

Botany Department Report for 2019-2020

Department faculty involved in curriculum Design : All staff members are members of Board of studies in Botany with Dr Usha Mukundan as the chairman of BOS. In addition they are also in the statutory bodies of other autonomous colleges.

Dr Usha Mukundan: VC nominee in BOS of Mithibai college, Academic council member V C nominee Patkar college, member Academic council Sophia college, Governing council VC nominee in Nagindas Khandwala college, B K Birla college, Guru Nanak Khalsa college, 2018-2019 for three years

Dr Himanshu Dawda: BOS member SIES college 2018-2019 for three years

Dr Nisha Muni : Senate member University of Mumbai, BOS member K J Somaiya college of Commerce and Science 2018-2019 for three years

Dr Anil Avhad: BOS member B K Birla college 2018-2019 for three years

Curriculum Design : The curriculum for the B Sc and M Sc programs have been mapped on the basis of learning outcomes (LOCF). The CO's and PO's have been defined and the same is available on the college website

Members in Board of studies in Botany

All faculty members of the Department of Botany (8 with HOD as chairperson)

S.No.	Name and Designation	Mobile Number	email	Contact details
1	Dr Aruna Rai HOD Botany V C Nominee	9821774412	Aru_r17@hotmail.com	CHM College, Ulhasnagar
2	Dr S G Bhagwat subject expert	9969680089	Sgb1953@gmail.com	Former Scientist Nuclear and Agriculture Division, BARC
3	Dr Dharmendra Shah subject expert other University	9427336842	shahdhamu@gmail.com	Department of Botany, M S University Baroda
4	Dr Priya Mukerjee Illustrious	9619230955	Priya.chatterjee@merckgroup.com	Director Regulatory Affairs, India and

	Alumni			Emerging Frontier Markets (EFM) MERCK,KGA— Germany
5	Mr Ashish Lad Alumni from Industry facilitating placements	9930978104	ashish@metropolis.com	Meteropolis Laboratory Molecular Diagnostics
6	Dr Vaishali Gode Invitee Industry representative	9833995961	vai2avi@gmail.com	R & D Executive MARICO Former Executive HUL
7	Dr Mrunalini Date Invitee Subject expert	9820128697	date.mrunalini@gmail.com	Retired Assistant Professor Dept of Botany R J College

Revision of curriculum 2019-2020 to be implemented from 2020-2021

This year (2019-2020) the first year B Sc Botany syllabus has been revised (Course codes: RJSUBOT101, RJSUBOT102 and RJSBOTP101 and RJSBOTP102) and the same will be implemented from the academic year 2020-2021

The syllabi for the PG program semester I, II, III and IV have been revised in 2019-2020 and the same will be implemented from the academic year 2020-2021

The BOS in Botany framed the syllabus for the new program M Sc Environmental Science and Disaster Management which has been duly approved by the Academic council and governing council of the college and the permission of the statutory body of the affiliating University of Mumbai has been obtained. The new PG program will commence from the academic year 2020-2021.

Curriculum Enrichment value added courses imparting transferable skills offered during the year.

1. **Intellectual Property Rights (IPR course code RJBOTC08):** Total 42 students from the departments of M Sc Botany (16) , Chemistry (12) and Biotechnology (20) completed value added course in IPR (2credits) the course was held from 23rd December, 2019 to 2nd January,2020.
2. **Brewing of Wine (course code RJBOT C09)** 16 students completed the course of 2 credits
3. **Solid Liquid waste management (course code RJBOTC13)** 16 S Y B Sc students have successfully completed the course of 2 credits from 1st October, 2019 to 20th October, 2019.
4. **Post harvest technology (course code RJBOTC02)** online from April 18, 2020 from April 19th ,2020 to 30th April, 2020 number of students who have registered are 127 successfully completed the course conducted online during Lock down
5. **Tree Appreciation (course code RJBOTC15)** online from April 18, 2020 from April 19th ,2020 to 30th April, 2020 registered students are 65 conducted online during lockdown
6. **Gardening in limited space (course codeRJBOTC03)** online from April 18, 2020 from April 19th ,2020 to 30th April, 2020 registered students are 65 conducted online during lock down
7. **Post graduate Diploma in Horticulture and Landscape gardening 2019-2020 (PGDHLG) :** 41 students have completed the program in 2019-2020
8. **Postgraduate Diploma in Dietetics and Applied Nutrition 2019-2020 (PGDDAN) :** 39 students have completed the program in 2019-2020 however their diplomas will be awarded on successful completion of mandatory internship

Field Projects undertaken in 2019-2020

1. Field Project: Hemant Karkera Udyan, Andheri

Date : 20th August, 2019

Class: T Y B Sc Botany

Number of Beneficiaries: 46 students + 3 teachers

Report: Hemant Karkera Udyan Andheri is a public municipal garden mainly for the local citizens to take a stroll and provide the much needed fresh air. The students were taken this garden specially to give them an experience of experiential learning of native trees. The garden has 200 native trees which have been planted to save the biodiversity. Students were able to study the various morphological features and classified the plants to their respective families. A project report which is evaluative has been submitted by each and every student

2. S Y B .Sc. 19th July, 2019 Field Project: Dattaji Salve Udyan

Date: 19th July, 2019

Class: S Y B Sc.

Number of beneficiaries: 121 students +6 teachers

Report:

Dattaji Salve Udyan, Thane is an attempt by a plant enthusiast to replicate a Botanical garden. In true words of a group a place where flowers smile in its vibrant colors. From being a wasteland used for dumping building material. It houses both native and exotic plants. A good collection of exotics. Easily reachable by local train it's a cost effective field project enabling student to learn by observing and can revise and enjoy nature. Students enjoyed the nature trail and also learnt about the plants which are food for butterfly caterpillars. All students have submitted an evaluative field project.

3. Field Project: ASPIRA Diagnostic Laboratory

Date: 29th July, 2019

Class: M Sc I Botany

Number of beneficiaries: 16 students + One teacher

Report:

ASPIRA diagnostic laboratory is located at a walk able distance of 5 minutes from the college. It's a modern laboratory with total automation. Students learnt about molecular diagnostics, automation in diagnostic laboratory, NABL audit, data processing and interpretation. A detailed field report has been submitted by the students. No Photography was allowed.

4. Field Project: Vanaspatyam Ayurveda garden Somaiya Ayurvihar Everad Nagar, Chunnabatti/Sion Eastern express highway

Date: 13/8/2019

Class: M.Sc. I

Number of beneficiaries: 17 students + One teacher

Report:

Three acreland has been brought under cultivation of medicinal plants adjacent to the hospital. Students had an opportunity to learn about medicinal plants to identify them know their latin names and names in Ayurvedic literature along with the medicinal uses. Pharmacognosy is an important component of their curriculum and this field project enabled them to study many medicinal plants in the field. Students have submitted evaluative project report

5. Field Project: University of Mumbai Kalina Campus, Santacruz Mumbai

Date: 30/9/2019

Class: M.Sc. I

Number of Beneficiaries: 17 students+ One teacher

Report: The extended raining season of the year has provided with an unique opportunity to study the flora on the plateaus of Western Ghats which appear in plenty only in rainy season. These ephemerals appear for a short period of time complete their life cycle and then disappear and remain underground with their perennating organs to reappear in the next favourable seasons in the rains. Students learnt about life cycle of such plants and appreciated the vibrant colours of nature in the form of balsam, wild *Hibiscus*, *smithia*, *Celosias* to name few of them. A detailed field report has been submitted.

6. Field Project: Bhandup Pumping station Mangrove park

Date: 16th December, 2019

Class: M.Sc. I

Beneficiaries: 17 students + One teacher

Field Report:

Bhandup pumping station is a perfect place to study the wetland ecosystem. Like minded people have taken efforts to conserve the flora and fauna. It's a great place for bird watching since the wetlands provide the perfect habitat for the migratory birds. It is one of the hotspots for birding. The mangrove vegetation is diverse with both classical mangroves like *Avicennia*, *Rhizophora*, *Sonneratia* to background halophytes like *Acanthus*. Student also learnt about blue carbon wetlands being an important contributor to it. A Project report has been submitted.

7. Field Project : Maharashtra Nature Park Mahim

Date :17th December, 2019

Class: M.Sc. I

Number of Beneficiaries: 17 students and one teacher

Report:

Maharashtra Nature Park is a man developed by MMRDA with the help of WWF an NGO. The park is located at Bandra Sion link road opposite to the largest slums Dharavi. It is a beautiful woodland with 14 thousand trees , 300 varieties of herbs, beautiful butterflies, reptiles. A good place for bird viewing. Students could appreciate the biodiversity. A detailed field project has been submitted by the students.

8. Field Project: Open ground at Ghatkopar East Hingwala Lane

Date:16th December, 2019

Class: M.Sc. I

Number of Beneficiaries: 17 students and one teacher

Field Report:

Community ecology is an important aspect of studying plant community and its development. This can be achieved through a field project. Students learnt aspects of community ecology quadrat, transect etc. A proper location with enough herbaceous species is ideal and a patch was identified which is 15 minutes distance from college. Students calculated density, frequency for the plant community. Field project has been submitted and is evaluative.

9. Field Project: Go Green Nursery,Panvel

Date: 23rd December, 2019

Class: Third Year B.Sc. Botany

Number of beneficiaries: 46 students and three teachers.

Report:

This is an annual field project which enables final year students to learn about the various taxonomic group. Career prospects in horticulture. They learn about the business of supplying foliage plants both for indoors and outdoors. How these can be a big opportunity for a commercial city like Mumbai which is developing its infrastructure. Students have submitted an evaluative report.

10. Field project: Visit to BISLERI Factory, Western Express Highway Andheri East

Date: 3rd January, 2020

Class: Third Year B.Sc. Botany

Number of beneficiaries: 46 students and 3 teachers

Report

Bisleri International Private Ltd. Founded in 1969 provided clean pyrogen free bottled water. Students took the initiative to book the factory visit and the entire field project was planned by the student with the help of teacher mentor. Students have Environmental science as an elective course and water is an important component. The field project helped students to learn about water purification, quality test, microbial analysis of potable water, bottling, recycling of bottles and quality assurance. Every student has submitted an evaluative project.

11. Field project: Vrushkavalli Thane Municipal Flower Show

Date: 10-12th January, 2020

Class: S Y B.Sc

Number of beneficiaries: 100 students + 6 teachers

Report :

An annual field project for every new batch of second year students. In this field project the student have a great opportunity for experiential learning. The seasonal flowers are displayed. Garden designs, aquascapes, different nurseries display their plants, pots, soil, compost etc. This gave an opportunity to learn about the business of setting up a nursery for supplying quality planting material. All students have submitted a evaluative project report

12. Field Project: Veermata Jijabai Udyan Fruits, Flowers, Vegetable Exhibition

Date: 1st February, 2020

Class: First Year B.Sc.

Number of beneficiaries: 210 students and 9 teachers

Report:

Jijamata Udyan commonly known as Victoria garden or Rani Baug is a garden cum Zoo covering 50 acres of land located at Byculla the heart of Mumbai city, It is the oldest public garden established in 1861. It is houses many trees which are more than 100 years old. The baobab tree at the entrance, avenue of *Guaicum*, some of rare trees like *Amherstia*, *Ficus krishnae*, *Crescentia* to name a few. The garden also houses many animals and bird. During the exhibition students have the experience of observing and

also attending workshops. Students observed the various morphological features of the leaves of different plants and made a key for identifying and describing the leaf morphology.

All students have submitted a field project

13. Field project: Agrotourism centre Baramati and Institutions in Baramati

Dates : 23rd to 25th January, 2020

Class; T Y B.Sc+ M. Sc I and II

Number of beneficiaries: 41 students and 3 teachers

Report:

The field project started with a bus trip to Baramati a modern city near Pune. A city known for its sugar cane farmers and sugar factories and prosperous farmers. It has now ventured into Agrotourism. The Agrotourism centre provided comfortable accommodation, local food and an elaborate educational tour.

23rd January, 2020: Krishi Vigyan Kendra Baramati

The centre is a well planned education centre specially for students of Agriculture Botany and Horticulture. Students were able to learn propagation techniques, quality produce by growing crops in controlled environment in green houses built with Dutch collaboration, centre of excellence in growing vegetables. Exotic vegetables, raising and maintaining flower beds. Students learnt about diversity in bees, raising them apiary, sericulture, soil testing laboratories, pest controlled, producing biofertilizers.

24th January, 2020: Short fil on KVK Baramati, Sharad Pawar Museum VidyaPratishthan's School of Biotechnology and ICAR National Institute of abiotic stress management

The Vidya Pratishthan's School of Biotechnology enabled students to observe and learn about sophisticated instruments used in genetic transformation. The laboratory had DNA sequencers, electrophoresis units, gel documentation system, gene gun, electroporation units, LC MS and was well explained by the professor. The college has a beautiful Nakshtra garden where plants are arranged as per constellation.

Visit to the National Institute of abiotic stress management established in 2009 is a premier research institute working on various aspects of abiotic stress with special emphasis on drought stress and crop productivity. The students were taken on a guided tour including field visit. The students were able to appreciate by observing what they had studied in the class rooms. The field visit helped students in monitoring plants subjected to water stress.

25th January, 2020 : Visit to Sugar factory

Maharashtra is a well known producer of sugar cane and the sugar factories. Students were able to observe and learn about weighing of sugarcane, co operative societies, sugar

cane juice extraction and the process involved in sugar production along with its grading and packing.

14. Field Project: Visit to Mahabaleshwar

Date: 5th to 7th February, 2020

Class: S Y B.Sc

Number of beneficiaries: 49 students and four teachers

Report:

An excursion to Mahabaleshwar (Dist: Satara, Maharashtra) was arranged for the Botany students of S. Y. B. Sc. From 5th to 7th February, 2020. The field project included visits to various locations and industries.

- Visit to Apiary -Madhusagar . students observed the technique / method for rearing honey bees, types of honey and their medicinal importance
- Visited Madhusagar center to study the production of Jam, Jelly, Squash and Syrups of various fruits cultivated around the area. Students also visited the well-known MAPRO industry for understanding the production of various commercial and popular products like Jelly sweets, various types of squashes, syrups, chocolates, , Jam etc.
- Students were taken to various locations such as Bombay Point, Wilson Point, Old Mahabaleshwar, to study the vegetation and they were instructed to prepare the list of observed plants with scientific names and characteristics.
- The highlight of excursion was a visit to Wheat Rust Research Institute located at Mahabaleshwar. This centre is involved in scientific research on wheat rust (*Puccinia* sp.) It is a testing center for rust resistant varieties brought in by different breeders. The eminent scientists of this center conduct comprehensive research and successfully produce disease resistant varieties of wheat. Our students could observe various wheat species cultivated at the field station of this institute and also the pattern of fungal infections occurring on the same plant species. Few varieties developed by their scientists showed almost no infection by *Puccinia* and hence seeds were released to farmers for sowing. This institute is the 2nd largest institute in Asia for wheat rust research work.
- Students visited strawberry gardens and learnt about the entire process of strawberry cultivation and utilization of its fruit for making various products.

15. Field Project: Hiranadani Gardens Powai Municipal Gardens

Date: 8th February, 2020

Number of Beneficiaries: 75 S Y B Sc. students + 5 teachers

Report:

The second year B Sc student have a course on horticulture in which they learn about plants to be used in various gardens and also plan for formal and informal garden. Field project provides them with experiential learning . Students ;earnt about plants to be used for hedges, edges, arches, pergolas, seasonal's, palms, avenues and designing of gardens and plants to be grown there and how they have to be maintained. All students have submitted a project report which is evaluative

16. Field Project: Nanotechnology and Nanoscience centre University of Mumbai

Date: 23rd February, 2020

Number of Beneficiaries: 26 M Sc students + 2 teachers

Report:

This field project enabled the students to learn from the experts. They learnt how nanoparticles are made and the sophisticated instruments used for characterisation. Students saw and learnt about scanning electron microscope, transmission electron microscope, atomic force microscope, X ray diffraction, FTIR. The field project provided an opportunity to interact with researchers working in this area. All students have submitted a field report

Post Graduate Diploma in Horticulture and Landscape Gardening

Field Project:

As an integral part of their program students need to do workshops in field so that they can be trained to become an entrepreneur or working as an horticulturist

1. **8/12/2019 Heritage garden Powai: 40 students and two teachers.** The students learnt about garden design. Plants to be used in various sections of the garden. Procurement of plants. Exotic species, native trees etc.
2. **Field Project: Vruskshavalli TMC flower and vegetable show 12 January 25 students**
3. **Victoria garden 2nd February 15 students**
4. **Field Project: National Society of the friends of the trees 59th Annual Vegetable Fruit and Flower Show**

Dates : 8th and 9th Febraury,2020

Number of beneficiaries: 15 students

Live demonstrations cum lectures Saturday 8/2/2020 Healthy plants for healthy planet, Flower arrangement western style, Basics of Bonsai 9/2/2020 Kokedama, organic farming, home gardening, kitchen gardening and compositing

Feed back system on curriculum

A structured feedback on curriculum was collected from students, teachers, employers and alumni the same has been analysed

Action Plan: Students have suggested use of more interactive techniques in curriculum delivery, topic on life skills be included these would be implemented in the academic year 2020-2021. The employers have suggested to use techniques to measure outcomes

which will make students employable. 98 % of all the stakeholders have expressed satisfaction of the adequacy of content in terms of domain knowledge.

Teaching and Evaluation techniques used by the teachers:

Department strength: F Y B Sc 210, S Y B Sc 112 and T Y B Sc 46

Number of teacher: Total Sanctioned Post: 09 vacant 01 : Filled in 8 permanent staff (7 with a Ph D, Principal is from this department) and three contractual basis of which two are NET qualified.

All teachers have a teaching plan as per the course content to be taught. The classrooms, laboratories are all equipped with LCD and audio visual aids. Teachers are trained to use these aids. Teachers use the conventional chalk and talk method since there are diagrams and pathways which can be best explained by these methods. The teaching sessions are made interactive by using innovative techniques POGIL, just in time teaching, you tube videos are sent earlier and students explain the same in the class. In areas which require application problem solving techniques are used. Students also give seminars, they explain a concept, give power point presentation. Students also learn in field projects and mini projects in addition students are given extra practicals which is not included in the syllabus in an effort to inculcate research in UG students. In addition to the mandatory two internal assessment and one semester end examination all teachers take class test after completion of a topic. The department practices continuous evaluation for practicals which helps students in learning the required skills. Post graduate students are trained in making the contents from reference books which are accessible from the department library. They are very well trained in practicals each one of them perform the experiments independently. Evaluative Research Project work is mandatory for completion of PG program in Botany and they learn a course in research methodology.

Student Mentoring System: The department has a mentoring system namely “SUNFLOWER”. The S Y B Sc and T Y B Sc students are divided in batches of 12 to 15 for second year and 4 to 6 in third year and each group is assigned a teacher mentor. The mentor discusses with the students about their physical and mental well being. They hold both formal which are in record and informal sessions and if need be the student also approaches the mentor. The mentor also takes care of their assignments and project work specially during the annual department fest BOTANICA. The mentor also helps student to prepare for forthcoming competitions, research festivals. In PG program there is a mentor for two students who takes care of their entire project implementation and completion. The department maintains the self analysis profile of the student which is structured format which gives the mentor an idea of the background of the mentee students.

A structure feed back has been collected with regards to teaching by the faculty members and has been shared. All students have filled an online student satisfaction survey as well as self analysis profile which has been analysed.

Research: The department of Botany is in the fore front of research and is a recognised research centre for the last five decades. The department has been getting grants under the DBT star college scheme for the last four years and this year 2019-2020 the department has been awarded the DBT Star Status which has funding of Rupees fifteen lakhs for non recurring items, 5 lakhs for recurring. 0.25 lakh contingency and 0.25 lakh for travel. This grant has been utilised for purchase of multiple units of equipments so UG teaching and research has been strengthened. Students were given new practicals and mini projects.

A major research project under consultancy has been received from MARICO industry to the tune of six lakh thirty thousand only the Principal investigator Dr Usha Mukundan and Dr Karishma Rajbhar is the postdoctoral fellow.

Award won by student for research and Innovation

1. Ms Susmita Gudulkar M Sc Part II Botany bagged the first prize and a gold medal in the Intrauniversity research festival Avishkar and First Prize at the Interuniversity state level Avishkar festival held at Mumbai University from 28-30th January, 2020. She was awarded the gold medal and was felicitated with an Innovation award one among the five students who won the innovation award by the Nehru Science Centre. She won a Silver medal at the West Zone Inter University research festival Anveshan held from 19-20th February, 2020 at University of Mumbai. She has been selected to represent the West Zone in the National research event known as Anveshan which was to be held at Bhopal from 18th to 20th March, 2020.
2. Our student Ms Susmita Gudulkar MSc part II Botany won first prize at the research festival held at Rathnam college she presented a research paper. She also stood first in PG pure Science category at the Avishkar research festival held at intercollegiate level in University of Mumbai.
3. Ms Pratiksha Chedda Ph D Biotechnology student presented a paper at the 2nd Global Congress on Molecular Pathology held from May 16-18 2019 held at Hongkong the abstract is listed in the Journal of Molecular Diagnostics, Vol21, supplement, May 2019 She works under the guidance of Dr Usha Mukundan.

Workshops/Seminars conducted on IPR and Industry Academia Innovative practices during 2019-2020

1. Extraction and analysis of natural products followed by colloquium on natural products with industry partners. All nine teachers were resource persons and they were responsible for one natural product. The Colloquium was an Industry academia activity with resource persons drawn from industry. The eminent speakers were Dr Sasikumar Menon from

TDM, Dr Sunita Shailajan from Ruia college, Dr Suchita Deepak from Jai Hind college, Dr Subhod Chavan (Scientia) , Dr Ashutosh Pudage (Accurex) and Dr Sharukh Bharucha (Anchrome) were the Industry experts

2. The Botany department organised an informative exhibition on 21 plants in Ganesh Patri along with their botanical names, useful parts, economic importance and to create awareness regarding biodiversity and importance of plants under the DBT star status scheme from 2-11 September, 2019.
3. A workshop on Mushroom cultivation was held on September, 23rd ,2019 40 students were beneficiaries
4. A workshop on How and Why of research was organised for the PG students on September, 25 and 26 Dr S D Samant Professor of Chemistry ICT was the resource person.
5. On 17th December 2019, 47 students and one faculty member from Wilson College visited the Plant tissue culture laboratory of the Department of Botany. A small workshop was conducted for them
6. “THE LIVER” seminar an Interdisciplinary program was organised on 22nd December, 2019. The Key note address was given by Dr Vaibhav Kumar Liver transplant expert from Nanavati Hospital, Dr Dilip Tripathi Executive from Johnson and Johnson, Dr Jyotsna Nijure teacher in Biology and Vaidya Dr Aashish S Phadke
7. Stop wasting water plumbing workshop was organised by the Department of Botany in collaboration with NGO Srushtidyan Mumbai and PRATHAM Institute and NSS unit of R J College on 22nd October, 2019. The main speaker was Mr Shivaji Kadam Program Head, Plumbing Pratham Insitute Mumbai. 60 students and 20 non teaching staff attended and were trained in basics of plumbing atleast to take care of tap leakages saving water.
8. Wild vegetable workshop preceded by a talk on raanbhaji by Ms Nilima Jorwar and exhibition of wild vegetables with explanation on their nutritive values and culinary use of these vegetables was displayed on 26/8/2019
9. Under the DBT star status activity the department of Botany organised lecture series on A case of Quantum Biology: Application of Quantum Mechanics to Biology for all science students by Dr Kishore Kapale Interim Chair Professor and Graduate coordinator from Western Illinois Univeristy on June 13,2019. Ms Nilima Jorwar delivered talk on wild vegetables, exhibition of plants, exhibition of plants in Ganesh Patri 10th and 11th February, 2020. On 10th February, Dr Ninad Raut of Terracon (Industry) delivered a lecture on “ opportunities in Tree Census Ecological restoration” and on 11th and 12th February, 2020 Mr Mayuresh Kulkarni delivered a lecture on “ *Ceropegia* of Maharashtra” underlining the fact how a non botanist can enjoy, observe and document about plants.

10. The department of Botany organised an Intercollegiate floral Rangoli competition 63 teams from 11 colleges participated . The competition was held on 7/12/2019. The Department of Botany had its annual fest :BOTANICA” on 9th December, 2019.

Publications;

1. **Karishma Rajbhar and Himanshu Dawda.** Verdant source of ferulic acid. World journal of pharmaceutical and medical research, 2019, 5(9), 146-149.
2. **Karishma Rajbhar and Himanshu Dawda.** Evaluation of the activity of hemicellulase and xylanase under different conditions of pH temperature and catechin concentration. Trends in carbohydrate research, Vol.11, no.3 (2019) 44-51. ISSN 0975 0304.

Books

1. **Himanshu Dawda** (2019). Transformed root. Lambert Academic Publishing House. ISBN 978-620-0-29436-4.

Book chapters

1. **Karishma Rajbhar and Himanshu Dawda (2019).** Analysing Activity of Cellulase and Macerating Enzyme and Effect of Catechin on Cellulase Activity. Modern Research in Botany Vol. 1, pp 13-21. Editor Dr Afroz Alam. Book Publisher International. ISBN 978-93-89246-10-0
2. **Mugdha Ambatkar and Usha Mukundan** (2019). Horse Radish Peroxidase : At the Tip of the Iceberg . In Horse Radish Peroxidase Structure, Functions and Applications EdMarten Uzun Nova Science Publishers New York, PP: 1-29.ISBN : ; 9:/3/75837; 35/6”*gdqqm+

Faculty and student participation in workshops/ seminars/conferences and symposia during 2019-2020

Dr Veena Kelkar participated in the workshop organised by R D and S H National college & S W A Science college, Bandra (W) entitled Basics of Plant Identification and Nomenclature held in collaboration with Botanical Survey of India under DBT Star college held on 22nd to 24th November, 2019. Two postgraduate students Ms Susmita Gudulkar and Mr Somnath Karanglaker also attended the workshop

Ms Aishwarya Parab accompanied by Ms Susmita Gudulkar, Ms Sadaf Muskan, Ms Shraddha Sonawane attended two day workshop at NIRRH on 29th February and 1st March, 2020.

Ms Aishwarya Parab and Ms Susmita Gudulkar (M Sc II) attended one week workshop from 22nd to 26th July on advanced Molecular Biology Techniques and Bioinformatics at Tata Memorial Centre Advanced Centre for Treatment Research and Education Centre (ACTREC) Karghar, Navi Mumbai 410210

Mr Neeraj Kadam M Sc II attended one week workshop at NIREH Bhopal sponsored by ICMR from 18th July to 2nd August, 2019.

Dr Anil Avhad and Dr D B Singh attended workshop on Techniques of extraction and isolation of Phytoconstituents held at ICT Mumbai on 14th and 15th March, 2020.

Dr Usha Mukundan was invited to participate in the conference on Autonomous college the road ahead organised by B K Birla college Kalyan held at Century Bhavan on 7th and 8th January, 2020.

Consultancy: Some amount of money has been generated through consultancy provided by the department

1. MARICO : Six Lakh thirty thousand for a major research project under consultancy
2. A solutions for microscopic particle analysis Rs 4720/-
3. Green Path for soil analysis Rs 8550/-

Awards:

Dr Usha Mukundan was felicitated at the India Pen Show as a women achiever on the occasion of International Women's day celebrated on 7th March, 2020 at Nehru Centre, Mumbai

Resource persons

Dr Anil Avhad delivered an invited lecture on “ Fight global warming with carbon sequestration of trees” at D G Ruparel college under the DBT star college scheme on 24/2/2020

Dr Nisha Muni delivered an invited lecture on Biostatistics –fundamentals and applications at Mithibai College under DBT star college scheme on 20/1/2020

Extension Activities:

1. Ms Sadaf Muskan, Ms Sonal Vishwakarma, Ms Sharddha Sonawane, Mr PankajYadav, Mr Somnath kangralkar, Ms Naian Yadav, Mr Abhijeet Avchare, Ms Sugyani Kumari Sahu, Ms Karishma Yadav, Ms Gayatri Thorat successfully completed their assignment with WWF Ek Prithvi as volunteers in BMC schools in Thane helping them to understand Nature and educate them to appreciate what Mother Earth has given them. They did this social work from August 2019 till February, 2020. They were awarded certificates appreciating their contribution.
2. The students of S Y B Sc along with team leader Ms Susmita Gudulkar participated in the WWF project ECHO the theme for this year being Sustainable consumption and development under which they went on Nature trail, did projects on sustainability and along with NSS volunteers organised lectures, street plays based on sustainable goals. Four students Mr Anmol Mishra, Ms Tote, Mr VinaySahani and Ms Priti Patel attended two days workshop at the WWF head office on 23/10/2019.
3. On 18th February, 2020 our students Mr K Somnath Kangralkar, MS Gayatri Thorat, Ms Gauri Joshi, Ms Sadaf Muskan, Mr Abhijeet Avchare, Ms Karishma Yadav, Ms

Shraddha Sonawane and Mr Pankaj Yadav from M Sc. Part I Botany along with Dr Anil Avhad were felicitated by Srushtidnyan an NGO working on efforts taken for preventing climate change. The college also received a plaque of appreciation for their concerted work in prevention of climate change.

Infrastructure: Well equipped laboratories with all instruments and microscope for students to perform experiments individually. Common Instrument centre with sophisticated instruments like Spectrophotometer, Analytical balances, refrigerated centrifuges, LEICA microscope, plant tissue culture laboratory with laminar air flows, MQ water filtration units, shakers, green house to name the important ones.

Departmental Library: 365 Reference books, 40 dissertations, 40 project reports, 6 Journals for students, access to computer with connectivity, e books, e journals. The departmental library has open access.

Herbarium: Angiosperms, Pteridophytes and Algae.

Museums: Paleobotany with fossils, permanent slides, Preserved specimens of Cryptogams for practicals, museum of plant drugs, carpology museum and collection of over 100 permanent slides.

Student Support and Progression

Career Seminars : In the academic session 2019-2020 an orientation of all students was done on 10th and 11th June, 2019 and for the first year BSc class a induction program was conducted from 1st to 6th July, 2019. Several career seminars were conducted to appraise the students of career opportunities after B Sc Botany. These were by Dr Kishore Kapale on opportunities abroad on June 13, 2019, 29th July 2019 Mr Niketan Taware gave an insight on Careers in Management studies, Dr Vaishali Gode (Illustrious alumni) Executive Hair care Hindustan Unilever inaugurated the activities of Botanica and gave a talk on careers in Botany in Industry. The toppers of T Y B Sc batch 2018-2019 and M Sc 2018-2019 were felicitated on this occasion. On 28th August student took a aptitude test conducted by Pro TEEN to know what type of profession they can take up. On 14th November Dr Jyotsna Nijsure conducted a session on Careers in Botany on 14th November, 2019.

Mentor and Mentee: The Mentoring scheme of the department is known as the “SUNFLOWER” group in third year 4-6 students are under one teacher, 12-15 students of S Y B Sc under one teachers and 25 students of a batch under a teacher in F Y B Sc . The mentor looks after the academic progress, wellness of the students. But there is no restriction of any student at any time and there are whatsapp groups for greater connectivity.

Bridge Course : A bridge course in statistical tools was done for UG and PG students.

Remedial Teaching: With the lockdown being announced from March 16th 2020 the department of Botany organised remedial teaching with the help of technology google class rooms were made and students were given assignments which were graded and sent to the student. This was mainly for Third year and all Postgraduate students. Postgraduate students also gave presentations as a revision of specific topics. The second year students were given quiz to motivate them to keep learning during trying times. The first year B Sc students are provided with revision visual based learning study material.

Student progression to higher studies : 2018-2019 batch 30 % students progressed for higher studies PG program in M Sc, Bed, MMS and Post graduate diploma studies. Others are employed in various service sectors

Results for 2019-2020 not available due to lockdown examinations not held.

Campus placement: Four students were placed in TCS through campus placement they also underwent the employability training held by TCS in our college. One student was placed in IKEA.

Competitions Organised by the Department: The department of Botany organised the following competitions

1. Intracollegiate poster making competition was held on 1st July, 2019 The topics were Biodiversity conservation methods and present status, alternatives to plastics, role of public and society on solid waste management, bioremediation and water conservation
2. Intracollegiate elocution completion
3. Intercollegiate Dr D V Amonkar Elocution competition on August, 23, 2019 It was the 25th year after the inception of the competition five students were awarded prizes. The topics were Coastal zone areas present status importance and its mitigation methods, biodiversity conservation methods and present status, Artificial Intelligence and Agriculture, Role of healthy plants in achieving sustainable development goals, CRISPR technology.
4. Intercollegiate floral Rangoli competition was held on 7/12/2019 63 teams from 11 different colleges participated
5. Intra collegiate project competition was held on 9/12/2019 under the aegis of BOTANICA

Alumni Engagement:

Ms Annie George (working in Godrej) alumni addressed the students on how to be Industry ready

Grand Alumni meet of students from 1963 till date on 28th November, 2019 to celebrate the 88th birthday of Dr S M Karmarkar former HOD of the Department and former Principal of the college . Seventy alumni attended a grand musical celebration along with a great discussion was held. 12 Endowment prizes have been initiated due to alumni contribution to the tune of two lakh sixty thousand.

Ms Priyanka Harish RajanaiAhire B Sc. Botany Batch of 2008 and Ms Leena P Jadhav Biotechnology Batch of M Sc 2008 have been appointed as Judge Jr. Division and JMFC a proud moment for the college. They were felicitated by Dr Rajendra Singh Honorary Secretary, HVPS in a grand function organised on 4th January, 2020 in MPSS hall.

Inclusion and Situatedness: Our Institution is situated in a thickly populated North Eastern suburb of Mumbai with many BMC schools and our trust Hindi High School all these cater to the marginalized section of the society. Schools often don't emphasise on imparting practical skills to the students and in turn they often miss out on enjoying science. In view of these invitations are sent to schools and timings are allotted so children come and visit this exhibition. This fest has been organised from 1999 and has found great popularity among school children. More than 500 students visit the exhibition. This year **BOTANICA** the annual fest of the department was held on 9/12/2019 nine mentors allotted theme based projects to their mentees 200 students participated and 1000 students visited the projects which included three schools. Some of the project were sustainable development through waste management, food adulteration and detection, natural dyes, betalains from dragon fruit, biodiesel, good fat and bad fat, gardens in limited space, aquascape to name few. The PG students showcased an inclusive garden which had plants to be felt (tactile) recognition, sensory (smell, visual), for ambience this was highly appreciated. There were quiz to test the aptitude of students, flower arrangements. To hone the entrepreneurship skills students had put up food stalls. As a social responsibility a stall is provided to the tribals who put up different items with warli paintings. The entire organisation is done by the students. Our students develop organisational skills, communication and team work

Participatory Management and decentralization of administration

Name of the faculty	Administrative responsibility	Committee
Dr Usha Mukundan	Head of the Institution from 2004	
Dr Himanshu Dawda	Vice Principal, from 2009 , Controller of examination, Member secretary Academic council, Governing council	Speakers forum, R J Herald, Gymkhana committee chairperson, Overall DBT Star Status coordinator IQAC member BOS Botany member, Member secretary Academic council, member Governing council
Dr Nisha Muni		Internal Complaints committee, CWDC, Canteen committee, Member BOS Botany
Capt Pravin Nayak	Vice Principal from July 2019 ANO NCC unit of RJC	 IQAC Member BOS Botany
Dr Anil Avhad	In charge T Y B Sc	Chairperson PAVO Nature club DBT star college coordinator for the department Climate change activities in collaboration with Shurishitdyan

Dr Veena Kelkar	In charge S Y BSc	In charge Botanica Chairperson Cultural committee Member BOS Botany
Dr D B Singh	In charge F Y B Sc	IQAC member, magazine committee member, BOS Botany member

Teachers on contractual basis

1. Ms Aishwarya Parab M.Sc. NET Mentoring scheme
2. Ms Ruchira Javkar M Sc.NET Mentoring scheme
3. Ms Namrata Jaiswal M.Sc Mentoring scheme and organising lectures for PGDHLG
4. Instrumentation Centre In charge Ms Deepawali Kale M.Sc.

Activities conducted for promotion of Universal values and Ethics

The staff and students actively participate in Independence day and Republic day celebrations. The students of the department along with staff members celebrate Guru Poornima and Teachers day with special programs

National science day by organising workshops

Earth day quiz was conducted by the PAVO nature club online on 22 April 2020 which had a huge response.

PAVO nature club conducts programs to create awareness about climate change and need for adopting ecofriendly ways.

Superannuation

Dr A K Bhatnagar (1989 to 2019 November): A Ph D from Agra University joined the department as lecturer in Botany and rendered 30 years of dedicated service. With a specialisation in Mycology he contributed significantly to the growth of the department

Dr Usha Mukundan (1979 -2020) superannuation on 31st March 2020. Joined Jhunjhunwala college as a Teacher in Biology June, 1976, joined Degree College, 20th June, 1979. Elevated as Head Department of Botany in 2002 , appointed as Vice Principal from November, 1998 . Appointed as Principal of the college 1st July, 2004. Appointed as Director of Hindi Vidya Prachar Samiti from 1st April, 2020.

DBT STAR COLLEGE ACTIVITIES



Colloquium and Workshop



Colloquium and Workshop



TYBSc Topper Ms. Sadaf Muskan



Botanica Inauguration by Dr. Vaishali Gode



Ms. Nilam Jorwar on Wild Vegetables



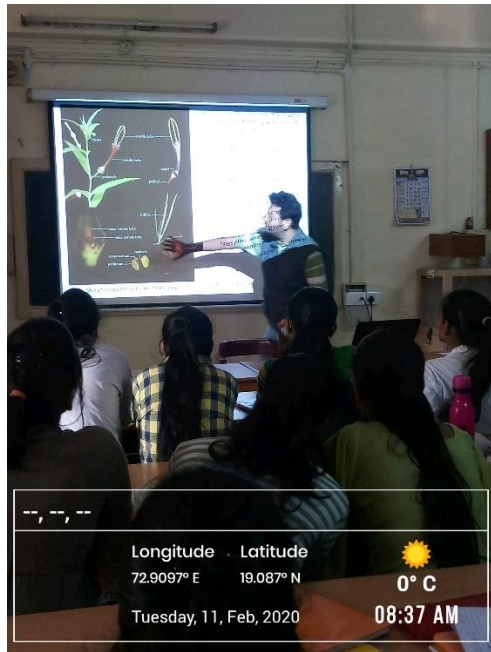
Exhibition of Wild vegetables



Careers in Botany – Dr. Jyotsna Nijsure



Career Mantra – Dr Usha Mukundan



Ceropegia's of Maharashtra – Mayuresh Kulkarni



Tree Census and Ecological Restoration – Dr Ninad Raut

Excursions/ Field Trips/ Visits



MSc Excursion to Somaiya Medicinal Garden



TYBSc Excursion to Go Green Nursery



Students learning making of Terrarium



FYBSc Excursion to Victoria gardens



SYBSc Excursion Hiranandani gardens



TYBSc Visit to Baramati