

# DEPARTMENT OF BOTANY

## FACULTY OF SCIENCE

### Prospectus and Admission Guidelines 2021 (onwards)



**THE MAHARAJA SAYAJIRAO UNIVERSITY OF BARODA**  
**VADODARA-390002, GUJARAT, INDIA**

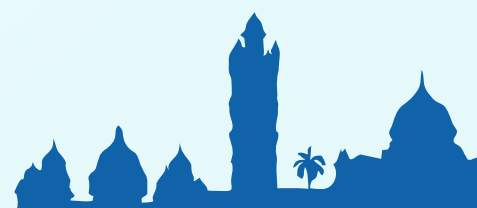


## H. H. MAHARAJA SAYAJIRAO GAEKWAD-III

### MISSION STATEMENT

#### VISION AND MISSION AS PERCEIVED BY H. H. MAHARAJA SAYAJIRAO GAEKWAD-III

*“The progress of a nation requires that its people should be educated. Knowledge is a necessity of man. It instills in him a desire to question and to investigate, which leads him on the path of progress. Education, in the broadest sense, must be spread everywhere. Progress can only be achieved by the spread of education. Cooperation is necessary to achieve any worthy end and this readiness to cooperate will not be found in people if they are not educated.”*







सत्यं शिवं सुन्दरम्

# DEPARTMENT OF BOTANY

FACULTY OF SCIENCE,  
THE MAHARAJA SAYAJIRAO UNIVERSITY OF BARODA,  
VADODARA-390 002, GUJARAT, INDIA



सत्यं शिवं सुन्दरम्

# PROSPECTUS | 2021-22

**PROGRAMME AND CURRICULUM**  
**B.Sc., M.Sc., Ph.D.**

**STUDENT INTAKE CAPACITY**  
**B.Sc. : 120 + 12 + 12 / YEAR**  
**M.Sc. : 30 + 3 + 3 / YEAR**  
**Ph.D. : 15 / YEAR**

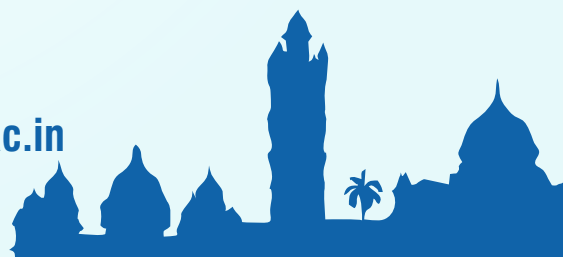
**FACULTY MEMBERS :**  
**13 Permanent + 7 Ad-hoc**

**MODE OF ADMISSION :**  
**MERIT BASED FOR B.Sc.**  
**ENTRANCE BASED FOR M.Sc**

## CONTACT

Email: [nsr.krishnayya-botany@msubaroda.ac.in](mailto:nsr.krishnayya-botany@msubaroda.ac.in)

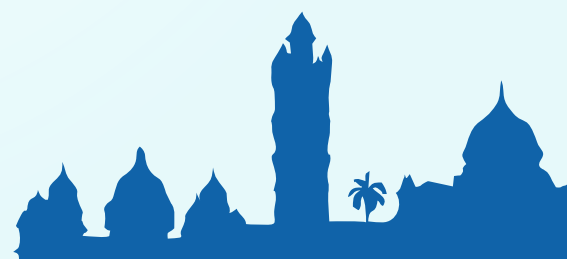
PHONE: +91-265-2791891





# DEPARTMENT OF BOTANY

- Department of Botany at The Maharaja Sayajirao University of Baroda is unique in its expansive and interdisciplinary perspective, with a culture that twines intellectual inquisitiveness over a range of fields. Our faculty and students work collectively to disentangle mysteries of plants life in an ever-changing world.
- The mission of the department is to mentor generation next students about how plants can expansively contribute and cater to the needs of nature and humanity. The department takes a multi-dimensional approach in exploring Plant sciences as a subject of interest to both under graduate, post-graduate, and doctoral students. Our faculty is passionate in addressing contemporary research questions in specialised areas such as Phytodiversity, Ecology, Plant developmental processes, Specialised metabolites, Plants propagation and conservation. Department's culture is intellectual openness and collaborative spirit providing a trusting and supportive environment to the students and transforming them as modern learners of Botany.
- Department of Botany is known for its quality of teaching and research. The department has funding from DST-FIST and UGC-SAP programme. More than 35 research scholars are working in the field of Plant physiology, Plant anatomy, Plant Tissue Culture, Ecology, Taxonomy, Remote sensing, Plant Molecular Biology, Phytochemistry and Phytopathology. Funding of more than 3.5 crores for research is available from agencies as DST, SERB, DBT, ISRO, MoEF, SSNL, NMPB, GBB,GSBTM, BSI, UGC, Department of Forest, Govt. of Gujarat, DOEn, ICAR, CSIR, UNIDO and GSFC Science Foundation have granted to the department for the same.
- The department has several advanced research facilities to work with due to which infrastructure has been strengthened. The department also has Herbarium and E-herbarium facility.
- Botanical garden and arboretum which is managed by the department has a number of rare and economical plants. Support provided by National Medicinal Plant Board has helped in developing a rare collection of medicinal plants. Students from different institutions and schools regularly visit the garden.



## DEPARTMENT OF BOTANY AT GLANCE

- ❖ Established in the year 1951
- ❖ Program and Curriculum in the Department are BSc, MSc and PhD
- ❖ Department has 13 + 7 faculty members
- ❖ Department is supported by DST-FST & UGC-DRS programs
- ❖ Research in the Department is funded by DST, DBT, SERB, UGC, GSBTM, GSFD, MoEF, NMPB, MPGCPD, IIRS and ISRO.

## FACILITY AVAILABLE IN THE DEPARTMENT

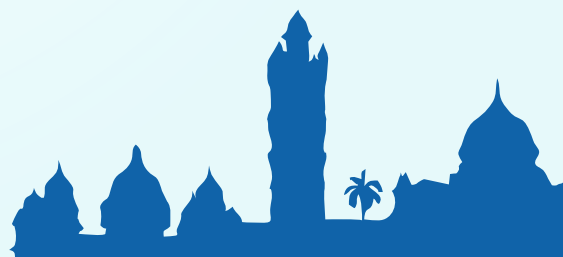
Botanical Garden and Arboretum  
Herbarium and E-herbarium  
Green house Facility  
Plant Tissue Culture facility  
Satellite data and-  
analysis software's  
Gas Chromatography  
HPLC  
Microtome  
Spectrophotometer  
Nano-spectrophotometer

Fluorescence microscopes  
Stereo zoom microscopes  
CPD and sputter coating-  
unit for SEM  
PCRs  
Geldoc system  
Plant growth chambers  
Refrigerated centrifuges  
-80C and -20C Freezers  
Biosafety cabinets  
Laminar flows

## FACULTY MEMBERS

**PROF. N.S.R. KRISHNAYYA**  
**PROF. G. SANDHYA KIRAN**  
**PROF. VINAY M. RAOLE**  
**PROF. ARUNA G. JOSHI**  
**PROF. SUSY ALBERT**  
**PROF. PUNITA S. PARIKH**  
**PROF. SUNIL K. SINGH**

**DR. NAGESH CHIRUMAMILLA**  
**DR. D. G. SHAH**  
**DR. P. S. NAGAR**  
**DR. KISHORE S. RAJPUT**  
**MR. SANKET D. CHAROLA**  
**MR. RAVINAYAK P**



# RESEARCH LABORATORY

**ECOLOGY LAB**

**ECOPHYSIOLOGY & RS-GIS LAB**

**ANGIOSPERMS TAXONOMY LAB**

**PLANT TISSUE CULTURE LAB**

**SEED ANATOMY LAB**

**PLANT CELL AND MOLECULAR BIOLOGY LAB**



**PLANT GENETICS LAB**

**ECOTOXICOLOGY AND LOWER PLANTS LAB**

**PHYTOCHEMISTRY LAB**

**PLANT ANATOMY LAB**

**PLANT PHYSIOLOGY LAB**



# PROGRAMME AND CURRICULUM ACTIVITIES

Course offered	Number of seats	Eligibility
Doctor of Philosophy in Botany	15/ Year	Postgraduate degree in Botany / Biological Sciences. & Any of PET, SET, GATE, NET
Master of Science in Botany	33/ Year	Graduate degree in Botany/Biological Sciences
Bachelor of Science in Botany	120/ Year	HSC/ Intermediate in Biology

## PhD Course

Departmental PhD curriculum has been developed to assist and train Ph.D. students in research skills and scientific writing. Ph.D. students typically take courses during their first year. Students then dedicate their efforts entirely to research in their own selected field.

COURSE 1 : ADVANCES IN PLANT RESEARCH

COURSE 2 : SCIENTIFIC WRITING IN PLANT SCIENCES



# COURSE CONTENT OF M.Sc BOTANY

Semester	Course Code	Course Title
1	BOT 2101	Prokaryotes, Phycology, Mycology and Mycorrhizal Biotechnology
1	BOT 2102	Bryophyta, Pteridophyta and Gymnosperms
1	BOT 2103	Angiosperm Systematics
1	BOT 2104	Cell Biology
1	BOT 2105	Practical
1	BOT 2106	Practical
2	BOT 2107	Seminar and Field Work
2	BOT 2201	Developmental Biology
2	BOT 2202	Developmental Processes
2	BOT 2203	Basic Molecular Biology
2	BOT 2204	Analytical Techniques
2	BOT 2205	Practical
2	BOT 2206	Practical
2	BOT 2207	Field Work (Botanical Excursion)
3	BOT 2301	Plant Physiology – I
3	BOT 2302	Plant Ecology – I
3	BOT 2303	Gene Structure and Gene Regulation
3	BOT 2304	Plant Resources & Biotechnology
3	BOT 2305	Optional Paper – I Biodiversity and Ecological Informatics
3	BOT 2306	Optional Paper – I Plant Tissue Culture - I
3	BOT 2307	Optional Paper – I Climate Change
3	BOT 2308	Optional Paper – I Applied Botany
3	BOT 2309	Optional Paper – I Angiosperm Taxonomy – I
3	BOT 2310	Practical
3	BOT 2311	Practical
4	BOT 2401	Plant Physiology – II
4	BOT 2403	Molecular Genetics
4	BOT 2404	Optional Paper II Global Change Biology
4	BOT 2405	Optional Paper II Plant Tissue Culture II
4	BOT 2406	Optional Paper II Population Biology
4	BOT 2407	Optional Paper II Angiosperm Taxonomy - II
4	BOT 2408	Optional Paper II Phytochemistry and Pharmacognosy
4	BOT 2409	Dissertation
4	BOT 2410	Practical
4	BOT 2411	Practical
4	BOT 2412	Viva-voce

# COURSE CONTENT OF B.Sc. BOTANY

Semester	Course Type	S No	Code	Course Title
1	Core	1	BOT1101PT	Diversity of Plants
1		2	BOT1102PT	Plant Resources
1		3	BOT1103PT	Botany Practical-I
2	Core	1	BOT1201PT	Plant Architecture
2		2	BOT1202PT	Plant Interactions
2		3	BOT1203PT	Botany Practical-II
3	Core	1	BOT1301PT	Diversity of Non-flowering Plants
3		2	BOT1302PT	Cell Biology
3		3	BOT1303PT	Botany Practical-III
3	Generic Elective	1	BOT1301ET	Plant Systematics and Development
3		2	BOT1303ET	Physiology and Biochemistry of Plants
3	Ability Enhancement	1	BOT1001FT	Applied Techniques in Botany
4	Core	1	BOT1401PT	Plant Ecology
4		2	BOT1402PT	Genetics and Plant Breeding
4		3	BOT1403PT	Botany Practical-IV
4	Generic Elective	1	BOT1401ET	Plant Ecology and Adaptive Biology
4		2	BOT1403ET	Genetic Engineering & Plant Biotechnology
4	Ability Enhancement	1	BOT1002FT	Plant Identification Techniques
5	Core	1	New Course	Plant Molecular Biology
5		2	New Course	Angiosperms Systematics
5		3	New Course	Botany Practical-V
5	Discipline Specific	1	New Course	Plant Evolution and Biodiversity
5		2	New Course	Phycology, Mycology & Plant Pathology
5		3	New Course	Plant Biochemistry
5		4	New Course	Biophysics and Instrumentation
5		5	New Course	Botany Practical-VI
5	Skill Enhancement	1	New Course	Horticulture and Gardening
6	Core	1	New Course	Plant Physiology
6		2	New Course	Developmental Biology
6		3	New Course	Botany Practical-VII
6	Discipline Specific	1	New Course	Plant Biotechnology
6		2	New Course	Stress Physiology
6		3	New Course	Biostatistics and Bioinformatics
6		4	New Course	Biosafety and IPR
6		5	New Course	Botany Practical-VIII
6	Skill Enhancement	1	New Course	Herbal Technology & Natural Resources



## ADMISSION PROCEDURE

The application form is to be filled online only. A student willing to apply for more than one MSc Program should submit separate application for each and **the application form fee in such cases will have to be paid separately for each course/program.** The students who have applied and fulfill the criteria of minimum qualifications for eligibility can appear in the entrance examination. **A written Entrance Test will be conducted for deciding admission to each programme.**

## ELIGIBILITY CRITERIA

To appear in **entrance test**, following **eligibility criteria** is to be fulfilled:

1. A student with B. Sc. or an equivalent degree (10+2+3 pattern of education) in the relevant subject from a university in any state or Union Territory of India or a global University/ Education Institution recognized by The Maharaja Sayajirao University of Baroda is eligible. The minimum marks/ grade points in qualifying examination shall be as follows:
  - i. **For general category candidates**  
**50% or equivalent grade points** (considering all the three years).
  - ii. **For SC/ST candidates**  
Must have passed qualifying examination.
  - iii. **For SEBC candidates**  
**45% or equivalent grade points for applicants from Gujarat and**  
**50 % or equivalent grade points for applicants from other states**  
**and Union Territories in India**
2. Candidates who have appeared for final year of the qualifying examination may also apply and appear in the Entrance Test. However, their admission will be confirmed only on the submitting original marksheet of the qualifying examination and fulfillment of eligibility requirement, at the time of Admission.

## CRITERIA FOR CASTE -WISE RESERVATION AND OTHER QUOTA

**Government of Gujarat rules for the reservation quota will be applied:**

**SC: 7%, ST: 15%, SEBC: 27%, General: 51%.** All original certificates should be produced at the time of document verification and admission.

If any relevant certificate is not produced at the time of admission, the student will NOT be considered for particular reservation category.

**A student, irrespective of her/his reservation category, for admission, will be first considered for**

### **GENERAL category.**

- a) The **SC and ST students of other than the Gujarat state** should produce a certificate from competent authority of Government of Gujarat if their original certificate DO NOT indicate that their caste / Tribes recognised under such category in Gujarat also.
- b) The **SEBC category** are required to produce a valid **non creamy layer certificate** from competent authority.
- c) There will be **10 % supernumerary seat (additional seats over and above the total number of seats)** reservation of the total seats for **Economically Weaker Sections (EWS)** Within this 10% quota **33%** seats shall be further sub reserved for female students belonging to the same Economically Weaker Sections.
- d) **Reservation for physically disabled students: 5%** seats of the total seats (to be included under each different category with in the limit of total reservation under a particular reservation category like SC/ST/SEBC/GEN) are reserved for the persons with benchmark disability in accordance with the provisions of the section 32 of the rights of persons with Disabilities ACT, 2016. They should produce a **current/recent year certificate of Civil Surgeon** stating the type of disability, extent (%) of disability and state (Progressive/non-progressive) of disability. Only those students who have **minimum 40% disability** are eligible to be considered for the reservation.
- e) **Reservation for Defence & Ex/In- Servicemen 1%** seats of the total seats (to be included under each different category with in the limit of total reservation under a particular reservation category like SC/ST/SEBC/GEN) are reserved for wards of Defence & Ex/In Servicemen.
- f) **Reservation for Kashmir Migrants 1% supernumerary seat reservation quota**

(Additional seats, **NOT** included under each different category with in the limit of total reservation under a particular reservation category like SC/ST/SEBC/GEN)

g) **Advantage to Sports Persons: Please note that the benefit to sports persons is granted ONLY if the student has participated/awarded medals in State level or higher level competitions.**

- i. Students who participated at State level: **3%** marks to be added to their eligibility marks
- ii. Students who won medal at State level or participated at National level: **5%** marks to be added to their eligibility marks

Students who have won medal at National level or participated/ won medal at International level: to be granted **Direct admission**

h) **Reservation for wards of MSU Staff: 01% supernumerary seat reservation quota**

(Additional seats, **NOT** included under each different category with in the limit of total reservation under a particular reservation category like SC/ST/SEBC/GEN) **only in Regular Payment Fee Category** for the wards of the permanent or temporary employees of The Maharaja Sayajirao University of Baroda. They should produce relevant documents at the time of admission.

- i) If the **seats remain vacant** after stipulated admission rounds in the SC or ST reservation categories then these seats can be **interchanged** among SC and ST.
- j) After granting admission to all the students of any reserve category on respective reserve seats, if the **reserved category seats remain vacant then these seats shall be transferred to General (Unreserved) category seats.**

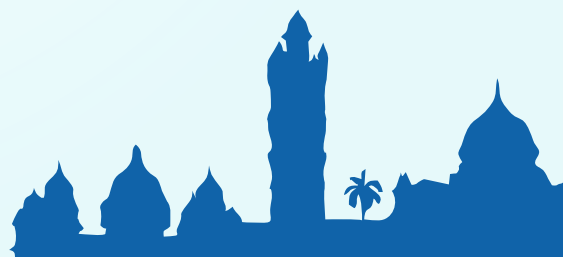
**Supernumerary seats which remain vacant shall NOT be transferred to any other category.**

**Admission Fees is to be paid through online mode only.**

**CASH/CHEQUE OR ANY OTHER MODE OF TRANSACTION NOT ACCEPTED**

### **INSTRUCTIONS TO THE CANDIDATES**

1. **The admissions will be strictly based on the merit** Just fulfilling the eligibility criteria DOES NOT GUARANTEE admission.
2. The admission to the course is PURELY TEMPORARY and subjected to various scrutiny till the unique Permanent Registration Number (PRN) of the candidate is generated.
3. If the information provided by the candidate is incorrect or if any unfair





practice is followed or the candidate is unable to submit any of the required certificates in the stipulated time period, his/ her admission is liable to cancellation.

4. **Maintenance of Stipulated Attendance of Students**(Ordinance 183) The following shall be the minimum attendance necessary:
  - a. In a semester an overall attendance of at least 75% of the number of lectures delivered and tutorials, seminars etc. arranged in all subjects, provided the total attendance in each of the subjects offered is at least 60%.
  - b. In a semester an overall attendance of at least 80% of the days allotted for practical classes and laboratory work in each subject.
5. General rules governing the conduct of students in the university:
  - i. A student must do nothing either inside or outside the University that will interfere with its orderly working and discipline.
  - ii. This comprehensive rule covers most cases that are likely to arise. It forbids:
    - a. Impolite or unseemly behaviour in classroom or University premises during working hours of the College and the Faculty.
    - b. Attempt to persuade other students to abstain themselves from regular classes.
    - c. Damage to or defacement of University furniture, fittings and property.
    - d. Disobedience of notifications or instructions issued by the Principals/Deans/Heads of the Departments and Members of the staff duly authorized.
  - iii. As per UGC regulation, stipulated attendance (Ordinance 183) is required for permitting students to appear for final examination. If unavoidably absent on account of health, urgent private affairs or other reasons, they must be prepared to state the exact reason for absence.
  - iv. Students are expected to behave with courtesy towards the members of the staff, their fellow students and all visitors to the Institution.
  - v. Sexual harassment will lead to severe punishments like suspension, rustication from the University / College/ Institution. Disciplinary action is as prescribed under The M. S. University of Baroda rules.
  - vi. Ragging is prohibited on MSU Campus, ragging is a criminal offence and

is liable to severe punishment, including suspension, rustication and imprisonment.

vii. **Compulsory Thalassemia Blood Screening:** Thalassemia blood testing is made compulsory by Government of Gujarat. Final Eligibility of any student for admission to any course to this University will be granted ONLY after she/ he submits report of the Thalassemia blood screening. Students are encouraged to get the test done and submit the report at the time of Admission. Those students who already have a Thalassemia Test Report done earlier, need not get it done again. They can submit copy of earlier report.

### GRADE POINT SYSTEM

A system comprising of 7 grade points (4 to 10) will be followed for evaluating a candidate in every course. Both mid-semester and end-semester exams are counted for final grade points.

Grade Points	Description	Percentage of Marks	Division/Grade	Range
10	Outstanding	90% - 99%	First / O	Above 9.01
9	Excellent	80% - 89%	First / A	8.01 – 9.00
8	Very Good	70% - 79%	First / B	7.01 – 8.00
7	Good	60% - 69%	First / C	6.01 – 7.00
6	Fair	50% - 59%	Second / D	5.01 – 6.00
5	Average	40% - 49%	Pass / E	4.01 – 5.00
4 – 0	Dropped	Below 40%	F	Below 4.00

CGPA	Class
CGPA < 4	Fail
4 = CGPA < 5	Pass Class
5 = CGPA < 6	2nd Class
6 = CGPA < 7	1st Class
CGPA ≥ 7	Distinction

**Grade Point Average =  $\sum (\text{Credit} \times \text{Grade Point}) / \text{Total Credits}$**

### AWARD OF CLASS

Marks-sheets of semester I to III of M. Sc. will simply indicate result as either Pass or Fail or ATKT but not the class which will be indicated in the last Semester mark sheet.

Cumulative Grade Point Average (CGPA) is computed as:

**CGPA =  $\sum (\text{Semester credits} \times \text{GPA}) / \text{Total Semester Credits}$**

The sum is taken over from Sem-I to Sem-IV for M. Sc.

### CRITERION FOR M.Sc. DEGREE AWARD

For obtaining M.Sc. degree in any subject, a candidate has to earn minimum 100 credits in all during the programme.

**Website: [www.msubaroda.ac.in](http://www.msubaroda.ac.in)**

**The M. S. University of Baroda Admission Portal:  
[admission.msubaroda.ac.in](http://admission.msubaroda.ac.in)**

**The information contained herein is for general guidelines only.**

**For further information contact Faculty Administration:**

**Prof. Haribhai Kataria  
Dean, Faculty of Science  
E-mail: [dean-science@msubaroda.ac.in](mailto:dean-science@msubaroda.ac.in)**

**Dr. R N Jadeja: Dean of Students  
E-mail: [deanstudents-science@msubaroda.ac.in](mailto:deanstudents-science@msubaroda.ac.in)**

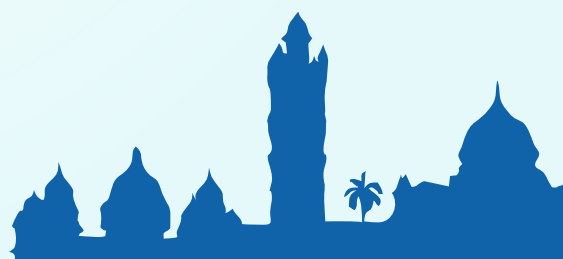
**Ms. Shilpa Gupta: Dean of Sports  
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**Dr. Rupal Shah, Dr. Dharmendra Shah: Teacher Supervisors  
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**Ms. Bharati M Pamnani: CBCS Coordinator  
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**Office Superintendent: Mr. K M Damor  
Ph: 0265 2795329 (office)  
Mob: 8141332160 (during office hours only)**







**“The full-blown lotus growing out of the lake symbolises the emergence of the mind and its triumph over matter. The flame rising from the center of the lotus is the flame of the human knowledge, spreading light and learning for the coming generations. The motto inscribed below the lotus defines the purpose and existence of life which is love of beauty, goodness and intellectual curiosity.”**

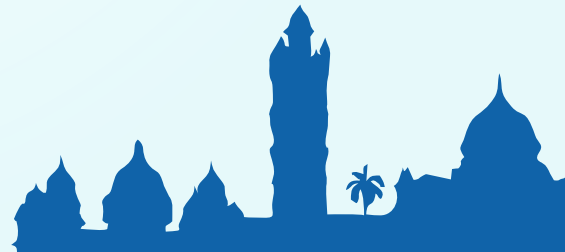
महाराजा सयाजीराव विश्वविद्यालय गीत

अमे वडोदराना विद्यापीठना सपना सारवनारा  
अमे ज्योत जलावी सृष्टी नवली सहसा सर्जनहारा.

अमे गगमकुसुम कर धरनारा  
अमे मगन मगन थई फरनारा  
अगन बाथ अमे भरनारा  
अमे दैन्यतिमिरने हरनारा.

श्री सयाजी विद्यापीठना ज्ञानदीपने धरनारा  
सत्यं शिवं सुन्दरम् नो मंत्र अनंतर भणनारा.

*सयाजीराव*





## **CONTACT ADDRESS**

**FOR ANY FURTHER QUERY FEEL FREE TO CONTACT:  
THE HEAD,  
DEPARTMENT OF BOTANY, FACULTY OF SCIENCE  
THE MAHARAJA SAYAJIRAO UNIVERSITY OF BARODA,  
VADODARA-390 002, GUJARAT, INDIA**

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