

ACADEMIC AUDIT REPORT
(FACULTY OF SCIENCE)
For the Year 2023-24



Internal Quality Assurance Cell

TRIPURA UNIVERSITY
(A CENTRAL UNIVERSITY)
SURYAMANINAGAR, TRIPURA - 799022

Academic Audit Report for the Year 2023-24

Academic audit report for the year 2023-24 for Science Faculty of Tripura University was conducted on 08/01/2025 and 09/01/2025. The academic audit committee consisted of the following members who critically examined the audit related documents submitted by the various departments and visited each department of the science faculty and different facilities of the university for preparing this report.

1. Prof. K.N. Singh, Vice Chancellor, Central University of South Bihar, Gaya
2. Prof. J. P. Tamang, Vice Chancellor, Sikkim University, Gangtok
3. Prof. Debajyoti Bhattacharjee, Dean. Faculty of Science, TU
4. Prof. Samir Kumar Sil, Dept. of Human Physiology, TU
5. Prof. Swapan Majumdar, Director, R & D Cell, TU

Recommendations in General:

1. All 12 science departments at Tripura University are well-equipped with basic and some advanced instruments for teaching and research. Some Departments have advanced equipment acquired through external projects, which enhances their capabilities.
2. A detailed logbook should be maintained for each major equipment in every department to monitor its usage and upkeep.
3. Several teaching positions are vacant in nearly all departments. Immediate action should be taken to fill these posts. Additionally, each department should have one technician and one lab attendant to support practical and technical tasks.
4. The University should consider creating Minimum Travel Grant programs for regular faculty and final-year PhD students to cover costs for speaking engagements (invited talks), whether domestic or international. They should also award the Best Publication Awards annually based on impact factors for the application year. Newly appointed PhD holder Assistant Professors may be given one-time seed funding of Rs. 50,000 after completing their probation, with one grant available per year from each faculty or school, depending on available resources and set selection criteria.
5. It is important to promote diversity in the recruitment of faculty members from all over India. Likewise, student admissions should reflect national diversity across the country to ensure quality education and competitiveness.
6. The University should implement Annual Maintenance Contracts for scientific instruments to ensure they operate smoothly.

7. All the department should explore the possibility to start UG-PG integrated courses for their better survival as per mandate of NEP-2020 to improve the quality of students.
8. Reformation of curriculum should be based on inputs collected from different stakeholders with proper format and process.
9. Indian Knowledge system (IKS) should be incorporated in the course curriculum of every discipline.
10. As per NEP 2020, school education needs to be integrated with higher education. It is required to revisit the curriculum of different departments based on NEP 2020.
11. Multidisciplinary approach should be adopted in teaching and research for quality education.
12. Implementation of different need-based vocational courses for skill enhancement programmes
13. Outreach programmes by various departments to be strengthened, particularly focussing on different mission modes of the government of India.
14. The national and international seminars are to be conducted in an interdisciplinary mode, and eminent resource persons from the respective fields should be invited from the national and international reputed institutes.
15. Department wise publications and community centric activities by the faculty members need to be increased.
16. Job-oriented certificate or diploma courses based on local needs should be introduced for employment creation and entrepreneurship development.
17. In order to utilize the optimum potential of the department specially engineering department, the ratio of teachers and students should be increased.
18. Every discipline is advised to seek its active role in 'Viksit Bharat'.

Department-wise Report for the Academic Year 2023-24

Department of Botany

1. Academic and research progress is good for the academic year 2023–24.
2. Short term and long-term goals need to be formulated and need to be fulfilled by the department time to time.
3. UG-PG integrated courses need to be started by the department.
4. Mentor-mentee systems, Feedback from stakeholders, Specific measures for slow learners should be initiated by the department.
5. Campus-community connect need to be formulated.
6. Indian Knowledge system (IKS) should be incorporated in the course curriculum.
7. Herbal garden has to be developed by the department.
8. Student involvement in various outreach activities needs to be promoted.

Department of Forestry and Biodiversity

1. Publications and research work carried out by the department are satisfactory.
2. Skill development and vocational courses on emerging areas may be started to encourage self-employment.
3. Short term and long-term goals need to be formulated and fulfilled time to time by the department.
4. Online courses need to be started by the department.
5. The department should provide consultancy services.
6. Reformation of curriculum should be based on inputs collected from different stakeholders with proper format and process.
7. Research themes should be selected based on emerging areas and problem-oriented issues of the region.
8. Indian Knowledge system (IKS) should be incorporated in the course curriculum.
9. Community related works need to be promoted.
10. Popular articles should be published in different local or regional media from research works carried out by the students.

Department of Mathematics

1. Academic and research progress is good for the academic year 2023–24.
2. Reformation of curriculum should be based on inputs collected from different stakeholders by developing a proper format and process.
3. The syllabus of the department needs to be updated regularly, and the inclusion of MOOCs needs to be encouraged.
4. Job oriented courses need to be included in the course curriculum.
5. Indian Knowledge system (IKS) should be incorporated in the course curriculum. More emphasis may be given on Vaidic mathematics.
6. The department should take active role to popularize mathematics among school students.
7. Workshop and conferences may be organised regularly by the department.

Department of Statistics

1. The potentiality of the department is not being utilized due to less admitted students, so the department should take much initiative to popularize statistics among the students.
2. The faculty should prepare year wise plan for expansion of the department and also to fulfil the need of new century.
3. International collaboration with reputed institutions needs to be strengthened.
4. New course like 'Data Science' need to be incorporated.
5. Explore the prospect of consultancy service in the field of statistics.
6. More projects need to submit for funding and publications.

Department of Pharmacy

1. Faculties are appreciated for their efforts in raising grants for research projects.
2. Department should organize more conference, seminar and workshops.
3. Department is having lot of potential but need to be planned accordingly.
4. Need to improve department-industry interaction. Industrialist may be invited for interaction with the students.
5. Feedback from the industrial person need to be incorporated in the syllabus.
6. Encourage the students to start up projects in the field of pharmacy.
7. The department should see the potential to link the subject with 'Viksit Bharat'.
8. Outreach activities need to be carried out for the betterment of the society of this region by involving students.

Drug Metabolomics Lab

1. Research work carried out in the lab is satisfactory.
2. More fund need to be generated.
3. As it is one of the rare facility of the region, so the faculties may try to use full potential of the resource.
4. Need to develop MoU with industries and other research institutes.

Department of Chemical and Polymer Engineering

1. Faculties involvement in research publications and product development is well appreciated.
2. The department is unique in terms of nomenclature and should be involved in unique activities.
3. The potentiality of the department is not being utilized due to less admitted students, so the faculties should take initiative to popularize the department.
4. Student's placement is also a concern for the department. Placement details need to be highlighted.
5. Faculties should develop a proper plan to address the challenges of student scarcity for the survival of the department.
6. More industrial linkage required for the department.
7. B.Tech-M.Tech integrated program may be initiated
8. Teachers' strength need to be increased.

9. Explore the potential of consultancy service in the field.

B.Voc in Rubber Technology

1. The beginning of B.Voc in Rubber technology is recommendable but more emphasis is needed to develop these efforts.
2. Develop entrepreneurship skill among the students and people of the region.
3. Infrastructure and the maintenance of instruments are to be improved.
4. Develop a plan to make the department self-sustainable.
5. Need to develop and highlight a success story of the activities.
6. Regular faculty and other staffs are required for the programme.
7. Develop a linkage with Ministry of Skill development and make a plan for transformative reforms.

Department of Material Science and Engineering

1. The potentiality of the department is not being utilized due to less admitted students, so the faculties should take initiative to popularize the department.
2. Faculties should prepare a comprehensive plan for the department.
3. Publications and research work carried out by the department are satisfactory.
4. Need to collaborate with state departments.
5. Explore the potential of consultancy service to enrich the department.
6. Skill based courses may be initiated by the department.

Department of Chemistry

1. Academic and research progress is good for the academic year 2023-24.
2. The departmental laboratory facilities need to be renovated and upgraded to avoid any potential risk.
3. As per NEP 2020, school education needs to be linked with higher education and the department should take initiative to work on this aspect.
4. Efforts are to be made to promote collaboration through MoUs between other reputed institutes and industries.
5. Indian Knowledge system (IKS) should be incorporated in the course curriculum.
6. UG-PG integrated course needs to be started in the department.

7. Short term skill development Certificate and Diploma course like Laboratory Technology should be introduced.

Department of Zoology

1. Reformation of curriculum should be based on inputs collected from different stakeholders with proper format and process.
2. Interdisciplinary research needs to be strengthened, Problem-oriented and solution based research are also required.
3. Indian Knowledge system (IKS) should be incorporated in the course curriculum.
4. Explore the potential of consultancy service in the field of aquaculture.
5. More projects need to submit by the faculties for funding and publications.
6. Consortium projects need to be initiated, involving more departments in a focused area along with the collaboration of national and international institutes.

Department of Geography and Disaster Management

1. Academic and research progress is good for the academic year 2023-24.
2. Reformation of curriculum should be based on inputs collected from different stakeholders with proper format and process.
3. Remote Sensing and GIS-based PG Diploma Certificate courses may be started.
4. One PG Diploma program should be introduced on 'Spatial Management'.
5. Organize seminar/workshop to popularize the department.
6. 'National Geospatial Policy 2022' should be incorporated in the course curriculum.

Department of Microbiology

1. The department has made considerable progress since last evaluation period.
2. A common Microbial Repository has to be established along with a Database that includes details like microbe names, sources, growth conditions, names of depositors, and whether they are pathogenic or non-pathogenic. These will be stored in cryotubes at -80°C. Only microbes identified by their NCBI accession numbers will be included.
3. All microbes identified with NCBI accession numbers will also be sent to culture collection centres like the Microbial Type Culture Collection (MTCC) in Chandigarh or the National Centre for Microbial Culture Collection (MCC) in Pune.

4. The Department needs to focus on enhancing metagenomic research, especially through shotgun sequencing, to gather detailed microbial community profiles from environmental samples.

Department of Molecular Biology and Bioinformatics

1. The progress made by the department since the last assessment year is impressive and satisfactory.
2. It is important to set up a high-performance computing facility. A system with at least 96 GB RAM should be acquired. This setup will support advanced computational analysis and promote innovative research.
3. To strengthen bioinformatics capabilities in the department and assist the broader university, it is advisable to hire at least one Bioinformatics Scientist with a Master's in Bioinformatics and a PhD.
4. The Department should act as a central resource for bioinformatics, offering collaborative support to related Departments. This will encourage interdisciplinary research and make bioinformatics resources available throughout the University.
5. More focus should be placed on obtaining research projects that allow for advanced studies using multi-omics approaches.
6. It may be beneficial to include the use of multi-omics approaches in biomedical science and human microbiomes in the new NEP curriculum.

Department of Physics

1. The department has achieved significant milestones.
2. It is advised to add Biophysics as an essential part of the curriculum. A specific unit on Biophysics should be included in the updated syllabus to enhance the academic structure.
3. The department should seek partnerships with other biological science departments. This will encourage innovative research and help raise the average impact factor of publications.
4. A separate budget for curriculum-related field trips outside Tripura for the PG semester should be proposed to the University Finance Section each year.
5. Outreach programs should be strongly supported to engage students from the North East, who often struggle with mathematics and physics.

Central Instrument Centre

1. All tools and equipment should have clear labels showing the Date of Purchase, make, model, and contact details of the caretakers. This ensures proper tracking and maintenance.
2. Annual Maintenance Contracts must be renewed each year to keep the equipment working properly.

3. The facility needs a strong power backup system, such as an automatic generator, along with a dedicated power supply to reduce issues from power outages. The Dean's committee should suggest adding a generator for consistent operations.
4. Equipment rooms must be well-equipped with false ceilings, wall coverings, and features to keep dust and free-humidity. Water-absorbing rubber mats should be added for a better environment and to prevent humidity problems.
5. A separate account or logbook should be set up to track equipment usage.
6. Users should be charged a basic fee for all equipment, particularly those from the PIs of the University with extra-mural projects (from their contingencies grants), while higher fees should apply to outside users to generate revenue.
7. Regular training programs for technicians must be held to ensure proper equipment handling and maintenance. Advanced training for Central Instrumentation Centre staff is also important for managing complex instruments.

Department of Human Physiology

1. Ph.D. coursework must cover research ethics, responsible research practices, animal ethics, regulatory bodies, and clinical trial principles. These topics are essential for conducting research according to set standards. Including information on pre-, pro- and post-biotics will enhance the educational experience and research skills of Ph.D. students.
2. Collaboration with new and upcoming institutions should be a priority to stimulate innovative research and broaden the department's academic and professional connections.
3. Biomedical and medical science technology research should be encouraged, focusing on developing and using advanced techniques. Additionally, paramedical courses should be offered to connect research with healthcare, strengthening the interdisciplinary approach.
4. Strong job placement opportunities for graduating students must be established. This can be done by partnering with respected diagnostic centres and healthcare organizations to ensure students find relevant jobs after graduation.
8. The partnership with the university health centre should be improved, and plans should be made to set up at least 10 hospital beds for training and research. This will give students practical experience and support the department's healthcare research efforts.

Department of Information Technology

Computer Science and Engineering

Electrical Engineering

Electronics and Communication Engineering

1. Departments must engage with industries to create job placement opportunities for students. A few students should be placed successfully each year, with the University proactively facilitating these placements.
2. The revenue generated should be used wisely to support departmental growth. Using AMC fees for upgrading software and hardware can help the department stay current for research and teaching.
3. Industrial visits, tours, and internships should be promoted for hands-on learning. Including at least one semester of internship in the program can enhance students' practical skills and job readiness.
4. Students should look for local issues in the state and find solutions using technology or models.
5. Departments should start a program to help students develop business proposals and launch their own start-ups. Entrepreneurship should be part of the updated syllabus, along with training in proposal writing. Collaboration with the community should also be emphasized.
6. Departments should seek minor research projects and work with state government agencies to contribute to various programs, building partnerships between industry, academia, and government.
7. The department should aim for internship placements outside Tripura, focusing on the third or fourth semester for a one-semester experience. This will expand students' exposure.
8. Digital preservation efforts should be started to protect and promote the endangered languages of Tripura, ensuring their continued presence online.
9. The "Information Technology" and "Computer Science and Engineering" departments should work with the University's administration and finance teams to create in-house e-governance portals, reducing the need to outsource and saving money.
10. For a proposed project by the Computer Science and Engineering department, it is suggested to replace fermented foods with non-fermented local food products.

Photo Plate 1: Interaction with Department/Centre by Academic Audit Expert team

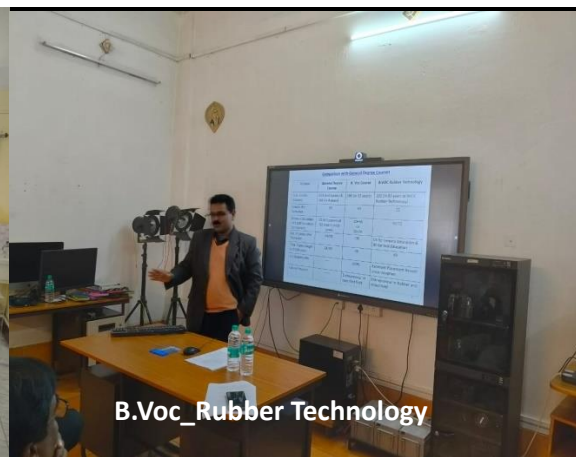


Photo Plate 2: Interaction with Department/Centre by Academic Audit Expert team



Botany Dept.



Forestry and Biodiversity Dept.



Mathematics Dept.



Statistics Dept.



Metabolomics Lab.



Pharmacy Dept.

Photo Plate 3: Interaction with Department/Centre by Academic Audit Expert team



Photo Plate 4: Interaction with Department/Centre by Academic Audit Expert team



Photo Plate 5: Handing over of the Academic Audit/ Exit Meeting



The Academic Audit Committee conducted a two-day visit on January 8-9, 2025, to evaluate the Academic Year 2023-2024. During their visit, the committee members toured various laboratories, 20 departments, and centers, engaging with faculty members, research scholars, and master's degree students.

Following PowerPoint presentations by the Heads of Departments, the committee members interacted with faculty, visited laboratories, and met with research scholars and lab in-charges. The overall performance of most departments was deemed satisfactory, with some areas identified for further improvement. These findings are reflected in both the general and department-specific reports.



Prof. K. N. Singh

External Expert

Vice-Chancellor,

Central University of South Bihar, Gaya

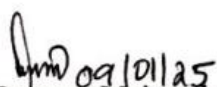


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Prof. Debajyoti

Bhattacharjee Chairman

Dean, Faculty of Science,

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Action taken Report

In view of the general observations, suggestions and recommendations of the Academic Audit expert team who visited all the departments of the Faculty of Science on January 08-09, 2025, the following steps have been taken by all the departments over the last year:

Department of Botany

The faculty members improved the quantity and quality of publications; faculty members tried to submit different projects from different funding agencies; Regarding the placement, students, Research Scholars got number of placements; Classes and project work of the students are satisfactory; Number of students from other states has increased; ICT enabled teaching is satisfactory. Overall actions taken by the department is satisfactory.

Department of Forestry and Biodiversity

The department has undertaken different initiatives as per the comments given in last academic audit. However further improvements are required in few observations. Overall actions taken by the department is satisfactory.

Department of Mathematics

The department has undertaken different initiatives as per the comments given in last academic audit. However further improvements are required in few observations. Different projects have been submitted by the faculties of the department; Many books have been published by the faculties of the department; Syllabus for MSc course revised in January, 2024; Number of PhD students has been increased in the department; Overall actions taken by the department is satisfactory.

Department of Statistics

The department has undertaken different initiatives as per the comments given in last academic audit. However further improvements are required in few observations. Research scholars are involved in practical and IMD classes; students are encouraged to do project with real life data and analysis using modern tools and techniques; Overall actions taken by the department is satisfactory.

Department of Pharmacy

The department has undertaken different initiatives as per the comments given in last academic audit. However further improvements are required in few observations. Department is undertaking collaborative research work with other allied departments; developing MoU with other organization; strengthening department-industry interaction to foster better partnership; different facilities are now accessible for university students; Overall actions taken by the department is satisfactory.

Department of Chemical and Polymer Engineering

The department has undertaken different initiatives as per the comments given in last academic audit. However further improvements are required in few observations. Overall actions taken by the department is satisfactory.

B.Voc in Rubber Technology

The Centre has undertaken different initiatives as per the comments given in last academic audit. However further improvements are required in few observations. Overall actions taken by the department is satisfactory.

Department of Material Science and Engineering

The department has undertaken different initiatives as per the comments given in last academic audit. Research project grants are increasing and department is planning to organize seminar and workshops. However further improvements are required in few observations. Overall actions taken by the department is satisfactory.

Department of Chemistry

Collaboration with top-tier institutes has been increased due to joining of new faculties in the department; It may further increase if all vacant posts are filled; joining MOOC course is gradually increasing; Overall response from the department is satisfactory.

Department of Zoology

Students are encouraged to participate in the various academic and extra curricular activities; Students are encouraged to participate in field and lab based activities; Students are encouraged to pursue online course for better understanding; faculties of the department are submitting project proposal to different funding agencies; organizing

seminars; students are encouraged for the study of diversity of fauna in the region; Overall response from the department is satisfactory.

Department of Geography and Disaster Management

The faculty members improved the quantity and quality of publications; faculty members tried to submit different projects from different funding agencies; Students are using data generated through GIS & RS for publication; Students are participating in different outreach activities; Faculties are planning to initiate self-funding PG diploma in RS, GIS and Data Science; Overall response from the department is satisfactory.

Department of Microbiology

Department of Molecular Biology and Bioinformatics

Department of Physics

Central Instrument Center

Department of Human Physiology

Department Of Information Technology

Computer Science and Engineering

Electrical Engineering

Electronics And Communication Engineering

The presented action taken report of the departments was evaluated and deemed satisfactory.




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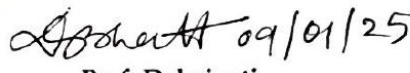
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