

BEJOY NARAYAN MAHAVIDYALAYA
ITACHUNA HOOGHLY
712 147

GREEN AUDIT

PREPARED BY:
GREEN AUDIT ASSESSMENT TEAM
BEJOY NARAYAN MAHAVIDYALAYA
ITACHUNA HOOGHLY
712 147

FORMAT OF GREEN AUDIT: QUESTIONNAIRE

Prepared by

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Environmental audit or *Green audit* is a general term that can reflect various types of evaluations intended to identify environmental compliance and management system implementation gaps, along with related corrective actions. In this way they perform an analogous (similar) function to financial audits. The term "Green" means eco-friendly or not damaging the environment. This can acronymically be called as "Global Readiness in Ensuring Ecological Neutrality (GREEN)". "Green Auditing", an umbrella term, is known by another name "Environmental Auditing".

There are generally two different types of environmental audits: compliance audits and management systems audits. Compliance audits tend to be the primary type in the US or within US-based multinationals.

The term "protocol" in environmental audit means the checklist used by environmental auditors as the guide for conducting the audit activities. Current technology supports many versions of computer-based protocols that attempt to simplify the audit process by converting regulatory requirements into questions with "yes", "no" and "not applicable" check boxes.

Green Audit can be defined as systematic identification, quantification, recording, reporting and analysis of components of environmental diversity. The 'Green Audit' aims to analyze environmental practices within and outside the college campus, which will have an impact on the eco-friendly ambience. It is basic exercises that can help to measure the risk to the health of inhabitants and the environment. Through Green Audit, one gets a direction as how to improve the condition of environment and there are various factors that have determined the growth of carrying out Green Audit.

This includes the plants, greenery and sustainability of the campus to ensure that the buildings conform to green standards. This also helps to monitor if an *Environmental Policy* is enacted, enforced and reviewed using various environmental awareness programmes.

The purpose of the audit was to ensure that the practices followed in the campus are in accordance with the Green Policy adopted by the institution. The methodology include: preparation and filling up of questionnaire, physical inspection of the campus, observation and review of the documentation, interviews with key persons and data analysis, measurements and recommendations. It works on the several facets of 'Green Campus' including Water Conservation, Tree Plantation, Waste Management, Paperless Work, Alternative Energy and Mapping of Biodiversity.

'Green Audit' aims to analyze environmental practices within and outside the college campus, which will have an impact on the eco-friendly ambience. Green Audit is assigned to the criteria 7 of NAAC.

There are main three pillars i.e. zero environmental foot print, positive impact on occupant health and performance and 100% graduates demonstrating environmental literacy. The goal is to reduce CO2 emission, energy and water use, while creating an atmosphere where students can learn and be inspired.

college has to work on the several facets of 'Green Campus' including Water Conservation, Tree Plantation, Waste Management, Paperless Work, Alternative Energy and Mapping of Biodiversity.

Methodology

In order to perform green audit, the methodology included different tools such as preparation of questionnaire, physical inspection of the campus, observation and review of the documentation, interviewing key persons and data analysis, measurements and recommendations. The study covered the following areas to summarize the present status of environment management in the campus:

- Water management
- Energy Conservation
- Waste management
- E-waste management
- Green area management

A water audit is an on-site survey and assessment to determine the water use and hence improving the efficiency of its use. Water is used for drinking purpose, canteen, toilets, laboratory and gardening. Loss of water must be checked, neither by any leakages, nor by over flow of water from overhead tanks. The green audit practically involves use of renewable sources, conservation of the energy, rain water harvesting program, and efforts of carbon neutrality, plantation of trees, E-waste management and hazardous waste management.

GREEN AUDIT DATA FOR SESSION: 2017-2018

Bejoy Narayan Mahavidyalaya, Itachuna, Hooghly-712147, West Bengal

1. GENERAL INFORMATION

- 1.1 Year of Establishment of college: 1950
- 1.2 History behind the establishment of the college: Spread of education in village and building high moral values
- 1.3 Total campus area: 11.84 acres
- 1.4 Total built up area: 6.66 acres
- 1.5 Total open space area: 5.18 acres
- 1.6 Total green area: 4.19 acres approx
- 1.7 Whether the college is implementing the Green Policy for the first time: "yes", "no" and "not applicable" (mention date/month/year): Yes
- 1.8 Whether green audit is followed annually, if so, please produce the year-wise recommendations of the auditor along with report (as Annexure): "yes", "no" and "not applicable": No
- 1.9 Whether college has constituted the "College Environmental Committee", "yes", "no" and "not applicable" (if so, give the details of it):
Yes
- 1.9.1 Name of the Committee members:
Formation of committee:
1. Chairperson- Principal
 2. Sri Samir Kr. Majumder (Convener , Asso. Lab. Instructor)
 3. Dr. Vinoy Kr. Mishra (Asso. Lab. Instructor)
 4. Dr. Kausik Ghosh (Asst. Prof.)
 5. Dr. Semanti Basu (Asst. Prof.)

6. Sri Gopendra Narayan Chattopadhyay (Society Representative)

7. Dr. Mohanlal Ghosh (Alumni General secretary)

1.9.2 Number of meetings conducted so far: 2017-18 = 04

1.9.3 Resolutions of the meetings: Resolved that ornamental plants will be planted in the college gardens. Further resolved that fruit plants Guava & Papaya will be planted. Some saplings of *Thuja* sp. will be planted along the passage from the main gate to the staff room. Sapling of *Polyalthia* sp will be planted along the second passage from the main gate. *Caesalpinia pulcherrima* will be planted in the garden. 900 plants of *Tectona grandis* will be planted in Hostel Garden. Plantation of *Shorea robusta* will be done at G. C. Majumder Hostel Garden. Plantation of tree along road side from Khanyan station to institution will be done under the banner of Canopy.

1.9.4 Action taken by the Committee : i) Plantation is done as per resolution. ii) Fencing for the plants iii) Watering to the plants by Gardener and staffs iv) Fertilizer to the plants, v) Thinning of the plants.

1.9.5 Future programmes of the Committee : i) To increase the population density of shrubs and trees in the fallow land around the building and along the roads inside the institution. ii) Renovation of pond inside the institution premises with the help of PWD. iii) Preservation of aquatic flora and fauna in the pond. iv) Establishment of water purifying system for safe drinking water inside the college. v) Maintenance of Aquaguard already installed at different sites of the institution by renewing the AMC. vi) Replacement of tubes and bulbs with LED sufficient light and to save the energy. vii) Exhaust fans will be installed in all the rooms. viii) Air stopper to the window will be installed in all the rooms. ix) Proper placement of dustbin at different places inside the college. x) Solar energy will be introduced in the institution. Animesh Layek visited Khandra College on 12.08.2018 to survey their solar energy system xi) Thinning of unwanted herbs and shrubs in the gardens for the proper growth of the plants. xii) Inside plantation will be done by shade loving plants in different departments.

1.9.6 Policy enforcement strategies: i) Resolutions will be forwarded to the Head of the institution and respective offices for proper implementation and working. ii) Make a working committee for the proper implementation for the future programme. iii) Establishment of link between the institution and Govt. organization for the fund required for the said programmes. iv) Work load for maintenance of garden will be distributed among the gardeners.

1.10 Whether college has conducted any awareness/responsibility programme among the staff members: "yes", "no" and "not applicable":

Yes, awareness programme was done on conservation of energy

1.11 Whether all the departments/teachers/non-teaching members/students are aware about the need of the environmental protection and audit: "yes", "no" and "not applicable": **Yes**

1.12 Whether college has involved the students as volunteers in greening programmes: "yes", "no" and "not applicable": **Yes, NSS volunteers are already involved for the greening programme since January 2015 onwards.** 1.13 Whether construction/demolition/repairing are in compliances with green standard:

"yes", "no" and "not applicable": **No**

1.14 Whether college has conducted any workshop/seminar/lecture on environmental awareness programme inside and/or outside the campus:

"yes", "no" and "not applicable": **Yes, Seminar Lecture workshop arranged by Nature club.**

1.15 Whether the institute has department of Law/Environmental Science/3-Year degree Course/Course curriculum "yes", "no" and "not applicable": **No**

(if so, how does it takes part in greening programmes)

1.16 Whether college provides any community services, if so, give details (as Annexure): "yes", "no" and "not applicable": **Yes, by NSS in three villages i) Mandaran (NSS unit-I), ii) Itachuna (NSS unit-II), IIschoba (NSS unit-III).**

Besides this during the different awareness programme on agriculture village peoples are involved properly.

1.17 Whether the students are aware about the use of medicinal plants (any lecture/seminar/conference organized on it): "yes", "no" and "not applicable": **No**

1.18 Comments on the following:

1.18.1 Plantation program: Y / N: **Yes, During rainy season by NSS, Canopy, Plantation committee plantation programme has been regularly. Garden plants, some fruit yielding plants and timber yielding plants has been planted within the premises and along the side by netting in the sapling stage. We planted less number of trees but our main motto is the survival of all the saplings. Ga have put their best effort on the plants development. Thinning is done regularly. Proper manuring is done by NPK.**

Herbal treatment of seeds is done in seasonal flowering plants. Plantation is done by the person who atleast interested in future for survival of the plants by given at least water to the plant. We never promote the quantity of plant population, but the quality population should be maintained.

1.18.2 Formation of Natural club/Eco club: Y / N: Yes.

1.18.3 Management of natural resources, wildlife, conservation of species: Y / N: Yes, Natural resources like rain water preservation is done for maintenance of ground water level. Medicinal plant garden is maintained by NSS and Department of Botany.

1.18.4 Any project sponsored by national funding agency/NGO, independent project related to environmental issues: Y / N: NO.

1.18.5 Is there any incidence of burning of plastics containing garbage within the campus for necessary reduction: Y / N: NO.

1.18.6 Celebration of 5th June, Ozone day, Earth Day etc.: Y / N: Yes, observed by the students of NCC and NSS.

1.18.7 Number of field visits/survey records: Y / N (if Y number) : Yes

1.18.8 Campus biodiversity register: This work is under process by Canopy

1.19 General aspects (express in statements) :

1.19.1 Campus cleanliness: Regular cleaning is done by the staff workers, Students regularly clean the working table and equipments properly.

1.19.2 Rainwater harvesting: Rain water from the roof of the main building runs down along the drainage system to the two harvesting pits.

1.19.3 Solar street lamp: No

1.19.4 Carbon dioxide neutrality on the campus by developing greenery: Yes, by the green mass of the institution.

1.19.7 Man-made nest to attract some birds to maintain ecological balance: No, Natural nest made by pigeon and sparrow is maintained in the campus corridor and on plants inside the institution.

1.19.8 Restriction in use of plastic and plastic products: Plastic and plastic product is restricted to some extent by taking awareness programme.

1.19.9 Culture of some ducks, swans etc., for scenic beauty in pond or any water body resources (if available): No, artificial culture of water land animals is not done. We preferred to establish undisturbed environment around the pond and wet land area to attract birds and animals.

1.19.10 Green monitoring by green committee/volunteers/team: **Green monitoring is done by NSS & NCC volunteers. The gardening and beautification committee along with nature club monitor and take active part with the help of gardeners.**

1.19.11 Training on vermicomposting: **Department of Zoology organized a workshop on vermicompost. Now a fresh workshop will be done along with nearby village farmers by department of Zoology.**

1.19.12 Celebration of 'No vehicle Day' on a particular day: **We plan to celebrate atleast once in a month as no vehicle day**

1.19.13 Dams inside the campus to meet the demand for water; **No**

1.19.14 Installation of fire safety instruments in all the buildings/departments: **Fire safety instruments installed in all buildings and recharges are done periodically.**

1.19.15 Toilets/separate toilets for differently abled students: **One separate toilet is present.**

1.20 Over all noise level (dB)

Sl no.	Inside campus area	Outside campus	Class room	Lawn	Office	Laboratory	Canteen
1	53 dB	88 dB	56 dB	63 dB	54 dB	57 dB	63 dB

1.21 Is there any device (preferably HVS: High Volume Sampler) for measuring ambient air quality in the campus (if so, pl mention the data month wise): **"yes", "no" and "not applicable": NO, It may be bought in future**

2. WATER MANAGEMENT

2.1 Whether college has an efficient and hygiene water storage mechanism to minimize the loss of water during storage "yes", "no" and "applicable"

"yes", College has 3 water tank of 1000 liters each (total 3000 liters), which is sufficient for drinking and other purpose.

2.2 Whether college is using water filter with RO, Aqua Guard and/or large water filter with cooler at the strategic locations in the college, so, are they under AMC: "yes", "no" and "not applicable"

"yes", college is using water filter with RO, Aqua Guard and/or large water filter with cooler at the strategic locations in the college and also they are under AMC.

2.3 Whether college has its own mechanism in repairing of water leakage: "yes", "no" and "not applicable"

Yes, any water leakage is being repaired immediately with the help of plumber

2.4 Is there any rainwater harvesting unit in college: "yes", "no" and "not applicable"

(if so, what are the uses of this water:)

a) Yes, college has 3 rain water harvesting chambers. **Rain water recharged and maintained properly .**

2.5 Whether college has developed any reuse and recyclable of water system: "yes", "no" and "not applicable"

Yes, Rain water recharged and maintained properly .

2.6 Is there any scope of measurement of water quality parameters used in hostel, lab, office, canteen, tap water (if so, parameters: TDS etc.).

Yes, We measure the quality of our drinking water (parameters: pH) in hostel, lab, office, canteen, tap etc.

2.7 Lab-wise water consumption (lt/d)

Chemistry	30
Zoology	18
Botany	12
Nutrition	12

2.8 Whether college has sufficient/adequate drainage system: "yes", "no" and "not applicable"

Yes, the college has adequate drainage system.

3. ENERGY CONSERVATION

3.1 Reduction of energy consumptions, especially fossil fuel energy

3.1.1 Total electric consumption amount48532 units..... /Yr

3.1.2 Average electrical consumption in a month4044 unit (meter no. L2595964), 1079 unit (meter no. 10)

December 2018

3.1.3 Total No. of

i) LED	44
ii) CFL	53
iii) Tube lights	245
iv) Fans	187
v) Air conditioners/Air Coolers	4

3.1.4 Whether college has any provision/choice of renewable and carbon-neutral electricity options applicable"

No, at present our college does not has any provision/choice of renewable and carbon-neutral electricity options.

3.1.5 Whether college has planned to install solar panels: "yes", "no" and "not applicable"
(if so, Project installed/working: Date/Month/Year)

No, at present our college does not has any plan to install solar panels.

3.1.6 Whether college has efficient water heating system: "yes", "no" and "not applicable"

No, at present our college does not has any water heating system.

3.1.7 Whether the staff members of all sectors are concerned in turning off electrical appliances when not in use in residential area: "yes", "no" and "not applicable"

Yes our staff members of all sectors are concerned in turning off electrical appliances when not in use in residential area. On this topic Nature club of our college arranged a seminar on ---- to make awareness among

3.1.7 Is there any monitoring system – like put off the main switch where there is no need of electricity:
"yes", "no" and "not applicable"

No, there is nothing like this. We are planning to put MCB and main switch whenever necessary.

3.1.8 Whether the users follow the appropriate and measurable targets for a reduction of energy, such as, ce
equipment when not in use: "yes", "no" and "not applicable"

Yes, our users follow the appropriate and measurable targets for the reduction of energy by putting off the appliances when not in use.

3.1.9 Is there any options for equipment's running on standby mode: "yes", "no" and "not applicable"

No

3.1.10 Whether college has taken initiative to purchase efficient and environmentally sound appliances in order to fulfill the green budget: "yes", "no" and "not applicable"

Yes, we have purchased environmentally sound appliances such as LED light instead of other lamp.

3.1.11 Whether college has its own mechanism in repairing of electrical fault:

"yes", "no" and "not applicable"

Yes by Electrician.

3.1.12 Whether the class rooms are with sufficient illumination in day time and ventilation:

"yes", "no" and "not applicable"

Yes, in day time all the class rooms are with sufficient illumination and ventilation.

Number of lights & fans in class room (average): Light-07 and Fans-07

Use of light & fans in the day time (average hours): Light-03 hrs and Fans-07 hrs.

Number of windows per class: 03-07(average)

Natural light source in day time (in hours) (average per class): 09 hrs

3.1.13 How many (%) e-notice generated by the college for academic/administrative purposes in a month-70%

3.1.14 How many (%) paper-notice generated by the college for academic/administrative purposes in a month-30%

3.1.15 Total number of computer, printer, Laptop, Xerox machine Desktop-13; Laptop-07 Xerox-01 Printer-17

3.1.16 Whether college has organized lectures on energy conservation in order to give awareness to the students:

"yes", "no" and "not applicable"

Yes

3.2 Energy conservation strategies

3.2.1 Whether the architectural design for college is based upon use of natural lighting & ventilation, to save extra power for bulbs and fans:

"yes", "no" and "not applicable"

Yes

3.2.2 Whether florescent bulbs are replaced with CFL bulbs/LEDs: "yes", "no" and "not applicable"

Yes

3.3 Minimize the use of unsustainable transport

3.3.1 What are the available/maximum transport facility used by the staff members/students etc., - mention the number (in average per day):

3.3.2 Whether college has any common car sharing/car pool among the students and faculty:

"yes", "no" and "not applicable"-No

4. WASTE MANAGEMENT

4.1 Maximization of the process of wastes & minimization of non-renewable refuse

4.1.1 Is there any method of segregation of waste materials? "yes", "no" and "not applicable"-No

4.1.2 Total amount of solid waste generated in the campus (including tree droppings & Lawn wastes)

Per capita production per day -Not measured properly.

4.1.3 Whether college arrange any workshop/seminar/conference for awaring the students/staff for specific arrangements for recycling

wastes: "yes", "no" and "not applicable"-No

4.1.4 Whether college follow specific disposal method for solid or liquid waste in specific manner:
"yes", "no" and "not applicable"-No

4.1.5 Whether the recycling/collection facilities are provided by the city Municipality and/or private suppliers (including glass, white plastic bottle, printer cartridges, cardboard, furniture, plastics, thermocol, waste papers, electrical goods & alliances, electronic gadgets, instruments, equipment, packing materials):

"yes", "no" and "not applicable"-No

4.1.6 Whether college has any composting ground/vat or any collection unit etc.:

"yes", "no" and "not applicable" No

(if yes, what is the percentage of waste undergone composting and the final use of the products)

4.1.7 Is there any mechanism of treatment/uses of domestic influent in the college campus (if so, what is the capacity of treatment plant/composting etc.): "yes", "no" and "not applicable"-No

4.1.8 Minimize use of chemical pollutants-Not done properly.

Sl No.	Departmen t	Name of the waste			Total (a+b+c)	Characteriz ation (if any)	Method of disposal	Agency if any
		Chemica l (a)	Biologica l waste (b)	Microbial waste (c)				

1.9 Records of dustbins/collection bins inside the campus-09

Sl no.	Location of dustbin	No. of dustbins			Quantity of collection (per day)	Disposal time	Cleaning by ecofriendly product Y/N
		Biodegradable	Non-biodegradable	Plastic waste			
	In front of diff.Department				Approx. 03 Kg/day	09 am	Yes

4.1.9 Whether the cleaning products used by the college staff are ecofriendly and under the COSHH (Control of Substances Hazardous to Health) regulations: "yes", "no" and "not applicable"-Yes

Whether the college is using fertilizers, pesticides for any purposes, if so, amount used per month and places of uses

Use of public transport: "yes", "no" and "not applicable"-No

5. E-WASTE MANAGEMENT

5.1 Quantity of e-waste generated: 20 to 50 million metric tones of e-waste are disposed world wide every year. The e-waste includes used printers, Keyboard, Mouse, CPU, UPS etc amounting a total of 20 kg/year.

5.2 Number of cartridge used month-wise: 5 Cartridge per year

5.3 Number of cartridge disposed in a year (average): 2 per year

5.4 Number of times refilling & reusing method of disposal of e-waste (if any): 3 times

5.5 Whether college has conducted any awareness programme on e-waste management:

"yes", "no" and "not applicable": NO, Yet to be done.

In the connection, we request you kindly marked areas of the map in the submitted proposal additional requirements essential for this purpose.
 If you so desire, you may visit our place.
 Thanking you,

Forwarded
 to
 - Principal
 Biju Narayan Mahavidyalaya
 Kachuna Hooghly

Enclosure:
 Xerox Copy of submitted project proposal

5.6 Is there any means of disposal of unused computers, printers and electronic wastes through authorized agents: "yes", "no" and "not applicable" : NO.
 5.7 Disposal methods : Though the process is bit old fashioned and causing contamination to nature, land filling is the most common practice of disposal method followed by the college.

Sl No.	Location	Amount of generation	Method of disposal	Name of the Agency (if any) for disposal

6. GREEN AREA MANAGEMENT

6.1 Is there any garden in the college campus/outside the campus under college custody: "yes", "no" and "not applicable" :

Yes, inside college premises there are four gardens, among which one is dedicated to butterfly park maintain by Canopy. Among the three gardens, one is for seasonal flowering and fruit plants, two is for medicinal plants. Outside the college premises there is one garden adjacent to the Hostel where more than 900 tick trees were planted.

6.2 Whether the garden is watered by using drip/sprinkler irrigation system: "yes", "no" and "not applicable" :

No, But the garden is watered by pipe system using ground water.

6.3 Is there any mechanism of review of periodical monitoring of tree species: "yes", "no" and "not applicable":

Yes, the tick trees are brought from outside vender and the contract says that they will looks after all the sapling till their three years and they will replace all the destroyed sapling within that tenure. For the other trees planted by Canopy and Plantation Sub Committee visits are done by the members for watering of the plants.

6.4 Whether the college has taken any programme for plantation of some fruit trees which can attract birds, bees etc.

"yes", "no" and "not applicable" :

Yes, In the year 2016, Canopy the nature club of this college planted 20 trees surrounding the college. Among them 18 are fr
 Mango, Jackfruit, Amloki, Bhera, Bakul, Bel etc. The purpose was to supply fruits for languor and birds. All the trees survive
 shape. Nss has planted 27 Guava trees in the garden.

6.5 Biodiversity mapping

Sl No.	Name of the place	Area	Type of plantation				Species name & quantity	Name of the Family	Total no. of species
			Indigen ous plants	Medici nal plants	Ornam ental plants	Exoti c plants			
Mapping work is taking care by Dept. of Botany-Yet to be done									

6.6 Records of Plantation programmes

Sl No.	Programme conducted	Date of functioning	No. of tree planted	Present status of the species	Documentation (if any)	No. of beneficiaries
1	Canopy	25/01/2016	20	All survived and growing well	Yes	
2	Plantation Sub Committee	14/09/2018	20	All survived and growing well	Yes	

Appendix: Photo album.

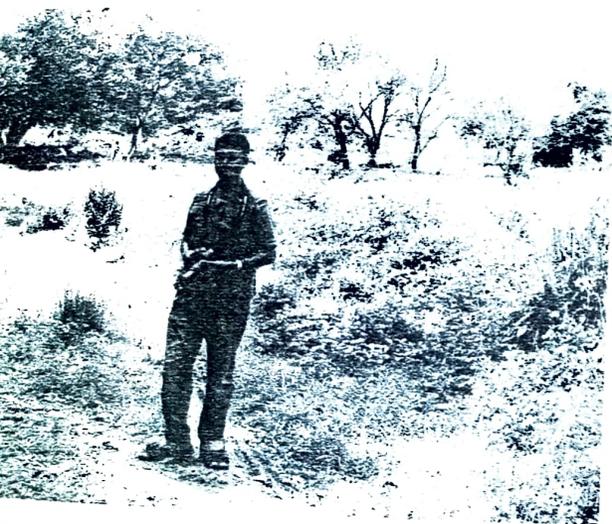
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Nature study by the students and teachers



Biodiversity study of the creeks in Mangalajodi



Student on field to photograph fauna

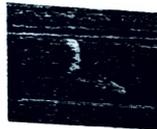


Association of Zoologists

Secretary
Ecology and Field Biology

Speaker

Dr. Savru Kumar Mukhopadhyay
Former Principal,
Hooghly Mahon College



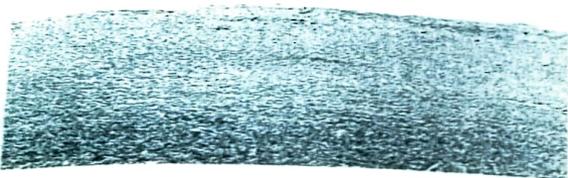
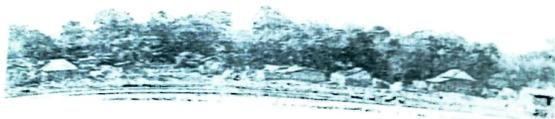
Certificate giving ceremony hosted by: Dr. Saroshi Mohan Das, Pro-VG, The university of Burdwan
Distinguished Guest: Present: Dr. Gautam Bis, Principal BSMV
Dr. Mohanta Gosw, Secretary, Alumni Association

Venue: Chemistry Hall

Time: 11:00 AM

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Flex of workshop held on field biology



Studying winter assemblage of avifauna



Nature trail in Singalila national park.



Use of dustbin to keep the college clean.



Setting the bird nest in the college premises.

Some Butterflies of college premises:



Common Silverline



Pale Blue



Grass Demon



S

Tawny Coster