

Shiksha Mandal's

Bajaj College of Science, Wardha

(Formerly known as Jankidevi Bajaj College of Science)

4th Cycle: Assessment and Accreditation by NAAC



Criterion III

Research, Innovations and Extension

QIM 3.3.1

Institution has created an eco system for innovations, creation and transfer of knowledge supported by dedicated centers for research, entrepreneurship, community orientation, Incubation etc.



Bajaj College of Science, Wardha

(Formerly known as Jankidevi Bajaj College of Science)
An Autonomous College affiliated to RTM Nagpur University, Nagpur
NAAC Reaccredited 'A' with CGPA of 3.21
(A Linguistic Minority College)



Prof. Pradip. V. Tekade
Principal (Offg.)


Email : jbsciencewardha@yahoo.co.in
pradiptekade@gmail.com

Ref. No. BCS/ /20 -20


Date : 2/7 DEC 2022

DECLARATION

This is to declare that the information and data furnished as supporting/additional document in the metric 3.3.1 *Institution has created an eco system for innovations, creation and transfer of knowledge supported by dedicated centers for research, entrepreneurship, community orientation, Incubation etc.* are true to the best of my knowledge and is verified by IQAC.


Dr. M. R. Chandrakar
IQAC Co-ordinator




Prof. P. V. Tekade
Principal (Offg.)
Offi. Principal
Bajaj College of Science
WARDHA



Shiksha Mandal's
Bajaj College of Science, Wardha
Research and Development Cell



Innovation Ecosystem (2017-2022)

1. Central Instrumentation Center

The Central Instrumentation Center at Bajaj College of Science, Wardha has been established in the year 2017 with an objective of providing a central facility of latest and advanced analytical techniques for research in various areas of science and technology. It houses several highly sophisticated and modern analytical equipment offering its users a wide range of analytical methods/techniques for analysis/testing/characterization enabling them to keep pace with developments taking place globally, publish their research findings in peer reviewed journals and through their concerted efforts contribute to the upliftment of the society at large. This facility can be used by undergraduate, post graduate, doctoral students, and faculty members. The facility is also extended to external organizations; mainly academic institutions in the nearby region, on chargeable basis. This facility can also be used for organizing short-term courses/ workshops on the use and application of various advanced instruments and analytical techniques.

We offer the consultancy of the following sophisticated instruments with us:

S.N.	Instrument	Make/Model
1	X-Ray diffraction	Rigaku's Miniflex 1800
2	Fourier Transform Infrared Spectroscopy	Bruker (ATR Mode)
3	UV-Vis. Spectroscopy	Shimadzu's UV 1800
4	Gel Documentation	Bio-Era
5	PCR - Thermocycler	Standard make
6	Soil Analysis Kit	Standard make

Faculty Incharge: Dr. G.V. Lakhotiya, Asst. Prof. Dept. of Physics (Contact No. +919579194076)

For further details, write us at: instrumentation.bcs@gmail.com, lakhotiya.govinda@gmail.com

2. Workshop and Instrumentation Centre of Department of Physics

- The 'Workshop and Instrumentation Centre' in the Department of Physics has provided the students an environment and motivation to execute their ideas and plans. It serves as a workplace for innovation, creativity, and fabrication activities by the students.
- Project activities are also carried out by the students in the Workshop and Instrumentation Centre. Students are involved in fabrication of low-cost circuits and laboratory experimental kits that can be used in regular syllabus practicals. Few students have also developed demonstrative models based on concepts in Physics.



3. Astro-Club: A New Era of Observation

Astro-Club offers a platform for incubating astronomical knowledge of the students who are interested to knowing what is happening in the universe which is visible through a source of observatory. It has been the initiative of Department of Physics of the institute since the academic session 2017-18. The objective is to inspire students

and others to know more about the world around the earth. Also, it is an effort to make social awareness about the facts and finding of the astronomy.

Procedure of enrolment

Students, alumni, and staff of Bajaj College of Science are eligible to join Astro-Club. The life-time membership fee is as follow.

Sr. No.	Categories	Amount
1.	Students	` 100/-
2.	Alumni	` 1000/-
3.	Staff	` 1500/-

Life-time membership certificate is given to each enrolled participant.

Composition and Working:

Out of the registered members, seven members (SAPTRUSHI) are selected as working committee members of Astro-Club (Current Students Only). They will be categorized as follows:

- | | | |
|-------------------|---|------------------|
| 1. President | : | III Year Student |
| 2. Vice President | : | II Year Student |
| 3. Secretary | : | II Year Student |
| 4. Treasurer | : | I Year Student |
| 5. Member | : | I Year Student |
| 6. Member | : | II Year Student |
| 7. Member | : | III Year Student |

Committee members will be functional for one academic session. Along with this, a faculty member as follows will be part of working committee:

1. Teacher In-charge (Dr. S. R. Tiple, Assistant Professor, Department of Physics)
All work related to development, maintenance and club activity will be coordinated by the above 7+1 committee members.

Apart from this, around 20 volunteers will be selected time to time for various activities.

Activities

1. Inauguration of Astro Club

The Astro Club was inaugurated at the hands of Dr. M. Y. Apte, Retd. Prof., SFS College, Nagpur on 12th August 2017. He is a well-known Astrophysicist of the Vidarbha Region.



2. An essay competition was organized and students have been asked to submit the essay on “Our Universe and We” on or before 19 August 2017.
3. Poster competition on “Universe beyond solar system” was organized on Saturday the 23rd September 2017, at 1:45 pm.
4. The poster competition was followed by a Guest Lecture by Prof. Kishor Wankhede. He had delivered a lecture on “*Astronomical Reflector Telescope: Construction, Working and Applications.*”
5. Participated in “AHIMSA RALLY” on 2nd October 2017.
6. An 8-inch diameter telescope was fabricated indigenously by the first year Astro-Club members - Aniket Nagrale, Kartik Gokhe, Shubham Mukhati, Urvi Gupta, Shweta Dahake, Roshan Chute, Payal Chafle, Chinmay Wagharkar and Abhijeet Chatur. Telescope making was guided by Dr. Sudhir Tiple and Shri. Kishor Wankhede, Lecturer (Retd.), Bajaj College of Science, Wardha.
7. Astro-Club ‘One Day Educational Tour’ to Nagpur was scheduled on Sunday the 17th December 2017. The students visited Raman Science Centre of Nagpur and explored the knowledge about Astrophysics.

8. A social awareness activity was performed along with sky observation at a village “Aashta,” Dist. Wardha on 12th January 2018. Here, students of Astro-Club performed a play on “*Khagol Shastra: Gyan aani Agyan*” to make villagers aware about the myths and superstition about Eclipses. The act was followed by a detailed knowledge sharing about Sky and Telescope. The program was concluded by sky observation.
9. Astro-Club has organized “*Chandra Darshan*,” an event to observe the total lunar eclipse of ‘Super Blue Blood Moon’ on 31st December 2017 from 5:30 pm to 9:30 pm at college campus. In all 3 telescopes were used for sky observations, out of which 2 were reflector of 8-inch and 6-inch diameter and one was refractor of 3-inch diameter. In order to have social awareness about eclipses, Astro-Club student members performed a drama “*Khagol Shastra: Gyan aani Agyan*.” Also “FETE” was organized as a tool to eradicate superstitions.

4. Botanical Museum

The Department of Botany at Bajaj College of Science, Wardha, maintains a collection of approximately 1296 specimens documenting the vegetation of Wardha district. The herbarium’s major collections include the angiosperm plants of the Wardha district. The main contribution of present day’s collection is by Dr. R. M. Acharya, dedicated taxonomist, and a former faculty at the department. The herbarium is also a repository for Botanical specimens from students and other faculties research at the Department of Botany. Its collections record the past and present plants of Wardha district, so botanists can see how species have changed with respect to time and geography. The plan is to digitise the angiosperm plant collection of Wardha district, as a part of a nationwide effort to photograph herbarium collections.

5. Botanical Garden

Our institution has a dedicated Botanical Garden. The college Botanical Garden is designed to meet the requirements of students, academics, environmental studies’ researchers, and society. We have been doing this since 2020. In our garden, we are growing phytogeographic, endemic, medicinal, decorative, native, and exotic species.

The botany team meticulously plans the garden, with the help of the principal and college administration. Several plant species are intended to improve the visual value. There are various sections of the garden for decorative, medicinal, spices, and aquatic plants. The Botanical Garden is 8,000 square feet in size. The Botanical Garden is currently ornamented with 52 attractive plants, 5 gymnosperms, 64 medicinal plants, 3 Spices, 3 spices, and 9 types of Bamboo, 13 vegetables, and 8 fruit plants. Our long-term objective is to build a polyhouse for cactus, succulents, and unusual shade plants, as well as a sector to cultivate rare, endemic, native, and endangered-threatened local species with medicinal and ethnomedicinal significance. Staff and students regularly visit the vegetation fields, university departments, research facilities, and enterprises.



6. Plant tissue culture Facility

Plant tissue culture is regarded as the most popular and effective method for large-scale plant multiplication. Micropropagation can create plants of superior quality plantlets. In 2015, the Department of Botany developed a research facility for plant tissue culture with a total space of 300 square feet with air conditioning, strict cleanliness, and sterile conditions for explant inoculation. The laboratory comprises of an aseptic culture room, an inoculation room, a media preparation room, and a sterilising equipment. This facility is equipped with an autoclave, an orbital shaker, an incubating orbital shaker, a digital pH meter, a magnetic stirrer, an oven, a -20° C freezer, a laboratory freezer, a microwave oven, weighing balance, a vacuum filtration system, and distillation equipment. We also have a hardening section for acclimatising laboratory-grown plants to natural environments. Using this facility, micropropagation

methods for tobacco and tomato have been established to conduct plant tissue culture practicals, and some economically important plants have been developed.



7. Animal Tissue Culture Laboratory

An Animal Tissue Culture laboratory is located in the Department of Zoology where students perform practicals and project works related to animal cell culture. Mostly primary cell lines are cultured and practices related with the primary cultures are performed. The Animal Cell Culture lab has all the instruments and facilities for basic cell culture maintenance and applications.



8. Zoology Museum

The Zoology Museum of the Department contains more than 500 specimen samples of different animal phylums along with various osteological specimens. The museum is well maintained and school students of surrounding schools visit the museum quite often. The specimens of the museum are also used for studying the phylums in the undergraduate and post graduate classes.



9. Vermicompost Production Unit and Mulberry Garden

Department of Zoology maintains a Vermicompost production unit and Mulberry Garden in the institute campus. The vermicompost production unit comprises of two vermicompost beds of 8 feet x 4 feet x 2 feet dimensions. The output of these beds is approximately 400 kg per 3 months. The generated vermicompost is distributed among the institutes staff and used for the gardening purposes of the institute. The beds are maintained by the students admitted to the certificate course in Vermicompost Technology run by the department.

The mulberry garden is also maintained by the Department of Zoology. There are several plantations of mulberry plants which are watered and nurtured. The leaves of these plants are utilized for feeding the silkworms that are used for M. Sc. projects of the department. The leaves are also used for green synthesis of nanoparticles.



10. Research Innovation Curricular Hours (RICH) Club

The main objective of “Research Innovation Curricular Hour” (RICH) Club is to promote academic ecosystem among the students and to motivate them to think on novel ideas. The formal Inauguration of RICH Club was held on 21st March 2022 at the hands of Shri. Sanjay Bhargava, Chairman, Shiksha Mandal, Wardha. It is expected that the activities under this banner should be driven by the students for the benefit of the students to inculcate innovative qualities among them. These activities may include workshops, seminars, quizzes, debates, group-discussions, talks of eminent speakers etc. These activities will be carried out in collaboration with the respective departments. In all 38 UG and PG students are selected as a functional group member in the core-body of RICH, one from each class. There is one teacher-mentor from each department to monitor and facilitate the activities. This RICH Club

would remain functional throughout the year under the umbrella of Research Promotion Cell.

Activities carried out under RICH Club.

- Participation of four students in “Intercollegiate online poster competition on creating awareness about COVID-19” organized by Department of Microbiology, Sathaye College in association with Microbiologists Society, India on 21st Aug. 2021 in which Ms. Javeria Qureshi from B. Sc. Sem V got Second Prize.
- Ms. Yukti Ambatkar (B. Sc. Final) and Ms. Harshada Sontakke (M. Sc. Final) were awarded with Best Student Award from Microbiologist Society of India on 17th Sept. 2021.
- Participation in Video Making competition on theme “*Integrated Approach in Science and Technology for Sustainable Future*” held at Dharampeth College Nagpur on science day 28th Feb. 2022 in which B. Sc. II students Ms. Sanika Golait got the second prize and Mr. Aniket Vitalkar got a consolation prize.
- Guest lecture on “Incubation Opportunities for Students and Faculties: Early-stage entrepreneurs” on 9th July. 2022.
- ‘Elocution Competition’ for UG and PG students on the occasion of International Tiger Day on 29th July. 2022.
- Seminar on “Converting Innovation into Start-up” on 6th Aug. 2022.
- Guest Lecture on "Cyber Awareness" on 13th Aug. 2022.
- Online Poster Competition and Exhibition under "Micromania 2022" on 23rd Aug. 2022.
- Quiz Competition "The Right Guess" under "Micromania 2022" on 24th Aug. 2022.
- Fermented Food Fest Competition and Expo 25th Aug. 2022.
- Shikshak Parv / Self Governance Day on 5th Sept. 2022.
- Book reading and Library Orientation Program 8th Sept. 2022.
- “Biotechnology Open Day” on 17th Sept. 2022.
- Workshop on "IT Awareness and Office Skills for Supporting Staff" 19th Sept. 2022.
- "Chemistry Seminar Competition for UG and PG students" on 22nd Sept. 2022.



Inauguration of RICH Club



Principal addressing the gathering



RICH Club committee members with departmental representative (2022-23)



Shiksha Mandal's
BAJAJ COLLEGE OF SCIENCE, WARDHA

RESEARCH PROMOTION COMMITTEE

Dr. P.V. Tekade (President and Convener)

Dr. D.D. Naik (Member)

Dr. P.G. Borkar (Member)

Dr. B.V. Mohite (Member)



RESEARCH INNOVATION CURRICULAR HOUR (RICH) CLUB 2022-23

President : Ms. Shruti Kochade

Vice-President : Ms. Chanchal Dhanwe

Secretary : Ms. Janhvi Deshmukh

Joint-Secretary : Ms. Vaidehi Pandey, Mr. Dilip Raghvan

DEPARTMENTAL REPRESENTATIVES

PHYSICS

Dr. G. V. Lakhotiya - Mentor

Anurag Lokhande : B.Sc. III

Sai Dhumane : B.Sc. II

Sakshi Kadu : B.Sc. I

CHEMISTRY

Dr. P. G. Borkar - Mentor

Vaishnavi Gidmare : M.Sc. II

Shweta Magar : M.Sc. I

Vaishnavi Yerkar : B.Sc. III

Disha Sojrani : B.Sc. II

Saksham Bhagat : B.Sc. I

ELECTRONICS

Dr. P. A. Saudagar - Mentor

Samiksha Andeo : B.Sc. III

Chanchal Dhanwe : B.Sc. II

Shrutika Vaidya : B.Sc. I

MATHEMATICS

Mr. R. S. Pradhan - Mentor

Sarthak Bajpai : M.Sc. II

Vaibhav Pal : M.Sc. I

Rutik Dabhane : B.Sc. III

Roshan Fukat : B.Sc. II

Vaidehi Pandey : B.Sc. I

BOTANY

Dr. D. D. Naik - Mentor

Teena Uike : M.Sc. II

Trupti Paturkar : M.Sc. I

Shruti Kochade : B.Sc. III

Pornima Daf : B.Sc. II

Guruprasad Satone : B.Sc. I

ZOOLOGY

Dr. S. P. Biswas - Mentor

Nandini Surjuse : M.Sc. II

Renuka Chanap : M.Sc. I

Janvhi Deshmukh : B.Sc. III

Hemang Butle : B.Sc. II

Bushra Pathan : B.Sc. I

MICROBIOLOGY

Dr. B. V. Mohite - Mentor

Neha Tekade : M.Sc. II

Prajakta Mulkalwar : M.Sc. I

Dilip Raghvan : B.Sc. III

Nubesh Pathan : B.Sc. II

Sampada Udepurkar : B.Sc. I

BIOTECHNOLOGY

Dr. K.A. Kale - Mentor

Sanskriti Shukla : B.Sc. III

Khushi Deogade : B.Sc. II

Sanika Ingole : B.Sc. I

COMPUTER SCIENCE

Mr. S. A. Durge - Mentor

Ayan Kazi : B.Sc. III

Arpit Jiwane : B.Sc. II

Gauri Waghmare : B.Sc. I

LANGUAGE

Mr. R.K. Thombare - Mentor

Mayuri Kapse : B.Sc. I

11. Institution's Innovation Cell (IIC)

Ministry of Education (MoE) Govt. of India has established MoE's Innovation Cell (MIC) to systematically foster the culture of Innovation amongst all Higher Education Institutions (HEIs). Primarily IIC's role is to engage large number of faculty, students and staff in various innovation and entrepreneurship related activities such as ideation, problem solving, Proof of concept development, Design thinking, IPR, Project handling and management at Pre-incubation/Incubation stage, etc., so that innovation and entrepreneurship ecosystem gets established and stabilized in HEIs.

Our college has reconstituted Institutions Innovation Council (IIC) this year. The following faculty members of our college have been entrusted with various responsibilities mentioned in the following table. They are supposed to arrange various activities regularly under this banner. These members successfully execute the assigned work related to their responsibilities from time to time with the help of student members and update the records on IIC portal and keep record of these activities.

More details can be obtained from <https://mic.gov.in/mic/innovation-council/>

Following committee is constituted for Institution's Innovation Council.

Sr. No.	Name of the Faculty Member	IIC Designation / Responsibility
1	Dr. O. A. Mahodaya	Head of the Institute
2	Dr. S. H. Bagade	President and ARIIA Coordinator
3	Dr. P. V. Tekade	Vice-President and NIRF Coordinator
4	Dr. Mrs. N. P. Mohabansi	Convener of IIC
5	Shri Jaykumar Dahake	Industrial Expert form around the region
6	Shri. Ashok Saraf	Alumni Entrepreneur
7	Dr. Vikas Chandra Choudhary	Patent Expert
8	Dr. D. D. Naik	Innovation Activity Coordinator
9	Dr. M. M. Yerpude	Innovation Activity Member
10	Dr. A. V. Nakhate	Internship Activity Coordinator

11	Shri. M. G. Ingale	Internship Activity Member
12	Dr. P. G. Borkar	IPR Activity Coordinator
13	Dr. Ms. B. V. Mohite	IPR Activity Member
14	Shri. P. B. Bhoyar	Social Media Coordinator
15	Dr. A. A. Maheshwari	Social Media Coordinator
16	Dr. S. R. Tiple	Start up Activity Coordinator
17	Dr. S. P. Biswas	Start up Activity Coordinator
18	Ms. Laxmi Baghel	Student
19	Ms. Sakshi Kapase	Student
20	Mr. Ganesh Soni	Student
21	Ms. Mrunal P. Gandole	Student
22	Mr. Musharraf Yusuf Khan	Student
23	Ms. Pranjal A. Nandeshwar	Student
24	Ms. Sakshi S. Agrawal	Student
25	Ms. Mugdha M. Shukla	Student
26	Mr. Saurabh N. Dhote	Student

Following programmes were conducted under IIC for the session 2020-21:

Title	Date	Head
Webinar on - Story of Foldscope by co-inventor and CEO Foldscope Instruments, Jim Cybulski, California (USA)	25/07/2021	Self-Driven Activity
Session on why IP is important in academics?	26/04/2021	MIC Calendar Activity
Talk on “ From your Ph.D. / Master thesis to a Start up” by Dr. Anand Deshpande, Founder and CMD, Persistent Systems.	23/04/2021	MIC Calendar Activity
Virtual Industrial Visit at Cleantech, Mumbai	17/04/2021	Self-Driven Activity
Start Up: A future dream for graduates and young minds by Shri. Abhishek Acharya, Director Biz-Viz production Nagpur.	06/03/2021	Self-Driven Activity

National Webinar on “Green Audit for Education Institutions” Dr. Pravir Deshmukh, Counsellor, India Business and Biodiversity Initiative (IBBI), Confederation of Indian Industry (CII), New Delhi	23/02/2020	Self-Driven Activity
National Workshop on “Intellectual Property Rights (IPR) and Innovations” by Dr. M. Kantha Babu, Director, Centre for Property Rights (CIPR)- College of Engineering Guindy, Anna University, Chennai.	19/12/2020	Self-Driven Activity

Activities carried out under IIC in 2021-22.

- Webinar on “Motivational Talk by Successful Entrepreneur” on 23rd August 2021.
- National webinar on Impact Lecture Series Session I on “Intellectual Property Rights and Entrepreneurship” on 22nd September 2021.
- National webinar on Impact Lecture Series Session II on “INNOVATION and STARTUP” jointly on 5th October 2021.
- Motivational Talk on “Katta Model: Doing Research Differently” on 23rd November 2021.
- National Level e-Awareness Program on topic “Entrepreneurship and Start-up” jointly organized IIC and Mahatma Gandhi Institute for Rural Industrialization (MGIRI), Wardha on 1st December 2021.
- National Workshop on topic “Intellectual Property Rights (IPR), IP Management and Research Ethics” jointly organized on 29th August 2022.
- Seminar on “Start up Plans: Legal and Ethical Steps” on 15th July 2022
- National webinar on “Raman Techniques in Science and Technology” on 28th Feb 2022.
- Live webinar on “ Pre-incubation for new ideas via guidance session on job placement” on 21st January, 2022.
- Motivational Talk by Successful Innovator by Dr. Rahul Suryawanshi, Gladstone Virology Institute, San Francisco, California, United States on 14th December 2021.

Glimpses of Activities under IIC



Story of Foldscope by Dr. Jim Cybulski, CEO, Foldscope Instruments, CA, USA



National Workshop on “Intellectual Property Rights (IPR) and Innovation” by Dr. M. Kantha Babu, Director, Center for Property Rights (CIRP), College of Engineering Guindy, Anna University, Chennai



Faculties of Bajaj College of Science, Wardha attending the online talk of Dr. Anand Deshpande



Virtual Industrial Visit at Cleantech, Mumbai



Faculties of Bajaj College of Science, Wardha attending the online session on "Why IP is important in academia"