



सत्यमेव जयते

Government of Maharashtra



HBSU

Dr. Homi Bhabha State University

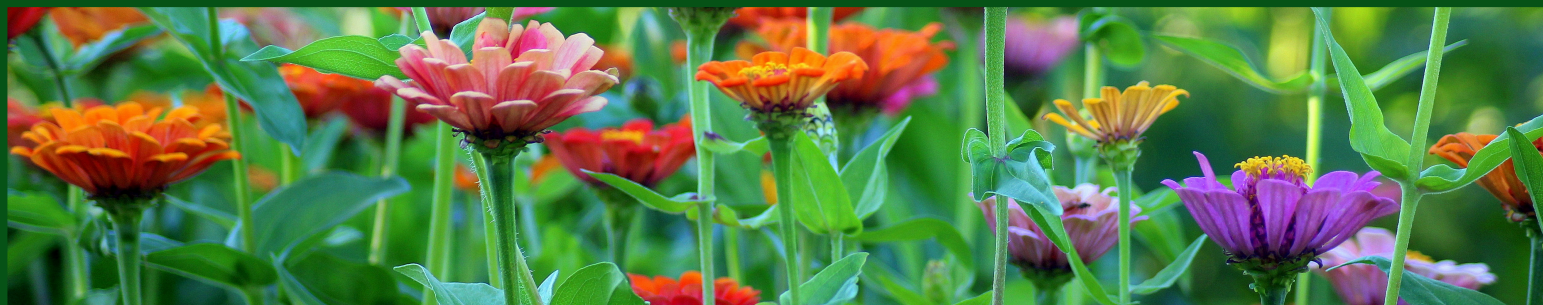
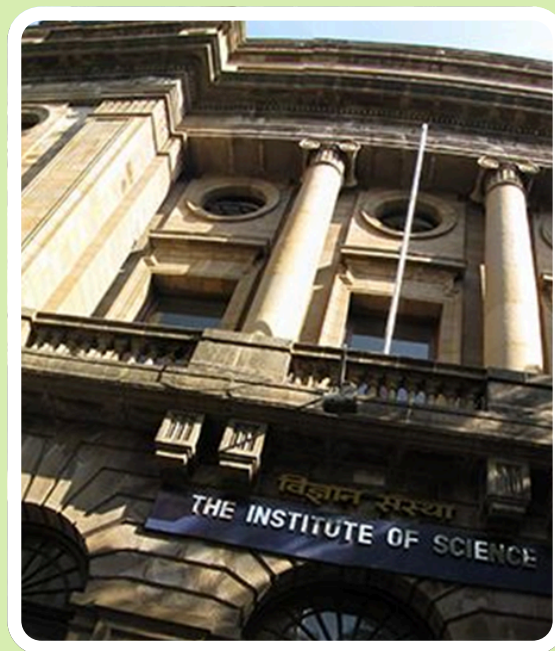
Dr. Homi Bhabha State University, Mumbai

**The Institute of Science,
Mumbai**

ESTD 1920

Department of Botany

2025-2026



15, Madame Cama Road, Mumbai, Maharashtra 400032

<https://hbsu.ac.in>

CONTENT



ABOUT THE DEPARTMENT

MESSAGE FROM THE HOD

FACULTY MEMBERS

PROGRAMMES WE OFFER

ELIGIBILITY CRITERIA

BOARD OF STUDIES

CREDIT DISTRIBUTION (NEP)

FESTS & EVENTS

KEY FEATURES

**INTERNSHIP, PLACEMENT & JOB
OPPORTUNITIES**

CONTACT DETAILS



ABOUT THE DEPARTMENT

Since its inception in 1923, the Botany Department has boasted a roster of esteemed botanists who have left indelible marks on the field. Notably, luminaries like Professors L. A. Ajrekar, R. H. Dastur, F. R. Bharucha, Mrs. E. Gonzalves, V. R. Dnyansagar, Dr. V. D. Tilak, and Mrs. S. Chitaley, have graced its faculty over the years.

Prof. F. R. Bharucha, who also served as the Director of The Institute of Science, garnered global acclaim for his groundbreaking research in grassland and desert ecology. His leadership extended to roles such as President of the Indian Ecological Society and Vice President of the International Botanical Congress. UNESCO entrusted him with the task of compiling a report on ecological research, while his expertise was sought after by the University of Syria and the United Nations. Meanwhile, Prof. V. R. Dnyansagar's expertise as a cytogeneticist earned him international recognition, and Prof. Mrs. Chitale pioneered the widely adopted Chitale method for preserving plant material as a distinguished paleobotanist. Dr. V. D. Tilak's pioneering work in floral and nodal anatomy has been referenced by renowned botanists Arthur Cronquist and Armen Thakhtajan, further solidifying the department's legacy.

Additionally, Prof. S. B. Chaphekar's contributions to ecology and Dr. K. V. Hipalgaonkar's expertise in plant physiology have further enriched the department's scholarly endeavors, cementing its position as a hub of botanical excellence.

The Botany Department, led by Prof. Aparna A. Saraf, fosters active research within each faculty member's area of expertise. Ph.D. programs in the department encompass a broad spectrum of research interests, including Phytochemistry, Nanotechnology, and Environmental Botany.

The Department is well-equipped with state-of-the-art instrumentation. It offers specializations in Plant Physiology and Biochemistry, Molecular Biology and Plant Biotechnology, and Environmental Botany.

Instruments such as HPLC, HPTLC, PCR, Inverted Microscopes, Microphotograph facilities, Nanoparticle Tracking Analyzers (NTA), Multiple Solvent Extractor Units, Guava Cell Counters, UV Visible Spectrometry for solid and liquid samples, Lyophilizers, and Bioreactors, supports innovative research initiatives.

Complementing these facilities are the Plant Tissue Culture laboratory, Greenhouse, and specialized Cell Inoculation Chambers. The department's 1.6-acre Botanical Garden hosts a diverse array of rare plants, spices, and medicinal flora, while its collection of historic Herbariums adds depth to its academic resources.



A MESSAGE FROM THE HOD



**PROF. APARNA SARAF
HEAD OF THE BOTANY
DEPARTMENT
THE INSTITUTE OF SCIENCE,
MUMBAI**

IT IS MY PLEASURE TO WELCOME YOU TO THE BOTANY DEPARTMENT AT THE INSTITUTE OF SCIENCE, MUMBAI. AS THE HEAD OF THE DEPARTMENT, I AM HONoured TO LEAD A TEAM OF DEDICATED FACULTY MEMBERS AND STUDENTS WHO ARE PASSIONATE ABOUT EXPLORING THE WONDERS OF THE PLANT SCIENCE.

OUR DEPARTMENT IS EQUIPPED WITH STATE-OF-THE-ART INSTRUMENTATION FACILITIES FOR PROVIDING AN IDEAL ENVIRONMENT FOR CUTTING-EDGE RESEARCH AND ACADEMIC PURSUITS. WITH SPECIALIZATIONS IN PLANT PHYSIOLOGY AND BIOCHEMISTRY, MOLECULAR BIOLOGY AND PLANT BIOTECHNOLOGY, AND ENVIRONMENTAL BOTANY, WE OFFER A DIVERSE RANGE OF OPPORTUNITIES FOR STUDENTS TO DELVE INTO THEIR AREAS OF INTEREST.

THE BOTANY DEPARTMENT, DESIGNED TO ACCOMMODATE 20 POSTGRADUATE STUDENTS, IS CURRENTLY NURTURING A VIBRANT COMMUNITY OF 23 DOCTORAL CANDIDATES, FOSTERING AN ENVIRONMENT RICH IN ACADEMIC EXPLORATION AND COLLABORATION. MSc PART I STUDENTS ARE ENGAGED IN A DYNAMIC INTERNSHIP PROGRAM, COLLABORATING CLOSELY WITH INDUSTRY PARTNERS AND ESTEEMED RESEARCH INSTITUTIONS TO GAIN INVALUABLE HANDS-ON EXPERIENCE AND REAL-WORLD INSIGHTS.

AT THE BOTANY DEPARTMENT, WE ARE COMMITTED TO FOSTERING A CULTURE OF RESEARCH EXCELLENCE. OUR FACULTY MEMBERS ARE ACTIVELY ENGAGED IN RESEARCH ACTIVITIES, FOCUSING ON AREAS SUCH AS PHYTOCHEMISTRY, NANOTECHNOLOGY, AND ENVIRONMENTAL BOTANY. THROUGH OUR PH.D. PROGRAMS, WE AIM TO NURTURE THE NEXT GENERATION OF LEADERS IN BOTANICAL SCIENCE. FURTHERMORE, OUR DEPARTMENT BOASTS A BOTANICAL GARDEN, HOUSING RARE PLANTS, SPICES, AND MEDICINAL FLORA, PROVIDING A LIVING LABORATORY FOR OUR STUDENTS TO EXPLORE AND LEARN FROM NATURE FIRSTHAND. ADDITIONALLY, OUR COLLECTION OF OLD HERBARIUMS SERVES AS A VALUABLE RESOURCE FOR ACADEMIC STUDY AND RESEARCH.

THE DEPARTMENT ORGANIZES A RANGE OF ENRICHING INITIATIVES, INCLUDING INSTRUMENTATION WORKSHOPS, GUEST LECTURES BY EXPERTS, IMMERSIVE FIELD VISITS, EXCITING EXCURSIONS, INSIGHTFUL INDUSTRIAL TOURS, AND AN INTERCOLLEGIATE FEST. THESE PROGRAMS ARE THOUGHTFULLY DESIGNED TO PROVIDE STUDENTS WITH DIVERSE LEARNING EXPERIENCES AND OPPORTUNITIES FOR PERSONAL AND PROFESSIONAL GROWTH.

I INVITE YOU TO EXPLORE OUR WEBSITE FURTHER TO LEARN MORE ABOUT OUR DEPARTMENT, FACULTY, RESEARCH PROJECTS, AND ACADEMIC PROGRAMS. WHETHER YOU ARE A PROSPECTIVE STUDENT, CURRENT STUDENT, FACULTY MEMBER, OR VISITOR, WE LOOK FORWARD TO WELCOMING YOU TO OUR VIBRANT BOTANICAL COMMUNITY AT THE INSTITUTE OF SCIENCE, MUMBAI.

BEST REGARDS,

FACULTY MEMBERS



DR. RAJESH RAUT

Research thrust area:
Green Synthesis of Metal and Alloy Nanoparticles and their applications in diagnosis, medicine, sensors, nano fertilizers, photothermal therapy, and water filtration. Characterization of the stabilizing agent responsible for the synthesis of metal nanoparticles. Secondary Metabolites enhancement in cell cultures.



PROF. (DR.) UMESH KAKDE

Research thrust area:
Environmental biotechnology, bioremediation, biodegradation and utility of agricultural wastes as bio-fertilizers, mass cultivation of SCP, bio-fertilizers and bio-control microbes, Air and water pollution control, carbon sequestration, Biological treatment of wastewater and solid waste management, greenbelt development, plant-pathogen interaction, Bioaerosol studies, Phytochemistry and Nanobiotechnology

DR. JAYA PAWAR



PROGRAMMES WE OFFER

**M.SC. (BOTANY)
PH.D. (BOTANY)**

ELIGIBILITY CRITERIA

**M.SC.(AS PER THE UNIVERSITY GUIDELINES)
PHD (AS PER THE VCD)**





BOARD OF STUDIES

- 1. Dr. Rajesh Raut**
- 2. Prof. Aparna Saraf**
- 3. Prof. Umesh Kakde**
- 4. Prof. Sakshi Chaubal**
- 5. Prof. Sanjay Jagtap**
- 6. Dr. Jaya Pawar**
- 7. Dr. Rahul Zanan**
- 8. Prof. Nitin Lambhane**
- 9. Dr. Shabnam**
- 10. Dr. K V Hippalgaonkar**
- 11. Dr. Vasant Ramakant Pusalkar**
- 12. Dr. Gautam Talukdar**
- 13. Ms. Varsha Gaikwad**
- 14. Ms. Sana Shad**

CREDIT DISTRIBUTION (NEP)

NEP Credit structure: Two Years PG Program (M.Sc.) in BOTANY

Semester I & II

| Dr. Homi Bhabha State University, Mumbai. Proposed structure for Two Year PG Program (M.Sc.) Degree | | | | |
|--|------------------------------------|---|---|---------|
| Semester | Course Type | Course Code | Course Title | Credits |
| I | Discipline Specific Core I | MSBODC101T | Plant Diversity I Algae, Fungi, Bryophytes and Pteridophytes | 4 |
| | | MSBODC101P | | 2 |
| | Discipline Specific Core II | MSBODC102T | Plant Physiology and Ecology | 4 |
| | | MSBODC102P | | 2 |
| | Discipline Specific Elective I | MSBODE101T | Molecular Biology, Cytogenetics and Biotechnology-I | 4 |
| | | MSBODE101P | | 2 |
| | Discipline Specific Elective I | MSBODE102T | Plant Physiology, Biochemistry and Phytochemistry-I | 4 |
| | | MSBODE102P | | 2 |
| Discipline Specific Elective I | MSBODE103T | Ecology, Environmental Botany and Biotechnology-I | 4 | |
| | MSBODE103P | | 2 | |
| Research Methodology | MSBORM101T | Research Methodology | 4 | |
| Total 22 Credits for Semester I | | | | |
| II | Discipline Specific Core III | MSBODC201T | Plant Diversity II Gymnosperms, Angiosperms, Paleaobotany and Developmental Botany | 4 |
| | | MSBODC201P | | 2 |
| | Discipline Specific Core IV | MSBODC202T | Genetics, Cell Biology & Plant Breeding | 4 |
| | | MSBODC202P | | 2 |
| | Discipline Specific Elective II | MSBODE201T | Molecular Biology, Cytogenetics and Biotechnology-II | 4 |
| | | MSBODE201P | | 2 |
| | Discipline Specific Elective II | MSBODE202T | Plant Physiology, Biochemistry and Phytochemistry-II | 4 |
| | | MSBODE202P | | 2 |
| Discipline Specific Elective II | MSBODE203T | Ecology, Environmental Botany and Biotechnology-II | 4 | |
| | MSBODE203P | | 2 | |
| On Job Training/Field Project | MSBOFP201 | On Job Training/Field Project | 4 | |
| Total 22 Credits for Semester II | | | | |



Semester III & IV

| Exit Option: Award of PG Diploma in Discipline with 44 credits OR Continue with Discipline | | | | |
|--|----------------------------------|---|---|---|
| III | Discipline Specific Core V | MSBODC301T | Techniques and Instrumentation I | 4 |
| | | MSBODC301P | | 2 |
| | Discipline Specific Core VI | MSBODC302T | Cell and Molecular Biology-I | 4 |
| | | MSBODC302P | | 2 |
| | Discipline Specific Elective III | MSBODE301T | Molecular Biology, Cytogenetics and Biotechnology-III | 4 |
| | | MSBODE301P | | 2 |
| | Discipline Specific Elective III | MSBODE302T | Plant Physiology, Biochemistry and Phytochemistry-III | 4 |
| | | MSBODE302P | | 2 |
| Discipline Specific Elective III | MSBODE303T | Ecology, Environmental Botany and Biotechnology-III | 4 | |
| | MSBODE303P | | 2 | |
| Research Project | MSBORP301P | Research Project | 4 | |
| Total 22 Credits for Semester III | | | | |
| IV | Discipline Specific Core VII | MSBODC401T | Techniques and Instrumentation II | 4 |
| | | MSBODC401P | | 2 |
| | Discipline Specific Core VIII | MSBODC402T | Cell and Molecular Biology-II | 4 |
| | | MSBODC402P | | 2 |
| | Discipline Specific Elective IV | MSBODE401T | Molecular Biology, Cytogenetics and Biotechnology-IV | 4 |
| | Discipline Specific Elective IV | MSBODE402T | Plant Physiology, Biochemistry and Phytochemistry-IV | 4 |
| | Discipline Specific Elective IV | MSBODE403T | Ecology, Environmental Botany and Biotechnology-IV | 4 |
| Research Project | MSBORP401P | Research Project | 6 | |
| Total 22 Credits for Semester IV | | | | |
| Two-year PG Degree in Discipline with 88 Credits. | | | | |



FESTS & EVENTS



**One Day Interactive Session
on Instrumentation Facility at
the Department: 6th May 2022**



**World Environment
Day: 3rd June 2022**



**Plantation drive on Rare
Endangered Plant: 12th
August 2022**



**Industrial Visit to Nishant
Aroma, Palghar: 17th
September 2022**



**LONG EXCURSION TO SHIMLA-MANALI-DALHOUSIE-
KHAJJIYAR-AMRITSAR 11TH JANUARY TO 22ND JANUARY
2023**



KEY FEATURES

THE ONLY BOTANY DEPARTMENT IN MUMBAI OFFERING DEDICATED PG AND PHD PROGRAMS. THE DEPARTMENT HOUSES STATE-OF-THE-ART FACILITIES TAILORED TO THE NEEDS OF MSC AND PHD SCHOLARS. THE DEPARTMENT IS EQUIPPED WITH ADVANCED INSTRUMENTATION INCLUDING HPLC, HPTLC, PCR, INVERTED MICROSCOPES, MICROPHOTOGRAPHY RESOURCES, NANOPARTICLE TRACKING ANALYZERS (NTA), MULTIPLE SOLVENT EXTRACTOR UNITS, GUAVA CELL COUNTERS, UV VISIBLE SPECTROMETRY FOR SOLID AND LIQUID SAMPLES, LYOPHILIZERS, AND BIOREACTORS, ENABLING STUDENTS TO HAVE ACCESS TO CUTTING-EDGE TECHNOLOGY FOR THEIR RESEARCH ENDEAVORS.

IN ADDITION TO THESE INSTRUMENTAL RESOURCES, THE DEPARTMENT BOASTS SPECIALIZED LABS SUCH AS A TISSUE CULTURE LAB AND A COMPUTER LAB TO SUPPORT VARIOUS SCIENTIFIC PURSUITS. A COMPREHENSIVE DEPARTMENTAL LIBRARY ENRICHES SCHOLARLY EXPLORATION, WHILE THE BOTANICAL GARDEN SHOWCASES OVER 1500 MEDICINAL PLANTS, PROVIDING A LIVING LABORATORY FOR BOTANICAL STUDIES. MOREOVER, THE HERBARIUM COLLECTION FURTHER ENHANCES ACADEMIC RESOURCES, ENSURING A HOLISTIC LEARNING ENVIRONMENT FOR BOTANICAL ENTHUSIASTS.

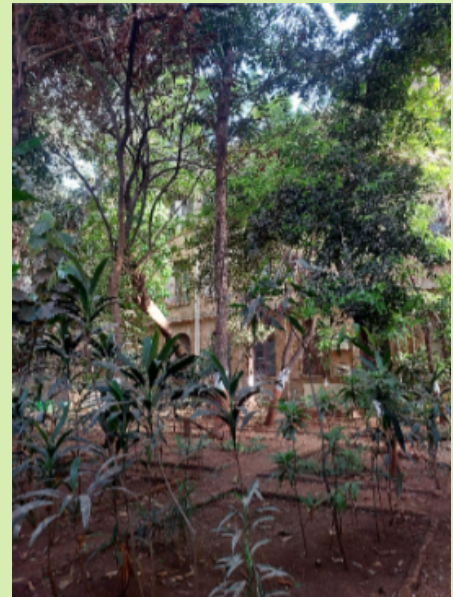
SCHOLARSHIPS OFFERED TO BOTANY STUDENT

- **PROF. SOHONIE MEMORIAL PRIZE FOR BOTANY (RS 750/-):** FOR AN INSTITUTE STUDENT WHO SECURED THE HIGHEST NUMBER OF MARKS AT THE MSC. PART I UNIVERSITY EXAMINATION IN BOTANY FROM AMONG INSTITUTE STUDENTS.
- **PROF. SOHONIE MEMORIAL PRIZE FOR BOTANY (RS 750/-):** FOR AN INSTITUTE STUDENT WHO SECURED THE HIGHEST NUMBER OF MARKS AT THE MSC. PART II UNIVERSITY EXAMINATION IN BOTANY FROM AMONG INSTITUTE STUDENTS.
- **DR. ASHOK M. JOSHI PRIZE:** FOR A STUDENT SECURING THE HIGHEST MARKS AT M.SC. PART I IN THE SUBJECT OF BOTANY AT UNIVERSITY EXAMINATION AND WHO WILL BE CONTINUING HIS/HER STUDIES FOR MSC PART II AT THE INSTITUTE OF SCIENCE.(RS. 8000)
- **DR. K.V. HIPPALGAONKAR ENDOWMENT AWARD FOR UNIVERSITY TOPPER IN BOTANY AT THE POST GRADUATE LEVEL.**
(SPECIALIZATION: PLANT PHYSIOLOGY & BIOCHEMISTRY)
- **PROF. SHARAD CHAPHEKAR ENDOWMENT AWARD FOR UNIVERSITY TOPPER IN BOTANY AT THE POST GRADUATE LEVEL.**
(SPECIALIZATION: ENVIRONMENTAL BOTANY)
- **ISMAA CONVENTION AWARDS: "THE I.SC. MUMBAI ALUMNI ASSOCIATION'S CONVOCATION AWARD FOR M.SC. IN BOTANY."**

FACILITIES IN THE DEPARTMENT



M.Sc. Laboratory



Botanical Garden



Instrumentation facility





INTERNSHIP, PLACEMENT & JOB OPPORTUNITIES

INDUSTRIES & REPUTED RESEARCH INSTITUTE

CONTACT DETAILS

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**Dr. Jaya Pawar,
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**Dr. Rajesh Raut
rajesh@iscm.ac.in**

