

**DEPARTMENT OF BIOTECHNOLOGY**  
**GOVT. DIGVIJAY AUTONOMOUS POSTGRADUATE COLLEGE**  
**RAJNANDGAON (C.G.) 491441**

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**Annual Report (2024-25)**

The Department of Biotechnology presents a glimpse of its academic and outreach activities for the academic year 2024–2025, showcasing student engagement, interdisciplinary learning, scientific research and social awareness.

**1. Research Paper published in high impact journals –**

**02** research paper published in RSC and Springer journals

High impact factor of **3.8**

SCI/Scopus and UGC CARE indexed

1. Iqbal Ansari, Charu Arora, Aazad Verma, Alaa El Din Mahmoud, Maha M. El-Kady, Ravikumar Rajarathinam, Dakeshwar Kumar Verma & Pramod Kumar Mahish  
A Critical Review on Biological Impacts, Ecotoxicity, and Health Risks Associated with Microplastics. *Water Air and Soil Pollution*, Volume 236, Issue 88, 2025 PP  
<https://doi.org/10.1007/s11270-024-07731-z>

2. Pramod Kumar Mahish, Dakeshwar Kumar Verma, Anjali Ghritlahare, Charu Arora and Paz Otero. 2024. Microbial bioconversion of food waste to bio-fertilizers. *Sustainable Food Technology*, 1 (2), 1-20 <https://doi.org/10.1039/D3FB00041A>

**2. Patent –**

**03** Patent in the academic year 2024-25

S. No.	Patent/ Design Number	Date of Registration	Type	Title
1	202421044550	09/06/2024	Invention	Possible drugs against methicillin-resistant <i>Staphylococcus aureus</i> (MRSA) from leaf extract of <i>Butea monosperma</i> (Lam.) Taub
2	426235-001	08/08/2024	Design	IOT BASED WASTEWATER TREATMENT DEVICE
3	202421071328	20/09/2024	Invention	Improvement of Water quality using <i>Eichhornia crassipes</i> and Immobilized <i>Pseudomonas atacamensis</i> consortium in Constructed Wetlands

**3. Book Chapter published –**

**01** Book chapter published in Tylor and Francis publication house -

1. Varsha Meshram, Khemraj, Pramod Kumar Mahish, and Nagendra Kumar Chandrawanshi. Chapter 16 - Mushroom Cultivation and Application in Green Technology. Book Title - Microbial Approaches for Sustainable Green Technologies, Editor(S) - Jata Shankar, Pradeep Verma, Maulin P. Shah, Publisher - Taylor & Francis Group, USA. P. ISBN - 304-317. 9781003407683

**4. SWAYAM/MOOCs Content development**

Contributed 04 Video lecture to 4-Credit SWAYAM course “Environmental Studies: Pollution, Climate Change and Safety Management (पर्यावरण अध्ययन: प्रदूषण, जलवायु परिवर्तन और सुरक्षा प्रबंधन).”

Course Link: [https://onlinecourses.swayam2.ac.in/nou24\\_es12/preview](https://onlinecourses.swayam2.ac.in/nou24_es12/preview)

**5. Honor/Award –**

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Honoured with **\$333.33** and **€27.24** as a royalty for authoring book from ACS (USA) and De-Gruyter (Germany)

**6. Curriculum Design –**

Design UG (NEP) and PG syllabus as a part of BOS of – Central BOS, Govt. Digvijay College RJN, Govt. VYT PG Coll. Durg and Bharti University Durg.

**7. Used of ICT tools -**

Used tools like interactive panel, power point presentation, Canva, Photoshop, etc were used to clear the fundamentals of students.

**8. Ph.D. Guidance –**

Guided **03** Ph.D. students

01 – Final viva defended, 01 – Thesis submitted, 01 – Under Six monthly course

**9. MoU activity –**

MoU activity conducted with Govt. VYT PG College Durg, St. Thomas college Bhilai, Bhilai Mahila Mahavidyalaya and Shivnath Science College RJN

1. MOU with Govt. VYT College, Durg (04/01/2025)- Lecture on instrument care and technologies like ELISA and spectroscopy by expert Mr. Moti Ram Sahu.

2. MOU with St. Thomas College, Bhilai-Training session by Dr. Shubha Diwan on plant tissue culture and explant sterilization.

3. MOU with Bhilai Mahila Mahavidyalaya (03/02/2025)-Health talk on immunity-related issues in youth by Dr. Sabiha Naz, covering nutrition, infections, and lifestyle impacts.

**10. Extracurricular and extension activity –**

1. **Poshak Vidyalaya activity** – in Maharani Laxmi Bai School RJN

Student Outreach & NEP Awareness- Poshak Sampark Abhiyaan (07/01/2025)

Awareness drive for 11th–12th grade students at Govt. Maharani Laxmibai Girls School on NEP-2020, credit system, subject selection, and online learning.

2. **Entrepreneurship development Program** – Mushroom cultivation

Entrepreneurship & Skill Development Mushroom Cultivation Workshop (26/07/2024) M.Sc. 3rd semester students received hands-on training in mushroom production and spawn sterilization techniques, under the guidance of Dr. Promod Mahish (HOD, Biotechnology).

3. **Environmental Awareness Program** – Poster on Env. Issues

Environment & Health Awareness-Poster Presentation on Environment Awareness (01/08/2024) Students showcased posters on pollution, e-waste, global warming, and ozone depletion, following an expert talk on environmental conservation.

4. **Health Awareness Program** – Celebration of World Leprosy Day, Awareness on Weaken Immunity, World Tuberculosis Day

World Tuberculosis Day (24/03/2025)- An awareness program on TB symptoms, stages, and diagnosis was conducted by Dr. Promod Mahish (HOD) with participation from SPM College students.

Health Awareness Initiatives (24/02/2025)-Separate sessions on holistic health and women's health awareness were conducted for UG & PG students, emphasizing lifestyle care and national health data.

Celebration of National Days- Important Day Observance (30/01/2025)

Educational sessions on National Leprosy Day and Gandhi Jayanti were conducted by Ms. Harshita Uikey and Ms. Ritu Deshlahrey, focusing on disease awareness and historical relevance.

5. **Scientific Workshops** – PCR programming, Instrumentation handling.

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Inter-Institutional Collaborations & MOUs & Visit to Departmental Instruments Lab (01/01/2025) B.Sc. III students from Govt. Shivnath Science College explored laboratory instruments and plant tissue culture techniques.

Advanced Lab Training- PCR Programming Workshop (23/03/2025)

Postgraduate students from Biotechnology, Microbiology, and Zoology departments learned practical PCR handling in the RUSA sophisticated instrument lab.

Antimicrobial Sensitivity Testing by PG students from Govt. Sitapur College participated in lab tests using plant extracts and nanoparticle solutions for microbial resistance, guided by faculty and M.Sc. 4th-sem students on 29-03-2025.

**6. Plantation**

Plantation & CO<sub>2</sub> Absorption Awareness (30/01/2025)- PG students participated in an environment program led by Mrs. Yogeshwary Tiwari (SF teacher), including a plantation done near the RUSA building garden.

**11. Participation in conferences -**

Presented research paper in international conference – 04

Chaired Session in international conference - 01

This academic year was marked by productive collaborations, practical learning experiences, and social responsibility programs, enriching student knowledge and aligning with NEP-2020 goals. The Department remains committed to fostering innovation, scientific curiosity, and community engagement.

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**Annual Report 2024-25 - Extra-curricular Activity**

- **Entrepreneurship Development Workshop- Production of Mushroom**

The workshop was conducted on the dated 26/07/2024 for master's 3<sup>rd</sup> semester students with hands-on training. Where they learnt about the mushroom cultivation, production procedure, sterilization of spawn seeds. This workshop was guided by **Dr. Promod Mahish** (HOD, Department of Biotechnology, Digvijay College, RAJ, (C.G.)).



**The mushroom cultivation by master's 3<sup>rd</sup> semester students**

- **Environment Awareness Programme (Poster-Presentation)**

One-day “**Environment Awareness programme**” was conducted on the dated on 01/08/2024. In which the talk was delivered for the awareness of environment and its conservation, human created pollutions, various types of pollution, electronic garbage, prevention strategies, global warming and knowledge about the depletion of ozone layer. All the topic also covered by students participation in the form of poster presentations.

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**Participated students and presented the poster by M.Sc. students in Environment Awareness programme**

- **One-day Visit- Working on Departmental Instruments**

**Govt. Shivnath Science College, Raj, (C.G.)** B.Sc. III (Bio- group) students were introduced to the departmental all instruments by **Dr. Promod Mahish** (HOD, Department of Biotechnology, Digvijay College, RAJ, (C.G.)). This activity was conducted on date 01/01/2025 in which two teachers from science college and the departmental teachers were present to enhance their awareness of the lab. Students also gain their knowledge about plant tissue culture.

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**Govt. Shivrath Science College, Raj, (C.G.) B.Sc. III (Bio- group) students were introduced by teacher about the departmental instruments in the Biotech Department.**

- **Poshak-Sampark Abhiyaan**

One day visit for the “**Poshak Sampark Vidhyalay Abhiyaan Program**” was organised dated on 07/01/2025 by the Department of Biotechnology under the NEP-2020 in the host school **Govt. Maharani Laxmibai Girls School, RAJ. (C.G.)**. This program is organised to deliver knowledge about the new education policies, its credit systems, selection of subjects, various online courses etc. before the higher secondary 11-12<sup>th</sup> students.



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**Introducing students with “Poshak Sampark Vidhyalay Abhiyaan Program” by college teachers in the presence of Principal of School on the Date 07/01/2025.**

- **Environment Awareness Programme**

On the date of 30/01/2025 the environment awareness programme conducted by Department of Biotechnology. In this program master's students were participated where departmental teacher **Yogeshwary Tiwari** (Self-finance teacher) shared her knowledge about environment and CO<sub>2</sub> absorptions and some techniques related to it. The plantation activity was also done in the college botanical garden near RuSa Building.

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- **Celebration of Important Dates and its importance**

Students were gained knowledge about the various important celebration dates with **national leprosy day**, **national Gandhi Jayanti**. These topics were covered as presentations by Departmental teachers **Harshita Uikey** (Self-finance teacher) and **Ritu Deshlahrey (Research Scholar)**. This activity was conducted on the date on 30/01/2025. The aim of this program was to share



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knowledge about its importance, diagnosis strategies, early and late stages as well as clinical health impact.



**Celebration of important National Days –“National leprosy day, national Gandhi Jayanti.”**

- **Invited lecture & lab activity MOU with Govt, VYT Science College, Durg**

The **Memorandum of Understanding (MOU)** was conducted with the **Govt. VYT Science college, Durg, (C.G.)** dated on 04/01/2025 in the presence of subject expertise **Moti Ram Sahu (Assistant professor)** in the Department of Biotechnology-delivered his knowledge about the maintenance and care of instruments lab as well for the lab equipment. In this program all post graduates students were gained their awareness and interest about ELISA, Atomic absorbance, spectroscopy etc.

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**Memorandum of Understanding (MOU) with the Govt. VYT Science college, Durg, (C.G.) dated on 04/01/2025**

- **Activity under MOU with St. Thomas College, Bhilai, (C.G.)**

The **Memorandum of Understanding (MOU)** was organized with the **St. Thomas College, Bhilai (C.G.)** dated on 04/01/2025 in the presence of subject expertise **Dr. Shubha Diwan** in the Department of Biotechnology- delivered her knowledge about the plant tissue culture, explant collection, cutting methods, and explant sterilization techniques etc. to the all post & under graduate students.

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**Memorandum of Understanding (MOU) with the St. Thomas College, Bhilai (C.G.) dated on 04/01/2025**

- **Health Awareness Program Under the MOU activity – “Behind Weaken Immunity”**

The **Memorandum of Understanding (MOU)** was conducted with **Bhilai Mahila Mahavidyalaya, Durg, (C.G.)** dated on 03/02/2025. The program related with harshening of immunity among school and college students has been discussed by the subject expert **Dr. Sabiha Naz** (Department of Biotechnology). In this program some of the important factors ie, poor nutrition, microbial infection, changes in life style, addictions of smoking and alcohol were discussed. All the post graduate students were gained their awareness and raised their queries in-front of expert.



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**Memorandum of Understanding (MOU) with Bhilai Mahila Mahavidyalaya, Durg, (C.G.) dated on 03/02/2025.**

- **Departmental Health Awareness Program-**

On the dated 24/02/25 in the Department of Biotechnology the “**Holistic Health awareness**” program was conducted. Where all PG & UG students gained their knowledge about Health and its proper care solution-based talk delivered and discussed. The **annual health report** of India is also discussed.

- **Departmental Women Health Awareness Program-**

On the dated 24/02/25 in the Department of Biotechnology the “**Women Health awareness**” program was conducted. Where all PG & UG girl students gained their knowledge about holistic women Health, daily needs, situational based and its proper care solution-based talk delivered and discussed.



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- **PCR Programming Workshop**

In the RUSA building under the sophisticated instrument lab one day workshop for Programming of PCR experiment was held on the date on 23/03/2025 in the presence of subject expertise **Dr. Promod Mahish** (HOD, Department of Biotechnology, Digvijay College, RAJ, (C.G.)) delivered his knowledge about working **PCR experiment**. In this program all post graduate students from the department of Biotech, microbiology and zoology were gained their awareness PCR machine.



**A news-paper publication of students visiting at the RUSA building for the awareness sophisticated instruments, Dated: 23/03/2025**

- **A Program on World Tuberculosis Day, at college**

On the date of 24/03/2025 the **World Tuberculosis Day**, for the health awareness program conducted by Department of Biotechnology. The aim of this program was to share knowledge about TB, early and late stages, its diagnosis and clinical health impact by very good power-point presentation. This presentation was delivered by **Dr. Pramod Mahish** (Head of the Department) in new hall. Whereas, students of **Govt. SPM college** (Department of

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**Chemistry**) were also joined the program. This program is get benefitted by 2<sup>nd</sup> & 4<sup>th</sup> master students as well as departmental teachers participated too.

- **Activity of Lab experiment for the testing antimicrobial sensitivity at the Department**

One day visit of PG students from **Govt. Sitapur college** at the department. In the lab they learnt the experiments for microbial laboratory test- Antimicrobial sensitivity test using different plant extract and nano-partical solutions. All the tests were done under the guidance of head of the department and M.Sc. 4<sup>th</sup> sem students of the Govt. Digvijay College, RAJ, (C.G.).