Integration of Local Biodiversity into Planning and Development at JSS AHER

JSS Academy of Higher Education & Research (JSS AHER), Mysuru demonstrates a strong institutional commitment to **biodiversity-sensitive planning and sustainable campus development**. The University ensures that all construction, expansion, and infrastructure projects are carried out in a manner that preserves **local flora and fauna, natural habitats, and ecological balance**. This approach aligns with **SDG 15 (Life on Land)**, focusing on the conservation of biodiversity within campus and surrounding areas.

1. Biodiversity Assessment Prior to Construction

Before any new construction or infrastructure development, JSS AHER undertakes:

- **Environmental and ecological assessments** of the site
- **Flora and fauna inventory** to identify native and threatened species
- Mapping of **existing green cover, water bodies, and micro-habitats**
- Consideration of **impact on local wildlife corridors**

This ensures that **local biodiversity is considered in all planning decisions**.

Evidence:

Biodiversity Conservation Efforts

- The campus promotes green resilience and operates as a plastic-free environment. Spanning 6.45 acres, the JSS College of Pharmacy, Ooty, has 36,032 square meters covered by buildings. While our infrastructure supports a high standard of academic education within a clean, safe, and comfortable setting, the college has also been proactive since its establishment in developing a state-of-the-art SMART campus.

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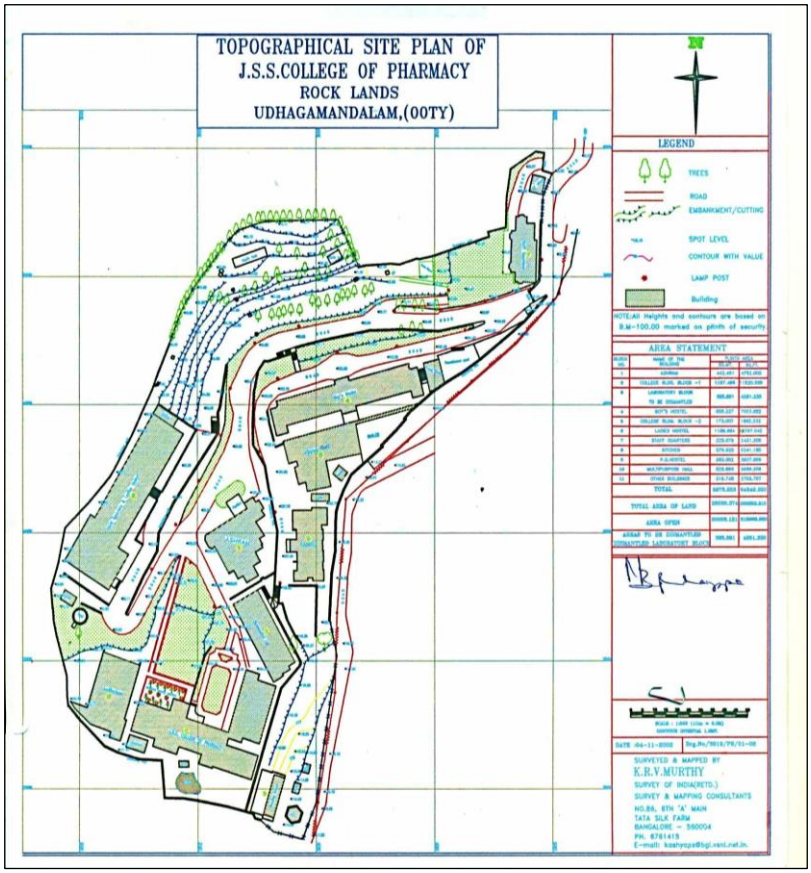
- **Green Cover in Campus**

- SMART CAMPUS COMMITTEE- https://jssuni.edu.in/jssaher/college-of-pharmacy-ooty/smart-campus.html



- **Topographical Map of Green cover in the campus**

- As per the Policy of Nilgiris District, expansion of Buildings is planned in accordance with Ministry of Forestry and HADP of Nilgiris and prior permission is taken for the same.
- The government policy on this is as follows- https://nilgiris.nic.in/plastic-free-nilgiris/#introduction

Tree Species Inventory at JSS AHER Campus

In addition to its bird species, the campus is home to a wide range of tree species, contributing to the ecological health of the environment. The trees not only provide habitat for birds but also support various other wildlife and promote environmental sustainability.

Tree Species Overview

Morinda coreia (Indian Mulberry)

Count: 10 trees

Uses: The bark is used for its tonic and antiseptic properties.

Roystonea regia (Royal Palm)

Count: 67 trees

Uses: Primarily for landscape purposes.

Pithecellobium dulce (Monkey Pod)

Count: 25 trees

Uses: The leaf decoction is used for leprosy and jaundice treatment.

Terminalia arjuna (White Murdah)

Count: 5 trees

Uses: Bark decoction is a cardiac tonic and used for reducing high blood pressure.

Pongamia pinnata (Hongay Oil Tree)

Count: 64 trees

Uses: Bark cooked with rice is used for uterine diseases and rheumatism.

Azadirachta indica (Neem)

Count: 52 trees

Uses: The bark powder is used for treating septic wounds, and the oil is applied for healing wounds and ulcers.

Swietenia mahagoni (West Indian Mahogany)

Count: 14 trees

Uses: Timber for construction.

Ficus benghalensis (Banyan Tree)

Count: 2 trees

Uses: The root and bark are used as a tonic and healer for cracked feet.

Other Notable Tree Species

- Ficus racemosa (Cluster Fig): 2 trees
- Cocos nucifera (Coconut): 70 trees
- Cinnamomum camphora (Camphor): 5 trees
- Santalum album (Sandalwood): 8 trees
- Tectona grandis (Teak): 1450 trees
- Acacia catechu (Red Cutch): 1 tree

Total Tree Count at JSS AHER

Total Trees: 2397

Distribution:

- 328 trees under 10 years
- 475 trees between 10-20 years
- 1575 trees between 20-50 years
- 14 trees over 50 years old

Tree Species Inventory at JSS College of Pharmacy Campus, Ooty

The JSS College of Pharmacy campus in Ooty also hosts a variety of tree species, contributing to the region's biodiversity and ecological stability.

Tree Species Overview

- **Acacia:** 39 trees
- **Cypress:** 10 trees
- **Eucalyptus:** 21 trees
- **Jacaranda:** 6 trees
- **Silver Oak:** 17 trees
- **Plums:** 31 trees
- **Bottle Brush:** 19 trees
- **Jungle Wood:** 75 trees

Total Tree Count

Total Trees: 249







2. Biodiversity-Conscious Campus Design

All new buildings, hostels, laboratories, and administrative blocks are planned with:

- **Preservation of existing trees and green patches**
- Creation of **green buffers and natural corridors** for wildlife
- Maintenance of **ponds, wetlands, and open habitats**
- Incorporation of **landscaping with native and medicinal plants**

Impact:

- Prevents habitat fragmentation
- Enhances ecological connectivity
- Supports campus micro-ecosystems and pollinator populations





3. Integration of Biodiversity in Infrastructure Projects

JSS AHER follows sustainable construction practices that include:

- Retention of **native vegetation** where possible
- Use of **eco-friendly materials and low-impact building methods**
- Rainwater harvesting and natural drainage to protect soil and aquatic ecosystems
- Creation of **rooftop gardens and vertical green spaces**

Examples:

- Hostels and academic blocks constructed with minimal tree felling
- Campus expansion that maintains **connectivity with natural green belts**
- Sustainable building policy statements

4. Campus Biodiversity Enhancement Initiatives

Alongside planning and construction, JSS AHER actively **enhances local biodiversity** by:

- Planting **native trees and shrubs in new project areas**
- Developing **medicinal and herbal gardens** near buildings
- Maintaining **open spaces as wildlife-friendly microhabitats**
- Integrating **biogas plants and compost units** to reduce soil contamination and support soil biodiversity





Cultivation of Herbal Plants for Research purposes

The college has herbal garden where many medicinal plants are displayed which provides the fresh air and relives from the ailments.



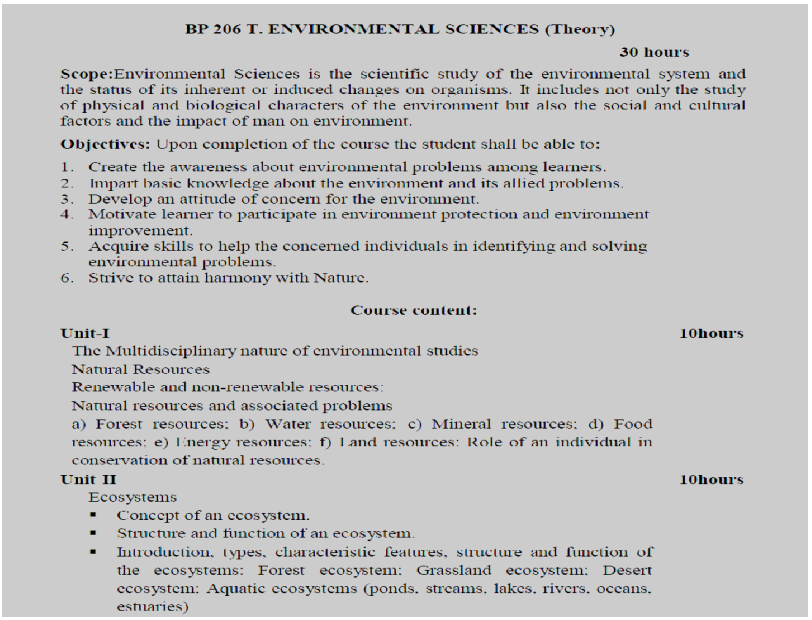
Medicinal Plants Garden

Principal PRINCIPAL J.S.S. COLLEGE OF PHARMACY Rockland's, Ootacamund - 643 001	B. Shivaramakrishnan Coordinator Smart Campus-JSSCPO	Dr.B.Babu NSS Programm Officer JSS College of Pharmacy Rock lands Udhagamandalam-643001 The Nilgiris

Environmental Education and Awareness

Raising awareness about the importance of biodiversity, land conservation, and sustainable land use through educational programs and public campaigns mobilizes support for SDG 15. In addition, promoting responsible forest management practices, such as selective logging and reforestation, ensures the continued provision of ecosystem services and economic benefits from forests.

In this regard, we have academic programmes which promotes the conservation of plants and land. At Undergraduate level in B Pharm prescribed by Pharmacy Council of India– Environmental Sciences Subject is taught for conservation of land. Screenshot of it is below and syllabus is attached.



BP 206 T. ENVIRONMENTAL SCIENCES (Theory)

30 hours

Scope: Environmental Sciences is the scientific study of the environmental system and the status of its inherent or induced changes on organisms. It includes not only the study of physical and biological characters of the environment but also the social and cultural factors and the impact of man on environment.

Objectives: Upon completion of the course the student shall be able to:

1. Create the awareness about environmental problems among learners.
2. Impart basic knowledge about the environment and its allied problems.
3. Develop an attitude of concern for the environment.
4. Motivate learner to participate in environment protection and environment improvement.
5. Acquire skills to help the concerned individuals in identifying and solving environmental problems.
6. Strive to attain harmony with Nature.

Course content:

Unit-I **10hours**

The Multidisciplinary nature of environmental studies
Natural Resources
Renewable and non-renewable resources:
Natural resources and associated problems
a) Forest resources: b) Water resources: c) Mineral resources: d) Food resources: e) Energy resources: f) Land resources: Role of an individual in conservation of natural resources.

Unit II **10hours**

Ecosystems

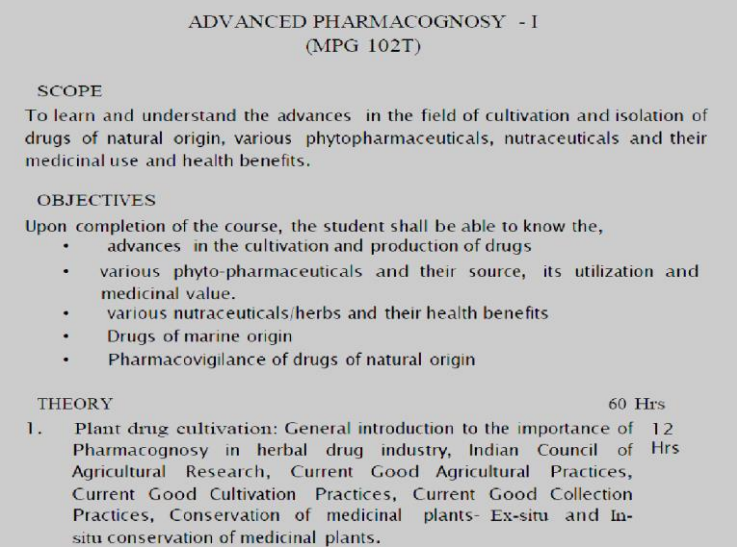
- Concept of an ecosystem.
- Structure and function of an ecosystem.
- Introduction, types, characteristic features, structure and function of the ecosystems: Forest ecosystem: Grassland ecosystem: Desert ecosystem: Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)

- More details at Page 71 of the Regulatory body approved syllabus- https://www.pci.nic.in/pdf/Syllabus_B_Pharm.pdf

The College offers post graduate programme- Masters in Pharmacy - Pharmacognosy aimed at promotion conservation and sustainable utilisation of the land, including forests and wildlife.

- Website of Pharmacognosy Department- https://jssuni.edu.in/jssaher/college-of-pharmacy-ooty/deptartment-pharmacognosy-home.html

The M.Pharm in Pharmacognosy has curriculum which elaborates on the conservation of biospheres of medicinal value and the importance of cultivation of such rare medicinal plants.



ADVANCED PHARMACOGNOSY - I
(MPG 102T)

SCOPE

To learn and understand the advances in the field of cultivation and isolation of drugs of natural origin, various phytopharmaceuticals, nutraceuticals and their medicinal use and health benefits.

OBJECTIVES

Upon completion of the course, the student shall be able to know the,

- advances in the cultivation and production of drugs
- various phyto-pharmaceuticals and their source, its utilization and medicinal value.
- various nutraceuticals/herbs and their health benefits
- Drugs of marine origin
- Pharmacovigilance of drugs of natural origin

THEORY 60 Hrs

1. Plant drug cultivation: General introduction to the importance of Pharmacognosy in herbal drug industry, Indian Council of Agricultural Research, Current Good Agricultural Practices, Current Good Cultivation Practices, Current Good Collection Practices, Conservation of medicinal plants- Ex-situ and In-situ conservation of medicinal plants. 12 Hrs

More details in this link - https://www.pci.nic.in/pdf/Syllabus_M_Pharm.pdf

Principal PRINCIPAL J.S.S. COLLEGE OF PHARMACY Rockland's, Ootacamund - 643 001	**B. Shivaramakrishnan** **Coordinator** **Smart Campus-JSSCPO**

COLLABORATION WITH LOCAL COMMUNITIES

Nilgiris Biosphere Medicinal Plants Exhibition

The College as a body always extends support to organise events aimed at promotion conservation and sustainable utilisation of the land, including forests and wildlife. The Department of Pharmacognosy of the college annually organizes such events to promote the conservation of medicinal plants in the Nilgiris Biosphere.



Department of Pharmacognosy – Achievements in Flower Shows & Rose Show Competitions

We are delighted to announce that during the 20th 'Rose Show' competitions held from May 10 to 12, 2025, JSS College of Pharmacy & JSS Public School, Ooty, were awarded an impressive 16 prizes:

- Rolling Cup: 2
- First Prize: 5
- Second Prize: 4
- Special Prize: 5

Hearty congratulations to the TIFAC Center, Staff of the Department of Pharmacognosy, and our enthusiastic students for their outstanding creativity, commitment, and hard work in community engagement initiatives, which have further enhanced the institution's reputation.

Building on past achievements, the Department of Pharmacognosy has a tradition of excellence. At the 125th Flower Show and 175th Anniversary 'Ooty 200' competitions held at the Government Botanical Garden in May 2023, the Department secured 9 prizes (1 Rolling Cup, 4 First Prizes, 2 Second Prizes, 1 Third Prize, and 1 Special Prize). Additionally, in the Rose Show Competitions, the Department won 3 prizes (2 First Prizes and 1 Special Prize), including awards in the Arrangement of Roses (Special Prize) and Rose Rangoli (First Prizes).

These achievements reflect the Department's dedication to community service, creativity, and continuous pursuit of excellence. Congratulations once again to all the staff and students involved for bringing laurels to the institution!

Principal

PRINCIPAL
J.S.S. COLLEGE OF PHARMACY

	B. Shivaramakrishnan Coordinator Smart Campus-JSSCPO

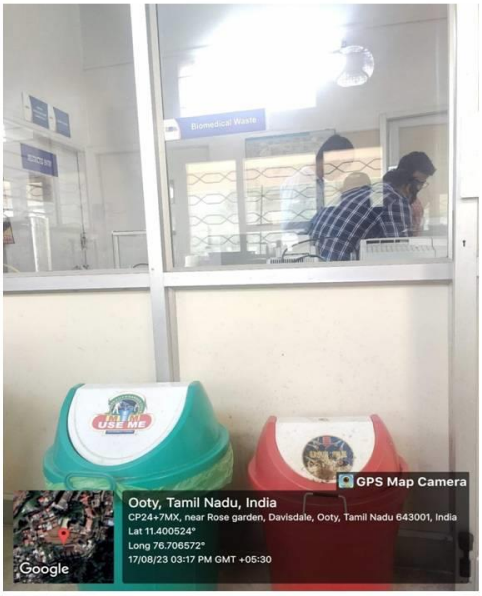
Waste Management

Managing waste in a smarter way is the most important aspect of any organization. For this management for the waste we have Bio-waste management, initiative of plastic free campus with no plastic bottles, Rain Water harvesting management for the reduction of water waste to save more water. Mechanical Chimneys, Fume hoods for chemical reactions and Bio-safety cabinets (Class II type A/B3).

The College follows the Government Gazette on Plastic Free zone in the whole Nilgiris District. The Enlisted items are completely banned within the campus. On, MAY 09, 2018 The Government Policy is abided by the College strictly and no single-use plastic items are used on the campus.

- https://nilgiris.nic.in/plastic-free-nilgiris/#banned
- https://cdn.s3waas.gov.in/s339461a19e9eddfb385ea76b26521ea48/uploads/2022/03/2022032483.pdf

The garbage waste disposal by the Municipality collects recycle plastic items from Separate bins placed around the campus.



Colour codes for Biomedical waste collection and Packing

				
▪ Human and animal anatomical wastes ▪ Soiled wastes, ▪ Discarded or expired medicines ▪ Chemical wastes, ▪ Blood and body fluids ▪ Microbiology / Biotechnology wastes	▪ Contaminated waste (recyclable)	▪ Sharps including metals ▪ Needles ▪ Scalpels ▪ Blades	▪ Broken and contaminated glass including vials and ampoules ▪ Metallic body implants	▪ Food items ▪ Papers / paper plates, ▪ Water bottles, etc

The College has a Biomedical Waste Disposal certificate in accordance with the Nilgiris District Municipality Office. The sanitation team collects the biomedical waste from the campus for incineration process at the Centralized facility at the Government.



BIOHAZARD

SOCIETY FOR BIO MEDICAL WASTE MANAGEMENT
THE NILGIRIS
REGISTERED UNDER SOCIETY ACT No: 72 / 2010
GOVERNMENT OF TAMILNADU

SL.No

Membership Certificate

This is to Certify that M/S/DR.....J.S.S. College of Pharmacy.....
...Udhagamandalam..... is a member* of Society For Bio Medical Waste Management, The Nilgiris. The Bio Medical Waste Generated in their Hospital / Clinic / Laboratory is being disposed through the treatment plant run by our society as per the norms and approval of Tamil Nadu Pollution Control Board

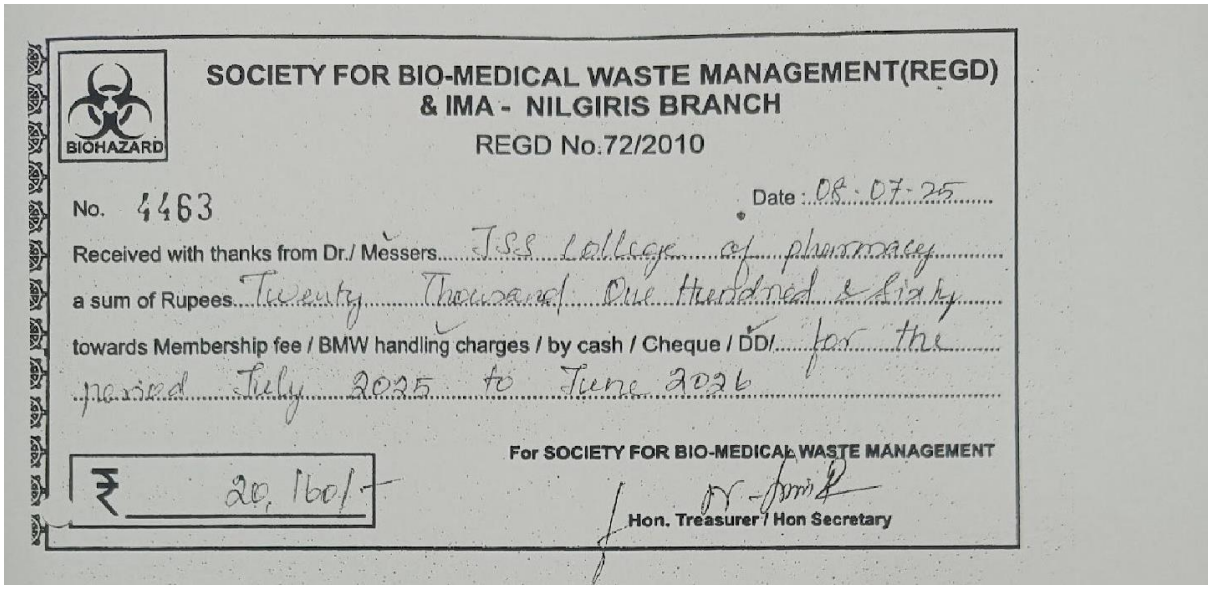
HONORARY PRESIDENT
* Subject to Renewal Annually

SOCIETY FOR BIO MEDICAL WASTE MANAGEMENT
REGD.No. 72 / 2010
Date: 20. 6 2013

HONORARY SECRETARY

Membership Certificate

The University also publishes the Waste Disposal in a detailed webpage given in the link.
https://jssuni.edu.in/jssaher/jssaher-infra/institutional-biosafety-committee/ibsc-home.html



SOCIETY FOR BIO-MEDICAL WASTE MANAGEMENT(REGD)
& IMA - NILGIRIS BRANCH
REGD No.72/2010

BIOHAZARD

No. 4463 Date : 08-07-25

Received with thanks from Dr./ Messers. JSS College of pharmacy

a sum of Rupees Twenty Thousand One Hundred & Sixty

towards Membership fee / BMW handling charges / by cash / Cheque / DD/ for the

period July 2025 to June 2026

₹ 20,160/-

For SOCIETY FOR BIO-MEDICAL WASTE MANAGEMENT

Hon. Treasurer / Hon Secretary

Principal PRINCIPAL J.S.S. COLLEGE OF PHARMACY Rockland's, Ootacamund - 643 001	B. Shivaramakrishnan Coordinator Smart Campus-JSSCPO

5. Student and Community Engagement

Students and faculty are actively involved in biodiversity integration through:

- Environmental impact studies for new buildings
- Tree monitoring and planting drives
- Awareness campaigns on ecological planning
- Collaboration with **JSS KVK and local communities** to preserve ecosystem services

Impact:

- Students gain hands-on experience in biodiversity-sensitive planning
- Communities understand and participate in sustainable land management
- **COLLABORATION WITH LOCAL COMMUNITIES**
- **Nilgiris Biosphere Medicinal Plants Exhibition**
- The College as a body always extends support to organise events aimed at promotion conservation and sustainable utilisation of the land, including forests and wildlife. The Department of Pharmacognosy of the college annually

organizes such events to promote the conservation of medicinal plants in the Nilgiris Biosphere.

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6. Monitoring and Continuous Improvement

JSS AHER maintains a **biodiversity management plan** for all campuses, which includes:

- Regular tree census updates
- Monitoring of local wildlife populations and pollinators
- Periodic assessment of green cover and habitat health
- Evaluation of construction impact on micro-ecosystems

7. Quantitative and Qualitative Impacts

Parameter	**Data / Observation**
Native trees preserved during construction	500+ trees annually
Green cover maintained across campuses	65% of total area
Ponds, wetlands, and open habitats preserved	5 major water bodies + microhabitats
Students involved in biodiversity monitoring	200+ per year

Parameter	Data / Observation
New trees planted during development projects	1,000+ saplings/year

Qualitative Impact:

- Protection of local flora and fauna
- Enhanced campus ecosystem resilience
- Promotion of environmentally responsible development practices
- Increased awareness among students and staff on biodiversity conservation

8. Conclusion

JSS Academy of Higher Education & Research ensures that **local biodiversity is fully integrated into all planning and development processes**. From ecological assessment and design considerations to active engagement of students and the local community, the University demonstrates **measurable, ongoing commitment to sustainable campus development**. This approach preserves ecosystems, protects threatened species, and creates **green, resilient, and biodiversity-friendly infrastructure**, fully satisfying the expectations of national and international ranking frameworks.