in the Kama Sutra as an ingredient in a cosmetic to be used on the eyelashes to increase sexual attractiveness.



72.	Cylindrical snake plant	<i>Dracaena angolensis</i>	Asparagaceae	Medicinal	Snake plants are also known for their ability to help remove toxic air pollutants.
73.	Willow-leaved justicia	<i>Justicia gendarussa</i>	Acanthaceae		Snake plants are also known for their ability to help remove toxic air pollutants. Though in small contributions, snake plants can absorb cancer-causing pollutants, including CO ₂ , benzene, formaldehyde, xylene, and toluene.
74.	Flannel weed	<i>Sida cordifolia</i>	Malvaceae	Medicinal	<i>Sida cordifolia</i> is applied directly to the skin for numbness, nerve pain, muscle cramps, skin disorders, tumors, joint pain (osteoarthritis and rheumatoid arthritis), healing wounds, ulcers, scorpion sting, snakebite, and as a massage oil.
75.	True cardamom	<i>Elettaria cardamomum</i>	Zingiberaceae	Medicinal	Small cardamom [<i>Elettaria cardamomum</i> (L.) Maton. (Family: Zingiberaceae)] capsules (fruits) have been used for traditional medicine applications including for the control of asthma, teeth and gum infections, cataracts, nausea, diarrhea, as well as cardiac, digestive and kidney disorders.
76.	Java Plum	<i>Syzygium cumini</i>	Myrtaceae	Medicinal	The bark is acrid, sweet, digestive, astringent to the bowels, anthelmintic and used for the treatment of sore throat, bronchitis, asthma, thirst, biliousness, dysentery and ulcers. It is also a good blood purifier.
77.	Achiote	<i>Bixa orellana</i>	Bixaceae	Medicinal	Thus, despite the different culture and traditions among the countries in South and Central America, several of the popular uses of <i>Bixa orellana</i> are the same, for example, antipyretic, aphrodisiac, antidiarrheal, antidiabetic, and insect repellent.



78.	Cutch tree	<i>Senegalia catechu</i>	Fabaceae	Medicinal	Catechu is most commonly used by mouth for stomach problems such as diarrhea, swelling of the colon (colitis), and indigestion. It is also used orally for pain from osteoarthritis and topically to treat pain, bleeding, and swelling (inflammation). But there is limited scientific evidence to support any of these uses.
79.	Malabar leaf	<i>Cinnamomum tamala</i>	Lauraceae	Medicinal	Cinnamomum tamala is an Ayurveda herb mentioned for the treatment of bad odor from mouth, black spots on the face, dental caries, swelling, cough and in complications of tuberculosis.
80.	Rudraksha	<i>Elaeocarpus ganitrus</i>	Elaeocarpaceae	Medicinal	Elaeocarpaceae, is used for treating diverse diseases such as mental illness, epilepsy, hysteria, cough and hepatic diseases. A combination of bark, stem and leaf of <i>Elaeocarpus floribundus</i> has been used as mouth wash and fruits has been used as antiseptic.
81.	Siamese rough bush	<i>Streblus asper</i>	Moraceae	Medicinal	<i>Streblus asper</i> Lour is a small tree found in tropical countries, such as India, Sri Lanka, Malaysia, the Philippines and Thailand. Various parts of this plant are used in Ayurveda and other folk medicines for the treatment of different ailments such as filariasis, leprosy, toothache, diarrhea, dysentery and cancer.
82.	Orchid tree	<i>Bauhinia variegata</i>	Fabaceae	Medicinal	<i>Bauhinia purpurea</i> is a species of flowering plant is used in several traditional medicine systems to cure various diseases. This plant has been known to possess antibacterial, antidiabetic, analgesic, anti-inflammatory, anti-diarrheal, anticancerous, nephroprotective and thyroid hormone regulating activity.



83.	Garden Asparagus	<i>Asparagus officinalis</i>	Asparagaceae	Medicinal	Asparagus is used along with lots of fluids as "irrigation therapy" to increase urine output. It is also used for bladder infections (urinary tract infections), joint pain, obesity, and many other conditions, but there is no good scientific evidence to support these uses
84.	Marsh herb	<i>Enhydra fluctuan</i>	Asteraceae	Medicinal	Enhydra fluctuans is nutritious and used in ascites, dropsy, anasarca and snakebite. This plant has been reported to have antioxidative and analgesic activities.
85.	Sacred Tree	<i>Butea monosperma</i>	Fabaceae	Medicinal	Bark is used as poultice for pimples; bark juice is given orally to cure intestinal worms. 'Lukol' has a stimulatory action on the endometrium and improves uterine circulation. Alleviates Diabetes Symptoms, Treats Hypertension, Detoxifies The Kidneys, Enhances Digestive System, Strengthens Respiratory Processes, Naturally Moisturizes Skin, Combats Skin Infections, Promotes Hair Growth,
86.	Ajwain	<i>Trachyspermum ammi</i>	Apiaceae	Medicinal	The fruit possesses stimulant, antispasmodic and carminative properties and is used traditionally as an important remedial agent for flatulence, atonic dyspepsia, diarrhea, abdominal tumors, abdominal pains, piles, and bronchial problems, lack of appetite, galactagogue, asthma and amenorrhoea.
87.	Indian lotus	<i>Nelumbo nucifera</i>	Nelumbonaceae	Medicinal	It is used for hematemesis, epistaxis, and hematuria, the flowers are used for lowering blood sugar levels, diarrhea, cholera, fever, and hyperdipsia. Rhizomes are promoted have purported diuretic, antidiabetic, and anti-inflammatory properties.



88.	Barbados nut	<i>Jatropha curcas</i>	Euphorbiaceae	Medicinal	<i>Jatropha curcas</i> is traditionally used to treat bacterial and fungal infections or febrile diseases, muscle pain or jaundice. It is also used for obtaining new drugs through the identification of active ingredients to eliminate pathogens or inhibit signs and symptoms of human and veterinary diseases.
89.	Salparni	<i>Desmodium gangeticum</i>	Fabaceae	Medicinal	<i>Desmodium gangeticum</i> is used as a tonic, febrifuge, digestive, antiscorbutic, antiepileptic, in inflammatory conditions of chest and in various other inflammatory conditions in the Ayurvedic System of Medicine while <i>Desmodium adscendens</i> is widely used for the treatment of asthma in Ghana, Africa.
90.	Ceylon leadwort	<i>Plumbago zeylanica</i>	Plumbaginaceae	Medicinal	The paste of the whole plant is applied externally on any kind of skin diseases, extract of leaves and root is administered orally to alleviate arthritic pain; and the plant acts as a good digestive. Product 'Muscle & Joint Rub' is highly effective for backaches, muscular sprains and joint pains.
91.	Antmool	<i>Tylophora indica</i>	Asclepiadaceae	Medicinal	<i>Tylophora</i> by mouth for allergies, asthma, cancer, congestion, constipation, cough, inflamed skin, diarrhea, bloody diarrhea, gas, hemorrhoids, tender joints (gout), yellowed skin (jaundice), joint disorder (rheumatoid arthritis), whooping cough, to make someone vomit, and to cause sweating.
92.	Lemon	<i>Citrus limon</i>	Rutaceae	Medicinal, Culinary	Uses of lemon juice, known from traditional medicine, include treatment of high blood pressure, the common cold, and irregular menstruation. Moreover, the essential oil of <i>C. limon</i> is a known remedy for cough



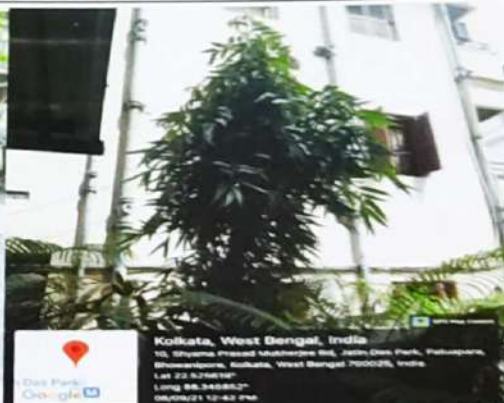
93.	Holy Basil	<i>Ocimum tenuiflorum</i>	Lamiaceae	Medicinal	It is recommended for the treatment of bronchitis, bronchial asthma, malaria, diarrhea, dysentery, skin diseases.
94.	Water thymes	<i>Hydrilla verticillata</i>	Hydrocharitaceae	Medicinal	Therapeutically this plant may be used to provide complete nutrition, to improve digestion and gastrointestinal function, circulation, neurological health, blood sugar control, to strengthen immunity and increase endurance.
95.	Broom creeper	<i>Cocculus hirsutus</i>	Menispermaceae	Medicine	<i>Cocculus hirsutus</i> is widely used in various traditional medicine systems in South Asia for the treatment of fever, skin diseases, stomach disorders, urinary diseases and also as a sedative among many other uses.
96.	Bengal currant	<i>Carissa carandas</i>	Apocynaceae	Medicinal	Its fruit is used in the ancient Indian herbal system of medicine, Ayurvedic, to treat acidity, indigestion, fresh and infected wounds, skin diseases, urinary disorders and diabetic ulcer, as well as biliousness, stomach pain, constipation, anemia, skin conditions, anorexia and insanity.
97.	Wild Eggplant	<i>Solanum surattense</i>	Solanaceae	Medicinal	It has been used traditionally for curing various ailments such as fever, cough, asthma and diabetes in south Indian traditional medicines.
98.	Cymbopogon grass	<i>Cymbopogon winterianus</i>	Poaceae	Cosmetics, Repellent	Cymbopogon grass oil is mainly used as an insect repellent for humans and pets and is applied in soaps, detergents, household insecticides and technical products. d-Citronellal from the oil, which has few direct perfumery uses, is often converted into l-menthol or hydroxycitronellol.



99.	Musk mallow	<i>Abelmoschus moschatus</i>	Malvaceae	Medicinal	Ambrette is used for stomach and intestinal disorders with cramps, loss of appetite, and stomach cancer. It is also used for headaches, muscle spasms, hysteria, gonorrhoea, and lung problems. Some people use it as a stimulant. It has also been used to treat snakebites.
100.	Turmeric	<i>Curcuma longa</i>	Zingiberaceae	Medicinal	It is a medicinal plant extensively used in Ayurveda, Unani and Siddha medicine as a home remedy for various diseases including biliary disorders, anorexia, cough, diabetic wounds, hepatic disorders, rheumatism, and sinusitis.



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Kolkata, West Bengal, India
26, Radhika Rd, Jatin Das Park, Patuapara, Bhuvaneshwari, Kolkata, West Bengal 700026, India
Lat 22.825691°
Long 88.348887°
08/08/21 08:51 PM

Green space present in the college campus





Various trees and potted plants present in the college campus



Analysis and Recommendation

Due to the tropical cyclone "Amphun" a lot of vegetation was destroyed in and around the campus. However, tree plantation drive was carried out by the college and many potted plants were observed.

- Rehabilitation of green areas destroyed by the tropical cyclone should be initiated.
- Name tagging of trees and plants should be done.
- More flowering plants should be planted to enhance aesthetic beauty of the main campus.



Waste Management



Introduction

Any unwanted or unusable substances which is of no use and are introduced into the environment is referred to as waste. The Wastes that we see in our surrounding area is referred to as garbage. There are two main kinds of wastes. They are biodegradable which can be degraded easily into the environment and mainly includes organic matter and the other type of waste is known as non-biodegradable wastes which are harmful for the environment and they can't be decomposed naturally into the environment and also causes pollution, for example plastic waste.

Types of Waste found:

- **Lab Waste:**

Biological wastes are found from various laboratories for example fisheries lab, Biochemistry lab, Microbiology Lab, Environmental Lab. Some of the major data we have collected from several labs are as follows:

Labs	Items Discarded
Biochemistry Lab	Broken glass wares, Unused biological samples, Chemicals
Microbiology Lab	Agar, Unused Growth medium, Broken funnel, Broken Test tubes
Environmental Science Lab	Broken Test tubes, Lab trash, unused rocks and soil sample
Fishery Lab	Soil after experiments

- **Paper Waste:**

Every department of Ashutosh College have their own dustbin where they put all the wastes. All the dustbins are located outside the laboratory room. Each building has different colour coded bins like red, blue, yellow.

- **Plastic waste:**

Empty packaged drinking water bottles (Polyethylene Terephthalate or PET): PET bottles are most widely used plastics and an easily recyclable one. A few discarded plastic bottles were seen littered around the canteen area and some of them that was generated by the departments were disposed in their respective bins.

Different type of polybags used for Packaging (High density polyethylene or HDPE and Low-density polyethylene or LDPE) were disposed in the departmental bins. HDPE bags were seen to carry construction materials. The pictures are given below.

Thermocol cups and plates (expanded Polystyrene or EPS) were observed at various places on the campus including the canteen, main building area and rooftop area and constituted a very small portion of the total garbage.

The college is a plastic free zone. The college canteen has been directed to use bio-degradable cups and plates. There are separate bins which are used to dump bio-degradable and non-bio-degradable wastes. The members and the volunteers of the Green Audit Committee regularly sensitize the students and staffs of the college to minimize the use of plastics. The municipal corporation of our area, regularly collects the non-bio-degradable wastes.

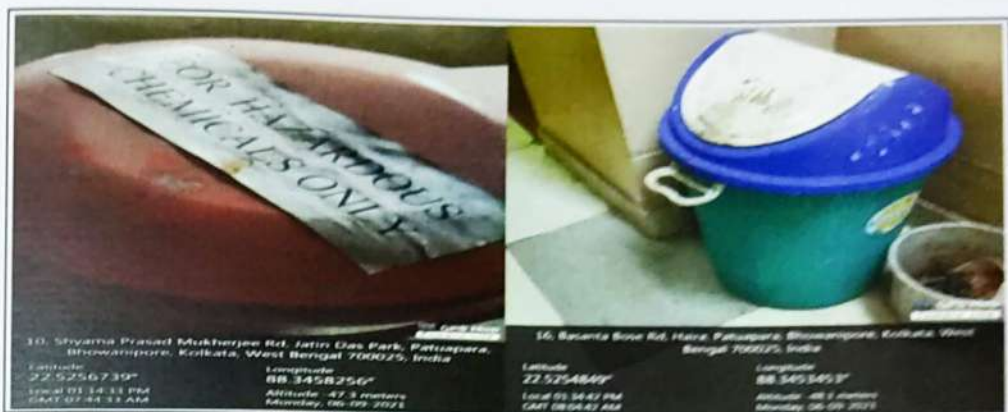
- **Kitchen Waste:**

Due to the pandemic situation kitchen waste was not generated as the canteen was completely closed. So, no wastes were found around the college premises or in the canteen.

- **E waste:**

Another type of waste found in the campus was e waste which included discarded keyboards, mouse, hard drives, monitors etc. These wastes are either sold of to organizations or used after repairing. Use of online data transfer to reduce use of DVD/CDs, Pen drive and other storage devices is being promoted by the college. The parts of instruments that can be repaired or reassembled are reused and those which are completely damaged and can't be reused are carried away from the campus by appointed agencies for destruction.





Colour coded dustbins with lids in the various corridors of the college

- **Hazardous Waste**

Practical classes involving hazardous chemicals in the laboratories ensure protection of the students and the environment by practicing the following:

- All hazardous chemicals are handled under the supervision of teachers or laboratory instructors.
- No student is allowed in the class without protective apron and in some cases, masks.
- Students working in the laboratory always face the risk of exposure to toxic fumes. This is taken care of by running exhaust fans in the laboratories

during class hours. This helps drive away the fumes and reduces their concentration within the confines of the laboratory.

- All microbial cultures are heat killed before disposal.
- Special techniques have been devised regarding reagent handling, like using pipette man, adaptors and pipette aids for pipetting hazardous chemicals like concentrated sulphuric and nitric acids, chloroform, etc., wearing gloves and mask when using Ethidium Bromide or Polyacrylamide, using H₂S water during qualitative analysis instead of the Kipp's Apparatus for producing hydrogen sulphide gas, etc.
- All toxic and hazardous chemicals are dumped and stored till arrangements are made for their safe and suitable disposal instead of being drained out through the regular drainage system.

Analysis and Recommendation

- Proper waste segregation should be carried out by cleaners as well as staff and students of the institution.
- Initiating the usage of reusable items in the campus like reusable water bottles, plates and cups.
- Taking sincere steps in recycling or disposing the plastic wastes in due time.
- Campaigns for reduce, reuse and recycle should be conducted to make students and staff aware of the various ways in which they can reduce their daily waste generation.

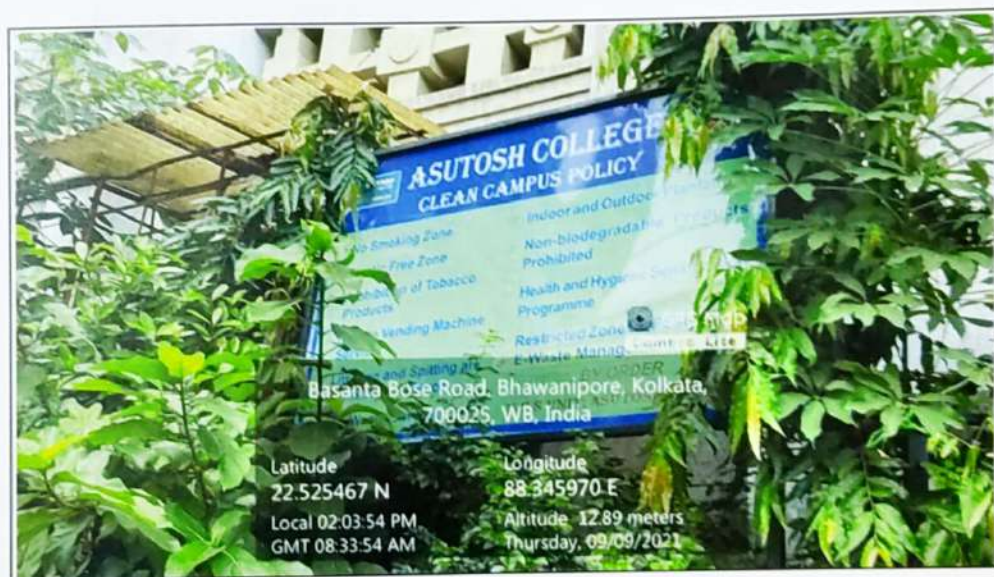


Clean Campus

Introduction

A Green Campus is a place where environment friendly practices and education is combined to promote sustainable and eco-friendly practices in the campus. A clean teaching-learning environment increases overall productivity and has a positive impact on staff and students mental and physical health. Awareness generation amongst the students of an institute regarding the importance of a clean campus is a duty of every institute and to access day to day cleanliness of the campus should be done to ensure a sustainable culture.

All the campuses of Asutosh college have colour coded dustbins and also has awareness generating posters to ensure students and staffs keep the campus clean. The campuses also are smoke free zones to ensure student and staff are not exposed to indoor air pollution and to promote healthy lifestyle choices.



Clean campus polisy adopted by Asutosh College





The college premises is a no smoking zone and proper dustbins are available for disposal of waste

Pest control drives are carried out in association with the Kolkata Municipal Corporation especially for malaria and dengue-larvae extermination in the campuses.





Proper COVID-19 protocol being followed by the college.

Due to the pandemic situation prevalent in 2020-20201, the college took every initiative to incorporate COVID appropriate behaviour. The college COVID-19 Cell took measures to minimise chances of spreading of the virus by installing sanitiser booths at every college entry point. All student and staff members were thermally scanned before entering the premises. Mask mandate was carried out strictly by the college.

ASUTOSH COLLEGE

STUDENTS ARE REQUESTED TO FOLLOW THE FOLLOWING COVID PROTOCOLS IN THE COLLEGE

NO ONE IS SAFE FROM COVID UNTIL EVERYONE IS SAFE

DO'S

Follow COVID appropriate behavior (ABC) even if you are fully vaccinated

- ◆ No mask No entry No class.
- ◆ Maintain physical distancing, wear mask, and sanitise hands.
- ◆ Please sanitise your hands (with soap & water or alcohol based sanitiser) before entering campus, class and common.
- ◆ Do cover your nose and mouth while coughing and sneezing.
- ◆ Do dispose used tissues and avoid paper sharing, use specified dustbin.
- ◆ If you feel yourself **unwell** **please** talk to the HOD/Department/College authorities & communicate with parents/guardian.

COVID-19 related Emergency Help Line (only in College Hours) 832-2455 6864.

DO'S

- ◆ If any of your family members is COVID positive, COVID symptomatic, **do not** come to college.
- ◆ Do not touch your eyes, nose, mouth.
- ◆ Avoid spitting in the college campus.
- ◆ Avoid poorly ventilated places.
- ◆ No smoking or alcohol consumption on campus is allowed.

TOGETHER WE CAN FIGHT COVID-19

COVID-19 Cell
Asutosh College

Notice by the Asutosh college COVID-19 cell



Analysis and Recommendation

- Students should be involved in campus cleaning campaign and take part in government initiatives of "Swachh Bharat Abhiyan".
- Demonstrations and awareness camps should be organized by the institution.
- Cleaning staffs should be given proper instructions towards keeping the campus clean and healthy.



Energy Audit

Introduction

An energy audit is an inspection survey and an analysis of energy flows for energy conservation in a building. It may include a process or system to reduce the amount of energy input into the system without negatively affecting the output. In commercial and industrial real estate, an energy audit is the first step in identifying opportunities to reduce energy expense and carbon footprint.

Principle of Survey:

When the object of study is an occupied building then reducing energy consumption while maintaining or improving human comfort, health and safety are of primary concern. Beyond simply identifying the sources of energy use, an energy audit seeks to prioritize the energy uses according to the greatest to least cost-effective opportunities for energy savings.

Survey Report:

We have performed a survey in Asutosh College. The total College area comprising of five campuses located at five different locations; 4 out of 5 are in Urban area of Kolkata and 1 is located in South 24 Paraganas. These are listed below;

1. Asutosh College Main Building
2. Asutosh College Training Center
3. Asutosh College Humanities Block
4. Asutosh College Centenary building and
5. Asutosh College second campus (Bhasa)

This was done to identify major machines consuming electricity. The following table depicts such items and their estimated consumption in kWh (Kilowatt Hour) per month.



Table of Major Instruments in day to day use consuming significant amount of electricity

Serial No.	Item name	Number of Units	Wattage (Watts)	Average Usage per Month in (Hours)	Total Consumption per Month
1	Desktop Computer	256	70	30	537.6
2	Laptops	328	50	20	328
3	Printers	56	50	20	56
4	Projectors	45	300	20	270
5	Incandescent bulbs	84	100	20	168
6	CFL lamps	278	28	20	155.68
7	LED bulbs	384	22	150	1267.2
8	Tube Lights	781	60	150	7029
9	LED tube Lights	478	22	150	1577.4
10	Celing Fans	582	60	100	3492
11	Number of Refrigerators	27	125	720	2430
12	Window Air Conditioning machines	18	1000	30	540
13	Split Air Conditioning Machines	25	2000	30	1500



14	Number of Water Pumps	5	1000	30	150
15	Pedestal Fan	81	90	100	729
16	Photocopier	3	120	30	10.8
17	LIFT	3	5500	50	825
18	Microwave	17	1200	1	20.4
19	Television	6	60	80	28.8
20	Closed Circuit TV	15	15	720	162
21	Equipment	39	100	50	195
	Total Units Consumed Per Month				21471.88 kWH

Analysis and Recommendation

The survey shows Asutosh College uses significant amount of energy every month which can be reduced in several ways.

- Usage of Incandescent bulbs should be completely forbidden and should be replaced by LED's.
- Usage of Air-conditioning machines should be restricted.
- Usage of all kinds of electric lights during day time should be restricted.
- Fans should be turned off while leaving any room.
- Overflow of pumped water should be monitored.
- Solar lights can be used in all campuses



Water and Soil quality analysis

Introduction

Water and soil quality is an important key indicator of the overall health of the ecosystem. Water is one of the most important resource available to us. It not only helps sustain life but also keeps the water cycle in check to ensure proper cycling of nutrients within an ecosystem. Water bodies present in and around a campus also provides habitat for aquatic life increasing the biodiversity of the area. Water quality analysis helps in sustainable use of water which is the goal in the present time. Water quality of drinking water of an institute should be evaluated regularly to avoid the outbreak of any water born disease amongst the students and staff members.

Soil is another key resource as it is the medium on which all terrestrial life survives. It is the medium where the primary producers get their nutrients which helps them grow and provide food to entire food webs. Other than this obvious service, soil also act as purifying medium for water as they infiltrate into the water table. Soil quality check is required to maintain healthy soil ecosystem and to properly chart plant species in accordance.

Analysis Procedure

Water samples were collected from various sites in the two campuses. Tap water were collected from Asutosh college main building (T1), ACTC building (T2), Humanities Block (T3), Centenary Building (T 4) and Bhasa Campus (T 5) and analysed in the laboratory of the Department of Environmental Science. The results of the tests conducted are given in the table below:

Water parameter analysis results

Parameter	T1	T2	T3	T4	T5	BIS Standard
Taste	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	
Odour	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	
pH	7.09	7.14	7.11	7.2	7.02	6.5-8.5
Conductivity (ms/cm)	0.461	0.483	0.479	0.488	0.494	
Chloride (mg/l)	21.3	21.11	22.05	22.04	29.94	250
Hardness (ppm)	30	30.05	31.1	30.76	58.07	200
Dissolved Oxygen (DO) (mg/l)	5.22	5.04	5.17	5.8	4.1	6-8
Total Dissolved Solid (mg/l)	118	120	120	121	116	500
Total Coliform	Nil	Nil	Nil	Nil	Nil	



Similar to water, soil samples were collected from the 5 sites named S1, S2, S3, S4 and S5 respectively for Asutosh college main building, ACTC building, Humanities Block, Centenary Building and Bhasa. The soil samples were then analysed in the Department of Environmental Science. The results are shown in the following table.

Soil parameter analysis results

Parameter	S1	S2	S3	S4	S5
pH	7.04	7.12	7.11	7.02	7.01
Conductivity (ms/cm)	0.481	0.477	0.479	0.477	0.494
Organic Carbon (%)	0.86	0.88	0.88	0.91	1.4
Chloride	39.02	40.01	39.1	39.2	41

Analysis and recommendation

- All water and soil parameters are within the acceptable range.
- Regular water and soil parameters should be checked.
- Water wastage should be minimised.
- Vegetable waste composting can be done to enhance soil quality.



Beyond the Campus Environmental Activities

Introduction

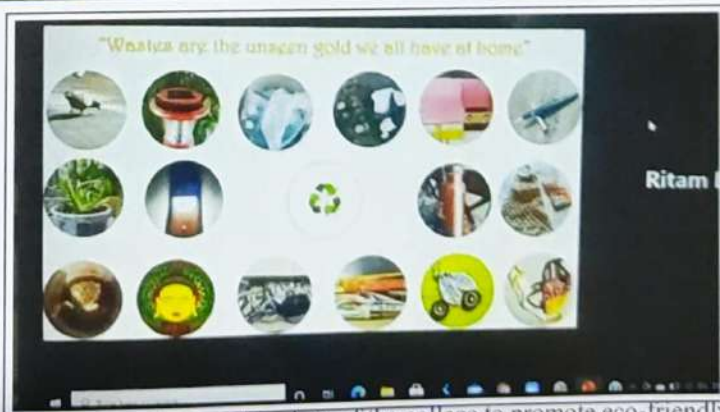
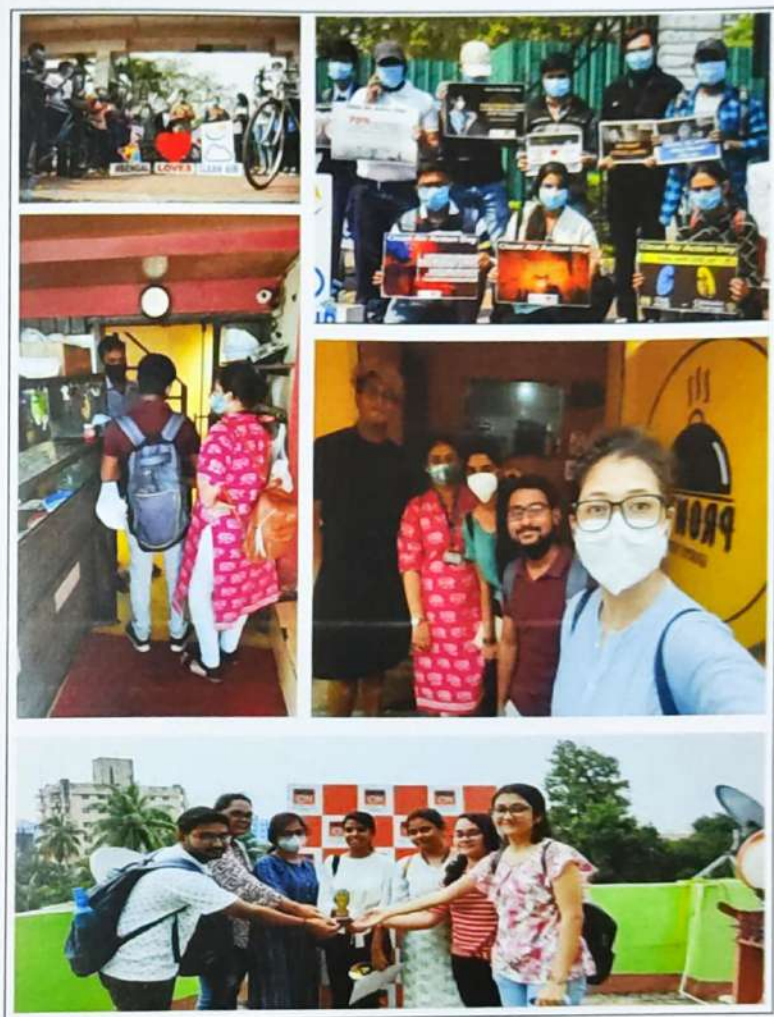
Sensitizing common people regarding the environmental issues and to promote sustainable and eco friendly practices is another goal of any institute. It is the duty of every staff member and student to conduct outreach programs and awareness camps.

The faculty and students of the college actively participate in various beyond the college environmental activity. Students and teachers work in collaboration with NGOs to incite environmental awareness. Team of 8 UG students of the Department of Environmental Science, Asutosh College worked with Bengal Clean Air Championship under Switch On Foundation on February 2021. They spread awareness via demonstration, slogans, posters. They also organized quizzes and competitions, proposed projects and ideas for improvement of air quality of Kolkata. Students regularly make questioners for common people for community outreach and documentation purpose and to raise awareness towards common environmental issues. The college also organize plantation programmes to increase greenery in and around the college band to sensitize the people regarding importance of greenery.



Awareness generating poster presentation by the students and faculty members





Various activities by students and teachers of the college to promote eco-friendly attitude beyond the campus



Conclusion

Keeping in mind the tropical cyclone that hit these parts of West Bengal, it is commendable that the Institution has taken various steps to re vegetate green space which were destroyed due to the cyclone. Plans for extending the existing green space has also been initiated by the institution. The students and teachers are actively involved in campaigns to keep the college campus eco-friendly. The NSS unit of the college have done active plantation and awareness programmes.

The second campus (Bhasa campus) is a one of its kind green campuses with biogas unit, rain water harvesting unit, integrated fish farming, vegetable patch medicinal garden which shows the substantial environmental initiatives taken by the institution. The cleanliness of the campus is also note worthy with cleaning procedure with proper equipment are carried out regularly. The smoke free campus campaign also promotes a healthy lifestyle choice to staffs and students alike. Students are also participating in various beyond the campus awareness campaigns and community outreach program to sensitize the common people about environmental issues.

Taking into consideration, the pandemic situation, the college has taken utmost care in maintaining COVID protocols.

