GREEN AUDIT REPORT
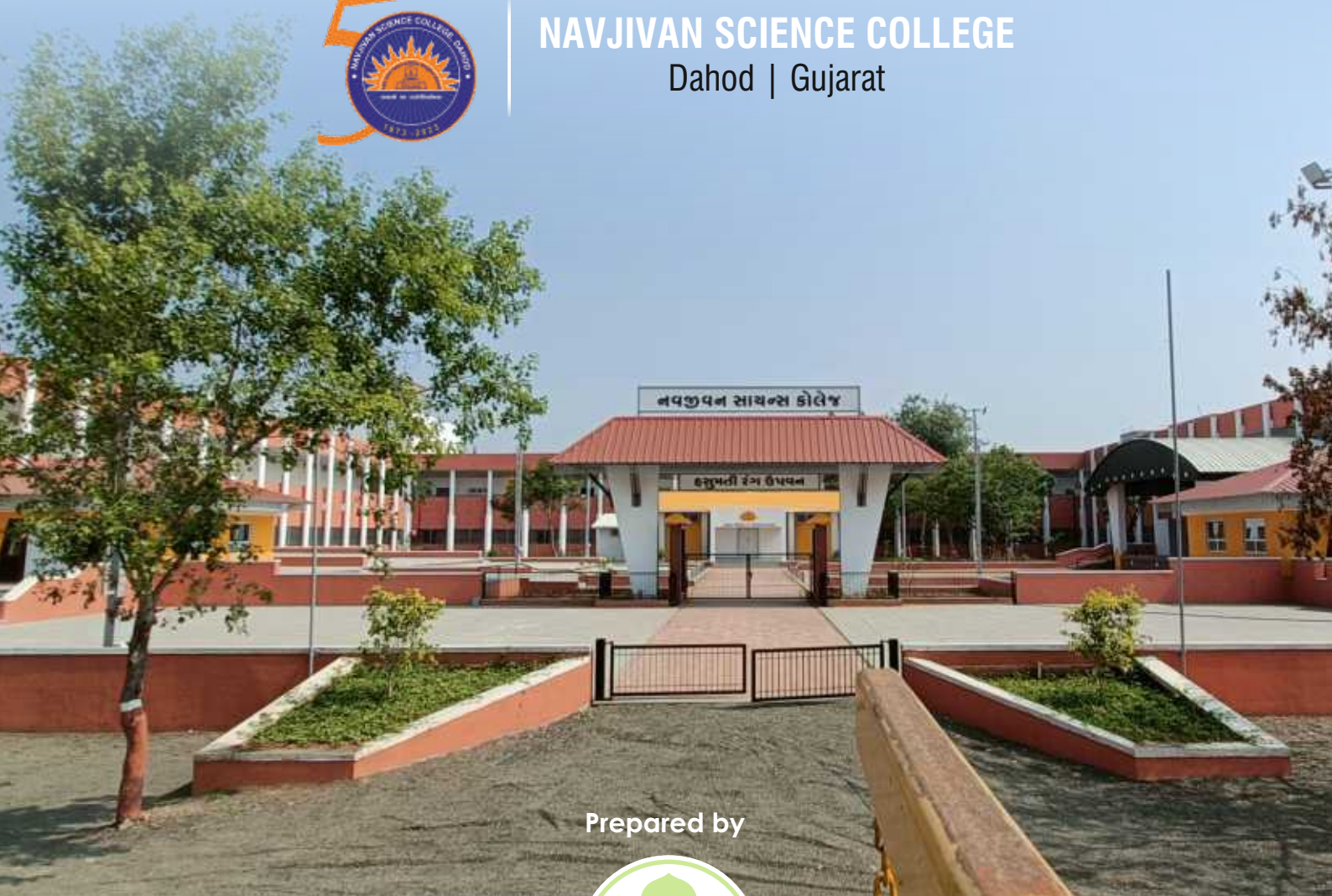**Academic Year 2024 - 2027**

EARTH WATER AIR LIGHT SPACE

NAVJIVAN SCIENCE COLLEGE
Dahod | Gujarat

Prepared by

GREEN MENTORS
Powered by Law of Nature

**Special Consultative Status with the
Economic and Social Council of United Nations from 2021**

AUDITOR'S VIEW

EARTH WATER AIR LIGHT SPACE

Navjivan Science College (NSC), Dahod, Gujarat, is a distinguished institution that has demonstrated remarkable leadership and commitment to sustainability. It earned the prestigious Gold Ranking in the Global Green University Accreditation Standards for the Academic Year 2024-2027.

This recognition by Green Mentors, an organization with special consultative status with the Economic and Social Council (ECOSOC) of the United Nations, underscores NSC's dedication to meeting present needs for natural resources—such as energy, water, and materials—without compromising the ability of future generations to meet their own needs.

Governance and Leadership: NSC has excelled in embedding sustainability into its management and academic frameworks. Developed with extensive stakeholder involvement, the institution's environmental policy articulates a clear commitment to sustainability, setting specific and measurable goals. The active Green Committee meets regularly, ensuring effective implementation and continuous improvement of sustainability initiatives.

Greening Innovation: Innovation at NSC is driven by dedicated labs, competitions, and grant programs that encourage creativity in sustainability. Projects such as developing energy-efficient technologies and sustainable materials are regularly assessed for their impact, fostering a culture of continuous innovation and adaptation.

Commitment to the Planet: NSC's commitment to environmental stewardship is evident through its comprehensive monitoring and educational programs. Establishing diverse monitoring squads and effective training programs ensures all stakeholders are educated on sustainable practices, promoting a campus-wide culture of environmental responsibility.

Campus Planning: NSC's campus planning initiatives are exemplary. They feature compliance with environmental regulations, soil preservation projects, and enhanced greenery. Sustainable commuting options and heat mitigation strategies, such as green roofs and shaded areas, are effectively implemented, reducing the campus's overall environmental footprint.

Water and Energy Efficiency: The institution excels in water and energy efficiency with rainwater harvesting systems, water-efficient fixtures, and advanced irrigation practices. Energy efficiency is further enhanced through solar panels, energy-efficient lighting, and appliances. Continuous monitoring ensures optimization and identifies areas for further improvement.

Waste Management: NSC has established an effective waste management system that includes segregation, recycling, and organic waste management. Initiatives to reduce waste generation and manage hazardous waste are effectively implemented, demonstrating NSC's commitment to minimizing its environmental footprint.

Air Quality and Health & Hygiene: High air quality and hygiene standards are maintained through policies controlling tobacco smoke, ensuring proper ventilation, and using low-VOC materials. The institution also promotes physical activity and organic practices in food services and landscaping, supporting the overall well-being of its community members.

Greening Teaching and Learning: Environmental education is seamlessly integrated into the curriculum at NSC. Hands-on learning opportunities, such as projects in organic gardening and renewable energy systems, engage students and provide practical experiences. These initiatives cultivate a generation of environmentally conscious graduates ready to contribute to sustainable development.

Community Engagement: NSC actively involves the local community in its sustainability initiatives through awareness campaigns, partnerships with local organizations, and events like clean-up drives and tree planting. These efforts foster a culture of environmental stewardship within and beyond the institution.

In conclusion, Navjivan Science College's remarkable performance in the Green College Audit and Accreditation demonstrates its leadership in sustainability education and practices. Achieving 395 out of 500 points and earning a Gold Ranking is a testament to the institution's holistic and comprehensive approach to creating a sustainable future. NSC is poised to become a green engine for the new paradigm of the green economy, contributing significantly to the overall sustainability of the planet.
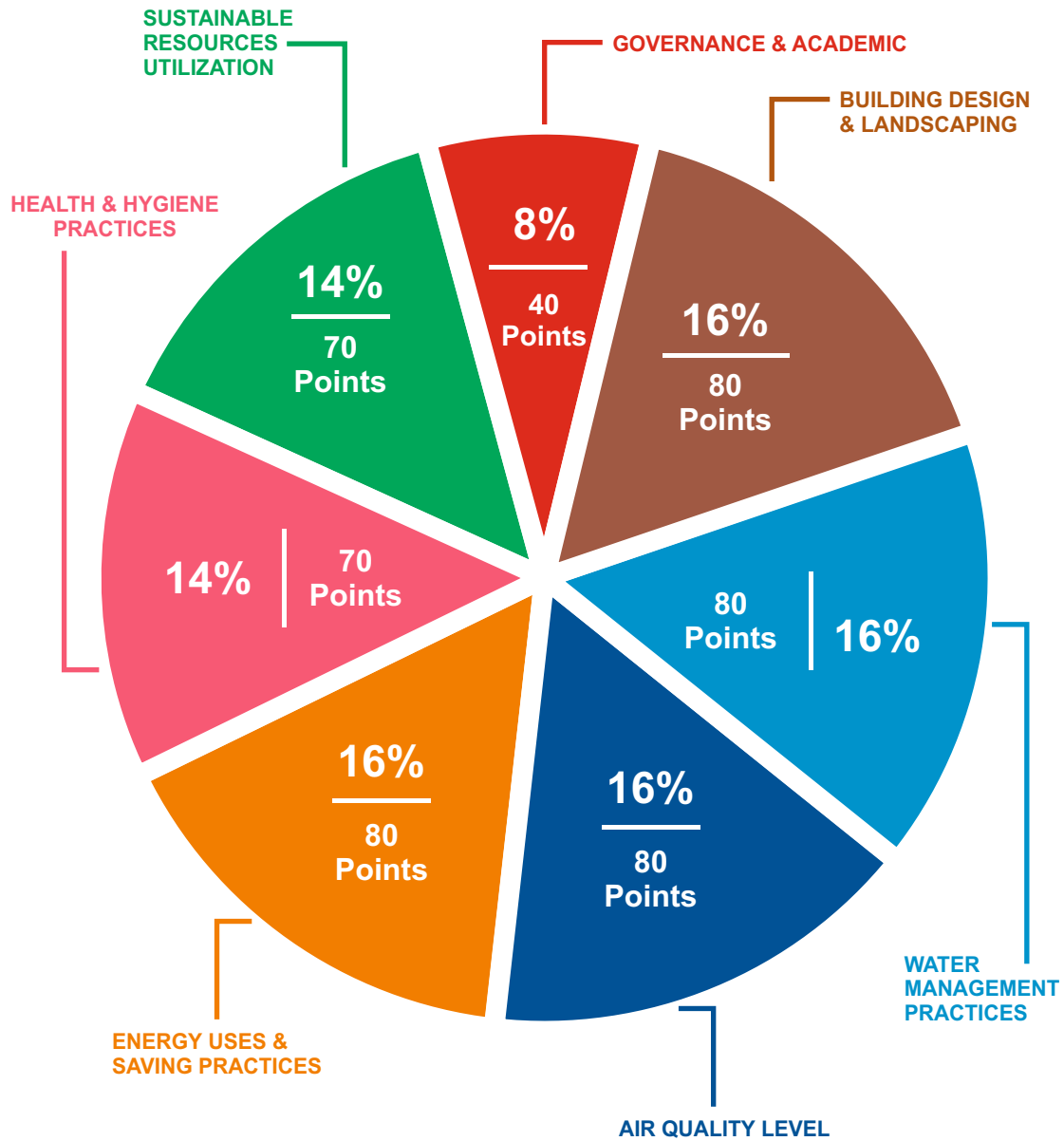
23-05-2024

Virendra Rawat
Director,
Green Mentors

GOOD FOR PUPIL &
GOOD FOR PLANET

GREEN MENTORS

SUSTAINABILITY WEIGHTAGE OF ASSESSMENT AREAS

SUSTAINABLE RESOURCES UTILIZATION

GOVERNANCE & ACADEMIC

BUILDING DESIGN & LANDSCAPING

HEALTH & HYGIENE PRACTICES

8% — **40 Points**

14% — **70 Points**

16% — **80 Points**

14% — **70 Points**

80 Points — **16%**

16% — **80 Points**

16% — **80 Points**

WATER MANAGEMENT PRACTICES

ENERGY USES & SAVING PRACTICES

AIR QUALITY LEVEL

Certification Level

Rejection	Certification	Silver	Gold	Platinum
000-100 Points	100-200 Points	200-300 Points	300-400 Points	400-500 Points

ACCREDITED CERTIFICATE

Brief Introduction

Navjivan Science College, established on June 15th, 1973, by the visionary leader and philanthropist Shri Girdharlal C. Sheth, operates under the auspices of Dahod Anaj Mahajan Sarvajanik Education Society (DAMSES).

As a prominent non-governmental organization, DAMSES oversees 32 educational institutions from pre-school to postgraduate levels across various disciplines, including humanities, science, commerce, and law.

DAMSES thrives on the charity of benevolent institutions and individuals, emerging as one of the largest philanthropic educational networks in Dahod and the surrounding rural areas. Managed by eminent educationalists and distinguished personalities, DAMSES is dedicated to providing value-based education primarily to rural and tribal students at an affordable cost.

Navjivan Science College serves as a beacon of education in Dahod. It is particularly noted for its commitment to serving youth from agricultural, underprivileged, and marginalized backgrounds. The college's reputation is built on its traditions of honest, transparent, and democratic management.

The college boasts an expansive green campus spread over 6.5 acres, featuring a massive and impressive building. Each department has well-developed laboratories and qualified faculty, ensuring a robust educational environment.

The college began with the Department of Chemistry in 1973 under the leadership of Dr. D. H. Mehta and has since expanded to offer undergraduate and postgraduate programs in various core science subjects, including Physics, Mathematics, Botany, Zoology, Microbiology, and Biotechnology.

The institution's primary objective remains to provide affordable quality education to the weaker sections of society, significantly contributing to community and nation-building.

The Chemistry Department stands out with seven of its nine faculty members holding Ph.D. degrees, five of whom are Ph.D. Guides. The department is renowned for high-quality teaching and research in advanced chemical sciences, possessing a library with a comprehensive collection of international and national journals, textbooks, and reference books.

The department also features high-end research instruments and has seen its students excel in NET and GSET examinations, produce 16 Ph.D. graduates, and publish 181 research papers in reputed journals.

The department has successfully completed numerous research projects funded by UGC and Bhabha Atomic Research and Nuclear Science, showcasing our academic prowess and research capabilities.

Over the past nine years, Navjivan Science College has expanded both vertically and horizontally, enabling students to pursue advanced careers. The institution is committed to providing an academically rigorous, morally grounded, and intellectually stimulating education, enriching the lives of its students and preparing them for significant contributions to society. This growth and development demonstrate our potential for further progress and our commitment to academic excellence.

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Programs Offered

Certificate | **Under Graduate** | **Post Graduate** | **Research/ Ph.D.**

Certificate
- Food Additives
- Soap
- Basic concept of Electronics
- Hematology
- Plant Identification & Documentation
- Basics of Bioinformatics

Post Graduate
- Organic Chemistry
- Zoology

Under Graduate
- Chemistry
- Physics
- Zoology
- Botany
- Mathematic
- Microbiology

Research/ Ph.D.
- Chemistry
- Physics
- Botany
- Physical Education
- Life-Science

List of Green Team

Sr. No	Name	Position
1	Dr. G. J. Kharadi	Assistant Professor I/C Principal
2	Dr. J. M. Patel	Associate Professor
3	Dr. H. R. Dabhi	Associate Professor
4	Dr. N. M. Vaghela	Assistant Professor
5	Dr. S. A. Patel	Assistant Professor
6	Dr. K. T. Joshi	Assistant Professor H.o.d. Chemistry Department
7	Mr. D. D. Rathva	Assistant Professor (adhyapak Sahayak)
8	Mr. N. R. Patel	Assistant Professor (adhyapak Sahayak)
9	Mr. H. G. Solanki	Assistant Professor (temporary Full Time)
10	Miss. Bhoomi J. Tilwani	Assistant Professor (temporary Full Time)
11	Dr. V. R. Jain	Assistant Professor, H.o.d. Physics Department
12	Dr. R. R. Patel	Assistant Professor,
13	Mr. M. R. Agrawal	Assistant Professor (temporary Full Time)
14	Smt. N. A. Vohra	Associate Professor, H.o.d. Zoology Department
15	Miss. S. M. Ravat	Assistant Professor (temporary Full Time)
16	Mr. D. R. Paramar	Assistant Professor (temporary Full Time)
17	Mr. A. N. Chauhan	Assistant Professor (temporary Full Time)
18	Miss. Dhruvi K. Patel	Assistant Professor (temporary Full Time)

| Sr. No	Name	Position
19	Dr. K. J. Mehta	Associate Professor, H.o.d. Botany Department
20	Miss. A. S. Bhabhor	Assistant Professor (temporary Full Time)
21	Miss. S. C. Khaped	Assistant Professor (temporary Full Time)
22	Mr. P. C. Pavar	Assistant Professor H.od. Mathematics Department
23	Mr. S. S. Prajapati	H.o.d. Micro Biology Assistant Professor (temporary Full Time)
24	Miss. S. P. Modhiya	Assistant Professor (temporary Full Time)
25	Miss. K. K. Parmar	Assistant Professor (temporary Full Time)
26	Dr. V. J. Chauhan	Assistant Professor
27	Smt. Meghna Kantharia	Assistant Professor (visiting Faculty)

List of Non-Teaching Team

Sr. No	Name	Position
1	Mr. A. B. TADVI	Lab. Assistant (temporary Full Time)
2	Mr. M. N. BILWAL	Gas Mechanic (temporary Full Time)
3	Mr. R. D. MUNIYA	Lab Assistant (temporary Full Time)
4	Mr. L. K. GOHIL	Lab Peon (temporary Full Time)
5	Mr. D. M. DHAKIA	Lab Peon (temporary Full Time)
6	Mr. J. R. DHAKIA	Lab Peon (temporary Full Time)
7	Mr. P. N. SOLANKI	Lab Peon (temporary Full Time)
8	Mr. J. C. PAWAR	Lab Assistant
9	Mr. D. N. KOLI	Lab Peon (temporary Full Time)
10	Mr. N. C. MUNIYA	Lab Technician (temporary Full Time)
11	Smt. M. M. NAGAR	Lab Assistant (temporary Full Time)
12	Mr. R. B. MAKWANA	Lab Peon (temporary Full Time)
13	Miss. RUTU R. RATHOD	Lab Assistant (temporary Full Time)
14	Mr. L. R. SOLANKI	Plant Collector
15	Mr. A. B. KISHORI	lab Peon (temporary Full Time)
16	Mr. S. D. DAMOR	Peon (temporary Full Time)
17	Mr. B. G. GOHIL	Lab Peon (temporary Full Time)

Sr. No	Name	Position
18	Mr. K.M. PITHAYA	sweaper
19	Miss. R. K. PAREKH	Junior Clerk
20	Mr. J. B. BODAR	Junior Clerk
21	Mr. V. K. Gadariya	Accountan (temporary Full Time)
22	Mr. M. B. Bhabhor	Poen (temporary Full Time)
23	Mr. D. R. Champaneri	Clerk (temporary Full Time)
24	Mr. Shri. F. R.nalwaya	Store Keeper
25	Mr. A. S. Bariya	Librarian (temporary Full Time)

Number of students

Certificate
-

Diploma
46

Under Graduate
2355

Post Graduate
629

Research / Ph.D.
-
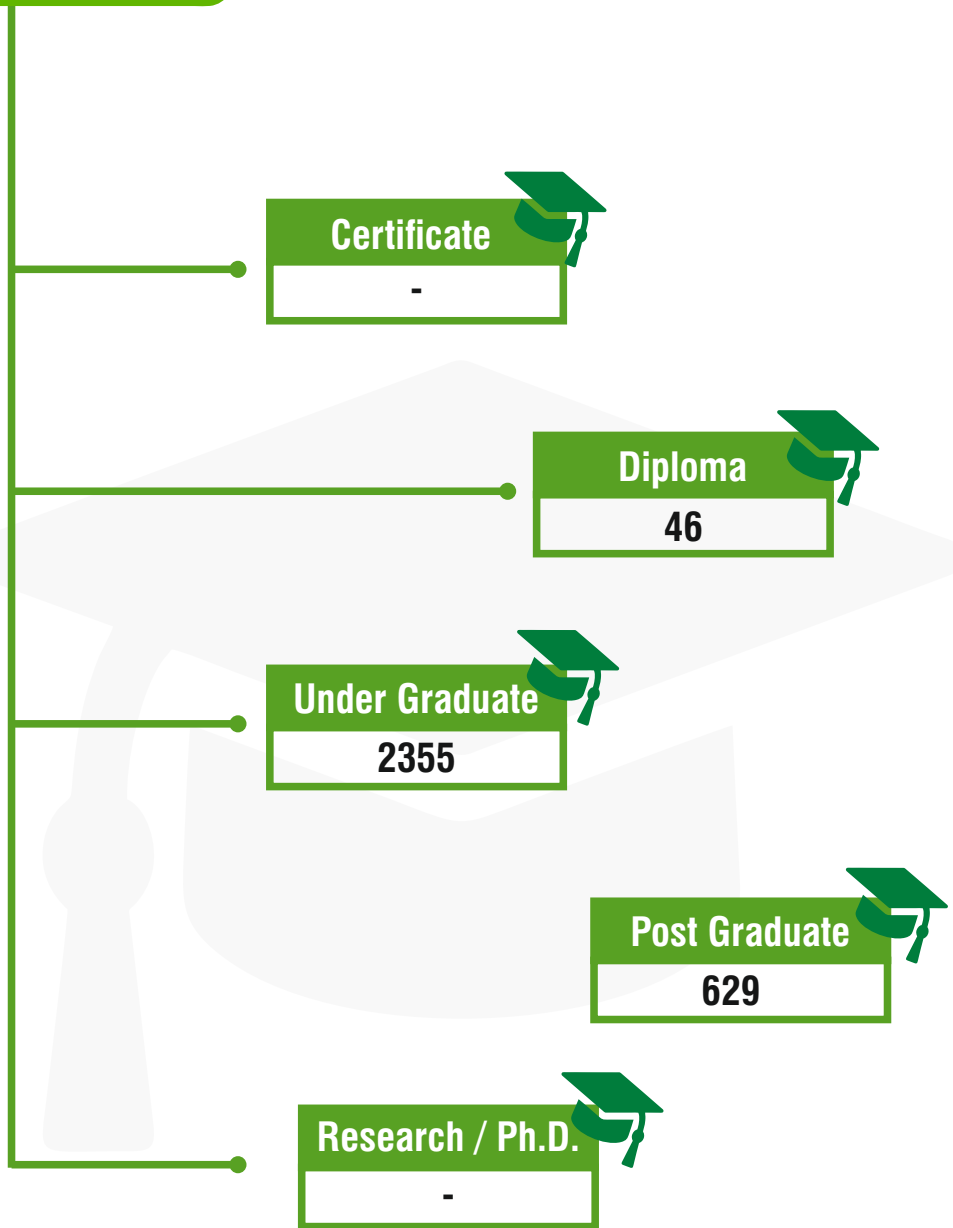
GOVERNANCE & ACADEMIC

A Green University is an institution of higher education that prioritizes sustainability and environmental stewardship in its operations, curriculum, and community engagement. As such, academic practices in a Green University are centered around sustainable principles and procedures.

Sustainable Curriculum: A Green University may offer programs focusing on environmental sustainability, such as Environmental Science, Sustainable Development, Green Energy, and more.

Green Research: A Green University may prioritize research on environmental sustainability, climate change, and green technologies. Researchers at Green University may work on projects that seek to find innovative solutions to environmental challenges, such as developing renewable energy sources or reducing carbon emissions.

Sustainable Campus Operations: A Green University may prioritize sustainable campus operations by implementing sustainable practices such as energy-efficient buildings, renewable energy sources, sustainable transportation, waste reduction and recycling programs, and more.

Community Engagement: A Green University may engage with the local community to promote sustainability and environmental stewardship.

Sustainable Procurement: A Green University may prioritize purchasing products and services that are environmentally sustainable, such as environmentally-friendly cleaning products, recycled paper, and locally sourced food.

Sustainable Policies: A Green University may prioritize implementing sustainable policies that align with its mission and values.

GOVERNANCE & ACADEMIC

1. Governance

Green Governance

Green governance of the University refers to the policies, practices, and structures in place to ensure the institution operates environmentally and sustainably. Here are some key elements of green governance in universities:

Environmental Policies: A university should have a clear set of environmental guidelines that outline its commitment to sustainability and environmental stewardship.

These policies should address energy and water conservation, waste reduction and recycling, sustainable procurement, and sustainable transportation.

Sustainability Committees: A university should establish a sustainability committee or task force responsible for implementing and overseeing sustainability initiatives.

This committee should include representatives from various departments, faculty, and students to ensure sustainability is integrated throughout the institution.

Green Buildings: Universities should adopt green building practices to reduce the environmental impact of their facilities.

This includes designing and constructing energy-efficient buildings, using sustainable materials, and promoting healthy indoor environments.

Sustainable Transportation: Universities should promote sustainable transportation options such as biking, walking, carpooling, and public transportation.

This can be achieved through infrastructure improvements, incentives for sustainable commuting, and partnerships with local transportation providers.

Curriculum Integration: Universities should integrate sustainability into their curriculum to ensure that students are equipped with the knowledge and skills needed to address environmental challenges.

This can be achieved by offering sustainability-focused courses, interdisciplinary programs, and experiential learning opportunities.

Community Engagement: Universities should engage with local communities to promote sustainability and environmental stewardship.

This can be achieved through partnerships with local organizations, sustainability events, and outreach programs.

Green governance of the University involves integrating sustainability into all aspects of the institution, from policies and practices to facilities and curriculum. This approach promotes environmental stewardship and sustainability and is a model for other higher education institutions.

GOVERNANCE & ACADEMIC

1. Governance

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩

Navjivan Science College (NSC) exhibits strong governance driven by state statutes and is dedicated to serving all stakeholders, including the Environment. The college's governing body ensures transparency in decision-making, accountability in performance, and the effective use of human potential.

The governance structure includes diverse members representing different aspects of the college community, ensuring a holistic approach to governance that prioritizes sustainable practices.

NSC's governance includes diverse members, each playing a crucial role in the institution's sustainable practices. The governing body's commitment to sustainability is reflected in its policies and decisions, prioritizing environmental stewardship and the community's well-being.

Sr. No.	Name of the Member	Designation
1	Smt. Anjali Parikh	Secretary
2	Shree Mihir Shah	Director, College campus
3	Dr. Gaurang Kharadi	In-charge Principal
4	Dr. Nilesh. M. Vaghela	IQAC Co-ordinator
5	Mr. Pritesh C. Pavar	Representative of Teaching Staff
6	Mr. Jayeshkumar C. Pawar	Representative of non-teaching staff
7	Miss Rucha Parekh	Junior Clerk

GOVERNANCE & ACADEMIC

1. Governance

Shri Sureshchandra G. Sheth

President Trustee

Shri Pankaj H. Sheth

President

Smt. Anjali S. Parikh

Secretary

Shri Rajesh M. Bansal

Treasuries

Shri Mihir A. Shah

Director

GOVERNANCE & ACADEMIC

2. Leadership

Sustainable university leadership incorporates sustainability into the institution's operations, policies, and culture.

Developing a Sustainability Vision: University leaders should establish a clear and compelling vision that outlines the institution's commitment to environmental, social, and economic sustainability.

The vision should be communicated to all stakeholders, including students, faculty, staff, and community members.

Establishing Sustainability Goals: University leaders should develop specific, measurable, and time-bound goals aligning with the institution's vision. These goals should be integrated into the University's strategic plan and monitored regularly to track progress.

Embeding Sustainability Into the Curriculum: University leaders should work to integrate sustainability into the curriculum across all disciplines.This can be achieved by offering sustainability-focused courses, incorporating sustainability into existing courses, and promoting interdisciplinary sustainability programs.

Promoting Sustainable Operations: University leaders should implement sustainable practices in university operations, including energy and water conservation, waste reduction and recycling, sustainable transportation, and green building practices.

Fostering a Culture of Sustainability: University leaders should promote a culture of sustainability throughout the institution by engaging stakeholders and encouraging participation in sustainability initiatives. This can be achieved through employee and student sustainability training programs, sustainability awards, and sustainability outreach programs.

Collaborating with Stakeholders: University leaders should work collaboratively with stakeholders, including students, faculty, staff, alumni, and community members, to identify sustainability priorities and develop strategies to achieve sustainability goals. Sustainable leadership in universities requires a commitment to sustainability across all institution levels. By incorporating sustainability into the institution's operations, policies, and culture, university leaders can promote a more sustainable future and inspire the next generation of sustainability leaders.

GOVERNANCE & ACADEMIC

2. Leadership

1 2 3 4 5 6 7 8 9 10

Under the leadership of Dr. Gaurang Kharadi, NSC strives to embody responsible education, nurturing successful leaders committed to sustainability. Dr. Kharadi's extensive experience in teaching and research, along with his dedication to building a responsible educational institution, underscores the college's commitment to sustainability and excellence in scientific education.

His leadership ensures that the college remains a beacon of quality and responsible education, fostering an environment where sustainability is integrated into every aspect of academic life.

Dr. Gaurang Kharadi's leadership is pivotal in shaping NSC's sustainable vision. His background in chemistry and extensive research experience contribute to the college's strong foundation in scientific education. Under his guidance, NSC continues to promote responsible education and sustainable practices.

Dr. Gaurang Kharadi
Principal
Navjivan Science College

GOVERNANCE & ACADEMIC

2. Leadership

BRIEF PROFILE OF PRINCIPAL

Dr. G. J. Kharadi obtained his M.Sc. and Ph.D. in Chemistry from Sardar Patel University, Vallabh Vidyanagar, Anand, Gujarat, India. He is currently serving as an Assistant Professor in the Chemistry Department at Navjivan Science College, Dahod, Gujarat, India. With 13 years of teaching experience and 16 years of research experience, Dr. Kharadi's primary research interest lies in coordination chemistry for medicinal applications.

Dr. Kharadi has an impressive record of scholarly activity, with more than 32 publications in well-reputed international journals and 5 book publications. Under his guidance, one scholar has been awarded a Ph.D., and two scholars are currently pursuing their doctoral studies. He has also successfully completed a minor research project.

In addition to his academic responsibilities, Dr. Kharadi holds several significant positions at Navjivan Science College. He is currently the I/C Principal and PG In-Charge of the M.Sc. Self-Finance Unit. He has also served as the Programme Officer for the National Service Scheme (NSS) and coordinated the Soil Testing Lab for five years. Dr. Kharadi is actively involved in student union activities and holds multiple editorial duties in various reputed international journals.

Dr. Kharadi is a life member of the Indian Council of Chemists, reflecting his commitment to the professional community and his ongoing contributions to the field of chemistry.
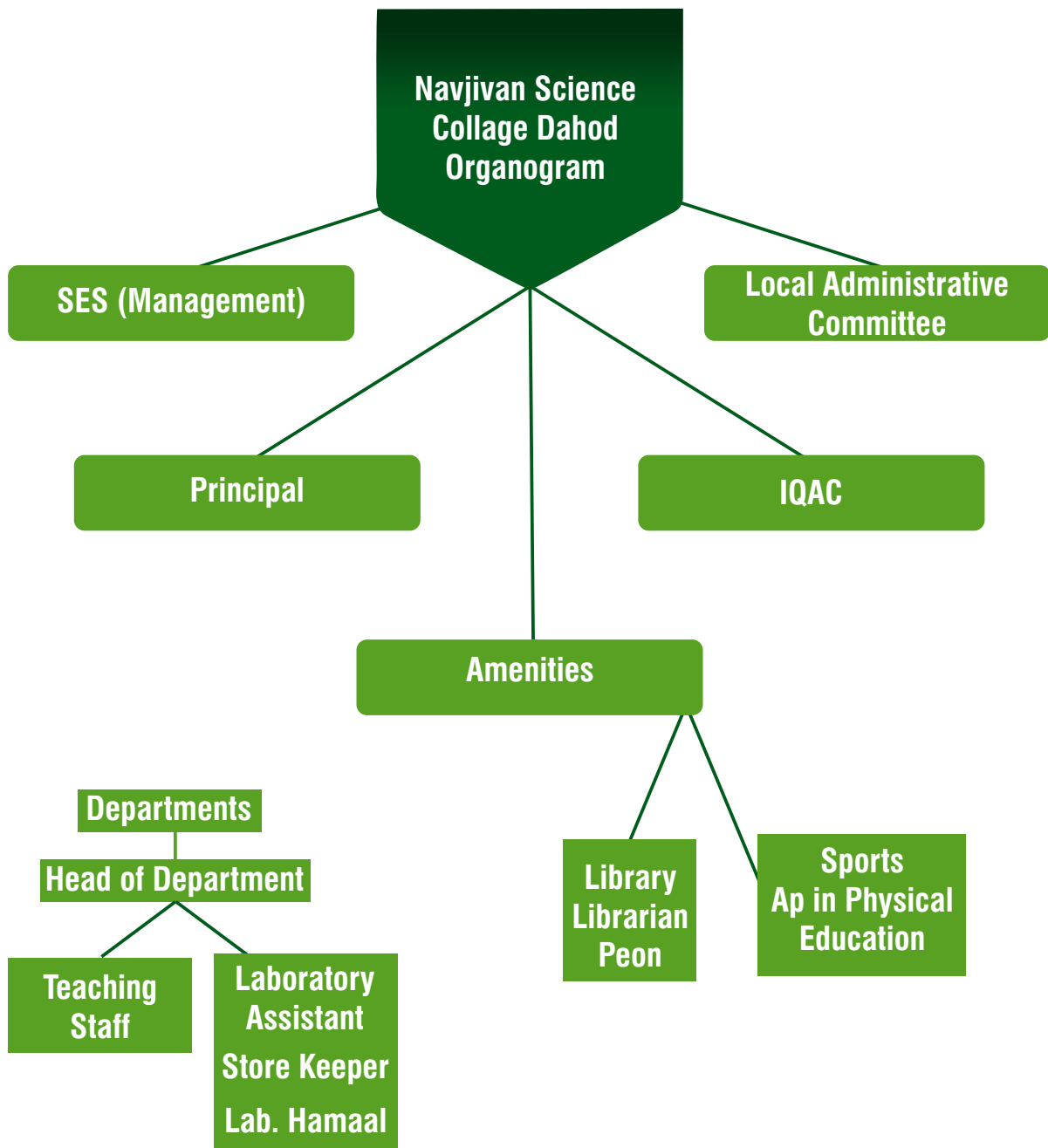
GOVERNANCE & ACADEMIC

2. Leadership

ORGANIZATION CHART

Navjivan Science Collage Dahod Organogram

- SES (Management)
- Local Administrative Committee
- Principal
- IQAC
- Amenities
  - Library Librarian Peon
  - Sports Ap in Physical Education
- Departments
  - Head of Department
    - Teaching Staff
    - Laboratory Assistant Store Keeper Lab. Hamaal

GOVERNANCE & ACADEMIC

3. Sustainability Commitment

The sustainability commitment of a university refers to its dedication to integrating sustainability into all aspects of its operations, policies, and culture. A university's sustainability commitment involves a comprehensive approach to sustainability that incorporates environmental, social, and economic factors i.e.

Environmental Sustainability: A university's commitment to ecological sustainability involves reducing its environmental impact through sustainable practices in energy and water conservation, waste reduction and recycling, sustainable transportation, and green building practices.

Social Sustainability: A university's commitment to social sustainability involves promoting social justice, equity, and inclusivity within the institution and in the broader community.

This can be achieved through diversity and inclusion initiatives, community engagement programs, and the promotion of social responsibility and ethical behavior.

Economic Sustainability: A university's commitment to economic sustainability involves balancing its financial needs with its sustainability goals.
This can be achieved through responsible financial management, sustainable procurement practices, and promotion of entrepreneurship and innovation.

Curriculum and Research: A university's commitment to sustainability involves incorporating sustainability into the curriculum across all disciplines and promoting sustainability research.
This can be achieved by offering sustainability-focused courses, incorporating sustainability into existing systems, and promoting interdisciplinary sustainability programs.

Stakeholder Engagement: A university's commitment to sustainability involves engaging stakeholders, including students, faculty, staff, alumni, and community members, in sustainability initiatives.

This can be achieved through employee and student sustainability training programs, sustainability awards, and sustainability outreach programs.

Overall, a university's sustainability commitment involves a comprehensive approach that integrates environmental, social, and economic factors into all aspects of the institution's operations, policies, and culture.

By promoting sustainability within the institution and in the broader community, universities can inspire the next generation of sustainability leaders and contribute to a more sustainable future.

GOVERNANCE & ACADEMIC

Sustainability Commitment

1 2 3 4 5 6 7 8 9 10

NSC's commitment to sustainability is evident in its vision and mission. The college embraces its responsibility to confront climate change and sustainability challenges, aiming to create a campus that contributes positively to the Environment and community's well-being.

NSC focuses on providing high-quality scientific education to tribal students, promoting intellectual, moral, and social development. The college's initiatives, such as organic composting and energy-efficient practices, highlight its dedication to reducing environmental impact and promoting sustainable living.

NSC's sustainability commitment involves various initiatives to reduce the college's environmental footprint. These include energy-saving measures, waste management practices, and organic materials. The college's vision and mission emphasize educating students to be socially responsible and environmentally conscious leaders.

GOVERNANCE & ACADEMIC

Innovative Practices

Innovation practices in universities refer to the strategies and approaches universities use to promote and support innovation and entrepreneurship. Here are some examples of innovative practices in universities:

Incubators and Accelerators: Many universities have established incubators and accelerators to provide support and resources to startups and entrepreneurs.

These programs often offer mentoring, funding, networking opportunities, and specialized equipment and facilities access.

Entrepreneurship Courses and Programs: Universities can offer classes and programs that teach students the skills and knowledge needed to launch and run a successful startup.

These programs may cover business planning, marketing, and finance topics.

Research and Development Partnerships: Universities can partner with businesses and organizations to conduct research and development, leading to new products, services, and technologies. These partnerships can benefit both the University and the partner, creating opportunities for innovation and commercialization.

Intellectual Property and Commercialization Support: Universities can provide support and resources for protecting and commercializing intellectual property. This can include patent filing assistance, licensing services, and startup incubation and acceleration.

Collaborative Innovation Spaces: Universities can establish collaborative spaces that bring together students, faculty, researchers, and industry partners to work on innovative projects.

These spaces can facilitate cross-disciplinary collaboration and knowledge sharing.

Innovation Competitions and Awards: Universities can organize innovation competitions and prizes to recognize and incentivize creative thinking and problem-solving.

These competitions encourage students to develop new solutions to real-world problems and promote a culture of innovation on campus.

University innovation practices involve creating an environment that fosters creativity, encourages risk-taking, and supports entrepreneurship. By promoting innovation on campus, universities can help drive economic growth and development while providing students with the skills and experience needed to succeed in a rapidly changing world.

GOVERNANCE & ACADEMIC

4. Innovative Practices

1 **2** **3** **4** **5** **6** **7** **8** **9** **10**

Innovation at NSC is driven by the creativity and dedication of its faculty and students. The college encourages innovative learning opportunities through collaborations with researchers, innovators, and entrepreneurs.

This approach ensures that students are exposed to cutting-edge research and practical applications of scientific knowledge. By integrating innovation into postgraduate and research programs, NSC fosters an environment where creativity thrives, contributing to sustainable solutions and advancements in scientific education.

Innovation at NSC is evident in its research programs and collaborative projects. The college's focus on innovation ensures that students have the skills and knowledge needed to address contemporary environmental challenges. NSC contributes to advancing sustainable practices and scientific discovery by fostering a culture of creativity and practical application.

Cumulative Score	36/40

BUILDING DESIGN & LANDSCAPING

Building design and landscaping are critical components of a Green University, as they are vital in promoting sustainability and environmental stewardship. Here are some essential considerations for building design and landscaping in a Green University:

Sustainable Building Design: A Green University should prioritize sustainable building design incorporating energy-efficient systems and materials, green roofs and walls, natural lighting and ventilation, and water conservation features.

Renewable Energy Sources: A Green University should consider incorporating renewable energy sources into its buildings, such as solar panels, wind turbines, or geothermal systems.

Sustainable Landscaping: A Green University should prioritize sustainable landscaping practices that promote biodiversity, soil health, and water conservation.

Sustainable Water Management: A Green University should consider implementing sustainable water management practices, such as rainwater harvesting, grey water recycling, and low-flow fixtures. These practices can help conserve water and reduce the University's impact on the local water supply.

Green Transportation: A Green University should prioritize sustainable transportation options, such as bike paths, pedestrian walkways, and electric vehicle charging stations.

Sustainable Materials: A Green University should prioritize using sustainable materials in construction and landscaping, such as reclaimed wood, recycled materials, and sustainably sourced materials.
 The University can reduce its environmental impact, promote sustainable practices, and inspire the next generation of environmentally-conscious leaders.

BUILDING DESIGN & LANDSCAPING

1. Local Building Regulations

Building laws and regulations in India vary from state to state and are subject to changes over time. These regulations are typically enforced at the local or state level, and they cover a wide range of aspects related to construction, including safety, zoning, environmental concerns, and more. For universities or educational institutions in India, here are some key considerations and regulations to keep in mind:

Local Building Codes: Universities in India must adhere to local building codes and regulations. These codes specify requirements for structural integrity, fire safety, electrical systems, plumbing, and other aspects of construction. Local municipal bodies or development authorities often enforce these codes.

Zoning Laws: Zoning regulations determine how land in a particular area can be used. Educational institutions, including universities, are allowed in specific zones. It's important for universities to ensure that their campus location complies with local zoning laws.

Environmental Regulations: Building and construction activities can have environmental impacts. Universities need to be aware of and comply with environmental regulations related to waste disposal, energy efficiency, and water conservation.

Fire Safety Regulations: Fire safety is a critical aspect of building construction. Universities must adhere to fire safety regulations, which may include the installation of fire alarms, sprinkler systems, and fire exits.

Accessibility and Disability Laws: It's important for universities to ensure that their buildings are accessible to individuals with disabilities. Compliance with accessibility standards, such as the Rights of Persons with Disabilities Act, is crucial.

Heritage and Conservation Laws: If a university is located in an area with historical or cultural significance, there are heritage conservation laws that restrict modifications to existing buildings or the construction of new structures.

Occupancy Certificates: Before a university building can be occupied, it typically needs to obtain an occupancy certificate from the local municipal authority. This certificate confirms that the building meets all necessary safety and regulatory requirements.

Land Use Planning: Universities need to submit a master plan for their campus, outlining the land use and development plans. This plan may need approval from local planning authorities.

BUILDING DESIGN & LANDSCAPING

Local Authority Approvals: Before starting construction, universities need to obtain approvals and permits from local development authorities or municipal corporations. These approvals may involve scrutiny of building plans and compliance with local regulations.

Energy Efficiency Standards: Building regulations in India increasingly emphasize energy efficiency and sustainability. Universities need to incorporate energy-efficient features into their buildings and follow local green building standards like LEED (Leadership in Energy and Environmental Design).

To ensure compliance with local building laws and regulations, universities need to work closely with local authorities, hire qualified architects and engineers, and consult legal experts as needed.
It's also important to stay updated on any changes in building codes and regulations at the local or state level, as these can evolve over time.

BUILDING DESIGN & LANDSCAPING

Local Building Regulations

1 **2** **3** **4** **5** **6** **7** **8** **9** **10**

Navjivan Science College (NSC) adheres to local building regulations, ensuring its structures comply with voluntary green building codes.

These codes emphasize water conservation, energy efficiency, natural resource conservation, waste reduction, and healthier spaces for occupants.NSC's built-up learning spaces meet all local building laws, supporting sustainability through proper design and construction.

NSC's infrastructure meets all local regulatory requirements, focusing on aspects like structural safety, fire safety, accessibility, and environmental impact. The college has ensured that all its buildings are constructed and maintained by these regulations to foster a safe and sustainable environment.

BUILDING DESIGN & LANDSCAPING

Local Building Regulations

SR. NO.	DESCRIPION	AREA (SQM)
1	Ground Floor Area	3973
2	First Floor Area	3600
3	Parking Area	
	Scooter	741
	Car	365
	Bus	57
	Bicycle	70
4	Total Terrace Area	3557
5	Pavered / Stone Area	2040
6	Botanical Garden Area	512
7	Herbal Garden Area	510
8	Play Ground Area	21872
9	Plot Area	54424
10	Navjivan Science College	7502
11	Common area for Common activities includes roads, out door sports, convetinoal center, play ground, etc.	40690

BUILDING DESIGN & LANDSCAPING

2. Top-Soil Preservation

Topsoil erosion can occur due to wind, rain, or human activities like excavation and construction. When topsoil erodes, it can cause soil degradation and reduce the soil's ability to support plant growth. Therefore, preserving topsoil helps to prevent erosion and maintain soil health.

Soil conservation is the prevention of loss of the topmost layer of the earth from erosion or the prevention of reduced fertility caused by over usage, acidification, salinization, or other chemical soil contamination.

Topsoil has the highest concentration of organic matter and nutrients. It is also the most fertile layer of soil and is crucial for plant growth. Therefore, preserving topsoil helps to conserve the soil's fertility and ensures that it can support plant growth in the future.

Topsoil acts as a sponge, absorbing water and allowing it to infiltrate the soil. This helps to reduce runoff and erosion, and it also helps to recharge groundwater supplies. In addition, preserving topsoil helps to maintain soil moisture levels and ensure that water is available for plant growth.

The topsoil layer contains diverse microorganisms, including bacteria, fungi, and other soil organisms. These microorganisms play an essential role in nutrient cycling and soil health. Preserving topsoil helps to maintain soil biodiversity, which is necessary for ecosystem health.

Preserving topsoil is an essential aspect of sustainable landscaping. It helps to reduce the need for chemical fertilizers and pesticides, which can harm the environment and human health. The University can create a more sustainable and environmentally friendly landscape by preserving topsoil.

BUILDING DESIGN & LANDSCAPING

Top-Soil Preservation

1 **2** **3** **4** **5** **6** **7** **8** **9** **10**

NSC actively preserves topsoil, the most fertile soil layer capable of supporting vegetation. The college employs methods such as regular aeration, indigenous gardening, building wind barriers, mulching, and placing stepping stones to protect the topsoil from erosion and chemical contamination, maintain soil fertility, and support plant growth.

Techniques such as erosion control measures, the use of organic matter, and minimal land disturbance are employed to preserve topsoil. This helps in maintaining soil fertility, promoting healthy vegetation growth, and enhancing campus biodiversity.

Dahod, Gujarat, India
V64V+7RJ, Chhapri, Dahod, Gujarat 389151, India
Lat 22.85566°
Long 74.244479°
23/03/24 10:25 AM GMT +05:30

BUILDING DESIGN & LANDSCAPING

3. Eco-friendly Commuting Practices

Eco-friendly commuting practices in universities involve promoting sustainable transportation options that reduce the environmental impact of commuting to and from campus, including...

Public Transportation: University should encourage students and employees to use public transport by providing information on local transit options, offering transit subsidies, and partnering with local transit agencies to provide discounted fares.

Active Transportation: University should promote active transportation options such as walking, biking, and skateboarding by providing bike racks, shower facilities, and safe pedestrian and bike routes.

Carpooling and Vanpooling: University should encourage carpooling and vanpooling by providing carpool matching services, preferred parking for carpool vehicles, and incentives such as discounted parking fees.

Electric and Hybrid Vehicles: Universities can promote using electric and hybrid cars by providing charging stations and offering incentives such as preferred parking or discounted parking fees.

Telecommuting and Flexible Work Arrangements: Universities can offer telecommuting and flexible work arrangements to reduce the need for employees to commute to campus.

Green Transportation Events and Campaigns: Universities can organize events and campaigns to promote eco-friendly commuting options, such as bike-to-work days, car-free days, and sustainable transportation fairs.

Universities' eco-friendly commuting practices involve sustainable transportation options that reduce the environmental impact of commuting to and from campus.

By promoting sustainable transportation, universities can help reduce traffic congestion, improve air quality, and contribute to a more sustainable future.

BUILDING DESIGN & LANDSCAPING

Eco-friendly Commuting Practices

1 **2** **3** **4** **5** **6** **7** **8** **9** **10**

NSC promotes eco-friendly commuting among its students and staff, encouraging walking, cycling, and public transport.

The college also provides residential facilities for its faculty and non-teaching staff to minimize the environmental impact of automobile use. This initiative reduces the campus's carbon footprint and promotes sustainable transportation habits.

NSC has installed bike racks, shuttle services, and carpooling incentives to facilitate eco-friendly commuting. Campaigns and awareness programs further encourage students and staff to adopt green commuting practices, significantly reducing the campus's carbon footprint.

	Walking	Bicycle	Motorcycle	Car	College Bus	Public Transport	Total
Students	1500	00	25	00	00	1500	3025
Teachers	13	00	15	10	00	25	63
Non-Teaching Staff	5	00	10	00	00	12	27

BUILDING DESIGN & LANDSCAPING

4. Parking Facility

Sustainable parking facilities in universities involve designing and operating parking structures to minimize their environmental impact and maximize their sustainability benefits. Here are some examples of sustainable parking facilities in universities:

Green Roofs and Walls: Universities can incorporate green ceilings and walls into their parking structures, which can help reduce the heat island effect, improve air quality, and provide habitat for wildlife.

Electric Vehicle Charging Stations: Universities can install electric vehicle charging stations in their parking structures to encourage the use of electric vehicles and reduce greenhouse gas emissions.

Bike storage and amenities: Universities can provide bike storage and amenities such as showers, lockers, and repair stations in their parking structures to encourage active transportation and reduce the use of cars.

Sustainable Construction Materials: Universities can use sustainable construction materials such as recycled content concrete, low VOC paints and coatings, and locally-sourced materials to reduce the environmental impact of their parking structures.

Solar Panels: Universities can install solar panels on the roofs of their parking structures to generate renewable energy and reduce their carbon footprint.

Stormwater Management: Universities can incorporate stormwater control features such as rain gardens, bioswales, and permeable paving into their parking structures to reduce stormwater runoff and improve water quality.

Sustainable parking facilities in universities involve designing and operating parking structures to minimize their environmental impact and maximize their sustainability benefits.

By incorporating sustainable features into their parking structures, universities can reduce their carbon footprint, promote active transportation, and contribute to a more sustainable future.

BUILDING DESIGN & LANDSCAPING

Parking Facility

1 2 3 4 5 6 7 **8** 9 10

NSC offers sustainable, tree-shaded parking spaces with sustainable paving materials, energy-efficient or natural lighting, and improved pedestrian walkways. The campus has dedicated parking spaces for buses, cars, motorcycles, and bicycles, supporting eco-friendly commuting practices.

Parking areas at NSC include designated spaces for electric vehicles and carpooling. By optimizing the use of parking space, the college reduces its environmental impact and preserves more land for green areas.

Buses	Cars	Motorcycles	Bicycles
57	365	341	70

BUILDING DESIGN & LANDSCAPING

5. Greenery in Campus

Greenery in universities involves incorporating plants and other natural elements into the campus environment to create a more sustainable and livable space. Biodiversity in universities consists in promoting and preserving various plant and animal species within the campus environment.

Green Roofs and Walls: Universities can install green ceilings and walls on their buildings to provide insulation, reduce stormwater runoff, improve air quality, and create habitats for wildlife.

Trees and Shrubs: Universities can plant trees and shrubs throughout their campuses to provide shade, improve air quality, and reduce the heat island effect.

Rain Gardens and Bioswales: Universities can incorporate rain gardens and bioswales into their landscapes to manage stormwater runoff and improve water quality.

Urban Aagriculture: Universities can establish urban agriculture programs that provide fresh produce for campus dining services and engage students in sustainable food systems.

Native Plant Gardens: Universities can establish gardens that feature native plant species, which support local ecosystems and promote biodiversity.

Wildlife Habitat Preservation: Universities can preserve natural areas on campus that serve as habitats for local wildlife, such as wetlands, forests, and meadows...

Campus Sustainability Plans: Universities can include biodiversity initiatives in their campus sustainability plans, setting targets for biodiversity preservation and establishing monitoring programs to track progress.

Education and Awareness: Universities can educate their students, faculty, and staff about the importance of biodiversity and promote awareness of local ecosystems and wildlife.

Greenery in universities involves incorporating natural elements into the campus environment to create a more sustainable, livable, and biodiverse space. By promoting vegetation on campus, universities can contribute to a healthier and more sustainable future for their communities and the planet. In contrast, by supporting biodiversity on campus, universities can contribute to a healthier and more sustainable future for their communities and the earth.

BUILDING DESIGN & LANDSCAPING

Greenery in Campus

1 **2** **3** **4** **5** **6** **7** **8** **9** **10**

The campus has community gardens, parks, meadows, green roofs, playing fields, and wetlands. This biodiversity supports well-being and educational outcomes, providing food, shelter, and essential habitats for wildlife. Interaction with greenery also improves human stress reduction, emotional states, and cognitive function.

The campus is dotted with a variety of trees, shrubs, and gardens. These green spaces provide habitat for local wildlife, enhance air quality, and create a serene environment for students and staff.

Total Area of the campus : 12 Acres

Buses	Cars	Bicycles
01	Building foot print	7502
02	Playground area	21,872
03	Vegetated space	3670.5
	A. Turf area	2423.5
	B. Area with native species	1022
	C. Area with drought tolerant species	-
	D. Other Species area	225
04	Non-roof impervious area	43,280
05	Water body	

BUILDING DESIGN & LANDSCAPING

Greenery in Campus

BUILDING DESIGN & LANDSCAPING

Sr.No.	Plant Family	Name	Botanical Name
	Botanical (Harbal) Gardan Plant		
01	Acantihaceae	અરડૂસી	AdhatodaVasica
02	Verbenaceae	નગોડ	Vitex negundo
03	Sapindaceae	અરીઠા	Sapinduscaurifolius
04	Combretaceae	બહેડા	Terminalia belerica
05	Apiaceae	અજમો	Trachyspermumammi
06	Myrtaceae	જાંબુ	Syzygiumcumini
07	Urticaceae	અંજીર	Ficus carica
08	Liliaceae	કુંવારપાઠું	Aloe vera(barbadensis)
09	Vitaceae	હાડસાંકળ	Cissus quadrangulare
10	Asclepiadaceae	સફેદઆકડો	Calotropis gigantea
11	Crassulaceae	પનફૂટી	Kalanchoe pinnata
12	Apocynaceae	સફેદચંપો	Plumeria Obtusa
13	Apocynaceae	લાલચંપો	Plumeria rubra
14	Moraceae	બ્લેકફ઼ાઈક્સ	Ficus benjamina
15	Bignoniaceae	જાંકરેન્ડા	Jacaranda mimosifolia
16	Euphorbiaceae	જેટ્રોફ઼ારેડ	Jateophacurcus
17	Euphorbiaceae	પેટ્રાકોટન	Codiaeum variegatum
18	Arecaceae	એરેકાપામ	Dypsislutenscens
19	Oleaceae	મોગરો	Jusminumsambac
20	Asteraceae	સેવંતી	Chrysanthemum indicum
21	Caesalpinioideae	પેલ્ટ્રોફ઼ોરમ	Paltophorumpterocrpum
22	Zygophyllaceae	ગોખરુ	Traibulusterrestris
23	Combretaceae	હરડે	Terminalia chebula
24	Combretaceae	અર્જુનસાહડ	Terminalia arjuna
25	Scitaminaceae Sub family:-Zingiberaceae	હળદર	Curcuma longe
26	Myristicaceae	જાયફ઼ળ	Myristica fragrans
27	Euphorbiaceae	ખરસાણીથોર	Euphorbia tirucali
28	Salvodoraceae	પીલુડી	Salvadora persica
29	Combretaceae	મધવેલ	Combretum ovalifolium
30	Papilionaceae	ચણોઠી	Abrus precatorius
31	Compositae	ભાંગરો	Eclipta alba
32	Asparagaceae	સફેદમૂસળી	Chlorophytum borivilianum
33	Tiliaceae	ફ઼ાલસા	Grewia subinequalis

BUILDING DESIGN & LANDSCAPING

Sr.No.	Plant Family	Name	Botanical Name
	Botanical(Herbal) Gardan Plant		
34	Myrtaceae	બોટલબ્રશ	Callistemon lanceolatus
35	Lauraceae	તમાલપત્ર	Cinnamomum tamala
36	Piperraceae	નાગરવેલ	Piper betle
37	Clusiaceae	કોકમ	Garcinia indica
38	Apocynaceae	સપ્તપર્ણી	Astoniaschlolaris
39	Araceae	અળવી	Colocasia
40	Asclepiadaceae	રબ્બરવેલ	Cryptostegia grandiflora
41	Arecaceae	સોપારી	Area catechu
42	Meliaceae	બકાનલીમડો	Melia azedarach
43	Arecaceae	નાળિયેરી	Cocos nucifera
44	Nephrolepidaceae	હંસરાજ	Nephrolepisexaltata
45	Apocynaceae	મધુનાશિની	Gymnemasylvestre
46	Apocynaceae	લાલચંપો	Plumerica rubra
47	Solanaceae	અશ્વગંધા	Withaniasomnifera
48	Amaryllidaceae	નાગદમન	Crinum asiaticum
49	Solanaceae	ટામેટા	Lycopersicum esculentum
50	Labiatae	તુલસી	Ocimumbasilicum
51	Rosaceae	દેશીગુલાબ	Rosa indica
52	Nyctaginaceae	બોગનવેલ	Bougainvillea glabra
53	Labiatae	ડમરો	Ocimumbasilicum
54	Sapotaceae	મહુડો	Madhuca indicus
55	Liliaceae	ડુંગળી	Allium cepa
56	Liliaceae	લસણ	Allium sativum
57	Compositae	ગલગોટો	Tegekeserecta
58	Malvaceae	પારસ પીપળો	Thespesia populnea
59	Combretaceae	બદામ	Terminalia catappa
60	Menispermaceae	ગળો	Tinispora cordifolia
61	Moraceae	પીપળો	Ficus religiosa
62	Meliaceae	લીમડો	Azadirachta indica

BUILDING DESIGN & LANDSCAPING

	Botanical Garden Plant		
Sr. No	Family	Local Name	Scientific Name
01	Euphorbiaceae	લાલપતિ	Euphorbia pulcherima
02	Euphorbiaceae	આમળા	Phyllanthus emblica
03	Euphorbiaceae	રતનજ્યોત	Jatropha curcus
04	Malvaceae	જાસૂદ	Hibiscus rosa sinensis
05	Papilionaceae	અપરાજીતા	Clitoriaternatea
06	Papilionaceae	કેસૂડો	Butea monosperma
07	Palmae	શિવજટા	Caryotaurens
08	Mimosae	લજ્જામણી	Mimosa pudica
09	Apocynaceae	બારમાસી	Catharanthus roseus
10	Apocynaceae	ટગર(ચાંદની)	Tabernaemontanacorandus
11	Apocynaceae	કરમદી	Carissa carandus
12	Rubiaceae	હેમેલીયા	Hamelia patens
13	Rubiaceae	કદંબ	Anthocephalus indicus
14	Rubiaceae	ઇક્ઝોરા	Ixora coccinea
15	Cannaceae	કેના	Canna indica
16	Moraceae	શેતૂર	Marus alba
17	Annonaceae	સીતાફળ	Annona squamosa
18	Annonaceae	આસોપાલવ	Polyalthia longifolia
19	Rutaceae	બીલી	Aegle marmelos
20	Rutaceae	લીંબુ	Citrus aurantifolia
21	Rutaceae	મીઠોલીમડો	Murrayakoenigii
22	Rutaceae	મોસંબી	Citrus sinensis
23	Labiatae	તુલસી	Ocimumbasilicum
24	Labiatae	ફૂદીનો	Mentha viridis
25	Labiatae	ડમરો	Ocimumbasilicum
26	Combretaceae	મધુમાલતી	Quisqualis indica
27	Caesalpiniaceae	ગલતોરો	Caesalpinia pulcherrima
28	Caesalpiniaceae	ગરમાળો	Cassia fistula
29	Amaryllidaceae	નાગદમન	Crinum asiaticum
30	Lythraceae	દેશીમહેંદી	Lawsoniainermis
31	Lythraceae	દાડમ	Punica grantum
32	Verbenaceae	સાગ	Tectona grandis
33	Verbenaceae	સેવન	Gmelina arborea

BUILDING DESIGN & LANDSCAPING

Botanical Garden Plant			
Sr. No	Family	Local Name	Scientific Name
34	Oleaceae	મોગરો	Jusminumsambac
35	Moringaceae	સરગવો	Moringa oleifera
36	Rosaceae	દેશીગુલાબ	Rosa indica
37	Urticaceae	કણજી	Holoptelea integrifolia
38	Pandanaceae	કેવડો	Pandanus odorifer
39	Theaceae	લીલીચા	Camellia sinensis
40	Musaceae	કેળ	Musa indica
41	Compositae	પરદેશીભાંરો	Tridax procumbens
42	Liliaceae	ડ્રેસીના	Dracaena sanderiana
43	Santalaceae	ચંદન	Santulum album
44	Anacardiaceae	આંબો	Mangifera indica
45	Caricaceae	પપૈયુ	Carica papaya
46	Amaryllidaceae	નાગદમન	Crinum asiaticum
47	Oleaceae	જૂઈ	Jasminum auriculatum
48	Nyctaginaceae	પારીજાતક	Nyctanthesarbortristis
49	Solanaceae	રાતરાણી	Cestrum nocturnam
50	Euphorbiaceae	ખરસાણીથોર	Euphorbia tirucali
51	Combretaceae	મધવેલ	Combretum ovalifolium
52	Solanaceae	ટામેટા	Lycopersicum esculentum
53	Moraceae	બ્લેક ફાઈક્સ	Ficus benjamina

BUILDING DESIGN & LANDSCAPING

Other Plant Species

Sr.	Local Name	Scientific Name	Plant Family	Total
1	અર્જુન સાદડ	Terminalia arjuna	Combretaceae	
2	આકડો	Calotropis Procera	Asclepiadaceae	9
3	ગાંડો બાવળ	Prosopis Juliflora(SW.)	Fabaceae	4
4	સપ્તપર્ણી	AlstoniaScholaris(L.)	Apocynaceae	
5	ગુલમહોર	Delonixregia(Hook)Raf	Fabaceae	9
6	સીસમ	Dalbergia Sissoo	Fabaceae	7
7	ખાટી આમલી	Tamarindus indica L.	Caesalpiniaceae	4
8	પીપળો	Ficus religiosa L.	Moraceae	2
9	વડ	Ficus benghalensis L.	Moraceae	2
10	બોરડી	Ziziphus Jujuba	Rhamnaceae	2
11	બોગનવેલ	Bougainvillea glabra	Nyctaginaceae	
12	ગરમાળો	Cassia Fistula L.	Caesalpiniaceae	2
13	શીમળો	Salmaliamalabarica (DC)		1
14	લીમડો	Azadirachta indica A. Juss	Meliaceae	8
15	કરેણ	Nerium olender L.	Apocynaceae	
16	શીરીષ	Albizia lebbeck	Fabaceae	
17	બોટલ પામ	Roystonea regia(kuntha)	Arecaceae	7
18	ક્રિસમસ ટ્રી	Araucaria columnaris	Araucariaceae	2
19	સાયકસ	Cycas revoluta	Cycadaceae	
20	કદંબ	Neolamarckiacadamba	Rubiaceae	1
21	શેતૂર	Morus alba L.	Moraceae	4

BUILDING DESIGN & LANDSCAPING

Sr.	Local Name	Scientific Name	Plant Family	Total
22	બિલી	Aegle marmelos (L.)	Rutaceae	
23	સરગવો	Moringa oleifera Lam.	Moringaceae	2
24	ગોરસ આમલી	Pithecellobium dulce(Roxb.)	Fabaceae	2
25	સાગ	Tectona grandish L.	Lamiaceae	1
26	બદામ	Terminalia catappa	Combretaceae	1
27	ચંપો	Plumeria obtusa L.	Apocynaceae	3
28	ભોય રીંગણી	Solanum verginianum L.	Solanaceae	
29	ધતૂરો	Dhaturametel L.	Solanaceae	
30	દારૂડી	Aorgemonemexicana L.	Papaveraceae	
31	અરડૂસી	Adhatoda Vasika	Acanthaceae	1
32	ક્રોટોન	Codiaeum Variegatum L.	Ephorbiaceae	
33	ગલગોટો	Tagetes erecta	Asteraceae	
34	કેના	Canna indica L.	Cannaceae	
35	બારમાસી	Catharanthus roseus L.	Apocynaceae	
36	પાનફૂટી	Kalanchoe pinnata (Lam.)	Crassulaceae	
37	પરદા વેલ	Vernonia elaegnifolia D.C.	Asteraceae	1
38	રામબાણ	Agave americana	Amerilidacae	
39	લાલપત્તી	Euphorbia pulcherima	Ephorbiaceae	
40	કણજી	Holoptelea integrifolia	Urticaceae	
41	વાસંતી	Tecoma stans(L)	Bignoniaceae	
42	ગાજર ઘાસ	Parthenium hysterophorus L.	Asteraceae	

BUILDING DESIGN & LANDSCAPING

6. Minimise Heat Exposure to Sun: Non-Roof

Minimizing heat exposure to the Sun for non-roof areas in universities can be achieved through a variety of strategies, including:

Planting Trees and Greenery: Trees and other vegetation provide natural shade and help to cool the surrounding environment through evapotranspiration.

Installing Shade Structures: Installing shade structures, such as pergolas or shade sails, can provide a shaded area for students and staff to stay calm and protect them from the Sun's heat.

Creating Green walls and Green Roofs: Green walls provide additional insulation and reduce the heat absorbed by buildings and surrounding areas.

Using Cool Pavement: Using light-colored or reflective pavement can reduce heat absorption and reflect sunlight into the atmosphere, helping to cool the surrounding area.

Incorporating Water Features: Water features, such as fountains or misting systems, can help cool the surrounding area through evaporative cooling.

Creating Windbreaks: Installing windbreaks, such as walls or hedges, can protect from the wind and reduce wind chill, making the area feel more relaxed.

Providing Proper Ventilation: Ensuring adequate ventilation in the area can help circulate air and prevent hot air buildup.

Minimizing heat exposure to the Sun for non-roof areas in universities involves incorporating shading, Greenery, cool pavement, water features, windbreaks, and proper ventilation into the design and operation of the campus. By implementing these strategies, universities can create a comfortable and safe outdoor environment for students and staff, even on hot days, while promoting sustainability and reducing energy consumption.

BUILDING DESIGN & LANDSCAPING

Minimise Heat Exposure to Sun: Non-Roof

1 **2** **3** **4** **5** **6** **7** **8** **9** **10**

NSC's campus houses over 500 trees and plants across 11 acres, limiting impervious surface exposure to the sun.

This helps minimize the impact on the campus microclimate, reducing heat absorption and promoting a more relaxed environment.

Reflective paint and shading structures help lower surface temperatures, reduce cooling costs, and improve comfort. These measures contribute to a cooler campus environment and enhanced energy efficiency.

A.	College campus area	48192 SQM
B.	No. of existing trees / saplings planted	157
C.	Total non-roof area, area covered with trees (foliage) or open grid pavers	43,280 Sqm

(the non-roof impervious areas include footpaths, pathways, roads, uncovered surface parking and other impervious areas.)

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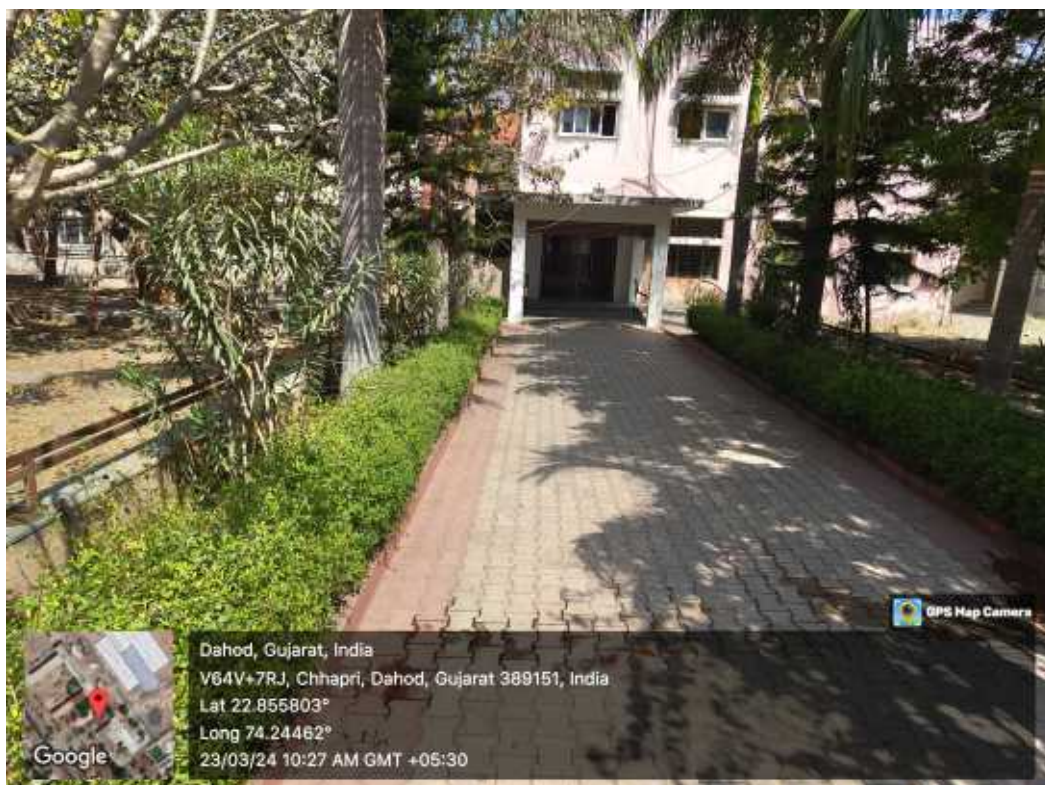
BUILDING DESIGN & LANDSCAPING

7. Minimise Heat Exposure to Sun: Roof

Minimizing heat exposure to the Sun on roofs in universities can be achieved through a combination of strategies, including:

Cool Roofs: Using cool roofs, designed to reflect more sunlight and absorb less heat, can help reduce the amount of heat absorbed by the shelter and transferred into the building.

Green Roofs: Installing a green roof, which involves planting vegetation on the surface, can provide natural insulation and reduce the heat the top absorbs. This can also help to improve biodiversity on the campus.

Solar Shading Devices: Installing solar shading devices, such as awnings or screens, can help block direct sunlight and reduce the amount of heat the roof absorbs. This can also provide shaded areas for students and staff to study or relax.

Insulation: Properly insulating the roof can help to prevent heat from penetrating the building and reduce the need for air conditioning.

Ventilation: Proper ventilation of the roof space can help to circulate air and reduce the buildup of hot air. This can be achieved through the installation of vents or fans.

Maintenance: Regular roof maintenance, cleaning and repairing any damage, can help ensure the roof functions efficiently and reduces heat absorption.

By incorporating these strategies into the design and operation of university buildings, it is possible to create a more comfortable and sustainable campus environment.

This can also reduce energy costs and improve the University's overall sustainability. Additionally, providing shaded and cool areas on roofs can encourage outdoor learning and activities, positively impacting student well-being and academic performance.

BUILDING DESIGN & LANDSCAPING

Minimise Heat Exposure to Sun: Roof

1 2 3 4 5 6 7 8 9 10

Strategically planted trees provide shade to the roofs during summer while allowing sunlight during winter when leaves fall. Most roof areas are covered with solar panels or tiles and paint to reduce heat absorption, minimizing the microclimate impact.

Cool and green roofs at NSC reflect more sunlight and absorb less heat, promoting energy efficiency. This not only reduces the energy required for cooling but also extends the life of roofing materials.

Total Roof Area 3557

BUILDING DESIGN & LANDSCAPING

8. Universal Design

Universal design is an approach to design that aims to create products, buildings, and environments accessible and usable by everyone, regardless of their age, abilities, or disabilities. For example, in the context of a university, universal design should be applied to create an inclusive learning environment that benefits all students, including those with disabilities.

Universal design can be incorporated into the design and operation of a university through...

Building Design: Buildings should be designed to be accessible and usable by people with disabilities. This includes ramps, wide doorways, elevators, and accessible restrooms.

Classroom Design: Classrooms should be accessible and usable by students with disabilities. This includes features such as adjustable desks, chairs, and lighting and ensuring classroom materials are available in accessible formats.

Information Technology: Information technology should be designed to be accessible to all users. This includes closed captioning on videos, text-to-speech options, and compatibility with assistive technology devices.

Pedagogy: Teaching methods should be designed to be inclusive of all students. This includes using various teaching methods, such as visual, auditory, and kinesthetic, and providing clear instructions and expectations.

Campus Amenities: Campus amenities, such as dining facilities and recreational areas, should be designed to be accessible and usable by people with disabilities.

By incorporating universal design principles into the design and operation of a university, it is possible to create an inclusive learning environment that benefits all students. This can help to improve the academic experience and outcomes for students with disabilities, as well as promote a more diverse and inclusive campus community.
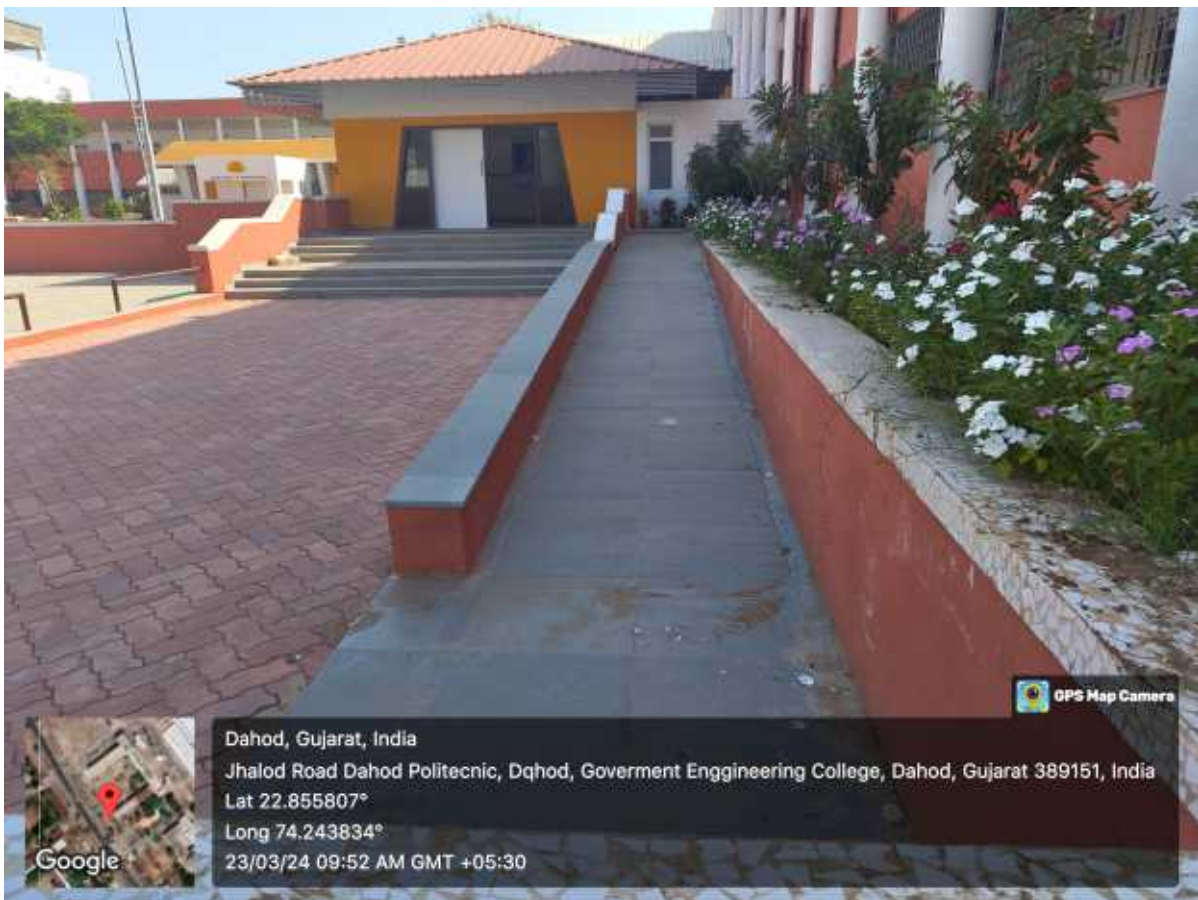
BUILDING DESIGN & LANDSCAPING

Universal Design

1 2 3 4 5 6 7 8 **9** 10

NSC implements Universal Design for Learning (UDL), ensuring all students, including differently-abled pupils, have equal learning opportunities. The campus features ramps, lifts, designated restrooms, and hindrance-free movement facilities, promoting accessibility and inclusion.

Universal design features include ramps, elevators, and accessible restrooms. These elements ensure that the campus is navigable and usable by everyone, fostering an inclusive learning environment.

Dahod, Gujarat, India
Jhalod Road Dahod Politecnic, Dqhod, Goverment Enggineering College, Dahod, Gujarat 389151, India
Lat 22.855807°
Long 74.243834°
23/03/24 09:52 AM GMT +05:30

Cumulative Score	70/80

WATER MANAGEMENT PRACTICES

Water management is a critical component of sustainability in a Green University. Some essential water management practices that a Green University should consider implementing:

Rainwater Harvesting: A Green University should have rainwater harvesting systems, such as rain barrels or cisterns, to collect rainwater from rooftops and other surfaces.

Greywater Recycling: A Green University should consider recycling greywater, wastewater from sinks, showers, and washing machines, for landscape irrigation.

Low-Flow Fixtures: A Green University should install low-flow fixtures, such as toilets, showerheads, and faucets, to reduce water consumption.

Drought-Tolerant Landscaping: A Green University should prioritize drought-tolerant landscaping, such as native plants, that require less water than traditional turf grass.

Water Audits: A Green University should conduct water audits to identify high-water use areas and implement measures to reduce water consumption.

Leak Detection and Repair: A Green University should regularly check for leaks in plumbing fixtures, irrigation systems, and other water systems.

Educational Programs: A Green University should also provide educational programs on water conservation for students, faculty, and staff. These programs can increase awareness of water conservation issues and promote sustainable water use behaviors.

Water management practices in a Green University should prioritize water conservation, reuse, and efficiency. By implementing these practices, the University can reduce its water consumption, conserve water resources, and promote sustainable water use.

WATER MANAGEMENT PRACTICES

1. Rainwater Harvesting: Roof & Non-Roof

Rainwater harvesting is collecting, storing, and using rainwater for various purposes. It is an effective and sustainable method of conserving water, especially in regions where water is scarce or where water supply is unreliable.

Rainwater harvesting can be done through the roof and non-roof methods, both of which can be implemented in a university setting. Roof-based rainwater harvesting involves collecting rainwater that falls on rooftops and storing it for later use. This method is typically used in buildings with large roof areas and is relatively easy to implement.

The rainwater collected from the roofs can be used for a variety of purposes, including irrigation, flushing toilets, and washing clothes.

Non-roof rainwater harvesting, on the other hand, involves collecting rainwater from other surfaces such as pavements, lawns, and gardens. This method is typically used in open spaces such as parks, playgrounds, and other public areas.

Non-roof rainwater harvesting can be done using trenches, swales, and other surface-level structures that capture and store rainwater.

In a university setting, both roof-based and non-roof rainwater harvesting methods can be implemented to conserve water and reduce the demand for municipal water supply.

This can be done by installing rainwater collection systems on rooftops and in open spaces such as lawns, gardens, and parks. The collected rainwater can be used for irrigation, landscaping, and other non-potable uses.

Additionally, universities can also implement rainwater harvesting systems for potable water use. This can be done by treating the collected rainwater to make it safe for drinking and cooking. This approach requires a more sophisticated and expensive system than non-potable uses, but it can be a viable option in areas with limited water supply.

Rainwater harvesting is a sustainable and effective way to conserve water and reduce the demand for municipal water supply. In a university setting, implementing rainwater harvesting systems can reduce water usage and promote sustainable practices among students, staff, and faculty.

WATER MANAGEMENT PRACTICES

Rainwater Harvesting: Roof & Non-Roof

1 **2** **3** **4** **5** **6** **7** **8** **9** **10**

NSC's rainwater harvesting system captures maximum runoff from roof and non-roof areas. This system enhances the groundwater table and reduces potable water usage, demonstrating the college's commitment to sustainable water management.

The systems include rooftop collection units and ground-level catchment areas. Harvested rainwater is used for irrigation, toilet flushing, and other non-potable applications, contributing to significant water savings.

Average Normal Rainfall ®					
Location	Year	Peak Rainy Month	Total Rainfall (mm)	Number of rainy days	Normal rainfall/day (mm)
Dahod	2023	May	10.1	4	2.52
		June	247.6	8	30.95
		July	550.9	25	22.036
		August	82.1	5	16.42
		September	461.91	8	57.7
Averagenormalrainfall/day(mm)					
Averagenormalrainfall/day(m)					

Note: If the number of rainy days in respective months is not available, a maximum of 15 rainy days can be considered to arrive at normal rainfall

WATER MANAGEMENT PRACTICES

Rainwater Harvesting: Roof & Non-Roof

Rain Water Harvesting Calculation

Sr.No	SURFACE TYPE	Run-off coefficient (c)	Area (m2) (a)	Impervious area (m2) I = (c × a)
1	Tiled Roof			
2	Playground		21872	
3	Turf, Flat (0-1% slope)		2423.5	
4	Vegetation, average (1-3% slope)		3670.5	

4 numbers of Percolation Well

WATER MANAGEMENT PRACTICES

2. Water Efficient Plumbing Fixtures

Water-efficient plumbing fixtures are designed to conserve water while providing the same functionality as traditional fixtures. In addition, these fixtures use less water than conventional fixtures, which can help reduce water consumption and lower water bills. For example, the university can use the following to achieve water-efficient plumbing fixtures.

Low-flow Toilets: Low-flush toilets work with a minimal amount of water. The exact amount of water varies between less than a liter - 8 liters per flush. In addition, these toilets can operate by gravity or vacuum. This can save significant water, as conventional toilets use up to 15 liters per flush.

Water-Saving Showerheads: Water-saving showerheads can reduce water consumption by up to 50% compared to traditional showerheads while still providing a satisfying shower experience. These fixtures typically have a flow rate of 6 liters per minute or less.

Faucet Aerators: Faucet aerators mix air with water to reduce water use while still maintaining water pressure. These can be installed on any faucet, saving up to 50% of water usage.

High-Efficiency Washing Machines: High-efficiency washing machines use less water than traditional washing machines and are designed to be more efficient in water use. They can save up to 40% of water usage compared to traditional washing machines.

Dual-Flush Toilets: Dual-flush toilets have two flush options: solid waste and liquid waste. This reduces water usage for liquid waste, saving significant water consumption.

By using water-efficient plumbing fixtures, universities can reduce water usage and promote sustainable practices among students, staff, and faculty. Ensuring these fixtures are installed correctly and properly maintained is essential to ensure maximum efficiency and water conservation.

WATER MANAGEMENT PRACTICES

Water Efficient Plumbing Fixtures

1 2 3 4 5 6 7 8 9 10

NSC uses water-efficient plumbing fixtures in academic and hostel areas to reduce potable water consumption. These fixtures, including low-flow faucets, urinals, and toilets, help conserve water while maintaining performance standards.

Low-flow fixtures at NSC are designed to reduce water use without compromising performance. These installations help conserve water, reduce utility costs, and promote sustainable water management.

Baseline Flow Rates for Plumbing Fixtures

Fixture Type	Maximum Flow Rate
Water Closets	1.6
Urinals	2.5
Health Faucet	2.2
Faucet/ Taps	2.2
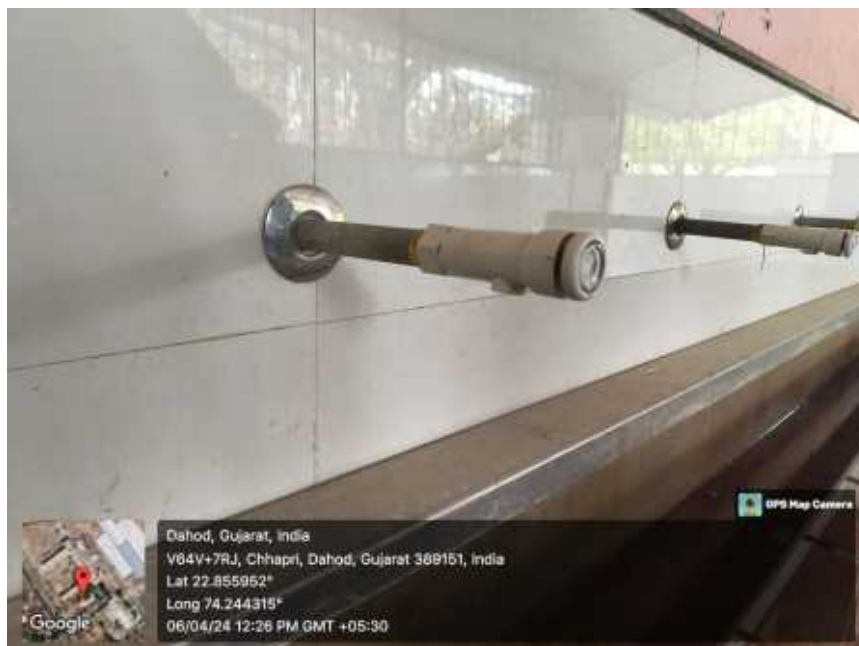
WATER MANAGEMENT PRACTICES

Water Efficient Plumbing Fixtures

Water Flow Chart

↓

Under Ground Tank

↑

- **Under Ground Tank**
- **Chemistry/Physics**
- **Microbiology/Botany**
- **Garden**

Dahod, Gujarat, India
V64V+7RJ, Chhapri, Dahod, Gujarat 389151, India
Lat 22.856125°
Long 74.244323°
30/03/24 12:37 PM GMT +05:30
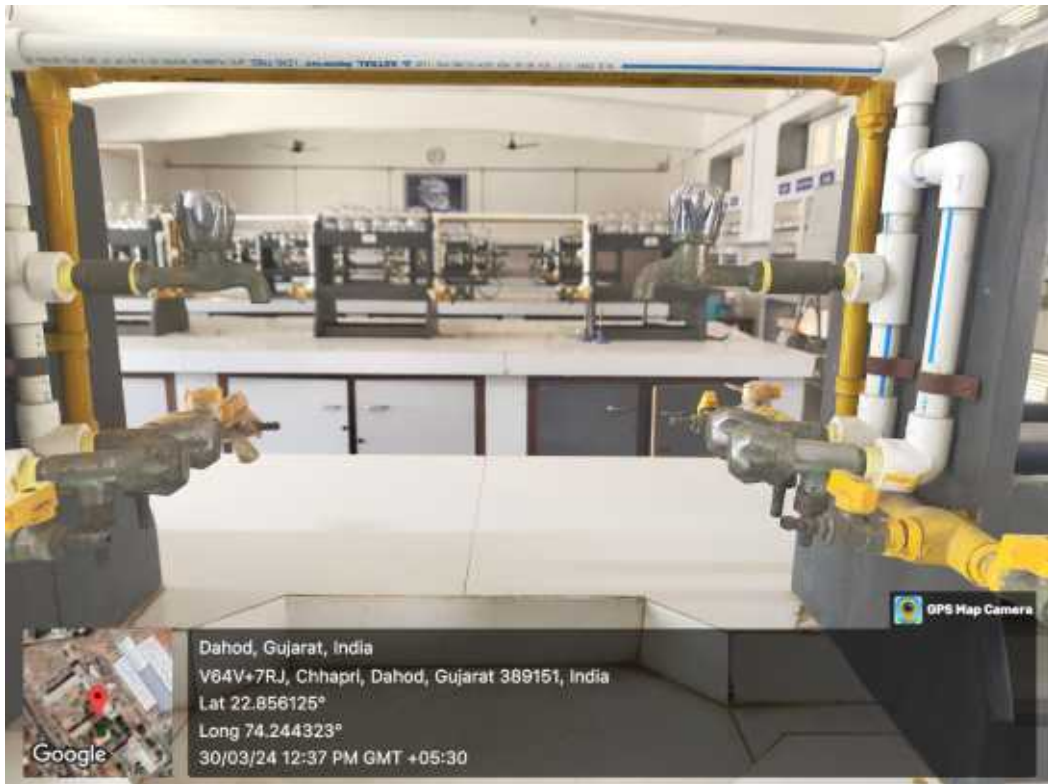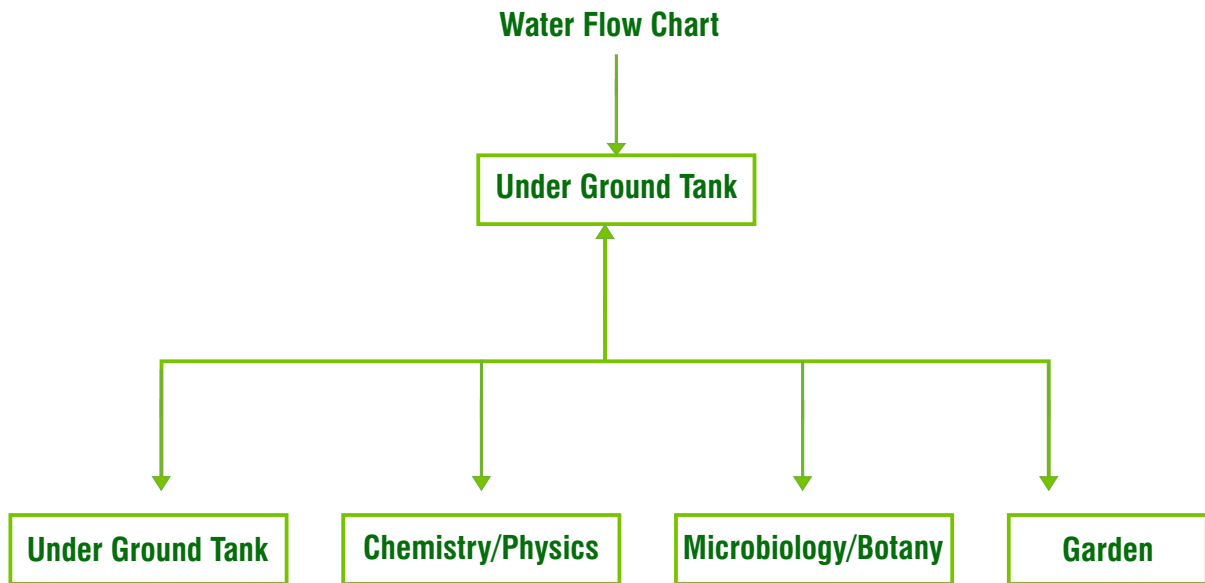
WATER MANAGEMENT PRACTICES

3. Turf Design

Sustainable turf design is an approach to landscaping and management that focuses on reducing the environmental impact of turf areas while maintaining their functionality and aesthetics. University can use the following principles of sustainable turf design:

Reduce the Size of Turf Areas: One of the most effective ways to reduce the environmental impact of turf areas is to reduce their size. This can be achieved by converting some areas to natural landscapes, such as meadows or native plant gardens.

Choose Drought-Tolerant Grass Varieties: Drought-tolerant grass varieties require less water and maintenance than traditional grass varieties. This can significantly reduce water usage and maintenance costs.

Use Organic Fertilizers and Pest Control Methods: Organic fertilizers and pest control methods are less environmentally harmful than traditional chemical methods. They can also promote soil health and reduce water pollution.

Use Recycled Water for Irrigation: Recycled water, such as greywater or rainwater, can be used for irrigation instead of potable water. This can save significant amounts of water and reduce the demand for municipal water supply.

Implement low-Impact Maintenance Practices: Low-impact maintenance practices, such as using manual tools instead of electric ones,

Consider Alternative Turf Surfaces: Alternative turf surfaces, such as synthetic turf or gravel, can be used in high-traffic areas where natural grass may not be feasible. In addition, these surfaces require less water and maintenance than natural grass.

By implementing sustainable turf design practices, universities can reduce environmental impact while maintaining functional and aesthetically pleasing outdoor spaces.

When designing and maintaining turf areas, it is essential to consider the local climate, soil conditions, and water availability.

WATER MANAGEMENT PRACTICES

Turf Design

1 2 3 4 5 6 7 8 9 10

The college's design minimizes natural resource impact while meeting functional and aesthetic expectations. NSC's turf areas contain many drought-tolerant species, reducing water consumption and maintaining landscape health.

The selection of drought-tolerant grass species and mulching techniques ensures healthy turf with minimal water input. These practices contribute to a resilient and sustainable landscape.

Type of Vegetation	On Ground (sq.m.)
Turf	2423.5
Native species	1022
Drought tolerant species	-
Other plant species	225
Total	3670.5

Total landscaped area (sq.m)	16,635
Total Turf area (sq.m)	2423.5
Percentage (%)of vegetated area with turf	14.56 %

WATER MANAGEMENT PRACTICES

4. Water Efficient Landscaping

Water-efficient landscaping, also known as xeriscaping or drought-tolerant landscaping, is an approach to landscaping that focuses on reducing water consumption while still maintaining functional and aesthetically pleasing outdoor spaces. University can use these critical principles of water-efficient landscaping:

Choose Drought-Tolerant Plants: Drought-tolerant plants require less water than traditional plants and can still provide a lush and attractive landscape. Native plants are often a good choice as they are well-adapted to the local climate.

Group Plants by Water Needs: Grouping plants with similar water needs together can help reduce water usage by avoiding overwatering or underwatering. This can also help ensure that water is used efficiently.

Use Efficient Irrigation Systems: Drip irrigation systems and smart controllers can help reduce water usage by delivering water directly to the plants and adjusting water output based on weather conditions.

Mulch Around Plants: Mulch helps retain moisture in the soil, reducing the need for watering. It also suppresses weeds, which can compete with plants for water.

Use Permeable Surfaces: Permeable surfaces, such as gravel or permeable pavers, allow rainwater to soak into the soil instead of running off, reducing the need for irrigation.

Consider Hardscaping: Hardscaping, such as patios or walkways, can reduce the amount of lawn or plant beds, reducing water usage and maintenance needs.

By implementing water-efficient landscaping practices, universities can reduce water usage, save money on water bills and maintenance costs, and promote sustainable practices among students, staff, and faculty. Therefore, choosing the right plants and irrigation systems based on local climate and soil conditions is essential, and adequately maintaining the landscape ensures maximum efficiency and water conservation.

WATER MANAGEMENT PRACTICES

Water Efficient Landscaping

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩

NSC's landscaping is water-efficient, incorporating responsible irrigation practices and mulching. The vegetated area includes drought-tolerant species that require less water, contributing to sustainable landscaping.

Xeriscaping involves using native plants, efficient irrigation systems, and soil amendments to enhance water retention. This ensures that the landscape remains vibrant and sustainable year-round.

Type of Vegetation	On Ground (sq.m.)
Turf	2423.5
Native species	1022
Drought tolerant species	-
Other plant species	225
Total	3670.5

Total landscaped area (sq.m)	16,635
Total area with native/ drought tolerant species (sq.m)	1020
Percentage(%) of vegetated area with native and drought tolerant species	6.14%

WATER MANAGEMENT PRACTICES

5. Water Efficient Irrigation System

Water-efficient irrigation systems are designed to deliver the right amount of water to plants while minimizing water waste. Therefore, the university can apply a few fundamental principles of water-efficient irrigation systems:

Choose The Right System: There are several types of irrigation systems, including drip irrigation, sprinklers, and soaker hoses. Choosing the right system depends on plant type, soil type, and local climate.

Use an Intelligent Controller: A smart controller can adjust the amount and frequency of water delivery based on weather conditions and plant needs. This can help reduce water waste and improve plant health.

Use Water-Saving Nozzles and Heads: Water-saving nozzles and heads can reduce water usage by up to 30% compared to traditional ones. These are available for both drip and sprinkler systems.

Check for leaks and Maintenance Issues: Regular maintenance can help ensure that the system is working efficiently and that there are no leaks or other issues that can waste water.

Use Rainwater Harvesting: Harvesting rainwater can provide a free source of water for irrigation, reducing the demand for potable water.

Install a Soil Moisture Sensor: Soil moisture sensors can help ensure that plants are receiving the right amount of water by measuring the moisture content of the soil. This can prevent overwatering or underwatering.

By implementing water-efficient irrigation systems, universities can reduce water usage and save money on water bills. Therefore, choosing the right design and components based on local climate and plant needs is essential, and adequately maintaining the system ensures maximum efficiency and water conservation.

WATER MANAGEMENT PRACTICES

Water Efficient Irrigation System

1 2 3 4 5 6 7 8 9 10

The college uses sprinkler irrigation systems that apply water directly to plant root zones, minimizing water usage and maintaining healthy landscapes.

Drip irrigation and smart controllers help maintain optimal soil moisture levels while reducing runoff and evaporation. This promotes efficient water use and healthy plant growth.

WATER MANAGEMENT PRACTICES

6. Waste Water Treatment

Wastewater treatment is treating and cleaning sewage and other wastewater before it is released into the environment. Here are some fundamental principles of wastewater treatment for Universities:

Primary Treatment: Primary treatment involves the removal of large particles and solids from wastewater through physical processes such as screening and settling.

Secondary Treatment: Secondary treatment involves using biological processes to remove organic matter and nutrients from wastewater. This is typically done through activated sludge or other natural treatment systems.

Tertiary Treatment: Tertiary treatment involves the removal of remaining contaminants from the wastewater using processes such as filtration, disinfection, or chemical treatment. This is often necessary to meet regulatory standards for wastewater discharge.

Reuse of Treated Water: Treated wastewater can be reused for irrigation, flushing toilets, or other non-potable uses, reducing the demand for potable water and conserving resources.

Energy Recovery: Energy recovery systems, such as biogas capture or heat recovery, can be used to generate energy from the treatment process, reducing energy costs and promoting sustainability.

Proper Disposal of Residual Sludge: The residual sludge from the treatment process must be appropriately disposed of to prevent contamination of the environment. This may involve further treatment or disposal at a certified facility.

By implementing wastewater treatment systems in universities, the amount of wastewater pollution can be reduced, and the water quality in the surrounding environment can be improved. It is essential to choose suitable treatment systems based on the size of the university and local regulations and to properly maintain and monitor the systems to ensure maximum efficiency and compliance with regulatory standards.

WATER MANAGEMENT PRACTICES

Waste Water Treatment

1 2 3 4 5 6 7 8 9 10

NSC treats wastewater from toilets, showers, kitchens, and agricultural processes. Treated water is reused for flushing toilets and irrigating vegetated areas, reducing dependence on freshwater.

Wastewater treatment plants process sewage and greywater, producing treated water suitable for irrigation and other non-potable applications. This system helps close the water loop, supporting sustainable water management.

WATER MANAGEMENT PRACTICES

7. Use of Treated Waste Water

Using treated wastewater in universities can provide several benefits, including reducing demand for potable water, conserving resources, and promoting sustainability. Here are some key ways that treated wastewater can be used in universities:

Irrigation: Treated wastewater can be used for irrigation of landscaping and agriculture, reducing the demand for potable water and conserving resources.

Toilet Flushing: Treated wastewater can be used for toilet flushing, reducing the demand for potable water and conserving resources.

Cooling Systems: Treated wastewater can be used in cooling systems, reducing the demand for potable water and conserving resources.

Fire Protection: Treated wastewater can be used for fire protection systems, reducing the demand for potable water and conserving resources.

Industrial Uses: Treated wastewater can be used for industrial processes that do not require potable water, reducing the demand for potable water and conserving resources.

It is essential to ensure that treated wastewater is safe for its intended use and that all regulatory standards are met. This requires proper treatment and monitoring of the wastewater treatment system.

Treated wastewater must also be clearly labeled and separated from potable water to avoid accidental consumption. Finally, communicating and educating the university community about the benefits and safe use of treated wastewater can promote acceptance and support for these sustainable practices.

WATER MANAGEMENT PRACTICES

Use of Treated Waste Water

1 2 3 4 5 6 7 8 9 10

NSC uses treated grey water for irrigation and flushing, conserving potable water, and replenishing surface and groundwater resources.

Treated greywater is used to irrigate gardens and lawns, providing a reliable water source while conserving potable water for essential uses. This approach aligns with the college's sustainability goals.

WATER MANAGEMENT PRACTICES

8. Water Use Monitoring

Water use monitoring in universities is critical to help identify water usage patterns and areas where water conservation measures can be implemented. Here are some essential steps for implementing water use monitoring in universities:

Identify the Scope of the Monitoring: Determine which buildings, areas, and water fixtures will be included in the monitoring program. This will depend on the size of the university and the availability of resources for monitoring.

Install Water Meters: Install water meters on all significant water lines and fixtures to measure water usage over time. This can help identify patterns and areas where water conservation measures can be implemented.

Collect and Analyze Data: Collect and analyze water usage data to identify areas of high water usage and potential areas for water conservation measures. This can also help track progress over time and identify trends.

Set Targets and Goals: Set targets and goals for water conservation based on the data collected. These can include reducing overall water usage or reducing water usage in specific areas or buildings.

Implement Water Conservation Measures: Implement water conservation measures based on the data and targets set. These can include repairing leaks, installing water-efficient fixtures, and promoting water-saving behaviors.

Communicate with the University Community: Communicate the goals and progress of the water use monitoring program to the university community. This can promote support and participation in water conservation efforts.

By implementing a water use monitoring program in universities, water usage patterns can be identified, and water conservation measures can be implemented to reduce overall water usage and promote sustainability. Therefore, it is essential to regularly monitor and analyze the data and communicate the progress and goals to the university community to maintain support and participation.

WATER MANAGEMENT PRACTICES

Water Use Monitoring

1 **2** **3** **4** **5** **6** **7** **8** **9** **10**

Continuous water use monitoring helps NSC identify inefficiencies and implement corrective measures, ensuring sustainable water management.

Water meters and monitoring software provide real-time data on water usage, enabling informed decisions and corrective measures to enhance water efficiency.

Cumulative Score	59/80

AIR QUALITY LEVEL

Achieving good air quality is an essential aspect of sustainability in a Green University. Following critical practices that can help achieve good air quality:

Energy-efficient HVAC Systems: A Green University should prioritize energy-efficient heating, ventilation, and air conditioning (HVAC) systems that minimize the energy needed to heat or cool the building while maintaining good indoor air quality.

Use of Non-Toxic Cleaning Products: A Green University should prioritize using non-toxic cleaning products to reduce the amount of harmful chemicals released into the air.

Proper Waste Management: A Green University should prioritize appropriate waste management practices, including recycling and composting, to reduce the amount of waste sent to landfills. Landfills are a significant source of air pollution and can contribute to poor air quality.

Green Transportation: A Green University should promote sustainable transportation options, such as biking, walking, or taking public transportation, to reduce the number of vehicles on campus.

Proper Ventilation: A Green University should prioritize adequate ventilation to ensure good indoor air quality. This can include using natural ventilation, such as opening windows, or mechanical ventilation systems that bring in fresh air.

Building Materials: A Green University should prioritize using low-emission building materials, such as low-VOC paint, to reduce the amount of harmful chemicals released into the air.

AIR QUALITY LEVEL

1. Tobacco Smoke Control

Tobacco smoke control is an important issue for universities, as exposure to secondhand smoke can have negative health effects on students, faculty, and staff. Here are some key principles for implementing tobacco smoke control measures in universities:

Establish Smoke-Free Policies: Establishing smoke-free policies for all campus buildings, facilities, and grounds is an important step in reducing exposure to secondhand smoke. These policies should be communicated clearly to students, faculty, and staff.

Provide Smoking Cessation Resources: Providing resources and support for smoking cessation, such as counseling and nicotine replacement therapy, can help smokers quit and reduce secondhand smoke exposure for others.

Create Designated Smoking Areas: If smoking is allowed on campus, create designated smoking areas in non-residential areas away from building entrances and common areas. These areas should be well-ventilated and have appropriate ashtrays for cigarette butts.

Enforce Policies: Enforce smoke-free policies through signage, education, and disciplinary actions if necessary. This will help promote compliance and reduce exposure to secondhand smoke.

Monitor Air Quality: Monitor air quality in buildings and other areas where smoking is allowed to ensure that levels of secondhand smoke are not harmful to non-smokers.

Promote Awareness and Education: Promote awareness and education about the risks of smoking and exposure to secondhand smoke through public health campaigns, educational programs, and community outreach.

By implementing tobacco smoke control measures in universities, the health and well-being of students, faculty, and staff can be promoted. It is important to establish clear policies, provide support for smoking cessation, and enforce policies to promote compliance and reduce exposure to secondhand smoke.

AIR QUALITY LEVEL

Tobacco Smoke Control

1 2 3 4 5 6 7 8 9 10

NSC enforces strict tobacco smoke control policies to ensure a healthy, smoke-free environment. Designated smoking areas are located away from buildings to minimize exposure to secondhand smoke.

Tobacco-free zones and designated smoking areas maintain clean air on campus, protecting the health of students, faculty, and staff. These measures contribute to a healthy and conducive learning environment.

AIR QUALITY LEVEL

2. Day Lighting

Daylighting and the daylight factor are closely related concepts essential for sustainable building design in universities.

Daylighting is using natural light to illuminate interior spaces in buildings, reducing the need for artificial lighting and promoting energy efficiency. It involves strategically placing windows, skylights, and other openings to maximize the natural light entering a space while minimizing glare and overheating.

The daylight factor is a quantitative measure of the amount of natural light that reaches the interior of a building. It is calculated as the ratio of the amount of light that enters a space through windows and skylights to the amount of light that would enter the room if the entire window or skylight was open to the sky.

The daylight factor is expressed as a percentage and is typically measured at a height of 0.75 meters above the floor. In universities, daylighting and the daylight factor are essential considerations for promoting energy efficiency, improving productivity and comfort, and reducing environmental impact.

The following principles can help Universities can achieve daylighting and daylight factor.

Design Buildings for Daylighting: Incorporate daylighting into the design of new buildings and renovations by placing windows and skylights strategically to allow for maximum natural light.

Use Daylighting Controls: Use automated shading and dimming systems to regulate the amount of natural light in a space and reduce the need for artificial lighting.
Optimize window and skylight placement: Optimize the placement of windows and skylights to maximize natural light while minimizing glare and direct sunlight.

Use Shading Devices: Use shading devices, such as blinds and shades, to control the amount of natural light in a space and reduce glare and overheating.

Monitor and Adjust: Monitor the daylight factor regularly and adjust shading devices to maintain a comfortable and productive learning and working environment.

By implementing daylighting and the daylight factor in universities, natural light can be maximized, reducing the need for artificial lighting and promoting energy efficiency. Additionally, natural light has improved productivity and comfort for students and faculty, promoting a positive learning and working environment. Therefore, it is essential to design buildings for daylighting, use daylighting controls and shading devices, optimize window and skylight placement, and monitor and adjust as necessary to promote sustainable and comfortable learning and working environments.

AIR QUALITY LEVEL

Day Lighting

1 2 3 4 5 6 7 8 **9** 10

The college's building design maximizes natural daylight, reducing the need for artificial lighting and promoting energy efficiency. Large windows and skylights are strategically placed to illuminate indoor spaces.

Daylighting strategies enhance indoor lighting conditions, improve occupant well-being, and reduce energy consumption. Natural light also creates a pleasant and productive atmosphere.

Illumination level Chart

Space	Carpetareainm2(a)
Classroom	1902.1
Lab	1445.02
Library	196.30
IndoreGames	-

Dahod, Gujarat, India
V64V+7RJ, Chhapri, Dahod, Gujarat 389151, India
Lat 22.856294°
Long 74.244297°
23/03/24 08:01 AM GMT +05:30

AIR QUALITY LEVEL

3. Fresh Air Ventilation

Fresh air ventilation is an essential component of sustainable building design in universities. It involves the controlled introduction of fresh air into a building to maintain indoor air quality, reduce the risk of indoor pollutants, and promote occupant health and well-being.

In universities, fresh air ventilation can be achieved through a variety of strategies, including natural ventilation, mechanical ventilation, or a combination of both. Here are some key principles for implementing fresh air ventilation in universities:

Determine Ventilation Requirements: Determine the ventilation requirements for each space based on the number of occupants and the type of activities that occur in the space.

Use Natural Ventilation Where Possible: Where possible use natural ventilation strategies, such as operable windows, to introduce fresh air into a space and reduce the need for mechanical ventilation.

Use Mechanical Ventilation When Needed: In spaces where natural ventilation is not feasible, use mechanical ventilation systems, such as air handling units, to introduce fresh air into a space.

Use Energy Recovery Systems: Use energy recovery systems, such as heat recovery ventilation (HRV) or energy recovery ventilation (ERV), to reduce the energy required for ventilation while still maintaining indoor air quality.

Monitor and Adjust: Monitor ventilation systems regularly to ensure that they are functioning properly and adjust them as necessary to maintain indoor air quality and occupant comfort.

By implementing fresh air ventilation in universities, indoor air quality can be maintained, reducing the risk of indoor pollutants and promoting occupant health and well-being. Additionally, by using natural ventilation strategies and energy recovery systems, energy can be saved, and sustainability can be promoted. It is important to determine ventilation requirements, use natural ventilation where possible, use mechanical ventilation when needed, uses energy recovery systems, and monitor and adjust ventilation systems as necessary to promote a sustainable and comfortable learning and working environment.
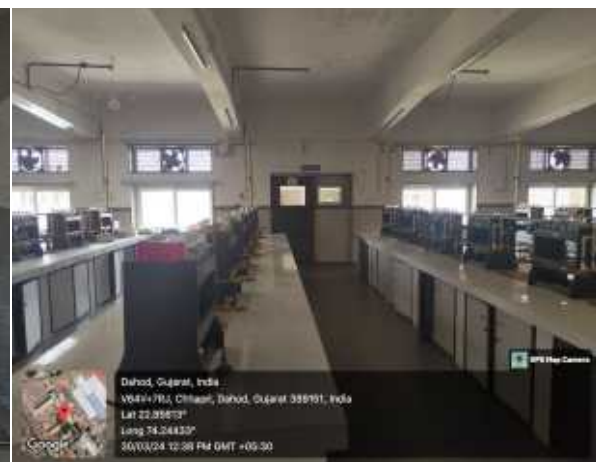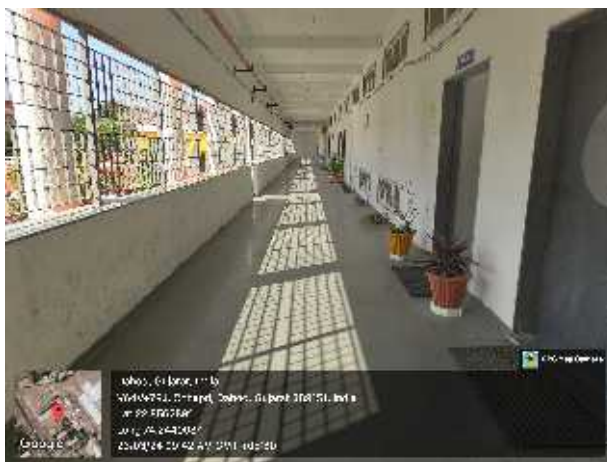
AIR QUALITY LEVEL

Fresh Air Ventilation

1 2 3 4 5 6 7 8 **9** 10

NSC ensures adequate fresh air ventilation in all buildings to maintain indoor air quality. Mechanical ventilation systems and operable windows provide a constant supply of fresh air.

Ventilation systems remove indoor pollutants and supply fresh outdoor air, ensuring a healthy indoor environment. Proper ventilation enhances comfort and well-being for all occupants.

Space	Carpet area in m2 (a)	Openable area in m2 (b)	Prescribed percentage or openable area	Percentage or openable area (b/a) x 100	Achieved/ Not achieved
Classroom	1902.1	112.455+96.921	-	11.008	-
Lab	1445.02	78.54+92.026	-	11.804	-
Library	196.30	30.345+24.475	-	27.927	-
Indore Games			-		-

AIR QUALITY LEVEL

4. Area of Class Room

The area of a classroom in a university can vary depending on the number of students and the type of activities that will take place in the space. However, there are some general guidelines and standards that can be used to determine the appropriate size for a classroom.

The Compendium of Architectural Norms and Guidelines for Educational Institutions of CPWD India has established standards for classroom sizes based on the number of students and the type of activities that will take place in the space.

The classroom area should also be designed to provide sufficient space for the various activities that will take place in the space, such as lectures, discussions, and group work. The classroom layout should allow for clear sightlines to the instructor and the board or screen and should provide sufficient space for seating, circulation, and storage.

Additionally, the classroom should be designed with acoustics in mind to ensure that sound is properly distributed and that there is minimal noise disturbance from external sources. Lighting should also be considered to provide adequate illumination for the various activities that will take place in the space.

In summary, the appropriate area for a classroom in a university will depend on various factors, such as the number of students and the type of activities that will take place in the space. However, established standards and guidelines can be used to ensure that the classroom provides sufficient space, clear sightlines, and proper acoustics and lighting for a comfortable and productive learning environment.
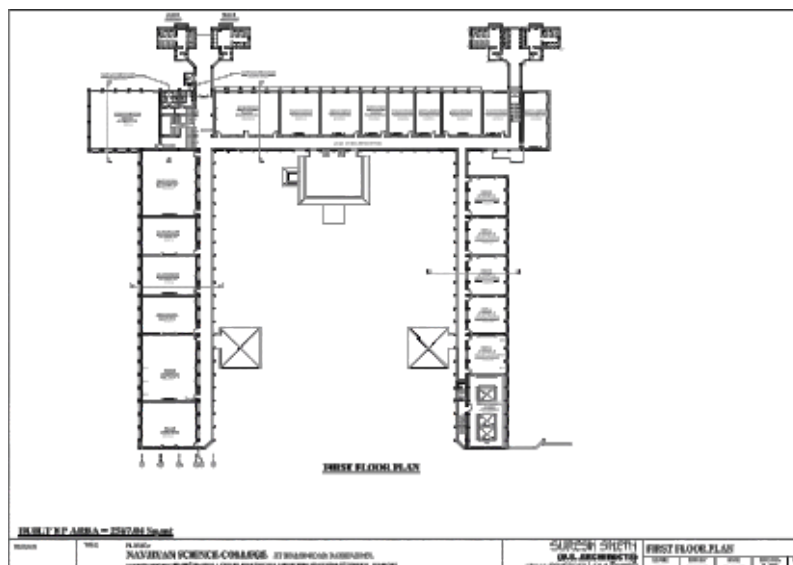
AIR QUALITY LEVEL

Area of Class Room

1 2 3 4 5 6 7 8 **9** 10

Classrooms at NSC are spacious and designed to accommodate optimal student-to-teacher ratios, ensuring a comfortable learning environment. Adequate space promotes better air circulation and student engagement.

Well-designed classrooms with ample space support interactive learning and reduce overcrowding risk. These spaces enhance students' overall educational experience and well-being.

Sr.No.	Category	No. of studentsper classroom	Minimum gross area of classrooms (inm2)/student
1	Diploma	-	-
2	Under Graduate	68	1.8
3	Post Graduate	88	1.4

AIR QUALITY LEVEL

Area of Class Room
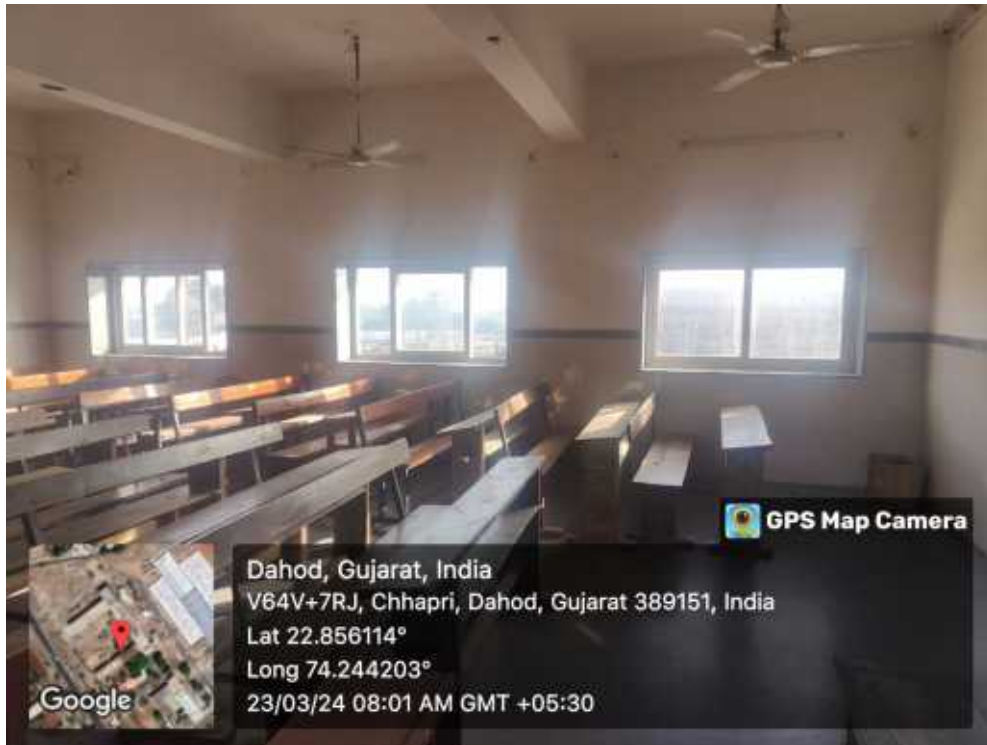
AIR QUALITY LEVEL

5. Anthropometric Dimensions in spaces

Anthropometric dimensions refer to the measurements of the human body and are an important consideration in the design of built-up spaces in universities. Designing spaces with appropriate anthropometric dimensions ensures that the spaces are comfortable and accessible for the occupants and can help to promote a healthy and productive learning environment.

Here are some common anthropometric dimensions to consider when designing built-up spaces in universities:

Seating Height: The height of chairs or benches should be appropriate for the intended occupants to ensure that they can comfortably sit and work for extended periods. The recommended seating height is between 16 and 20 inches for most adults.

Desk or Table Height: The height of desks or tables should be appropriate for the intended occupants to ensure that they can comfortably work and maintain good posture. The recommended desk or table height is between 28 and 30 inches for most adults.

Door Width: Doorways should be wide enough to accommodate the passage of people and equipment, including those with mobility aids. The recommended door width is at least 32 inches.

Aisle Width: Aisles and passageways should be wide enough to allow for the safe and efficient movement of people and equipment. The recommended aisle width is at least 36 inches.

Corridor Width: Corridors should be wide enough to allow for the safe and efficient movement of people and equipment, as well as to provide a sense of openness and accessibility. The recommended corridor width is at least 6 feet.

Ceiling Height: The height of ceilings can have a significant impact on the perceived spaciousness and comfort of a space. The recommended ceiling height for most built-up spaces in universities is between 9 and 10 feet.

By designing built-up spaces in universities with appropriate anthropometric dimensions, a comfortable and accessible environment can be created for the occupants. This can help to promote a healthy and productive learning environment and contribute to the overall well-being of the university community.

By designing restrooms in universities with appropriate anthropometric dimensions associated with toilet seat height, Toilet stall depth,

Grab bar height, Sink height, and Mirror height must be maintained to make toilets comfortable and accessible. This can help to promote hygiene, privacy, and overall well-being of the university community.

AIR QUALITY LEVEL

Anthropometric Dimensions in spaces

1 **2** **3** **4** **5** **6** **7** **8** **9** **10**

NSC considers anthropometric dimensions in the design of its facilities to ensure comfort and accessibility for all users. Furniture and spaces are designed to accommodate diverse body sizes and shapes.

Ergonomically designed furniture and appropriately scaled spaces promote comfort and reduce physical strain. These considerations are integral to creating an inclusive and accessible learning environment.

Architectural Element	Height (H), in m		
Parapet Wall	-	1.1m	1.1m
Sill height	-	0.9m	0.9m
Riser of the stairs	-	0.137m	0.137m

Dahod, Gujarat, India
V84V+7RJ, Chhapri, Dahod, Gujarat 389151, India
Lat 22.856111°
Long 74.244324°
30/03/24 12:54 PM GMT +05:30

AIR QUALITY LEVEL

6. Toxin-free Environment

Creating a toxin-free environment in a university is an important aspect of promoting the health and well-being of students, faculty, and staff. Here are some strategies that can be implemented to create a toxin-free environment in a university:

Use of Non-Toxic Cleaning Products: Traditional cleaning products can contain toxic chemicals that can be harmful to the health of occupants. Consider using non-toxic cleaning products that are safe for both humans and the environment.

Avoidance of Chemical Pesticides: Chemical pesticides can have negative effects on both human health and the environment. Consider implementing integrated pest management strategies that use non-toxic methods of pest control, such as trapping or exclusion.

Proper Ventilation: Proper ventilation can help to reduce the concentration of indoor air pollutants, such as volatile organic compounds (VOCs) and carbon monoxide. Ensure that HVAC systems are properly maintained and that air filters are regularly changed.

Use of Non-Toxic Building Materials: Building materials, such as flooring, paint, and insulation, can contain toxic chemicals that can off-gas into the indoor environment. Consider using non-toxic building materials that are free from harmful chemicals.

Indoor Plant Installation: Indoor plants can help to purify the air by absorbing pollutants and producing oxygen. Consider installing indoor plants in common areas, such as classrooms and offices.

Proper Waste Management: Proper waste management can help to reduce the amount of toxins that are released into the environment. Consider implementing recycling and composting programs to divert waste from landfills.

By implementing these strategies, a university can create a toxin-free environment that promotes the health and well-being of occupants.
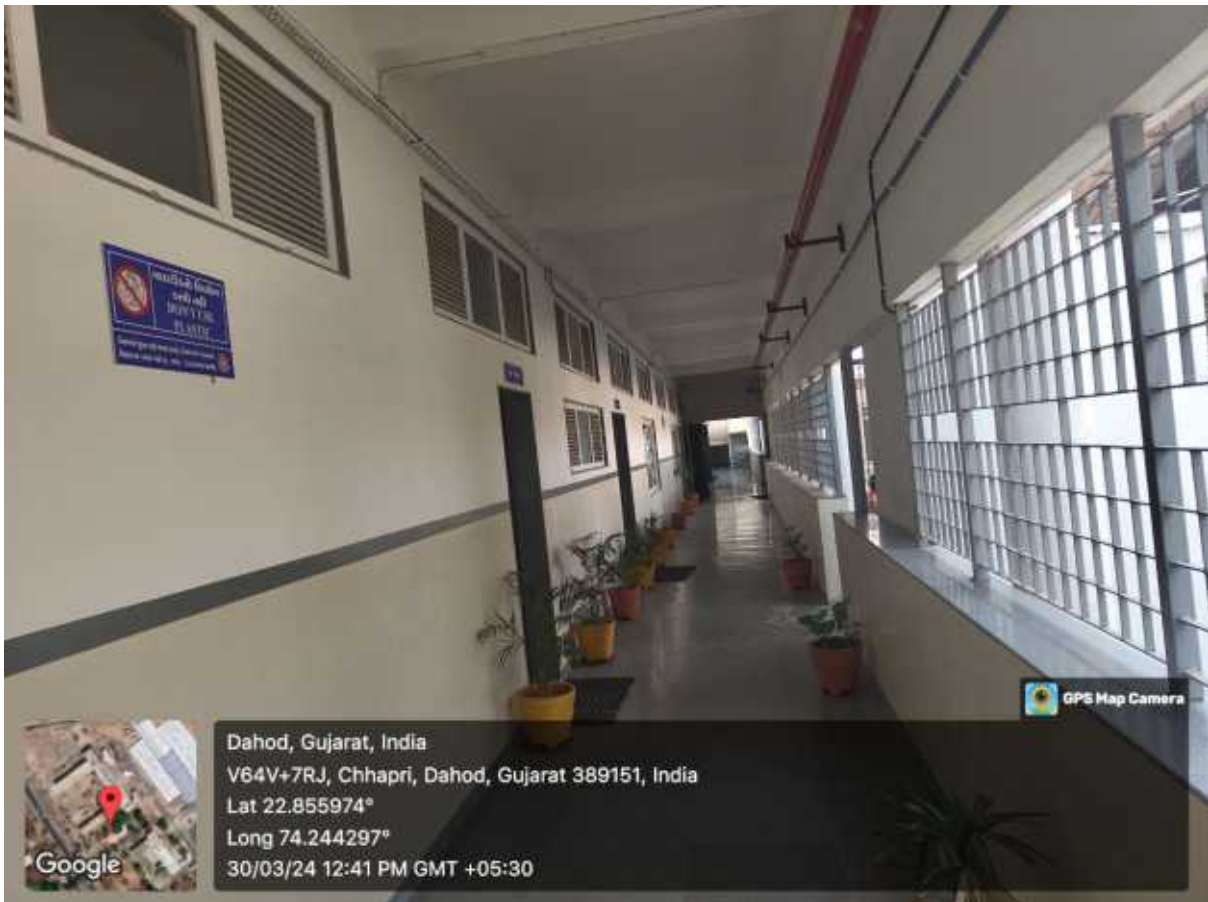
AIR QUALITY LEVEL

Toxin-free Environment

1 **2** **3** **4** **5** **6** **7** **8** **9** **10**

The college prioritizes the use of non-toxic materials and cleaning products to maintain a healthy environment. This approach minimizes exposure to harmful chemicals and promotes well-being.

Toxin-free policies include using low-VOC paints, eco-friendly cleaning products, and non-toxic building materials. These practices ensure a safe and healthy environment for all campus users.

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V64V+7RJ, Chhapri, Dahod, Gujarat 389151, India
Lat 22.855974°
Long 74.244297°
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AIR QUALITY LEVEL

7. Dust-free Environment

Creating a dust-free environment in a university is important for promoting the health and well-being of students, faculty, and staff. Dust can contain a variety of allergens and pollutants that can cause respiratory problems and exacerbate existing health conditions. Here are some strategies that can be implemented to create a dust-free environment in a university:

Regular Cleaning: Regular cleaning is essential for maintaining a dust-free environment. Ensure that floors, walls, and surfaces are cleaned regularly to prevent the accumulation of dust.

Use of HEPA Filters: High-efficiency particulate air (HEPA) filters can help to remove dust particles from the air. Consider using HEPA filters in HVAC systems and portable air purifiers.

Proper Ventilation: Proper ventilation can help to reduce the concentration of dust particles in the air. Ensure that HVAC systems are properly maintained and that air filters are regularly changed.

Reduction of Clutter: Clutter can trap dust particles and make cleaning more difficult. Encourage occupants to keep their spaces tidy and free from clutter.

Use of Doormats: Doormats can help to reduce the amount of dust that is tracked into buildings. Consider using doormats at building entrances to help prevent dust from entering the building.

Use of Natural Cleaning Products: Traditional cleaning products can contain chemicals that can contribute to the accumulation of dust. Consider using natural cleaning products that are free from harmful chemicals.

By implementing these strategies, a university can create a dust-free environment that promotes the health and well-being of occupants.

AIR QUALITY LEVEL

Dust-free Environment

1 2 3 4 5 6 7 8 9 10

NSC employs dust control measures to maintain clean indoor air quality. Regular cleaning and maintenance routines help reduce dust accumulation.

Efficient HVAC systems with high-quality filters and regular cleaning schedules ensure minimal dust presence. These measures contribute to a healthier indoor environment and improved air quality.

AIR QUALITY LEVEL

8. Exhaust Systems

Exhaust systems in a university are an important component of building ventilation systems. Exhaust systems are responsible for removing stale air and pollutants from indoor spaces and replacing them with fresh outdoor air. Here are some types of exhaust systems commonly found in universities:

Bathroom Exhaust Fans: Bathroom exhaust fans are typically installed in restrooms to remove excess moisture and odors. They help to prevent the growth of mold and mildew and improve indoor air quality.

Kitchen Exhaust Systems: Kitchen exhaust systems are designed to remove cooking fumes, smoke, and odors from commercial kitchens. They typically consist of hoods, ducts, and fans and are important for maintaining good indoor air quality and preventing fire hazards.

Laboratory Exhaust Systems: Laboratory exhaust systems are designed to remove hazardous fumes and pollutants from laboratory spaces. They are typically equipped with high-efficiency filters and fans to ensure that hazardous substances are safely removed from the building.

General Exhaust Systems: General exhaust systems are used to remove stale air and pollutants from common areas, such as hallways and lobbies. They help to maintain good indoor air quality and prevent the buildup of pollutants.

Parking Garage Exhaust Systems: Parking garage exhaust systems are designed to remove vehicle exhaust fumes and pollutants from enclosed parking garages. They typically consist of fans and ducts and are important for maintaining good indoor air quality and preventing the buildup of pollutants.

By ensuring that exhaust systems are properly installed and maintained, a university can ensure good indoor air quality and promote the health and well-being of occupants.

AIR QUALITY LEVEL

Exhaust Systems

1 **2** **3** **4** **5** **6** **7** **8** **9** **10**

The college utilizes exhaust systems in laboratories, kitchens, and other areas to remove pollutants and maintain air quality. These systems are essential for creating a safe and healthy environment.

Exhaust systems effectively remove airborne contaminants, ensuring that the air quality remains high in specialized areas. This helps protect the health of students, staff, and visitors.

Cumulative Score	67/80

ENERGY USES & SAVING PRACTICES

Energy sourcing and saving practices are critical components of sustainability in a Green University. Some essential techniques that can help achieve these goals:

Renewable Energy: A Green University should prioritize the use of renewable energy sources, such as solar, wind, or geothermal power, to reduce reliance on fossil fuels and reduce greenhouse gas emissions.

Energy-efficient Lighting: A Green University should use energy-efficient lighting systems, such as LED lights, to reduce energy consumption.

Energy-efficient Appliances: A Green University should use energy-efficient appliances, such as refrigerators and washing machines, to reduce energy consumption.

Energy Audits: A Green University should conduct regular energy audits to identify areas of high energy use and implement measures to reduce energy consumption.

Behavioral Changes: A Green University should encourage sustainable energy practices among its students, faculty, and staff. This can include promoting energy-saving behaviors, such as turning off lights and electronics when not in use and providing education on the importance of energy conservation.

Green University Accreditation: A Green University should consider obtaining green University Accreditation from Green Mentors to demonstrate its commitment to sustainability and energy efficiency.

ENERGY USES & SAVING PRACTICES

1. Ozone Depleting Substances

Ozone-depleting substances (ODS) are chemicals that can cause damage to the earth's ozone layer, which protects us from harmful ultraviolet radiation. These substances are commonly used in refrigeration, air conditioning, fire suppression systems, and other applications. Here are some ways in which a university can reduce its use of ODS:

Retrofitting Equipment: Old equipment that uses ODS can be retrofitted with alternative refrigerants that are more environmentally friendly. This can help to reduce the amount of ODS that is released into the atmosphere.

Purchasing Equipment with Alternative Refrigerants: When purchasing new equipment, choose models that use alternative refrigerants that are less harmful to the environment. This can help to reduce the university's overall use of ODS.

Proper Disposal of ODS: ODS should be properly disposed of to prevent them from entering the atmosphere. Work with qualified technicians to ensure that ODS are properly recovered and disposed of in accordance with local regulations.

ODS Awareness and Training: Educate staff, students, and faculty about the dangers of ODS and the importance of reducing their use. Training programs can help to raise awareness and promote responsible behavior.

Use of Alternatives: Consider using alternative products and technologies that do not contain ODS.

For example, fire suppression systems can be replaced with alternatives that use inert gases or water mist.

By taking these steps, a university can reduce its use of ODS and help to protect the earth's ozone layer. This can have a positive impact on the environment and the health of future generations.

ENERGY USES & SAVING PRACTICES

Ozone Depleting Substances

1 **2** **3** **4** **5** **6** **7** **8** **9** **10**

Navjivan Science College (NSC) is committed to eliminating the use of ozone-depleting substances (ODS) in its operations. This includes transitioning to environmentally friendly refrigerants and avoiding materials that harm the ozone layer.

NSC has phased out ODS in its cooling systems by adopting alternatives like hydrofluorocarbons (HFCs) and other environmentally benign substances. The college also ensures that any new equipment purchased is free from ODS, aligning with global environmental protection standards.

ENERGY USES & SAVING PRACTICES

2. Energy Efficient Lighting Fixtures

Energy-efficient lighting fixtures are an important part of any university's efforts to reduce energy consumption and lower operating costs. Here are some examples of energy-efficient lighting fixtures that can be used in universities:

LED Lighting: LED lights are highly energy-efficient and can last up to 25 times longer than traditional incandescent bulbs. LED lighting can be used in various applications, including classrooms, offices, and outdoor spaces.

CFL Lighting: Compact fluorescent lights (CFLs) are another energy-efficient lighting option. They use up to 75% less energy than incandescent bulbs and can last up to 10 times longer.

Occupancy Sensors: Occupancy sensors can be used to automatically turn off lights in unoccupied areas, such as classrooms or offices. This can help to reduce energy waste and lower operating costs.

Daylight Harvesting Systems: Daylight harvesting systems use sensors to automatically adjust the amount of artificial light based on the available natural light. This can help to reduce energy consumption and improve the quality of light in indoor spaces.

Task Lighting: Task lighting is designed to provide lighting for specific tasks, such as reading or computer work. By using task lighting instead of overhead lighting, energy consumption can be reduced while maintaining adequate lighting levels.

By implementing energy-efficient lighting fixtures, a university can reduce its energy consumption and operating costs while also improving the quality of light in indoor spaces. Additionally, energy-efficient lighting fixtures can contribute to a more sustainable and environmentally friendly campus.

University has installed LED Lighting & Fixtures instead of old Lightning that reduces the environmental impacts associated with energy use.

University decided to replace all the old structured 36 W fluorescent-based lighting modules by 18 W LED T/L, 2×2 LED panels and required efficient lighting where needed.
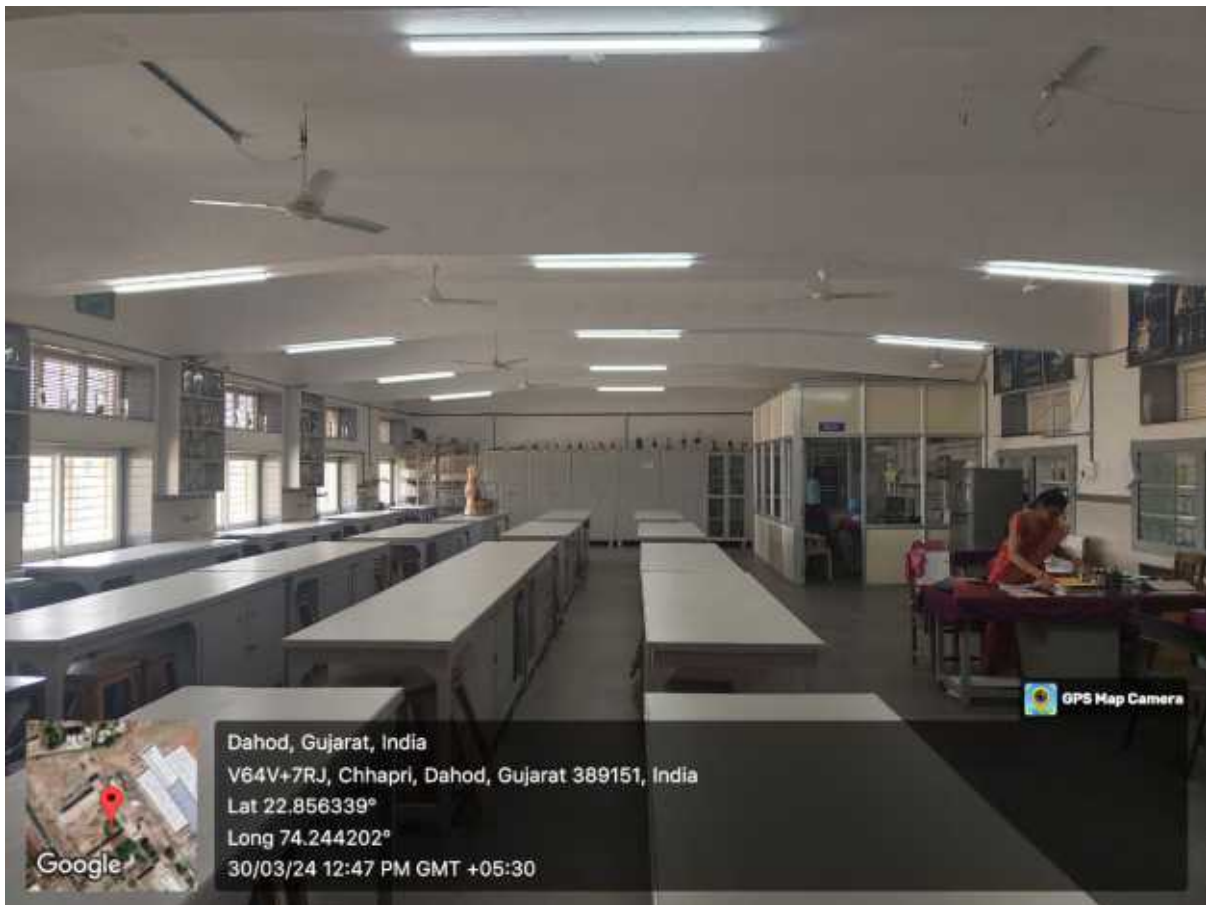
ENERGY USES & SAVING PRACTICES

Energy Efficient Lighting Fixtures

1 **2** **3** **4** **5** **6** **7** **8** **9** **10**

NSC has installed energy-efficient lighting fixtures across its campus, including LED lights and motion sensor-activated systems. These measures significantly reduce energy consumption and lower the institution's carbon footprint.

The transition to LED lighting has resulted in a substantial decrease in electricity use. Motion sensors in classrooms, hallways, and restrooms ensure that lights are only on when necessary, further enhancing energy efficiency.

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Lat 22.856339°
Long 74.244202°
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ENERGY USES & SAVING PRACTICES

Energy Efficient Lighting Fixtures

BASECASE SCENARIO - Lighting Fixtures Number of working days (n)						
Location	Carpet area (sq.m)	Number of fixtures (f)	Luminare capacity (kW)	Operating hours (hr)	Energy consumption by lighting fixtures in a day (kW x hr x f)	Total energy consumption by lighting fixtures in entire year (W x Hr x f x n)
Classrooms	3790	824	40kw	8	320	64,000
Labs	4125	935	40kw	4	160	32,000
					Total	96,000

PROPOSED SCENARIO - Lighting Fixtures Number of working days (n)						
Location	Carpet area (sq.m)	Number of fixtures (f)	Luminare capacity (kW)	Operating hours (hr)	Energy consumption by lighting fixtures in a day (kW x hr x f)	Total energy consumption by lighting fixtures in entire year (W x Hr x f x n)
Classrooms	3790	824	40kw	8	320	64,000
Labs	4125	935	40kw	4	160	32,000
					Total	96,000

Percentage (%) improvement (X) = 50.0
(Basecase scenario - Proposed scenario) / (Basecase scenario) x 100

ENERGY USES & SAVING PRACTICES

3. Energy Efficient Fans

Energy-efficient fans and air-conditioners are important in universities as they can help reduce energy consumption and lower operating costs. Here are some examples of energy-efficient fans and air-conditioners that can be used in universities:

High-Efficiency Ceiling Fans: Ceiling fans can be a cost-effective way to cool indoor spaces. High-efficiency ceiling fans can be up to 20% more efficient than standard ceiling fans, helping to reduce energy consumption and lower operating costs.

Variable Speed Air Handlers: Variable-speed air handlers can be used with central air-conditioning systems to help reduce energy consumption. These systems can adjust the speed of the fan based on the cooling needs of the indoor space, helping to save energy and reduce operating costs.

Energy-Efficient Window Air-Conditioners: Window air-conditioners can be an energy-efficient option for cooling small spaces, such as individual offices or dorm rooms. Look for models with the BEE STAR rating 1 to 5, the ascending order of energy efficiency, which indicates that they meet the energy efficiency level.

Split-System Air-Conditioners: Split-system air-conditioners are designed to cool individual rooms or spaces. They are more energy-efficient than traditional central air-conditioning systems, as they only cool the spaces that need them.

Heat Pumps: Heat pumps can be used for both heating and cooling indoor spaces. They are more energy-efficient than traditional heating and cooling systems, as they transfer heat rather than create it. Heat pumps are particularly effective in moderate climates.

By implementing energy-efficient fans and air-conditioners, a university can reduce its energy consumption and operating costs while maintaining a comfortable indoor environment for students, staff, and faculty. Additionally, energy-efficient fans and air-conditioners can contribute to a more sustainable and environmentally friendly campus.
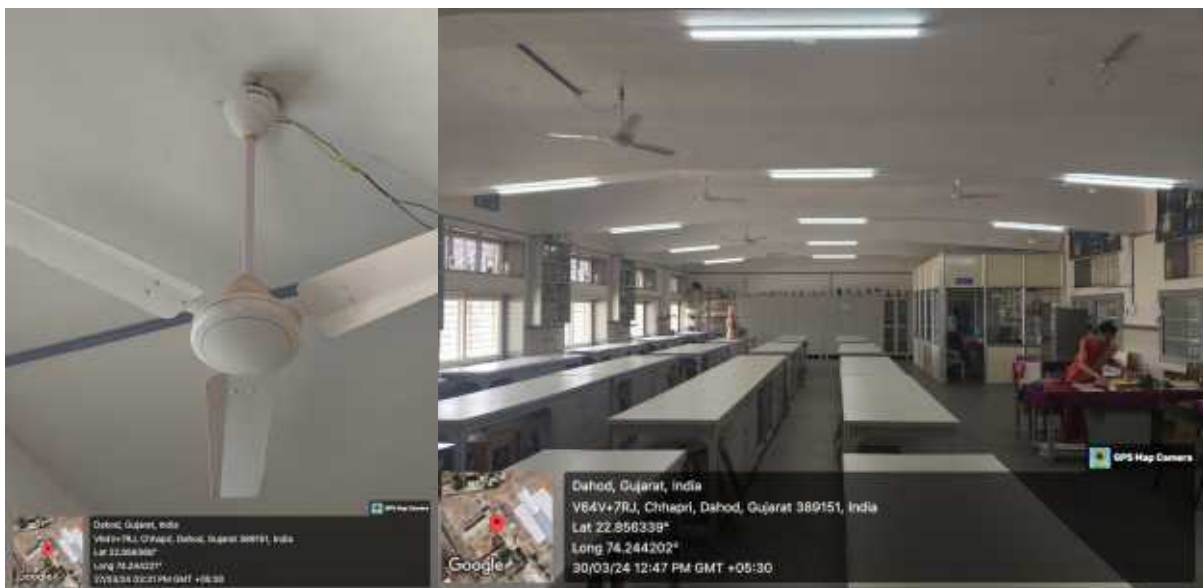
ENERGY USES & SAVING PRACTICES

Energy Efficient Fans

1 2 3 4 5 6 7 8 9 10

The college has replaced traditional fans with energy-efficient models that consume less power while providing adequate ventilation. This upgrade supports the college's overall energy conservation goals. Total 346 Fans are in college.

Energy-efficient fans at NSC are designed to operate at lower wattage without compromising airflow. This reduces energy consumption and contributes to a more comfortable indoor environment.

ENERGY USES & SAVING PRACTICES

4. Energy Efficiency in Appliances & Equipment

Energy efficiency in appliances and equipment is important in universities as it can help reduce energy consumption and lower operating costs. Here are some examples of energy-efficient appliances and equipment that can be used in universities:

Energy-Efficient Computers and Monitors: Energy-efficient computers and monitors can help reduce energy consumption in computer labs and offices. Look for models that have earned the BEE STAR label, which indicates that they meet energy efficiency guidelines set by the Bureau of Energy Efficiency.

Energy-Efficient Refrigerators and Freezers: Energy-efficient refrigerators and freezers can help reduce energy consumption in university dining halls, cafeterias, and research labs. Look for models that have earned the ENERGY STAR label, which indicates that they meet energy efficiency guidelines set by the Bureau of Energy Efficiency.

Energy-Efficient HVAC Systems: Energy-efficient heating, ventilation, and air conditioning (HVAC) systems can help reduce energy consumption in university buildings. Look for systems that have earned the ENERGY STAR label, which indicates that they meet energy efficiency guidelines set by the Bureau of Energy Efficiency.

Energy-Efficient Lighting Controls: Lighting controls, such as occupancy sensors and daylight harvesting systems, can help reduce energy consumption in university buildings by automatically adjusting lighting based on occupancy and available natural light.

Energy-Efficient Water Heaters: Energy-efficient water heaters can help reduce energy consumption in university dormitories and athletic facilities. Look for models that have earned the ENERGY STAR label, which indicates that they meet energy efficiency guidelines set by the Bureau of Energy Efficiency.

By implementing energy-efficient appliances and equipment, a university can reduce its energy consumption and operating costs while maintaining the necessary functionality of its facilities. Additionally, energy-efficient appliances and equipment can contribute to a more sustainable and environmentally friendly campus
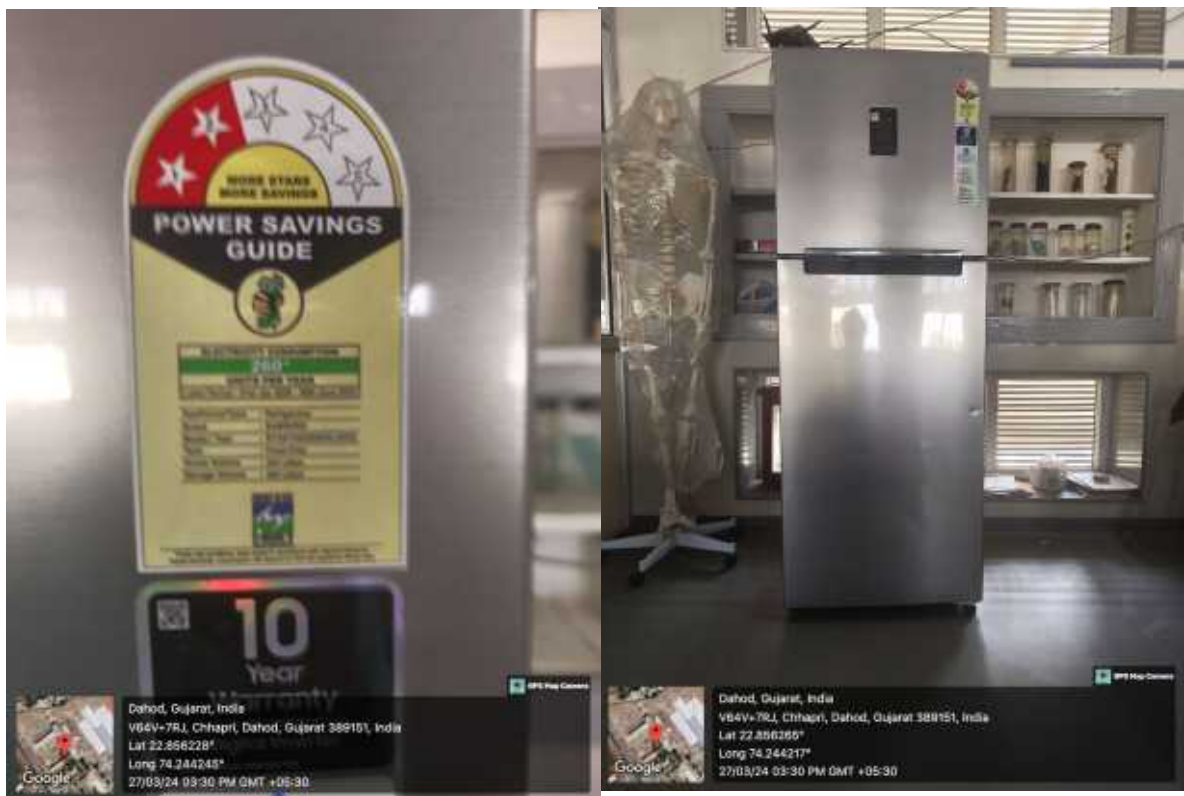
ENERGY USES & SAVING PRACTICES

Energy Efficiency in Appliances & Equipment

1 2 3 4 5 6 7 8 9 10

NSC prioritizes the use of energy-efficient appliances and equipment in its laboratories, offices, and common areas. This includes refrigerators, air conditioners, computers, and other electronic devices

Energy-efficient appliances are selected based on their Energy Star ratings and other certification standards. The college regularly audits its equipment to ensure optimal performance and energy savings.

ENERGY USES & SAVING PRACTICES

5. Energy Sub-Metering

Energy sub-metering is the practice of installing meters to measure energy consumption in specific areas or systems within a building, such as lighting, HVAC, and plug loads. In a university setting, energy sub-metering can be used to identify areas of high energy consumption and implement energy-saving measures to reduce energy consumption and costs. Here are some benefits of energy sub-metering in universities:

Identify Areas of High Energy Consumption: Energy sub-metering can help identify areas of high energy consumption within a university. By identifying these areas, universities can target energy-saving measures to reduce energy consumption and costs.

Allocate Energy Costs: Energy sub-metering can help allocate energy costs to specific departments or buildings within a university. This can provide an incentive for departments to reduce energy consumption and costs.

Monitor Energy Performance: Energy sub-metering can help monitor energy performance over time. By monitoring energy performance, universities can track energy consumption and identify trends or anomalies.

Improve Sustainability: Energy sub-metering can help universities achieve their sustainability goals by reducing energy consumption and carbon emissions.

When implementing energy sub-metering in a university, it is important to ensure that the meters are accurate, reliable, and installed correctly. Additionally, data from the meters should be collected and analyzed to identify opportunities for energy savings.

ENERGY USES & SAVING PRACTICES

Energy Sub-Metering

1 2 3 4 5 6 7 8 9 10

NSC has implemented energy sub-metering to monitor and manage electricity usage in different buildings and departments. This helps identify areas of high consumption and opportunities for improvement.

Submetering allows the college to track energy use in real time, enabling targeted interventions to reduce wastage. Data from submeters is analyzed to develop strategies for further energy conservation.

ENERGY USES & SAVING PRACTICES

6. On-Site Renewable Energy

On-site renewable energy in universities refers to the installation of renewable energy systems on university campuses to generate electricity or heat. On-site renewable energy can help universities reduce their reliance on fossil fuels and reduce their carbon emissions. Following options of on-site renewable energy systems that can be installed in universities:

Solar Photovoltaic (PV) Systems: Solar PV systems can be installed on university buildings or in open areas on campus to generate electricity. Solar PV systems are relatively low-maintenance and have a long life span, making them a good investment for universities.

Wind Turbines: Small-scale wind turbines can be installed on university campuses to generate electricity. Wind turbines require more maintenance than solar PV systems and are less reliable, but they can be a good option in areas with high wind speeds.

Geothermal Heating and Cooling Systems: Geothermal heating and cooling systems can be installed in university buildings to provide heating and cooling using energy from the ground. Geothermal systems are highly efficient and can reduce heating and cooling costs for universities.

Biomass Heating Systems: Biomass heating systems can be installed in university buildings to provide heat using renewable biomass fuels, such as wood chips or pellets. Biomass heating systems require regular maintenance and can be more expensive to install than other renewable energy systems, but they can provide a reliable source of heat for universities.

By installing on-site renewable energy systems, universities can reduce their energy consumption and carbon emissions while demonstrating their commitment to sustainability. Additionally, on-site renewable energy systems can provide educational opportunities for students and faculty, as well as research opportunities for university researchers.

ENERGY USES & SAVING PRACTICES

On-Site Renewable Energy

1 2 3 4 5 6 7 8 9 10

NSC will invested in on-site renewable energy systems, including 20KW solar panels and wind turbines, to generate clean energy. These systems reduce the college's reliance on fossil fuels.

Solar panels installed on rooftops and other strategic locations harness solar energy, providing a significant portion of the college's electricity needs. Wind turbines complement this by generating power from wind, making the campus more sustainable.

ENERGY USES & SAVING PRACTICES

7. Solar Water Heating Systems

Solar water heating systems are a type of renewable energy system that can be installed in universities to heat water using energy from the sun. Solar water heating systems can be installed on university buildings, such as dormitories, gymnasiums, or cafeterias, to provide hot water for showers, sinks, and other uses.

Here are some benefits of installing solar water heating systems in universities:

Energy Cost Savings: Solar water heating systems can help universities save money on energy costs by reducing the need for electricity or natural gas to heat water.

Reduced Carbon Emissions: Solar water heating systems can help universities reduce their carbon emissions by using renewable energy to heat water.

Educational Opportunities: Solar water heating systems can provide educational opportunities for students and faculty to learn about renewable energy technologies and their applications.

Increased Resilience: Solar water heating systems can provide increased resilience to universities by providing hot water even during power outages or other disruptions to the electrical grid.

When installing solar water heating systems in universities, it is important to ensure that the systems are designed and installed correctly to maximize their efficiency and lifespan. Additionally, regular maintenance and monitoring should be performed to ensure that the systems are operating effectively and efficiently.

ENERGY USES & SAVING PRACTICES

Solar Water Heating Systems

1 **2** **3** **4** **5** **6** **7** **8** **9** **10**

The college utilizes solar water heating systems to provide hot water for various uses, reducing the need for conventional water heating methods.

Solar water heaters installed on campus leverage sunlight to heat water, reducing electricity or gas consumption. This sustainable approach not only saves energy but also lowers utility costs.

ENERGY USES & SAVING PRACTICES

8. Distributed Power Generation

Distributed power generation is a type of energy system that involves generating electricity from small-scale power sources located close to the point of use instead of from a centralized power plant. Universities can benefit from distributed power generation by installing renewable energy systems such as solar panels or wind turbines on their campuses.

Here are some benefits of distributed power generation in universities:

Reduced Energy Costs: Distributed power generation can help universities save money on energy costs by generating electricity on-site and reducing their reliance on grid-supplied electricity.

Reduced Carbon Emissions: Distributed power generation can help universities reduce their carbon emissions by using renewable energy sources to generate electricity.

Increased Resilience: Distributed power generation can provide increased resilience to universities by providing a local source of electricity in case of power outages or other disruptions to the electrical grid.

Educational Opportunities: Distributed power generation can provide educational opportunities for students and faculty to learn about renewable energy technologies and their applications.

Examples of distributed power generation systems that can be installed in universities include:

Solar Photovoltaic (PV) Systems: Solar PV systems can be installed on university buildings or in open areas on campus to generate electricity.

Wind Turbines: Small-scale wind turbines can be installed on university campuses to generate electricity.

Micro-Hydro Systems: Micro-hydro systems can be installed on university campuses to generate electricity using the energy from flowing water.

Combined Heat and Power (CHP) Systems: CHP systems can be installed in university buildings to generate both electricity and heat from a single system.

By installing distributed power generation systems, universities can reduce their energy costs, carbon emissions, and reliance on grid-supplied electricity while demonstrating their commitment to sustainability.

ENERGY USES & SAVING PRACTICES

Distributed Power Generation

1 **2** **3** **4** **5** **6** **7** **8** **9** **10**

NSC employs distributed power generation systems to enhance energy resilience and efficiency. This includes combined heat and power (CHP) systems that utilize waste heat for additional energy savings.

Distributed power generation systems at NSC ensure a reliable power supply while maximizing energy efficiency. These systems reduce transmission losses and improve overall energy management on campus.

Source
62 KW

50 KW

20 KW

20 KW

OFFICE

10 KW

Cumulative Score	68/80
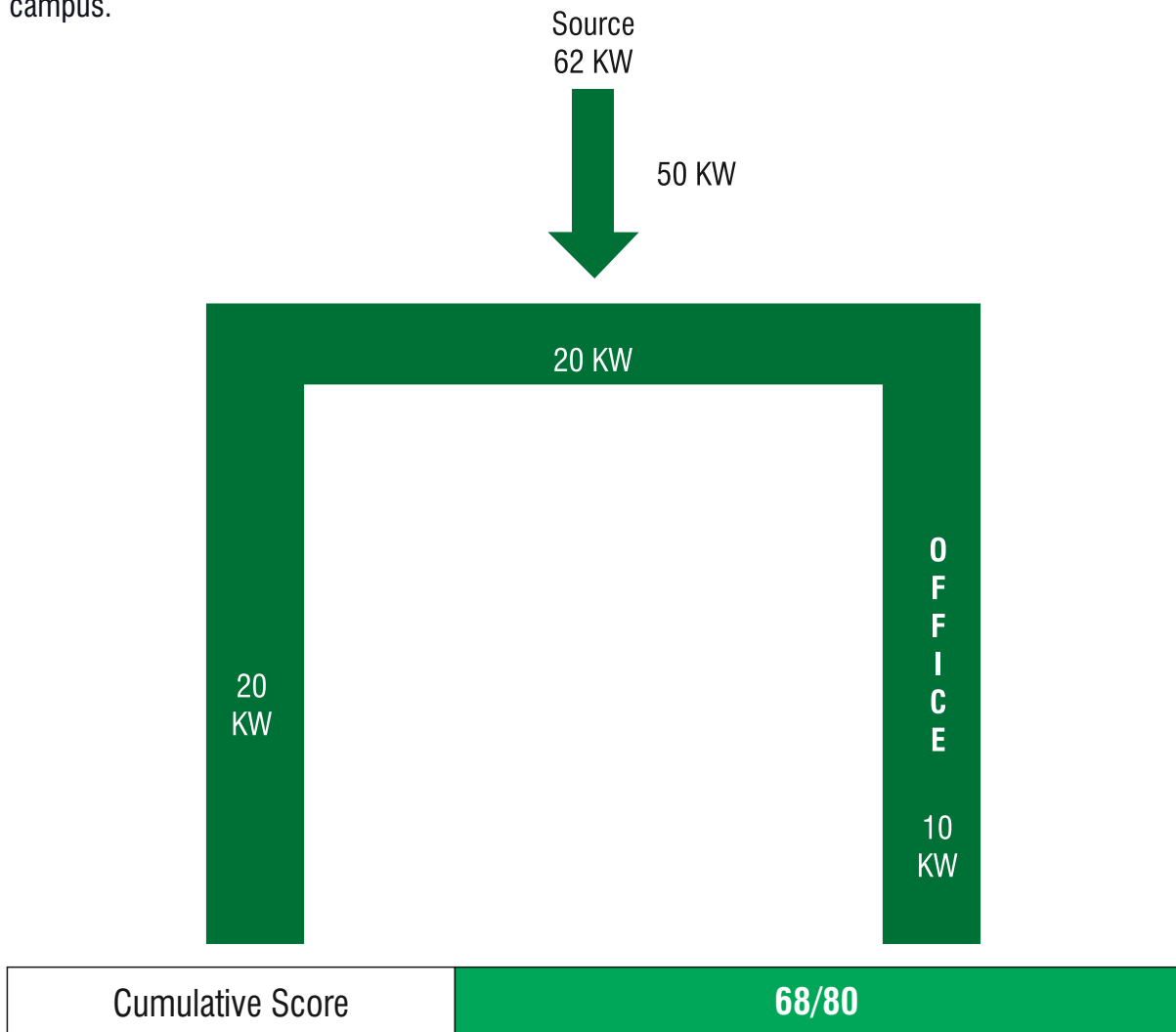
HEALTH & HYGIENE PRACTICES

Health and hygiene practices are essential considerations in a Green University, as they can help ensure the well-being of students, faculty, and staff while also promoting sustainability. Following critical practices that can help achieve these goals:

Clean Drinking Water: A Green University should prioritize clean drinking water by regularly testing and treating the water supply to ensure it meets quality standards.

Sustainable Food Options: A Green University should prioritize sustainable food options, such as locally sourced and organic foods, to promote healthy eating and reduce the environmental impact of food production.

Handwashing and Sanitizing Stations: A Green University should provide ample handwashing and sanitizing stations throughout its buildings to promote good hygiene and prevent the spread of illness.

Safe and Sustainable Cleaning Products: A Green University should prioritize using safe and sustainable cleaning products to reduce the amount of harmful chemicals released into the environment.

Waste Management: A Green University should prioritize proper waste management practices, including recycling and composting, to reduce the amount of waste sent to landfills.

Sustainable Transportation: A Green University should promote sustainable transportation options, such as biking, walking, or taking public transportation, to reduce the number of vehicles on campus. This can help reduce air pollution and promote good health.

Mental Health Support: A Green University should prioritize mental health support services for its students, faculty, and staff to promote overall well-being.

HEALTH & HYGIENE PRACTICES

1. Toilet Facilities

Restrooms and toilets are important facilities in universities that need to be designed to meet the needs of the students, faculty, and staff. Proper design and maintenance of these facilities can help promote hygiene, reduce water usage, and ensure accessibility for all. Some factors to be considered when designing restrooms and toilets in universities:

Accessibility: Restrooms and toilets should be designed to be accessible for people with disabilities, including wheelchair users. This includes providing adequate space, grab bars, and accessible fixtures.

Gender Inclusivity: Restrooms and toilets should be designed to be inclusive of all gender identities, with options for single-user restrooms and multi-user restrooms with privacy features.

Hygiene: Restrooms and toilets should be designed to promote good hygiene, with features such as touchless fixtures, automatic flush systems, and hand sanitizing stations.

Water Efficiency: Restrooms and toilets should be designed with water-efficient fixtures, such as low-flow toilets and faucets, to reduce water usage and promote sustainability.

Maintenance: Restrooms and toilets should be designed with ease of maintenance in mind, with durable and easy-to-clean materials and regular cleaning schedules.

When designing restrooms and toilets in universities, it is important to consider the specific needs and requirements of the campus community, as well as applicable laws and regulations related to accessibility and hygiene. Regular maintenance and monitoring should also be performed to ensure that the facilities are operating effectively and efficiently.

HEALTH & HYGIENE PRACTICES

Toilet Facilities

1 2 3 4 5 6 7 8 9 10

NSC maintains high standards for its toilet facilities, ensuring they are clean, well-maintained, and equipped with water-saving fixtures. Regular sanitation and maintenance routines are followed to ensure hygiene.

Toilet facilities are cleaned multiple times a day and stocked with necessary supplies. Water-saving fixtures like dual-flush toilets and low-flow faucets help conserve water while maintaining hygiene standards.

HEALTH & HYGIENE PRACTICES

2. Drinking Water Facility

Drinking water is a basic necessity, and providing access to clean and safe drinking water is an important aspect of ensuring the health and well-being of students, faculty, and staff in universities. A few suggested criteria associated with drinking water facilities in universities:

Accessibility: Drinking water facilities should be easily accessible to all members of the campus community, including people with disabilities. This may involve providing wheelchair-accessible fountains or bottle filling stations.

Water Quality: The quality of the drinking water provided in universities should meet or exceed applicable standards and regulations for drinking water. Regular testing and monitoring should be performed to ensure that the water is safe to drink.

Water Conservation: Drinking water facilities should be designed to promote water conservation, with features such as low-flow fountains and automatic shut-off valves.

Maintenance: Regular maintenance and cleaning of drinking water facilities are important to ensure their continued functionality and hygiene.

Education: Providing information to students, faculty, and staff about the importance of staying hydrated and the availability of drinking water facilities can help promote healthy habits and reduce waste from single-use water bottles.

When designing and maintaining drinking water facilities in universities, it is important to consider the needs and preferences of the campus community, as well as applicable laws and regulations related to water quality and accessibility. Providing access to clean and safe drinking water is an important step in promoting the health and well-being of the campus community.

HEALTH & HYGIENE PRACTICES

Drinking Water Facility

1 2 3 4 5 6 7 8 **9** 10

The college provides access to safe and clean drinking water through filtered water stations placed strategically around the campus. Regular testing ensures water quality meets health standards.

Water stations are equipped with advanced filtration systems to remove contaminants, ensuring the safety and health of the campus community. These facilities are regularly inspected and maintained.

HEALTH & HYGIENE PRACTICES

3. Access to Healthy Food

Access to healthy foodfood is an important aspect of promoting the health and well-being of students, faculty, and staff in universities. The following can be considered while planning to provide access to healthy foodfood in universities:

Availability: Healthy food options should be readily available on campus, including in dining halls, cafes, vending machines, and other food service areas.

Variety: Offering a wide variety of healthy food options can help ensure that the needs and preferences of all members of the campus community are met.

Nutrition: Healthy food options should be nutritious, with an emphasis on fresh fruits and vegetables, whole grains, lean protein, and healthy fats.

Affordability: The cost of healthy food options should be comparable to other food options on campus to ensure that they are accessible to all members of the campus community.

Sustainability: The food options provided on campus should be sourced in a sustainable and socially responsible manner, with a focus on reducing waste and supporting local and organic food systems.

Education: Providing education and information about healthy eating habits can help promote healthy lifestyles and encourage members of the campus community to make informed food choices.

When designing and maintaining food service areas in universities, it is important to consider the needs and preferences of the campus community, as well as applicable laws and regulations related to food safety and accessibility. Providing access to healthy and nutritious foodfood is an important step in promoting the health and well-being of the campus community.
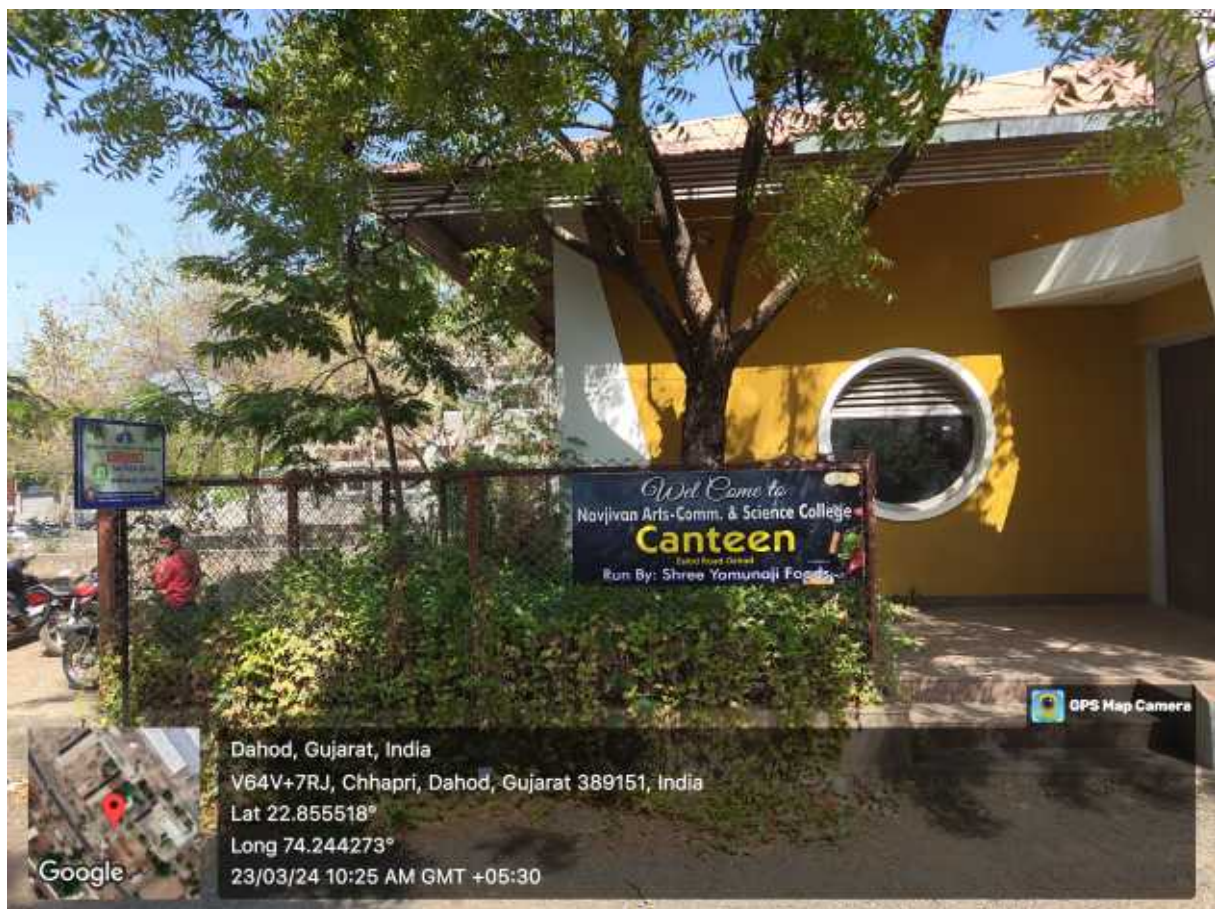
HEALTH & HYGIENE PRACTICES

Access to Healthy Food

1 2 3 4 5 6 7 8 9 10

NSC promotes healthy eating by offering nutritious food in its canteen and cafeteria. Emphasis is placed on providing fresh, locally sourced, and organic food

The college canteen features a variety of healthy meal options, including salads, fruits, whole grains, and lean proteins. To ensure quality and sustainability, efforts are made to source ingredients from local farmers and organic suppliers.

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HEALTH & HYGIENE PRACTICES

4. Sports Amenities

Sports amenities in universities are essential for promoting physical activity, encouraging healthy lifestyles, and providing opportunities for socialization and community building. Here are some standard sports amenities found in universities:

Athletic Fields: Universities often have athletic fields for sports such as soccer, football, lacrosse, and baseball.

Indoor Gymnasiums: Indoor gymnasiums may include basketball courts, volleyball courts, badminton courts, and other facilities for indoor sports.

Fitness Centers: Fitness centers typically include exercise equipment such as treadmills, ellipticals, weights, and resistance machines.

Swimming Pools: Swimming pools provide opportunities for aquatic sports and fitness activities.

Tennis and squash courts: Tennis and squash courts provide opportunities for racquet sports.

Climbing Walls: Climbing walls are becoming increasingly popular in universities, providing opportunities for rock climbing and other vertical activities.

Outdoor Recreational Areas: Universities may also have outdoor recreational areas for hiking, camping, and picnicking.

When designing and maintaining sports amenities in universities, it is essential to consider the needs and preferences of the campus community, as well as applicable laws and regulations related to safety and accessibility. In addition, providing a variety of sports amenities can help ensure that all campus community members have opportunities to engage in physical activity and promote healthy lifestyles.

HEALTH & HYGIENE PRACTICES

4. Sports Amenities

1 **2** **3** **4** **5** **6** **7** **8** **9** **10**

The college provides essential sports amenities to encourage physical activity among students. These facilities are maintained to ensure safety and accessibility.

Sports amenities include a gymnasium, outdoor sports fields, and indoor courts for basketball, badminton, and table tennis. Regular maintenance ensures these facilities remain in good condition and accessible to all students.

College haveVolley ball, hand ball, hockey, Football, kho-kho and kabaddi ground are under construction.

College also have indoors sports facilities i.e. Chess, Carom Boards, mallkhamba, badminton

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Lat 22.85644°
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HEALTH & HYGIENE PRACTICES

5. Dedicated Playground

A dedicated playground for sports in a university can provide students, faculty, and staff with space for organized and informal sports activities. Points to be considered when designing a playground for sports in a university:

Space: The playground size will depend on the number and types of sports that will be played. Consider the size of the field or court needed for each sport, as well as any additional space for spectator seating, restrooms, and storage.

Surface: The type of surface used on the playground can affect the safety and performance of the athletes. Options include natural grass, synthetic turf, concrete, and asphalt.

Lighting: Adequate lighting is essential for evening and nighttime use of the playground. Consider the placement and brightness of the lights and any energy efficiency measures that can be implemented.

Equipment: Depending on the sports played, the playground may require equipment such as basketball hoops, soccer goals, volleyball nets, and tennis nets. It is important to ensure that the equipment is safe, durable, and properly maintained.

Accessibility: The playground should be accessible to all members of the campus community, including those with disabilities. This may involve the installation of ramps, accessible seating, and other features to ensure that the playground is compliant with relevant accessibility guidelines and regulations.

When designing a playground for sports in a university, it is important to involve stakeholders from across the campus community to ensure that the design meets the needs and preferences of all users. This may include student organizations, athletic departments, facilities management, and disability services offices.

HEALTH & HYGIENE PRACTICES

Dedicated Playground

1 2 3 4 5 6 7 8 9 10

NSC has a dedicated playground area that supports various recreational and sporting activities and is designed to promote physical fitness and well-being.

The playground includes spaces for team sports, individual exercise, and leisure activities. It is regularly maintained and equipped with necessary safety features to support students' active lifestyles.

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Lat 22.855918°
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HEALTH & HYGIENE PRACTICES

6. Organic Fertilizers and Pesticides

Using organic fertilizers and pesticides in a university can benefit the environment and the health of students, faculty, and staff. Here are some considerations when implementing organic fertilizers and pesticides in a university:

Soil Health: Organic fertilizers are made from natural materials and help to improve soil health by increasing microbial activity and promoting the growth of beneficial microorganisms. This can result in healthier plants and a more sustainable campus environment.

Reduced Chemical Exposure: Organic pesticides are made from natural ingredients and are less toxic than chemical pesticides, which can harm human health and the environment. Using organic pesticides can reduce the risk of exposure to these chemicals.

Environmental Benefits: Organic fertilizers and pesticides are generally considered more environmentally friendly than their chemical counterparts, as they do not contribute to water and air pollution or harm wildlife.

Cost: Organic fertilizers and pesticides can be more expensive than chemical products, but the long-term benefits to soil health and environmental sustainability may outweigh the upfront costs.

Education: Implementing organic fertilizers and pesticides in a university can also provide opportunities for education and outreach about sustainable practices and environmental stewardship. This can raise awareness among students, faculty, and staff about the importance of sustainable agriculture and pest management.

When implementing organic fertilizers and pesticides in a university, consulting with experts in sustainable agriculture and pest management is essential to ensure that the products used are effective and safe for the campus environment. Additionally, it may be necessary to invest in training for facilities management staff and groundskeepers to ensure they can implement these practices properly.

HEALTH & HYGIENE PRACTICES

Organic Fertilizers and Pesticides

1 **2** **3** **4** **5** **6** **7** **8** **9** **10**

The college uses organic fertilizers and pesticides for its landscaping and gardening activities, ensuring a healthy and eco-friendly environment.

Organic fertilizers and pesticides reduce chemical runoff and improve soil health. NSC's commitment to organic practices supports biodiversity and sustainable campus landscaping.

Pit method

Heap method

Bin method

HEALTH & HYGIENE PRACTICES

7. Green Housekeeping

Green housekeeping in a university involves implementing sustainable cleaning practices to reduce the negative environmental impact of cleaning products and processes. Some criteria associated with green housekeeping in a university:

Environmentally Friendly Cleaning Products: Using environmentally friendly cleaning products can reduce the amount of harmful chemicals that are released into the environment. Look for cleaning products certified by organizations such as Green Seal or EcoLogo, and avoid products that contain volatile organic compounds (VOCs) or other harmful chemicals.

Water Conservation: Implementing water conservation measures during cleaning can reduce water use, such as using low-flow cleaning equipment and mops and minimizing water use for rinsing. Additionally, using microfiber cleaning cloths can help reduce water usage and the amount of cleaning product needed.

Waste Reduction: Implementing waste reduction measures such as using reusable cleaning cloths and mops, and reducing the use of disposable cleaning products, can help to reduce the amount of waste generated by the cleaning process.

Energy Conservation: Utilizing energy-efficient equipment such as vacuums and floor polishers can help reduce energy consumption during cleaning.

Education: Providing education and training for cleaning staff on sustainable cleaning practices and the proper use of cleaning products can help to ensure that these practices are implemented effectively.

By implementing green housekeeping practices in a university, the campus can reduce its environmental impact, improve indoor air quality, and promote sustainability. These practices can also improve the health and well-being of students, faculty, and staff by reducing their exposure to harmful chemicals and allergens.

HEALTH & HYGIENE PRACTICES

Green Housekeeping

**1** **2** **3** **4** **5** **6** **7** **8** **9** **10**

NSC employs green housekeeping practices, using eco-friendly cleaning products and methods that minimize environmental impact. These practices ensure a clean and healthy campus environment.

Eco-friendly cleaning products are free from harmful chemicals and toxins, promoting a healthier indoor environment. Green housekeeping practices at NSC include proper waste disposal, recycling, and sustainable cleaning materials.

Cumulative Score	52/70

SUSTAINABLE RESOURCES UTILIZATION
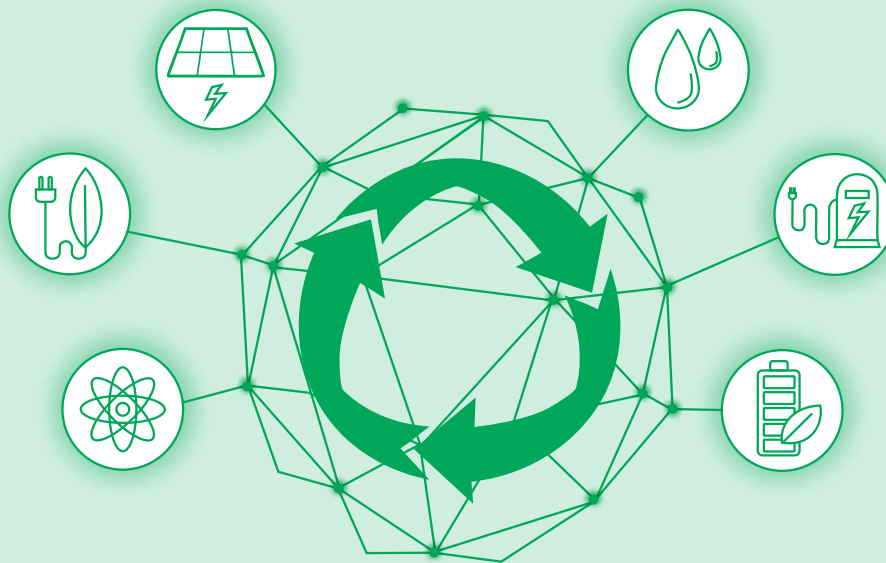
A Green University should prioritize water conservation practices, such as low-flow faucets and toilets, to reduce water consumption on campus. The University can also implement rainwater harvesting systems to collect and reuse rainwater for non-potable uses like landscaping or toilet flushing.

Materials Management: A Green University should prioritize materials management practices, such as recycling and composting, to reduce the amount of waste sent to landfills.

Energy Conservation: A Green University should prioritize energy conservation practices, such as energy-efficient lighting and appliances, to reduce energy consumption on campus.

Transportation: A Green University should prioritize sustainable transportation practices, such as biking, walking, and public transit, to reduce the carbon footprint of transport on campus.

Land Use: A Green University should prioritize sustainable land use practices, such as preserving green space and wildlife habitat, to promote biodiversity and ecosystem health.

Procurement: A Green University should prioritize sustainable procurement practices, such as purchasing products from sustainable materials and minimizing packaging waste.

Education and Outreach: A Green University should prioritize education and outreach efforts to promote sustainable resource utilization among its students, faculty, and staff.

Sustainable resource utilization in a Green University should prioritize water conservation, materials management, energy conservation, sustainable transportation, land use, procurement, and education and outreach. A Green University can promote a more sustainable future by implementing these practices.

SUSTAINABLE RESOURCES UTILIZATION

1. Waste Segregation

Waste segregation in a university separates different types of waste materials for proper disposal or recycling. Proper waste segregation is crucial for managing waste effectively and reducing waste in landfills.

Waste segregation guidelines for a university:

Education and Training: Proper education and training on waste segregation should be provided to all members of the university community, including students, faculty, and staff. This includes information on what types of waste can be segregated, how to segregate waste properly, and the importance of waste segregation for sustainability.

Bin Placement: Adequate waste bins should be placed throughout the university, with clear signage indicating which types of waste should be placed in each bin. Color coding can also be used to help with waste segregation. For example, blue bins can be used for paper and cardboard, green bins for organic waste, and yellow bins for plastic and metal.

Collection and Transport: Proper collection and transport of segregated waste materials is important to ensure they are properly disposed of or recycled. Separate collection vehicles can be used for each type of waste material to ensure that they are not mixed together during transport.

Recycling Infrastructure: The university should have adequate recycling infrastructure to recycle segregated waste materials properly. This includes recycling facilities for paper, plastic, metal, and other recyclable materials.

By implementing waste segregation in a university, the campus can significantly reduce the amount of waste in landfills, promote sustainability, and save resources by recycling materials that would otherwise be discarded.

SUSTAINABLE RESOURCES UTILIZATION

Waste Segregation

1 2 3 4 5 6 7 8 9 10

The college has implemented an effective waste segregation system, categorizing waste into recyclables, compostables, and non-recyclables to ensure proper disposal and recycling.

Color-coded bins are placed throughout the campus to facilitate waste segregation. Educational campaigns encourage students and staff to sort waste correctly, supporting NSC's recycling and composting programs.

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SUSTAINABLE RESOURCES UTILIZATION

2. Organic Waste Management

Organic waste management in a university involves properly handling, treating, and disposing of food waste and other organic materials generated on campus. Organic waste management tips for the university:

Source Separation: One of the critical components of organic waste management is source separation. This involves separating food waste and other organic materials from waste streams such as paper, plastics, and metals. The university should provide separate bins for organic waste in high-traffic areas such as dining halls and kitchens.

Composting: Composting is a natural process where microorganisms break down organic materials to create nutrient-rich soil. Composting can be a cost-effective and sustainable way to manage organic waste on campus. The university can establish on-site composting facilities or work with local composting facilities to process organic waste.

Anaerobic Digestion: Anaerobic digestion is another method for managing organic waste that involves using microorganisms without oxygen to break down organic material. This process can produce biogas, which can be used to generate energy.

Education and Outreach: Proper education and outreach are crucial to the success of organic waste management programs in universities. The university should provide information on the importance of organic waste management, how to correctly separate organic waste, and how to participate in composting programs.

By implementing organic waste management in a university, the campus can significantly reduce the amount of organic waste in landfills, promote sustainability, and create valuable resources such as compost and biogas.

SUSTAINABLE RESOURCES UTILIZATION

Organic Waste Management

1 2 3 4 5 6 7 8 9 10

NSC manages organic waste through composting, turning food scraps and garden waste into nutrient-rich compost used for campus landscaping.

Composting bins collect organic waste in cafeterias and garden areas. The resulting compost is used to fertilize plants on campus, creating a closed-loop system that reduces waste and enhances soil health.

SUSTAINABLE RESOURCES UTILIZATION

3. Greening Education Policy

A greening education policy can provide a roadmap for universities to reduce their environmental impact and promote sustainability on campus while also creating a culture of environmental stewardship among students, faculty, staff, and other stakeholders. A "Greening Education" policy for a university may include the following elements:

Curriculum Integration: The policy should promote the integration of sustainability principles and practices into all aspects of the university's academic programs, including general education requirements, majors, and graduate programs.

Professional Development: The policy should provide opportunities for faculty and staff to learn about sustainability principles and practices and how to integrate them into their teaching, research, and operations.

Campus Operations: The policy should encourage the university to adopt sustainable practices, such as green building design and construction, energy and water conservation, waste reduction and recycling, sustainable transportation, and the use of renewable energy sources.

Research and Scholarship: The policy should encourage and support research and scholarship that advances sustainability science and addresses pressing environmental, social, and economic challenges.

Community Engagement: The policy should encourage the university to engage with its local and global communities to promote sustainability, such as through outreach and education programs, community gardens, and sustainability-focused events and initiatives.

Partnerships and Collaboration: The policy should encourage partnerships and collaboration with other universities, government agencies, and private sector organizations to advance sustainability efforts and share best practices.

Monitoring and Reporting: The policy should establish a system for monitoring and reporting on the university's progress in achieving its sustainability goals and regularly reporting on its performance to stakeholders.

A greening education policy can provide a framework for universities to integrate sustainability principles and practices into all aspects of their operations, research, and education, promoting environmental stewardship, social responsibility, and economic viability for future generations.

SUSTAINABLE RESOURCES UTILIZATION

Greening Education Policy

1 **2** **3** **4** **5** **6** **7** **8** **9** **10**

The college has established a comprehensive green policy that outlines its commitment to sustainability, covering areas like energy use, waste management, water conservation, and environmental education.

NSC's green policy sets clear goals and strategies for reducing its environmental footprint. The policy is regularly reviewed and updated to incorporate new sustainability practices and technologies.

SUSTAINABLE RESOURCES UTILIZATION

Greening Education Policy

Navjivan Science College Dahod

Ph. :(O) 94845 48232

(Conducted by : Dahod Anaj Mahajan Sarvajanik Education Society)

Affilated to Shri Govind Guru University, Godhra
Re-Accredited by NAAC with B Grade with a CGPA of 2.31
Accredited "AAA" B Grade With a CGPA of 2.65

Dr. G. J. Kharadi
(Officiating Principal)
M : 99796 62555
E-Mail : gaurangkharadi@yahoo.com

Ref No. : 364 /2023-24
Date : 23/ 04 /2024
E-Mail : navjivan_73@yahoo.co.in
Website : www.navjivansciencecollege.com

Green Campus Policy

Introduction:

The concept of green campus is an integration concept in the Education research and community service system in environmental management. Green campus is a combination of the environment and the campus world in its management. The concept of the environment which includes reduce, reuse and recycle wastage. Basically it's a eco-friendly practice to make the campus a better place to live in.

Scope of the Policy

The Green Campus, Energy and Environment Policies will develop exciting new co-curricular and extracurricular practices that encourage students to take the lead in creating positive change. These initiatives call for a thorough review of all infrastructural, administrative functions from the standpoints of energy efficiency, sustainability and the environment.
The focus areas of this policy are:

Clean Campus Initiatives

Landscaping Initiatives

Clean Air Initiatives

Solar rooftop power generation system

Installation of Energy Efficiency Equipment

Water Conservation through Rainwater Harvesting System

Waste Management processes

- Solid Waste Management
- Liquid Waste Management
- E-Waste Management

Officiating Principal
Navjivan Science College,
DAHOD

Girdharnagar College Campus, Opp. Govt. Polytechnic college, Jhalod Road, Usarvan Dahod

SUSTAINABLE RESOURCES UTILIZATION

Greening Education Policy

Awareness Initiatives

→ Environment-centric Student Societies and Department Activities

→ Green Audit

→ Energy Audit

→ Plastic-Free Campus

- **Objectives of the Policy**

  - To protect and conserve ecological systems and resources within the campus.

  - To ensure judicious use of environmental resources to meet the needs and aspirations of the present and future generations.

  - To integrate environmental concerns into policies, plans and programs for social development and outreach activities.

  - To work with all stakeholders and the local community to raise awareness and seek the adoption of environmental good practice and the reduction of any adverse effects on the environment.

  - To continuously improve our contribution to climate protection and adaptation to climate change and to the conservation of global resources.

  - To continuously improve the efficient use of all resources, including energy and water, and to reduce consumption and the amount of waste produced, recovering and recycling waste where possible.

  - To make the campus plastic free.

  - To conduct environmental and energy audits from time to time.

  - To minimize the use of paper in administration through having policy for E-governance.

SUSTAINABLE RESOURCES UTILIZATION

Greening Education Policy

Policy:

Clean Campus Initiatives

Navjivan Science College had pledged to actively coordinate cleanliness activities in the college and beyond the campus in accordance with the vision of Swachh Bharat Abhiyan. It commits to continue with this Programme. The broad vision is as follows:

1. Generating mass awareness on cleanliness and hygiene amongst students and staff members by holding regular cleanliness drives. The idea is to motivate them to contribute in a proactive manner.

2. Activities under 'Swachh Bharat Abhiyan' will be a key component of all the community work being done by NSS volunteers of the college.

3. Staff Members will be encouraged to participate in the cleanliness drive in the college campus.

4. Events such as poster and slogan competitions, essay writing, spoken word poetry, speeches, skits on 'Swachh Bharat' will be organised.

5. Rallies on themes connected with 'Swachh Bharat Abhiyan' in and around the college campus will be conducted to create mass awareness.

7. Remove all kinds of waste material like broken furniture, unusable equipment etc.

8. Administer of the pledge by students and staff members to maintain cleanliness of the college campus and its surrounding areas on an annual basis.

9. Conduct workshops on the: Reduce, reusing and recycling of waste.

10. Commit to manage waste and maintain clean campus especially during college events

Renewable Sources of Energy

The institute is dedicated to minimize and sustainably manage its use of electricity. The college believes in reducing the consumption of electricity produced by non-renewable resources by switching to clean energy sources like solar energy for purposes like lighting the campus.

SUSTAINABLE RESOURCES UTILIZATION

Greening Education Policy

Energy Saving and Energy Efficient Equipment

We commit to install environment-friendly electrical appliances that save energy and reduce wasteful inefficiencies. The college believes in using cleaner energy such as LED lighting.

Water Conservation through Rainwater Harvesting System

As an institution located in the South district of the Gujarat, the area that has seen maximum fall of ground water levels, Navjivan Science college has committed itself to this effort to replenish the groundwater table by practicing rainwater harvesting. This practice helps in the replenishment and recharge of the groundwater.

LANDSCAPING INITIATIVE:

- Our college has a scarcity of open land space hence plantation to be carried out will be done within the building area , all to be light weighted so that the college building does not bear additional potting weights.

CLEAN AIR INITIATIVE:

- Our college pledges to reduce air pollution
- Maintain good green cover to enhance CO2 sequestration from campus.
- No vehicle day in a month to be initiated.

WASTE MANAGEMENT PROCESSES:

- This Policy underlines our commitment with regard to sustainable waste management. It outlines a set of agreed aims and deliverables for all aspects of sustainability, including recycling and waste management.
- The college adheres to the following principles of the waste management:
  Prevent – avoid creating waste
  Reduce – minimizing the amount of waste produced
  Reuse – repair, refurbish or relocate items
  Recycle – promote segregation of waste to increase the quantity of waste recycled
  Recovery – send non-recyclable waste to energy recovery
  Disposal – this will only be used as a last resort if all other options are exhausted

SUSTAINABLE RESOURCES UTILIZATION

Greening Education Policy

Solid Waste Management:

- Measures shall be taken for minimal or optimal use of papers: Instead of taking hard copies of documents, keep in digital format as far as possible.
- Strategies to lessen the generation of paper waste are adopted: double-sided printing, printing in reduced font size, printing in "fast draft" mode etc.
- e-billing is promoted to reduce use of paper.
- Use of paperclips (over staples) is encouraged.
- Reusing of envelopes with metal clasps and file folders by sticking a new label over the previous one is promoted.
- Colour coded dustbin system is employed for segregation of solid waste: green dustbins for biodegradable wastes like food; blue dustbins for disposal of plastic wrappers and non- biodegradable wastes.
- Cleaning or emptying of dustbins is ensured at regular intervals daily.
- Preparation of compost through solid west produced at college campus

Liquid waste management: (Chemical Waste Management)

- Academic strategies are taken to reduce the amount of chemical waste generated in the laboratories.
- Promote existing reuse schemes and develop additional recycling schemes to stream more waste at source.
- Communicate effectively with our employees, students, and residences to increase engagement and participation in the recycling initiatives across campus

E-waste Management:

- Purchasing of devices with increased life time is encouraged.
- The buyback policy of the retailers will be utilized to purchase new computers and batteries for out-dated computers and laptops.
- MoUs with relevant agencies are renewed time to time.

Conduct Green Audit

The college aims to regularly conduct a Green Audit of our college campus to assess our strengths and weaknesses to further our goals of long-term sustainability. A green audit is a useful tool to determine how and where most energy or water or resources are being used. The college can then consider how to implement changes and make savings. It can determine the type and volume of waste. Recycling projects or waste minimization plans can be adopted. It will create health consciousness and promote environmental values and ethics. It provides a better

SUSTAINABLE RESOURCES UTILIZATION

Greening Education Policy

understanding of the impact of eco-friendly practices on campus. Green auditing will promote financial savings through reduction of resource use. It is imperative that the college evaluate its own contributions toward a sustainable future.

Conduct Energy Audit

An Energy Audit to be conducted as and when required to further reduce its carbon footprint. The importance of reducing energy consumption cannot be overstated. The energy audit, with its specialized tools will identify wastage of energy. Such an inspection often reveals several different flaws which cause a loss of significant amounts of energy which the college will not be able to detect. These flaws often have easy and affordable solutions and provide significant savings.

Awareness Initiatives

Outreach and education are of utmost importance so that all members of the campus community may value the objectives of the policy and aid in its implementation. This is why Navjivan science college supports and encourages awareness campaigns, seminars, workshops, conferences and other interactive sessions to facilitate effective implementation of the Green Campus, Energy and Environment policies.

Plastic-Free Campus

Navjivan science college has been observing most of its duties in terms of solid waste management since its inception. In view of the Government of India's resolution to ban all single use plastics due to the hazardous impact of plastic use and pollution, the college administration strictly bans the use of single use plastics in its premise to make it a 'Plastic Free Campus'.

SUSTAINABLE RESOURCES UTILIZATION

4. Salvaged Materials

The use of salvaged materials in universities can contribute to sustainable and environmentally responsible construction practices. Salvaged materials are typically reclaimed or reused from existing structures or buildings rather than being newly produced and can include items such as reclaimed wood, repurposed metal, or refurbished fixtures.

Incorporating salvaged materials into university construction projects can offer several benefits, including reducing the demand for new materials and the associated energy and resources required for their production. It can also reduce the amount of waste sent to landfills and provide unique and characterful design elements that contribute to a sense of history and place.

However, when incorporating salvaged materials into university projects, it is important to ensure that they are of high quality and suitable for their intended use. It is also important to work with experienced professionals who are knowledgeable about salvaged materials and their appropriate applications. Additionally, proper documentation and tracking of salvaged materials can help ensure that they are sourced ethically and that their environmental benefits are accurately accounted for. Overall, the use of salvaged materials in universities can help to promote sustainable and environmentally responsible construction practices.

SUSTAINABLE RESOURCES UTILIZATION

Salvaged Materials

1 2 3 4 5 6 7 8 9 10

NSC incorporates salvaged materials in construction and renovation projects to reduce waste and promote sustainability. This includes repurposing materials from demolished buildings or surplus supplies.

Salvaged materials are used in building projects to minimize the need for new resources. This practice supports waste reduction, resource efficiency, and sustainable construction methods.

SUSTAINABLE RESOURCES UTILIZATION

5. Eco-friendly Wood Based Materials

The use of eco-friendly wood-based materials in university construction can contribute to sustainable and environmentally responsible building practices.

Eco-friendly wood-based materials are typically made from sustainably sourced or recycled wood and often have a reduced environmental impact compared to traditional wood-based materials.

Examples of eco-friendly wood-based materials include bamboo, which is a rapidly renewable resource that can be used for flooring, furniture, and other applications.

Another example is reclaimed wood, which is salvaged from old buildings or structures and repurposed for use in new construction projects. Additionally, there are composite wood materials made from recycled wood fibers and plastics, which can be used for decking, cladding, and other applications.

Using eco-friendly wood-based materials in university construction can offer several benefits, including reducing the demand for new wood and the associated energy and resources required for their production. It can also reduce the amount of waste sent to landfills and promote sustainable forestry practices that protect the environment.

However, it is important to ensure that eco-friendly wood-based materials are of high quality and suitable for their intended use. It is also important to work with experienced professionals who are knowledgeable about eco-friendly materials and their appropriate applications.

Overall, the use of eco-friendly wood-based materials in universities can help to promote sustainable and environmentally responsible building practices while also creating a healthy and inspiring learning environment for students and staff.

SUSTAINABLE RESOURCES UTILIZATION

Eco-friendly Wood Based Materials

1 2 3 4 5 6 7 8 9 10

The college uses eco-friendly, certified wood-based materials in its construction and furniture, ensuring that wood is sourced from sustainably managed forests.

Wood products at NSC are certified by organizations like the Forest Stewardship Council (FSC), ensuring they come from responsibly managed forests. This supports sustainable forestry practices and reduces environmental impact.

SUSTAINABLE RESOURCES UTILIZATION

6. Materials with Recycled Content

The use of materials with recycled content is an important aspect of sustainability in university buildings. This includes materials such as recycled steel, glass, plastic, and concrete.

By using these materials, the demand for virgin materials is reduced, which helps to conserve natural resources and energy. In addition, using recycled materials can help to reduce the amount of waste that ends up in landfills.

There are several ways that universities can incorporate materials with recycled content into their buildings. One way is to specify these materials in construction contracts and to work with contractors and suppliers to ensure that they are used. Another way is to require that a certain percentage of materials used in construction and renovation projects are made from recycled content.

It's also important to note that not all materials with recycled content are created equal. The quality and environmental benefits of recycled materials can vary depending on factors such as the manufacturing process, the source of the recycled content, and the end-of-life disposal options for the material.

Therefore, it's important to carefully evaluate the environmental impact of different materials before selecting them for use in university buildings.

SUSTAINABLE RESOURCES UTILIZATION

Materials with Recycled Content

1 2 3 **4** 5 6 7 8 9 10

NSC prioritizes the use of materials with recycled content for its construction, maintenance, and operational needs. This practice reduces the demand for virgin resources and supports the recycling industry.

Recycled materials are used in a variety of applications, from building construction to office supplies. This commitment to recycled content helps reduce waste and promote a circular economy.

SUSTAINABLE RESOURCES UTILIZATION

7. Local Materials

Local materials are resources that can be found readily in large quantities at a particular location or area at a certain time. It could also be referred to as material that can be used to fabricate a finished element. These materials, however, could be abundant in some areas but not available in another.

Localizing your supply chain represents a tremendous opportunity to help the environment. When we reduce shipping and storage, we also reduce emissions and energy usage. Sourcing locally not only contributes to green manufacturing but ultimately helps you build consumer confidence.

Utilizing local raw materials, such as homegrown timber, provides jobs for the local community and housing for local residents and ensures that these same residents are invested in their local businesses. This creates an effective and robust partnership that allows local communities to thrive.

CSJMU uses Building Materials available locally to minimize the associated environmental impacts resulting from transportation to build its new facilities.

At MCM DAV College Kangra, we believe in more than just sustainability; we believe in fostering a deep connection with our local community and environment. One of the ways in which we embody this ethos is through the deliberate integration of local materials into our campus infrastructure and operations.Our commitment to using local materials stems from a recognition of the rich abundance of resources that surround us in the Kangra Valley. By sourcing materials locally, we not only reduce our carbon footprint by minimizing transportation emissions but also support local economies and artisans, thus fostering a sense of community resilience and empowerment.

SUSTAINABLE RESOURCES UTILIZATION

Local Materials

1 2 3 **4** 5 6 7 8 9 10

The college prefers locally sourced materials for its projects to reduce transportation emissions and support the local economy. Using local materials also ensures that building practices align with regional sustainability standards.

Locally sourced materials are used whenever possible, reducing the carbon footprint associated with transportation. This practice also supports local businesses and ensures materials suit the local climate and conditions.

Cumulative Score	42/70

SUSTAINABILITY EVALUATION CHART

Sr. No.	Assessment Areas	Cumulative Score
1.	GOVERNANCE & ACADEMIC	36/40 ✅
2.	BUILDING DESIGN & LANDSCAPING	70/80 ✅
3.	WATER MANAGEMENT PRACTICES	59/80 ✅
4.	AIR QUALITY LEVEL	67/80 ✅
5.	ENERGY USES & SAVING PRACTICES	66/80 ✅
6.	HEALTH & HYGIENE PRACTICES	52/70 ✅
7.	SUSTAINABLE RESOURCES UTILIZATION	42/70 ✅
	Total	**392/500**

Certification Level

Rejection	Certification	Silver	Gold	Platinum
000-100 Points	100-200 Points	200-300 Points	300-400 Points	400-500 Points

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B-802, Mondeal Heights, Near Wide Angle Cinema,
S.G. Highway, Ahmedabad - 380 015, Gujarat, India
+91 79 49000160 I +91 96242 70773

#401, 67 W Street , Brooklyn , New York -11222
+ 17186733942

info@greenmentors.in | www.greenmentors.in

EARTH WATER AIR LIGHT SPACE

ENVIRONMENT
AUDIT 2024-27

EDUCATION INNOVATION HYGIENE SPACE TRANSPORT

Certificate

This is to certify that

NAVJIVAN SCIENCE COLLEGE

Dahod, Gujarat

has achieved the global standards for environmental responsibility with

academic accountability for the Universities during the Green College Audit - 2024-27

This Certificate is issued on the bases of Green College Audit Report 2024-27

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In Association

GREEN MENTORS inc
New York | USA

23-05-2024
Virendra Rawat
Director, Green Mentors

ACCREDITATION   CERTIFICATE

ACCREDITED GREEN COLLEGE

GOLD

2024-2027

EARTH   WATER   AIR   LIGHT   SPACE

EDUCATION   INNOVATION   HYGIENE   SPACE   TRANSPORT

This is to certify that

NAVJIVAN SCIENCE COLLEGE

Dahod, Gujarat

has successfully achieved the Accreditation Standards designed and defined by Green Mentors for Global Readiness in Ensuring Ecological Neutrality (GREEN) associated with Teaching and Learning practices, and now is Accredited as a

GREEN COLLEGE

in Gold Ranking.

Virendra
23-05-2024

Virendra Rawat
Director, Green Mentors

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This Certificate is issued on 23rd May, 2024 & Valid till the Academic Year 2027

ENERGY AUDIT

Academic Year 2024 - 2027

Certificate

This is to certify that

NAVJIVAN SCIENCE COLLEGE
Dahod, Gujarat

has achieved the energy uses standards for the learning spaces

with least impact on environment during the

Green College Audit - 2024 - 27.

This Certificate is issued on the bases of Green College Audit Report 2024 - 27

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Economic and Social Council of United Nations from 2021

In Association

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New York | USA

23-05-2024
Virendra Rawat
Director, Green Mentors

GM/EYA/2024/044/E1