



Annual Progress Report of College

Internal Quality Assurance Cell

2022-2023

(Five Years of Autonomy)

Name of the College	Fergusson College (Autonomous), Pune
Address of College	Fergusson College Road, Deccan Gymkhana, Pune
Type of College/Financial Status	Grant-In-Aid and Self Finance
Year of Establishment	1885
Status of College	Autonomous
Date of conferment of Autonomous Status by UGC	16 th June, 2016
Name of the Affiliating University	Savitribai Phule Pune University
Type of Faculty/ Programmes	Arts and Science
Name of Principal	Dr. Ravindrasing Pardeshi
Special Status	UGC-CPE and CE Status DBT STAR College Scheme and STAR Status UGC-STRIDE Scheme- Component-I
New Programmes Introduced (undergraduate/post graduate/ diploma/ Certificate)	B.Voc (Fashion Technology) B.Voc (Interior Designing)

Curricular Aspects

Relevance of Curricula Developed with special reference to local and global needs

Ever since the college became autonomous in June 2016, the college has striven to upgrade the syllabi to help students acquire theoretical and practical knowledge on par with national and global standards. Syllabi for all the programs were changed progressively from 2016-19. The second syllabus revision cycle started in 2019. Besides the existing courses, skill and value-based courses have been added to all the programs during the second cycle. Some noteworthy additions in this regard are:

Arts	Science
History appreciation and Historical tourism	Industrial Writing
Critical Reasoning	Biotech and Bioethics
Psychological Test Construction	Introduction to Bioinformatics
Social Dynamics	Medico-Botany
Introduction to Archaeology	Mushroom Culture technology
Methods and Concepts in Philosophical Counselling (Western and Indian)	e-commerce

Interdisciplinarity in Political Science	User Interface Design
Sanskrit Lexicography	Artificial Intelligence
Fundamentals of qualitative research	Python programming
Academic writing	Robotics
Advanced Writing Skills	IoT and applications
Creative Writing	Hydroponics
Literary and Media texts	Softwares in Environmental Studies
Research methodology	Entrepreneurship development and services
Interview techniques	Design and Development of Eco-friendly products
Functional Hindi	Mathematical models in Population Biology
Business French and Communication	Marine Microbiology
Introduction to Didactics and Translation Skills	Prebiotics and Probiotics
	Biomedical Instrumentation and Biophysics
	Biostatistics
	Time series analysis
	R software

The Program Outcomes, Program Specific Outcomes and Course Outcomes have been clearly spelt out for all the courses during the second cycle. The outcomes have been defined using Revised Bloom's taxonomy and cover all the levels of learning. Students are made aware of these and there is a conscious attempt on the part of teachers to synchronize the whole learning process with the outcomes. Evaluation methods too have been adapted to work in tandem with course and program outcomes. Flexible testing methods in particular have helped in testing the higher order skills. Case studies, field visits and survey methods help the students to hone their observational and analytical skills besides preparing them for research. Research projects/internships have become a regular feature of Arts as well as Science programs at both UG and PG levels.

Besides topics included in the syllabi that address local, national and global issues, an attempt is frequently made in the classroom to integrate all three. For example, when students get introduced to a topic such as cooperative banking at the local level in their Economics class, they are led to research on and discuss the best practices related to the same on the national and international levels. The course in Analytical methods for B.Sc Chemistry students exposes students to apply theoretical knowledge related to water, soil, food products and cosmetic testing locally and globally. Courses in human geography, environment, lab safety, climate change and sustainability integrate local, national and global needs, allowing students to explore and come up with a wide array of solutions.

Apart from the interactive mode of learning that helps in this process of integration, flexible methods adopted for internal assignments permit students to actively explore, think critically and present their views and knowledge acquired to their peers and teachers alike.

[Inclusion of Professional Ethics, gender, human values, environment and sustainability in curricula.](#)

Autonomy has ushered in another Renaissance and given an impetus to incorporate relevant current issues of human interest into the curriculum.

Courses in Economic Development, Growth and Planning study demographic patterns and discuss issues related to equitable distribution of resources. The course in Public Finance has got a specific unit on 'Gender Budgeting.' The courses in Economics and Environment specifically deals with environmental and sustainability issues on the local, national and global levels. Several language and literature courses include literary components to integrate the aspects of gender, human values, environment and sustainability. Research ethics, media ethics and advertising ethics are covered through the Advanced Writing Skills in English course for TY students. The Women's Writing in English course (for Post-graduate students) spread out over two semesters deals with the history of the women's movement and its evolution through the representative texts. Human values and issues such as social justice are an aspect of most language as well as social science courses. The concept of equality and inclusiveness is highlighted through the 'suktas' in the Sanskrit course. A study of all segments of the population and problems such as discrimination and inequalities and ways to resolve them are covered through most of the Sociology courses. Some courses aim at studying these issues in the Indian context while others have a wider sweep. The paper in Human Geography covers issues related to demographics, inclusiveness, regional and other disparities including food security, while examining man's relationship with his environment. Psychology courses aim at sensitizing students to deal empathetically with differently-abled persons and those suffering from mental illness. The entire program aims at helping students to understand the core of human behavioural patterns in order to encourage prosocial and harmonious behaviour within individuals and society as a whole.

Environmental issues and ethical issues are an integral part of several science courses too. The Environmental Science and Biotechnology departments have included critical issues related to Ecology and sustainability into all their courses. They also proactively encourage students to engage in debating, creating awareness and finding solutions to these problems through different activities organized on a regular basis. Students are frequently made to reflect on the pros and cons of contemporary urban development. An attempt is made to inculcate the habits of REDUCE, REUSE and RECYCLE. The course on Biosafety and Bioethics exposes students to professional ethics. The Chemistry department proactively engages in green chemistry practicals, lab safety and waste management.

A course on Intellectual Property Rights is offered by the Biotechnology department. The Environmental Science department offers a course on Law, Ethics and Policy and a component on Women in Environment is included in the Biodiversity course for PG students. A study of media ethics from the perspective of human values is an integral part of B. Voc. in Animation and Digital Media and Media and Communication courses.

New Courses Introduced

2022-2023: 28

2021-2022:178

2020-2021: 162

2019-2020: 155

2018-2019: 304

2017-2018:311

Teaching- Learning and Evaluation

Assessment of Teaching Learning Levels

The college has a policy to assess the learning levels of students following which the learning levels of the students are identified using the parameters given below:

- Performance in the qualifying exam
- Performance in diagnostic test conducted for first year post graduate students
- (If the performance score of the student is below 40%, then the student is considered as slow learners and score above 70% as advanced learners)
- Performance in continuous assessment and end semester examination (Theory and Practical wherever relevant)
- Attendance
- Communication skills
- Participation/contribution in various curricular and extra-curricular activities
- Specific observations by teacher/s

For successful teaching and learning experience it is therefore necessary for the teacher to identify the ability of a student and develop strategies and implement them so that both slow and advanced learners are benefitted without ignoring the average learners.

Specific measures for slow learners are:

- Remedial teaching and bridge classes are conducted
- Problem solving sessions / revision sessions/extra sessions are arranged
- Practise questions are provided and guidance on how to write answers is given
- Counselling by mentors during mentoring sessions
- Personal attention/Encouragement and motivation given by the faculty members to participate in various activities for capacity building in the areas of concern
- Workshops are conducted to improve spoken English, soft skills and communication skills

Specific measures for advanced learners

- Flexible and innovative mode of internal for continuous evaluation allows faculty members to assess various aspects of learning like subject content, presentation skills, communication skills, research orientation and capabilities
- Encouragement to participate and contribute in Regional/State/National and International Levels workshops/seminars/conferences/technical

events/Summer and Winter schools, catering to subject matter, to promote entrepreneurial and research capabilities.

- Ensuring regular participation of students in guest lectures (e.g., Prime Minister's Research Fellows) for introducing current research/entrepreneurial and industrial traits and insight into various subject specific content beyond the curriculum to enhance subject matter expertise
- Providing opportunity to undertake research projects under the aegis of various funding schemes at college.
- Providing opportunities to participate in internship programs/dissertation/project work at reputed industries/research institutes.
- Encouragement to join and complete NPTEL/SWAYAM/COURSERA/other online courses.
- Publishing and contributing in newsletters, magazines, books and research articles etc.
- Students demonstrating entrepreneurial skills are enrolled in start up club for further guidance from experts.

Teaching-Learning Methods established by the institution

the students realize their potential and make them future ready.

A. Experiential learning:

The focus of experiential learning is education through first-hand experience that includes knowledge, Skills and experience acquired outside of the traditional academic classroom setting. The teachers are actively involved in and also encourage the experiential method of learning by way of:

a. Internships/Projects:

Students participate in summer internships, carry out projects in research institutes, undertake Industry based projects to experience the work environment, understand the technical know-how and practical application of their subject. Students are also given opportunity to undertake research projects under the aegis of various funding schemes at college.

The Science education initiative of the college provides the students an opportunity to impart science and mathematics education to students of low- and middle-income group studying in higher secondary classes of the local schools.

b. Workshops/Training Programmes/Competitions

Regular organisation of:

Hands-on training workshops, workshops in collaboration with Industry/Institutes and other subject specific programmes under different aegis such as DBT STAR college, UGC – STRIDE, UGC- CE etc.

Training workshops for imparting skills and improving the employability of the students

Entrepreneurship aptitude development activities and competitions

Field work/ field-based projects/Survey based projects

c. Industrial /Field Visits/Guest Lectures/Seminars

The institute practices the vestibule experiential method by organizing industrial visit of students that gives the students an opportunity to interact with industry personnel and experience the work environment of the same.

Interaction via Guest Lectures by eminent personalities (Industry or Academia) in respective fields

Organization of Interdisciplinary/Social / Emotional health themed Seminars and Guest lectures

Inspirational talks by prominent alumni

d. Organisation of programs/activities by students

Students are involved in organising various curricular and extracurricular programs such as public events, seminars, Quiz competitions, exhibitions, publishing newsletters, promoting various important issues and organising programs via social media platforms thereby gaining experience of organisation and management skills

e. Creating short films and games using art and coding, film screening sessions etc.,

B. Participative learning

Participative learning motivates/stimulates creativity and interest, encourages co learning and creates a learning ecosystem

Students participate in various activities like:

- Group discussions, Podcasts, Blogs, Debates, Quiz, role plays, Presentations
- Departmental club/association, festivals and other activities like Currency Quiz, Can Digital Literacy solve social ills of India, Mock Stock, FRANCOFOLIES, Computer Assisted Translation Tool, German Culinary Culture, QUORUM for Constitutional Awareness
- Poster /Oral presentations in Conferences
- Participation in MOOC and other online courses on SWAYAM platform
- Participation in events like Mock Parliament
- Creating real size cartoons models from news paper,
- Cultural, social and sports events (International, National, State, District, College Level).
- Organization and participation in events like science day, Language days

C. Group Learning

Group activities like:

- Group Projects, Exhibitions, interdisciplinary activities, Discussions, assignments, surveys, video making, poster/model making
- Social activities (Amrut Varsha (rice sowing in paddy fields),
- Experiencing Live events like Zero shadow day, Solar eclipse, Red moon observation
- Environment awareness/Biodiversity related activities

D. Problem Solving Methodologies

Methodologies like case studies, small projects, giving high order thinking questions, analytical problems and conducting problem solving sessions.

Evaluation and ICT

The College/Examination Section uses MASTERSOFT ERP ITLE module for conducting examinations. Admitted students are registered in Microsoft ERP and are provided with individual user name and password. Students admitted to the college are registered under the ITLE module for further academic activities.

Online orientation for using the different modules (Admission, academics, examination etc.) is conducted for all the faculty members, office and support staff. Regular guidelines regarding the use of Mastersoft ERP software is provided to the students as well.

The schedule for concurrent evaluation is adhered to as per the academic calendar. The examination module is utilized for the registration of students for exams, generation of hall tickets, student marks entry and result preparation along with provisional marksheets. The software is also utilized for generating the seating arrangements for the end semester examinations conducted in the offline mode.

The MASTERSOFT ERP system has also been utilized to generate data under the outcome based education (OBE), for gap analysis between teaching and learning process. This is done for all PG and few selected UG courses. Attainment of course outcomes, programme specific outcomes and programme outcomes has been measured using OBE module available on ERP software.

The entrance examinations for different PG courses have been successfully conducted using proctored mode.

An online grievance redressal mechanism is being set up to ensure that grievances of students are dealt with on priority.

E-Resources for all courses taught under all academic programmes have been identified and utilized.

Attainment Methods established

Attainment:

The Outcome Based Education (OBE) process has been implemented in the college in the year 2020. This process is supported by the Mastersoft ERP solutions which has outcome-based education software to bring operational ease and efficiency towards OBE process and provides assessment reports.

As per OBE, Program Outcomes (POs), Programme Specific Outcomes (PSOs) and Course Outcomes (COs) have been defined for each programme and courses respectively. Mapping of POs, PSOs and Cos has been done at specific department level and strength of correlation between COs and POs and COs and PSOs has been assessed on the basis of faculty's perception of course content which is given a weightage on the scale of 0 to 3 (0- None, 1- Low, 2- Medium, 3-High). A mapping matrix of CO-PO is prepared in this regard for all courses in the program.

The attainment of COs, POs and PSOs is evaluated by direct and indirect assessment tools using OBE software. Direct attainment of COs is measured by the various assessment methods adopted during Concurrent Evaluations (CE) and End Semester Examinations (ESE) by mapping specific questions to COs. For CO attainment of a particular course (through CE and ESE), a threshold target is set by the faculty from individual department.

Method 1

Same target is identified for all the COs of a course. For example, the target can be "the class average marks > 60 marks"

Method 2

Targets are set for each CO of a course separately. It does not directly indicate the distribution of performance among the students. However, it has the advantage of finding out the difficulty of specific Cos.

To measure CO attainment, the threshold targets are quantized and measured on a scale (0-3).

% of CO attainment

Class average >70%

Class average > 50% and Class average <= 70%

Class average $\leq 50\%$

CO attainment level

3

2

1

The attainment level of COs is studied and if gap is noticed in case of non-attainment, it is analysed and a report is prepared.

At the end of each course, the PO/PSO assessment is also done using OBE software. PO weightage against each CO is calculated by dividing CO-PO mapping score with CO attainment level (obtained by direct assessments) respectively. This weightage value is further multiplied by COs attainment level to get 'Weighted PO Attainment' against each CO. Final PO/PSO attainment is calculated as an average of all the weighted PO/PSO attainment values against each CO.

For indirect attainment, student exit survey, employer survey and alumni survey has been rolled out. A copy of the questionnaire has been incorporated in Mastersoft's OBE software for the survey and computation for the attainment of the same.

Research, Innovations and Extension Research

Centres (under affiliating University)

English, Marathi, Botany, Chemistry, Electronic Science, Environmental Science, Geology, Microbiology, Physics and Zoology. The approved intake of PhD students in these centres is 184.

Research papers Published

2022-2023: 40

Infrastructure and Learning Resources

Library Services

The library has a collection of statues and posters, dedicated to national leaders and educationalists. Recently, the Library has been funded by National Archives of India for digitization of old and rare manuscripts. To keep pace with changing needs of the learner, the library is partially automated with Integrated Library Management System (ILMS) supported by GEMS (from 2016-2020) and then by Mastersoft ERP (April 2020-till the date) is undergoing full automation. The library automation has been carried out and has following key features:

- Automated circulation
- Issue return
- Access to e-Journals
- Digital Library
- MOPAC-App for library services

Digital Databases and Network

The following are key features of the digital databases and networks available for sharing information in B.J. Wadia Library:

- Provision of access to online databases of Springer, Delnet, NList,
- Remote access facility for e-Resources and Web OPAC
- PDF of manuscripts and college magazines
- National Digital Library (NDLI)
- e-PG Pathashala
- PEARSON-e-Library
- TATA McGraw Hill e-Library
- Marathi Literature/Books
- Institutional membership in National Digital Library, e-Shodh Sindhu, Shodhganga and British Library (Upto 2019-2020)
- Databases, e-Journals
- Wi-Fi availability in the campus provides easy accessibility to learning resources.

Online Mechanisms Developed

ERP system

Since, 2016, after getting autonomous status, there has been numerous changes in the office automation with continuation of online admission process and payment gateways. Earlier ERP system was procured from Persistent Technologies (GEMS) – which was functional from 2016 to 2020, and from April 2020, the system was switched to Mastersoft. The ERP is in place for Academics, Fees Collection, Online Registration, Testprep, Examination, ITLE, OBE, Feedback, Student Grievance, Case Movement, Hostel, Establishment and Library.

Online feedback system

A team of teachers conduct feedback for all semesters, for all courses and for all academic programmes. Earlier (2016-2020) the feedback was online and integrated on earlier ERP system. After 2020, the ERP vendor was shifted to MASTERSOFT and online feedback was integrated on the new ERP system.

College website

The college website is maintained by the third party, but routine up-dations are carried out by a team of three teachers. Some of the major changes are: SSL certification, additional space of 100GB space for college data, , NAAC and NIRF), online forms and students related issues, department data and teacher profiles. Restructuring of menus has been carried out.

ATM card system

All the heads of the department have been given ATM cards (with specific amount) which can be used for small departmental expenses.

Biometric Attendance

The college introduced biometric system of attendance for teaching and non-teaching staff in 2016 as per guidelines of State Government. Earlier, the system worked on identification of finger and for past three years face recognition has been implemented by the college administration. Security personnel in campus also have biometric attendance.

Wi-fi network

Earlier (2016-2018) local routers were used for wi-fi connectivity. But in 2019, all the routers have been replaced with access points from 21 to 80.

Interactive Smart TV (09)

Interactive Smart Television sets (Senses) have been installed at prominent locations (AV hall, C-6, IQAC, B.VoC and Animation, Computer science) which has helped in conducting lectures and interactive sessions.

IT Infrastructure Enhancement

Online Teaching-Learning Platform

- Licensed copy of MICROSOFT Teams (office 365) for online/blended mode of teaching-learning.
- Each teacher has domain - despune.org which has storage space of 1TB for one drive per log in. The college has created 1200 log in for teachers and 48,000 log in for students.

LAN and Wi-Fi

1. The campus is networked through 1 GBPS (LAN) and backbone connectivity is through 10 GBPS fibre.
2. The college has layer 2 switches installed with 256 GBPS throughput and also supports 10G ports to segregate the network provision of regularize distribution of resource throughout the campus.
3. All the computer laboratories are connected with 1 GBPS network switches with fibre optic as backbone connectivity.
4. Network access list restricts to respective LANs only at the switching and firewall level.
5. All access points support 200+ concurrent users with 2.4/5.0 GHz bandwidth.
6. Wi-fi connectivity is ensured through access point from a centralized firewall access controller.
7. Wi-fi speed of 1 to 2.0 GBPS in each access point.
8. SIP line has been installed in the campus for IP phones which enables user to plug directly into the Internet.

Cyber Security

1. Firewall security is ensured through SOPHOS firewall XG 350 (02 nos.)
2. Application, web filter level bandwidth and quota management through SOPHOS firewall.
3. IPS, Content filter and AV scanning in gateway mode.
4. Authentication based user access to connect internet.
5. Group base security policy is assigned to different users' group to ensure that no threats are entertained.
6. Internet data usage for students is available and reports are monitored.
7. Public paging server is integrated with DMZ zone to respective ports.
8. Synchronized security feature is planned for integration at the client level.

Hardware and Software

Hardware: 927 computers and one server (*IBM, X3620M3, Intel Xenon 2.26GHz, 600GB- 02 nos.*)

Software: Licensed copies of Windows 10 on all machines in the campus, Adobe Creative

Cloud for Enterprise (100 copies), After Effects, Animate cc, Autodesk Maya, Autodesk 3ds Maya, Blender, CorelDRAW, Graphics Suite 2019, ERDAS, GIS Software, Foundry NUKE, Illustrator, Immervision, Indesign, Labview, Mathematica (05 copies), MATLAB, MUDBOX, Photoshop, Premier Pro, SPSS, UNITY and XILINX Verilog.

IT facilities up-dation

1. Upgradation to Techroutes Layer 2 smart switches and Grandstream access point.
2. Firewall upgraded from Cyberoam to SOPHOS firewall.
3. wi-fi devices have been increased to 80.
4. LCD projectors are 55.
5. Library online (e-journals and e-books) / automated issue return system
6. CCTVs has been increased to 228.
7. IP phones (100 nos.) are new addition in IT infrastructure.

Student Support and Progression

Student Progression

2022-2023: 329

Placements

2022-2023: 236

Other initiatives

- a) Mechanism for capturing student progression is established.
- b) Support in terms of student projects is also provided
- c) Placement includes- pre placement and placement activities in the campus.
- d) Student representation in - IQAC - The IQAC committee of college includes two student representatives who participate in all the meetings of the committee and give their observations and suggestions pertaining to various topics discussed in the meetings. The committee constituted under Prevention of Sexual Harassment Committee as well as Anti Ragging Cell/Committee also include a student representative. This ensures a representation of the students in the process of handling such sensitive issues. The Social Outreach and Enabling Center (SOEC) and SAATHI Enabling Center (For differently abled students) have

group of volunteers who coordinate activities/ programmes under SOEC and SAATHI Enabling Center for the entire year and also train their junior fellows. The Gymkhana Managing Committee also has student representation, who help in handling routine issues of sports students and organization of sports events. Students also participate in “College Magazine Committee” (*Madhyam*). They help the committee in writing articles and designing the pages of magazine.

- e) Alumni Association is now a Company under Section 8 of the Company’s Act.

Internal Quality Assurance System

The IQAC reviews teaching-Learning process, structure and methodologies of operation and learning outcomes at periodic intervals.

Review- I: Academic Audit

- a) The review starts with course allotment by the head of the department and the teacher prepares teaching plan for the course based on the number of days available for teaching.
- b) All these details are entered in ‘teachers diary’ by the teacher and verified by the Head of the department.
- c) At the end of the semester the teacher submits one-page academic audit report to the Head of the department. This then reviewed by the faculty vice principal and IQAC.
- d) The academic audit is the part of annual performance appraisal of the teacher which is again verified by the IQAC.

Review-II: Monitoring of teaching-learning through OBE

- a) Outcome Based Curriculum/ syllabus
Curriculum for all academic programmes has Programme Outcomes (POs), Programme Specific Outcomes (PSO) and Course Outcomes (COs) and in tune with the vision and mission of the college. The Course Outcome describe the achievement of students after completion of the course.
- b) Outcome Based Teaching-Learning
Student centric teaching pedagogies/ methods and flexible methods of evaluating students like problem solving, open book test or any other method preferred by the students helps in enhancing learning outcomes.
- c) Course Attainment
Attainment of CO, PO and PSOs is evaluated by using direct and indirect assessment tools. Direct attainment is measured by various assessment methods adopted during internal and end semester exams. For indirect attainment, student exit survey, employer survey and alumni survey are taken. After the course completion, CO attainment is measured and after completion of a programme, PO attainment is also obtained by using OBE software.

Institutional Values and Best practices

The college has now developed policies for environment, green policy and has successfully addressed sustainable issues with related to the environment. The Green Policy of college is in place which emphasizes on clean and green campus and promotion of sustainable environment. This policy is been propagated amongst staff and students for all activities/ programmes conducted. Some important initiatives towards this policy are as follows:

- Provision of separate waste collection bins for dry and wet waste for each department
- Conversion of bio degradable waste by bio-Composting
- Grey Water Treatment Plant (Girl's hostel)
- Awareness and ban on Single Use Plastic.
- Provision of Sanitary Waste Incinerators

Awareness and training programs - In Campus and Off campus

Awareness and training programmes in campus and off campus include:

1. Observation of wild life weeks, films on monitoring of animals (endangered)dolphins, clash of tigers.
2. Workshops and training programmes on, water and waste water treatment, bioremediation of toxic wastes and public lectures like “*Nadi Ki Paathshala*” by Dr. Rajendra Singh.
3. Other notable activities include Beat the plastic pollution and organization
4. Campus activities such as “*metal bottle for a friend*”, in which the college staff was provided with metal bottles as an alternative for single use plastic bottles.
5. *Greensteps* is a campus initiative with a view to having an eco-friendlier attitude on or off campus and creating awareness about our environment and also conducts an audit during college fests.

Waste Management

Solid Waste Management

- Solid waste management process of the college is certified by Enrich Consultants, Pune registered with Maharashtra Energy Development Agency (MEDA).
- College premises and laboratories have color-coded labelled bins to segregate dry and wet waste.
- College botanical garden and green spaces on the campus generates a substantial amount of leaf litter. This wet waste is composted in botanical garden.
- Bio-Composting unit processes wet and garden-waste. The compost generated is used in the botanical garden for enriching the soil.
- About 16 tones paper is recycled every year through authorized waste recycling centres.

- Plastic, glass and scrap material are disposed of through authorized waste collection centres.
- Incinerators are installed in the campus for disposal of sanitary napkins.

Liquid Waste Management

- The College has installed the grey water treatment plant of capacity. The treated Water is used for watering the internal Garden.

Waste Management

- Waste is managed and utilized in college campus itself. The botanical garden has basic infrastructure for carrying out composting which is again utilized in the botanical and other green spaces in the campus. Papers (especially those used for examinations) are shredded and handed over to the vendor for further processing.
- Awareness programs such as using old newspapers to create paper bags to dispose used sanitary pads is also promoted through student workshops.
- Similarly, activities like Eco-fashion walk, Trash bands etc. are conducted to raise awareness about the 3 R's. Reduce, Reuse and Recycle.
- MoU with 6 Organizations:
 - a) Dabake Trust
 - b) German Duestsch
 - c) Indian Metrological Department
 - d) Lupin
 - e) Sony India Pvt Ltd

Best Practices

Best Practice-I

1. Title of Practice: Fostering Active Learning Strategies in Teaching-Learning

2. Goal

- To equip students with techniques/ use of technology.
- To instil sense of research in undergraduate and post graduate students through project- based learning.
- To equip students with interdisciplinary knowledge and enhance their knowledge base.
- To promote interaction with subject experts, scientists, academicians and industry experts.
- To make students employable and industry ready.

3. The Context

Higher education demands overall growth of the students and provide them learning opportunities and make them employable. It is not always possible to enrich

curricula with all the knowledge and expertise needed for their academic progression and move towards internships and lead to placement opportunities. Hence, additional efforts by the higher educational institutes are essential to equip students and make them aware of new technologies and hands on experiments. Interdisciplinary learning is also needed to cater to industry needs.

4. Practices

The College/ departments organizes Hands on training sessions with the help of industries and research institutes and other higher educational institutes which help students in increasing their knowledge horizons and in a way equips them new techniques. Project based learning has been practised by the college over a long period of time in both the faculties, which has promoted sense of research among the students. Workshops on interdisciplinary areas especially on learning new techniques/software's/technologies has provided an edge for our students and resulted in better placement opportunities. Learning and interacting with meritorious alumni and few sessions with present students has helped in grooming of students and helped in understanding new avenues/requirements in industries, research institutes and also in International Universities.

5. Evidence of Success

The overall impact of above -mentioned efforts has helped students and teachers to go beyond the curriculum and learn beyond the scope of the curriculum. Regular interactions with experts, scientists have helped students in widening their scope of learning. Apart from this, Career Summits and Sectorial Summits conducted in collaboration with recruiters and industries and industry HRs has paved way for both students as well as teachers in understanding industry needs and bridging the gap between academia and industries. Hands on training sessions especially for undergraduate students has equipped them in practically doing certain experiments/ techniques used in research institutes as well as in industries. Project based learning has given students an opportunity to do research, write papers and publish and in many cases, present their work in conferences. Learning of softwares/programmes like 'R' programming, "PYTHON" programming for life students has helped them to analyse data generated through research projects and provided an understanding of presentation of scientific data.

Best Practice-II

1. Title of the Practice: Diversification of Social Outreach Activities and Fostering Social Responsibility

2. Goal

- To instill a sense of social responsibility in students.
- To engage the students in meaningful service that meets community needs.
- To equip the students with skills, attitude and knowledge to work with the disadvantaged sections of society.
- To diversify social and outreach activities and reach school education
- To foster reciprocal learning where both the students and the recipients of service benefit from the activity.

- To encourage a lifelong ethic of service in students.
3. **The Context:** The purpose of education is not just preparing the students for a livelihood but also to make them good citizens and above all good human beings. Values of caring and sharing with the less privileged are one of the important elements of such education. It is our collective responsibility to empower the underprivileged to become self-reliant so that they can live with respect and dignity. It is our duty to uphold the human rights of all disadvantaged sections of society. Our college encourages a lifelong ethic of community service.

4. **Practices**

The college has a Social Outreach & Enabling Centre (SOEC) which gives an opportunity to the students to work with various civil society organizations. There are around 8 active organizations working under SOEC. They work for different causes and have different mottos. There are organizations working for blind students specifically and working for learning disabilities like Ankur and Prism. There are organizations working to educate the children from Below Poverty Line families like Doorsteps. There are multitasking organizations like Sevashayog working for more varied causes like women emancipation, menstrual hygiene and education. Muse, which is situated out of Pune, actively works through video calls.

Apart from the above, the College has been awarded with DBT STAR College Scheme. Eleven science departments are beneficiaries under this scheme. Every department carries out atleast one outreach activity under this scheme. The outreach activities carried out vary from poster exhibitions for general public, exhibitions on Scientist like Dr. APJ Kalam, Statistics in Army/ War/ How Alan Turing used Statistics and German's Lost, Big Data Analysis (How Statistics is used in Internet.), Workshops for school teachers teaching Biology and Geography introducing teachers to Earth and Solar System, Evolution of the Earth and Topography and Landforms, hands-on training on Maps and Toposheet reading and on minerals, rocks, fossils and rock thin sections, workshop on 'Introduction to the Exciting World of Microbiology' for high school student, where the number of students benefitted is more than 200, workshop on 'Understanding life-style diseases using Clinical biochemistry for high school teachers' and Three-day programme on 'Popularization of Science' which included lectures by eminent scientists on various topics and hands-on session on the use of scientific toys made from simple daily use objects to demonstrate the principles of Science were conducted.

5. **Evidence of Success:** This has helped the College in reaching out to the community which needs education, help rendered by our student volunteers has been solicited by the NGOs and Inclusive Schools. The press has given coverage to the work done by the social outreach and enabling centre. This has also helped in significant number of NGOs approaching the College/ SOEC to get support in the form of student volunteers and now the College is entering into formal MoU's with these NGOs/Schools. The students volunteering such outreach activities are awarded extra credits for participating in SOEC activities and their work is getting evaluated as well as appreciated.

Best Practice-III

1. Title of the Practice: Efforts for Differently abled students – SAATHI Enabling Center

2. Goal

- To help and support students with blindness
- To equip these students with skills needed for their academic and career progression.
- To help them evolve and bring them in main stream on par with their counterparts.

3. **The Context:** SAATHI Enabling centre has been established in the College. The objectives of this Center are to promote and help disabled students especially those with blindness. The center works for disabled students in their study and personality development. SAATHI also helps in identifying their skills, quality and abilities in them. As a part of their activities specifically for developing their academic abilities, the Center organizes various programmes and activities which include workshops, lectures by eminent persons for their overall development. SAATHI also provides study material for these blind students in form of recording of books prescribed in their curriculum. SAATHI provides writers for their exam and assigns student volunteers (called as peers) who help them in their office related work and their routine movements in the college campus. SAATHI also organizes local trips in nearby areas, which help them to build a friendship bond with other students.

4. Practices

The SAATHI Enabling Center conducts following activities and programmes for students with blindness.

- Computer training classes with dedicated computers with JAWS software.
- Painting Exhibitions for blind students- ‘Closed Eyes and Open Minds’.
- Sports competition like Chess.
- Scholarship for blind students – Given by Chennai Foundation
- Celebration of ‘Braille Day’
- Trips to nearby areas like Junnar, Shivneri Fort, Kolaba Fort, Kankeshwar Temple, Sri Ballaleshwar Ganpati Temple, Pali and Akshi Beach, Alibaug.
- Guest lectures and programmes like “LAKSHYA” for orienting blind students for competitive examinations.
- Virtual Study Circle, is an ongoing activity between student volunteers/peers and blind students where they engage themselves every week in academic discussions from exam point of view.
- A new initiative called, “Let's Record”, [the first Audiobooks' Website of SAATHI, www.vargshikshak.com] has been started when a countrywide lockdown was announced in India, It allows people from all around to record books for the blind students to help them pass their time during the period of lockdown and after knowing the importance of our Initiative, it was covered by well-known Times of India Group on 30 May 2020, in their issue.

5. Evidence of Success:

All these activities have helped blind students to learn in academics as well as in their routine life and has created a sense of belongingness in them. The center has provided a conducive environment to promote the overall development of these students. Few achievements are, SAATHI, was awarded Drushti Sanman Puraskar" by Drushti NGO on 16th Feb, 2018.our students, Aniket Bende (TYBA) has won gold medal in international Olympiad of Performing Arts organised by Akhil Bhartiya Sanskrutik Sangha at Dubai. Laxmikant got selected as probation officer in State Bank of India, Sanjeet Hoskoti (TYBA) wrote his own book named 'My experiences and feelings of a dog' in English.

Best Practice – IV

1. Title of the Practice: Frontiers in Physics

2. Goal

- To develop leadership qualities in students
- To provide a platform for students to interact with world renowned physicists working in different areas of research.
- To promote academic collaboration between the college and researchers.

3. The Context

Frontiers in Physics is a two to three-day National event organized by the students for the students. The event was conceptualized by student's in 2008 when we had the 1st Frontiers in Physics inaugurated by the founding Director of the Max Plank Institution Germany late Prof. Jurgen Ehlers. Participation for this event is from various institutions in India. The event exposes students to event management and organizational skills and interacting with eminent scientists. The seminar includes invited talks by eminent scientist and directors from various national as well as International institutions, poster presentation by students on their project work, panel discussion on various topics like careers and opportunities in physics followed by star gazing session at night. The seminar usually has registered participants between 150 to 200 each year. The entire event is managed by undergraduate students which includes:

- a) Designing Team: Designing the advertisement posters, banners, souvenirs, schedule, invitations, mementoes and certificates.
- b) Technical Team: Managing the stage mikes, projectors, lights, etc.
- c) Stage Committee: Comparing, introducing the speakers, escorting the speakers from their office / residence, transport etc.
- d) Food Committee: Deciding the menu for High Tea and Lunch, according to the available budget and tea / lunch arrangements.
- e) Registration and poster presentation team: Managing registrations, Funds and poster presentation arrangements.

The event is funded by nominal registration fee from students and teachers and funds from IUCAA, DBT and sometimes individuals or companies sponsors. Since 2008 till date, we have

had 15 years of Frontiers in Physics the latest one was held this year on 12th and 13th May 2022 and inaugurated by Prof. Deepak Dhar, IISER, Pune and the only Indian to have won the Boltzman medal.

4. Practices

Frontiers in Physics is conducted every year and the seminar includes:

- (a) Lectures by eminent physicists in India and abroad.
- (b) Poster Competition for students.
- (c) Panel discussion and interaction with students.
- (d) Some of the notable speakers were: Prof. Brian Schmidt, 2011, Nobel Laureate in Physics and Vice Chancellor of the Australian University, Topic - "Frontiers in Physics", Prof. Atish Dabholkar, Dir. International Center for Theoretical Physics, ICTP Italy, "Quantum Black Holes: An encounter between Hawking and Ramanujan"., Prof. Dhurb Saiki, Founding Vice Chancellor, Cotton University. "Extracting Energy from Gravity", Dr. Sudha Rajaramni, IISER, Pune, "Astrobiological narrative of life's origin", Prof. Sanjeev Dhurandhar, IUCAA, Pune - "Gravitation an Enigma: Newton, Einstein and beyond", Prof. Somak Raychoudhary, Director, IUCAA, Pune, Prof. Pierluigi Monaco, University of Trieste, Italy, Dr. Aru Beri University of Southampton, UK and Dr. Abhilash Mishra Caltech, USA and Prof. Deepak Dhar, IISER Pune, Only Indian to have Won of Boltzman medal, "Geometrical phase transitions."

5. Evidence of Success

Frontiers in Physics has helped students to enhance their knowledge in physics and allied areas and more over it has created strong knowledge ecosystem for all students to know more about physics, research in physics, opportunities for internships and collaborative work, where they can look forward and support from world's best physicists.



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