

Parvatibai Chowgule College of Arts and Science

Autonomous

7.1.5 Additional information on green campus initiatives

Contents	Page no.s
The institutional initiatives for greening the campus are as follows;	
1. Activities conducted in academic year 2020 – 21.....	2 – 3
2. Activities conducted in academic year 2019 – 20.....	3 – 4
3. Activities conducted in academic year 2018 – 19.....	5 – 7
4. Activities conducted in academic year 2017 – 18.....	7 – 8
5. Activities conducted in academic year 2016 – 17.....	8 – 10
6. Conferences/ Workshops/ Attended/ Invited as Resource person for topics related to Green campus, Environment and Energy Usage.....	10 – 12
7. List of Trees available in the campus.....	12 – 14
8. Other plant species in the campus.....	14 – 15
9. Other relevant information.....	15

Activities conducted in academic year 2020 – 21

1. 'Sustainable Approach to Organic Farming in a Self-designed Vermicompost Integrated Aquaponics Unit'

Miss Inoska Mendes and Miss Sarah Kandhekar who completed their Bachelor's Degree Programme in the academic year 2019 - 2020 presented a paper titled 'Sustainable Approach to Organic Farming in a Self-designed Vermicompost Integrated Aquaponics Unit' (which was based on their TYBSc project) at the International Conference (Virtual) on 'Affordable Strategies for Health, Environment and Food Technology. It was organized from 22nd-23rd December, 2020 by the Department of Biotechnology Engineering, N.M.A.M. Institute of Technology, Karkala . The project was guided by Ms.Vallanka Dias, Asst Prof, Dept. of Biotechnology, who also, participated in the conference.

2. Guest lecture on 'Landscaping and Garden Designing'

An online guest lecture was organised on 16th April 2021 by Ms. Amisha Pednekar and Ms. Jocelyn Makasare, Asst Professors, Dept of Botany on 'Landscaping and Garden Designing'. The guest speaker was Mr. Rozendo Mendonsa, Owner of Mr. Farmer India Pvt. Ltd. Guirim, Mapusa, Goa.

3. 'Wetland Conservation' poster presentation

Ms. Abigail Sacrafamilia, student of TYBSc Zoology won the 2nd place in the National poster competition organized by ASC College, Lanja, Ratnagiri in collaboration with Mangrove society of India on 2nd February 2021. The theme of the competition was "Wetland Conservation".

4. "Bird Walk

Department of Zoology coordinated the 'Bird Walk' organized by Goa Forest Department from 5th to 7th February 2021. Bird walks were conducted at two sites viz. Carambolim Lake and Curtorim-Raia Lake (Maina-Curtorim Wetland Complex). Mr. Stephen Dias, Ms. Gautami Manakikar, Ms. Prasanna Naik Gaonkar and Ms. Pratibha Tripathi conducted the bird walks for the general public on behalf of the forest department.



Bird Walk at Carambolim



Bird walk at Curtorim

5. 'Wildlife Management through GIS and GPS Technology'

Prof. Nandkumar Sawant (Head, Department of Geography), Dr. Nandini Vaz Fernandes (Head, Department of Zoology), Mr. Deepak Kumbhar (Assistant Professor, Department of Geography) and Mr. Stephen Dias (Assistant Professor, Department of Zoology) were invited as the Resource Persons for a workshop on 'Wildlife Management through GIS and GPS Technology' conducted for 50 forest officials by the Goa Forest Department, Government of Goa on 19th February, 2021.



Prof. Sawant stressed on the importance of applying a holistic approach in wildlife monitoring using GIS. Furthermore, he also explained the use of geospatial technologies in wildlife management using real world case studies and examples.



Dr. Nandini Fernandes discussed various conventional and advanced geospatial tools used to monitor biodiversity such as ground surveys, aerial photography, radio telemetry, infrared camera trapping, remote sensing, GIS and GPS in monitoring wildlife and gave examples of how it helps in wildlife monitoring

Activities conducted in academic year 2019 – 20

1. Awareness program on ‘Waste management’

On 11th and 12th September 2019, the Department of Zoology conducted an awareness program on ‘Methods of waste treatment and the importance of practicing waste segregation and management’ regarding the different methods of waste treatment, the 3Rs and the importance of practicing waste segregation and waste management using posters. Also, the students prepared a feedback form to know if the explanation enriched their knowledge regarding the waste management techniques. They also stuck labels on energy and water conservation on campus.

2. Awareness program on ‘Importance of Vermicomposting’

The students of the Department of Zoology conducted an awareness program on the ‘Importance of Vermicomposting’ on 27th September 2019 wherein students used the posters to explain the importance of vermicomposting as aim was to educate students on the process and techniques involved in vermicomposting.



Students creating awareness on vermicomposting on campus

3. Awareness program on Sanitation

The students of the Department of Zoology conducted an awareness activity focusing cleanliness in the girl’s washroom aiming to initiate responsibility from the students by interacting with them on 5th October 2019. The students stuck posters around the campus, including canteen, the café coffee day and girl’s washroom.



Students conducting awareness program on Sanitation

4. Labelling Waste bins for enable Segregation of Waste

All the students of the Skill Enhancement Course conducted by Zoology department labelled waste

Bins on campus to enable waste segregation on the campus. This activity was carried out on 18th October 2019 wherein the bins were labelled for the segregation of food waste, plastic, tetra packs, paper, leaf litter and metal.

5. National Seminar on ‘Landscapes Evolution and Transformation’

On 23rd January 2020 the Department of Geography organized National Seminar on Landscapes Evolution and Transformation for students wherein the key note address was given by Dr. Beatrice Moppert, Faculty, Department of Geography, University of Reunion Island.

Activities conducted in academic year 2018 – 19

1. Shramdhan

On 2nd October 2018, to commemorate Gandhi Jayanti, NSS volunteers were actively engaged in the cleaning process and cleaned many areas on college campus i.e., two-wheeler parking & gurukul area, butterfly garden, Tiger’s coop. They also washed and cleaned balcao on the campus. Plastic waste was segregated from



organic waste and dumped in respective bins. *NSS volunteers cleaning two-wheeler parking area*

2. Green Bazaar Day

On 14th December 2018, an Agri Expo was organized by the Department of Botany in collaboration with the Forest Department, Sub – Divisional Office, Aquem Margao Goa under DBT Star College Scheme. One Day exhibition cum sale of agrobased products i.e., ‘Medicinal Plant’ was organized for awareness about the medicinal plants and its uses. Botany students explained the importance of 35 medicinal plants to the visitors. The free distribution of the medicinal plant was done to promote afforestation and to also conserve the environment.

3. Medicinal Plants Exhibition cum Lecture series

Botany department in collaboration with State Medicinal Plant Board, Goa and Forest Department, Forest Complex, Aquem, Margao - Goa conducted ‘Medicinal plants Exhibition cum Lecture series for various schools in and around Margao on 28th January 2019 on campus. Dr. Pradip Sarmokadam, Member Secretary, Goa State Biodiversity Board, Saligao Goa was the resource person, attended by 68 students and coordinated by two faculty.

4. Swachh Bharat Abhiyan Pakhwada: Plastic free campaign

The 'Plastic free campaign: Cloth bags' was organized under Swachh Bharat Abhiyan Pakhwada under MHRD, Government of India, on campus wherein each of the 25 NSS volunteers actively participated and distributed between 31st January to 09th February 2019.

5. National Conference on 'Wetland Conservation: Approaches and Threats'

Department of Zoology in association with 'Mangrove Society of India, Goa Branch' and 'Goa State Wetland Authority' organized the National Conference on Wetland Conservation: Approaches and Threats on 2nd February 2019 on campus which was attended by 112 delegates and gave opportunity to 22 researchers.

6. Creating Paper Bags to reduce Plastics

Department of Sociology Club 'Human' organized a drive on creating paper bags to reduce use of plastics on campus wherein 35 students participated along with one faculty.

7. Workshop on Kitchen Gardening

The Department of Botany organized a workshop on kitchen gardening which was attended by 78 students coordinated by 4 faculty.

8. Workshop on Herbal Cosmetology

The Department of Botany organized the workshop on Herbal Cosmetology attended by 58 students coordinated by five faculty.

9. Lecture series on Plant Animal interaction

The Department of Botany organized a lecture series on Plant-Animal interaction attended by 48 students coordinated by four faculty.

10. 'Planting Trees: A stride towards Green Goals'

Biochrome – Biotechnology club of Department of Biotechnology organized 'Planting Trees: A stride towards Green Goals', afforestation project in association with Forest Department, Quepem Goa celebrated 'Van Mahotsav' on Independence Day. A total of 50 tree saplings were planted in different quarters of the college campus wherein 60 students participated and coordinated by two faculty.

(<https://www.navhindtimes.in/2019/08/30/magazines/kuriocity/a-stride-towards-green-goals/>)

11. Green Audit Report

Institution started its Green Audit on 10th November 2018 carried out by Ms. Apoorva from the Shubhankar Environmental Services welcomed on campus, followed by the interactive session was attended by 17 coordinators & 20 students from the four departments – Geography, Physics,

Botany, and Zoology. Ms. Apoorva started the session inviting all for a brief introduction and how each one had contributed positively to environment through activities such as, Study of human activities on River Sal in Goa, planting trees, waste segregation at home, use of cloth bags, beatification of the campus, NSS camps and cultivating horticultural crops were some of responses from participants. After this, the students were put into three groups which are; Biodiversity, Waste Management and Energy. A fun game was played where the students had to guess a word, which one of the students was acting it out without uttering a word. Ms. Apoorva then got all the students and coordinators and had individual detail meeting with each of the three groups and gave them the data collection formats and helped them plan the activities for the green audit. The Green audit will take place between 10th to 19th of November. Each student will put in minimum 40 hours of work over the period of 8 days (5 hours per day).



Green Audit report activities conducted on campus by coordinators and students

Activities conducted in academic year 2017 – 18

1. National Essay Competition on ‘Swacch Bharat Abhiyan’

Mr. Crandal D’Souza participated and won the First prize for the essay topic on ‘What will I do for Cleanliness?’ at National Essay Competition on ‘Swacch Bharat Abhiyan’ conducted on campus.

2. Swachta Pledge Film

Seventeen NSS volunteers took part in Swachta Pledge Film conducted on 29th September 2017.

3. NSS Special Rural Camp

N.S.S. volunteers cleaned the campus and playground area between 11th to 19th November 2017 and Cultural activities were organized. Also, awareness on plastic free environment and composting was carried out in the rural areas.

4. Bird houses on campus

On 13th February 2018, student members of Birder's club installed 15 bird houses at various locations in the College Campus to provide shelter for small birds and encourage them to inhabit the campus niche as a part of the 'Green Initiative'

5. Shramdaan

The NSS volunteers carried out 'Campus beautification' activities on 14th March 2018 at various locations on campus.

Activities conducted in academic year 2016 – 17

1. Shramdhan

Campus beautification activity was carried out by NSS volunteers on 22nd September; 1st, 3rd, 5th October; 10th, 11th, 12th, 15th, 16th, 17th, 18th, 19th, 23rd, 24th, 25th and 26th November in 2016 and on 20th January, 09th February and 05th March in 2017.

2. Tree plantation drive

On 2nd September 2016, Tree Plantation drive was conducted on campus wherein fifteen saplings were planted in this activity by the NSS volunteers.

4. Swachh Bharat Abhiyan Pakhwada

The NSS, NCC and Sports units of our college organized Swachh Bharat Abhiyan Pakhwada under MHRD, Government of India, wherein the volunteers actively participated in campus beautification on 1st October 2016.

5. Workshop cum interactive session on 'Hygiene and Cleanliness Strategies'

A Workshop cum interactive session on 'Hygiene and Cleanliness Strategies' for saffai karma

charis initiated through Swacch Bharat Pakhwada on 1st October 2016 in our institution. A total number of 19 saffai karmacharis attended the workshop cum interactive session wherein they were informed on the following:

- Smart strategy to segregate waste item or garbage i.e., separate plastic or bottles, papers, glass items and food items
- Maintain all safety measures while working, self-cleanliness and health tips.



Saffai karmacharis attending the Workshop cum interactive session on 'Hygiene and Cleanliness Strategies'

6. Gandhi Jayanthi Celebration

On 2nd October 2016, the Cleanliness drive was organized by all the departments wherein students and staff actively participated in the 'Campus cleanliness and Beautification activity' to mark the Gandhi Jayanti celebrations.

7. Environmental Project: Making of cloth bags

An environmental project on making of cloth bags was conducted by the NSS unit on 5th October 2016. The NSS volunteers prepared 10 cloth bags per student under this project for personal use and encouraged others to use these bags too.

8. Certificate course on ‘Kitchen Gardening and Waste Management’

The Career and Personal Counseling Centre conducted a certificate course on ‘Kitchen gardening and Waste Management’ under the Honours Programme in ‘Life - Style Management’ of 30 hours. Course comprised on topics of designing of kitchen garden, identification, management of insects, green-house effect, organic composting, natural farming and non-pesticide management, conducted twice a week in the evening.

9. Campaign against Single Use Plastics

The students of Department of Zoology designed pamphlets to create awareness regarding illeffects of single use plastic on the environment and encouraged carrying own cutlery on campus. They also carried out a survey to know about waste management, segregation and disposal at households in Gogol area wherein they collected waste cloth materials and handed over to ‘Mudra Prathisthan’ who designed cloth bags that were further distributed to the local people.

Conferences/ Workshops/ attended related to ‘Green campus, Environment and Energy Usage’

1. Talk on ‘Training on Problem solving approaches in green synthesis’

Dr. Rohan K. Kunkalekar, Faculty of Department of Chemistry attended a Talk on ‘Training on Problem solving approaches in green synthesis’ on 17th September 2016 organized by Vergo Pharma Verna, Goa.

2. National Conference on ‘Soil management and sustainable agricultural development’

Faculty from Department of Geography, Dr. Nandkumar N. Sawant attended National Conference on the ‘Soil management and sustainable agricultural development’ organized by the Department of Geography of Hon. Shri. Annasaheb Dange Arts, Commerce and Science College, Hatkanagale Kolhapur on 7th and 8th October 2016.

3. Workshop and interactive session on ‘Biodiversity of Butterflies and their Ecological Significance’

Dr. Nandini V. F. and Balekai M., Faculty from the Department of Zoology along with four students, Prabhu V., Chawla M., Naik V., Ayaswamy K attended the Workshop cum interactive session on ‘Biodiversity of Butterflies and their Ecological Significance’ conducted by Dr. Vilas Bardekar and organized by the Goa State Diversity Board on 20th November 2016.

4. Invited as a Resource person for talk on Cleanliness – ‘Change in Mindset’

Dr. Gunaji Desai, Faculty from the Department of Konkani was invited as a resource person for a talk on ‘Cleanliness – change in mindset’ for the staff members of Trade and commerce, Govt. of Goa as Swach Bharat Abhiyanin 2016 organized by Directorate of Industries, Trade and Commerce, Govt. of Goa at Vidhyut Bhavan, Panaji Goa.

5. ‘Nature Camp’

Ms. Gautami Manakikar, Zoology department attended the Nature Camp organized by the ‘Aranya Environment Research Organization, Bondla Wildlife Sanctuary from 23rd to 25th November 2018.

6. Talk on ‘Forest Management and Wildlife Conservation’

Ms. Gautami Manakikar, Faculty Department of Zoology attended a talk on ‘Forest Management and Wildlife Conservation’ organized by Forest Department of Goa and WWF-India Goa Science Centre, Panjim on 7th December 2018.

7. National Conference on ‘Wetland Conservation: Approaches and Threats’

Ms. Madhu Balekai and Mr. Prasanna Naik Gaonkar, Faculty from the Department of Zoology attended the National Conference on ‘Wetland Conservation: Approaches and Threats’ organized by the ‘Department of Zoology’ in association with ‘Mangrove Society of India, Goa Branch’ and ‘Goa State Wetland Authority’ on 02nd February 2019.

8. State Level Workshop on ‘Green Audit of College Campuses’

The State level workshop on green audit of college campuses was attended by Dr. R. Kanchana on 29th and 30th August 2019 organized by Dayanprassarak Mandal’s College and Research Center, Assagao, Bardez, in association with Directorate of Higher Education, Government of Goa.

9. National Symposium on ‘Green chemistry for better sustainability’

Faculty from the Department of Chemistry, Ms. Roopa S. Belurkar and Ms. Padmini C. Raiker attended the National Symposium on ‘Green chemistry for better sustainability’ (Creating Environ-

mental Awareness)’ organized by the Department of Chemistry, Dnyanprassarak Mandal College and Research Center Assagao - Bardez, Goa in association with Syngenta Biosciences Private Limited Corlim, Goa on 27th September 2019.

14. ‘Eco Training Workshop’

The ‘Eco training workshop’ was organized under the aegis of ‘National Green Corps’ on the 30th September 2019 attended by Dr. Nandini Vaz Fernandes, Madhu Balekai, Amisha Pednekar and

Divyarani Rivonkar held at Ravindra Bhavan, Margao Goa. The attended teachers were designated as 'Green Teachers' Grant by DHE, Goa.

15. National Conference on 'Environment, Culture and Development: Discourses'

The 45th All India Sociological National Conference on Environment, Culture and Development: Discourses was attended by Ms. Sayali Goankar, Faculty of Department of Sociology organized by the University of Kerala, Thiruvananthapuram from 27th to 29th December 2019.

16. National conference on 'Wetland Ecosystem, Biodiversity Conservation and Management'

Dr. Nandini Vaz Fernandes, Balekai Madhu and Gaonkar Prasanna, Faculty of Zoology attended National Conference on wetland Ecosystem, Biodiversity Conservation & Management' organized

at NVV Arts, Commerce, Science College, Lanza, Maharashtra on 2nd and 3rd February 2020.

7. List of Trees available on the College Campus

Sr. no.	Names of tree plants & Family	Common name	Number of trees
1.	<i>Terminalia catappa</i> Family: Combretaceae	Badam	36
2.	<i>Casuarina equisetifolia</i> Family: Casuarinaceae	Australian pine tree oak	04
3.	<i>Delonix regia</i> Family: Caesalpinaceae	Flame tree, Gulmohar	08
4.	<i>Anacardium occidentale</i> Family: Anacardiaceae	Cashew tree	02
5.	<i>Mangifera indica</i> Family: Anacardiaceae	Mango tree	11
6.	<i>Triadica sebifera</i> Family: Euphorbiaceae	Chinese yellow tree	11
7.	<i>Juglans regia</i> Family: Juglandaceae	Persian walnut	06
8.	<i>Psidium guajava</i> Family: Myrtaceae	Guava	02
9.	<i>Cassia fistula</i> Family: Fabaceae	Indian laburnum, Goldenshower cassia.	03
10.	<i>Murraya koenigii</i> Family: Rutaceae	Curry tree	01
11.	<i>Cinnamomum macrocarpum</i> Family: Lauraceae	Cinnamon / Tejpatta	02
12.	<i>Garcinia indica</i> Family: Clusiaceae	Kokum	02
13.	<i>Samanea saman</i> Family: Mimosaceae	Rain tree	14
14.	<i>Tectona grandis</i> Family: Lamiaceae	Teak	01
15.	<i>Musa sp.</i> Family: Musaceae	Banana	07
16.	<i>Leucaena leucocephala</i> Family: Fabaceae	Leucaena	02
17.	<i>Cocus nucifera</i> Family: Arecaceae	Coconut	09
18.	<i>Couropita guianensis</i> Family: Lecythidaceae	Cannon ball tree	02
19.	<i>Plumeria alba</i> Family: Apocynaceae	Caterpillar tree/pagodatree	06
20.	<i>Michelia champaca</i> Family: Magnoliaceae	Joy perfume tree/ shenbagam/ champakam	03

21.	<i>Polyalthia longifolia</i> Family: Annonaceae	False Asoka	13
22.	<i>Saraca asoca</i> Family: Fabaceae	Ashoka tree/ sorrow-less/sita-ashoka	03
23.	<i>Ravenala madagascariensis</i> Family: Strelitziaceae	Travellers palm	2
24.	<i>Artocarpous heterophyllus</i> Family: Moraceae	Jackfruit	8
25.	<i>Peltophorum pterocarpum</i> Family: Fabaceae	Copperwood/ yellow flamboyant/ yellow flame	3
26.	<i>Bauhinia variegata</i> Family: Caesalpinaceae	Purple orchid tree	4
27.	<i>Eucalyptus sp.</i> Family: Myrtaceae	Blue gum eucalyptus	2
28.	<i>Gliricidia sepium</i> Family: Fabaceae	Quickstick	2

8. Other plant species on the campus:

There are trees, shrubs, herbs and ornamental plants on the campus. The flora found on the campus has great importance in landscaping, beautification, etc.

Sr. No.	Name of the plant	Common name
1.	<i>Duranta erecta</i>	
2.	<i>Tradescantia spathacea.</i>	Moses in the cradle
3.	<i>Hamelia patens</i>	-
4.	<i>Agave sp.</i>	-
5.	<i>Tridax procumbens</i>	-
6.	<i>Hibiscus rosa sinensis</i>	-
7.	<i>Sansevieria sp.</i>	Snake plant
8.	<i>Ocimum tenuiflorum</i>	Tulsi
9.	<i>Ervetemia coronaria</i>	-
10.	<i>Clitoria ternatea</i>	-
11.	<i>Nerium oleander</i>	-
12.	<i>Anthurium andraeanum</i>	Flamingo flower
13.	<i>Caladium bicolor</i>	Fancy leaf caladium
14.	<i>Aloe vera</i>	Aloe, katkur
15.	<i>Hippeastrum puniceum</i>	Barbados lily
16.	<i>Heliconia psittacorum spathocircinata</i>	Heliconia Golden Torch
17.	<i>Mimosa pudica</i>	Touch me not plant
18.	<i>Caesalpinia pulcherrima</i>	Peacock flower
19.	<i>Delonix regia</i>	Flame tree

20.	<i>Rosa</i>	Rose, Gulab
21.	<i>Acalypha hispida</i>	Cat's tail
22.	<i>Cycas</i> sp.	-
23.	<i>Hibiscus schizopetalus</i>	Japanese hibiscus
24.	<i>Bougainvillea glabra</i>	Bougainvillea
25.	<i>Opuntia</i> sp.	-
26.	<i>Impatiens balsamina</i>	Garden Balsam
27.	<i>Ixora coccinea</i>	Ixora
28.	<i>Catharanthus roseus</i>	Periwinkle
29.	<i>Crossandra infundibuliformis</i>	Aboli
30.	<i>Lantana camara</i> var. <i>aculeata</i>	Lantana
31.	<i>Cosmos sulphureus</i>	Cosmos
32.	<i>Cynodon dactylon</i>	Hariyali
33.	<i>Syzigium cumini</i>	Jamun
34.	<i>Capsicum frutescens</i> <i>Capsicum annum</i>	Chilli
35.	<i>Cleome viscosa</i>	-
36.	<i>Cassia tora</i>	-
37.	<i>Boeharvia diffusa</i>	-
38.	<i>Musa paradisiaca</i>	Banana

9. Other relevant information on green practices

The Institution hired the following to maintain cleanliness on campus;

- 'Clean Kraft Agency' to sweep and mop the floors, buildings, windows and for gardening up to September 2019.
- 'Housekeeping Services' to sweep and mop the floors, buildings, windows and for gardening October 2019 onwards.