

From Principal Desk
Dr. Z. P. Bhatena

RESEARCH POLICY:

Science & Technology subjects:

The long years of a research culture at the College has been nurtured mainly through faculty driven research programs and industry sponsored projects. The sustenance of research at the college relies chiefly on the innovative approach and interdisciplinary nature of the research projects. The college takes conscious efforts to sensitize research scholars and research guides on various aspects of ethical conduct in research. Under autonomy, the College plans to consolidate its mandate for promoting undergraduate research. The College has made the following efforts to augment the involvement of students and faculty in research

- The research and consultancy monitoring committee will coordinate all research activities at the College and formulate the policies and guidelines to maintain the quality of research
- The College has plans to formalize the course work program for research students with sessions in Research methodology, Applied Statistics, IPR, patents, information sourcing (referencing), technical writing, soft skills etc..
- The College also has plans to train the students to use latest softwares for thesis writing and for evaluating technical documents for plagiarism.

The RCMC functions on the following policy recommendations which has created an impact in creating a research culture amongst the faculty and students -

Policy Recommendations	Impact
Encourage, foster and conduct research as an indispensable function of College activities.	Students and faculty are free to pursue research in an open and creative environment in accordance with the institution's vision and mission. Each department admits research students as per the available seats sanctioned.
Faculty members have the freedom to undertake scholarly research within their disciplines and should be accountable for maintaining	Students are selected on the basis of merit as per the norms prescribed. Topics are selected by the students in consultation with the guides.

professional standards in research and publications.	Proposals are prepared jointly after thorough referencing and presentation made to the department faculty / RCMC committee members and whenever possible to an invited external expert. A centralized system ensures that within a month of the results of PET being declared, the selection panel comprising subject expert, University nominee, RCMC members and HODs is constituted and interviews conducted. The selected candidates are initiated to a centralized system of course work for 18 credits. Such procedures are required for effective administration due to the large students' strength.
Time frame	During the registration period extensive follow up ensures that the candidates complete their studies within the stipulated time frame of 4years for Ph. D. and 2 yrs for M.Sc. (by research).
Encourage faculty to apply for various Government projects and grants.	This is enabled by the quick circulation of all notifications pertaining to FIP, University research projects, UGC minor and major research projects, DST and DBT projects to the relevant departments. This has enabled the research proposals initiated by faculty to increase dramatically by approx 75% within the last 5 years. Though, they are often processed close to submission dates, most of the proposals sent as Minor projects to the University of Mumbai have been sanctioned while 50% of Research projects submitted to UGC and DBT/DST have been sanctioned Talks by faculty on 'How obtain grants, and write proposals' has facilitated better application preparation for these grants
Create a College journal for printing articles and project reports of the research work undertaken in frontier areas of research.	Though a formal research journal has not been registered the campus has 'Parivar magazine' wherein scholarly articles and news articles are printed
Registration with the Department of Scientific and Industrial Research (DSIR) for custom duty and excise duty exemptions.	Obtained
Involvement of research scholars for Lab and Equipment Maintenance	Each researchers is allocated responsibility for care, repair and maintenance of an equipment and researchers maintain log books for repair, service etc AMC for the few sophisticated instruments is taken from the overhead amount recd from major research projects
The committee also plans to explore possibilities of studies with foreign collaborations for students and staff.	Deliberations are on.

These recommendations have facilitated better implementation of research schemes / projects mainly due to:

Autonomy to the Principal Investigator

The College will continue to actively encourages all staff to engage in research projects to facilitate skill and knowledge development, to serve the society in general and for academic excellence in particular. Research scholars both staff and students are encouraged to register for Ph.D. Each dept is given the freedom to be a recognized centre for research leading to M.Sc. and Ph.D. degree. Thus all the five Science departments conducting PG programmes are recognized by the university as centers of research.

Adequate infrastructure :

Infrastructure facilities especially for research are being developed not only for BRC but also for research laboratories for Botany and Zoology specially wrt the PTC and Mycorrhizae labs . Physics department has been renovated to accommodate PG centre on behalf of University of Mumbai. A portion of the research grant received is used by the College / Department for AMC of a few sophisticated instruments.

Enriching human resources:

Through a rigorous selection procedure post graduate students are selected as JRF / SRF to work for major research projects and through this fellowship funding, scholars pursue their doctoral degree simultaneously. Thus they **learn while they earn**. During the post-accreditation period, eighteen faculty members have obtained their Ph.D. degree and of these, five staff members have availed the facility of Faculty Improvement Program of UGC.

Support in terms of technology and information needs :

Under the INFLIBNET N-LIST programme, more than 6000 e-journals and more than 97000 e-books are available within the library for reference. Most of the science departments have access to computers and internet facility. Research Journals in Microbiology are procured from funds received from DFF trust and BRC. (DFF: Dr. Dhala Felicitation Fund Faculty arranges to obtain membership of various associations like ASM, SFAM which helps them to receive journals at concessional rates.

Timely availability or release of resources :

Almost every faculty from the science department and few faculty from Arts and Commerce have obtained grants for Minor and Major Research Projects .The College readily steps in with financial assistance when there is a time gap between the acceptance of the proposal, sanctioning of the grant and actual release of the finance from Government and Non-Government funding agencies. The College also reimburses the registration fees for faculty attending various UGC and GOI sponsored conferences

Time-off, reduced teaching load, special leave etc. to teachers:

Though reduction of teaching load for teachers engaged in research cannot be granted, internal adjustment and sharing by colleagues, makes it possible for staff members to pursue their vigorous research projects. Sabbatical leave was sanctioned to enable investigators of Indo-Korea collaborative project to visit their collaborative institute KRIBB in South Korea in Oct 2012. This was followed by **the visit of Ph.D. student to South Korea for 15 days** to facilitate her research work while one phd students received a bursary grant to present her work in Vienna , Austria at international water association conference

Timely auditing and submission of utilization certificate:

The Office staff of the College, facilitates the maintenance of accounts through the use of separate ledger for grants received from government funding bodies and within a time span of two to three months of the financial year, an audited statement of expenditure and utilization certificate is provided.

FOR HUMANITIES AND SOCIAL SCIENCE:

- Internships / Fieldwork experiences in humanities and social sciences are encouraged by the College so that students gain practical experience in their sphere of study.
- The concerned Dept. would have to monitor this activity as under:
 1. The HoD, on behalf of the student, would issue a request letter to the organization in which this activity will be undertaken.
 2. The Dept. would collect from the student the certification given to him / her by the said organization, post the internship.
 3. The Department would then conduct a viva to verify the quality of the tasks undertaken by the student in the said organization.

RESEARCH COLLABORATIONS AND PARTNERSHIPS

Bhavans College is proud to have **Bhavan's Research Center (BRC)** established as an extension of the **Department of Microbiology of the College** in 2005 as an excellent **case study for research based consultancy and collaborations that can be offered by a teaching oriented affiliated College**. BRC in addition, exemplifies the **core values of NAAC**, namely contributing to Nation Development, fostering global competencies, promoting use of technology and quest for excellence. It is a center in which **research meets entrepreneurship** to serve the needs of students, staff, industry and society at large. This innovative venture partnered by Center for Entrepreneurship of SPJIMR, focuses on research and consultancy services to the industry in areas of hygiene, pure drinking water systems and cosmetics and serves as a role model for other depts. to set up such centre post autonomy

Such setup like BRC which are fully operational industry-academia interface, envisioned as per the **NABL ISO 17025**, can be capable of undertaking problem based projects and analyses for various industries. Such a facility on our campus will be a boon since it facilitates job opportunities for students besides enabling them to get an insight into the workings of a national accredited laboratory.

The establishment of BRC exemplifies the deep commitment towards promotion of research, consultancy and extension by the Management and the College, and BRC is already gaining recognition as an entrepreneurial model for research, serving the social responsibility of an educational institution.

Though, BRC is the culmination of the research culture and ethos prevalent in the Department of Microbiology, research is an integral part of the College and most of the PG Departments are engaged in research. Five of the seven Departments from faculty of Science are recognized centers for research programmes leading to M.Sc. and Ph.D. degrees of the University of Mumbai Thus these depts are ready to take up industrial projects in the fields of Soil Remediation through use of Mycorrhizae development , setting up of analytical lab geared for analysis of pollutant and analytes etc

Process of collaboration already initiated :

Eminent faculty of our college deliver special lectures in refresher and orientation courses in front-line research areas and for demonstration of new concepts experimentally so as to motivate the research scholars and faculty members regularly. Such interactions help our faculty members to prepare and submit new, viable research proposals to various funding agencies and to develop new interdisciplinary technologies which contribute for the regional and National development.

Such interactions help our faculty to initiate Modern research programs which are collaborative in nature, such that many of our faculty research programs involve academics

from other institutions both national and international. Some of these collaborations are formalized, through Memoranda of Understanding (MoU) or other agreements signed between the participating institutions. Our faculty have visited University of Singapore, KRIBB, South Korea, These ideas have led to the 2 staff being granted patents and technology transfer rights. Faculty members have visited foreign University like KRIBB, South Korea, University of Ulster, Reutlingen, Paris, ITIN, and through these visits has brought back many ideas that are planned to be adopted based on the needs of our college . Various professors from various national and international universities like Univ of Michigan, Univ of Texas , Univ of Netherlands etc have visited and interacted with our faculty and students and these have had a strong impact, since a large number of faculty and students are exposed to innovations and newer ideas

MoU signed by College :

Bhavans research Centre has signed 10 MoU with industries as Education in the 21st century needs to be industry based so that our students besides being technically competent also learns managerial and implementation skills.. These MoU and exchange programmes gives our faculty and students a chance of meaningful international contact and experience. They also impact on our academics as the good practices in institutions are adopted in our teaching-learning. Our contact with bodies like the PFNDAI, FCCI have brought in Mr. Mahesh Zagade, FDA Commissioner Maharashtra to discuss with the students the food safety act of Maharashtra while that with UICT created opportunities for Dr A Lali , Director of DBT Centre of excellence on Bioenergy to visit and interact with the JRF working on Indo Korea collaborative project on microalgae bio-oil. Such interaction brings research skills, placements and internships – all of which go to improve the educational atmosphere on campus.

Research achievements of the faculty

The Teaching learning process are two sides of a coin called “Education”. Imparting education to the students in the world that is constantly changing requires the trainers to be well versed in their subjects and need them to knowledgeable about the requirements of the students. They themselves thus need to keep themselves upgraded, motivated and be a contemporary in their field.

As a reputed institution for higher learning, Bhavan’s College has always been in the forefront, striving for excellence in education not only for her students but for her teachers, keeping them abreast with the fast moving technological advances. This has culminated in Dr Bhathena, our Principal receiving the prestigious “Best Teacher Award- URBAN Region” from Mumbai University in 2019, presented by the Vice Chancellor Dr Suhas Pednekar during the 70th Republic day celebration in recognition of her valuable contributions to knowledge , teaching and research undertaken with a strong sense of dedication , commitment and sincerity . Faculty member from the Department of Geography Mr Ajay Kamble was the recipient of Krantiba Jyotiba Phule Aadarsh Shikshak Puraskar while Dr Nirmala Pawar from Economics department received Dr Rahakrishnan Memorial Award 2018 from International Human Rights Association recognizing thus the exceptional teaching skills of Bhavans teachers

Research promotion has been a key aspect of growth for our college during the last few years as research done in College feeds directly into the teaching process of the College and it gives both faculty and students an experience of good science. Hence, findings of research have helped the College to upgrade its teaching by including it into the curricula

helping to make it relevant and practical. The College is now looking forward to a paradigm shift in its focus by incorporating skill-based programs to make education more application-based in nature. To achieve this, the College has been organizing “train-the-trainers” programs and also encouraging faculty members to participate in training workshops in current advances in their field. Each department has over the years have worked to create an environment of academic excellence which has not only allowed students growth but has also enhanced teachers capabilities

To highlight a few achievements of our teachers

- Faculty members of our college from the departments of Microbiology, Psychology , Hindi, Economics ,Zoology, Statistics , Chemistry and Botany have received appointments through invitation, selection, nomination and election to represent within the Board of Studies formulated for Mumbai University as well as other deemed and autonomous colleges like NMIMS, Ruia college, SNTU, K.J Somaiya College , Khalsa College , Jaihind College, Mithibai College and CIFE . Dr Bhatena was elected chairperson of BOS in Microbiology while Dr Kranti Gawali was elected within the Psychology board of Mumbai University. This has led to many staff members designing syllabi for various autonomous institute. Dr Rasika Vaidya of BMS department was the chief external coordinator for the design of Mithibai college entrepreneurship development cells syllabi
- 17 faculty members have been invited to represent within various committees of Mumbai university, SNTU University and other autonomous institutes like SPIT, TISS, NMIMS , NEERI, AOAC etc as Chairpersons, and experts panel members for curriculum revisions, implementation of semester end examinations and assessment at UG and PG levels thereby impacting student learning. They have also been called as Vice chancellor nominee, subject expert for Career advancements of faculty besides scrutiny of research proposals and as expert panel members for institutional proposals for add on courses, additional divisions and PG recognitions. Dr Kranti Gawali, Head of Psychology department has been appointed as research expert and as a clinical psychologist on the panel for the selection of candidates for the award of BANRF Scholarship, GOI
- Almost 80% of our permanent faculty members have been actively involved in various statutory and non statutory college committees formed to assist the office of principal towards institutional progression. These committee members have worked to organize various seminars , workshops such that our faculty has organized 58 national and international conferences besides participating in 229 seminars, symposia, conferences, trainings programs and FDP. An highly successful conference was on “flip classroom learning” wherein the 20 teacher participants took on the onus of learning alternative teaching methods from former VC of SNTU university and then taught our other staff members on the various ways of involving students within the classroom. An another feather in our cap was organization of 2 day International conference on “Sustainable solutions implemented to achieve safe drinking water & beyond” held in Dec 2017 wherein internationally renowned faculty like Dr Patrick Stewart from Netherlands, Dr Joan Rose from Michigan university and Dr Charles Gerba gave invited talks

- Botany department was in the forefront in organising the national seminar on plant biology wherein Dr Laszlo Szabados of Biological Research centre Hungary , Dr Arun Kharat , JNU New Delhi and Dr Sateesh of Bangalore University could address our student on various topics like Aldh7 Promoter , Gene Mining etc. This event could be organised due to the contact developed by the staff during the faculty exchange program undertake with Hungary University
- Our faculty have completed 11 major and minor research projects and have published 120 research papers in peer reviewed high impact factor /h index national and international journals besides presenting 144 papers at national and international conferences. Research activities focused on water conservation was highlighted through the award of two major research projects from Water technology mission of DST to the tune of 40 lakhs each while staff members from department s. of Physics, chemistry and botany received minor research projects in 2018 from Mumbai university
- They have also authored /contributed chapters and reviewed in 36 books while a few staff members are on the editorial board of journals like the British journal of guidance and counselling, research horizons etc
- 17 research students within this academic span completed their Ph.D degrees under the supervision of 9 research guides recognized from Mumbai, SNDT and YCMOU universities.
- Various Faculty members from Botany department successfully qualified for the CSIR NET JRF and IITM GATE exam in Dec 2018
- Dr Kranti Gawali from Psychology department was nominated as a member of the institutional ethical committee for family welfare research and training centre , Ministry of Health and Family Welfare , and raja Ramdeo Podar institute GOI while Dr Bhatena was nominated as the DBT member of Institutional Biosafety Committee for Advance Enzyme ltd

NAMES OF PhD GUIDES AND STUDENTS REGISTERED (2020-21)

Dept of Chemistry

Sr No	Name of the student	Name of supervisor	Date of registration	Reg No at University of Mumbai
1	Ms.Smita N. More	Dr Pravin Singare	07/08/ 2015	083
2	Ms.Manisha Kuwar	Dr Pravin Singare	08.07.2018	081
3	Ms.Mahalaxmi Nadar	Dr Pravin Singare	04/03/2015	080
4	Ms. Asmita Jagtap	Dr Pravin Singare	07/08/2015	084

Dept of Microbiology

	Student	Guide	Topic	Registration No.	Year
1	Sohini Dasgupta	Dr. Z.P.Bhathena	Treatment of Graywater and its reuse for landscape irrigation in small urban communities	87/21/02/2019	2019
2	Farhan Makba	Dr. R. C. Patil	Study of microbial Tanase and its Role in Treatment of Industrial effluents	88/13.03.2019	2019
3	Ms. Hima Wani	Dr. S. Shrivastava	Analysing health risk from Available water in an Effort to mitigate the situation by applying quantitative microbial risk assessment(QMRA)	85/20.09.2016	2016
4	Mrs. Smita Menon	Dr. Z.P.Bhathena	Characterization and application of Bacteriophages to improve the quality of secondary treated waste water in Mumbai	89/24.07.2019	2019
			Submitted for topic approval		
1	Mr. Patil Saurabh R	Dr. S.V.Raut	Increasing the efficacy of the anti-tuberculosis drugs with silver nanoparticles.	Proposal submitted to University	15.10.2019
2	Miss. Niyati Tiwari	Dr. S.V.Raut	Microbial Biopolymer Production and its Application.	Proposal submitted to University	15.10.2019
3	Miss. Supriya H. Yadav	Dr. S.V.Raut	Isolation of potential probiotic Lactic acid bacteria for skin health related applications.	Proposal submitted to University	15.10.2019
4	Miss. Arati Gajanan Potpode	Dr. R.C.Patil	Preparation and Characterization of Lignin Nanoparticles from coconut coir and application in food preservation	Proposal submitted to University	15.10.2019
5	Miss. Ruchi H Malik	Dr. R.C.Patil	Extraction and study of novel bioactive compounds from selected mangrove plant surface micro-organisms	Proposal submitted to University	15.10.2019
6	Mr. Rutam Mulay	Dr. Z.P.Bhathena	Studies on antiviral potential of medicinal plant extracts	Proposal submitted to University	15.10.2019