



Government of West Bengal
Office of the Principal

Krishnagar Government College

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Memo No.....

Date

CRITERION 6

Governance, Leadership and Management

6.5 Internal Quality Assurance System

6.5.2 Quality assurance initiatives of the institution include:

File Description

Academic and Administrative Audit (AAA) and follow-up action taken




Officer-in-Charge
Krishnagar Govt. College
Krishnagar, Nadia (W.B.)



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Academic and Administrative Audit Report *Krishnagar Government College*




Officer-in-Charge
Krishnagar Govt. College
Krishnagar, Nadia (W.B.)

ACADEMIC AND ADMINISTRATIVE AUDIT

2018-2023



[Signature]
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Krishnagar, Nadia (W.B.)

KRISHNAGAR GOVERNMENT COLLEGE
Krishnagar, Nadia, West Bengal

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Members of the Audit Team

AUDIT TEAM

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Officer in Charge, Krishnagar Government College


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Krishnagar, Nadia (W.B.)

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Joint Convener, NAAC Steering Committee, Krishnagar Government College

Introduction

Significance of Academic and Administrative Audit (AAA)

Academic and Administrative Audit (AAA) is a tool for continuous quality improvement of any higher education institution (HEI). It is essential for achieving betterment and excellence in higher education. The audit of these two aims to create a quality academic environment with a strong administrative background.

Academic audit is a scientific and systematic method for reviewing the quality of academic processes and activities in HEIs. Administrative audit helps to explore the efficiency and effectiveness of administrative procedures by assessing the functions, policies, and strategies of various sectors of administration, as well as the overall administrative system.

The *objectives* of AAA include assessing the strengths and weaknesses of the academic departments and administrative units and suggesting methods for overcoming the weaknesses. It also ensures that departments have put in place adequate and effective quality assurance mechanisms in terms of strategies, procedures, and their applicability with available resources.

About the College

Krishnagar Government College has been recognized for its distinguished contribution to education, spanning from the colonial era to the present day. The College, situated at College Street, Nagendranagar, Krishnagar, in the Nadia district, has held its position as a premier institution for 179 years in the state of West Bengal. The college has adeptly navigated many challenges and earned a distinguished reputation. This esteemed institute is committed to perpetuating the legacy of academic excellence and social responsibility that has been fostered since its inception.

Krishnagar Government College was founded based on the educational model of the Imperial British Raj, focusing on higher education rather than mass education as outlined in Macaulay's 1835 publication. A report of the public meeting held in Krishnagar on November 18, 1845, to raise funds for the construction of the college building, was published in the renowned



contemporary paper, the Friend of India (November 27, 1845, page 754), which was later merged with the Statesman.

In 1932, the college was transformed into a co-educational institution, acknowledging the necessity for women's education. It currently aims to offer high-quality higher education to all, regardless of gender, caste, creed, religion, or socio-economic status. Located in the District Headquarters of Nadia District, Krishnagar, the broader mission of the college is to empower students, improve their socio-economic status, and cultivate a sense of national citizenship.

The journey of this esteemed educational institution commenced on November 28, 1845, in a rented house at Hatarpara. With the approval of Lord Hardinge, the Governor-General of India at the time, the college was formally inaugurated on January 1, 1846, and received a grant from the British Government. Capt. D. L. Richardson was appointed as the principal. Generous contributions of land from King Srishachandra Roy of Nadia and Queen Srimati Swarnamoyee of Cossimbazaar, Murshidabad, along with financial support from local elites, facilitated the construction of the Krishnagar Government College building, which became operational on June 1, 1856. The college building is a splendid structure standing on three bighas of land. The other two buildings were constructed during the years 1879-80 and 1917-18, respectively.

Originally affiliated with the University of Calcutta, the college has contributed to the advancement of learning in the province through its distinguished principals and teachers and notable alumni, some of whom are prominent figures in Bengal. Since 1999, this college has been incorporated under the University of Kalyani, located 56 km south of Krishnagar. Post-graduate teaching was introduced in the Departments of Geography and Philosophy in 2002, in the Department of Bengali in 2008, and in the Department of Zoology in 2010.

In 2008 and 2015, the college was awarded Grade A status with CGPAs of 3.14 and 3.17, respectively, by the National Assessment and Accreditation Council of the University Grants Commission. In 2010, it attained the status of College with Potential for Excellence under the auspices of the University Grants Commission. For 179 years, this institution has demonstrated resilience, adapting to political shifts, socio-cultural exchanges, and educational reforms.



The college has undergone numerous changes, with significant upgrades in technology, research, and teaching, which will be detailed in the subsequent sections. Efforts have been made to initiate and implement the recommendations proposed in Cycle I and Cycle II of Accreditation. Further expansion of postgraduate courses and research are central elements of the college's vision. Nestled in a lush green natural environment, the sprawling buildings occupy only a small portion of the total college property. Therefore, a significant area suitable for future infrastructure expansion is available. Discipline, peace, and harmony are essential prerequisites for learning and the character-building of the younger generation and the college is trying its best to achieve this in a systematic and well-organised manner.




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Academic Report

Academic Infrastructures

The college offers *fifteen undergraduate programs and four postgraduate programs* in fifteen different departments situated in multiple buildings within its 36-acre premises. The **Main building** houses departments of History, English, Sanskrit, Political Science, and Economics, while departments of Philosophy, Bengali, Chemistry, Geography and Physics have separate buildings. Biology building accommodates departments of Botany, Zoology, and Physiology, whereas departments of Mathematics and Statistics share a separate building. Also, there is a separate two-story building for the **Central Library**. Beyond academia, the college fosters multi-cultural student interaction through designated **common rooms** and **a canteen**, promoting social cohesion. Three large playgrounds further nurture students' physical and mental well-being. Embracing social responsibility, the college actively engages students in **National Service Scheme (NSS) activities**. Additionally, it provides accommodation with minimal expenses through two Boys' Hostels and one Girls' Hostel (from 2024).

The academic infrastructure comprises forty classrooms, including five seminar halls, facilitating the smooth conduct of theoretical classes. Each science department has ample well-equipped laboratories

Two **smart classrooms** are available in the Physics and Zoology departments. Additionally, many classrooms are equipped with portable projectors, enhancing their technological capabilities, and facilitating modern teaching approaches. For the convenience of students and teachers, every department maintains a seminar library. A medicinal plant garden nurtured by the Botany department and a museum facilitating hands-on knowledge on different animal species by the Zoology department motivates and enhances the curiosity of students.

To maintain social solidarity and promote extracurricular activities of students, the institute often arranges various cultural activities, sports, project work, field activities as well as **NSS extension activities**. Additionally, each of the two Boys' Hostels facilitates its own playground area. Indoor gaming facilities include amenities such as carom boards, table tennis, chess sets, etc. Moreover, students have access to a well-equipped gymnasium within the college premises.



The college extends its infrastructure and *human resource support to the NSOU* study center. Further, it hosts the Satyendra Nath Tagore Civil Service Study Centre, an initiative by the Government of West Bengal to train civil service aspirants. The college *offers NCC programmes* from the 2023-24 academic year which would help the enthusiastic students towards their successful future.

The rich *central library* possesses more than 1,00,000 books, and e-journals which provide distinctive academic opportunities to all stakeholders. Departments of Physics, Mathematics, and Geography possess their dedicated *computer laboratories*, while a *central computer center* serves other departments. Additionally, for academic needs, students can access computers in the central library and/or in their respective departments.

Courses /Programmes offered

Programs	Number	Remarks
UG	15	15 major/Hons since 2023 under NEP
PG	4	CBCS

U.G. Programme Details

Program	Department	University Affiliation	Affiliation Status
B.A. (Hons/Major)	Bengali	University of Kalyani	Permanent
B.A. (Hons/Major)	Economics	University of Kalyani	Permanent
B.A. (Hons/Major)	English	University of Kalyani	Permanent
B.A. (Hons/Major)	History	University of Kalyani	Permanent
B.A. (Hons/Major)	Political Science	University of Kalyani	Permanent
B.A. (Hons/Major)	Philosophy	University of Kalyani	Permanent
B.A. (Hons/Major)	Sanskrit	University of Kalyani	Permanent
B.Sc. (Hons/Major)	Botany	University of Kalyani	Permanent
B.Sc. (Hons/Major)	Chemistry	University of Kalyani	Permanent
B.Sc. (Hons/Major)	Geography	University of Kalyani	Permanent
B.Sc. (Hons/Major)	Mathematics	University of Kalyani	Permanent
B.Sc. (Hons/Major)	Physics	University of Kalyani	Permanent
B.Sc. (Hons/Major)	Physiology	University of Kalyani	Permanent
B.Sc. (Hons/Major)	Statistics	University of Kalyani	Permanent
B.Sc. (Hons/Major)	Zoology	University of Kalyani	Permanent



P.G. Programme Details

Program	Department	University Affiliation	Affiliation Status
M.A.	Bengali	University of Kalyani	Permanent
M.A.	Philosophy	University of Kalyani	Permanent
M.A./M.Sc.	Geography	University of Kalyani	Permanent
M.Sc.	Zoology	University of Kalyani	Permanent

Library Facilities

Krishnagar Government College, as a heritage institute, boasts a rich library with an extensive collection of textbooks, reference materials, newspapers, magazines, and rare books. The college also takes pride in its departmental seminar libraries, offering comprehensive support to students across 15 undergraduate and 4 post-graduate programs. These seminar libraries are equipped with a substantial collection of reference books procured through the RUSA grant. To ensure the continuous growth of the library infrastructure, the institution has set up the Library Development Sub-Committee, also known as the *Advisory Committee* for the Library. It is as follows:

Principal/ Officer-in-charge:	Chairperson
Librarian:	Convenor
Secretary, Teachers' Council:	Ex-officio Convenor
Selected Teaching Staff:	Members
Seminar Library in charge of Department:	Members

The Library Development Sub-Committee convenes regular meetings to strategize improvements for both the central and departmental libraries. Library automation software LIBSYS was utilized regularly in the Central Library. In 2023, it was substituted with the open-source software Koha. The bibliographic database is managed and regularly updated through a local server machine within the Central Library. Six computers connected through LAN with the server machine are there for accessing the bibliographic database by faculty members and students. Additionally, a dedicated computer is allocated for office purposes.



The College provides access to e-books and e-journals through the INFLIBNET facility. Through the N-LIST project of the INFLIBNET Centre, faculty members, students, and researchers can access e-resources like e-books and e-journals. Additionally, the institution offers Inter Library Loan Service (ILL) via Institutional Membership in the British Council Library, Kolkata. Ten membership cards are issued by the British Council Library, enabling alternating access to its physical documents for college teachers and students. Institutional Members now have access to select digital resources of the British Council Library, including self-development resources, e-books, audiobooks, and Universal Class. Moreover, patrons can access digital resources such as magazines like The Economist, Time, New Scientist, Vogue, and Marie Claire, as well as entertainment resources like Qello, offering a vast collection of live music concerts, films, and music documentaries. Furthermore, IELTS training papers and tutorials are available to aid in skill enhancement and productivity among students. Students can access these services by logging in with authenticated credentials using the computers located in the Central library. Faculty members receive separate membership access, provided by the librarian.

Within the Central Library, a dedicated space safeguards the college's collection of more than twenty thousand antiquarian and rare books, dating back to the mid-nineteenth century, in addition to archaic magazines, periodicals, and bound volumes of journals - all serving as invaluable assets for researchers. Meticulously organized maintenance services, including routine use of dehumidifiers, pest control measures, de-dusting practices, and bookbinding efforts, are systematically implemented to ensure the preservation of these esteemed materials. To optimize accessibility for both students and faculty, all academic departments consistently uphold and enhance their respective seminar libraries.




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ICT Facilities

To ensure academic excellence along with other facilities, Krishnagar Government College provides necessary IT facilities. Since the 2018-19 session. Two smart classrooms of this college were used to facilitate online/virtual classes conducted and shared by the affiliating university for some PG departments. Through these online classes, the students of this college got the opportunity to interact with other resource persons, thus promoting the idea of exchange of resources with other institutions well before the commencement of NEP 2020. During the lockdown period due to COVID-19, teaching-learning activities were conducted exclusively in online mode, and Google Classroom and Google Meet were the main platforms used by the teachers and students for the smooth conduction of regular classes, sharing of class notes, and arrangement of class tests and assignments. During the 2021-22 academic year, teaching-learning methods were conducted in a blended mode often employing the aforementioned platforms. Even after the transition to complete offline mode, platforms like Google Classroom, Email, or WhatsApp have been continuing to be used for sharing study materials with the students. Internet connectivity is circulated primarily from the principal's office to the other academic buildings which are situated distantly within the premises. During the complete lockdown situation, internet connectivity to some academic buildings was disrupted due to natural hazards and the closure of the institute, although the college office and some academic buildings continued to enjoy high-speed internet connections for smooth conduction of academic and administrative activities. The entrance, main building, and library building are covered under IP address-enabled CCTV surveillance. Restoration of full internet connectivity with updated bandwidth of 212 mbps, has started recently. The LAN connectivity in computer laboratories and Wi-Fi connectivity across the campus have also been upgraded.




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Academic Status

Academic Strength

List of Full-time Faculty Members (2022-2023)

Sl. No	Name with Salutation	Gender	Designation	Name the Department (e.g., Bengali, English, etc)	Highest Qualification (NET/SET/SLET/ Ph. D./D.Sc. / D.Litt./L.L.D.) and Year of obtaining
1	Dr. Ritankar Mukherjee	Male	Assistant Professor	Bengali	Ph. D
2	Dr. Ruchira Chakrabarty	Female	Assistant Professor	Bengali	Ph. D
3	Smt. Piyali Khan	Female	Assistant Professor	Bengali	Net
4	Dr. Munmun Ghosh	Female	Assistant Professor	Bengali	Ph. D
5	Dr. Somanjana Khatua	Female	Assistant Professor	Botany	Ph. D
6	Dr. Alokemoy Basu	Male	Assistant Professor	Botany	Ph. D
7	Dr Archan Bhattacharya	Male	Assistant Professor	Botany	Ph. D
8	Dr Ghanashyam Roy	Male	Assistant Professor	Chemistry	Ph. D
9	Dr. Abhijit Biswas	Male	Assistant Professor	Chemistry	Ph. D
10	Dr. Rubina Rahaman	Female	Assistant Professor	Chemistry	Ph. D
11	Dr. Pritha Mandal	Female	Assistant Professor	Chemistry	Ph. D
12	Dr. Debraj Saha	Male	Assistant professor	Chemistry	Ph. D
13	Dr. Debajyoti Saha	Male	Assistant Professor	Chemistry	Ph. D
14	Dr. Sobhan Niyogi	Male	Associate Professor	Chemistry	Ph. D
15	Dr. Moumita Basu	Female	Assistant Professor	Economics	Ph. D
16	Sri. Hrishabh Jaiswal	Male	Assistant Professor	Economics	NET
17	Dr. Mahuya Chakrabarti	Female	Associate Professor	Economics	Ph. D
18	Dr. Debasree Bose	Female	Assistant Professor	Economics	Ph. D
19	Dr. Sreerupa Ray	Female	Assistant Professor	Economics	Ph. D
20	Shri Arnab Mandal	Male	Assistant Professor	English	NET
21	Ms. Sudeshna Mukherjee	Female	Assistant Professor	English	NET
22	Sri Suman Banerjee	Male	Assistant Professor	English	NET
23	Dr Pulakesh Ghosh	Male	Assistant Professor	English	Ph. D
24	Ms. Sanjukta Sanyal	Female	Assistant Professor	History	NET
25	Sri Tanmoy Bhattacharjee	Male	Assistant professor	History	SET
26	Tanmoy Dey	Male	Assistant Professor	History	NET
27	Smt.Priyanka Biswas	Female	Assistant Professor	History	NET
28	Dr. Sujit Ghosh	Male	Assistant Professor	Mathematics	Ph. D
29	Dr. Gopal Das	Male	Assistant Professor	Mathematics	Ph. D
30	Shri Tuhin Manna	Male	Assistant Professor	Mathematics	NET



31	Dr. Pranab Bhattacharjee	Male	Assistant Professor	Mathematics	Ph. D
32	Dr Kalidas Das	Male	Associate Professor	Mathematics	Ph. D
33	Dr. Swati Bhattacharya	Female	Assistant professor	Philosophy	Ph. D
34	Dr. Edha Chakrabarti	Female	Assistant Professor	Philosophy	Ph. D
35	Dr. Buddhiswar Haldar	Male	Assistant Professor	Philosophy	Ph. D
36	Smt. Sewli Das Karmakar	Female	Associate Professor	Philosophy	SET
37	Mr. Md Eltutmis	Male	Assistant Professor	Philosophy	NET
38	Mr. Mebar Hossain	Male	Assistant Professor	Philosophy	NET
39	Dr. Bishwajit Paul	Male	Assistant Professor	Physics	Ph. D
40	Sri Nirmalendu Hui	Male	Assistant Professor	Physics	NET
41	Sri Arjun Das	Male	Assistant Professor	Physics	NET
42	Sri Biplab Kumar Mandal	Male	Assistant Professor	Physics	NET
43	Dr. Subhadip Nath	Male	Assistant Professor	Physics	Ph. D
44	Md Sariul Haque	Male	Assistant Professor	Physics	NET
45	Dr. Achintya Mohan Goswami	Male	Assistant Professor	Physiology	Ph. D
46	Dr. Maitrayee Banerjee Mukherjee	Female	Assistant Professor	Physiology	Ph. D
47	Dr Krishnendu Sarkar	Male	Assistant Professor	Physiology	Ph. D
48	Dr Kaushik Sarkar	Male	Assistant Professor	Physiology	Ph. D
49	Sri Manojit Mondal	Male	Assistant Professor	Political Science	SET
50	Sri Abinash Darnal	Male	Assistant Professor	Political Science	NET
51	Dr. Ashraful Islam Laskar	Male	Assistant Professor	Political Science	Ph. D
52	Dr. Mainak Putatunda	Male	Assistant Professor	Political Science	Ph. D
53	Dr. Lila Mahato	Female	Associate Professor	Geography	Ph. D
54	Dr. Debika Ghosh	Female	Assistant Professor	Geography	Ph. D
55	Dr. Indrita Saha	Female	Assistant Professor	Geography	Ph. D
56	Sri Alok Roy	Male	Assistant Professor	Geography	NET
57	Smt. Sarmistha Das	Female	Assistant Professor	Geography	SET
58	Mr. Mehedi Hasan Mandal	Male	Assistant Professor	Geography	NET
59	Dr. Samsul Hoque	Male	Assistant Professor	Geography	Ph. D
60	Dr. Balai Chandra Das	Male	Associate Professor	Geography	Ph. D
61	Smt. Ranita Ghosh	Female	Assistant Professor	Sanskrit	NET
62	Smt Mom Roy Chowdhury.	Female	Assistant Professor	Sanskrit	Set
63	Dr. Ashrumita Bhattacharya	Female	Assistant Professor	Sanskrit	Ph. D
64	Ms. Moumita Mondal	Female	Assistant Professor	Sanskrit	NET
65	Sri Pitambar Nirala	Male	Assistant Professor	Sanskrit	NET
66	Dr. Subrata Rana	Male	Assistant Professor	Statistics	Ph. D
67	Sri Goutam Barman	Male	Assistant Professor	Statistics	NET
68	Dr. Chandan Sarkar	Male	Assistant Professor	Zoology	Ph. D
69	Dr. Sumana Das	Female	Associate Professor	Zoology	Ph. D
70	Dr Sutapa Sanyal	Female	Associate professor	Zoology	Ph. D



71	Dr. Tanmay Sanyal	Male	Assistant Professor	Zoology	Ph. D
72	Dr. Himani Biswas	Female	Assistant Professor	Zoology	Ph. D

List of SACT Teachers (2022-2023)

Sl. No	Name	Category	Designation	Department	Highest Qualification
1	Dr. Hiranmay Pal	Male	SACT I	Physics	Ph.D
2	Dr. Bhaskar Samanta	Male	SACT I	Geography	Ph.D
3	Dr. Sumana Tarafder Mukherjee	Female	SACT I	Zoology	Ph.D
4	Dr. Kaustabi Maitra	Female	SACT II	Geography	Ph. D
5	Payel Bhattacharya	Female	SACT II	Geography	NET
6	Swagata Dey	Female	SACT-II	History	M.A.
7	Ranjit Nandi	Male	SACT-II	History	M.Phil
8	Tirtha sarkar	Male	SACT-II	History	M.A.
9	Anamika Adhikari Bhattacharjee	Female	SACT-II	Sanskrit	M.Phil

Curriculum implementation in the Departments

The Institution ensures effective curriculum delivery through a well-planned and documented process. All the departments of the institution follow a centrally-prepared master routine, to conduct the classes at undergraduate and post-graduate levels. The Academic Calendar and Routine sub-committee of the institution prepare an **academic calendar** for each academic session. **a systematic routine for curriculum completion within the stipulated period.** The academic calendars show **tentative dates for commencement of classes, internal examinations, holiday lists (based on Govt. of West Bengal's Holiday list),** and institutional levels events like annual sports, local holidays, and so on.

- **Meetings** are regularly conducted by all the departments for the **distribution of syllabi** before the commencement of classes in each semester. The same is shared with the students for their awareness.
- **Tutorial classes** are offered to the students of the institution. The institution also arranges **special classes** to give requisite support to **slow and advanced learners separately.**



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- All the departments apply **not only the conventional Chalk and Talk** method but also more advanced methods like **PowerPoint presentation, Audio-Video**, etc. to take classes as per requirement.
 - Departments conduct **continuous** internal assessments in the form of class tests, students' seminars, take-home assignments, viva voce, etc. to figure out the incremental progress of students. **Practical classes** are regularly conducted in science departments. **Field visits** and **educational excursions** are regularly conducted by many departments, for partial fulfillment of curricular requirements and/or to acquire practical knowledge on relevant topics.
 - Students are encouraged to participate in **seminars, workshops, and Quiz competitions at national and international levels**. They are also encouraged to **present posters and PPTs** on topics of their syllabus **at the departmental seminars**.
 - Students are encouraged to appear in national-level **competitive examinations like JAM, NET, SET, GATE, CUET (PG), etc.**

Integration of cross-cutting issues in the curriculum

The institution cultivates a comprehensive *teaching-learning environment*, with a strong emphasis on environmental concerns, *values education, and ethics in education*. This is achieved through regular lectures on value education and professional ethics, alongside special sessions dedicated to ethical values during students' week celebrations. The undergraduate and post-graduate syllabi across various departments cover a wide array of topics related to environmental sustainability, sustainable development, resource management, biodiversity, climate change, and environmental pollution, as well as concepts of environmental hazards and their management.

Additionally, the Department of Geography celebrates World Environmental Day and organizes regular plantation programs. Furthermore, the Department of Chemistry's undergraduate syllabus includes the study of Green Chemistry, a holistic approach to achieving sustainability. Departments such as English, Sanskrit, Economics, Geography, Political Science, and Philosophy



address pertinent issues including gender inequality, social inequality, women empowerment, and value education. The Department of Philosophy additionally hosts seminars on value education, human values, ethics in education, and professional ethics.

Other Aspects

Departmental Projects

Name of the research project/ endowment	Name of the Principal Investigator/Co-investigator	Department of Principal Investigator	Year of Award/ Grant sanctioned	Amount Sanctioned	Duration of the project	Name of the Funding Agency
Minor Research Project	Dr. Sujit Ghosh	Mathematics	2017	2,30,000/-	2 yrs	UGC
Major Research Project	Dr. Himani Biswas	Zoology	2017	14,98,000/-	3 yrs	WB-DST
Major Research Project	Dr. Sutapa Sanyal	Zoology	2018	10,79,900/-	3 yrs	WBDST BT
Major Research Project	Dr. Debajyoti Saha	Chemistry	2018	18,30,000/-	3 yrs	SERB, DST, India

Number of MoU/linkages during last 5 years

Name of the MoU/linkages	Number of MoU/linkages
Collaborative Research	08
Linkage	01
MoU (Faculty/Staff/Student Exchange Programme)	04

Publication Details

Publications Types	No of publications
Journals	171
Books / Chapters and Seminar/ conference Proceedings	29



Details of Professional/Administrative Training Programs

Total number of teaching and non-teaching staff participating in Faculty Development Programmes (FDP), Management Development Programmes (MDPs) professional development /administrative training programs during the last five years

2022-2023	2021-2022	2020-2021	2019-2020	2018-2019
14	22	29	17	15

Important Academic Activities

Workshops/seminars/conferences (2020-2023)

Sl. No.	Year	Name of the workshop/ seminar	Number of participants	Date from – to
1	2020	ONE DAY STATE LEVEL WEBINAR ON PHYSIOLOGICAL WELL-BEING DURING THE COVID-19 PANDEMIC	877	10th July 2020
2	2020	NATIONAL WEBINAR ON “INTERFACE OF CHEMISTRY & BIOLOGY: A MOLECULAR APPROACH	306	14th July 2020
3	2020	ONE DAY NATIONAL WEBINAR ON “THE ENIGMA OF COVID-19: FEATURES, GENOMIC PLASTICITY AND TREATMENT MODALITIES”	322	22 nd July 2020
4	2020	ONE DAY NATIONAL WEBINAR ON “SUSTAINABLE SYNTHESIS OF PHARMACEUTICALS AND BASICS OF DRUG DISCOVERY”	283	25th July 2020
5	2020	ONE DAY INTERNATIONAL WEBINAR ON “THE COVID-19 PANDEMIC : MYTHS, SCIENCE AND HOPE”	324	26 th July 2020
6	2020	ONE DAY INTERNATIONAL WEBINAR ON MATHEMATICS AS A WEAPON TO TACKLE REAL LIFE PROBLEMS	604	27 th July 2020
7	2020	ONE DAY STATE LEVEL WEBINAR ON WELL-BEING DURING COVID-19 PANDEMIC: PSYCHO-PHILOSOPHICAL PERSPECTIVES	475	30 th July 2020
8	2020	ONE DAY NATIONAL-LEVEL WEBINAR ON READING LITERATURE: CRITIQUING LITERARY ART	140	31st July 2020
9	2020	INTERNATIONAL WEBINAR ON CONTEMPORARY URBAN SCENE	1704	1st August 2020
10	2020	INTERNATIONAL WEBINAR ON APPLICATION OF STATISTICS IN CONTEMPORARY ISSUES	170	2nd August 2020
11	2020	ONE DAY STATE LEVEL WEBINAR ON “DISCOVERING THE FASCINATING WORLD OF NANO-SCIENCE”	230	3 rd August 2020
12	2020	দুদিন ব্যাপী রাজ্যস্তরের অন্তর্জাল-নির্ভর আলোচনাচক্র “বাংলা বিদ্যাচর্চার পেশাগত অভিমুখ : সমস্যা ও সম্ভাবনা “ (TWO-DAY STATE LEVEL WEBINAR ON "BANGLA VIDYA CHARCHAAR PESHAGATA ABHIMUKH: SAMASYA O SAMBHABANA")	927	4 th & 5 th August 2020
13	2020	ONE-DAY STATE LEVEL WEBINAR ON “IMPACT OF VIRUS AND VECTOR ON HUMAN HEALTH	2262	5th August 2020



14	2020	একদিনের রাজ্যস্তরের অন্তর্জাল-নির্ভর আলোচনাচক্র প্রসঙ্গ: অতিমারী (ONE DAY STATE LEVEL WEBINAR ON "PANDEMIC")	888	17 th August 2020
15	2020	ONE DAY STATE LEVEL WEBINAR ON SAMSKRITAVYĀKARANE KĀRAKATRAYAM (संस्कृतव्याकरणे कारकत्रयम्)	942	18 th August 2020
16	2020	ONE DAY NATIONAL LEVEL WEBINAR ON "DISCOVERING THE FASCINATING WORLD OF PHYSICS" CHAPTER-02: 'EXPLORING THE SKY: FROM ARYABHATA TO CHANDRAYAAN'	280	21 st August 2020
17	2020	ONE DAY INTERNATIONAL WEBINAR ON MODERN TRENDS IN MATHEMATICS AND ITS APPLICATIONS	380	21st August 2020
18	2020	ONE DAY INTERNATIONAL WEBINAR ON IMMUNOLOGICAL AND PSYCHOSOCIAL SPECTRUM OF COVID19	1023	23 rd August 2020
19	2020	ONE DAY NATIONAL LEVEL WEBINAR ON 'DISCOVERING THE FASCINATING WORLD OF PHYSICS' :CHAPTER 03- '1012DEGREES CELSIUS IN SHADOW: AN OVERVIEW OF HOT AND DENSE QUARK MATTER'	197	28 th August 2020
20	2020	ONE DAY STATE LEVEL WEBINAR ON "MACROECONOMICS OF COVID-19 PANDEMIC AND LOCKDOWN: THE INDIAN CASE"	288	9 th September 2020
21	2020	ONE DAY INTERNATIONAL WEBINAR ON 'DISCOVERING THE FASCINATING WORLD OF PHYSICS' CHAPTER 04: 'PLAYING WITH LASER'	187	14 th September
22	2020	ANTICANCER DRUG DESIGN AND DRUG DEVELOPMENT AND CANCER BIOLOGY	115	18th September 2020
23	2020	ONE-DAY STATE LEVEL WEBINAR ON "A VOYAGE TO THE INDUSTRIAL & ENVIRONMENTAL MICROBIOLOGY" – LECTURE SERIES-I	67	20 th September 2020
24	2020	ONE DAY NATIONAL-LEVEL WEBINAR TITLED AMERICAN LITERATURE: THE SAGA OF THE NEW WORLD	270	26th September 2020
25	2020	ONE-DAY NATIONAL LEVEL WEBINAR ON "INDUSTRIAL & ENVIRONMENTAL MICROBIOLOGY: PROSPECTS AND POTENTIAL" –LECTURE SERIES-II	34	26 th September 2020
26	2020	ONE-DAY NATIONAL LEVEL WEBINAR ON "AN EXCURSION TO THE INDUSTRIAL & ENVIRONMENTAL MICROBIOLOGY" –LECTURE SERIES-III	32	27 th September 2020
27	2020	ONE DAY STATE LEVEL WEBINAR ON NEGOTIATING MARGINALITIES : PROBING CASTE AND GENDER	614	28th September 2020
28	2020	ONE-DAY STATE LEVEL WEBINAR ON "PLANT BREEDING AND CROP PLANT IMPROVEMENT: A GLIMPSE AFTER HALF CENTURY OF GREEN REVOLUTION" –LECTURE SERIES-IV	33	08 th October 2020
29	2020	ONE-DAY STATE LEVEL WEBINAR ON "PLANT BREEDING AND CROP PLANT IMPROVEMENT STRATEGIES: AN OVERVIEW"	25	7 th November 2020
30	2020	175TH ANNIVERSARY CLOSING CEREMONY-KRISHNAGAR GOVERNMENT COLLEGE	3409	27 th November 2020
31	2020	ONE-DAY NATIONAL LEVEL WEBINAR ON "RELEVANCE OF REALISM OF INDIA'S FOREIGN POLICY: RECENT TRENDS IN INDO-CHINA RELATIONS"	156	30th November 2020
32	2021	আন্তর্জাতিক মাতৃভাষা দিবসে আলোচনাসভা ও সাংস্কৃতিক অনুষ্ঠান (SEMINAR AND CULTURAL PROGRAMME ON INTERNATIONAL LANGUAGE DAY)	623	21st February, 2021



33	2021	NATIONAL SCIENCE DAY, 2021	400	28th February 2021
34	2021	আন্তর্জাতিক নারীদিবসে আলোচনাসভা ও সাংস্কৃতিক অনুষ্ঠান (SEMINAR AND CULTURAL PROGRAMME ON WOMEN'S DAY)	148	8th March 2021
35	2021	WORLD ENVIRONMENT DAY: AN OATH TO RESTORE ECOSYSTEM	135	5th June, 2021
36	2021	ONE- DAY WEBINAR ON "HUMAN GENOME AND ITS VARIOUS ASPECTS"	86	12th July, 2021
37	2021	INTERNATIONAL WEBINAR ON 'ENVIRONMENTAL DISASTER: ISSUES, IMPACTS AND MITIGATION',	400	14th July, 2021
38	2021	নাটক ও অভিনয় বিষয় দু দিনের বিভাগীয় আলোচনাচক্র (TWO-DAY DEPARTMENTAL SEMINAR ON DRAMA AND PERFORMANCE)	507	21st and 22nd July, 2021
39	2021	ONE DAY STATE LEVEL WEBINAR ON " SNAKE- TWISTS IN THE TALE "	357	22nd July, 2021
40	2021	ONE DAY WEBINAR ON " MODERN INDIAN PHILOSOPHICAL THOUGHTS: RELEVANCE TO THE CONTEMPORARY WORLD" TO CELEBRATE INDIAN PHILOSOPHERS' DAY.	869	23rd July, 2021
41	2021	NATIONAL WEBINAR ON 'GEOMORPHOLOGY: RECENT TRENDS AND ISSUES'	600	24th October, 2021
42	2021	ONE DAY INTERNATIONAL WEBINAR ON "CONSERVATION CHALLENGES IN CHANGING CLIMATE"	122	13th November, 2021
43	2021	ONE TALK-CUM-INTERACTION SESSION ON "LOOKING DEEP INTO THE BINARY NEUTRON STAR MERGER WITH KILONOVA".	31	17th December, 2021
44	2022	ONE DAY STATE LEVEL SEMINAR ON " METAPHYSICS OF MIND"	150	27th April, 2022
45	2022	AWARENESS PROGRAMME ON INTELLECTUAL PROPERTY RIGHTS (IPRS) UNDER NATIONAL INTELLECTUAL PROPERTY AWARENESS MISSION-2.0 (NIPAM-2.0)	827	10th May, 2022
46	2022	FIELD BIOLOGY WITH WWF	100	17th June.,2022
47	2022	MUSHROOM CULTIVATION WORKSHOP	60	13th and 14th July,2022
48	2022	AFTER GRADUATION? BE AN ENTREPRENEUR!	141	16th September, 2022
49	2022	MANINDRA GUPTA : ADHUNIKATAR NANA MATRA	96	11th November, 2022
50	2022	ONE-DAY SEMINAR ON EMERGING PROSPECTS OF BIOSCIENCES AND CLINICAL RESEARCH	96	9th December, 2022
51	2022	APPLICATION IN HEALTH AND SAFETY	53	14th December, 2022
52	2022	WORKSHOP ON CAREER COUNSELING IN COLLABORATION WITH RICE EDUCATION	139	18th November, 2022
53	2022	WORKSHOP ON CAREER COUNSELING IN COLLABORATION WITH JIO CENTRE, KRISHNAGAR	88	30th November, .2022
54	2023	METABOLIC REPROGRAMMING OF CANCER: BACKGROUND, ONGOING RESEARCH AND FUTURE PROSPECTS	120	3rd February, 2023
55	2023	WORKSHOP FOR DRAMA SPECIAL	30	27th - 28th February,23
56	2023	BEAT PLASTIC POLLUTION AND SAVE THE ENVIRONMENT	188	6th April, 2023



Academic Pursuits and Social Responsibility

Best Practice

1. Community Services by the Students and Teachers and Social Responsibility

- ✚ Despite proximity to urban areas, the adopted village lacks various facilities. Programs were arranged to raise *villagers' awareness regarding primary health check-ups, sanitation, cleanliness, and livelihood opportunities.* etc.
- ✚ Following the Covid pandemic lockdown, camps were organized at Natun Shambhunagar Primary School to promote Covid protocols, respiratory hygiene, and vaccination.
- ✚ *Blood group determination of primary school children* was organized. Signs of anemia were examined by the Medical Officer and prescribed medicines were supplied for free by the college NSS unit.
- ✚ The local community was enlightened about ecological changes by Zoology UG and PG students, through the study of biodiversity at local ponds and gardens. *Methods to reduce plastic waste* and achieve comprehensive plastic recycling by preventing unorganized disposal of solid waste were demonstrated.
- ✚ Identification of occupational health hazards and essential suggestions for their mitigation were discussed with unorganized laborers, to ensure a better life for them.
- ✚ NSS unit, Krishnagar Government College organized *a Blood Donation Camp* in collaboration with the District Blood Bank, Shaktinagar, Nadia.

2. A green initiative taken at Krishnagar Government College

- ✚ Krishnagar Government College has initiated green initiatives in the college premises, to inculcate among students the importance of eco-friendly practices and foster environmental responsibility.
- ✚ A sophisticated sensor-based *weather monitoring system with a real-time display* in digital monitor has been installed in the college premises by the West Bengal Pollution Control Board, to record various environmental parameters, and constantly monitor air quality, thus helping to understand the pollution status in that area, prompting decision-making regarding environmental conservation.



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- ✚ To counteract escalating urban pollution, the college has implemented *several plantation programs* in the college premises, to improve air quality besides contributing to campus greenery.
 - ✚ Embracing renewable energy as an alternate energy source, the college has *installed solar panels*, thereby minimizing the institution's carbon footprint besides encouraging students to choose viable, clean energy solutions. This alternate, clean energy is utilized efficiently during power failures in the biology building, where some instruments require an uninterrupted power supply for the smooth running of ongoing research work
 - ✚ To ensure the *health of the surrounding ecosystem*, our college has recently started conducting water and soil testing regularly.
 - ✚ Knowing the detrimental impact of plastic on the environment, the college has declared itself a *plastic-free zone*, where single-use plastic is strictly prohibited. Comprehensive measures such as banners, awareness campaigns, and waste management strategies have been implemented to promote a cleaner and sustainable environment.
 - ✚ Another significant step taken by Krishnagar Government College towards *energy conservation* is the replacement of traditional lights with energy-efficient, longer-lasting, and less heat-emitting LED lights.
 - ✚ Promote nature study through *conducting excursions to* foster a further appreciation of interdependence between humans and the environment, Environmental science has been made an important part of the Kalyani University-framed syllabi for students of Zoology, Botany, and Geography.
 - ✚ Recognizing the importance of the environment, teachers of the Zoology Department have established a *Nature Club for the students*. It has published two issues of e-journal (Nerthus), besides periodically conducting nature surveys, organizing seminars on nature, and hosting quiz competitions.
 - ✚ With a total area of 36 acres, which is abode to various types of flora and fauna, gives the premises a serene and picturesque landscape. The establishment of a medicinal plant garden, no plastic zone, placement of numerous dustbins for waste disposal, and replacement of traditional lights with LED are notable steps towards the establishment of a sustainable environment within the college.



Administrative Strength

Human Resources

List of Administrative Staff (2022-2023)

SL NO	NAME	CATEGORY	DESIGNATION
1.	Kajal Saha	General	Store Keeper
2.	Gopal Majhi	SC	Compounder
3.	Debabrata Mondal	SC	Cashier
4.	Jayeeta Ghosh	OBC-B	LDC
5.	Subhadeep Malik	SC	LDC
6.	Biplab Karmakar	OBC-B	LDC
7.	Md Afzal	OBC-A	Laboratory Assistant
8.	Surendra Mahato	General	Gr. D
9.	Balaram Sarkar	General	Gr. D
10.	Satish Sardar	ST	Gr. D
11.	Ajit Kumar Kirtania	ST	Gr. D
12.	Ram Chandra Roy	General	Gr. D
13.	Abhijit Das	General	Gr. D
14.	Patit Paban Sarkar	SC	Gr. D
15.	Srabani Sengupta	General	Gr. D
16.	Tapan Hari	SC	Gr. D
17.	Rabi Zamader	SC	Gr. D
18.	Parimal Das	SC	Gr. D
19.	Bijoy Sardar	SC	Gr. D
20.	Samir Das	General	Office Staff
21.	Subrata Modak	General	Office Staff
22.	Jharna Karmakar	General	Office Staff
23.	Subhasish Ghosh	General	Office Staff



Special Features

SL. No	Particulars			Answers	
1	Office Automation				
	I	Administration			
		a.	Admission Processes		
			Online Admission	Yes	
		b.	Enrolment		
		c.	Maintenance of Records		
		d.	Declaration of Results		
		II	Accounts		
		a.	Fees Collection		
	b.	Maintenance of accounts			
2	Is there a College website?			Yes	
	Is it updated?			Yes	
3	Is the College Library automated?			Yes	
	a. Record of Books			Yes	
	b. Issue and Return of Books			Yes	
4	Is there an Internet facility in the library?				
		For all		Yes	
5	Is there an Anti-ragging Committee?			Yes	
6	Are there any Welfare schemes?			Yes	
7	Is there a functional Alumni Association?			Yes	
8	Does the college organize Institutions & Stakeholders meet (minimum one in a year)			Yes	

Physical Infrastructures

Sl. No.	Room No.	Theory /Lab.	Building/ Department	Floor	Room size
1	BD-1	Theory	Bengali Dept	Ground	13'×11'
2	BD-2	Theory	Bengali Dept	Ground	13'×11'
3	BD-3	Theory	Bengali Dept	Ground	13'×11'
4	PG--1	Theory	Physics	Ground	50'×40'



5	R-4	Theory	Annex Main Building	Ground	20'x30'
6	Room-1	Practical	Biology	Ground	15' x25'
7	Room-2	Practical	Biology	Ground	15' x25'
8	Room-3	Practical	Biology	Ground	20' x35'
9	Room-4	Theory	Biology	Ground	15'x35'
10	Room-5	Practical Microbiology Lab	Biology	Ground	20'x25'
11	Room-6	Practical Biochemistry Lab	Biology	Ground	20'x25'
12	Room-7	Theory	Biology	Ground	15'x35'
13	Dissection-I	Lab	Biology	1st	15' x 22'
14	Dissection-II	Lab	Biology	1st	17' x 25'
15	Ecology – III	Lab	Biology	1st	17' x 25'
16	Museum	NA	Biology	1st	20' x 40'
17	Histology-IV	Lab	Biology	1st	17' x 25'
18	ZG-I(UG)	Theory	Biology	1st	20' x 40'
19	ZG-II(UG)	Theory	Biology	1st	20' x 30'
20	Lecture – II (PG)	Theory	Biology	1st	17' x 25'
21	Lecture – III-PG	Theory	Biology	1st	17' x 25'
22	Fishery Special	Research Lab & Special Paper	Biology	1st	17' x 25'
23	Experimental Lab	Lab	Physiology	3rd	30' X 22'
24	Microbiology Lab	Lab	Physiology	3rd	25' X 22'
25	Biochemistry Lab I	Lab	Physiology	3rd	20' X 20'
26	Biochemistry Lab II	Lab	Physiology	3rd	18' X 22'
27	Histology Lab	Lab	Physiology	3rd	18' X 20'
28	Physiology Gallery	Theory	Physiology	3rd	30' X 22'
29	Physiology Lecture Theatre	Theory	Physiology	3rd	20' X 22'
30	Class room with projector	Theory	Physiology	3rd	20' X 22'
31	Physics Galley -I	Theory	Physics	Ground	40'x25'
32	Physics seminar -I	Theory	Physics	Ground	30'x25'
33	General Laboratory -II	Lab	Physics	Ground	30'x16'
34	General Laboratory -I	Lab	Physics	Ground	30'x30'
35	Language Laboratory	Lab	Physics	Ground	30'x15'
36	Optics-I	Lab	Physics	Ground	30'x15'
37	General Laboratory-III	Lab	Physics	Ground	30'x30'
38	Computer Laboratory	Lab	Physics	1st Floor	20'x25'
39	Seminar Library		Physics	1st Floor	25'x8'



40	Physics Galley -II	Theory	Physics	1 st Floor	40'x25'
41	Physics seminar -II	Theory	Physics	1 st Floor	30'x25'
42	Physics seminar - III	Theory	Physics	1 st Floor	30'x16'
43	Physics Hons Lab	Lab	Physics	1 st Floor	30'x30'
44	Electrical Laboratory	Lab	Physics	1 st Floor	30'x15'
45	Optics-II	Lab	Physics	1 st Floor	30'x15'
46	Electronics Laboratory	Lab	Physics	1 st Floor	30'x30'
47	Physics Galley -III	Theory	Physics	2 nd Floor	40'x25'
48	B.Sc. II	Theory	Geography	Ground	23'x20'
49	B.Sc. III	Theory	Geography	Ground	23'x20'
50	M.Sc. II	Theory	Geography	Ground	23'x20'
51	Gallery	Theory	Geography	Ground	33'x26'
52	Lab	Lab	Geography	Ground	20'x10'
53	Corridor		Geography	Ground	65'x7'
54	PHIL 1	Theory	Philosophy	Ground	18'*16'
55	PHIL 2	Theory	Philosophy	Ground	36'*16'
56	PHIL 3	Theory	Philosophy	Ground	36'*16'
57	Chem Gallery	Theory	Chemistry	Ground	25'*15'
58	General Lab	Lab	Chemistry	Ground	25'*20'
59	Hons Lab	Lab	Chemistry	Ground	25'*15'
60	LT-1	Theory	Chemistry	1st Floor	20; *12'
61	LT-2	Theory	Chemistry	1st Floor	20'*12'
62	Hons Lab	Lab	Chemistry	1st Floor	20'*25'
63	Hons Lab	Lab	Chemistry	1st Floor	15'*15'
64	1	Theory	Main Building	Ground	25'*45'
65	2	Theory	Main Building	Ground	18'*20'
66	3	Theory	Main Building	Ground	18'*20'
67	4	Theory	Main Building	Ground	20'*30'
68	5	Theory	Main Building	Ground	12'*18'
69	7	Theory	Main Building	Ground	18'*20'
70	8	Theory	Main Building	Ground	18'*20'
71	9	Theory	Main Building	Ground	18'*20'
72	10	Theory	Main Building	Ground	20'*18'



73	1	Theory	Dept.of Maths	Ground	25ftx18ft
74	2	Theory	Dept.of Maths	Ground	12ftx18ft
75	3	Theory	Dept.of Maths	Ground	10ftx18ft
76	4	Practical	Dept.of Maths	Ground	20ftx30ft
77	6	Theory	Main Building	Ground	15'*20'
78	Computer Lab	Practical	Maths Extension Building	Ground	25'x40'

Administrative Details

Sl. No.	Description	Report		
Infrastructural Facility				
1	Area of the College: (sq.Meters)	Campus area	1,45,930	
		Builtup area	10,028	
2	Office Space: (sq. Meters)	Main office +Department		730
3	Number of Class Rooms	40		
4	Number of Classrooms with ICT facilities	02		
5	Laboratories: No.of rooms:	30		
	Physics: 10	Zoology: 05	Botany: 05	
	Chemistry: 04	Physiology: 05		
6	Number of Computer Labs-	4		
	Mathematics:01	Geography: 01	Central: 01	
	Physics: 01			
7	Boy's Hostel - capacity available	YES	71	



	(Number of Boarders)			
8	Security:			
	Ø How many security guards are there?-	04		
	Ø Whether CCTV facility available?	YES		
	How many CCTV installed – Library: 08, Main building : 15		23	
9	Drinking Water facility:-	YES		
10	Power backup facility:-	YES	25kVA	
11	Solar Power	YES	10KW	
12	Energy Savings Measures taken	YES		
	Number of LED lights:		124	
13	Washroom facilities:-	YES		
	Number of Lavatories and urinals		112	
14	Common Room for Girls (mention the no.):	YES	4	
15	Medical care facility available (Sickbed, Wheelchair, First-aid):-	YES		
16	a) Canteen Facilities available-	YES		
	b) How many canteens available? -	1		
17	Gardener available-	YES		
18	Stock register is maintained for-			
	a) Laboratory Departments-	YES		
	b) Office-	YES		



19	College Central Library is automated (ILS-KOHA,) and Infilbnet supported. Library Loan Service (ILL) via Institutional Membership in the British Council Library, Kolkata	YES		
20	College regularly organizes cultural activities and encourages students to participate in national/international events?	YES		
21	NSS/NCC unit of the College is functional?	YES		
Service Facility				
22	Maintenance of leave records (whether maintained in the college office)	YES		
	a) Earned leave-			
	b) Maternity Leave-	YES		
	c) Extraordinary leave	YES		
	d) Medical Leave-	YES		
23	Updation and maintenance of Service Book for faculty members and office staff-	YES	Numbers	
	a) Service Books for Faculty Members-	YES	71	
	b) Service Books for office staffs-	YES	19	
24	Facilities of physically Challenged Students/Staffs-	YES		
	Ramp: 03	Wheelchair: 01		
25	Whether Internal Complaints Committee and Grievance Redressal system exist:	YES		
Sports, Games (indoor, outdoor)				
26	Whether the college has sports facilities for the students:-			
	a) Whether playground is present: -	YES		



	c) Whether Annual Sports is conducted every year?	YES		
	d) Types of events conducted	ALL		
	e) Can all male & female staff join in the annual sports events?-	YES		
Other Important Issues		-	-	-
27	How many computers do you have in the college?	112		
28	Does the college have good internet facilities /Wi-Fi connections?	YES	212 Mbps	
29	How many faculty members/administrative staffs can operate MS-Word/MS-Power Point/MS-Excel for teaching or administrative purpose?	88		
Basic Administrative Information.		-	-	-
30	Mission and vision of the college displayed in the premises and college website-Yes /No	YES		
31	IQAC meetings regularly held-	YES		
32	Tender and Purchase committee meetings regularly held-	YES		
33	Teacher's Council meetings regularly held-	YES		
34	Departmental meetings regularly held-	YES		
35	Maintenance of covid protocols done in the college: (during Covid period)	YES		
36	a) MoU with other Institutions?-	YES		



	b) How many institutions: -					5		
37	Linkage with other Institutions maintained:-					YES	9	
38	No of vacant post in the college-							
	a) Teaching staff:					20		
	b) Non-Teaching staff:					47		
39	Doctors-on call facility available -					No		
40	Are there any awareness seminars/workshops held in the college for cyber-crime security?-					Yes		
41	a) Is there any alumni Association in the college?					YES		
	b) Is it registered ?-					YES		
42	Do the college collect feedbacks regularly froms stake holders regarding campus environment,teaching-learning etc?-							
	a) From Students -					YES		
	b) From Faculties-					YES		
	d) From Parents-					YES		
	e) From Alumni-					YES		
	f) Feedback analysis and sharing of the result					YES		
43	Is there Students' stakeholders Sub- committee to adrees various student's welfare related issues					YES		
44	Whether audit conducted:-							
	a) Internal audit					YES		
	b) Green audit					YES		
	c) Environment audit					YES		
	d) Energy audit -					YES		
	e) Gender audit					YES		



	f) Government audit -		YES		
45	Whether maintenance of grants are received and utilization certificates submitted?		YES		
46	Whether the college has mandatory committees like-				
	a) Anti Ragging -		YES		
	b) Internal Complaints Committee		YES		
	c) General Grievance Redressal -		YES		
	d) Minority Cell -		YES		
47	Whether scholarship/grant records are maintained by the college office?–		YES		
48	How many types of scholarships are provided to students?–		11		
49	Percentage of students benefitted from scholarships in the current academic sessions?–			68%	
50	Other than the Government, is there any other source of funding in the college?–			YES	
	If yes mention in details -				
	Bidhayak Elaka Unnayan Prakalpa, MP LAD				
51	Whether notices are circulated by college authority				
	a) Income tax			YES	
	b) HRA declaration			YES	
	c) Career Advancement(CAS)			YES	
	d) Self Appraisal Declaration (SAR)			YES	
	e) WB Health Scheme benefits			YES	
	f) College Annual Sports			YES	
	g) Academic activities including exam, seminars, central class routine, library			YES	
	h) Cultural activities			YES	



52	Teachers' council, Allumni Association, Tender and Purchase committee, and other academic and administrative committees remained functional?	YES	
53	The institution has effective welfare measures for teaching and non- teaching staff	YES	
54	Departments conduct Research Institute visits, educational tours, etc	YES	

Overall Analysis

Strengths

1. With a current student strength of close to 3000, it caters to the academic needs of students spread over a considerable hinterland. This location allows students from myriad backgrounds to arrive as fledglings and depart as empowered citizens, ready to shoulder the mammoth task of nation-building, across several domains.
2. The lush green campus offers a tranquil atmosphere conducive for learning, amid an otherwise bustling city. The availability of twin playgrounds in this college has provided an impetus to participation in sports.
3. For male students two hostels-the Old and New Hindu Hostels have been functional for a long time. Now, the building, facilities, and security arrangements for a Ladies' Hostel are also ready and will be functional from the upcoming academic session.
4. The installation of CCTV cameras at multiple strategic locations has further reinforced the security arrangement.
5. this college has consistently spawned meritorious and diligent students. Besides academics, the students have won laurels in co-curricular activities.
6. Over a century and a half, this institution has emerged as a paragon of socio-economic and socio-cultural inclusivity.
7. The encouragement by the UGC and the state government has precipitated in the publication of a significant number of research and review articles in national as well as international journals, bearing testimony to the research potential of the faculty members of this college.



8. In collaboration with WEBEL, two Smart Classrooms have been set up and are fully functional. Moreover, the acquisition of portable projectors has bolstered the ICT component for multiple departments.
9. Embracing renewable energy as an alternate energy source, the college has installed solar panels, thereby minimizing the institution's carbon footprint besides encouraging students to choose viable, clean energy solutions.
10. The NSS unit of Krishnagar Government College arranges extension activities regularly to inculcate among its students a sense of social service, besides promoting social, communication, and leadership skills as well as team spirit. After the COVID-19 pandemic, camps were organized at Natun Shambhunagar Primary School to promote COVID protocols, respiratory hygiene, and vaccination. Blood group determination, checking for signs of anemia by a registered physician, and distribution of medicines were arranged for.
11. The NCC unit of this college started its journey with 1st-semester students admitted for the 2023-24 session. It is a matter of great prestige that the Commanding Officer, 14th Bengal Battalion, graced with his presence the occasion of the College Sports Meet held on 22.12.2023.
12. The RUSA grant received (after the 2nd cycle of NAAC accreditation, 2015) during the financial year 2015-2016 amounting to Rs two crores has been used for the purchase of books, scientific equipment, computers, new constructions, and renovations.

Weaknesses

1. Being a government college, it mostly depends on the State Government Fund for its developmental activities. The lack of the requisite amount has been a major obstacle in the implementation of several developmental and extension measures. Blessed with ample land and other amenities, this college with a student strength of close to 3000 suffers from the lack of its auditorium.
2. Another aspect in which the college is fully reliant on the government is the recruitment of teaching and non-teaching staff. This makes day-to-day functioning problematic. Not only the multi-pronged activities of the college office, but the running of departments (especially those requiring laboratory facilities), library facilities, and maintaining the cleanliness of the institution are adversely affected by the lack of a sufficient number of staff members.



-
3. Some of the departments have been suffering from the lack of adequate numbers of teaching faculty over a considerable period. For instance, the Postgraduate Department of Bengali with a significantly high student intake every year is forced to function with 4 faculty members. In a similar vein the Department of Botany functioning with only 2 faculty members, is suffering from an acute crisis of faculty members.
 4. With the introduction of NEP 2020 from the 2023-24 academic session, the lack of an adequate number of faculty and staff members has become even more apparent.

Opportunities

1. The availability of ample land is an opportunity for expansion. A larger student intake facilitated by the implementation of NEP 2020 necessitates the augmentation of currently existing laboratory and classroom facilities to accommodate greater student strength. The availability of land also facilitates the construction of a college auditorium.
2. There exists space and infrastructural opportunity for increasing the number of ICT-enabled smart classrooms beyond the two already existing, which in turn would benefit the students immensely.
3. The implementation of NEP 2020 makes it imperative for institutions to offer add-on courses of a multidisciplinary nature, which would boost the employability and/or research aptitude of undergraduate and postgraduate students. Krishnagar Government College has plans to introduce further add-on courses (in addition to the ones already introduced) of a cross-cutting, interdisciplinary nature to foster students' opportunities to excel academically and professionally.
4. The signing of multiple Memoranda of Understanding emerges as an opportunity for students and teachers of this college to indulge in exchange programs. Construction of new buildings becomes imperative for its execution.
5. Students of this college have excelled in university-level competitions as well as district and state-level competitions in games and sports. It would be worthwhile if the available infrastructure of the college could be utilized to create a department of Physical Education, offering interested and talented students a dedicated platform to excel
6. The library is a treasure trove of books and journals, many of which fall under the rare category. While digitization has been accomplished to a significant extent, the idea to



-
7. formally convert this rich library into an archive may be probed and if suitable, executed.
 8. The procedure to make Wi-Fi and LAN services available to the entire campus is in its final stage. Once completed, internet connectivity will help teachers and students alike.

Challenges

1. While there is scope for upgradation and expansion as discussed in the last-mentioned section, the funding necessary to execute those plans.
2. While the college has implemented the NEP 2020 from the 2023-24 academic session, the lack of an adequate number of teaching faculty as well as a shortage of rooms pose hindrances to the full implementation of the Multi-Disciplinary Subject (MDS) component of NEP 2020.
3. The lack of faculty members also poses an obstacle to the diversification of subjects that may be offered under NEP 2020.
4. Shortage of staff results in several challenges in the day-to-day running of the college important among them being the smooth functioning of the college office and maintenance of cleanliness in the campus.
5. The architecture, location, and greenery of the college provide animals and birds with a safe shelter and convenient habitat. Despite several attempts to get rid of them, dogs and pigeons create a continuous nuisance, which requires daily cleaning and careful supervision.
6. To cope with the sharply rising student strength, newer and bigger rooms must be constructed to accommodate the students. Especially for laboratory-based and postgraduate departments, the upgradation of laboratory facilities and allied co-ordinates for research work remain areas of concern.



Recommendation

Academics

A] For strengthening faculty

- Implementation of faculty development programs on innovative teaching methods and subject-specific advancements.
- Facilitation of research collaborations and publications to enhance faculty expertise and inspire students.
- Further exploration of faculty exchange programs with reputed institutions for knowledge sharing.
- Allotment of financial assistance to faculty members for participating in seminars, workshops, conferences, etc. in India and abroad.

B] For enhancing student learning

- Quality Enhancement: To intensify the focus on improving student learning outcomes by involving more students in workshops, and seminars effectively under the guidance of the college's Internal Quality Assurance Cell (IQAC).
- Digital Literacy: to improve students' digital skills by establishing more computer centers and promoting e-learning initiatives.
- Skill Development: Encouraging students to develop subject-specific and professional skills alongside academics is another potential focus area. This could involve workshops, guest lectures, or collaborations with industry experts.
- Alumni Engagement: Developing a strong alumni network to provide career guidance, mentorship programs, or financial aid opportunities for current students.
- Student Support Services: Enhance student support services like career counseling, and mental health counseling to create a more conducive learning environment for student progression.
- To initiate online learning platforms or MOOCs (Massive Open Online Courses) to supplement classroom learning.



Administration

A] Transparency and Technology Integration

- To improve communication channels between administration, faculty, and students.
- To share college updates, policies, and plans through clear and accessible platforms (website, social media, student portals) on a regular basis.
- To utilize technology for improved resource management by facilitating students with digital learning materials.
- To implement appropriate mechanisms for providing easy access of student-centric data to all.

B] Infrastructure Upgradation

- Conduct an assessment to identify areas requiring infrastructure upgrades or maintenance.
- Consider expanding library resources with digital subscriptions and e-books.
- Prioritize improving facilities like laboratories and classrooms with modern equipment and resources.





Officer-in-Charge
Krishnagar Govt. College
Krishnagar, Nadia (W.B.)


AUDIT TEAM

External Members


Expert 1


09/02/24
Inspector of Colleges
University of Kalyani
Dr. Subrata Kumar Roy Ray
Inspector of Colleges, University of Kalyani

Expert 2


Dr. SANTANU CHAKRABARTI
PRINCIPAL
Principal, Government General Degree College, SINGUR
Singur, Hooghly

Expert 3


09.02.2024
Head
Department of History
University of Kalyani
Prof. Alok Kumar Ghosh
Department of History, University of Kalyani




Officer-in-Charge
Krishnagar Govt. College
Krishnagar, Nadia (W.B.)

AUDIT TEAM


Internal Members


Dr. Sobhan Niyogi
Officer in Charge, Krishnagar Government College

09/02/2024
Officer-in-Charge
Krishnagar Govt. College
Krishnagar, Nadia (W.B.)




Dr. Mahuya Chakrabarti
Co-Ordinator, IQAC, Krishnagar Government College


Dr. Kalidas Das
Secretary, Teachers' Council, Krishnagar Government College


Dr. Lila Mahato
Joint Convener, NAAC Steering Committee, Krishnagar Government College


Dr. Sujit Ghosh
Joint Convener, NAAC Steering Committee, Krishnagar Government College



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Krishnagar, Nadia (W.B.)



Government of West Bengal
Office of the Principal

Krishnagar Government College

Krishnagar, Nadia, PIN- 741101

Phone: 03472-252863/252810 Fax: 03472 252810

Email: kgcollege1846@gmail.com

Website: www.krishnagargovtcollege.ac.in

Memo No.....

Date

Gender Audit Report

Krishnagar Government College



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Krishnagar, Nadia (W.B.)



Krishnagar Government College



**2018-19
to
2022-23**

GENDER AUDIT REPORT



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PREFACE

"When women thrive, all of society benefits, and succeeding generations are given a better start in life." - Kofi Annan

Gender equality, the pursuit of equal rights and opportunities for all individuals regardless of their gender, does not imply the eradication of differences between men and women. Instead, it signifies that individuals should have access to the same rights, responsibilities, and opportunities, irrespective of their gender. Gender equity involves ensuring fairness in the treatment of both men and women, taking into account of their specific needs. This may lead to the provision of equal treatment or different treatments, that is deemed equivalent in terms of rights, benefits, obligations and opportunities.

Gender equality is a pressing global issue, and the discourse surrounding the emancipation and rights of women is a prominent aspect of various formal and informal campaigns worldwide. With growing awareness about gender-related concerns, women are proactively addressing the oppression and exploitation they face. Gender awareness empowers women to transcend conventional gender stereotypes and rigid role expectations.

In pursuit of gender equity, a gender audit was conducted to identify strategies for creating a more inclusive and equitable environment in a college campus. The audit process involved selecting specific areas for assessment, assembling participants, providing orientation to the participants, developing a comprehensive checklist, conducting on-site observations, documenting the findings, and sharing the results with the college Principal for the implementation of recommended changes.

The aim of this gender audit is to ensure that the college campus becomes a safer and more supportive space for all individuals, irrespective of their gender. By fostering gender equity, we strive to create a society where every person can thrive and contribute their unique skills and perspectives, without any discrimination based on their gender identity.



**Dr. Edha Chakrabarti
&
Sri Tuhin Manna**

Edha Chakrabarti
Officer-in-Charge
Krishnagar Govt. College
Krishnagar, Nadia (W.B.)

Convenors, Gender Audit Committee

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07.

**Recommendations and
Conclusion**


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Krishnagar Govt. College
Krishnagar, Nadia (W.B.)

INTRODUCTION



Krishnagar Government College is a renowned institution in the district of Nadia, West Bengal. The institution maintains rich legacy since its inception. It has gained recognition as a prestigious institution known for its commitment to excellence in education. The college is dedicated for providing quality education to students through unwavering hard work, dedication, and a strong sense of devotion. In 2008, the college received the status of 'A' Grade by the NAAC and acquired the status of "College with Potential for Excellence" in 2010. In 2015, this institution was again awarded an 'A' Grade by the NAAC. Notable awards won in recent years, like "The Best College of Nadia District" by the University of Kalyani in the year 2017. In the year 2018, the college has also received "Ananya Samman" from ZEE Bangla 24 Ghonta for excellence in education.

In addition to its primary aim of imparting quality higher education at the undergraduate and postgraduate level, the college also aims at developing responsible and sensitive students, integrating them from diverse cultural, linguistic and religious groups, and moulds them towards developing social commitments a panoramic view of the society.

The Gender Audit Team has conducted a thorough review and analysis of the operating environment of Krishnagar Government College. Through this analysis, the team has recognized that the college operates in an inclusive environment where students, besides education have equal access to a wide range of opportunities in sports and physical activities.

After carefully examining the feedback provided by the students, it is concluded that their overall perception, regarding programme planning, design, and college activities, is positive. According to the analysis, a significant portion of students have expressed their satisfaction in the existing policies and programs of the college regarding gender equity. This indicates that they believe the college has made adequate efforts to ensure fairness and equality for all genders.



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KRISHNAGAR GOVT COLLEGE - AT A GLANCE

Name of the OIC/Principal	Dr. Sobhon Niyogi
Affiliated To	Kalyani University
NAAC Accreditation UGC Recognition AISHE Code	A-Grade with CGPA: 3.17 2(f) and 12(b) C-7093
Year of Establishment	1845
Type of College Intake Capacity No. of UG Program No. of PG Program Departments	Co-Education 1560 15 Major Courses 4 PG Courses Arts: 06 & Science: 09
Laboratory Hostel	23 Boys Hostel: 02 & Girls Hostel : 01
No. of Teaching Staff No. of Librarian No. of Non - Teaching Staff	81 01 19
Campus Area	24 acre.



P.O-Krishnagar, Dist.- Nadia,
West Bengal-741101



kgcollege1846@gmail.com



03472-252863



<http://www.krishnagargovtcollege.org>



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GENDER AUDIT



Gender Policy

- **Non-Discrimination:** No gender-based discrimination shall be tolerated in the institution.
- **Equal Opportunities:** The institution provides equal opportunities for all genders.
- **Freedom of Expression:** All genders have the right to express their opinions freely.
- **Grievance Redressal:** An accessible, unbiased, and confidential cell is available for addressing gender-related grievances.
- **Safety and Security:** The institution ensures the safety and security of all genders.
- **Inclusivity and Sensitization:** The institution promotes gender inclusivity and awareness.

Objectives of Gender Audit

- To identify gaps where gender imbalance exists and the causes behind them.
- To suggest measures for bridging the gap.
- To maintain good gender balance in decision-making processes in all the college activities.
- To analyse the efforts and capacity of relevant committees for preventing sexual harassment in the college.
- To strengthen the working capacity of Women's Cell/ Prevention of Sexual Harassment Cell/ICC and Grievance Redresses Cell of the college.

Key Steps in Gender Audit

Planning - setting the objectives and scope of the audit, determining the methodology, and creating a detailed plan for conducting the audit.

Data Collection - conducting surveys, reviewing relevant documents and policies, and observing practices within the organization.

Preliminary Report - Preparing the draft audit report including the audit observations, identified issues, and recommendations for improvement.

Final Report - The preliminary report is refined and finalized by incorporating feedback and additional information. The final report presents comprehensive audit findings, conclusions, and recommendations.


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GENDER AUDIT COMMITTEE

SL. NO.	NAME	DESIGNATION	INSTITUTION
01	Dr. Sobhon Niyogi (Officer-in-Charge)	Chairman	Krishnagar Government College
02	Dr. Natasa Dasgupta (Principal & Member of WBTGPDB)	External Member	Krishnagar Women's College
03	Dr. Edha Chakarabarti (Assistant Professor)	Jt. Convenor	Krishnagar Government College
04	Sri Tuhin Manna (Assistant Professor)	Jt. Convenor	Krishnagar Government College
05	Smt. Sewli Das Karmakar (Associate Professor)	Internal Member	Krishnagar Government College
06	Dr. Munmun Ghosh (Assistant Professor)	Internal Member	Krishnagar Government College

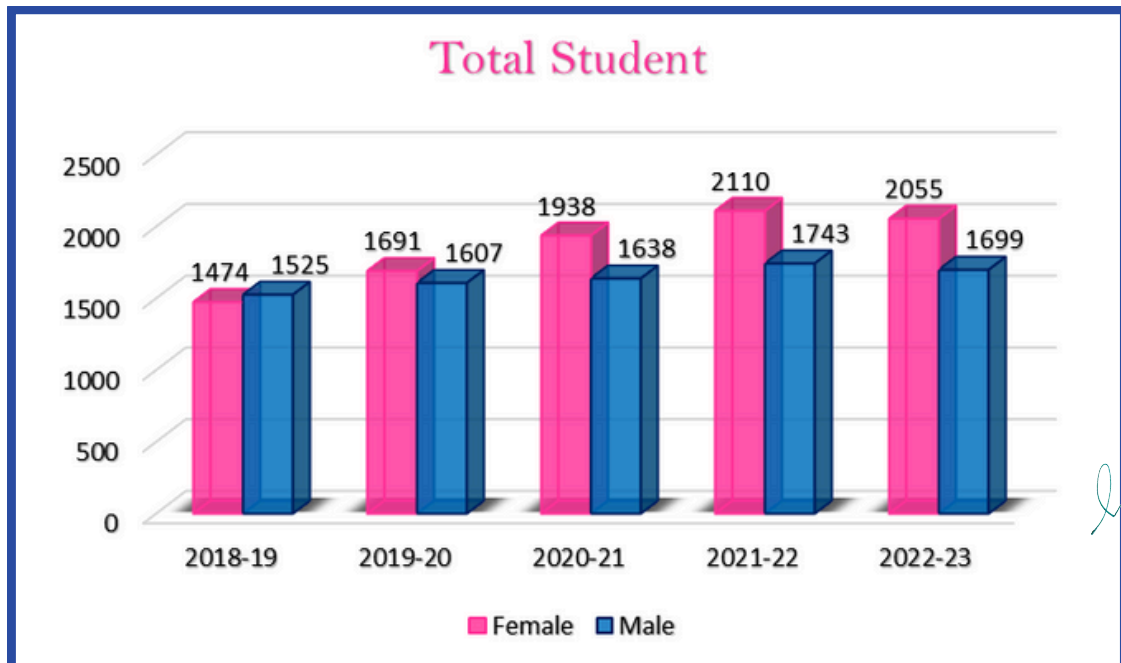


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DATA ANALYSIS

Table 1 : Gender Wise Distribution of Total Students in the College during the Period 2018-19 to 2022-23

Academic Year	Female	Male	Total
2018-19	1474	1525	2999
2019-20	1691	1607	3298
2020-21	1938	1638	3576
2021-22	2110	1743	3853
2022-23	2055	1699	3754

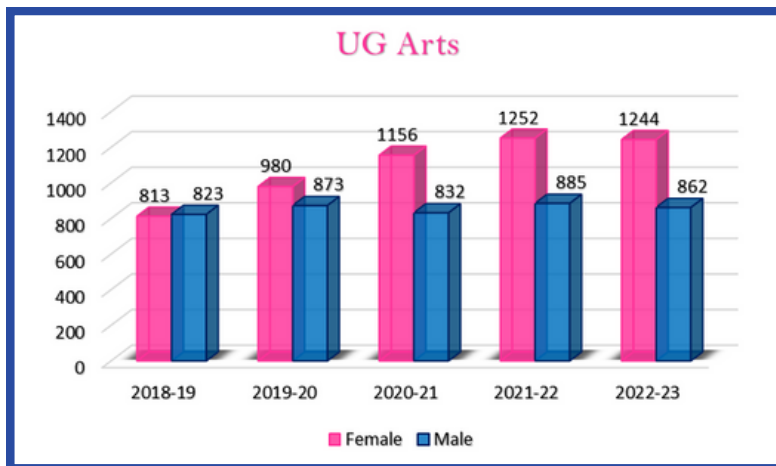


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This diagram provides an overview of gender distribution in the college. It is clear that the proportion of female students is increasing.

Table 2 : Gender Wise Distribution of Total Under Graduate Arts and Science Students during the Period 2018-19 to 2022-23

Academic Year	Under Graduate Arts			Under Graduate Science		
	Female	Male	Total	Female	Male	Total
2018-19	813	823	1636	460	595	1055
2019-20	980	873	1853	489	671	1160
2020-21	1156	832	1988	561	722	1283
2021-22	1252	885	2137	642	785	1427
2022-23	1244	862	2106	624	749	1373



UG Arts program is predominated by female students

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The dominance of male students is noticeable

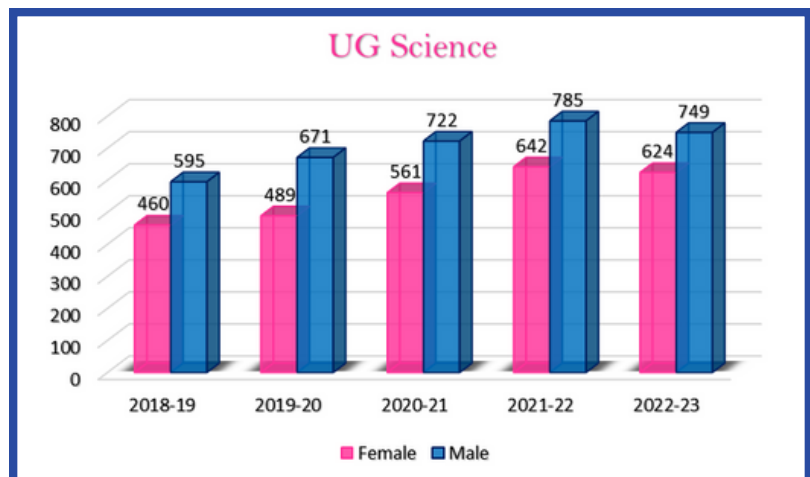
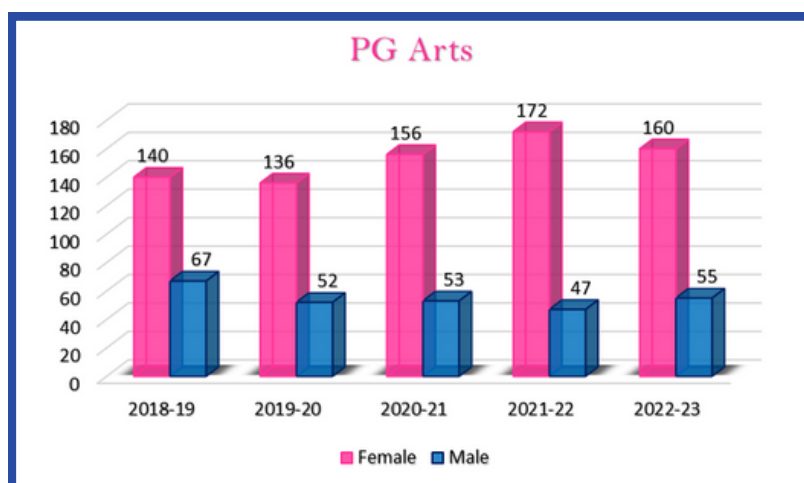


Table 3 : Gender Wise Distribution of Total Post Graduate Arts and Science Students during the Period 2018-19 to 2022-23

Academic Year	Post Graduate Arts			Post Graduate Science		
	Female	Male	Total	Female	Male	Total
2018-19	140	67	207	61	40	101
2019-20	136	52	188	65	32	97
2020-21	156	53	209	65	31	96
2021-22	172	47	219	44	26	70
2022-23	160	55	215	27	33	60



PG Arts Program is predominated by female students

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The dominance of female students is noticeable

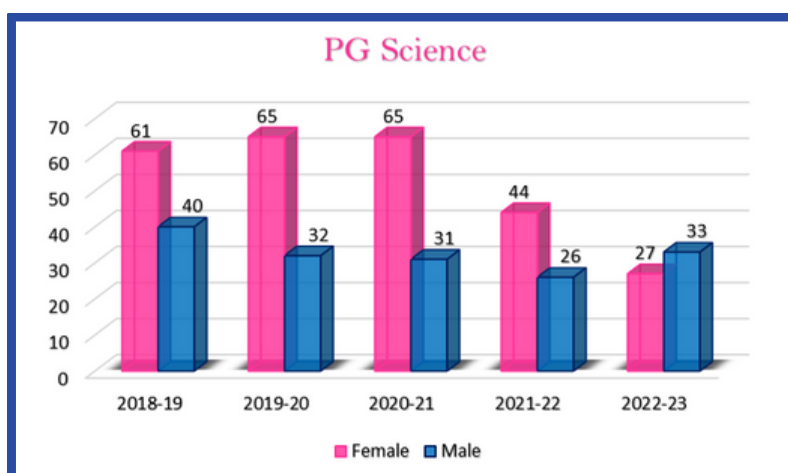
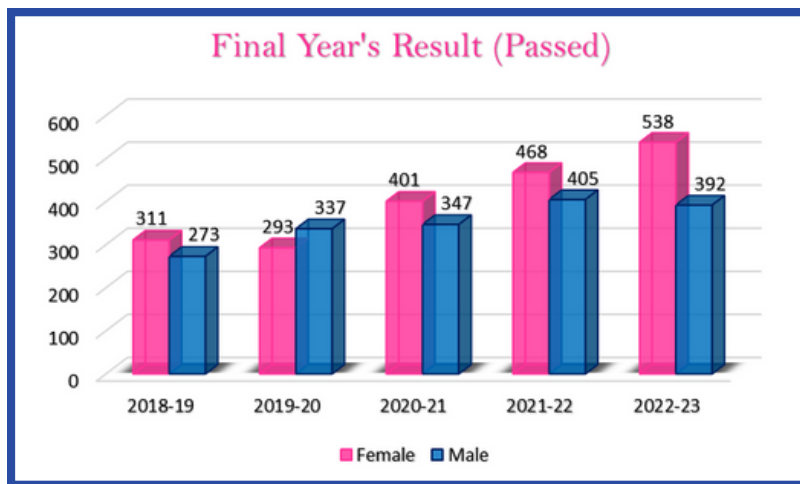


Table 4 : Gender Wise Distribution of Final Result of Students during the Period 2018-19 to 2022-23

Year	Total Passed out Student			Student Scoring more than or equal to 60% marks		
	Female	Male	Total	Female	Male	Total
2018-19	311	273	584	130	88	218
2019-20	293	337	630	121	111	232
2020-21	401	347	748	274	229	503
2021-22	468	405	873	465	384	849
2022-23	538	392	930	507	385	892



Female students are performing better than boys

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The performance of female students is remarkable

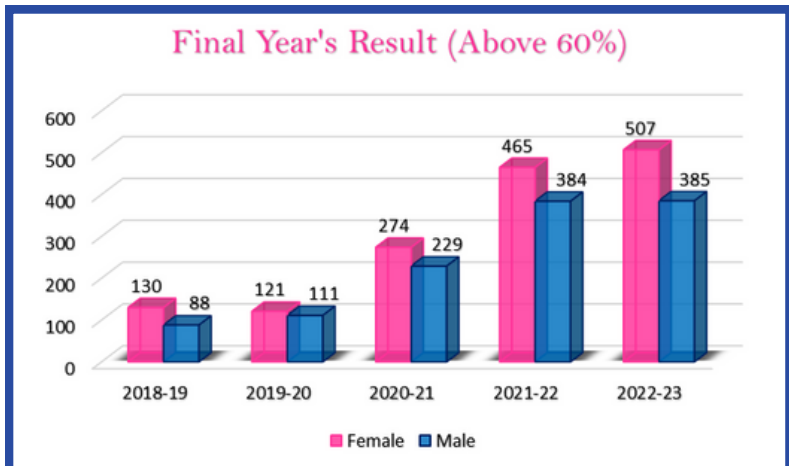
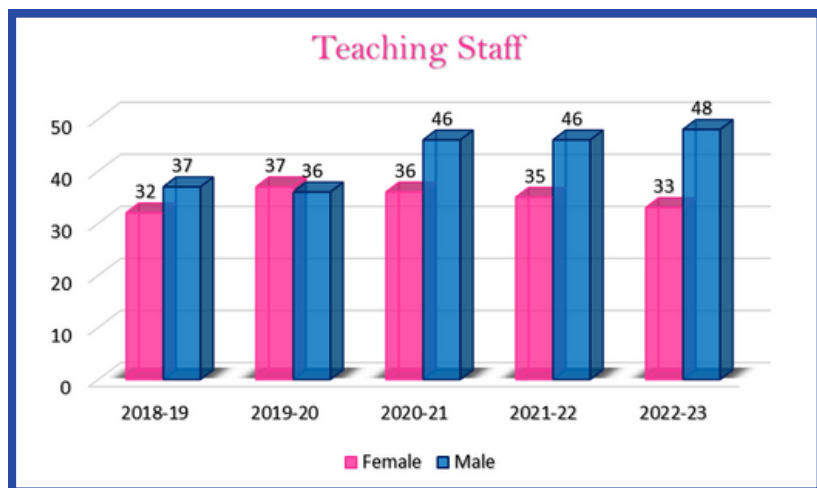


Table 5 : Gender Wise Distribution of Teaching and Non - Teaching Staff during the Period 2018-19 to 2022-23

Year	Teaching Staff			Non - Teaching Staff		
	Female	Male	Total	Female	Male	Total
2018-19	32	37	69	4	29	33
2019-20	37	36	73	4	24	28
2020-21	36	46	82	3	19	22
2021-22	35	46	81	4	16	20
2022-23	33	48	81	4	15	19



The number of male teachers is more than the female teachers

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Predominance of male staff is noticeable

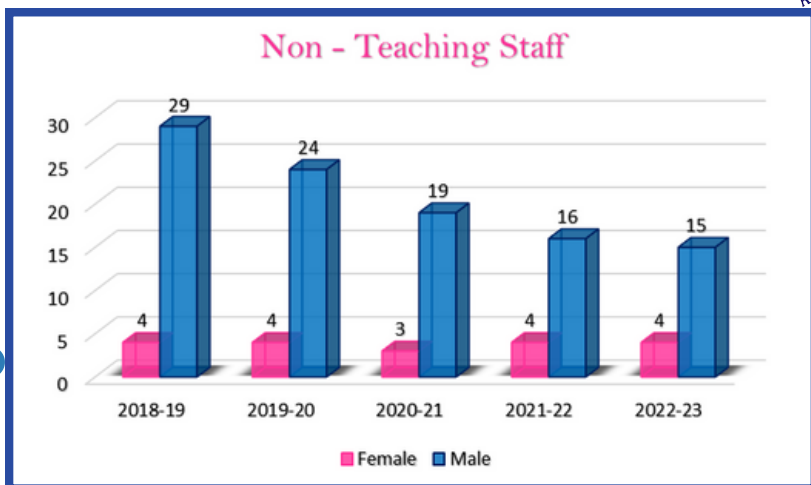
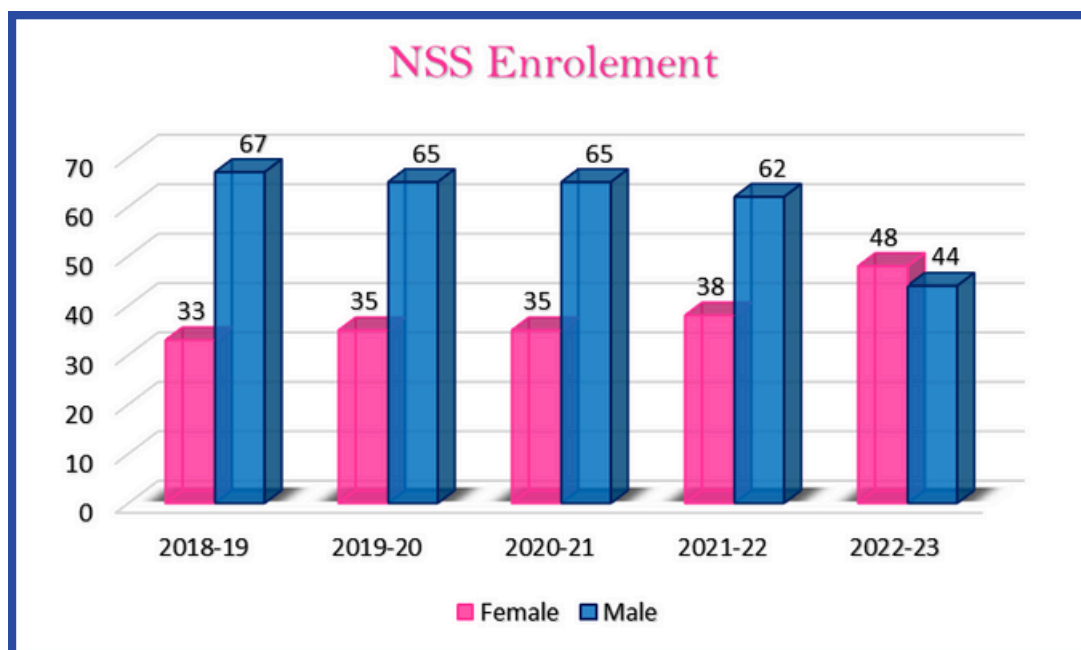


Table 6 : Gender Wise Distribution of Total Students Participation in NSS during the Period 2018-19 to 2022-23

Academic Year	Female	Male	Total
2018-19	33	67	100
2019-20	35	65	100
2020-21	35	65	100
2021-22	38	62	100
2022-23	48	44	92



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The number of total enrollment of students is fixed at 100 per year.

The selection of NSS volunteers is on the basis of their aptitude towards selfless service to the society and also their ability to work in groups. **It is a matter of pride to see that participation of girls is increasing in these activities.**



Is your college a gender-happy place?

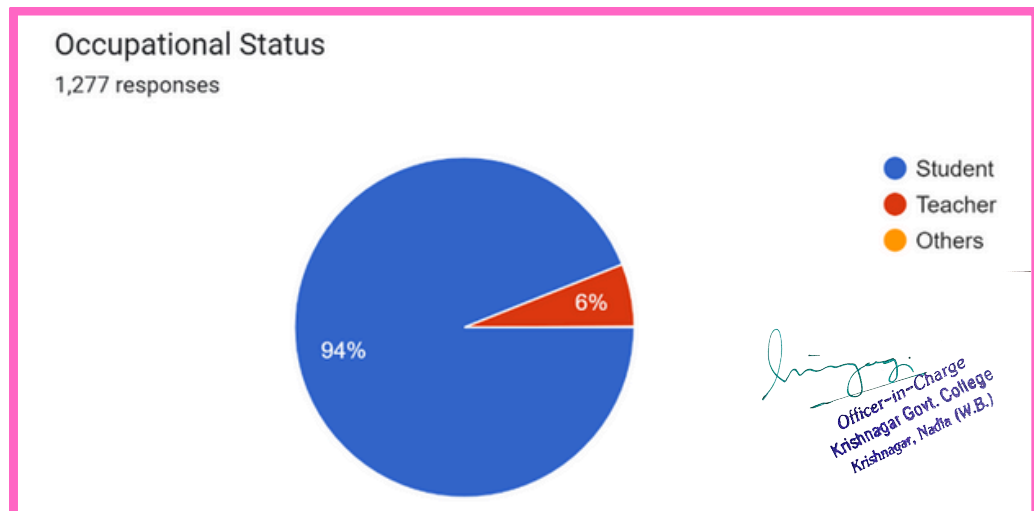
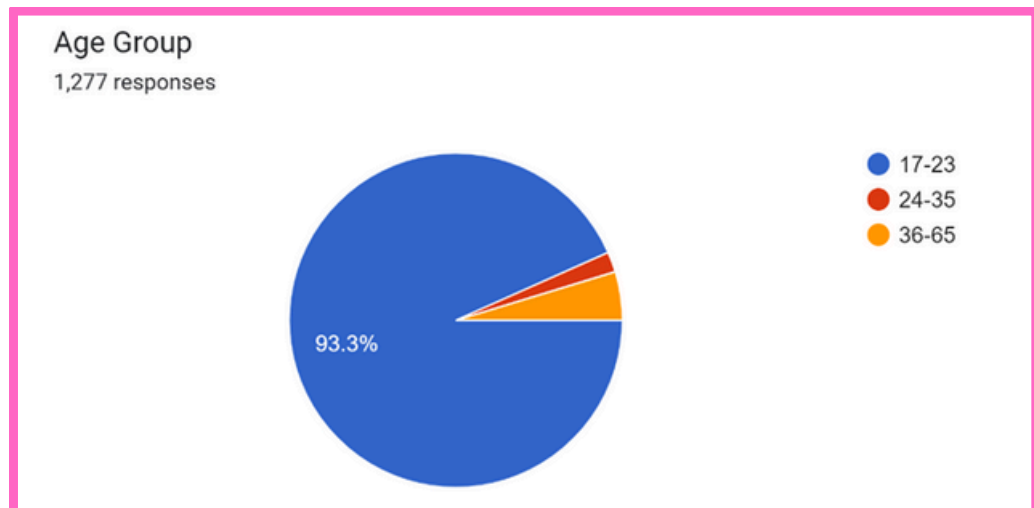
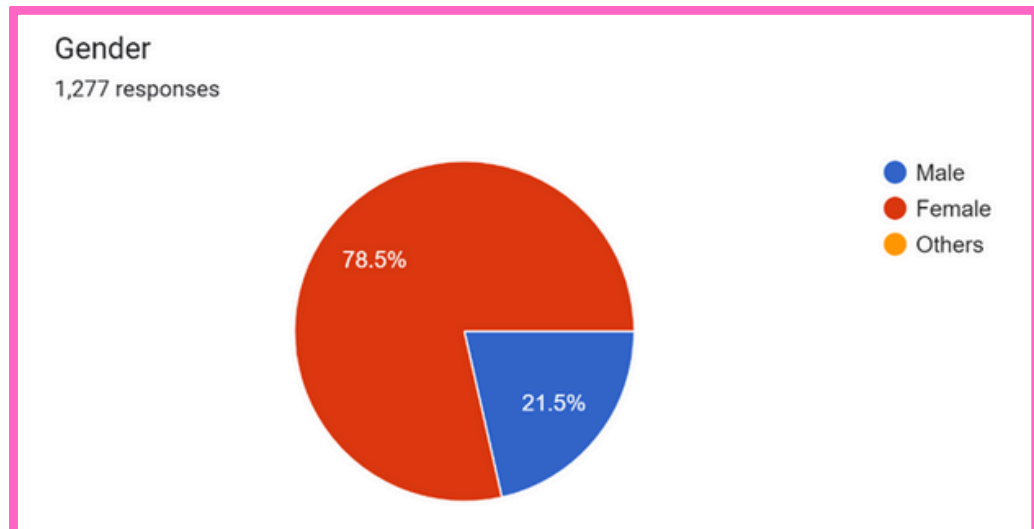
- Does the college conduct gender sensitization programme as a part of its curriculum?
- Does the college conduct gender awareness programme as a part of its curriculum?
- Are adequate amenities (e. g. toilets, first aid facility, common room, CCTV) available in the college campus?
- Are adequate facilities available inside the toilet, keeping in mind the need of girl students?
- Is adequate electricity facility available in corridors, class rooms, common areas and toilets?
- Have adequate security arrangements been made in the campus and common areas?
- Do you think a women cell is needed for improving the issue of gender equality in the college?
- If needed, do you know how and where to lodge a complaint?
- Is there any grievance redressal cell in the college?
- Are there female faculties in the grievance redressal cell?
- Does the classroom offer equal opportunities to all genders?
- Does the college offer equal opportunities to all genders in sports?
- Are there equal opportunities for all genders to work with various clubs and forums?
- Does the college offer equal opportunities to all genders for free and fair expression of ideas?


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GENDER AUDIT SURVEY



The auditor team conducts a survey and collected responses from students, teaching as well as non teaching staffs of the college. Following is a summary of the responses received:



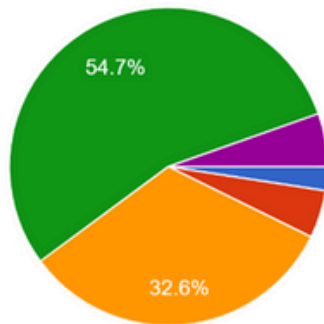
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GENDER AUDIT SURVEY



The college conducts gender sensitization programme as a part of its curriculum.

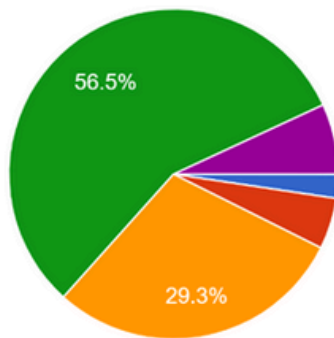
1,277 responses



- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

The college conducts gender awareness programme as a part of its curriculum.

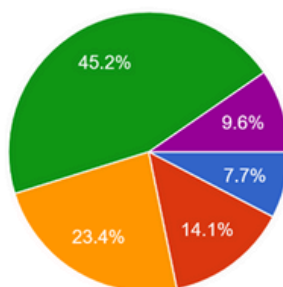
1,277 responses



- Strongly Disagree
- Disagree
- Neutral
- Agree
- Strongly Agree

Adequate amenities are available in the college campus (e. g. toilets, first aid facility, common room, CCTV)

1,277 responses



- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

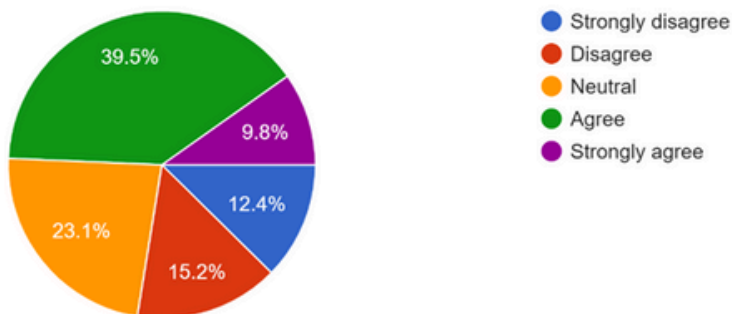
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GENDER AUDIT SURVEY



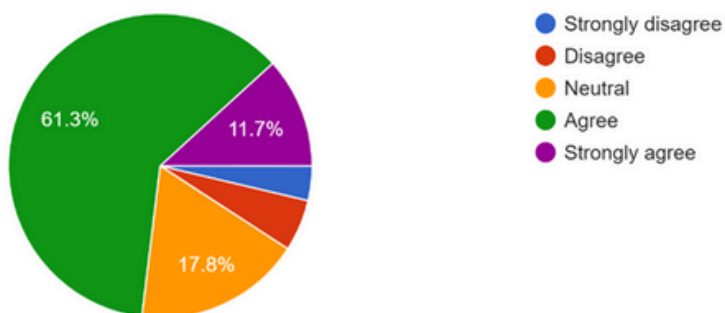
Adequate facilities are available inside the toilet, keeping in mind the need of girl students.

1002 responses



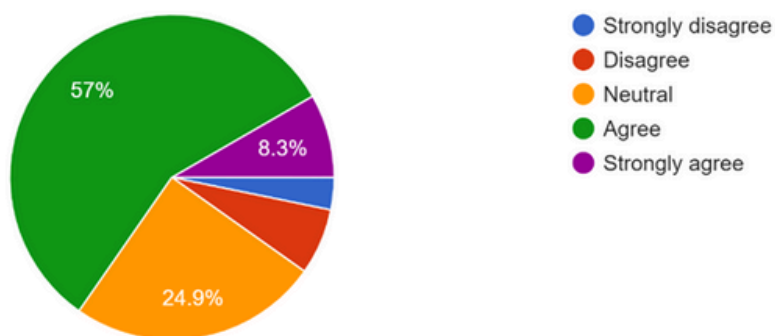
Adequate electricity facility is available in corridors, class rooms, common areas and toilets

1,277 responses



Adequate security arrangements have been made in the campus and common areas.

1,277 responses

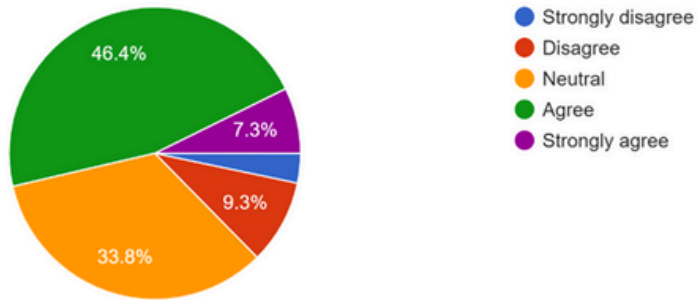


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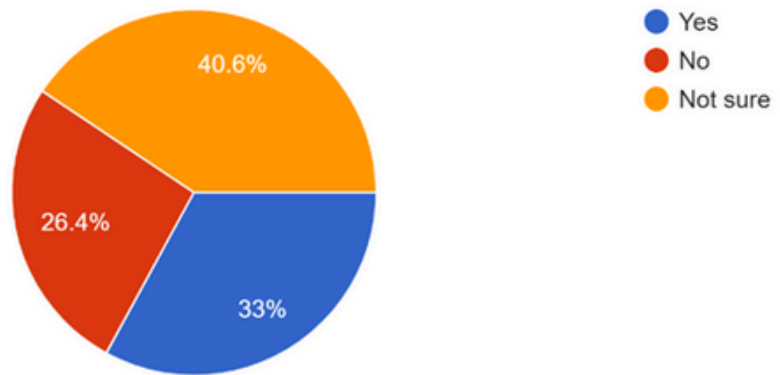
GENDER AUDIT SURVEY



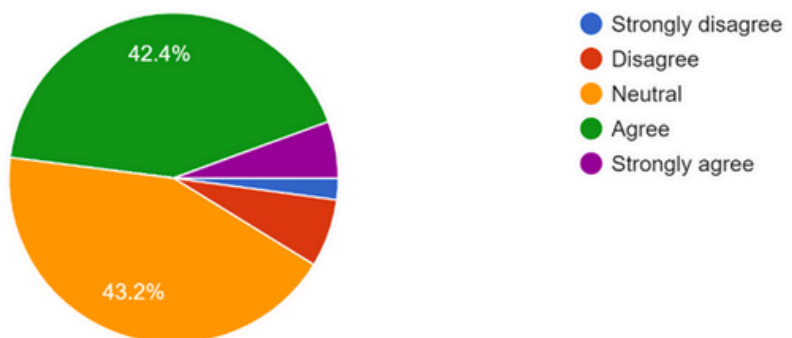
Do you think a women cell is needed for improving the issue of gender equality in the college?
1,277 responses



If needed, do you know how and where to lodge a complaint?
1,277 responses



A grievance redressal cell has been set up.
1,277 responses



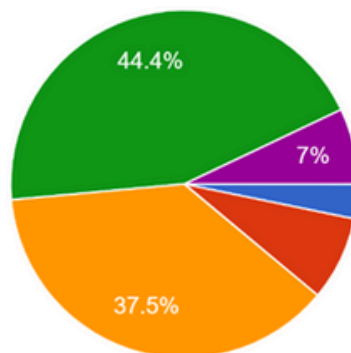
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Officer-in-Charge
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Krishnagar, Nadia (W.B.)

GENDER AUDIT SURVEY



There are female faculties in the grievance redressal cell.

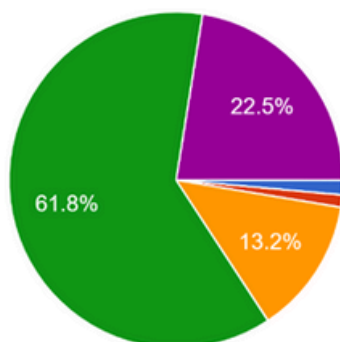
1,277 responses



- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

The classroom offers equal opportunities to all genders.

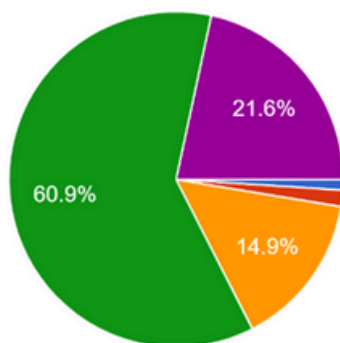
1,277 responses



- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

The college offers equal opportunities to all genders in sports.

1,277 responses



- Strongly disagree
- Disagree
- Neutral
- Agree
- Strongly agree

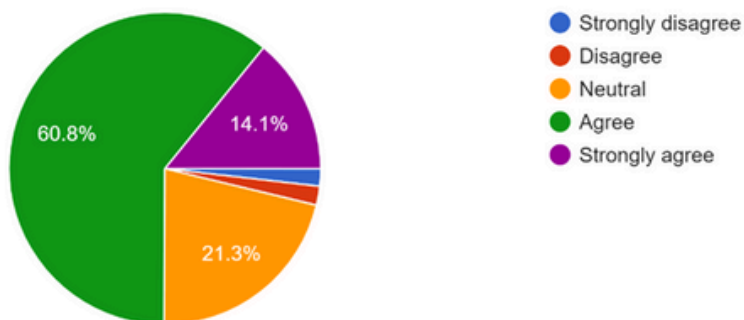
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GENDER AUDIT SURVEY



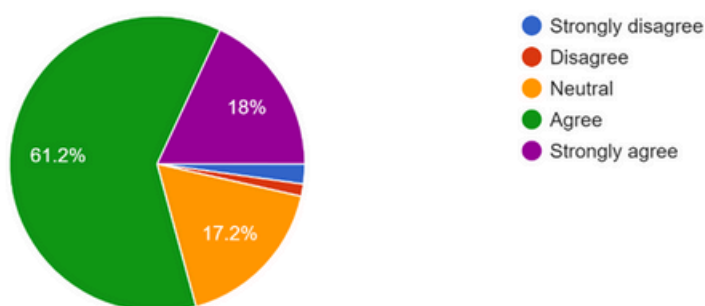
There are equal opportunities for all genders to work with various clubs and forums.

1,277 responses



The college offers equal opportunities to all genders for free and fair expression of ideas.

1,277 responses



SALIENT FINDINGS:

- Most importantly it is observed that, in academic performance, success rate of female students (58%) is comparatively higher than male students (42%).

According to the perception of respondents reflected in the survey report we have the following observations:

- College conducts gender sensitization and awareness programmes as a part of curriculum (around 65% positive responses are reported) .
- College has safety measures such as well-equipped security guards, adequate lights and CCTV facilities at campus.
- A Grievance Redressal Cell is working well.
- College also provides equal opportunities for all students irrespective of gender in classroom, sports or various clubs and forums (around 80% positive responses are reported).
- Finally it is noted that, the faculties are trying their level best to maintain the healthy and unbiased atmosphere in the college.


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RECOMMENDATIONS

- Enhance gender sensitization programme.
- Address neutral responses effectively.
- Increase awareness of Grievance Redressal Cell.
- Promote equal opportunities in co-curricular activities.
- Required more female toilets with disposal bins and sanitary vending machine.
- Implement faculty training programme on gender sensitivity.
- Form Women Cell to improve the issue of gender equality.
- Develop skills among the female students by means of various workshops and training programmes through Women Cell for their overall personality development as well as self-reliance among them.



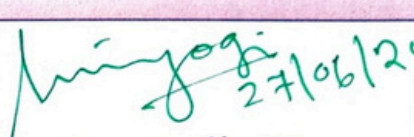
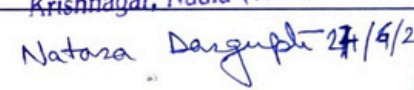
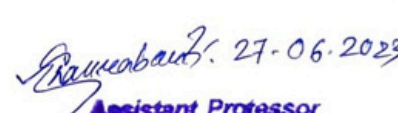
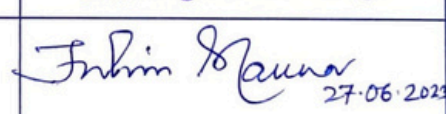
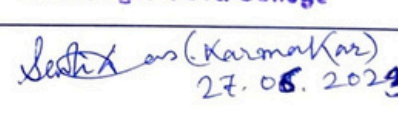
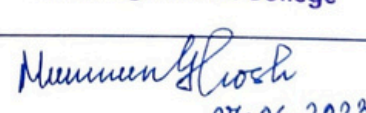
CONCLUSION

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Gender sensitization programmes of the college have received significant support and positive response, indicating their effectiveness in promoting gender equality. The establishment of a Grievance Redressal Cell has been accepted unanimously. Besides education, the efforts of the college in providing equal access for promoting gender equality in co-curricular activities have been recognized and appreciated. Respondents get equal opportunities for expressing opinions and ideas. They can actively participate in clubs and forums without any gender discrimination. For all students, adequate support services and resources are provided by the college. The findings highlight the importance of maintaining inclusivity and equal opportunities to ensure a positive and healthy educational experience.

The survey helps the college to identify its strengths in promoting gender sensitivity and equality. It also highlights those areas that may require further improvement, suggesting the college authority to address any concerns and make necessary changes to create a more inclusive and supportive environment for all students.

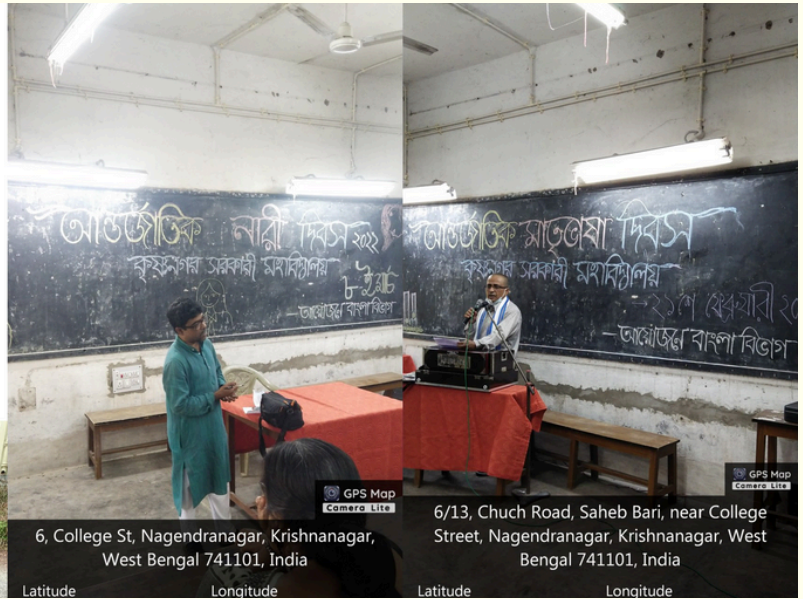
This is to verify that the following members of the Gender Audit Team reported facts and findings as found on ground:

SL. NO.	NAME	DESIGNATION	SIGNATURE
01	Dr. Sobhon Niyogi (Officer-in-Charge)	Chairman	 27/06/2023 Officer-in-Charge Krishnagar Govt. College Krishnagar, Nadia (W.B.)
02	Dr. Natasa Dasgupta (Principal, Krishnagar Women's College & Member, WBTGPDB)	External Member	 27/6/2023 Dr. Natasa Dasgupta Principal Krishnagar Women's College Krishnagar, Nadia.
03	Dr. Edha Chakarabarti (Assistant Professor)	Jt. Convenor	 27-06-2023 Assistant Professor WBES Krishnagar Govt. College
04	Sri Tuhin Manna (Assistant Professor)	Jt. Convenor	 27-06-2023 Assistant Professor WBES Krishnagar Govt. College
05	Smt. Sewli Das Karmakar (Associate Professor)	Internal Member	 27.06.2023 Associate Professor WBES Krishnagar Govt. College
06	Dr. Munmun Ghosh (Assistant Professor)	Internal Member	 27.06.2023 Assistant Professor WBES Krishnagar Govt. College




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THE IMAGE GALARY



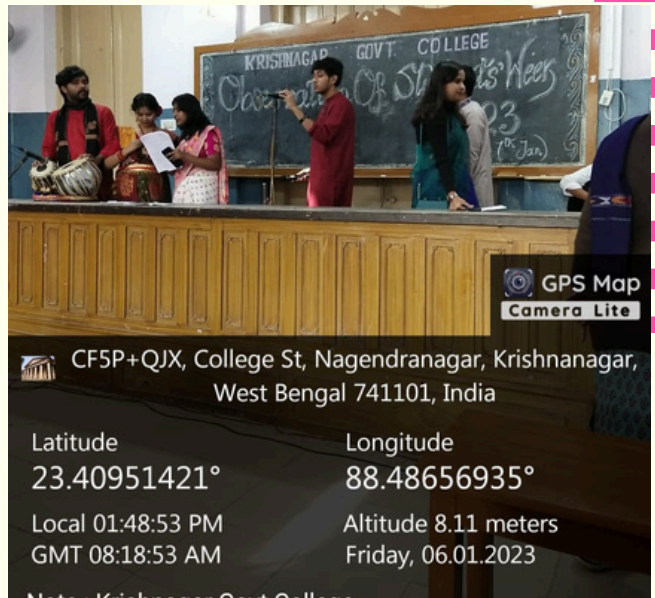
ANANDADHARA



BASANTA UTSAB



STUDENT WEEK OBSERVATION



ENVIROMENT DAY



1206/A, Rajapara, Last French Colony, Kolupukur
Panchanantala, Kolkata, West Bengal 712136, India

Latitude 22.86775733° Longitude 88.35705988°
Local 12:33:47 PM Altitude 12 meters
GMT 07:03:47 AM Monday, 06.03.2023

Note : Krishnagar Govt College

CF5P+QJX, College St, Nagendranagar, Krishnanagar, West
Bengal 741101, India

Latitude 23.4094488° Local 01:28:04 PM
GMT 07:58:04 AM



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Krishnagar, Nadia (W.B.)



Government of West Bengal
Office of the Principal

Krishnagar Government College

Krishnagar, Nadia, PIN- 741101

Phone: 03472-252863/252810 Fax: 03472 252810

Email: kgcollege1846@gmail.com

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Memo No.....

Date

Green Audit

Krishnagar Government College



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1848
KRISHNAGAR COLLEGE

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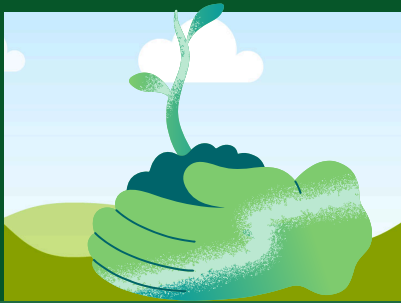
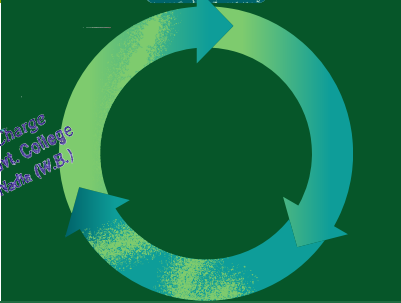
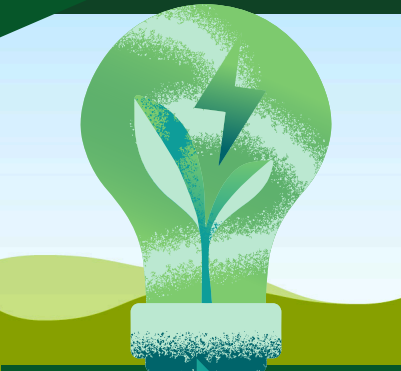
GREEN, ENERGY & ENVIRONMENT AUDIT REPORT

2022 - 2023

Krishnagar Government
College
Krishnagar, Nadia, W.B



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Krishnagar Govt. College
Krishnagar, Nadia (W.B.)



Report Prepared by
**INSTITUTE OF NATURE RESEARCH
AND CONSERVATION (INRC)**



INSTITUTE OF NATURE RESEARCH

AND CONSERVATION

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Registration Number: 190100239/2023

Reference No:

Date-17/11/23

GREEN, ENVIRONMENT AND ENERGY AUDIT CERTIFICATE


ACADEMIC YEAR 2022-2023

This is to certify that Krishnagar Government College located at Krishnagar, Nadia, West Bengal, Pin-741101, has steadfastly strived to establish a robust and ecologically sustainable environment, dedicated to the preservation of nature and biodiversity. Institute of Nature Research and Conservation (INRC) expresses satisfaction following the successful completion of the Green, Environment, and Energy Audit for the academic year 2022-2023.


This accomplishment has been made possible through the active and moral support extended by the Honorable Officer-in-Charge, the IQAC Team, the dedicated teaching and support staff and the enthusiastic student body of Krishnagar Government College. Their collective efforts have significantly contributed to the creation of a positive and eco-friendly atmosphere on the campus.

The commitment demonstrated by both faculty and students towards environmental improvement and the conservation of biodiversity is truly commendable. This proactive approach aligns with the highest standards of ecological stewardship, reflecting a genuine dedication to sustainable practices.

This certificate serves as recognition for the outstanding efforts undertaken by Krishnagar Government College to foster a healthier and more environmentally conscious campus. We applaud their commitment to creating a positive impact on the environment and encourage the continuation of such admirable initiatives in the future.


DR. SUMIT MANNA
Lead Auditor EMS
UIN: 840180406937
INRC

 Secretary
INRC
Satyen Bose Road, Sankrail
Howrah, W.B., 711304


DR. AMIT MANNA
Lead Auditor EnMS
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 Vice-President
INRC
Satyen Bose Road, Sankrail
Howrah, W.B., 711304




Officer-in-Charge
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Audit Committee Members

<u>Sl No</u>	<u>Name</u>	<u>Area of interest</u>	<u>Designation</u>
1.	Dr. Sumit Manna	Ecology, Environment, Biodiversity Economics and Conservation	Assistant Professor HOD. Dept. of Botany and IQAC coordinator Moyna College
2.	Dr. Amit Manna	Energy management, green synthesis of Nano particle and characterization, Spectroscopic analysis	Vice President Institute of Nature Research and Conservation & Former Project Scientist Spectroscopic Analysis Team NASA
3.	Mr. Kalipada Maity	Human Psychology and attitude towards Biodiversity	Associate Professor Dept. of Philosophy Moyna College
4.	Mr. Nilanjan Sadhukhan	Molecular Taxonomy and Biodiversity	Faculty (SACT) Dept. of Botany Moyna College





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Important dates and initiatives

SL NO.	PURPOSE	DATE	REMARKS
1	Communication with College authority	04.05.2023	Discussion about term and conditions
2	Collection of information about the College	08.05.2023	Introduction to Administrative Officer
3	Visit of campus and observation	14.06.2023	Outdoor observation to capture photographs and GPS coordinates
4	Campus enquiry	14.06.2023	Physical enquiry with experts
5	Departmental visit and Enquiry	14.06.2023	Laboratory enquiry
6	Interview with other stake holder	14.06.2023	Meeting with other stake holders
7	Interview with staff	14.06.2023	Collection of different Information
8	Review data and Assessment	14.06.2023	Data generation and drawing of graphs
9	Pre-closing meeting	14.06.2023	Meeting with IQAC
10	Closing meeting	28.08.2023	Pre-submission of the Report
11	Submission of audit report	17.11.2023	Submission of the Report

- ❖ The Audit team started the audit at the Krishnagar Government College Campus on 14th June, 2023




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Secondly, green & energy audits contribute to cost savings by identifying inefficiencies in resource utilization and recommending measures to improve energy efficiency and reduce operating costs. This financial efficiency not only benefits the institution's bottom line but also frees up resources for investment in academic programs and student services. Furthermore, green & energy audits provide valuable educational opportunities for students, faculty, and staff. By involving stakeholders in the audit process, educational institutions raise awareness about environmental issues, promote sustainability literacy, and foster a culture of environmental stewardship. These audits serve as interdisciplinary learning experiences, integrating concepts from various fields to address real-world environmental challenges. Lastly, green & energy audits enhance the reputation of educational institutions and position them as leaders in environmental stewardship. A strong sustainability profile attracts environmentally conscious students, faculty, and donors, enhancing institutional prestige and competitiveness in an increasingly competitive higher education landscape.

Overall, the significance of green & energy audits in educational institutions extends beyond environmental sustainability to encompass financial efficiency, educational opportunities, and institutional reputation, making them indispensable tools for promoting sustainability and driving positive change.

Aim of Green & Energy Audit

Evaluation of Green Campus Management

Maintaining a green campus not only enhances the aesthetic appeal but also contributes to environmental sustainability. Through the evaluation and management of flora and fauna, institutions can assess the ecological balance and identify the need for initiatives like seasonal plantation programs. This fosters biodiversity conservation and underscores the institution's commitment to environmental stewardship.

Evaluation of Solid Waste Management

Effective solid waste management is essential for minimizing environmental pollution and promoting resource efficiency. Through evaluation, institutions can analyze the composition of solid waste, identify disposal practices, and explore opportunities for waste reduction and recycling. This promotes a circular economy approach, where waste is viewed as a resource, thereby reducing environmental impact and promoting sustainability.




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Evaluation of Water Utilization

Water is indispensable for life, and its scarcity is a growing concern, especially in regions like India facing water stress. Quantifying water usage and wastage through evaluation aids in understanding current utilization patterns and promotes sustainable practices for the future. For instance, identifying and addressing issues like leaky taps can lead to significant water savings, contributing to water security and resource conservation.

Evaluation of Energy Utilization

Assessing energy utilization involves quantifying various aspects such as energy sources, consumption patterns, and efficiencies. This evaluation facilitates the identification of opportunities for optimizing energy usage, such as transitioning to energy-efficient technologies like LED bulbs. By understanding energy consumption across different sectors, institutions can strive towards reducing their environmental footprint and operating more efficiently.

Evaluation of Plastic Waste Management

Plastic waste poses significant environmental challenges due to its persistence and detrimental effects on ecosystems. By assessing plastic waste production and management practices, institutions can develop strategies to reduce plastic usage, promote recycling, and minimize environmental harm. This contributes to mitigating the adverse impacts of plastic pollution and advancing towards a more sustainable future.

Evaluation of Carbon Footprint Management

Carbon footprint management is crucial for addressing climate change and mitigating the impacts of greenhouse gas emissions. Through assessment, institutions can identify sources of carbon emissions, implement measures to reduce emissions, and promote eco-friendly practices. This fosters environmental responsibility, contributes to climate action efforts, and supports the transition towards a low-carbon economy.



Procedure of Green & Energy Audit


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Comparative assessment and evaluation of various resources utilized by the institution contribute to sustainability efforts, fostering the development of an eco-friendly campus. The green & energy audit process in the college typically involves several key steps to comprehensively assess the campus's environmental performance and sustainability practices

Preparation and Planning

Define the scope and objectives of the green audit, establish a multidisciplinary audit team, and develop a detailed audit plan outlining the audit methodology, timeline, and resource requirements.

Data Collection and Analysis

Gather relevant data on energy consumption, water usage, waste generation, transportation, procurement, and other environmental indicators. Analyze the data to identify trends, patterns, and areas of improvement.

Site Visits and Observations

Conduct site visits to assess environmental conditions, infrastructure, and operational practices firsthand. Identify opportunities for energy conservation, water efficiency, waste reduction, and sustainable landscaping.

Stakeholder Engagement

Engage with students, faculty, staff, administrators, and other stakeholders through surveys, interviews, and focus groups to gather feedback, insights, and suggestions for improving sustainability practices.

Documentation and Reporting

Document audit findings, observations, recommendations, and best practices in a comprehensive audit report. Present the report to relevant stakeholders, including senior management, for review, feedback, and decision-making.

Implementation and Monitoring

Develop an action plan based on audit recommendations, prioritizing initiatives, setting targets, and assigning responsibilities. Implement sustainable practices, monitor progress, and track performance indicators to ensure continuous improvement.




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About The College



Krishnagar Government College was established following the educational model of the Imperial British Raj, with an emphasis on higher education over mass education, as articulated in Macaulay's 1835 publication. This approach aimed to cultivate an elite class of academia to support the administration within the British domain, albeit being Indians in flesh and blood. Over time, recognizing the need for women's education, the college transitioned into a co-educational institution in 1932. Presently, the primary objective is to provide high-quality higher education to all, irrespective of gender, caste, creed, religion, or socio-economic status. Situated in the District Head Quarter of Nadia District, Krishnagar, amidst a rural atmosphere, the broader mission extends to empowering students to improve their socio-economic status and foster a sense of national citizenship.

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The journey of this esteemed educational institution began on November 28, 1845, in a rented house at Hatarpara. with the approval of Lord Hardinge, the Governor-General of India at the time, the college was formally inaugurated on January 1, 1846, receiving a grant from the British Government. Generous contributions of land from King Srishachandra Roy of Nadia and Queen Srimati Swarnamoyee of Cossimbazaar, Murshidabad, along with financial support from local elites, facilitated the construction of the grand Krishnagar Government College building, which became operational on June 1, 1856.



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In June 1848, the Council of Education assumed administrative control, which later transferred to the Director of Public Instruction, Government of Bengal, in January 1855. The college's academic offerings expanded over the years, with the introduction of B.A. and Law classes in 1865, followed by the inception of the M.A. course in 1870 and the Survey Department in 1872. Notably, the college underwent reorganization in 1908, leading to the abolition of M.A. and Law courses.

Since 1999, Krishnagar Government College has been affiliated with the University of Kalyani, witnessing further academic advancements with the introduction of post-graduate teaching in various departments including Geography and Philosophy in 2002, Bengali in 2008, and Zoology in 2010. For the past 179 years, this institution has been a testament to resilience, adapting to political shifts, socio-cultural exchanges, and educational reforms. Nestled a few kilometers from Krishnagar railway station, amidst serene surroundings, this haven of learning, dedicated to Goddess Saraswati, offers an idyllic environment with vast playgrounds and hostel facilities, presenting a picturesque setting for academic pursuits.



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Environmental Quality Assessment



Environmental monitoring and quality assessment are defined as the methodical analysis of air, water, and soil to evaluate the condition of ecosystems. This process includes measuring pollutants present in the air, water, and soil. Through systematic monitoring and analysis, environmental quality assessment helps to identify the effects of pollution and educate the public to raise awareness of environmental conditions.

Types of Environmental Quality Assessment

- Air Quality Assessment
- Water Quality Assessment
- Soil Quality Assessment

Air Quality Assessment



Parameters monitored

- Air Quality Index or AQI,
- Particulate Matter or PM 2.5 ($\mu\text{g}/\text{m}^3$),
- Particulate Matter or PM 10 ($\mu\text{g}/\text{m}^3$),
- Relative Humidity (%) and
- Temperature ($^{\circ}\text{C}$)



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Air Quality Index or AQI

The Air Quality Index is acquired by measuring emissions of eight major pollutants present in the air: Particulate matter (PM_{2.5} and PM₁₀), Ozone (O₃), Carbon Monoxide (CO), Nitrogen Dioxide (NO₂), Sulphur Dioxide (SO₂), Lead (Pb) and Ammonia (NH₃) emissions. Readings are noted every hour. Each country has their air quality indexes based on its air quality standards.

The government agencies are responsible for communicating to the public about the health hazards and how to keep a check on them. Under the Swachh Bharat Abhiyan, the National Air Quality Index was launched in September 2014 in New Delhi to measure India's air quality index.

Categories of Air Quality Index

The National Air Quality Index has set up six AQI categories: Good, Satisfactory, Moderately polluted, Poor, Very Poor and Severe. Each category specifies health impacts associated with it as mentioned below given table:

**CENTRAL POLLUTION CONTROL BOARD'S
AIR QUALITY STANDARDS**

AIR QUALITY INDEX (AQI)	CATEGORY
0-50	Good
51-100	Satisfactory
101-200	Moderate
201-300	Poor
301-400	Very Poor
401-500	Severe

AQI Category	Associated Health Impact
Good (0 to 50)	Minimal impact
Satisfactory (51 to 100)	May cause minor breathing discomfort to sensitive people
Moderately Polluted (101 to 200)	May cause breathing discomfort to the people with lung disease such as asthma and discomfort to people with heart disease, children and older adults
Poor (201 to 300)	May cause breathing discomfort to people on prolonged exposure and discomfort to people with heart disease
Very Poor (301 to 400)	May cause respiratory illness to the people on prolonged exposure. Effect may be more pronounced in people with lung and heart diseases
Severe (401 to 500)	May cause respiratory effects even on healthy people and serious health impacts on people with lung/heart diseases. The health impacts may be experienced even during light physical activity



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Air Quality Index Measurement

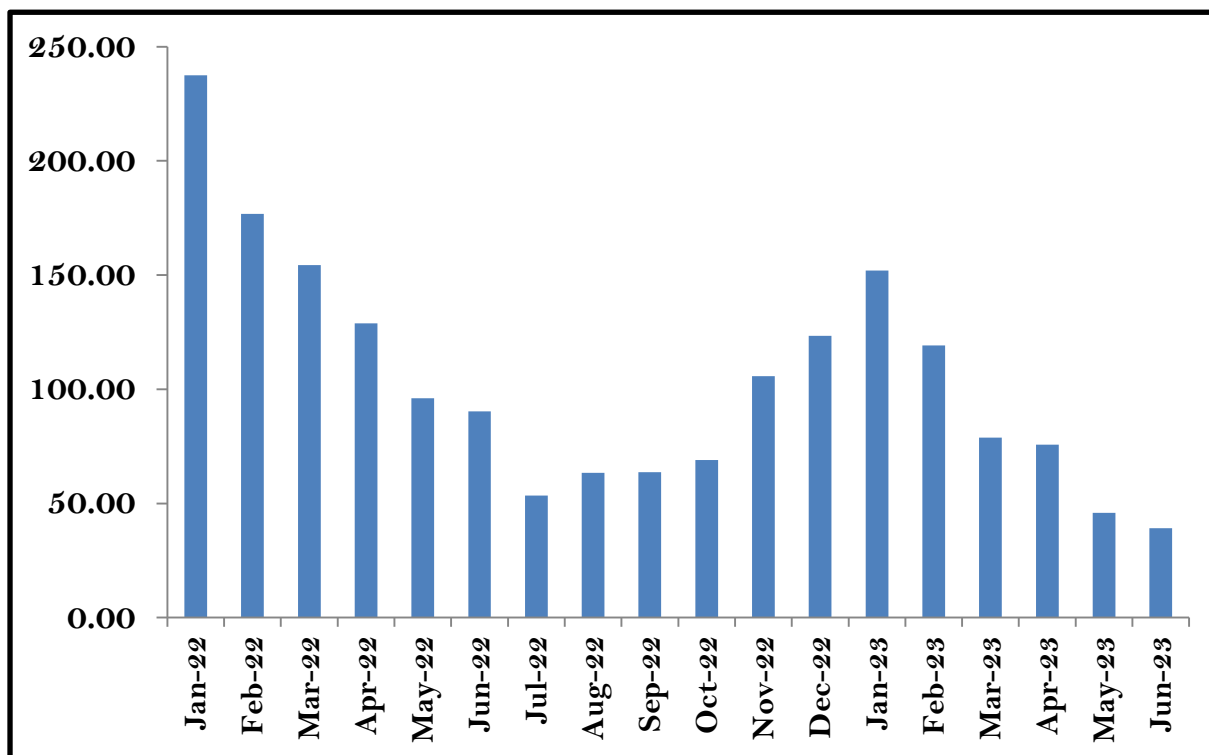
The Air Quality Meter was installed on the college campus in December 2021 and became fully operational by January 2022. As a result, the Air Quality Index of the campus was monitored from January 2022 to June 2023. The values of AQI are given in the table below.

Months	AQI
January 2022	237.52
February 2022	176.74
March 2022	154.37
April 2022	128.87
May 2022	96.11
June 2022	90.32
July 2022	53.38
August 2022	63.42
September 2022	63.74
October 2022	68.95
November 2022	105.77
December 2022	123.35
January 2023	151.93
February 2023	119.19
March 2023	78.86
April 2023	75.78
May 2023	45.88
June 2023	39.11

Table: AQI values were recorded in different months



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Graphical representation of AQI recorded between January 2022 and June 2023

Analysis



The AQI values ranged from 237.54 to 16.03. AQI levels are typically high in winter and comparatively lower during the monsoon period. In January 2022, the highest recorded AQI value was 237.54, indicating poor air quality with significant health impacts, while July 2022 recorded the lowest value of 16.03, indicating good air quality with minimal health impact. The data indicates a decrease in AQI values from January 2022 to July 2022, followed by another decrease after January 2023.



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Particulate Matters

$PM_{2.5}$ and PM_{10} ($\mu g/m^3$)

Airborne particulate matter (PM) is not a single pollutant, but rather is a mixture of many chemical species. It is a complex mixture of solids and aerosols composed of small droplets of liquid, dry solid fragments, and solid cores with liquid coatings. Particles vary widely in size, shape and chemical composition, and may contain inorganic ions, metallic compounds, elemental carbon, organic compounds, and compounds from the earth's crust. Particles are defined by their diameter for air quality regulatory purposes. Those with a diameter of 10 microns or less (PM_{10}) are inhalable into the lungs and can induce adverse health effects. Fine particulate matter is defined as particles that are 2.5 microns or less in diameter ($PM_{2.5}$). Therefore, $PM_{2.5}$ comprises a portion of PM_{10} .

Sl. NO.	Pollutant	Time weighted average	Concentration in ambient air	
			Industrial, residential, rural and other area	Ecologically sensitive area
1	PM 10	Annual	60	60
		24 hours	100	100
2	PM 2.5	Annual	40	40
		24 hours	60	60

Table: Maximum permissible limit of particulate matter concentration in ambient air
Reference: National Ambient Air Quality Standard, 2009

Health effects of $PM_{2.5}$

Particulate Matter ($PM_{2.5}$) refers to tiny particles or droplets in the air that are 2.5 micrometers or smaller in diameter. These particles can penetrate deep into the respiratory system and have numerous adverse effects on human health:



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1. **Respiratory Issues:** PM_{2.5} can cause or exacerbate respiratory conditions such as asthma, bronchitis, and pneumonia. The fine particles can irritate the airways, leading to coughing, wheezing, and shortness of breath.
2. **Cardiovascular Problems:** PM_{2.5} has been linked to an increased risk of heart attacks, strokes, and other cardiovascular diseases. These particles can enter the bloodstream, triggering inflammation and oxidative stress, which can contribute to the development of heart problems.
3. **Reduced Lung Function:** Long-term exposure to PM_{2.5} has been associated with a decline in lung function and the development of chronic respiratory diseases. This can impair the ability to breathe properly and lead to reduced quality of life.
4. **Increased Mortality:** Exposure to high levels of PM_{2.5} has been linked to premature death, particularly among vulnerable populations such as the elderly, children, and individuals with pre-existing health conditions.
5. **Other Health Effects:** PM_{2.5} has also been associated with a range of other health problems, including respiratory infections, allergies, and even neurological disorders.

In conclusion, the adverse effects of PM_{2.5} on human health are significant and wide-ranging, highlighting the importance of efforts to reduce air pollution and protect public health.

Health effects of PM₁₀

Particulate Matter (PM₁₀), consisting of tiny particles with diameters of 10 micrometers or less, poses significant adverse effects on human health. When inhaled, these particles can penetrate deep into the respiratory system, causing various health issues:

1. **Respiratory Problems:** PM₁₀ can irritate the respiratory tract, leading to coughing, wheezing, and shortness of breath. Individuals with pre-existing respiratory conditions such as asthma, bronchitis, or chronic obstructive pulmonary disease (COPD) are particularly vulnerable.
2. **Cardiovascular Issues:** PM₁₀ exposure is associated with an increased risk of cardiovascular diseases such as heart attacks, strokes, and arrhythmias. These particles can enter the bloodstream through the lungs, triggering inflammation and oxidative stress, which contribute to cardiovascular damage.



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3. **Reduced Lung Function:** Prolonged exposure to PM₁₀ has been linked to decreased lung function and development of respiratory diseases over time. Children, whose respiratory systems are still developing, are especially susceptible to these effects.
4. **Increased Mortality:** Long-term exposure to elevated levels of PM₁₀ has been correlated with higher mortality rates, particularly from respiratory and cardiovascular causes.
5. **Aggravation of Existing Conditions:** PM₁₀ exposure can exacerbate symptoms in individuals with pre-existing conditions, leading to more frequent hospitalizations and medical interventions.

Overall, reducing exposure to PM₁₀ through improved air quality regulations and personal protective measures is crucial for safeguarding public health.

Particulate Matters (PM_{2.5} & PM₁₀) Measurement

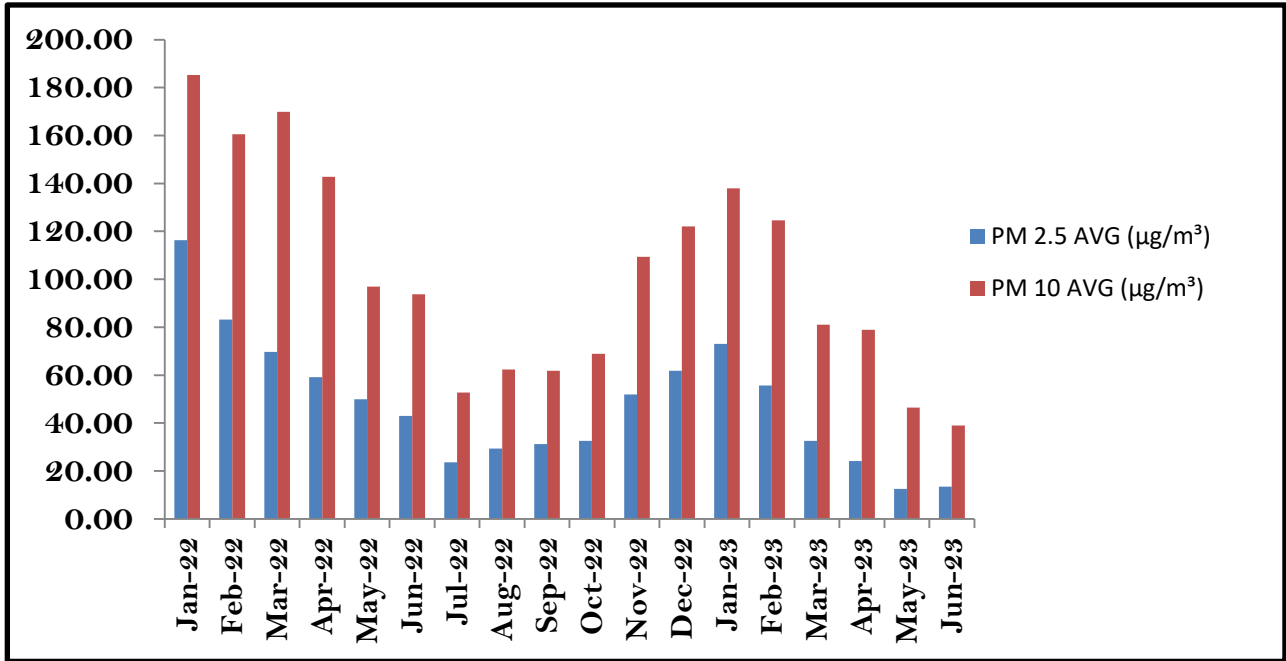
The Air Quality Meter was installed on the college campus in December 2021 and was fully operational by January 2022. Consequently, monitoring of particulate matters (PM₁₀ & PM_{2.5}) on the campus commenced from January 2022 and continued through June 2023. The values of PM₁₀ & PM_{2.5} are given in the table below.

Months	PM_{2.5} AVG (µg/m³)	PM₁₀ AVG (µg/m³)	Months	PM_{2.5} AVG (µg/m³)	PM₁₀ AVG (µg/m³)
January 2022	116.35	185.21	October 2022	32.52	68.91
February 2022	83.19	160.52	November 2022	51.87	109.42
March 2022	69.64	169.88	December 2022	61.78	122.07
April 2022	59.20	142.75	January 2023	73.06	137.91
May 2022	49.88	96.91	February 2023	55.61	124.62
June 2022	43.01	93.77	March 2023	32.60	81.00
July 2022	23.63	52.66	April 2023	24.07	78.92
August 2022	29.29	62.32	May 2023	12.51	46.41
September 2022	31.18	61.85	June 2023	13.39	39.00

Table: Particulate Matters values were recorded in different months



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Graphical representation of PM_{2.5} & PM₁₀ recorded between January 2022 and June 2023

Analysis



Particulate Matter levels were notably high during winter and comparatively lower during the monsoon season. The recorded data from January 2022 to June 2023 reveals a decline in values from January 2022 to July 2022, although exceeding the permissible limit. Subsequently, starting from January 2023, there was a consistent decrease in Particulate Matter levels.

Relative Humidity

Relative humidity (RH) plays a crucial role in human health by influencing comfort levels, respiratory function, and susceptibility to certain health conditions. RH refers to the amount of moisture present in the air relative to the maximum amount the air could hold at a given temperature.

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1. **Comfort:** Optimal RH levels contribute to a comfortable indoor environment, preventing dryness or excessive moisture. Comfortable conditions promote relaxation and productivity while reducing the risk of discomfort-related ailments such as headaches and skin irritations.
2. **Respiratory Health:** RH affects the respiratory system by influencing mucous membrane function and airway hydration. Low RH can lead to dry nasal passages and throat, exacerbating respiratory conditions like asthma and allergies. Conversely, high RH promotes mold and dust mite growth, triggering allergic reactions and respiratory distress.
3. **Disease Transmission:** RH impacts the transmission of certain infectious diseases. Low RH can facilitate the spread of respiratory viruses like influenza, as dry air may compromise the body's natural defenses against pathogens. On the other hand, high RH may promote the survival and transmission of certain bacteria and fungi.

Relative Humidity Measurement

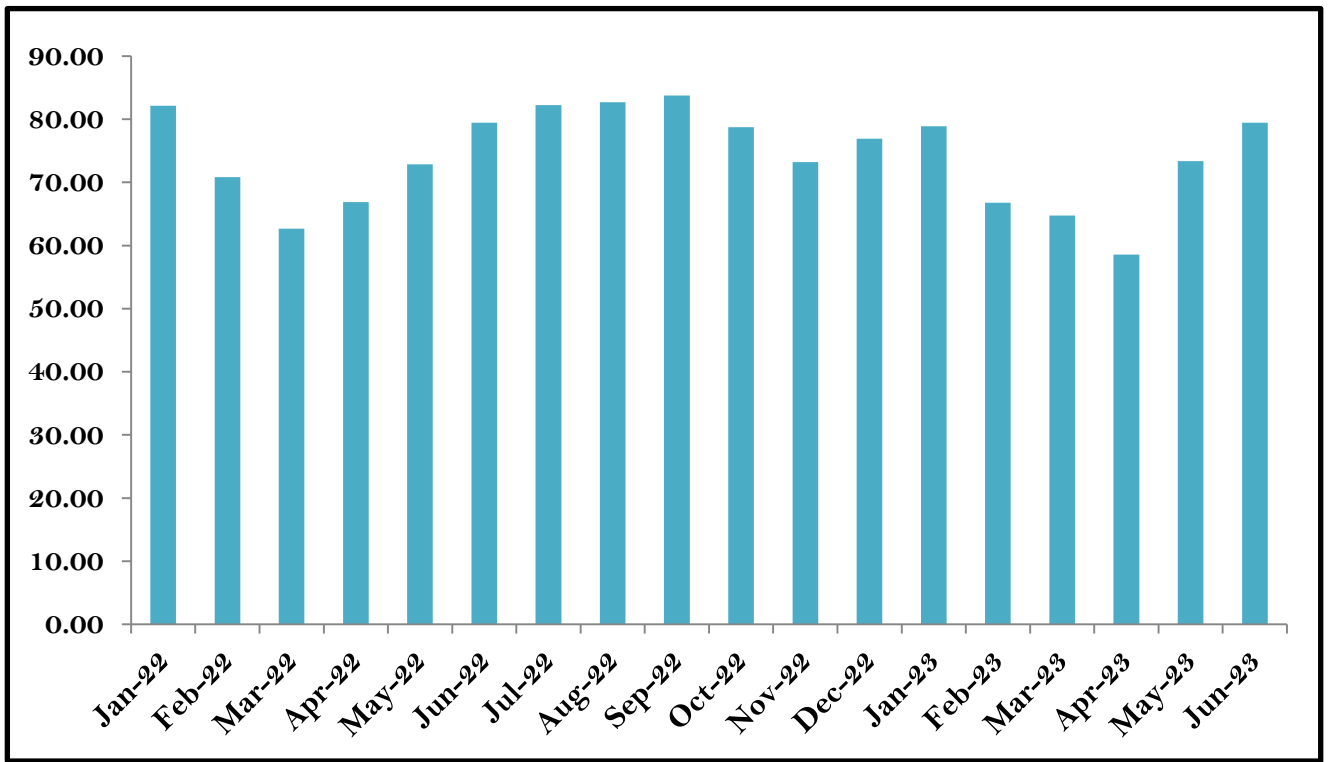
The Air Quality Meter was installed on the college campus in December 2021 and was fully operational by January 2022. Consequently, monitoring of Relative Humidity on the campus commenced from January 2022. The values of Relative Humidity (%) are given in the table below.

Months	RH (%)	Months	RH (%)
January 2022	82.14	October 2022	78.75
February 2022	70.81	November 2022	73.20
March 2022	62.69	December 2022	76.92
April 2022	66.88	January 2023	78.88
May 2022	72.85	February 2023	66.80
June 2022	79.47	March 2023	64.76
July 2022	82.25	April 2023	58.56
August 2022	82.68	May 2023	73.39
September 2022	83.74	June 2023	79.43

Table: Relative Humidity values were recorded in different months



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Graphical representation of Relative Humidity (RH) values (in %) recorded between January 2022 and June 2023

Analysis



Relative humidity was measured between Jan-2022 and June-2023. From January 2022 to June 2023, the recorded relative humidity levels indicate that, with the exception of February to April 2022 and February to April 2023, the values consistently surpassed the recommended range of 40-70%, posing health concerns.

Temperature

Temperature extremes most directly affect health by compromising the body's ability to regulate its internal temperature. Loss of internal temperature control can result in various illnesses, including heat cramps, heat exhaustion, heatstroke, and hyperthermia from extreme heat events. Temperature extremes related to heat can also worsen chronic conditions such as cardiovascular disease, respiratory disease, cerebrovascular disease, and diabetes-related conditions (Ebi, 2021).

Ambient temperature, referring to the temperature of the surrounding air, significantly influences human health in various ways:



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1. ***Heat-related Illnesses:*** High ambient temperatures can lead to heat-related illnesses such as heat exhaustion and heatstroke. Prolonged exposure to extreme heat can cause dehydration, heat cramps, and in severe cases, organ damage or death.
2. ***Cardiovascular Strain:*** Hot temperatures put extra strain on the cardiovascular system, increasing the risk of heart attacks, strokes, and other cardiovascular problems, especially in vulnerable populations such as the elderly and those with pre-existing heart conditions.
3. ***Respiratory Issues:*** Extreme heat can worsen air quality, leading to higher levels of air pollution and exacerbating respiratory conditions such as asthma and chronic obstructive pulmonary disease (COPD). Additionally, high temperatures can increase the formation of ground-level ozone, which can irritate the respiratory system.
4. ***Infectious Diseases:*** Ambient temperature can influence the transmission patterns of certain infectious diseases. Warmer temperatures may promote the proliferation and survival of disease vectors like mosquitoes, leading to increased transmission of diseases such as dengue fever, malaria, and Zika virus.
5. ***Mental Health Effects:*** High temperatures can also impact mental health, contributing to irritability, mood swings, and sleep disturbances. Heat waves can increase stress levels and exacerbate existing mental health conditions.
6. ***Cold-related Health Issues:*** On the other end of the spectrum, low ambient temperatures can pose risks such as hypothermia, frostbite, and exacerbation of respiratory conditions. Cold weather can also strain the cardiovascular system and increase the risk of accidents related to icy conditions.

Overall, ambient temperature fluctuations can have profound effects on human health, underscoring the importance of temperature regulation, hydration, and appropriate protective measures during extreme weather events.




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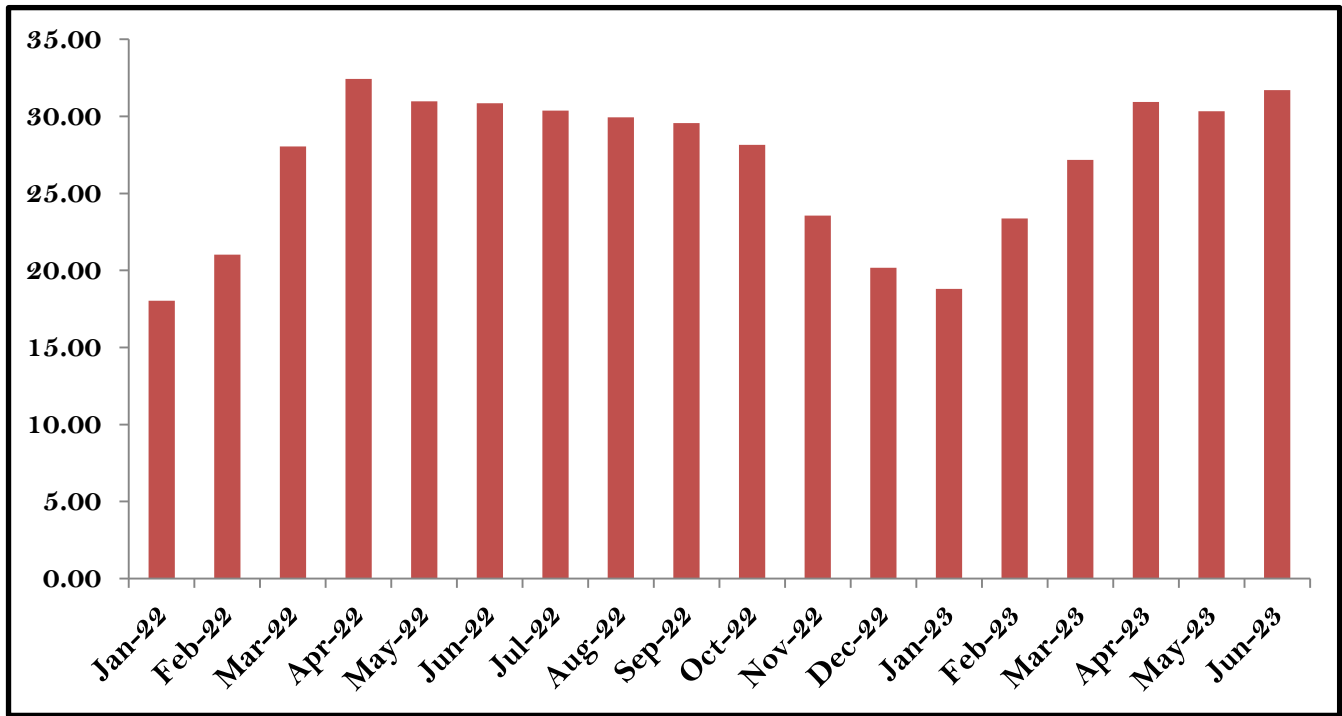
The Air Quality Meter was installed on the college campus in December 2021 and was fully operational by January 2022. As a result, monitoring of temperature commenced from January 2022 and continued through June 2023. The values of temperature are given in the table below.

Months	Temperature (°C)	Months	Temperature (°C)
January 2022	18.02	October 2022	28.14
February 2022	21.02	November 2022	23.56
March 2022	28.04	December 2022	20.17
April 2022	32.42	January 2023	18.80
May 2022	30.99	February 2023	23.38
June 2022	30.86	March 2023	27.18
July 2022	30.37	April 2023	30.93
August 2022	29.93	May 2023	30.32
September 2022	29.57	June 2023	31.69

Table: Month-wise Temperature recorded values



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Graphical representation of Temperature values recorded between January 2022 and June 2023

Analysis



Temperature recordings at the campus from Jan-2022 to June-2023 revealed that summer temperatures surpassed the recommended range of 20 °C to 30 °C, potentially impacting health. Additionally, winter temperatures fell below the ideal range, also posing health concerns.

Reference: Ebi, K. L., Capon, A., Berry, P., Broderick, C., de Dear, R., Havenith, G., & Jay, O. (2021). Hot weather and heat extremes: health risks. *The Lancet*, 398(10301), 698-708.



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Recommendations

Maintaining high air quality on campus is crucial for the health and productivity of students and staff. Audit reports suggest that AQI levels are typically high in winter and comparatively lower during the monsoon period. The high AQI value may lead to health issues. To reduce AQI, introducing indoor plants in classrooms and common areas to naturally purify the air by absorbing pollutants and releasing oxygen is necessary.

Particulate Matter levels were notably high during winter. Weather patterns, such as temperature inversions and stagnant air masses, can exacerbate particulate matter pollution by trapping pollutants near the ground, leading to higher concentrations in the air. To reduce high levels of particulate matter, activities such as maintaining heating systems, improving ventilation strategies, adopting indoor air quality management practices, put curbs on entry of outside vehicles, and collaborating with local authorities to address outdoor pollution sources are essential.

The optimal relative humidity range for good health in West Bengal, India, typically falls between 40% and 70%. However, audit reports consistently show values surpassing this range, impacting comfort and well-being. Proper ventilation, humidity control devices, and environmental management can improve relative humidity levels, creating a more comfortable and healthy environment.

In West Bengal, India, the ideal ambient temperature range for good health typically falls between 20 °C to 30 °C (68 °F to 86 °F). However, summer temperatures surpass the recommended range, and winter temperatures fall below it, potentially impacting health. To mitigate temperature extremes, increasing green cover, installing shading devices, and optimizing heating, ventilation, and air conditioning systems are necessary.




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Water Quality Assessment



Water quality assessment and pollutant monitoring are crucial processes that scrutinize the chemical, physical, and biological characteristics of water bodies to ascertain their suitability for various purposes, including drinking, recreation, and supporting tree plantation. The assessment of water quality, particularly with the rising levels of pollutants, has garnered significant attention in recent years. It involves analyzing parameters such as pH, total dissolved solids, alkalinity, and the presence of contaminants like heavy metals and pathogens. Through water quality assessment, the college can pinpoint potential risks to human health and ecosystems, devise appropriate management strategies, and ensure the sustainable utilization of this invaluable resource. The sample for comprehensive measurements of water quality was collected on 2nd June, 2023, across the college campus as well as in all the hostels.

Sl No.	Sample Source	Results (in mg/L or ppm) (Tolerable Limit)											Remarks	
		Total Alkalinity (in terms of CaCO ₃) (300)	pH (6.5 - 8.5)	As (0.05)	Fe (0.3)	F ⁻ (0.6 - 1.2)	Cl ⁻ (250)	Residual Cl ₂ (0.2)	PO ₄ ⁻³ (5)	NO ₃ ⁻ (45)	NO ₂ ⁻ (3)	NH ₄ ⁺ (5)		Total Hardness (in terms of CaCO ₃) (600)
1	College Campus	285	7.5	0	0-0.3	0	20	0	0	0	0	0	395.4	--
2	New Hindu Hostel	310	8-9	0	0	0	100	0	0	5-10	0	0-0.5	383.6	Slightly alkaline
3	Old Hindu Hostel	310	8-9	0	0	0-1	130	0	0	5-10	0	0	381.4	Slightly alkaline

Table: Parameter tested to analyze the quality of water



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Analysis & Recommendations

The table indicates that water in both the campus and hostels remains safe, with all listed parameters within permissible limits. Hostel water exhibits slight alkalinity. The college authority facilitates regular discussions with staff, students, and stakeholders to collectively address any concerns or areas of water quality in need of improvement. Additionally, plans are underway to enlist the support of environmental experts or water quality professionals for thorough assessments, accurate result interpretation, and necessary remedial actions.




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Soil Quality Assessment



Soil quality assessment is a critical component of environmental management and agricultural sustainability, involving diverse methodologies and criteria to assess the vitality and fertility of soil. It facilitates the determination of optimal nutrient supplementation tailored to the specific fertility requirements of the soil, thereby enhancing crop yield. This assessment entails scrutinizing physical, chemical, and biological attributes to ascertain the soil's capacity to sustain plant growth and preserve biodiversity. A plethora of techniques, spanning from conventional laboratory analyses to cutting-edge technologies, are utilized to evaluate parameters such as pH, total nitrogen, phosphorus, potassium, among others, in order to gauge soil quality accurately. The sample was collected on 14th June, 2023 for analysis.

Sl No.	Parameters tested	Results
1	pH	7.0
2	Total Kjeldahl Nitrogen	9.0 (mg/kg)
3	Total Phosphate	957 (mg/kg)

Table: Parameter tested to analyze the quality of Soil




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Analysis & Recommendations

Typically, soil phosphate levels range between 500-1000 mg/kg, and samples taken from the campus fall within this range, suggesting favorable conditions for plant growth and the uptake of essential micronutrients. Additionally, nitrogen content falls within the recommended range of 5.0 to 10.0 mg/kg, indicating favorable conditions for significant plant growth. These healthy soil conditions may be attributed to effective sewage maintenance and the mitigation of other contaminants. In order to improve soil quality on the college campus, the institution plans to collaborate with external researchers to harness combined knowledge and resources for soil quality assessment and management. Furthermore, it is advised to promote awareness of soil health significance and the advantages of soil quality assessment among the general public through seminars or campaigns.

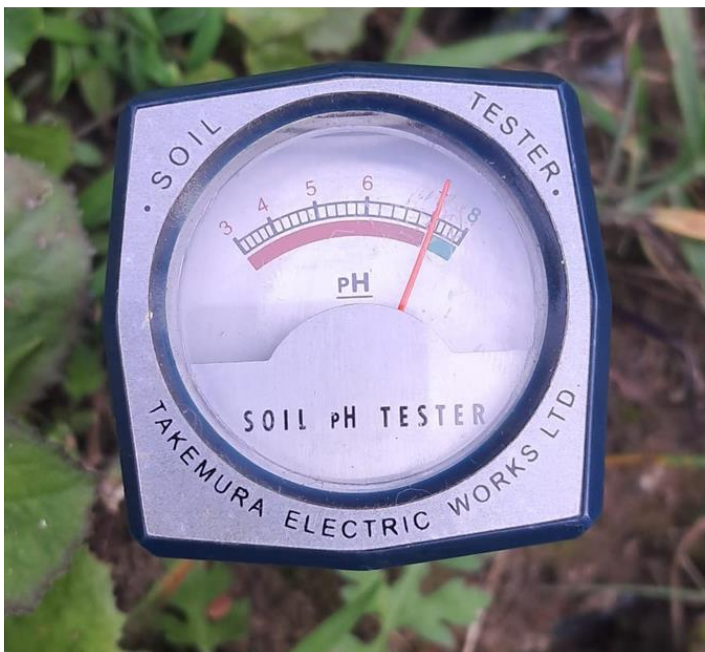


Figure: Images depicting soil pH testing and the measurement of total nitrogen and phosphate

Energy Management



The Campus utilizes energy for various purposes including lighting, operating laboratory instruments, appliances, and ground water pumping, and cooking in the office area, departments and other areas including hostels. The source of energy for all the buildings within the campus is through electricity only and consumes about 355.85 kW/day. The institution refrains from utilizing firewood, coal, etc., for any purposes. Routine switch-off drills are carried out by both campus administration and security personnel. Computers are set to automatic power saving mode when not in use while machinery remains on standby mode most of the time. The refrigerator operates continuously, and the incubator runs when necessary. Lighting and fans are in operation throughout the campus, predominantly with LED lamps and LED tube lights, though exceptions exist in a few locations. Several posters are also displayed to raise awareness about energy conservation. Furthermore, the institution has implemented a solar energy system with a capacity of 10K Wp since 22nd August, 2022. Nevertheless, the efficient utilization and distribution of this energy remain to be established.




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Main Building

Device	Rating	Uses Time (Hrs./Day)	Academic Year				
			2018-19	2019-20	2020-21	2021-22	2022-23
			Quantity	Quantity	Quantity	Quantity	Quantity
Tube light LED	20W	6	10	37	62	75	78
Tube light	40W/36W	6	70	45	15	19	17
CFL Bulb	20W	6	6	10	8	3	
Filament Bulb	60W	6	6	3	2	0	0
LED Ceiling light	18W	6	--	--	--	--	--
Electric Fan	70W	6	60	57	57	56	55
Exhaust Fan	120W	2	4	4	4	4	4
Computer	120W	2	4	4	4	4	4
UPS	20W	4	4	4	4	4	4
Printer	250W	4	2	2	2	2	2
Xerox +Scanner	300W	2	1	1	1	1	1
CCTV Camera	10W	24	3	3	3	3	3
Landline connection	10W	24	1	1	1	1	1
Wi-Fi Connector	10W	24	1	1	1	1	1
Speaker	20W	2	1	1	1	1	1
Projector	50W	2	1	1	1	1	1
Electric Bell	2W	0.05	1	1	1	1	1
AC	2190W	3	3	--	3	3	3
LED light	20W	6	6	6	6	6	6
Vapour Lamp	500W	12	22	22	21	18	17
Total electric energy consumption/ year			15142	12538	10353	12953	11704

Table: Electric energy consumption per academic year in Main building



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Office Building

Device	Rating	Uses Time (Hrs./Day)	Academic Year				
			2018-19	2019-20	2020-21	2021-22	2022-23
			Quantity	Quantity	Quantity	Quantity	Quantity
Tube light LED	20W	6	15	16	16	20	20
Tube light	40W/ 36W	6	9	10	10	5	5
CFL Bulb	20W	6	2	1	1	0	0
LED Ceiling light	18W	6	13	13	14	16	16
Electric Fan	70W	6	10	10	10	10	10
Exhaust Fan	120W	6	2	2	2	2	2
Computer	120W	6	9	9	9	9	9
UPS	20W	5	9	9	9	9	9
Printer	250W	4	8	8	8	8	8
Xerox +Scanner	300W	4	2	2	2	2	2
CCTV Camera	10W	24	5	5	5	5	5
Landline connection	10W	24	2	2	2	2	2
Wi-Fi Connector	10W	24	7	7	7	7	7
Electric Bell	2W	0.05	1	1	1	1	1
AC	2190W	6	4	4	4	4	4
submersible pump	5595W(7.5HP)	3	1	1	1	1	1
Total electric energy consumption/ year			1537	115	451	1336	1710

Table: Electric energy consumption per academic year in Office building



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Library Building

Device	Rating	Uses Time (Hrs./Day)	Academic Year				
			2018-19	2019-20	2020-21	2021-22	2022-23
			Quantity	Quantity	Quantity	Quantity	Quantity
Tube light LED	20W	6	22	62	62	110	129
Tube light	40W/36W	6	85	46	46	12	
CFL Bulb	20W	6	15	12	12	8	4
Filament Bulb	60W	6	6	6	6	3	0
LED bulb	18W	6	4	8	8	4	4
Electric Fan	70W	6	60	57	57	54	55
Exhaust Fan	120W	2	4	4	4	2	0
Computer	120W	4	7	7	7	8	8
UPS	20W	4	7	7	7	8	8
Printer	250W	4	1	1	1	1	1
Xerox +Scanner	300W	2	1	1	1	1	1
CCTV Camera	10W	24	8	8	8	8	8
Landline connection	10W	24	1	1	1	1	1
Wi-Fi Connector	10W	24	2	2	2	2	2
Total electric energy consumption/ year			9473	2916	250	8669	10293

Table: Electric energy consumption per academic year in Library building



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Philosophy Building

Device	Rating	Uses Time (Hrs./Day)	Academic Year				
			2018-19	2019-20	2020-21	2021-22	2022-23
			Quantity	Quantity	Quantity	Quantity	Quantity
Tube light LED	20W	6	5	15	15	50	58
Tube light	40W/36W	6	40	28	28	5	0
CFL Bulb	20W	6	2	3	3		0
Filament Bulb	60W	6	4	3	3	0	0
LED bulb	18W	6				2	0
Electric Fan	70W	6	26	25	25	24	24
Exhaust Fan	120W	2	3	3	3	2	2
Computer	120W	2	3	3	3	3	3
UPS	20W	4	3	3	3	3	3
Printer	250W	4	1	1	1	1	1
Xerox +Scanner	300W	2	1	1	1	1	1
CCTV Camera	10W	24	1	1	1		
Landline connection	10W	24	1	1	1	1	1
Wi-Fi Connector	10W	24	1	1	1	1	1
Speaker	20W	0.012	1	1	1	1	1
AC	2190W	3	2	2	2	2	2
Total electric energy consumption/ year			1382	1785	1265	1370	1327

Table: Electric energy consumption per academic year in Philosophy building



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Geography Building

Device	Rating	Uses Time (Hrs. /Day)	Academic Year				
			2018-19	2019-20	2020-21	2021-22	2022-23
			Quantity	Quantity	Quantity	Quantity	Quantity
Tube light LED	20W	6	10	20	30	58	58
Tube light	40W/36W	6	50	38	29	4	4
CFL Bulb	20W	6	2	4	5		
Filament Bulb	60W	6	4	4	2	0	0
LED bulb	18W	6	5	6	7	2	2
Electric Fan	70W	6	40	38	35	33	33
Exhaust Fan	120W	5	6	6	5	0	0
Computer	120W	5	10	11	11	12	12
UPS	20W	0.5	10	11	11	12	12
Printer	250W	0.5	2	2	2	2	2
Xerox +Scanner	300W		1	1	1	1	1
Wi-Fi Connector	10W	0.006	1	1	1	1	1
Speaker	20W	0.012	1	1	1	0	0
Projector	50W	0.012					
Fridge	157W	24	1	1	1	1	1
Electric Bell	2W	0.05	1	1	1	1	1
AC	2190W	3	2	2	2	2	2
Total electric energy consumption/ year			1885	1537	342	2344	3317

Table: Electric energy consumption per academic year in Geography building



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Bengali Building

Device	Rating	Uses Time (Hrs./Day)	Academic Year				
			2018-19	2019-20	2020-21	2021-22	2022-23
			Quantity	Quantity	Quantity	Quantity	Quantity
Tube light LED	20W	6	20	22	22	32	32
Tube light	40W/36W	6	12	10	10	2	2
CFL Bulb	20W	6	2	1	1		
Filament Bulb	60W	6	1	1	0	0	0
LED bulb	18W	6	1	1	4	4	4
Electric Fan	70W	6	18	16	16	16	16
Exhaust Fan	1200W	2	3	3	2	2	2
Computer	120W	2	2	2	2	2	2
UPS	20W	2	2	2	2	2	2
Printer	250W	2	1	1	1	2	2
Xerox +Scanner	300W	0.5	1	1	1	1	1
Landline connection	10W	24	1	1	1	1	1
Wi-Fi Connector	10W	24	1	1	1	1	1
AC	3000W	4	1	1	1	1	1
Total electric energy consumption/ year (kW)			1426	1785	1265	1370	1327

Table: Electric energy consumption per academic year in Bengali building



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Physics Building

Device	Rating	Uses Time (Hrs./Day)	Academic Year				
			2018-19	2019-20	2020-21	2021-22	2022-23
			Quantity	Quantity	Quantity	Quantity	Quantity
Tube light LED	20W	6	40	100	100	170	180
Tube light	40W/36W	6	170	90	90	75	50
CFL Bulb	20W	6	20	25	25	30	0
Filament Bulb	60W	6	3	3	2	1	0
LED bulb	18W	6	5	10	10	2	0
Electric Fan	70W	6	135	133	133	140	141
Exhaust Fan	120W	6	3	3	3	2	2
Computer	120W	5	8	10	10	16	16
UPS	20W	5	8	10	10	16	16
Printer	250W	0.5	2	2	2	4	4
Xerox +Scanner	300W	0.5	1	1	1	2	2
CCTV Camera	10W	24	2	2	0	0	0
Landline connection	10W	24	1	1	1	0	0
Wi-Fi Connector	10W	24	1	1	1	0	0
Speaker	20W	0.006	1	1	1	1	1
Projector	50W	0.012	2	2	2	2	1
Fridge	157W	24	1	1	1	1	1
Induction Oven	1300W	0.34	1	1	1	3	3
Water Heater	750W	2	6	5	5	5	5
Electric Bell	2W	0.05	1	1	1	1	1
AC	2190W	2	3	3	3	3	3
Laboratory Instruments	--	2	10/day	9/day	9/day	8/day	8/day
Total electric energy consumption/ year			4540	4669	2467	4412	4927

Table: Electric energy consumption per academic year in Physics building



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Chemistry Building

Device	Rating	Uses Time (Hrs./Day)	Academic Year				
			2018-19	2019-20	2020-21	2021-22	2022-23
			Quantity	Quantity	Quantity	Quantity	Quantity
Tube light LED	20W	6	10	25	27	28	30
Tube light	40W/36W	6	32	17	16	10	9
CFL Bulb	20W	6	2	2	1	0	0
Filament Bulb	60W	6	3	3	3	0	0
LED bulb	18W	6	0	0	4	4	3
Electric Fan	70W	6	18	17	17	16	16
Exhaust Fan	120W	5	11	9	7	8	8
Computer	120W	5	2	2	2	2	2
UPS	20W	5	2	2	2	2	2
Printer	250W	1	1	1	1	1	1
Xerox +Scanner	300W	1	1	1	1	1	1
Wi-Fi Connector	10W	0.006	1	1	1	1	1
Fridge	157	24	2	2	2	2	2
Laboratory Instruments	--	2	2/week	2/week	--	2/week	3/week
Total electric energy consumption/year			1384	8561	3173	11481	13950

Table: Electric energy consumption per academic year in Chemistry building



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Mathematics & Statistics Building

Device	Rating	Uses Time (Hrs./Day)	Academic Year				
			2018-19	2019-20	2020-21	2021-22	2022-23
			Quantity	Quantity	Quantity	Quantity	Quantity
Tube light LED	20W	6	5	15	24	30	31
Tube light	40W/36W	6	20	12	7	1	0
CFL Bulb	20W	6	2	1	0	0	0
Filament Bulb	18W	6	3	1	0	0	0
Electric Fan	70W	6	20	19	18	17	17
Exhaust Fan	120W	2	2	2	2	2	2
Computer	120W	4	11	12	12	13	13
UPS	250W	4	11	12	12	13	13
Printer	300W	2	3	3	3	3	4
Xerox +Scanner	300W	2	1	1	1	1	1
Landline connection	10W	24	1	1	1	1	0
Wi-Fi Connector	20W	24	1	1	1	0	0
Electric Bell	2W	0.05	1	1	1	1	1
Total electric energy consumption/ year			1762	2021	493	1599	2087

Table: Electric energy consumption per academic year in Mathematics & Statistics building



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Bio science Building

Device	Rating	Uses Time (Hrs./Day)	Academic Year				
			2018-19	2019-20	2020-21	2021-22	2022-23
			Quantity	Quantity	Quantity	Quantity	Quantity
Tube light LED 20W	20W	6	80	110	110	265	282
Tube light LED 18W	18W	6	90	100	100	120	99
Tube light CFL Bulb	36W	6	200	170	170	20	21
Filament Bulb	20W	6	10	14	14		
LED bulb	60W	6	6	6	6	0	
Electric Fan	18W	6	4	7	7	6	5
Exhaust Fan	70W	6	185	187	187	190	192
Computer UPS	120W	3	9	8	8	8	6
Printer	20W	2	10	11	11	13	13
Xerox +Scanner	20W	2	10	11	11	13	13
CCTV Camera	10W	1	5	6	6	6	6
Landline connection	300W	1	2	2	2	3	3
Wi-Fi Connector	10W	24	6	6	6	0	0
Speaker	20W	24	3	3	3	3	3
Projector	50W	24	3	3	3	3	3
Fridge	500W	2	1	1	1	1	1
Incubator	1300W	2	3	3	3	3	3
Induction Oven	750W	24	14	13	13	15	15
Heater	750W	0.006	15	14	14	12	12
Solar Panel	1000W	3	6	7	7	5	5
Electric Bell	1000W	2	8	7	7	8	8
AC		3	0	0	0	0	1
Total electric energy consumption/ year		0.05	1	1	1	1	1
	2190W	3	2	2	2	2	2
			11281	10060	4071	11394	11168

Table: Electric energy consumption per academic year in Bio science building



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Hostel Building (Old Hindu)

Device	Rating	Uses Time (Hrs./Day)	Academic Year				
			2018-19	2019-20	2020-21	2021-22	2022-23
			Quantity	Quantity	Quantity	Quantity	Quantity
Tube light LED	20W	6.5	8	8	19	17	19
Tube light	40W/36 W	6.5	71	73	75	60	65
CFL Bulb	20W	6.5	7	6	5	8	10
Filament Bulb	60W	6.5	8	6	5	3	2
LED bulb	18W	6.5	4	4	3	3	2
Electric Fan	70W	16	40	38	38	37	37
Exhaust Fan	120W	24	2	2	2	2	2
Halogen Bulb	300W	11	4	4	4	4	4
Fridge	157 W	24	1	1	1	1	1
submersible pump	746 W	3	--	--	--	--	2
Total electric energy consumption/ year			23540	10804	6724	22145	17007

Table: Electric energy consumption per academic year in Old Hindu Hostel building



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Hostel Building (New Hindu)



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Device	Rating	Uses Time (Hrs./Day)	Academic Year				
			2018-19	2019-20	2020-21	2021-22	2022-23
			Quantity	Quantity	Quantity	Quantity	Quantity
Tube light LED	20W	6.5	10	12	18	18	20
Tube light	40W/36W	6.5	60	45	37	35	45
CFL Bulb	20W	6.5	6	10	5	4	0
Vapour Lamp	60W	12.5	5	5	5	5	5
Filament Bulb	18W	6.5	8	12	6	0	0
LED bulb	70W	6.5	9	14	15	18	17
Electric Fan	120W	12	53	51	52	49	49
Exhaust Fan	300W	12	6	5	4	5	5
Fridge	157 W	24	1	1	1	1	1
submersible pump	746 W	3	2	2	2	2	2
Total electric consumption/ year		energy	6612	6361	2357	6658	6082

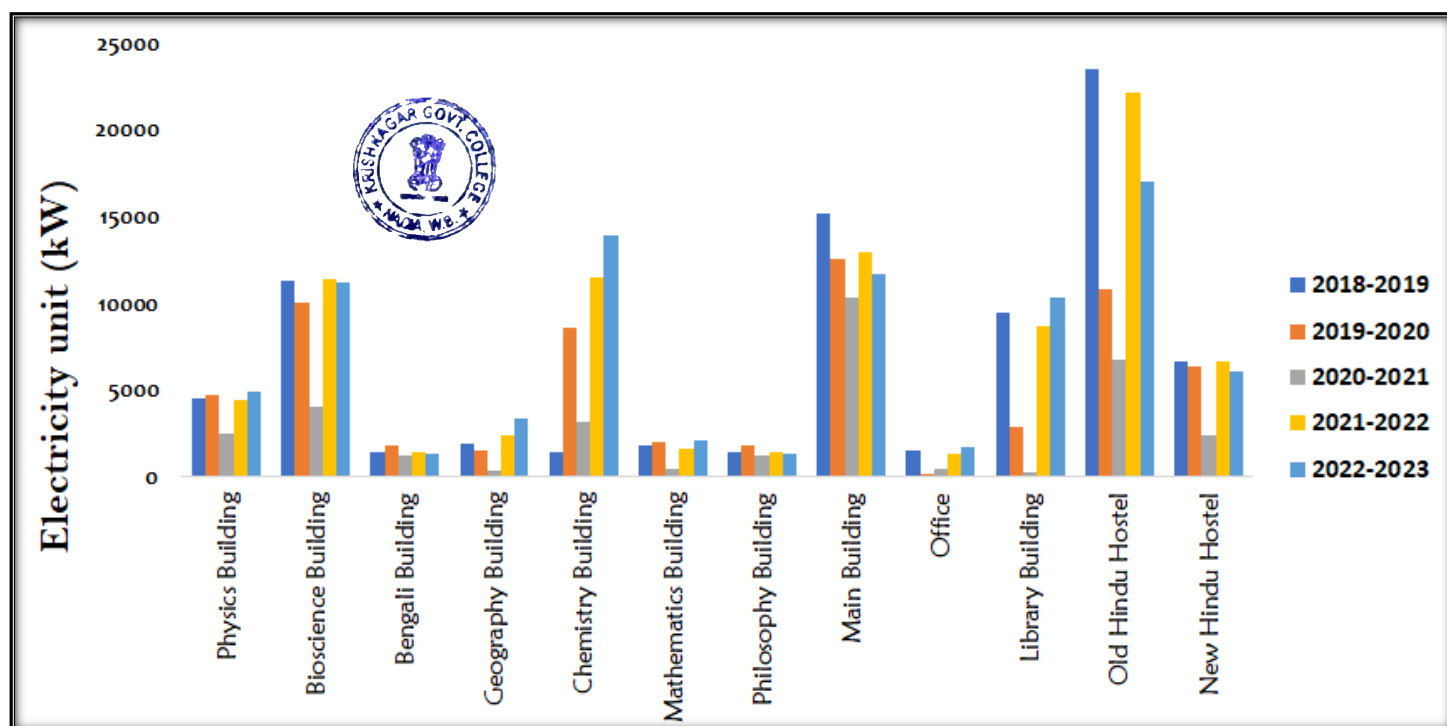
Table: Electric energy consumption per academic year in New Hindu Hostel building

According to the building-wise energy consumption table, the highest energy consumption was observed for tube lights, followed by ceiling fans in the main building. In the building containing laboratory facilities, including Chemistry, Physics, and Bioscience, significant energy consumption was noted in exhaust fans, followed by tube lights and ceiling fans. Similarly, in the hostel building, the primary energy consumption was attributed to the motor pump, followed by halogen bulbs, exhaust fans, and ceiling fans.

According to the energy consumption per academic year from all mentioned buildings, the largest amount of energy consumption was found in the hostel building (New Hindu hostel) followed by the main building and other buildings.

Building	Total electric energy consumption/ academic year (kW)				
	2018-19	2019-20	2020-21	2021-22	2022-23
Physics	4540	4669	2467	4412	4927
Bioscience	11281	10060	4071	11394	11168
Bengali	1426	1785	1265	1370	1327
Geography	1885	1537	342	2344	3317
Chemistry	1384	8561	3173	11481	13950
Mathematics	1762	2021	493	1599	2087
Philosophy	1382	1785	1265	1370	1327
Main	15142	12538	10353	12953	11704
Office	1537	115	451	1336	1710
Central Library	9473	2916	250	8669	10293
Old Hindu Hostel	23540	10804	6724	22145	17007
New Hindu Hostel	6612	6361	2357	6658	6082

Table: Building-wise total electric energy consumption per academic year

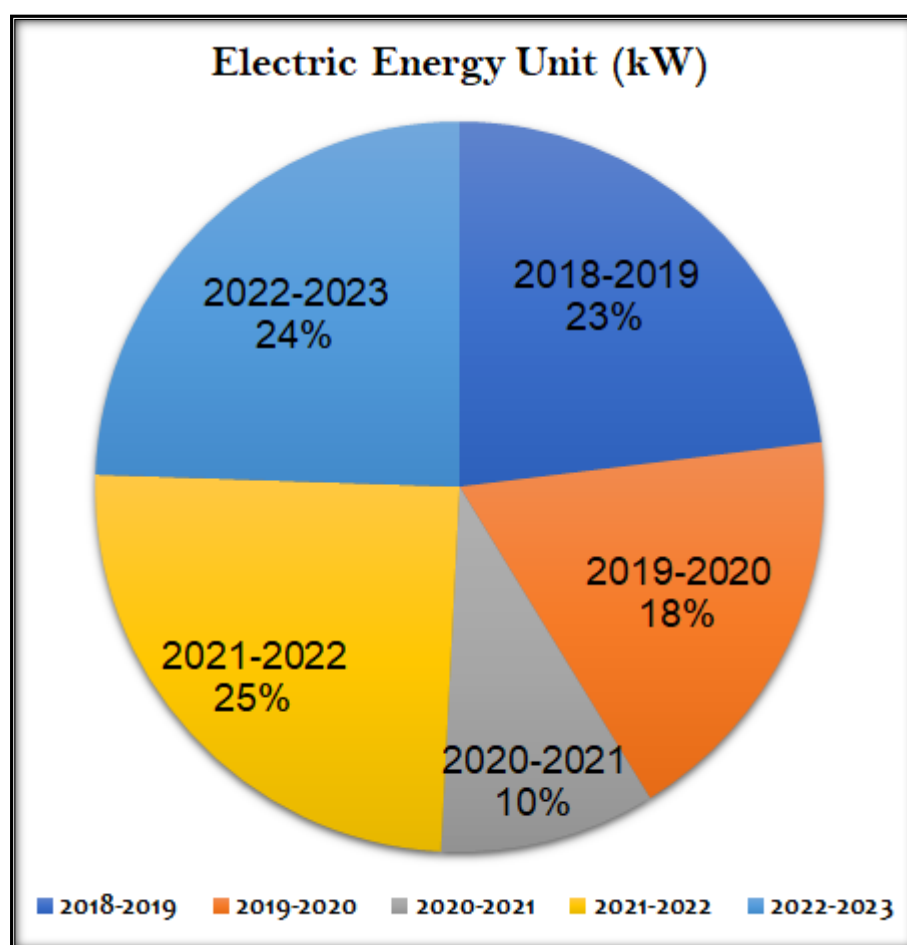


Graphical representation of building-wise total electric energy consumption per academic year

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<i>Academic year</i>	<i>Total electric energy consumption (kW)</i>
2018-2019	79964
2019-2020	63152
2020-2021	33211
2021-2022	85731
2022-2023	84899

Table: Total electric energy consumption per academic year



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Graphical representation of total electric energy consumption per academic year

Analysis & Recommendations

Analyzing energy consumption across different buildings, it was observed that tube lights consumed the most energy, closely followed by ceiling fans in the Main building area. In the Chemistry, Physics, and Bioscience buildings, significant energy consumption was noted, with exhaust fans leading, followed by tube lights and ceiling fans. Similarly, in the hostel building, major energy consumption was attributed to submersible pump, followed by halogen bulbs, exhaust fans, and ceiling fans. Reducing energy consumption is critical for an educational institute, and there are several ways to achieve it. Firstly, simple habits like turning off lights when not in use, unplugging electronics, and maintaining optimal temperature settings can make a substantial difference. Using energy-efficient appliances and equipment such as LED lighting, ENERGY STAR-rated appliances, and energy-efficient heating, ventilation, and air conditioning systems can significantly reduce energy usage. Additionally, implementing smart energy management systems can optimize energy usage by automatically adjusting heating, cooling, and lighting based on occupancy and usage patterns. Furthermore, the college encourages the staff to conduct monthly energy audits to identify areas of high energy consumption and implement energy-saving measures accordingly. The institution installed a solar energy system with a capacity of 10K Wp since 22nd August, 2022. However, the proper utilization of that energy is yet to be defined and distributed. The college authority is actively working to increase the capacity of solar energy systems to reduce reliance on nonrenewable energy sources.




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10kWp Rooftop Grid Connected Solar Photovoltaic Power Plant
at
Krishnagar Government College
A Green Energy Initiative for the Better Environment
Funded by:
Department of Environment, Govt. of West Bengal
Implemented by:
West Bengal Pollution Control Board

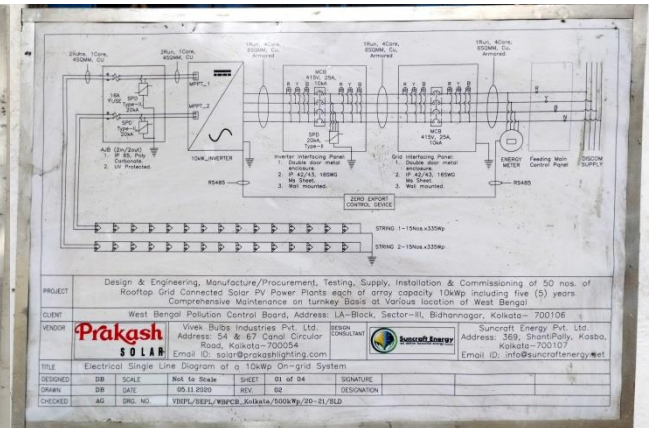


Figure: Photographs revealing the deployment of solar panel arrays on the roof of the college's main building


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Water Management



Examining the quality and usage of water in the college is imperative to prevent groundwater depletion and water contamination. It is crucial to measure water losses stemming from various uses within the system or utilities to implement water conservation strategies effectively.

In the college, the primary water source for drinking, toilet, lavatory, and canteen purposes are the rooftop water tanks. Currently, the institution possesses 35 water tanks, comprising two with a capacity of 2000 liters, twenty-nine with a capacity of 1000 liters, and four with a capacity of 500 liters. All tanks are filled daily, and no leakages have been observed. Submersible pumps are utilized for water storage. On average, the college consumes 15,085 liters per day, allocated as follows: 3,696 liters per day for laboratory use, 4,827 liters per day for toilet facilities, 1,886 liters per day for canteen purposes, 679 liters per day for gardening, and 3,997 liters per day for drinking purposes. Additionally, two water purifier systems have been installed for drinking water within the main buildings.

Apart from this, the college generates wastewater primarily from toilets and laboratories. The wastewater is discharged through drains and mixes with other sewage water. None of the wastewater is utilized for gardening purposes

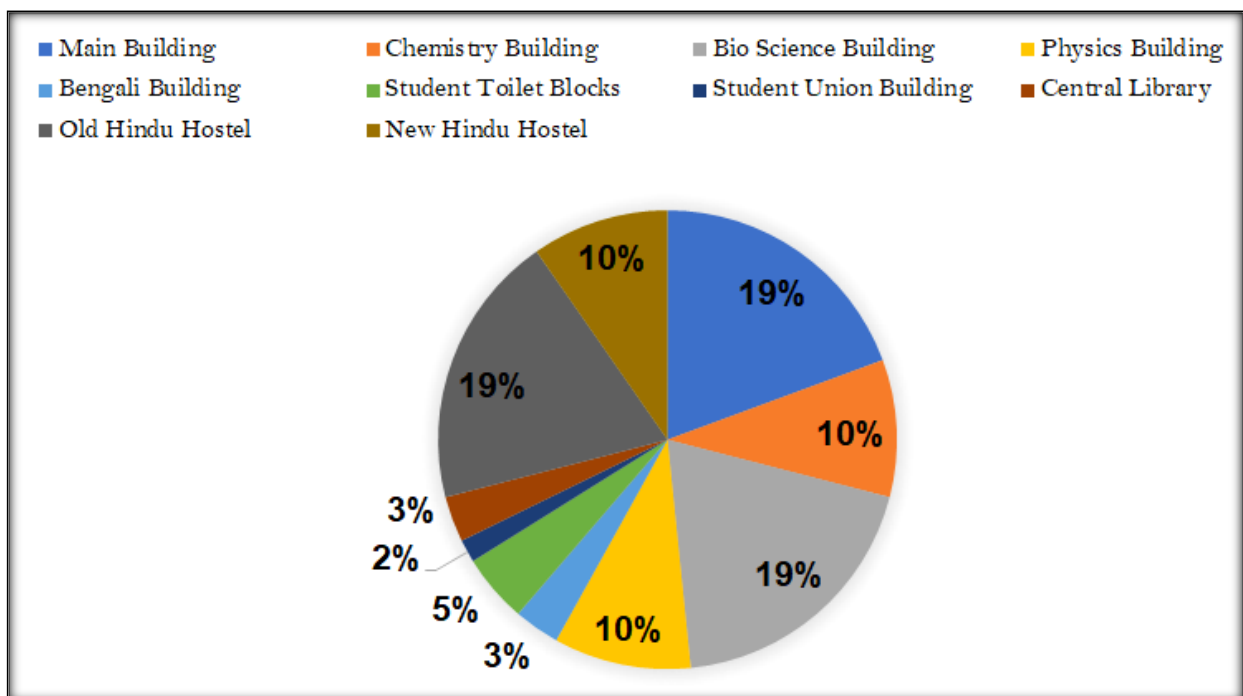



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Water Reservoir System

Sl No	Location of Reservoir	Capacity (Litre)	Quantity	Total (Litres)
1	Main Building	1000	6	6000
2	Chemistry Building	1000	3	3000
3	Bio Science Building	1000	6	6000
4	Physics Building	1000	3	3000
5	Bengali Building	1000	1	1000
6	Student Toilet Blocks	500	3	1500
7	Student Union Building	500	1	500
8	Central Library	1000	1	1000
9	Old Hindu Hostel	2000	1	2000
		1000	4	4000
10	New Hindu Hostel	2000	1	2000
		1000	1	1000
Total water reserved				27000

Table: Building-wise total water reservoir capacity



Graphical representation of building-wise water Reservoir capacity (in %)

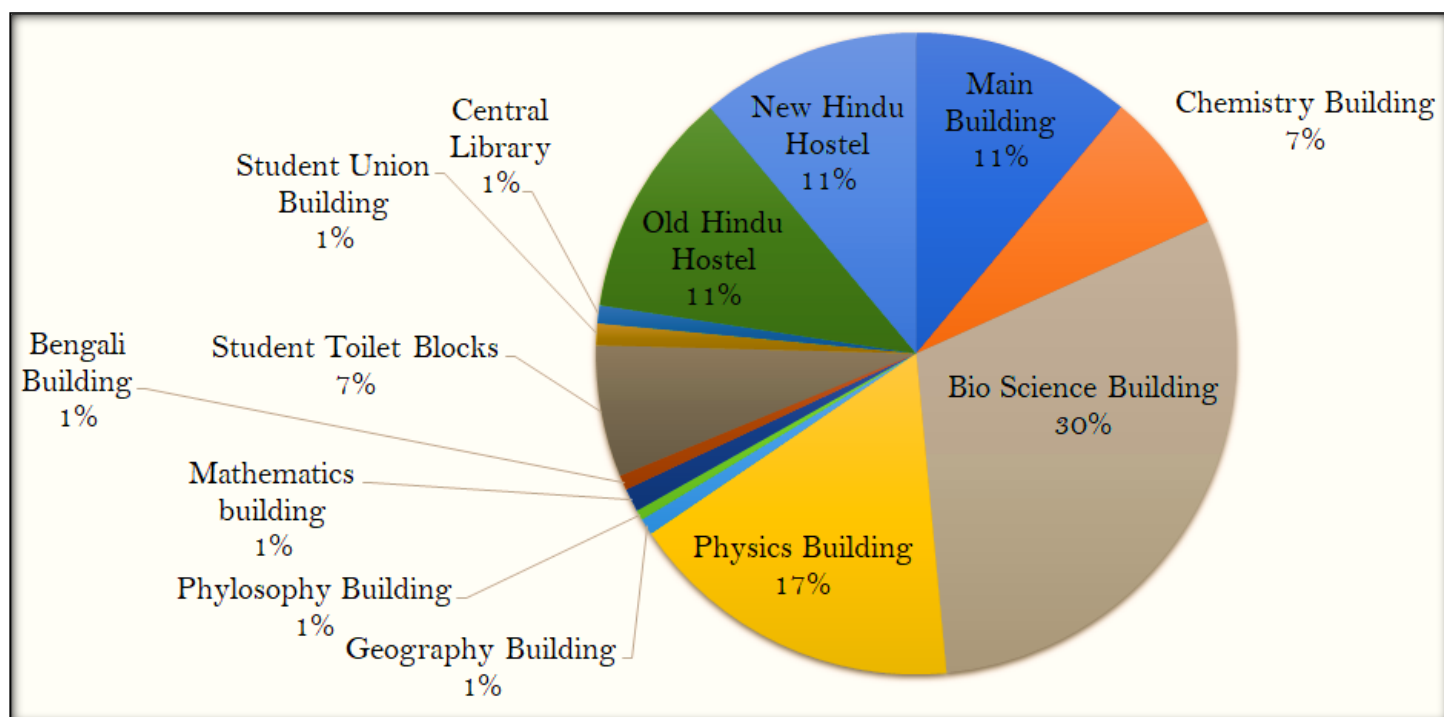



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Amount of Usage of Water in the campus & Hostels

Sl No.	Usage area (Building-wise)	Total Water consumption/day (Litre)
1	Main Building	1668
2	Chemistry Building	1086
3	Bio Science Building	4562
4	Physics Building	2567
5	Geography Building	126
6	Philosophy Building	76
7	Mathematics Building	178
8	Bengali Building	112
9	Student Toilet Blocks	1002
10	Student Union Building	164
11	Central Library	137
12	Old Hindu Hostel	1732
13	New Hindu Hostel	1675
Total water consumption per day		15085

Table: Building-wise total water consumption per day



Graphical representation of building-wise water consumption per day (in %)

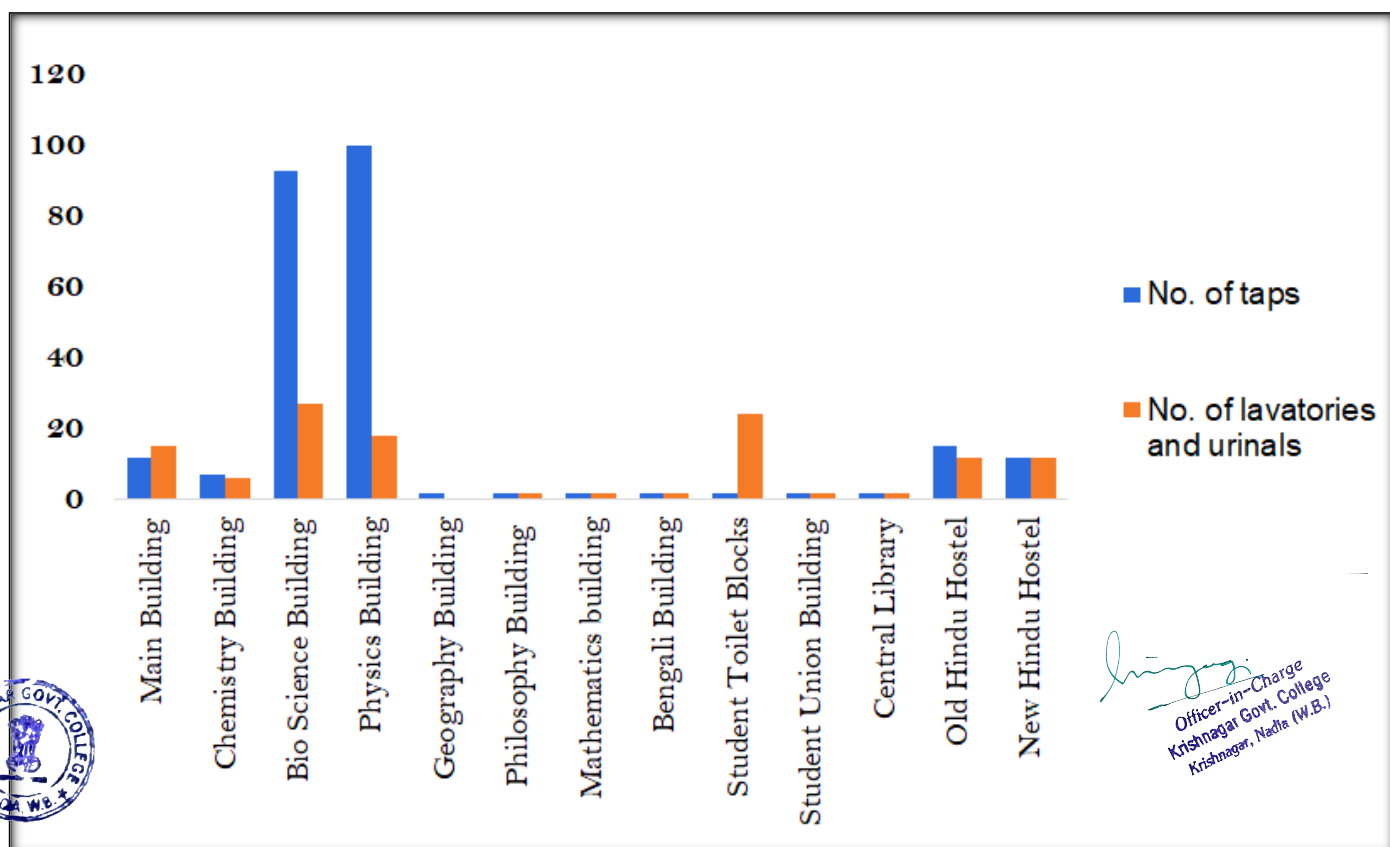


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Building-wise Source of Water in the college & Hostels

<i>Sl No.</i>	<i>Usage area (Building-wise)</i>	<i>No. of taps</i>	<i>No. of lavatories and urinals</i>	<i>Quantity (Litre)</i>
1	Main Building	12	15	1668
2	Chemistry Building	7	6	1086
3	Bio Science Building	93	27	4562
4	Physics Building	100	18	2567
5	Geography Building	2	0	126
6	Philosophy Building	2	2	76
7	Mathematics Building	2	2	178
8	Bengali Building	2	2	112
9	Students' Toilet Blocks	2	24	1002
10	Students' Union Building	2	2	164
11	Central Library	2	2	137
12	Old Hindu Hostel	15	12	1732
13	New Hindu Hostel	12	12	1675
Total		253	124	15085

Table: Building-wise total source of water and quantity from the source per day



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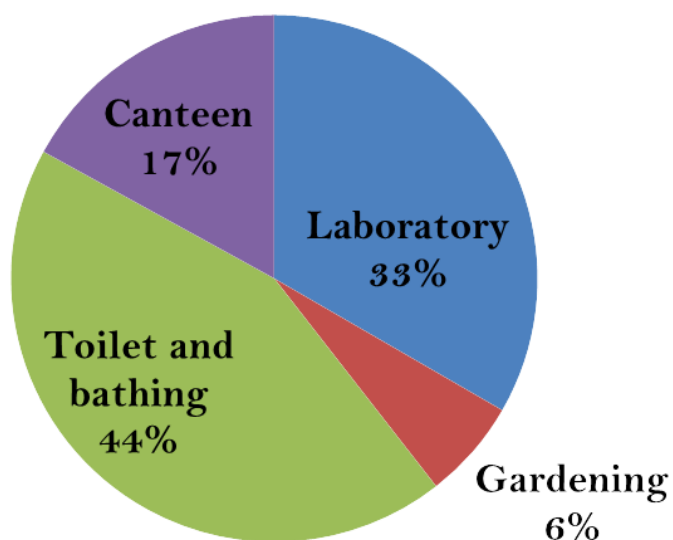
Graphical representation of building-wise water source

Types of usage of Water

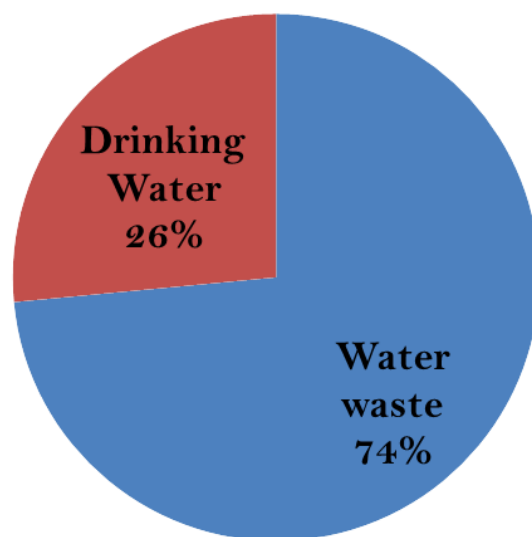
Sl No.	Usage type	No. of taps	No. of lavatories and urinals	Total Quantity (Litres)
1	Waste water	Laboratory	3696	11088
		Gardening	679	
		Toilet and bathing	4827	
		Canteen	1886	
2	Drinking water			3997

Table: Type of usage of water and amount in litre

(A)



(B)



Graphical representation of (A) types of waste water (in %), (B) amount of waste water & drinking water (in %)

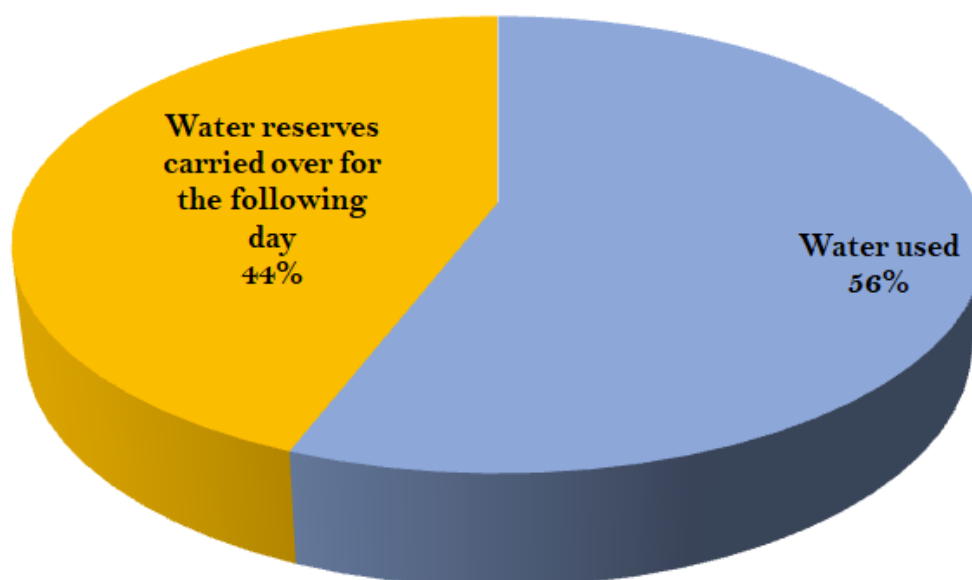


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Water Economy

Sl. No.	Water Economy	Quantity of water (Litre)
1	Water used	15085
2	Water reserves carried over for the following day	11915

Table: Quantity of water (in litres) utilized and reserved for the following day's consumption



Graphical representation of the quantity of water reserves carried over for the following day and water used (in %)



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Analysis & Recommendations

Based on the data, 56% of water is used daily for various purposes, while 44% is reserved for the next day. Among these consumption patterns across all buildings, the bioscience building showed the highest usage, followed by the physics building, hostel building, main building, and others. Predominantly, water was utilized for toilet and bathing purposes, followed by drinking. Buildings with laboratory facilities accounted for 24.5% of total water consumption. To further reduce water consumption, the institution plans to install low-flow toilets, faucets, and showerheads in hostel buildings while emphasizing monitoring and controlling overflow and leakage. Future plans include implementing rainwater storage systems to minimize reliance on external water sources. Additionally, the college plans to install additional water purifier systems in the hostel buildings



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Green Campus Management



Assessment of Green coverage in the College campus

The College campus is rich in vegetation diversity. Total 369 tree and shrub species, belonging to 48 species, 29 genera and 30 family are present in the college area.

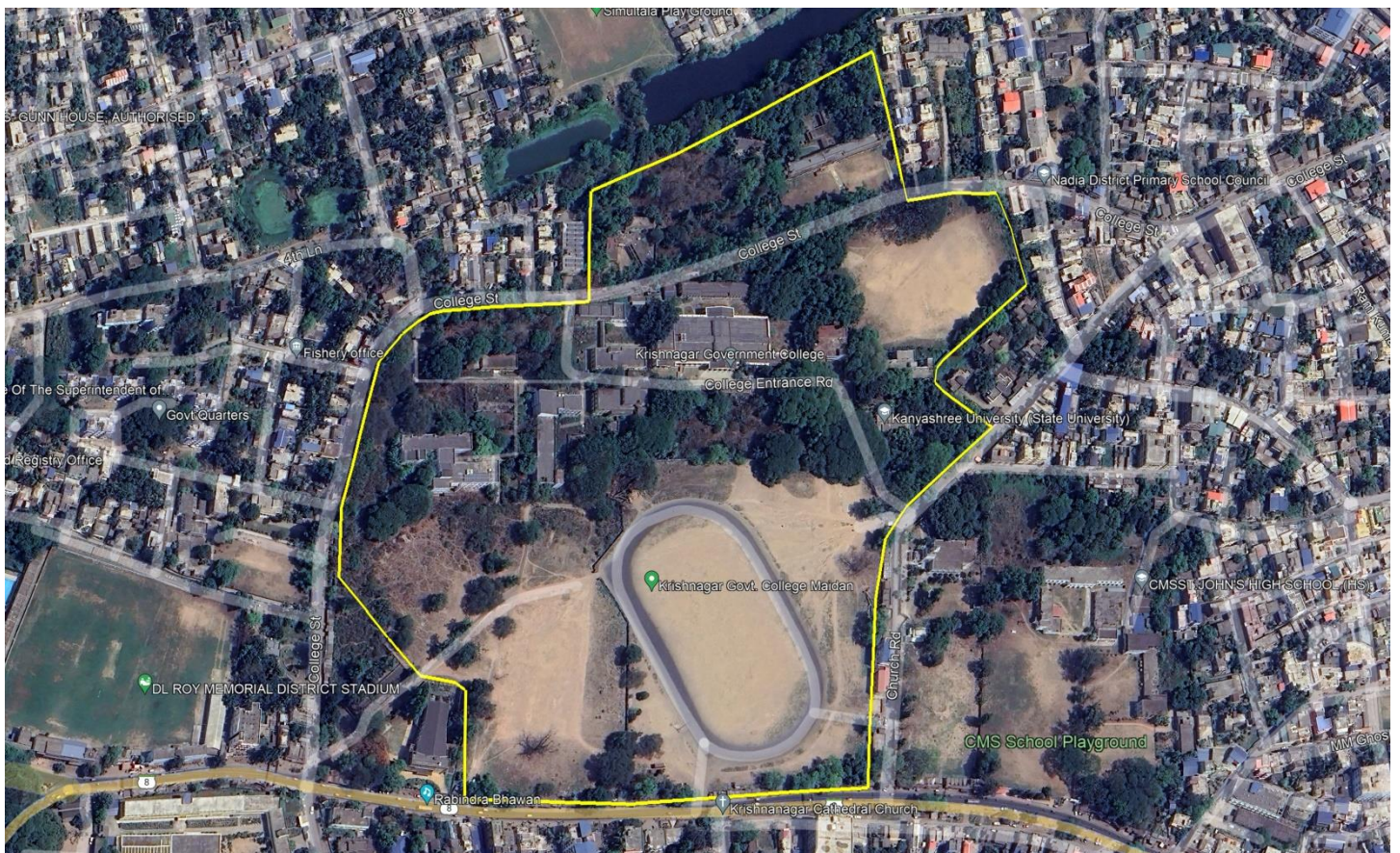


Figure: Satellite view of Krishnagar Government College Campus



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Name of Plants	Family	Number
<i>Acacia nilotica</i>	Fabaceae	13
<i>Aegle marmelos</i>	Rutaceae	6
<i>Albizia lebbek</i>	Fabaceae	7
<i>Alstonia scholaris</i>	Apocynaceae	4
<i>Anthocephalus chinensis</i>	Rubiaceae	8
<i>Areca catechu</i>	Arecaceae	7
<i>Aurocaria sp</i>	Araucariaceae	2
<i>Averrhoa carambola</i>	Oxalidaceae	8
<i>Azadirachta indica</i>	Meliaceae	5
<i>Bombax ceiba</i>	Bombacaceae	4
<i>Bougainvillea glabra</i>	Nyctaginaceae	3
<i>Butea monosperma</i>	Fabaceae	5
<i>Catyota urens</i>	Arecaceae	2
<i>Couropita grandiflora</i>	Lecythidaceae	3
<i>Cycas</i>	Cycadaceae	2
<i>Dalbergia sissoo</i>	Fabaceae	6
<i>Delonix regia</i>	Fabaceae	5
<i>Diospyros blancoi</i>	Ebenaceae	1
<i>Ficus benghalensis</i>	Moraceae	7
<i>Ficus religiosa</i>	Moraceae	6
<i>Hibiscus rosa-sinensis</i>	Malvaceae	4
<i>Lagerstroemia speciosa</i>	Lythraceae	20
<i>Lannea coromandelica</i>	Anacardiaceae	17
<i>Magnolia champaca</i>	Magnoliaceae	3
<i>Mimusops elengi</i>	Sapotaceae	17
<i>Murraya exotica</i>	Rutaceae	22
<i>Murraya koenigii</i>	Rutaceae	2
<i>Neolamarckia cadamba</i>	Rubiaceae	6
<i>Nerium oleander</i>	Apocynaceae	4
<i>Phoenix dactylifera</i>	Arecaceae	6
<i>Phyllanthus emblica</i>	Phyllanthaceae	1
<i>Polyalthia longifolia</i>	Annonaceae	15
<i>Ravenala madagascariensis</i>	Strelitziaceae	3
<i>Samania saman</i>	Mimosaceae	4
<i>Shorea robusta</i>	Dipterocarpaceae	21
<i>Swietenia macrophylla</i>	Meliaceae	19
<i>Syzygium cumini</i>	Myrtaceae	10
<i>Tabernaemontana divaricata</i>	Apocynaceae	3
<i>Tamarindus indica</i>	Fabaceae	5
<i>Tecoma stans</i>	Bignoniaceae	1
<i>Tectona grandis</i>	Lamiaceae	37
<i>Terminalia arjuna</i>	Combretaceae	12
<i>Terminalia belerica</i>	Combretaceae	1
<i>Terminalia catappa</i>	Combretaceae	4
<i>Terminalia chebula</i>	Combretaceae	3
<i>Thuja occidentalis</i>	Cupressaceae	14
<i>Vachellia nilotica</i>	Fabaceae	9
<i>Zizyphus mauritiana</i>	Rhamnacea	2
Total		369

Table: Total tree and shrub species in the College area



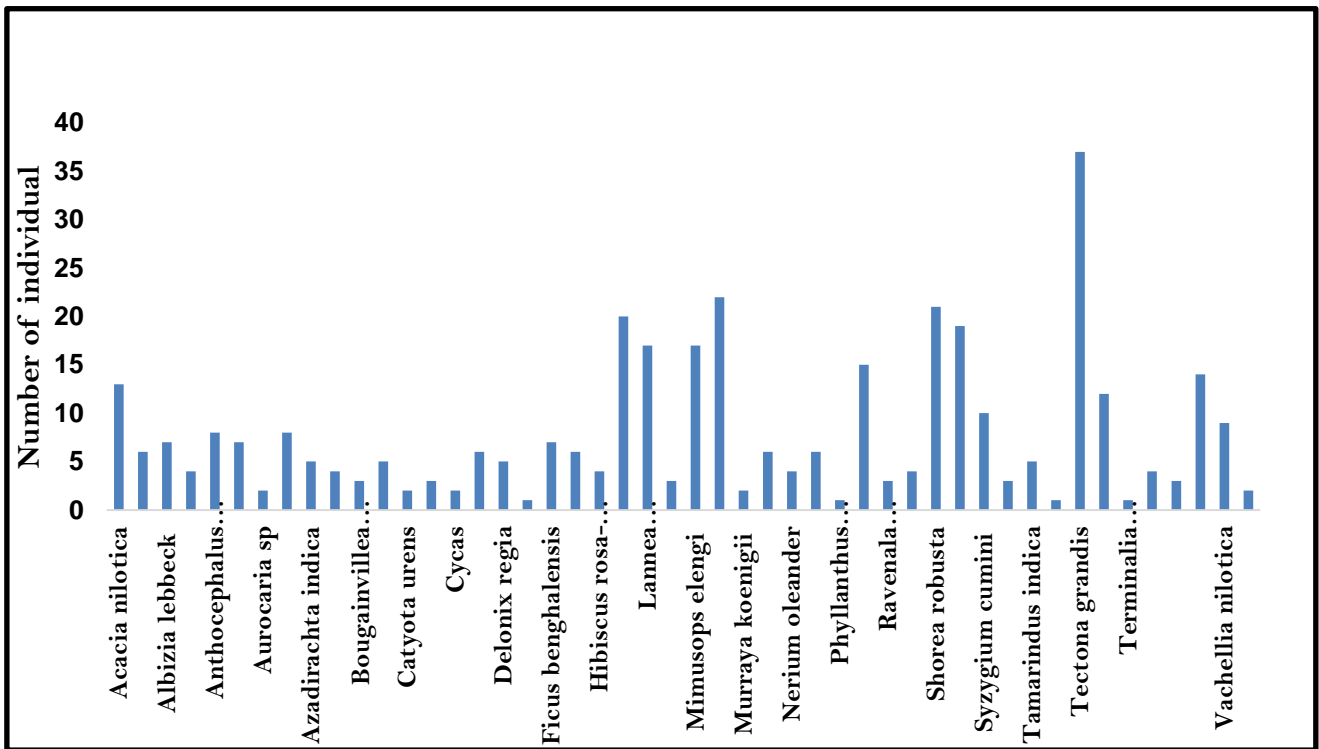
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<i>Family</i>	<i>Number of species</i>
Anacardiaceae	1
Annonaceae	1
Apocynaceae	3
Araucariaceae	1
Arecaceae	3
Bignoniaceae	1
Bombacaceae	1
Combretaceae	4
Cupressaceae	1
Cycadaceae	1
Dipterocarpaceae	1
Ebenaceae	1
Fabaceae	7
Lamiaceae	1
Lecythidaceae	1
Lythraceae	1
Magnoliaceae	1
Malvaceae	1
Meliaceae	2
Mimosaceae	1
Moraceae	2
Myrtaceae	1
Nyctaginaceae	1
Oxalidaceae	1
Phyllanthaceae	1
Rhamnaceae	1
Rubiaceae	2
Rutaceae	3
Sapotaceae	1
Strelitziaceae	1

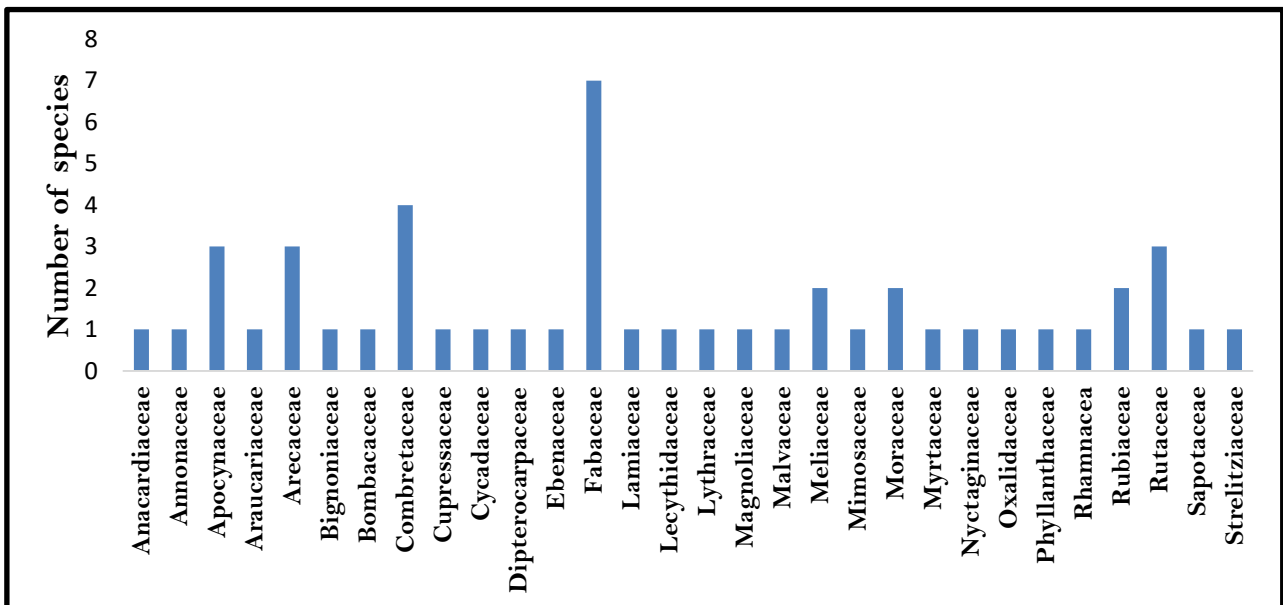
Table: Family wise distribution of the plant species in the College Campus



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Graphical representation of major plant diversity in the campus



Graphical Representation of Number of Plant Species within a Plant Family Present on Campus



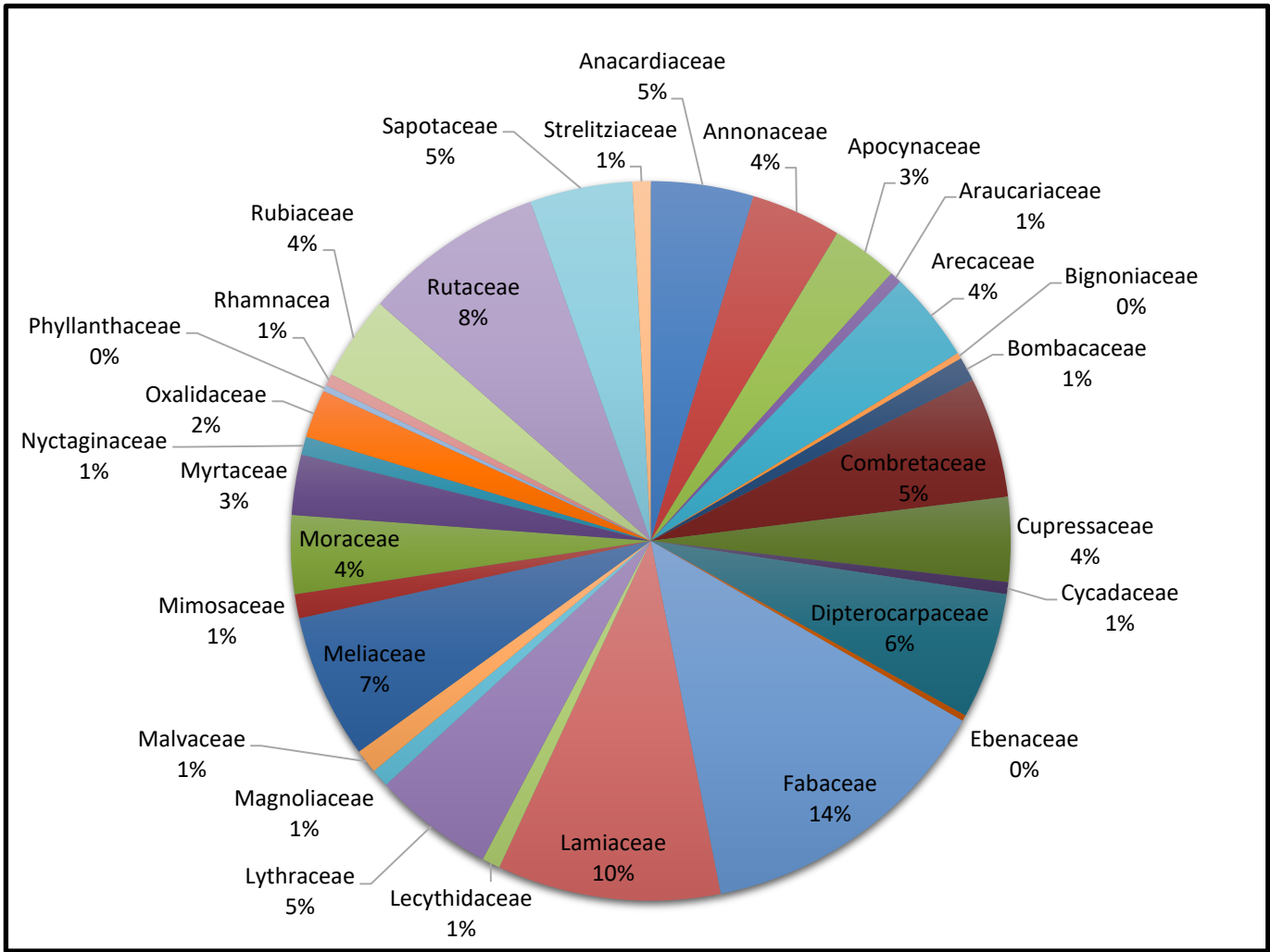
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<i>Family</i>	<i>Number of plants</i>
Anacardiaceae	17
Annonaceae	15
Apocynaceae	11
Araucariaceae	2
Areaceae	15
Bignoniaceae	1
Bombacaceae	4
Combretaceae	20
Cupressaceae	14
Cycadaceae	2
Dipterocarpaceae	21
Ebenaceae	1
Fabaceae	50
Lamiaceae	37
Lecythidaceae	3
Lythraceae	20
Magnoliaceae	3
Malvaceae	4
Meliaceae	24
Mimosaceae	4
Moraceae	13
Myrtaceae	10
Nyctaginaceae	3
Oxalidaceae	8
Phyllanthaceae	1
Rhamnaceae	2
Rubiaceae	14
Rutaceae	30
Sapotaceae	17
Strelitziaceae	3

Table: Family wise distribution of the individual plants in the College Campus

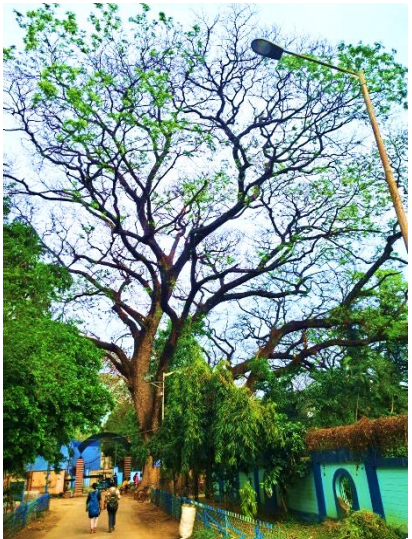
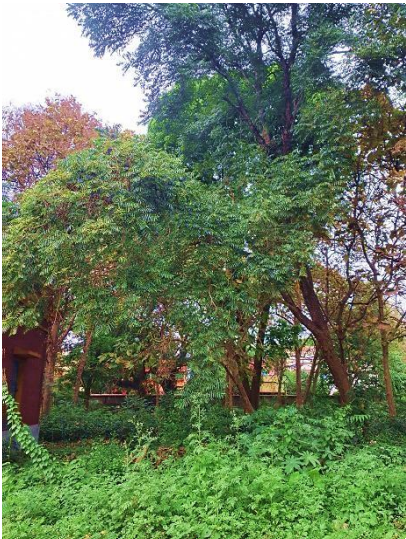
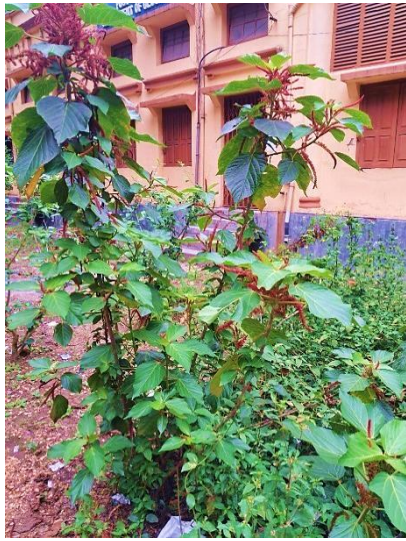


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Graphical representation of family-wise major plants distribution (in %)





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Figure: Photographs showcasing the rich biodiversity of plants within the college campus

The Medicinal Plant Garden

The college cultivates a diverse array of medicinal plants, fostering hands-on learning and research opportunities for students. These plants, rich in therapeutic properties, provide insight into traditional and modern medicinal practices. 28 medicinal plant species from 22 families are curated within two distinct gardens, divided by a narrow concrete pathway. These gardens adorn the landscape in front of the Botany Department at Krishnagar Government College, offering a diverse array of healing flora for study and exploration.



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Scientific name	Local Name	Family	Medicinal uses
<i>Aegle marmelos</i> (L.) Correa	Bel	Rutaceae	Most effective in treating fever, nausea, vomiting, swellings, dysentery, dyspepsia, seminal weakness, intermittent fever, and cough, it also proves beneficial in managing epilepsy. Apart from its laxative properties and efficacy in treating respiratory ailments, it is utilized in traditional medicine for various conditions such as chronic diarrhea, peptic ulcers, and exhibiting antioxidant, antibacterial, and antiviral properties, among others.
<i>Albizia lebbek</i> (L.) Benth.	Karai Chatka	Mimosaceae	It exhibits antiasthmatic and antianaphylactic activities, along with antiallergic properties. Thus, it could serve as an effective herbal remedy for bronchial asthma and tropical pulmonary eosinophilia.
<i>Andrographis paniculata</i> (Burm. f.) Wall. ex Nees	Kalmegh	Acanthaceae	Traditionally utilized in treating diabetes, high blood pressure, ulcers, leprosy, bronchitis, skin diseases, flatulence, colic, influenza, dysentery, dyspepsia, malaria, the common cold, diarrhea, and fever from various infections, and jaundice. It acts as a liver and cardiovascular tonic, antioxidant, and aids in sexual dysfunction and contraception.
<i>Asparagus racemmosus</i> L.	Shatamul	Asparagaceae	Used for athletic performance, diabetes, HIV/AIDS, lactation and for nervous disorders.
<i>Averrhoa carambola</i> L.	Kamranga	Oxalidaceae	Commonly employed for liver dysfunction, fever, cough, diarrhea, and chronic headache, inflammatory skin disorders like eczema, and fungal skin infections, as well as bleeding hemorrhoids. It exhibits hypoglycemic and antidiabetic effects.
<i>Barleria prionitis</i> L.	Vajradanti	Acanthaceae	Utilized in treating whooping cough, bronchitis, leucoderma, gum problems, toothache, glandular swellings, and skin diseases. It possesses anti-spermatogenic and hepatoprotective effects.
<i>Butea monosperma</i> (Lam.) Taub.	Palash	Papilionaceae	Used for various skin ailments, keratitis, piles, urinary discharges, and conditions affecting the brain, eyes, head, and skin. It boasts antiseptic, hematinic, bitter, and acrid properties, serving as an effective remedy for itch and herpes. The seeds and seed oil are prized for their carminative, antiseptic, anthelmintic, and antirheumatic effects, benefiting conditions such as biliousness, eye ailments, leukoderma, rheumatism, skin diseases, worms, and wounds. The powdered seeds act as a febrifuge and tonic, useful in bronchitis and whooping cough, while the seed oil exhibits styptic and depurative qualities.
<i>Cheilocostus speciosus</i> (J. Konig) C. Specht	Keumul (Crepe Ginger)	Costaceae	Rhizomes and roots are attributed with anthelmintic, anti-inflammatory, antidiabetic, hepatoprotective, antihyperlipidemic, antispasmodic, and antimicrobial properties. The leaves are employed in baths for patients with high fever. Rhizome juice, traditionally mixed with sugar, is administered for treating leprosy and relieving headaches. Additionally, its alkaloid extract serves as a



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Scientific name	Local Name	Family	Medicinal uses
<i>Cinamomum tamala</i> (Buch.Ham) Nees&Eberm	Tejpata	Lauraceae	muscle relaxant with antispasmodic effects. Various pharmacological activities have been identified, including anti-hyperlipidemic, anti-diabetic, gastroprotective, anti-helminthic/antiprotozoal, anti-inflammatory, antiemetic, anti-diarrheal, antifungal, and potent antibacterial properties against microorganisms such as <i>Escherichia coli</i> , <i>Bacillus subtilis</i> , and <i>Saccharomyces cerevisiae</i> . Additionally, it exhibits antioxidant and free radical scavenging activities, along with CNS protective effects like anticonvulsant and hypothermic activity.
<i>Cissus quadrangularis</i> L.	Harjora	Vitaceae	Used for diabetes, obesity, high cholesterol, bone fractures, allergies, cancer, stomach upset, painful menstrual periods, asthma, malaria, wound healing, peptic ulcer disease, weak bones, weak bones (osteoporosis) and as body building supplements as an alternative to anabolic steroids.
<i>Clitoria ternatea</i> L.	Aparajita	Papilionaceae	Used as a nerve tonic, alterative, and laxative, this plant's leaves and roots are employed in treating infections, urinogenital disorders, acting as an anthelmintic, and as an antidote to animal stings. A decoction of the roots alone or combined with flowers is recognized as an emmenagogue.
<i>Diospyros blancoi</i> A. DC.	Bon Gub	Ebenaceae	A decoction of young leaves is administered for hypertension, heart ailments, and diabetes. Combining these leaves with <i>Plectranthus amboinicus</i> treats chest colds. The bark's astringency is utilized in decoctions for coughs, fevers, dysentery, and diarrhea. Both bark and leaves are applied topically for skin issues and as an eyewash. Their juice serves as an antidote for snakebites. Unripe fruit juice is astringent, effective for wound cleansing. An infusion of the fruit aids in treating aphthous stomatitis. Oil extracted from the seeds treats diarrhea and dysentery.
<i>Euphorbia tithymaloides</i> L.	Rangchita	Euphorbiaceae	The plant holds a prominent place in folk medicine, addressing diverse ailments including inflammatory conditions, fever, and tumors. It exhibits a wide array of pharmacological activities such as anti-inflammatory, anti-tumor, anti-diabetic, anti-cancer, anti-leishmanial, anti-malarial, anti-helminthic, anti-microbial, anti-oxidant, anti-ulcerogenic, and cytotoxic effects.
<i>Lagerstroemia speciosa</i> (L.) Pers.	Jarul	Lythraceae	The plant is used to treat diabetes. It has hypoglycemic affect, antioxidant and glucose regulatory properties. Corosolic is isolated from the leaves of the plant, which has some insulin-like activity.
<i>Magnolia champaca</i> (L.) Baill. ex Pierre	Champa	Magnoliaceae	The flowers are employed in treating dyspepsia, vertigo, nausea, fever, renal diseases, gonorrhoea, and as a diuretic. Perfumed oil derived from the flowers proves beneficial in cephalalgia, ophthalmia, and gout, while the oil from the seeds is applied topically on the abdomen to relieve flatulence. Dried root and root-bark serve as applications for abscesses, aiding in clearing inflammation. Additionally, when prepared



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Scientific name	Local Name	Family	Medicinal uses
			as an infusion, it acts as a valuable emmenagogue and purgative.
<i>Mimusops elengi</i> L.	Bokul	Sapotaceae	The bark, flowers, fruits, and seeds are valued for their astringent, cooling, anthelmintic, tonic, and febrifuge properties. Primarily, they are utilized to address dental issues such as bleeding gums, pyorrhea, dental caries, and loose teeth
<i>Murraya exotica</i> L.	Kamini	Rutaceae	The plant is employed in treating diarrhea, abdominal pain, stomach ache, dysentery, headache, thrombosis, and blood stasis. It serves as a detoxification agent, anticonvulsant, local anesthetic, and expectorant. Extracts from the bark and leaves exhibit stimulant and astringent properties, along with antinociceptive, anti-inflammatory, antidiarrheal, antitrypanocidal, antidiabetic, antimalarial, antibacterial, antifungal, anti-amebic, and antioxidant activities.
<i>Murraya koenigii</i> (L.) Spreng.	Curry Pata	Rutaceae	The green leaves are utilized in treating piles, inflammation, itching, fresh cuts, dysentery, bruises, and edema. The roots exhibit mild purgative properties and are stimulant, often used for general body aches. The bark is beneficial in treating snakebites. Essential oil extracted from <i>M. koenigii</i> leaves is known for its antioxidative, hepatoprotective, antimicrobial, antifungal, anti-inflammatory, and nephroprotective effects.
<i>Neolamarckia cadamba</i> (Roxb.) Bosser	Kadam	Rubiaceae	The plant is employed in treating fever, uterine complaints, blood diseases, skin diseases, tumors, anemia, eye inflammation, and diarrhea. It possesses antihepatotoxic, antimalarial, analgesic, anti-inflammatory, antipyretic, diuretic, and laxative properties. Various phytochemicals including cadambine and its derivatives (dihydrocadambine and isodihydrocadambine), indole alkaloids (Neolamarckines), and quinovic acid derivatives have been isolated from the leaves and bark.
<i>Nyctanthes arbor-tristis</i> L.	Shiuli	Oleaceae	The plant is utilized for treating intermittent fevers, arthritis, and obstinate sciatica. Crude extracts and isolated compounds from the plant demonstrate pharmacological activity against inflammation, malaria, viral infections, leishmaniasis, and as an immunostimulant. The major class of biologically active compounds includes iridoid glucosides such as Arbortristoside A, B, and C, found in the seeds, which exhibit anticancer, anti-leishmanial, anti-inflammatory, anti-allergic, immunomodulatory, and antiviral properties. Other molecules, such as calceolarioside A, 4-hydroxyhexahydrobenzofuran-7-one, and β -sitosterol from the leaves, have been reported to be active against leishmaniasis, cancer, and inflammation, respectively.
<i>Ocimum sanctum</i> L.	Tulsi	Labiatae	It contains vitamin C and antioxidants such as eugenol, which protect the heart from free radicals and reduce cholesterol levels in the blood, while safeguarding the skin from



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Scientific name	Local Name	Family	Medicinal uses
			damage caused by free radicals. The plant extract acts as a mild diuretic and detoxifying agent, aiding in lowering uric acid levels, relieving fever and migraine pain. Its anti-inflammatory properties promote eye health by preventing viral, bacterial, and fungal infections, soothing eye inflammation, and reducing stress. Additionally, it acts as a mouth freshener and oral disinfectant, curing mouth ulcers by destroying bacteria responsible for dental issues like cavities, plaque, tartar, and bad breath, while also protecting teeth. It is effective against viral, bacterial, and fungal infections of the respiratory system, addressing disorders like bronchitis and tuberculosis. Furthermore, the plant is a rich source of Vitamin K, crucial for bone and heart health.
<i>Phyllanthus emblica</i> L	Amloki	Phyllanthaceae	Fruit is an important source of Vitamin C, tannins, Phyllembin, Linolic acid, Indole acetic acid, Ellagic acid, Phyllemblic acid etc. The fruit pulp is used as anti-diabetic, hypolipidemic, anti-microbial, anti-inflammatory, antioxidant, hepatoprotective and anti-emetic agent. It increases immunity and provides rejuvenating effect, cures bleeding disorders, diabetes, helps in restoration of vision, promotes health and lustre of hair.
<i>Ravenala madagascariensis</i> Sonn	Pantho Padop	Strelitziaceae	The plant is widely used in the treatment of diarrhoea, hypertension, edema, kidney stone and diabetes. The seeds are also reported to be antiseptic. The oil of seeds has antibacterial properties.
<i>Swietenia macrophylla</i> King.	Mahagoni	Meliaceae	The seeds are utilized to treat hypertension, diabetes, and pain relief, as well as for various skin ailments as an antiseptic for wounds, psoriasis, diabetes, diarrhea, chest pain, leishmaniasis, and controlling blood glucose levels. They are also used for treating constipation, menstrual pain, eczema, and rheumatism, improving fertility and appetite, and relieving fever and cold. Additionally, seed paste is a potent abortifacient. The bark decoction is employed for diarrhea, dysentery, and as a hemostyptic. It also serves as an antipyretic and tonic, increasing appetite, aiding in tuberculosis recovery, treating anemia, fever, and toothache. Leaf decoction is utilized against nerve ailments, while seed powder acts as an insect repellent.
<i>Tecoma stans</i> (L.) Juss. ex Kunth	Chandraprabha	Bignoniaceae	The roots are reported to have diuretic, tonic, anti-syphilitic, and vermifuge properties. Decoctions made from flowers and barks are used to alleviate stomach pains. The entire plant is utilized in treating diabetes, digestive issues, intestinal worms, and snake bites.
<i>Terminalia bellirica</i> (Gaertn.) Roxb.	Bohera	Combretaceae	The fruits possess laxative, astringent, anthelmintic, and antipyretic properties, and are employed in treating conditions such as hepatitis, bronchitis, asthma, dyspepsia, piles, diarrhea, and coughs, as well as eye



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Scientific name	Local Name	Family	Medicinal uses
<i>Terminalia chebula</i> Retz.	Hartuki	Combretaceae	diseases. They also exhibit antioxidant, antidiabetic, analgesic, antidiarrheal, anti-inflammatory, and antioxidant properties. The fruit exhibits mild laxative, stomachic, tonic, alterative, and antispasmodic properties. It proves beneficial in conditions such as ophthalmia, hemorrhoids, dental caries, bleeding gums, and ulcerated oral cavity. Its paste, when mixed with water, possesses anti-inflammatory and analgesic properties, along with purifying and healing capabilities for wounds. A decoction of the fruit is utilized as a gargle for oral ulcers and sore throat. Its powder serves as an effective astringent dentifrice for loose gums, bleeding, and gum ulceration. Additionally, it aids in increasing appetite, acts as a digestive aid, liver stimulant, gastrointestinal prokinetic agent, and mild laxative. The powder of <i>T. chebula</i> fruits is employed in chronic diarrhea and nervous weakness, while also improving nervous irritability and enhancing the receiving power of the five senses. Due to its astringent nature, it serves as an adjuvant in hemorrhages and is effective for chronic cough, chorizo, sore throat, and asthma. Furthermore, it is useful in conditions like renal calculi, dysuria, urinary retention, and skin disorders characterized by discharges such as allergies, urticaria, and other erythematous disorders.
<i>Vitex negundo</i> L.	Nisinda	Labiatae	The plant extract demonstrates anti-inflammatory, antibacterial, antifungal, analgesic, antihistamine, antimicrobial, antioxidant, and cytotoxic activities against various cancer cell lines. It is utilized for treating premenstrual mastodynia and other symptoms associated with premenstrual syndrome.



Figure: Pictures highlighting the presence of various medicinal plant species throughout the college campus



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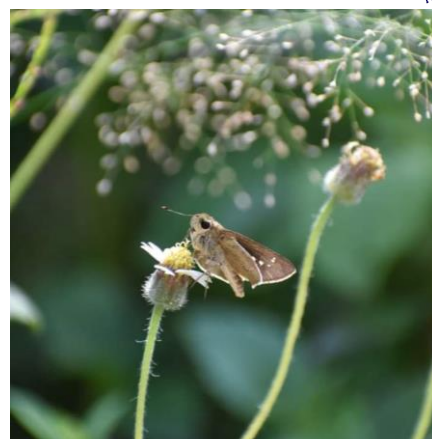
Animal Diversity in the College Campus

The college campus is visited by hundreds of animals every day. Among the numerous insect species, some of the most prominent ones are listed here. At least seven bird species visit and inhabit the campus regularly. In addition, at least three mammalian species and three reptile species visit and/or live in the college campus.

Sl No.	Scientific name	Common name
1	<i>Spindasis lohita</i>	Long-banded silverline
2	<i>Appias libythea</i>	Striped Albatross
3	<i>Graphium agamemnon</i>	Tailed Jay
4	<i>Junonia almana</i>	Peacock Pansy
5	<i>Pelopidas mathias</i>	Small Branded Swift
6	<i>Julus sp</i>	Millipede
7	<i>Oriolus xanthornus</i>	Black-hooded Oriole
8	<i>Merops orientalis</i>	Asian green bee-eater
9	<i>Psilopogon asiaticus</i>	Blue-throated barbet
10	<i>Acrocephalus scirpaceus</i>	Reed Warbler
11	<i>Psittacula krameri</i>	Ringneck Parakeet
12	<i>Eudynamis scolopaceus</i>	Cuckoo/ Koel
13	<i>Pycnonotus aurigaster</i>	Sooty-headed Bulbul
14	<i>Columba livia</i>	Pigeon
15	<i>Funambulus palmarum</i>	Indian palm squirrel
16	<i>Herpestes edwardsii</i>	Indian grey mongoose
17	<i>Semnopithecus sp</i>	Indian langur
18	<i>Varanus bengalensis</i>	Indian monitor lizard
19	<i>Coluber mucosus</i>	Rat Snake/ Darash
20	<i>Amphiesma stolatum</i>	Striped Keelback/ Hele

Table: Most Prominent Animals Frequenting the College Campus

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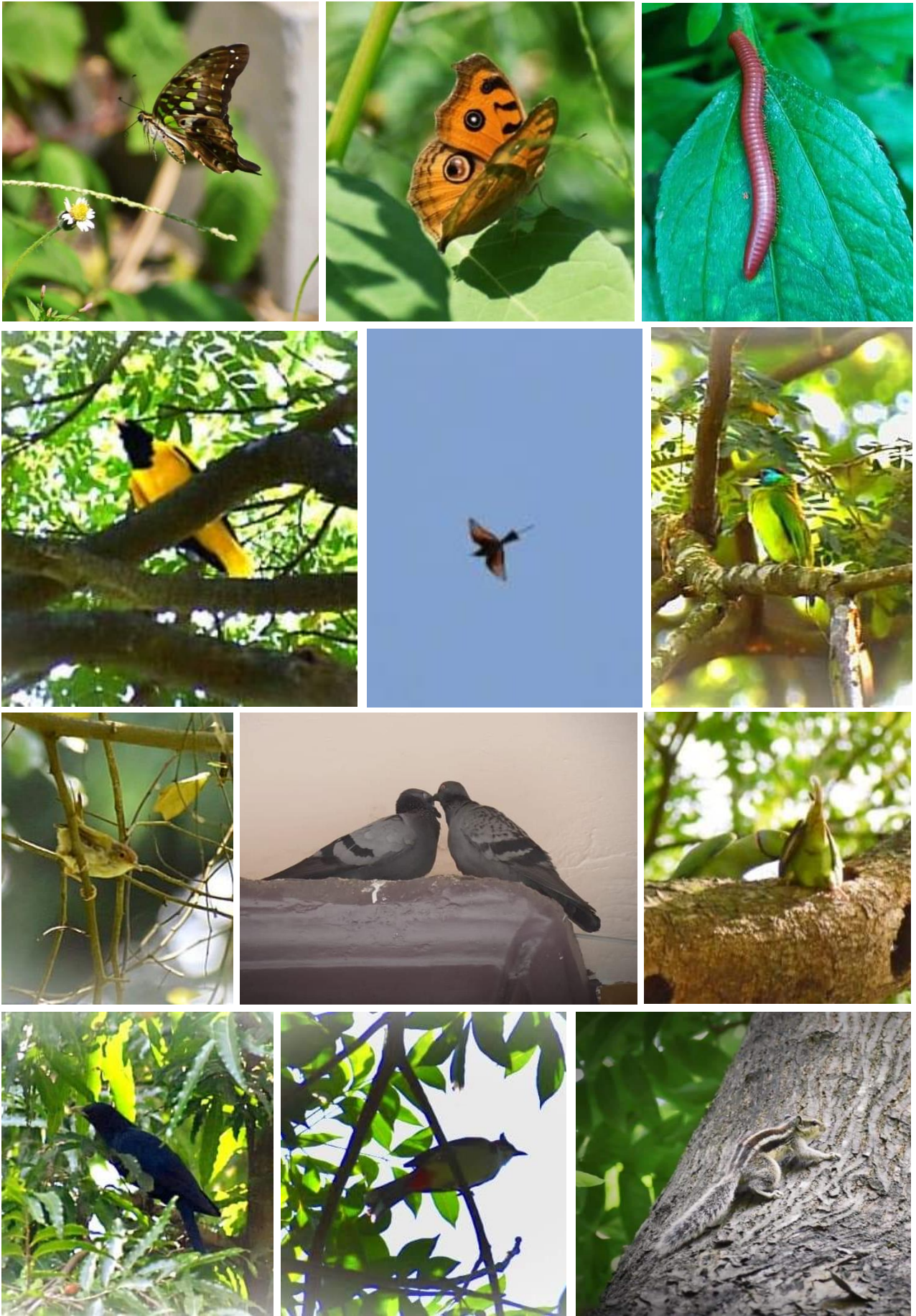


Figure: Pictures depicting the diverse animal ecosystem present within the college premises



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Assessment of Carbon Footprint

A carbon footprint, also known as a greenhouse gas footprint, is a quantified measure used to assess the total greenhouse gas emissions attributed to an activity, product, entity, or nation. This metric is typically expressed in units such as tonnes of CO₂-equivalent emissions per specified unit of comparison, such as per year, per unit of consumption, per distance travelled, or per item produced. It encompasses emissions across the entire lifecycle of a product, from production through consumption to disposal. Likewise, the carbon footprint of an organization or institution encompasses both its direct emissions and those indirectly associated with its activities. By identifying economic activities with significant carbon footprints, this measure aids in prioritizing climate change mitigation efforts. Consequently, the concept enables comparative analysis of the climate impact of individuals, products, organizations, and nations, informing strategies to mitigate emissions.

Methodologies

Numerous methodologies are available for computing carbon footprints, with various organizations and online tools offering assistance in this regard. The general formula utilized by most involves the following steps:

Electricity Unit consumed yearly x 105 kg

LP Gas Unit consumed yearly x 105 kg

Additional 184 kg if there is no paper recycling unit

Additional 166 kg if there is no aluminium and tin recycling unit

There will be a standard error of 1-8 kg

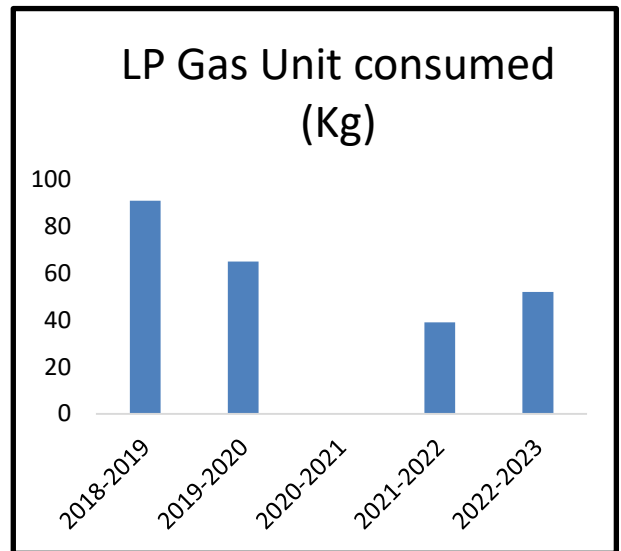
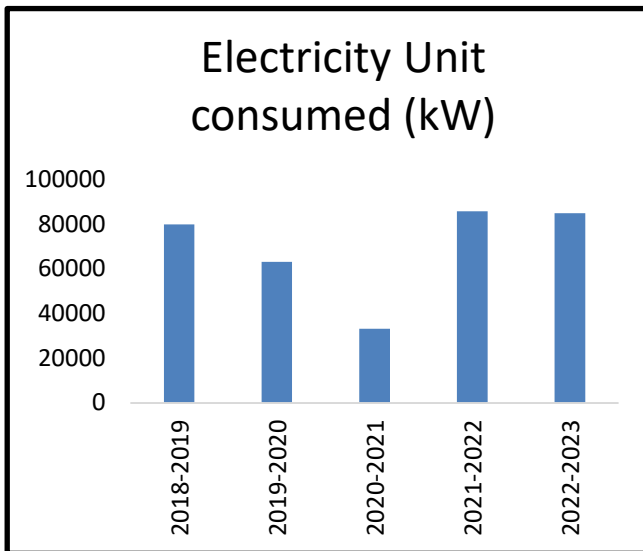
Estimation of CO₂ emission



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Academic year	Electricity Unit consumed (kW)	LP Gas Unit consumed (kg)
2018-2019	79964	91
2019-2020	63152	65
2020-2021	33211	--
2021-2022	85731	39
2022-2023	84899	52

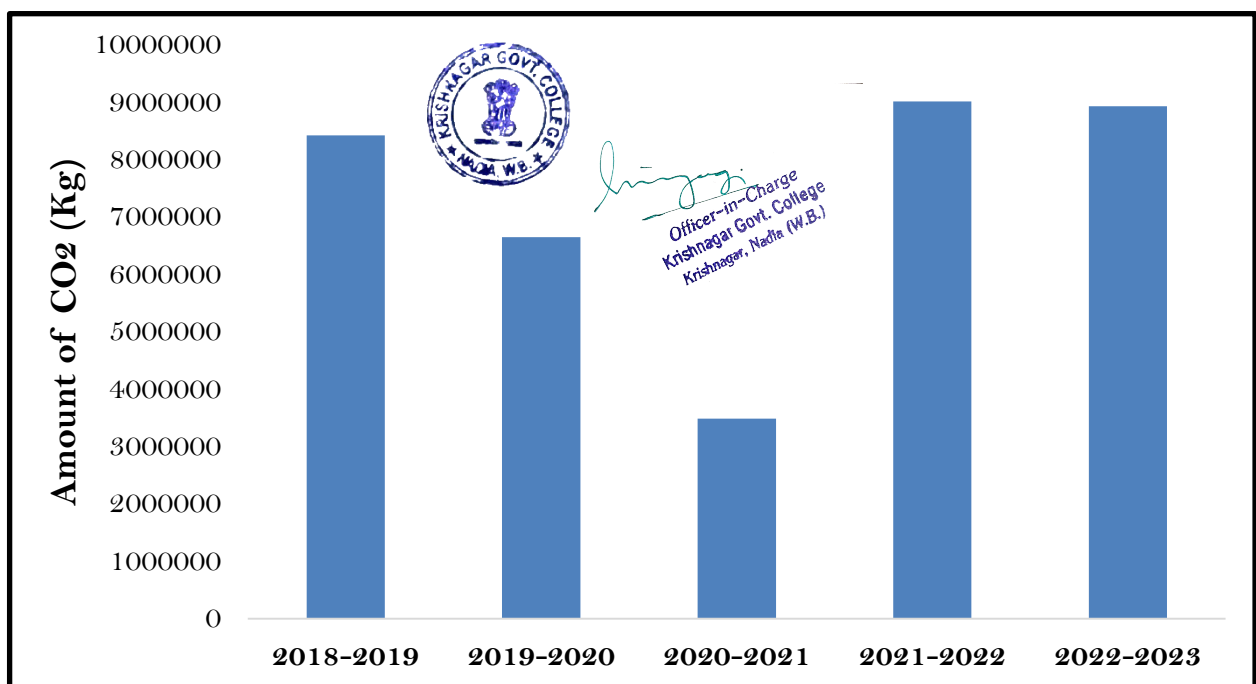
Table: Electricity and LP Gas consumed per year



Graphical representation of electricity consumed and LP gas consumed per academic year

Academic year	Carbon Footprint (Tonne)
2018-2019	8410.5
2019-2020	6641.2
2020-2021	3487.5
2021-2022	9008
2022-2023	8922.7

Table: Carbon footprint of the college per academic year



Graphical representation of carbon footprint per academic year

Assessment of Carbon Sequestration

Carbon sequestration refers to the process by which carbon dioxide (CO₂) is removed from the atmosphere and stored in carbon sinks, such as forests, oceans, soil, or geological formations, for an extended period. This natural or engineered process helps mitigate the accumulation of greenhouse gases in the atmosphere, thereby contributing to efforts to combat climate change. Carbon sequestration can occur through biological, chemical, or physical processes, and it plays a crucial role in regulating the global carbon cycle. Additionally, it is a key component of various climate change mitigation strategies and technologies aimed at reducing atmospheric CO₂ concentrations.

Methodologies

Carbon sequestration is closely linked to the growth and developmental dynamics of trees, primarily through its influence on biomass accumulation. Trees allocate this biomass into two main compartments: Above-Ground Biomass (AGB) and Below-Ground Biomass (BGB) (DiRocco *et al.*, 2014). Above-ground biomass comprises the visible parts of the tree above the soil line, such as the trunk, branches, leaves, and any fruits or flowers. Below-ground biomass consists of the roots, which, though less visible, are equally crucial for the tree's stability and nutrient uptake. The CO₂ absorbed from the atmosphere is assimilated into both AGB and BGB. As a tree matures, its capacity to sequester carbon increases, making older trees more efficient at absorbing CO₂.

To accurately determine the amount of CO₂ absorbed by trees, two critical measurements are taken directly from the tree: its diameter and its height (Shadman *et al.*, 2022).

$$AGB = 0.25 \times D^2 \times H$$

Where:

- AGB: Above-Ground Biomass (pounds).
- D: tree diameter (feet).
- H: tree height (feet).



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The overall green weight of the biomass is estimated to be 120% of the AGB value, based on the assumption that the BGB, which comprises the tree's root system, accounts for approximately 20% of the AGB (Shadman *et al.*, 2022). Therefore, BGB can be calculated as follows:

$$BGB = 0.2 \times AGB$$

From these formulas, one can calculate the total biomass from a tree:

$$\text{Total Biomass (TB)} = AGB + BGB = AGB + 0.2 \times AGB = 1.2 \times AGB$$

On average, a tree consists of 72.5% dry matter and 27.5% moisture content. To calculate the tree's dry weight, the total weight of the tree should be multiplied by 72.5%.

Total Dry Weight (TDW) = TB × 0.725

Carbon occupies 50% of the total dry weight. Therefore,

Total Carbon (TC) = TDW × 0.5,

and CO₂ weight = TC × 3.67

To ascertain the annual or yearly rate of CO₂ sequestration, the total weight of CO₂ absorbed is divided by the tree's age. Finally, the weight of CO₂ is converted from pound to kg by multiplying it with 0.45.

Estimation of CO₂ sequestration

Estimation of age, diameter and height of the plants to determine the Above-Ground Biomass (AGB)

On the college campus, there are approximately 66 trees that are over 100 years old. Additionally, there are around 68 trees aged between 50 and 100 years. The majority of trees on campus are below 10 years old.

Approximate Age	Number of Trees & Shrubs
Above 100 Years	66
50 to 100 Years	68
30 to 50 Years	67
10 to 30 Years	80
Below 10 Years	88

Table: number of trees and shrubs of different ages

The diameter of the trees ranges from as large as 9 feet to just a few inches, while their height ranges from over 100 feet to below 3 feet, depending on their age and type.

Approximate Diameter	Number of Trees & Shrubs
Above 8 ft	2
3 to 8 ft	31
1 to 3 ft	54
6 inch to 1 ft	73
1 to 6 inch	122

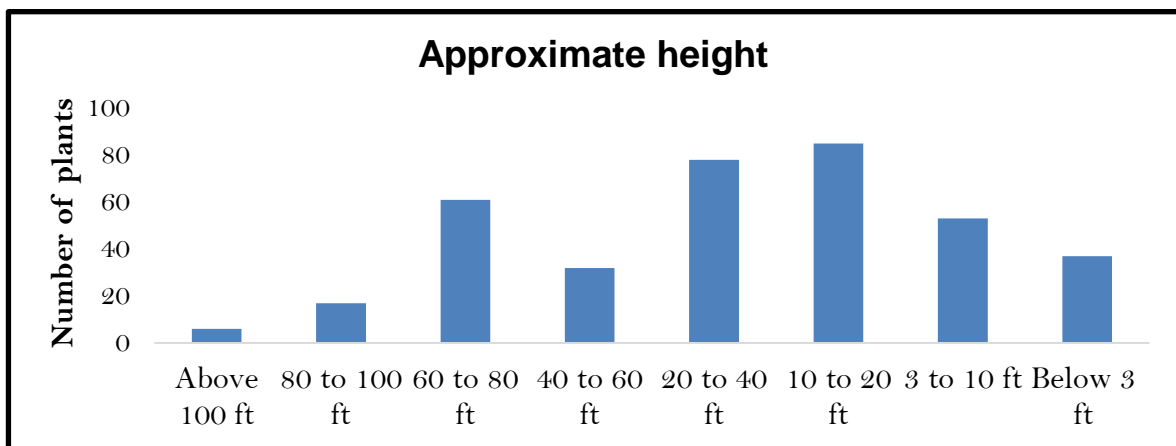
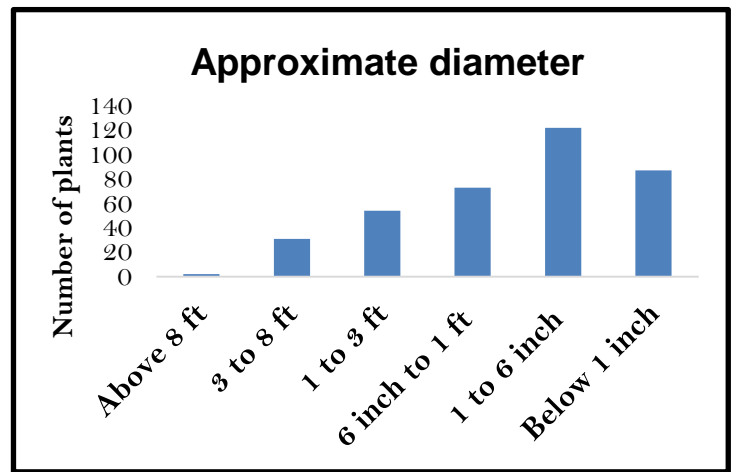
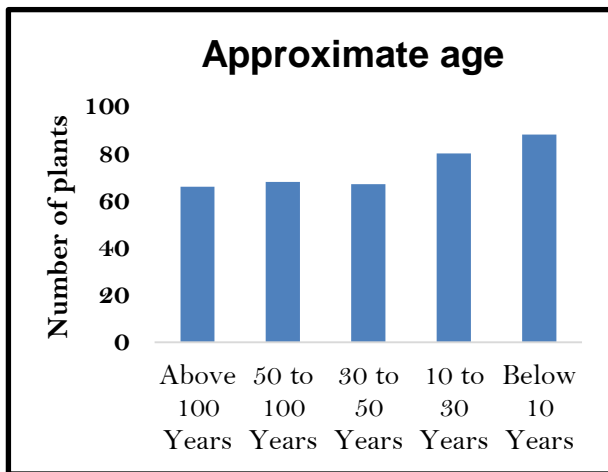
Table: number of trees and shrubs of different diameter



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Approximate Height	Number of Trees & Shrubs
Above 100 ft	6
80 to 100 ft	17
60 to 80 ft	61
40 to 60 ft	32
20 to 40 ft	78
10 to 20 ft	85
3 to 10 ft	53

Table: number of trees and shrubs of different height



Graphical representation of number of trees and shrubs by age, diameter, and height

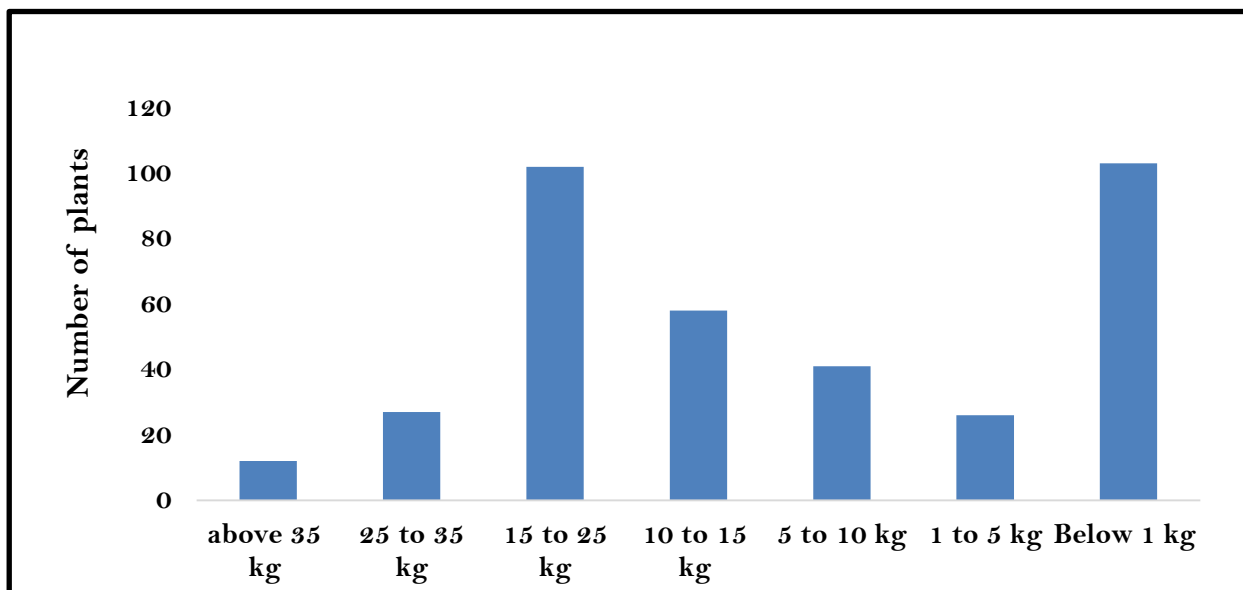
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Based on the data, the approximate CO₂ sequestration of the plants in the College campus has been determined. There are 328 trees and 41 shrubs, along with nearly 45,000 weeds present in the College campus.



<i>CO₂ sequestration</i>	<i>Number of Trees & Shrubs</i>
above 35 kg	12
25 to 35 kg	27
15 to 25 kg	102
10 to 15 kg	58
5 to 10 kg	41
1 to 5 kg	26
Below 1 kg	103

Table: measurement of average CO₂ sequestration according to number of trees and shrubs



Graphical Representation of Average CO₂ Sequestration (kg/year) by Number of Trees and Shrubs

The average CO₂ sequestration including the trees and shrubs of the campus has been determined to be 12.8 kg per year. Therefore, the annual CO₂ sequestration by them is $12.8 \times 369 = 4723.2$ kg. The CO₂ sequestration by the weeds (herbs) is very low, amounting to almost negligible contribution (less than 1 kg) to the total CO₂ sequestration per year. Hence, the final approximate annual CO₂ sequestration by the plant population in the college can be estimated as 4724 kg/year.

Reference: DiRocco, T. L., Ramage, B. S., Evans, S. G., & Potts, M. D. (2014). Accountable accounting: carbon-based management on marginal lands. *Forests*, 5(4), 847-861.

Shadman, S., Khalid, P. A., Hanafiah, M. M., Koyande, A. K., Islam, M. A., Bhuiyan, Show, P. L. (2022). The carbon sequestration potential of urban public parks of densely populated cities to improve environmental sustainability. *Sustainable energy technologies and assessments*, 52, 102064.



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Analysis & Recommendations

In comparison to the carbon footprint, the CO₂ sequestration appears inadequate on the college campus. Nevertheless, the vegetation within the campus contributes at least somewhat to environmental restoration efforts. LP gas is primarily used as burner fuel for laboratory experiments, with minimal consumption observed during lockdown periods. The college has also implemented measures to reduce LP gas usage, such as encouraging students to share gas burners during laboratory experiments. To mitigate the significant carbon footprint of the college, the institution has implemented various measures. These include regulating and prioritizing the use of lighting, fans, and air conditioning, transitioning to LED lamps and tube lights, and installing solar panels on the rooftop of the Bioscience building. These solar panels are intended to not only power the building itself but also potentially provide electricity to nearby buildings within the college premises. Additionally, various programs aimed at fostering social and environmental awareness among students and staffs have been initiated. It is recommended to further increase the number of trees both within and outside the campus, as well as to organize programs for the local community to promote environmental stewardship and carbon footprint reduction.




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Waste Management



The college generates various types of solid and liquid waste, with minimal impact on ground and surface water or air quality. Solid waste primarily originates from the canteen, with minimal amounts from laboratories. Liquid waste mainly stems from toilet usage. Waste quantity and quality are primarily dictated by their sources. Plastic waste amounts to approximately 0.85 kg per day, primarily arises from paper cups and plastic reagent bottles, although the campus is designated as a Plastic Free zone. Metal and wooden waste is stored separately for subsequent processing.

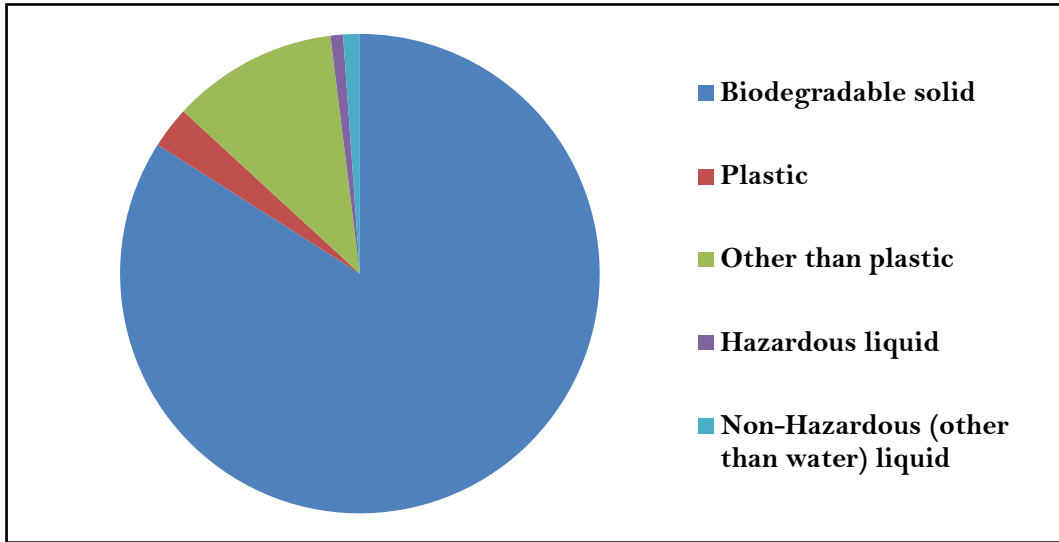
The college has designated separate buckets & bins for biodegradable and non-biodegradable waste across campus. In the office area, six bins and two buckets are provided, while the main building premises feature one closed bucket and six bins. Additionally, one open and one closed bucket are situated on the open area near the main building. Each toilet is equipped with a closed bin. Within departmental laboratories, separate buckets are allocated for biodegradable and non-biodegradable waste, with glass waste stored separately. Liquid waste from laboratories undergoes safe drainage procedures, with hazardous chemicals appropriately stored in designated containers for later disposal. Although the college lacks proper infrastructure for segregating and disposing of hazardous and non-hazardous waste, resulting in mixed waste streams, the laboratories take responsibility for neutralizing toxic and corrosive chemicals before releasing them into the waste stream

Sl No.	Source	Solid waste			Liquid waste	
		Biodegradable	Non-Biodegradable		Hazardous	Non-Hazardous (other than water)
			Plastic	Other than plastic		
(kg)	(kg)	(kg)	(Litre)	(Litre)		
1	Office and Departments	1.5	0.05	0.2	0.015	0.02
2	Laboratories	2.5	0.3	0.2	0.03	10
3	Kitchens	4	0.5	2.5 (average)	--	5

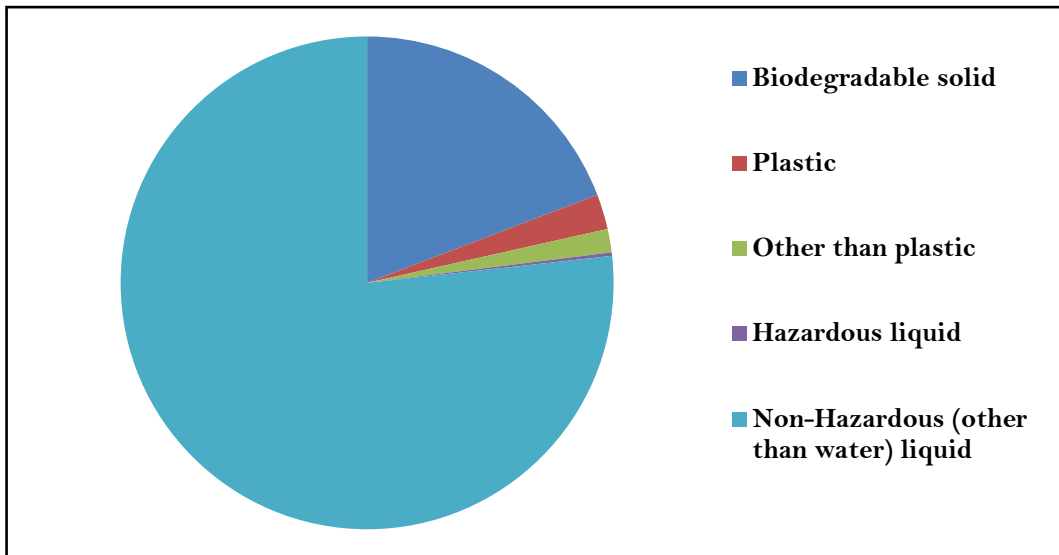
Table: Approximate quantity of waste generated per day from different source



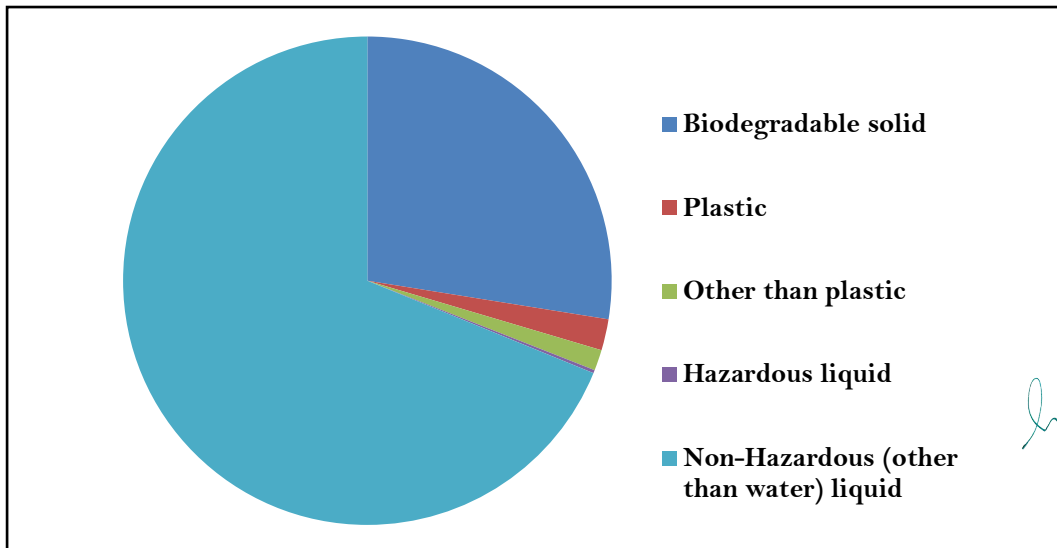
[Signature]
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Graphical representation of waste generated per day from office and departments



Graphical representation of waste generated per day from laboratories



Graphical representation of waste generated per day from kitchens



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Sl No.	Position of bins & buckets (Building-wise)	No. of bins	No of buckets	
			For dry waste	For wet waste
1	Office	6	1	1
2	Main Building	7	1	1
3	Chemistry	4	1	1
4	Bio Science	16	3	3
5	Physics	4	1	1
6	Geography	2	1	1
7	Philosophy	2	1	1
8	Mathematics & Statistics	2	1	1
9	Bengali	2	1	1
10	Student Union	2	1	1
11	Central Library	4	2	2
12	Old Hindu Hostel	4	1	1
13	New Hindu Hostel	3	1	1
14	Open areas of the College campus	--	2	2

Table: Number of bins and buckets for waste and there positioned



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Analysis & Recommendations

The data analysis reveals that the daily generation of plastic and chemical waste is negligible. The primary waste source is the hostel kitchens, attributable to the large student population, which can readily be composted for campus garden use. Plans are underway at Krishnagar Government College to establish a waste management system and a vermicomposting pit. Various initiatives, such as awareness campaigns and NSS unit-led cleaning programs, have been initiated by college authorities to manage solid waste effectively. To enhance waste segregation, it is suggested that differently coloured dustbins be installed throughout the campus for paper, biodegradable, plastic, and other non-biodegradable waste. Additionally, the college plans to install Sanitary Napkin

Vending Machines in women's toilet. Regular meetings are conducted with ground staff to ensure campus cleanliness and proper waste disposal practices. Furthermore, the institution has initiated collaborations with the municipality to collect and dispose of plastic, biomedical, and chemical waste at designated municipal disposal sites. The recommendation emphasizes minimizing waste generation and promoting recycling whenever feasible.



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Figure: Images illustrating the execution of the campus cleaning program and awareness campaigns about the importance of cleanliness



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Office of the Principal

Krishnagar Government College

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Memo No.....

Date

Green Audit Certificate

Krishnagar Government College



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Reference No:

Date-17/11/23

GREEN, ENVIRONMENT AND ENERGY AUDIT CERTIFICATE


ACADEMIC YEAR 2022-2023

This is to certify that Krishnagar Government College located at Krishnagar, Nadia, West Bengal, Pin-741101, has steadfastly strived to establish a robust and ecologically sustainable environment, dedicated to the preservation of nature and biodiversity. Institute of Nature Research and Conservation (INRC) expresses satisfaction following the successful completion of the Green, Environment, and Energy Audit for the academic year 2022-2023.


This accomplishment has been made possible through the active and moral support extended by the Honorable Officer-in-Charge, the IQAC Team, the dedicated teaching and support staff and the enthusiastic student body of Krishnagar Government College. Their collective efforts have significantly contributed to the creation of a positive and eco-friendly atmosphere on the campus.

The commitment demonstrated by both faculty and students towards environmental improvement and the conservation of biodiversity is truly commendable. This proactive approach aligns with the highest standards of ecological stewardship, reflecting a genuine dedication to sustainable practices.

This certificate serves as recognition for the outstanding efforts undertaken by Krishnagar Government College to foster a healthier and more environmentally conscious campus. We applaud their commitment to creating a positive impact on the environment and encourage the continuation of such admirable initiatives in the future.


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