



DURGAPUR GOVERNMENT COLLEGE

(Accredited by NAAC with "A" grade in 2017)

**Affiliated to Kazi Nazrul University, Asansol
Jawaharlal Nehru Avenue, Durgapur, Dist: Paschim Bardhaman
PIN: 713214, West Bengal
www.durgapurgovtcollege.ac.in**

ANNUAL PROGRESS REPORT DBT STAR COLLEGE SCHEME (29-09-2022 TO 28-09-2023)

**Submitted to
DEPARTMENT OF BIOTECHNOLOGY
MINISTRY OF SCIENCE & TECHNOLOGY
CGO COMPLEX, LODI ROAD
NEW DELHI-110003**



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DEPARTMENT OF BIOTECHNOLOGY

PROFORMA FOR SUBMISSION OF ANNUAL PROGRESS REPORT SUPPORTED UNDER STAR COLLEGE SCHEME

- 1 Name of the College Durgapur Government College
- 2 Name of Coordinator, designation, Address, Phone No. Dr. Nivedita Acharjee
Assistant Professor, Department of Chemistry
Durgapur Government College
Durgapur, West Bengal
Pin Code-713214, West Bengal
Phone No.: 9679697649
- 3 Assessment Duration **29/09/2022 to 28/09/2023**
Duration in years: 1 year
- 4 Details of Departments Supported

Sl No.	Name of Department	Courses (B.Sc./M.Sc./PG Diploma, certificate etc. offered)	Regular Faculty Members Total = 41	
			With Ph.D.	Without Ph.D.
1	Botany	B.Sc.	4	1
2	Chemistry	B.Sc., M.Sc., Ph.D.	5	3
3	Geology	B.Sc., M.Sc., Ph.D.	8	2
4	Mathematics	B.Sc.	2	3
5	Physics	B.Sc.	5	1
6	Zoology	B.Sc.	6	1

5.	Number & Date of Advisory committee meeting	One, the advisory committee meeting was held on 09-05-2023. Departmental Coordinators presented the status of respective departments in the meeting.
6	<p>Qualitative improvements due to DBT support. Please highlight 5 salient points (within 500 words).</p> <p>1. The DBT Star College Scheme support has enabled to amalgamate the expertise of departments providing interdisciplinary dimension to the teaching and learning process through student projects, new experiments and hands on training and also to use ICT tools extensively, which is one of the objectives of the modern education system and is not included in the university course curriculum. For example, bioactivity study through the computational chemistry, water collection through field visits followed by analysis by students of both biological as well as chemical sciences, several software workshops</p>	

Nivedita Acharjee

Dr. Nivedita Acharjee
Coordinator, DBT STAR COLLEGE SCHEME
Durgapur Government College

COORDINATOR
DBT STAR SCHEME
DURGAPUR GOVERNMENT COLLEGE
J.N. AVENUE, DURGAPUR 713214

Dr. Debnath Palit
Principal
Durgapur Government College

Principal
Durgapur Govt. College



<p>conducted for data handling and representation etc. Interestingly, students of mathematical sciences have received hands on training on laboratory equipment of other departments and students of biological, physical chemical and geological sciences have received data handling and mathematical software training, enabling the mutual exchange of ideas among the students and faculty members. Students of physical and chemical sciences learnt vegetation mapping and vermicomposting, geological students learnt the significance of ecology and machine learning etc. In the next year, more and more interdisciplinary activities have been planned under the scheme.</p> <p>2. The DBT Star College Scheme support has enabled the participating departments to procure new equipments so that multiple copies of the equipment can be provided to the students for practical classes. The new equipment, chemicals and consumables purchased for the undergraduate laboratories have enabled to conduct new experiments and hands on experiments giving them the opportunity to explore scientific understanding through experiential learning. The new experiments and hands on experiments conducted under the scheme as per the proposal have enhanced the learning skills of students to make them more equipped for higher education opportunities. Through presentation of student projects during winter school training courses, the presentation and communication skills of students have considerably improved along with their subject understanding.</p> <p>3. The grant has enabled conducting several seminars, workshops and invited lectures by guest speakers and facilitated the interaction of undergraduate students with scientists, eminent professors and research experts. This has promoted their research fundamentals and also motivated them towards the future scope of scientific studies. The support has also enabled conducting workshop for faculty members and non-teaching staff enabling them to learn skills for application in academic and administrative activities. The celebration of World Soil Day and National Science Day and poster presentations by students has motivated the scientific understanding of the students.</p> <p>4. The grant has enabled conducting industrial training, field visits and visits to research laboratories which could not be conducted previously due to lack of funding. Students got</p>

Nivedita Acharjee

Dr. Nivedita Acharjee
Coordinator, DBT STAR COLLEGE SCHEME
Durgapur Government College

COORDINATOR
DBT STAR SCHEME
DURGAPUR GOVERNMENT COLLEGE
J.N. AVENUE, DURGAPUR 713214

Dr. Debnath Palit
Principal
Durgapur Government College

Principal
Durgapur Govt. College



	<p>exposure to advanced instrumentation processes and demonstration of the working principle of the instruments, modern research facilities available in institutes and industry practices. Faculty members have also participated in events and presented their research work with proper acknowledgement to the DBT star college scheme support.</p> <p>5. The grant has enabled conducting outreach activities for schools and colleges. These outreach activities have promoted the subject understanding, motivation and scientific study of the students and faculty members of different institutes. More outreach activities are also planned under the scheme.</p>
7	<p>Any Novel aspect introduced or planning to introduce during the Scheme duration.</p> <p>The novel aspects introduced under the scheme were interdisciplinary activities:</p> <p>1. Training Course on Bioactivity of organic compounds by Computational Studies (Chemistry, Botany, Zoology): Students used computational chemistry software to draw the structures of biologically active compounds, they prepared the mol files and fed them into the Pass online software site to obtain the biological properties of the compounds. This training course equipped students towards the basics of computational chemistry and computational biology. They then analyzed the biological activity of the selected compound and presented their prepared projects through power-point presentations.</p> <p>2. Student Project on Vegetation Mapping (Botany and Geology): A qualitative assessment of the Angiosperm flora was done by botany and geology students in the vicinity of IQ city Hospital of Durgapur, Pashim Barddhaman district to assess the influence of anthropogenic activities which is a major issue and location specific approach for the city of Durgapur.</p> <p>3. Training Course on "Characterization of Chemicals and analysis of the material safety data sheet (MSDS) before performing experiments" (Chemistry, Botany, Zoology): Students could characterize chemical compounds by classifying them on the basis of safety symbols and properties mentioned in the MSDS. They will be able to analyze chemicals before performing experiments and the safety measures to be adopted while using chemicals in the laboratories.</p> <p>4. Seminar and hands on training on "Introduction to Biostatistics, with emphasis on Machine learning "(Botany, Physics and Mathematics): Students learnt different statistical</p>

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Durgapur Government College

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DBT STAR SCHEME
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Durgapur Government College

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Durgapur Govt. College



methods using origin, such as descriptive statistics, hypothesis testing, regression, ANOVA, and other relevant statistical procedures; they got and also received hands on training to analyze biological datasets, and to create different types of graphs and visualizations using the imported data which included the customization options for axes, labels, titles and annotations.

5. Hands on training on "Digital Image Processing: An overview" (Physics, Mathematics and Geology): Students learnt the process and overview of Digital image processing and received hands on training through this interdisciplinary approach

6. Hands on training on " Mathematica software" (Mathematics and Zoology): Students got the hands on training on the biological applications of the MATHEMATICA software for data analysis and representation

7. Hands on training on " Resistivity meter Logging in Ground Water Exploration" (Physics, and Geology): Students learnt the concept of Resistivity survey which is a widely used geophysical technique for mapping subsurface structures and characterizing geological formations.

8. Workshop on "Soil Testing and Fundamentals of Fertilizer Recommendation"(Chemistry, Botany, Zoology): Students got the demonstration on the process of soil testing, soil composition and the concept of the use of fertilizer was introduced to them.

9. Workshop on " Biological and chemical waste handling and vermicomposting "(Zoology and Chemistry): Students were taken for visit to organic farm to learn vermicomposting and in-house faculty members explained the methods of biological and chemical waste disposal to the students. A project was subsequently designed on the management of chemical waste generated in undergraduate laboratories.

10. Seminar on " Aspects of Biogeochemistry"(Botany, Geology and Chemistry): Students got introduced to the interdisciplinary dimension and diverse applications of Biogeochemistry such as biogenic signals, biogeochemicals cycles etc.

11. Outreach activity for local school students (Chemistry and Geology): Students of local schools received demonstration and hands on training on chemical equipment, software, geological microscopes and equipment etc through this outreach activity.

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Durgapur Government College

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DBT STAR SCHEME
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Future novel interdisciplinary activities:

1. Student Project on industrial pollutant concentration assessment in the ground water within 2 km radius from the source where discharge of certain industrial waste is being made into the Damodar River involving the undergraduate students of Geology and Chemistry Department. Durgapur city is situated in the interfluvium of the river Ajay and Damodar, and the recharge of ground water is mostly occurred from the Damodar River. Since Durgapur is primarily an industrial belt; many of the factories discharge their untreated waste into the local canal system that are flowing into the Damodar River. The pollutant within those waste disposal ultimately reaches the groundwater table and disperse as the ground water flows in the downstream direction. The students of Geology will locate the source of waste disposal and demarcate the tube wells and dug wells from where samples to be collected and those samples will be analyzed by students of Chemistry Department. **(Interdisciplinary project of Chemistry and Geology)**
2. Student project on Vegetation mapping involving the Geology department and Botany department for a specific area. Ground survey of vegetation types will be carried out by the Botany department and with help of GIS techniques the mapping process will be carried out by the Geology department. **(Interdisciplinary project of Botany and Geology)**
3. Student Project on plantation of vetiver grass to check soil erosion. Vetiver grass is reported to be very effective to resist erosion of both coarse and fine soil. Besides, it can prevent dispersal of fly ash from industrial dumping sites. The vulnerable spots will be located by the Geology department and those plantation process and its monitoring will be done by both Geology and Botany Department. **(Botany and Geology)**
4. Student Project on basic epidemic model **(Mathematics and Zoology)**
5. Faculty Development Programmes on Application of Biostatistics and Botanical Nomenclatural patterns. This will involve participation of faculty members of all departments to provide new dimensions of **Interdisciplinary research**
6. Training courses on plant biotechnology and allied disciplines **(Botany and Zoology)**

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Durgapur Government College

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DBT STAR SCHEME
DURGAPUR GOVERNMENT COLLEGE
J.N. AVENUE, DURGAPUR 713214

Dr. Debnath Palit
Principal
Durgapur Government College

Principal
Durgapur Govt. College



	<p>7. Student Project on Uses and applications of computational chemistry and computational biology software for drug designing and basics of docking. This will introduce molecular dynamics area to the students (Chemistry, Botany and Zoology)</p> <p>8. Student Project on Synthesis of metal nanoparticles by chemical route (Interdisciplinary project of Physics and Chemistry)</p> <p>9. Student project on "Chemical and Animal Waste Disposal Techniques" (Interdisciplinary project of Chemistry, Botany, Zoology)</p> <p>10. Student Project on "Digital Image Processing" (Physics, Mathematics and Geology)</p>
8	<p>Lessons learnt / difficulties faced/suggestions if any, in implementation of the programme and utilization of DBT grant. (Max 3 points within 300 words).</p> <p>Lessons learnt</p> <ul style="list-style-type: none">• Students were very much interested in learning the topics by the use of ICT tools and software. So, use of ICT tools and software studies were given more emphasis while teaching, planning the winter school training courses and workshops to make the teaching process more interesting and student-friendly.• Interdisciplinary learning by amalgamation of the expertise of different departments has led to exchange of ideas for better scientific understanding of the students in all events. So, the interdisciplinary learning dimension will be given more emphasis during the entire tenure• Students learnt best by doing. So, more emphasis was given on hands on training of equipment, practical classes and new experiments and accordingly more such workshops and training courses will also be organized for students to enhance their experiential learning which will include workshops on calibration and handling of equipment purchased from the DBT grant. <p>Difficulties</p> <ul style="list-style-type: none">• The end semester examinations scheduled by the university are held for each semester separately. The teaching days were reduced due to the same. So, while implementing the scheme, some activities took more time for completion than expected due to the shortage of teaching days.• Separate routine and timing had to be scheduled for interdisciplinary activities without hampering their regular college routine. So, while implementing the planned activities took more time for completion, this decreased the number of planned activities

Nivedita Acharjee

Dr. Nivedita Acharjee
Coordinator, DBT STAR COLLEGE SCHEME
Durgapur Government College

COORDINATOR
DBT STAR SCHEME
DURGAPUR GOVERNMENT COLLEGE
J.N. AVENUE, DURGAPUR 713214

Dr. Debnath Palit
Principal
Durgapur Government College

Principal
Durgapur Govt. College



9. Key Performance Indicators

Sl	Indicator	Pre Support (2022)	During/After Support (2023)	Remarks
1	No. of students admitted	BOTANY (For 3 YEAR Honours and Program Courses) Total = 45 M = 25 F = 20 SC ST GEN OBC SC ST GEN OBC 2 1 18 4 6 0 10 4 CHEMISTRY (For 3 YEAR Honours and Program Courses) Total = 45 M = 27 F = 18 SC ST GEN OBC SC ST GEN OBC 6 1 19 1 4 1 11 2 GEOLOGY (For 3 YEAR Honours course) Total = 30 M = 18 F = 12 SC ST GEN OBC SC ST GEN OBC 5 0 10 3 2 0 9 1 MATHEMATICS (For 3 YEAR Honours and Program Courses) Total = 46 M = 28 F = 18 SC ST GEN OBC SC ST GEN OBC 2 2 20 4 5 0 13 0 PHYSICS (For 3 YEAR Honours and Program Courses) Total = 40 M = 26 F = 14 SC ST GEN OBC SC ST GEN OBC 6 15 1 4 2 0 11 1 ZOOLOGY (For 3 YEAR Honours and Program Courses) Total = 50 M = 28 F = 22 SC ST GEN OBC SC ST GEN OBC 6 0 16 6 3 1 15 3	BOTANY (For 4 YEAR Honours with research and 3 YEAR Undergraduate Courses) Total=28 M = 11 F = 17 SC ST GEN OBC SC ST GEN OBC 3 0 5 3 5 1 10 1 CHEMISTRY (For 4 YEAR Honours with research and 3 YEAR Undergraduate Courses) Total = 28 M = 15 F = 13 SC ST GEN OBC SC ST GEN OBC 1 0 12 2 3 0 9 1 GEOLOGY (For 4 YEAR Honours with research Course) Total = 28 M = 21 F = 7 SC ST GEN OBC SC ST GEN OBC 5 0 10 6 2 0 5 0 MATHEMATICS (For 4 YEAR Honours with research and 3 YEAR Undergraduate Courses) Total = 37 M = 21 F = 16 SC ST GEN OBC SC ST GEN OBC 5 1 12 3 3 1 11 1 PHYSICS (For 4 YEAR Honours with research and 3 YEAR Undergraduate Courses) Total=23 M = 17 F = 6 SC ST GEN OBC SC ST GEN OBC 1 2 13 1 1 0 5 0 ZOOLOGY (For 4 YEAR Honours with research and 3 YEAR Undergraduate Courses) Total=49 M = 19 F = 30 SC ST GEN OBC SC ST GEN OBC 6 1 6 6 6 2 18 4	Relative to the Academic session 2022-2023, there has been complete change in the admission structure of 2023-2024. For 2022-23, admissions were for 3 year honours and program courses, while for 2023-24, admissions were for 4 year honours with research and 3 year undergraduate courses.
2	No. of students (%) Students admitted / passing out (pass %)	2019-2022 (Batch) (Pass % calculated with respect to the registered students in first year) Botany: 7 (100%) Chemistry: 15 (100%) Geology: 21 (100%) Mathematics: 11 (100%) Physics: 10 (100%) Zoology: 15 (100%)	2020-2023 (Batch) (Pass % calculated with respect to the registered students in first year) Botany: 9 (100%) Chemistry: 19 (100%) Geology: 18 (100%) Mathematics: 23 (100%) Physics: 13 (90%) Zoology: 15 (100%)	Both the batches graduated with 3 year Honours and Program courses

Nivedita Acharyee

Dr. Nivedita Acharyee
Coordinator, DBT STAR COLLEGE SCHEME
Durgapur Government College

COORDINATOR
DBT STAR SCHEME
DURGAPUR GOVERNMENT COLLEGE
J.N. AVENUE, DURGAPUR 713214

Dr. Debnath Palit
Principal
Durgapur Government College

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Sl	Indicator	Pre Support	During/After Support	Remarks
3	Drop-out rates	2019-2022 (Batch) (Calculated with respect to the registered students in first year) Botany: 0 students Chemistry: 1 student Geology: 0 students Mathematics: 1 student Physics: : 0 students Zoology: : 1 student	2020-2023 (Batch) (Calculated with respect to the registered students in first year) Botany: 0 students Chemistry: 0 student Geology: 0 students Mathematics: 0 student Physics: : 0 students Zoology: : 0 student	The drop out statistics is given with respect to the number of registered students in first year.
4	No. of students opting for MSc	2019-2022 (Batch) (Calculated with respect to the documents received from students for progression to higher studies) Botany: 1 Chemistry: 9 Geology: 6 Mathematics: 5 Physics: : 3 Zoology: : 9	2020-2023 (Batch) (Calculated with respect to the documents received from students for progression to higher studies) Botany: 3 Chemistry: 7 Geology: 11 Mathematics: 2 (Final grade card awaited of some students) Physics: 8 Zoology: 8	The Final Grade card of some students passed in 2023 are yet to be provided by the University, so their admission is pending in higher institutes.
5	Average marks	2019-2022 (Batch) Botany: 8.94 (CGPA) Chemistry: 8.61 (CGPA) Geology 8.46 (CGPA) Mathematics: 8.44 (CGPA) Physics 8.56 (CGPA) Zoology 9.25 (CGPA)	2020-2023 (Batch) Botany: 8.45 (CGPA) Chemistry: 8.64 (CGPA) Geology 8.74 (CGPA) Mathematics: 8.92 (CGPA) Physics 8.32 (CGPA) Zoology 9.30 (CGPA)	The average CGPA is calculated on the basis of marksheets received from the University
6	No. of hands-on experiments being conducted	NIL	Hands of Training Experiments: 9 Student Projects: 16 [Details in Annexure I]	These primarily included interdisciplinary ones and one activity conducted jointly by departments has been considered as one here.
7	No. of new experiments introduced	NIL	New Experiments Introduced: 16 [Details in Annexure I]	
8	Publications (scopus indexed) /patents, if any.	26 (Participating Departments)	32 (Participating Departments) of Faculty Members indexed in SCOPUS and Web of Science	These publications were published in reputed international journals by faculty members.

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Durgapur Government College

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DBT STAR SCHEME
DURGAPUR GOVERNMENT COLLEGE
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Dr. Debnath Palit
Principal
Durgapur Government College

Principal
Durgapur Govt. College



Sl	Indicator	Pre Support	During/After Support	Remarks
9	Training received by faculty	NIL	6 Training Programmes (For Faculty Members and Staff) [Details in Annexure V]	
10	Exhibitions/ seminars/ training courses conducted	8 Webinars (Participating Departments)	Workshops: 15 Seminar cum Workshops: 5 Training Courses: 6 Seminar/Conference: 6 [Details in Annexure III]	These primarily included interdisciplinary ones and one activity conducted jointly considered as one
11	Books/ journals subscribed from grants	Total 89154 books in central library and seminar ;libraries Journal/E-book subscription through INFLIBNET-NLIST facility; International Journal subscribed through Elsevier: Journal of the Indian Chemical Society from RUSA grant	The institution received grants from State Government for purchase of books. So, books were not availed for this financial year from the DBT STAR COLLEGE SCHEME grant. The recurring grant was utilized for purchase of chemicals, consumables for new experiments, student projects, organization of training programmes, workshops, seminars, invited lectures, outreach activities, mentoring activities, visit to research labs, industrial visits, etc	The institution received grant of Rs. 4,98,528.00 from Dept of Higher Education, Govtof West Bengal for purchase of books during 2022-2023.
12	Outreach activities (Popular lectures)	NIL	Geology and Chemistry: 01 Zoology: 03 Botany, Mathematics and Physics: 01 [Details in Annexure VI]	Outreach activity conducted for local schools and college
13	Colleges mentored to apply for DBT Star College grants	NIL	Faculty enrichment and Mentoring for DBT STAR COLLEGE SCHEME conducted on 15-03-2023 [Details in Annexure V]	
14	Invited lectures	NIL (Webinars organized as mentioned earlier in Pt. No. 10)	Total No: 07 [Details in Annexure III]	

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Dr. Nivedita Acharjee
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Durgapur Government College

COORDINATOR
DBT STAR SCHEME
DURGAPUR GOVERNMENT COLLEGE
J.N. AVENUE, DURGAPUR 713214

Dr. Debnath Palit
Principal
Durgapur Government College

Principal
Durgapur Govt. College



10. Self Evaluation

Department	*Objective (as stated in proposal)	% achieved	Reasons for underachievement / If achieved, state in quantitative metrics
Botany	<ul style="list-style-type: none"> • Successful implementation of practical experiments prescribed in curriculum. • Additional experiments will be designed considering the scope of the theoretical topics covered in the university curriculum. • Students will be trained to handle equipment and analyze data under the guidance of in house and visiting faculty. • Student projects will be designed to cover the ample research opportunities of the rich biodiversity present in the college campus and the pollution related and other issues of the industrial town of Durgapur and adjoining areas. • Vegetation mapping and planning with the GIS project of Geology Department, Hands on training on biological-chemical interface software with Chemistry Department, Biophysical and bio statistical studies with Physics and Mathematics Departments and biodiversity documentation, construction of species distribution maps with Zoology Department are some of the interdisciplinary outcomes. • Theoretical Outcome: Classical Botany, Biological Evolution, Biochemistry, Biodiversity, Food Science, Genomics, Bioinformatics, Signal transduction, Introduction to Cell Structure and Function, Membranes and Cell Transport, Principles of Cell Metabolism, Basic metabolic processes, Cell Cycles, Biostatistics, Patterns of Inheritance, DNA Structure and Chromosomes, Protein Synthesis & Gene Regulation, Viruses & Genetic Manipulation, Nursery and horticulture; Practical Outcome: Microscopic techniques, Spectroscopic Techniques , Plant identification, Qualitative and quantitative tests in biochemistry, Horticulture, Chromatography, Protein Purification & SDS-PAGE electrophoresis, DNA isolation & recombinant DNA techniques, Plant tissue culture • Seminar/workshop participation and training programmes for laboratory staff are also intended in the proposed scheme. 	<p>All objectives have been achieved to 100%,</p> <p>More activities under each objective have been planned during the next year to improve the quality of performance under the scheme.</p>	<p>The end semester examinations scheduled by the university are held for each semester separately. The teaching days were reduced due to the same. So, while implementing the scheme, some activities took more time for completion than expected due to the shortage of teaching days.</p>

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DURGAPUR GOVERNMENT COLLEGE
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Department	*Objective (as stated in proposal)	% achieved	Reasons for underachievement / If achieved, state in quantitative metrics
Chemistry	<ul style="list-style-type: none"> • Successful implementation of practical experiments prescribed in curriculum • The scheme aims to make students more research oriented, industry ready and will develop entrepreneurial skills. • The scheme aims up-gradation of knowledge on novel scientific concepts, computational chemistry , chemical-biological interface software use, IT skills, new teaching aids, interdisciplinary research areas etc and to provide training on good laboratory practices, general maintenance of laboratory articles, preparation of reagents, laboratory safety rules, disposal of laboratory waste etc. • The scheme will focus trainings on the software on biological-chemical interface • Trainings on greener synthesis, safe waste disposal & recycling, safety measures and health hazards, data interpretation and analysis • The theoretical outcomes will be bioinorganic chemistry, biochemistry, biophysical chemistry, industrial chemistry, green chemistry, surface chemistry, organometallic chemistry, environmental chemistry, supramolecular chemistry, solid-state chemistry, quantum mechanics, analytical chemistry, pharmaceutical chemistry, fuel chemistry, natural product chemistry, while the practical outcomes will be spectroscopic and separation techniques, organic synthesis, analysis of different ores, water analysis, soil analysis, preparation of complex salts and use of computational chemistry 	<p>All objectives have been achieved to 100%, More activities under each objective have been planned during the next year to improve the quality of performance under the scheme.</p>	<p>The end semester examinations scheduled by the university are held for each semester separately. The teaching days were reduced due to the same. So, while implementing the scheme, some activities took more time for completion than expected due to the shortage of teaching days.</p>

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Department	*Objective (as stated in proposal)	% achieved	Reasons for underachievement / If achieved, state in quantitative metrics
Geology	<ul style="list-style-type: none"> • Successful implementation of practical experiments prescribed in curriculum • Inception of interdisciplinary studies involving students of different departments • Application based studies incorporating multidisciplinary approach for enhancing the employability of students and providing further opportunities for higher education and research. • Reduce gap in the theoretical and practical knowledge by introducing various hands-on training program for the students of home department as well as other departments by promoting laboratory based and field based learning methodologies. • Theoretical Outcome: 1. Coal exploration predates coal mining and it needs study of Petrology, Coal Geology, Structural Geology, Geophysics and Geoinformatics. 2. During mining one should have knowledge of Mining Methodology, Engineering Geology, Beneficiation Techniques, Environmental Geology and Geoinformatics. 3. Studies of Palaeoecology, Geochemistry, Hydrogeology will be helpful for understanding of mining related pollution and subsequent environmental management through application of Geoinformatics. • Practical Outcome: i) Geological mapping (ii) drilling and logging, (iii) drill core sampling and rock sampling, (v) sampling of coal for proximate analysis and SEM study, (vi) Study of geohazards –related to coal mining and mitigation;(vii) drainage pattern study, recognizing drainage basin, ground water flow pattern,ground water pollution, recognizing pollutant source and mitigation techniques, (vii) application of Remote Sensing techniques and GIS tools in recognizing and mapping of geomorphological features, regional structural deformation, drainage pattern and lithological variation. 	<p>All objectives have been achieved to 100%, More activities under each objective have been planned during the next year to improve the quality of performance under the scheme.</p>	<p>The end semester examinations scheduled by the university are held for each semester separately. The teaching days were reduced due to the same. So, while implementing the scheme, some activities took more time for completion than expected due to the shortage of teaching days.</p>

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Department	*Objective (as stated in proposal)	% achieved	Reasons for underachievement / If achieved, state in quantitative metrics
Mathematics	<ul style="list-style-type: none"> • Successful implementation of the prescribed university curriculum and ensure mathematical skill enhancement of students through summer training, visits to advanced laboratories and expert interactions. • Experiments which cannot be performed due to lack of software are intended under the proposed scheme as mentioned in the respective section. • The theoretical outcomes can be stated as (1) Understanding volume and surface of revolution (2) Polynomials of higher degree and the derivative graph (3) Sketching of curves and conics (4) Convergence of sequences (5) Family of curves representing solutions of second order differential equation (6) Integral surfaces of a given first order PDE with initial data (7) Student exposure to neighbouring academic institutions and industries of repute (8) Application of programming language C. • The practical outcomes can be stated as (1) Plotting of different types of curves (2) Representing the volume and surface of revolution (3) Graphical representation of convergence of sequences (4) Application of programming language C in various fields (5) MatLab, LATEX & Mathematica. 	<p>All objectives have been achieved to 100%, More activities under each objective have been planned during the next year to improve the quality of performance under the scheme.</p>	<p>The end semester examinations scheduled by the university are held for each semester separately. The teaching days were reduced due to the same. So, while implementing the scheme, some activities took more time for completion than expected due to the shortage of teaching days.</p>

Nivedita Acharjee

Dr. Nivedita Acharjee
Coordinator, DBT STAR COLLEGE SCHEME
Durgapur Government College

COORDINATOR
DBT STAR SCHEME
DURGAPUR GOVERNMENT COLLEGE
J.N. AVENUE, DURGAPUR 713214

Dr. Debnath Palit
Principal
Durgapur Government College

Principal
Durgapur Govt. College



Department	*Objective (as stated in proposal)	% achieved	Reasons for underachievement / If achieved, state in quantitative metrics
Physics	<p>The objective of the present proposal for DBT star college scheme is to equip students with valuable cognitive abilities and skills so that they become competent in meeting diverse challenges of professional careers in a developing and knowledge-based society. Being a part of the DBT Star College Scheme, the students will be able to develop specific skills and knowledge as well as hands-on experience on the following: the theoretical outcomes are Understanding ecology in the framework of coupled oscillators, Dynamics of Weather and Climate System, Hands-on training for the preparation and characterization of nanomaterials, Nonlinear phenomena in Engineering, Medical and Biological Sciences, Student exposure to neighbouring research laboratories and industries, Circuit designing using logic gates and multiplexer, Direct application of computer programming knowledge, Nanomaterials and its Application., Integrable Systems and Solitons, Bifurcation Theory, Nonlinear Optics, Dynamics of Conservative Systems, Hamiltonian and Quantum Chaos, Chaos in dynamical system and its applications in physical and biological sciences and telecommunications, Nonlinearity in Plasma and Magneto Hydrodynamics, Chemical Dynamics and Kinetics, Nonlinear phenomena in Social Science and Management, Nanomaterials and Nanocomposites, while the practical outcomes are Conversion of 4-bit Adder-Subtractor output for direct result, Designing of Arithmetic Circuits using 4:1 Multiplexers, Synthesis of metal nanoparticles by chemical route, Synthesis of semiconductor nanoparticles, To study the effect of size on colour of nanomaterials, Hands on Training on Latex, Mat Lab, & mathematica software and Telescope making.</p>	<p>All objectives have been achieved to 100%, More activities under each objective have been planned during the next year to improve the quality of performance under the scheme.</p>	<p>The end semester examinations scheduled by the university are held for each semester separately. The teaching days were reduced due to the same. So, while implementing the scheme, some activities took more time for completion than expected due to the shortage of teaching days.</p>

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Department	*Objective (as stated in proposal)	% achieved	Reasons for underachievement / If achieved, state in quantitative metrics
Zoology	<p>Successful implementation of all experiments included in the course curriculum, The proposed scheme aims to enhance experimental exposure, hands-on training, expert interaction, industrial training and open-ended new experiments for students with equal emphasis on theoretical concept understanding.</p> <p>The theoretical outcomes are Basic Understanding of Biochemical Processes, Fundamentals of Immunological System, Working principle of Biochemical Analyzer, Spectrophotometer, Know-how of Lab safety protocol, Wildlife biology field study concepts, while the practical ones are Documentation of Biodiversity, Construction of species distribution maps, Application of open-source software like QGIS, Understanding of the techniques of Chromatography, Protein Purification & SDS-PAGE Electrophoresis, DNA isolation, Enzyme kinetics, ELISA technique, Ouchterlony's double immuno-diffusion method, Pearl Culture technique, Insect collection & preservation technique, Wildlife biology field study techniques, Wildlife photography. Hands on training will be on Bioinstrumentation, Spectrophotometer, Colorimeter, basic field-based techniques on Wildlife Biology: Population Census Techniques, Quadrature sampling, Use of software relating to geospatial data collection and construction of species distribution maps, The proposed scheme also aims to organize activities for faculty and workshop for laboratory staff and outreach activities.</p>	<p>All objectives have been achieved to 100%, More activities under each objective have been planned during the next year to improve the quality of performance under the scheme.</p>	<p>The end semester examinations scheduled by the university are held for each semester separately. The teaching days were reduced due to the same. So, while implementing the scheme, some activities took more time for completion than expected due to the shortage of teaching days.</p>

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11. ZBSA Status:

Not Opened Under Process Opened but not mapped on PFMS Account is functional

12. Sanctioned Budget details:

Total Sanctioned Budget	Total Released Budget	Expenditure	Balance as on 31-12-2023	Remarks (if any)
Grants for creation of Capital Assets (non-recurring)	Rs. 57,38,468.00	Rs. 56,58,779.00	Rs. 79,689.00	The Balance Amount of Non-Recurring refunded to BharatKosh vide Receipt No. 1901240033123 dated 19-01-2024 and UC, SOE and Asset Acquired Certificate Submitted.
Grants in aid General (Recurring) (Total)	Rs. 21,00,000.00	Rs. 21,00,000.00	0.00	

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Annexure-I

Winter School Training Courses, Student Projects, New Experiments, Hands on Training/Experiments, undertaken after receiving DBT support during the year (29-09-2022 to 28-09-2023)

[Purchase of equipment, chemicals, consumables, computer, printer, software, contingency items and field travel from DBT support]

No.	Organizing Department	Title of the Experiment/Project	Department/Course/Semester of participating students	Outcome of the Experiment/Project
1	Botany, Chemistry Zoology	Winter School Training Course involving Student Project on "Bioactivity of organic compounds by computational studies"	UG Semester-V Botany Honours, UG Semester-V, Zoology Honours UG Semester-V Chemistry Honours,	Students used chem draw software to draw the structures of biologically active compounds selected by them, they prepared the mol files and fed them into the Pass online software site to obtain the biologically relevant properties of the compounds. This course has equipped students towards the basics of computational chemistry and computational biology studies. They then analyzed the biological activity of the selected compound and presented their prepared projects through power-point presentations. For example, Bioactivity of curcumin, Flavones, compounds exhibiting UMAMI, ABTS , Penicillin, Chlorophyll and other similar compounds were completed by students.
2	Zoology and Chemistry	Student Project on "Water Analysis"	UG Semester-I Chemistry Honours , UG Semester-V Chemistry Honours and UG Semester-V Zoology Honours Students	Students collected water samples from Ambuja Wetland and Durgapur Barrage through field visit and performed study of the physicochemical parameters such as acidity, alkalinity, dissolved oxygen using Winkler's iodometric method and hardness of water. They recorded their findings in laboratory notebook
3	Botany and Geology	Student Project and workshop on "Vegetation Mapping"	UG Semester-V Botany Honours, UG Semester-I Botany students, UG Semester-V Geology Honours students	A qualitative assessment of the Angiosperm flora was done by students in the vicinity of IQ city Hospital of Durgapur, Pashim Barddhaman district. During this floral exploration, a total of 68 species from 17 families were documented. Among these, 7 species from Monocotyledons and rest from Dicotyledons were recorded. Herbs emerged as the most frequently observed plant growth forms, followed by shrubs, trees and climbers. Acacia auriculiformis (Roxb) Willd. of the family Fabaceae (Mimosaceae) were found to be dominant. The floristic exploration showed that this ecozone provides a diverse range of Angiosperms, with the overwhelming being wild species that are of the least concern. However frequent anthropogenic activities forced the area to deteriorate over the years. The vegetation map was prepared for the Study area with perimeter length nearly 5 Km and area measured as 1.46 sq.km.

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No.	Organizing Department	Title of the Experiment/Project	Department/Course/Semester of participating students	Outcome of the Experiment/Project
4	Botany, Chemistry, Zoology	Winter School Training Course involving Student Project on "Characterization of Chemicals and analysis of the material safety data sheet before performing experiments"	UG Semester-III Chemistry Honours UG Semester-V Botany Honours, UG Semester-V Zoology Honours	Students could characterize chemical compounds by classifying them on the basis of safety symbols. They will be able to analyze chemicals before performing experiments and the safety measures to be adopted while using chemicals in the laboratories.
5	Geology	Student Project on "The Field work in and around bagalgora Jhor, Raniganj Gondwana Basin"	UG Semester-V Geology Honours	Student performed field work and completed project on the understanding and recording the rock deposition at Raniganj, Gondwana Basin and collection of the terrestrial vertebrate fossils from the southern bank of Damodar river.
6	Geology	Student Project on "Application of Remote Sensing & GIS in Land Use-Land Cover Mapping"	UG Semester-IV Geology Honours UG Semester-V Chemistry Honours	Students learnt to use Q-GIS software for mapping of land use and land cover using remote sensing and geographical information systems (GIS). They will be able to recognize different earth features from satellite images which enabled them to apply their knowledge in their specialized field.
7	Geology	Student Project on "The Field work in and around Banspetali Nala Section"	UG Semester-V Geology Honours	Student performed field work and completed project on the determination of the changes that took place during the transition from Permian to Triassic in the terrestrial realm.
8	Mathematics	Winter School Training Course involving Student Project on "C Programming and Application"	UG Semester-III Mathematics Honours	Students were able to design programs used in calculator, for object oriented programming, to print mark sheet of students in a class and to obtain values of complex mathematical functions.
9	Mathematics	Winter School Training Course involving Student Project on "MS-Excel and its Applications"	UG Semester-III Mathematics Honours UG Semester-III Physics Program	Students used Microsoft excel for data representation, data analysis and graphical demonstration
10	Zoology	Student Project on "Screening of some plant species for antiproliferative activity based on basic bench top assays"	UG Semester-V Zoology Honours and UG Semester-III Zoology Honours	This study revealed the screening of eight traditionally used medicinal plants (<i>Synedrella nodiflora</i> , <i>Holoptelea integrifolia</i> , <i>Polyalthia longifolia</i> , <i>Moringa oleifera</i> , <i>Schleichera oleosa</i> , <i>Cynodon dactylon</i> , <i>Aegle marmelos</i> , and <i>Litsea glutinosa</i> for their antiproliferative effects using some basic bench-top assays. This study may open up a new possibility to look at the scientific validation and justification of using the plants for therapeutic purposes.

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No.	Organizing Department	Title of the Experiment/Project	Department/Course/Semester of participating students	Outcome of the Experiment/Project
11	Zoology	Student Project on " Graphical representation & Interpretation of Data of Height/Weight of a sample of 100 Humans in Relation to their Age and Sex"	UG Zoology Honours and Program Students	Students learnt to prepare the Correlation Plot from bivariate data taking height and weight of 100 males and 100 females, histogram from data taking height of 100 males and 100 females and accordingly learnt the graphical demonstration and data interpretation procedure
12	Zoology	Student Project on " A Field Report on Study of Nests and Nesting Habits of the Birds"	UG Zoology Honours Students	Students learnt to outline the merit and need for studying the nesting biology of birds in India, but also suggest best practices, specific to the Indian context, which will help to ensure that the research is done legally, ethically, and in a way that can provide important new information to advance Indian ornithology without compromising the welfare of birds.
13	Chemistry	Winter School Training Course involving Student Project on "Learning Chemistry through software applications"	UG Semester-III Chemistry Honours	Students used software applications to draw chemical structures, to determine stereochemistry, to determine IUPAC nomenclature, to optimize structures using Gauss View and Gaussian programmes and calculate the optimized energies and HOMO-LUMO energies
14	Chemistry	Student Project on "Learning Stereochemistry through software applications"	UG Semester-I Chemistry Students	Students used software applications to draw determine stereochemistry and prepared student project on the nomenclature and 3D arrangement of chemical compounds
15	Chemistry	Student Project on Safe Disposal and Management of chemical waste generated in undergraduate science laboratories	UG Semester-IV Chemistry Honours Students	Students learnt the techniques for safe disposal and management of chemical waste generated in undergraduate science laboratories
16	Chemistry	Student Project on "Optimization of chemical compounds and determination of optimized energy and thermodynamic parameters using Gauss View and Gaussian software"	UG semester-VI Chemistry Honours Students	Students learnt the software application for optimization of chemical compounds and other calculations using Gauss View and Gaussian Software

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No.	Organizing Department	Title of the Experiment/Project	Department/Course/ Semester of participating students	Outcome of the Experiment/Project
17	Botany	New experiment "Acetolysis of Spore and Pollen"	UG Semester-VI (Zoology Honours, Botany program, Zoology Program), UG Semester-IV (Botany Honours)	The sample used was <i>Hibiscus rosa-sinensis</i> pollens. Students learnt the process of acetolysis and study the same through microscopy.
18	Botany	New experiment "Plastidal Pigments Separation by Thin Layer Chromatography"	UG Semester-III Chemistry Program, UG Semester-III Botany Program, UG Semester-III Zoology Program, UG Semester-I Botany	Students learnt the technique of separation of plastidal pigments by Thin Layer Chromatography and also learnt the basic aspects of thin layer chromatography
19	Botany	New experiment "Endospore Staining"	UG Semester-V Botany Honours, UG Semester-I Botany Students	The students learnt about the conditions leading to endospore formation and induction of the same in <i>Bacillus subtilis</i> . Students also learnt the process of endospore staining and visualizing the same under microscope.
20	Botany	New experiment "Study of Mitotic Chromosomes of <i>Allium cepa</i> "	UG Semester-V Botany Honours, UG Semester-I Botany Students	Students learnt the importance of pretreatment, fixation and staining of chromosomes. They also learnt the squashing technique for preparation of plates of mitotic chromosomes, and visualizing the same under microscope.
21	Zoology	New experiment "Estimation of total protein contents in different tissues of <i>Labeo rohita</i> "	UG Semester-I Zoology Honours, Semester-I Program, UG Semester-V Honours	Students learnt the preparation of tissue homogenate and measured the amount of protein present in the liver and the gut samples from the standard graph.
22	Zoology	New experiment "Biological study of internal organs of earthworm"	UG Zoology Honours and Program students	Students studied and prepared project on the earthworm anatomy
23	Zoology	New experiment "Species Composition Analysis"	UG Semester-III, Semester-I and Semester-V Zoology Honours	Students learnt the concept of species composition in an ecosystem and the significance of ecosystems with greater diversity being more productive
24	Zoology	Hands on Training "Arc-GIS software"	UG Semester-I, Semester-V Zoology Honours students	Students learnt the applications of Arc-GIS software to create geographical information

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No.	Organizing Department	Title of the Experiment/Project	Department/Course/ Semester of participating students	Outcome of the Experiment/Project
25	Chemistry	New experiment "To estimate the amount of glucose present in commercial pack"	UG Semester-I (Chemistry Honours)	Students estimated the amount of glucose present in Glucon D and recorded their findings in practical notebook
26	Chemistry	New Experiment "Estimation of Vitamin C in fruits and vegetables"	UG Semester-I (Chemistry Honours)	Students estimated the amount of Vitamin C present in locally available fruits and vegetables through iodometric estimation
27	Chemistry and Zoology	New Experiment "Applying the principle of Thin Layer Chromatography for separation of chemical mixture"	UG Semester-I (Chemistry Honours); UG Semester-III (Zoology Honours) and UG Semester-V (Zoology Honours)	Students learnt to prepare TLC plates, give spots and measure the R _f values. Mixture of benzoin and benzil were studied for used in hexane, dichloromethane and acetone.
28	Chemistry	New Experiment on Separation and Purification of binary organic mixture (Aniline and Acetanilide) by Column chromatography	UG Semester-IV Chemistry Honours students	Students learnt the basics of Column Chromatography through this experiment
29	Chemistry	New Experiment on Determination of specific rotation of sucrose by using digital polarimeter	UG Semester-III Chemistry Honours	Students learnt the techniques of calibration and use of digital polarimeter
30	Chemistry	New Experiment on Using Stalagmometer and determination of surface tension of acetic acid of different concentrations	UG Semester-II students of Chemistry Honours	Students learnt the technique of using stalagmometer and determination of surface tension
31	Chemistry	New Experiment on Determination of Saponification value of an oil	UG Semester-IV Chemistry Honours students	Students learnt the process of determination of saponification value of an oil
32	Chemistry	New Experiment on Rapid Detection of adulterants: urea, formalin, detergents, ammonium sulphate and boric acid in milk	UG semester-II Chemistry Honours Students	Students learnt the techniques for detection of adulterants in milk

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No.	Organizing Department	Title of the Experiment/Project	Department/Course/Semester of participating students	Outcome of the Experiment/Project
33	Chemistry	Hands on training experiment on "Visible Spectrophotometer and UV-Visible Spectrophotometer"	UG Semester-III (Chemistry Honours, Mathematics Honours), UG Semester-VI (Chemistry Honours, Zoology Program, Zoology Honours)	Students learnt to measure the absorbance using Visible spectrophotometer and perform spectrum scan using UV_Visible spectrophotometer.
34	Physics	New Experiment on Preparation of NiO nanoparticles by Sol-Gel & coprecipitation methods	UG Semester-II students of Physics Honours and UG Semester-II students of Chemistry Honours	Students learnt the technique for preparation of NiO nanoparticles
35	Physics	Hands on Experiment on "4-bit binary Adder-Subtractor-conversion of the output for direct result"	UG Physics Honours students	Students learnt to design an adder subtractor circuit that will convert the result directly to its final binary form
36	Physics	Hands on Experiment on "Designing of arithmetic circuits using 4:1 multiplexer"	UG Physics Honours students	Students learnt to design basic arithmetic circuits (a logic circuit that carries out an arithmetic action with the set of inputs and the outputs of the circuit are the digits of the result of the arithmetic action) using multiplexers
37	Physics, Mathematics and Geology	Hands on training on "Digital Image Processing: An overview"	UG Honours and Program students of Physics, Mathematics and Geology	Students learnt the process and overview of Digital image processing and received hands on training through this interdisciplinary approach.
38	Physics and Geology	Hands on Experiment on "Resistivity meter Logging in Ground Water Exploration"	UG Semester-III Physics Honours; UG Semester-V Geology Honours, UG Semester-III Geology Honours, UG Semester-I Geology Honours	Students learnt the concept of Resistivity survey which is a widely used geophysical technique for mapping subsurface structures and characterizing geological formations
39	Geology	Hands on Experiment "Rock Thin Section Preparation"	UG Geology Honours	Students learnt to prepare rock thin section using rock cutter and petrothin. They also learnt safety measures to be adopted while cutting the rock samples. They also learnt the techniques of mounting the samples on glass slides and polishing of samples

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No.	Organizing Department	Title of the Experiment/Project	Department/Course/ Semester of participating students	Outcome of the Experiment/Project
40	Geology	Hands on Experiment on "Ore Geology"	UG Geology Honours Students	Students learnt the technique of ore microscopy which involved the techniques of centering of the objective, Levelling of the polished section, Orientation of the reflector, Centering of the light source, To adjust the field and aperture diaphragms and To position the analyser correctly.
41	Mathematics and Zoology	Hands on Experiment on " MATHEMATICA SOFTWARE"	UG Zoology Honours, UG Mathematics Honours; all Semesters	Students got the hands on training on the applications of the MATHEMATICA software for data analysis and representation

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Annexure-II

Mapping of the Practical Experiments included in Course Curriculum with the equipment/chemicals purchased from DBT support (29-09-2022 to 28-09-2023)

[Purchase of equipment, chemicals, consumables, computer, printer, software from DBT support]

Sl No.	Department	Course/ Semester	Name of the Practical Experiment	Pre support status of the conduction of the practical/ experiment	Equipment/ Chemical/Consumable/Computer/printer/Software purchased from DBT support	Status after receiving the DBT support
1	Botany	UG Honours/Semester-VI	Agarose gel electrophoresis	Done by students in groups (poor equipment : student ratio)	Digital Balance	Improvement in Equipment: student ratio due to purchase of multiple copies of the equipment
2	Botany	UG Honours/Semester-V	Determination of rate of Transpiration	Done by students in groups (poor equipment : student ratio)		
3	Botany	UG Honours/Semester-I	Estimation of carbohydrate from plant samples	Done by students in groups (poor equipment : student ratio)		
4	Botany	UG Honours/Semester-VI	Preparation of MS media for plant tissue culture	Done by students in groups (poor equipment : student ratio)	Digital pH meter	Improvement in Equipment: student ratio due to purchase of multiple copies of the equipment
5	Botany	UG Honours/Semester-VI	Seed sterilization and germination under aseptic conditions	Done by students in groups (poor equipment : student ratio)	Magnetic stirrer	Improvement in Equipment: student ratio
6	Botany	UG Honours/Semester-VI	Agarose gel electrophoresis	Done by students in groups (poor equipment : student ratio)	UV Transilluminator	Improvement in Equipment: student ratio
7	Botany	UG Honours/Semester-VI	Agarose gel electrophoresis	Done by students in groups (poor equipment : student ratio)	DNA mini gel electrophoresis apparatus	Improvement in Equipment: student ratio
8	Botany	UG Honours/Semester-VI	Plasmid isolation, Plant genomic DNA isolation, Agarose gel electrophoresis	Demonstrated only due to lack of the instrument	Pipetman micropipettes	Experiment can now be performed by students.

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Sl No.	Department	Course/ Semester	Name of the Practical Experiment	Status of the conduction of the practical/ experiment pre support	Equipment/ Chemical/Consumable/ Computer/printer/S software purchased from DBT support	Status after receiving the DBT support
9	Botany	UG Honours/Semester-VI	Plasmid isolation	Demonstrated only due to lack of the instrument	Multi tube vortexer	Experiment can now be performed by students
10	Botany	UG Honours/Semester-VI	Storing restriction enzymes required for restriction mapping of DNA	Demonstrated only due to lack of the instrument	Ultra freezer (-20°C)	Experiment can now be performed by students
11	Botany	UG Honours all Semester	Use of software for winter school training course on bioactivity by computational studies	Demonstrated only due to lack of the instrument	Desktop computer	Study/ Work can now be performed by students at class room only
12	Botany	UG Honours/Semester-VI	Plasmid isolation, Plant genomic DNA isolation	Done by students in groups (poor equipment : student ratio)	Table top centrifuge	Improvement in Equipment: student ratio
13	Botany	UG Honours/Semester-I	Sterilization of lab wares and preparation of media for bacterial culture	Done by students in groups (poor equipment : student ratio)	Autoclave	Improvement in equipment: student ratio due to purchase of equipment
14	Botany	UG Honours/Semester-VI	Sterilization of lab wares and preparation of media for plant tissue culture. Sterilization of stock reagents and chemicals to be used in molecular biology experiments	Done by students in groups (poor equipment : student ratio)		

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Sl No.	Department	Course/ Semester	Name of the Practical Experiment	Status of the conduction of the practical/ experiment pre support	Equipment/ Chemical/Consumable/ Computer/printer/S oftware purchased from DBT support	Status after receiving the DBT support
1	Chemistry	UG Honours/ Semester- IV	Conductometric titrations of an acid or a base (acid may be monobasic/dibasic, and similarly for the base)	Done by students in groups(poor equipment : student ratio)	Digital Conductivity Meter with Conductivity Cell (0.1);	Improvement in Equipment: student ratio due to purchase of multiple copies of the equipment
2	Chemistry	UG Honours/ Semester- VI	Kinetics of saponification of ester by conductometric method	Done by students in groups(poor equipment : student ratio)		
3	Chemistry	UG Honours/ Semester- VI	Conductometric verification of Ostwald dilution law	Done by students in groups(poor equipment : student ratio)		
4	Chemistry	UG Honours/ Semester- IV	Potentiometric titrations of an acid or a base (acid may be monobasic/dibasic, and similarly for the base)	Done by students in groups(poor equipment : student ratio)	Digital Potentiometer	Improvement in Equipment: student ratio due to purchase of multiple copies of the equipment
5	Chemistry	UG Honours/ Semester- VI	Ion-exchanger: Cation content of a sample by cation exchanger	Demonstrated only due to lack of equipment	Ion Exchange Resin and Ion Exchange Column, Chemicals and Consumables	Experiment can now be performed by students
6	Chemistry	UG Honours/ Semester- VI	Colorimetric determination of pKin of methyl red	Done by students in groups(poor equipment : student ratio)	Digital Colorimeter	Improvement in Equipment: student ratio due to purchase of multiple copies of the equipment

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Sl No.	Department	Course/ Semester	Name of the Practical Experiment	Status of the conduction of the practical/ experiment pre support	Equipment/ Chemical/Consumable/ Computer/printer/S oftware purchased from DBT support	Status after receiving the DBT support
7	Chemistry	UG Honours/ Semester- V	Rearrangement reaction : Benzil- benzilic acid rearrangement	Done by students in groups(poor equipment : student ratio)	Oil free Vacuum pump, Melting point Apparatus, Boiling point apparatus, Temperature controlled water bath, Heating Mantle; Chemicals and Consumables	Improvement in equipment: student ratio due to purchase of equipment
8	Chemistry	UG Honours/ Semester- IV	Identification with general reaction and tests of the liquid organic samples	Identification of liquid samples in done in groups since distillation and boiling point determination is done in groups due to poor equipment :student ratio]		
9	Chemistry	UG Honours/S emester-III	Qualitative analysis of inorganic compounds	Poor equipment : student ratio		
1	Geology	UG Honours/S emester-III	Study of important igneous rocks in hand specimens and thin sections- granite, granodiorite, diorite, syenite, nepheline syenite, gabbro, anorthosites, ultramafic rocks, basalts, andesites	Done by students in groups(poor equipment : student ratio)	Binocular Petrological Microscope	Improvement in Equipment: student ratio due to purchase of multiple copies of the equipment
2	Geology	UG Honours/ Semester- III	Petrographic study of clastic and non-clastic rocks in hand specimens and thin sections	Done by students in groups(poor equipment : student ratio)	Binocular Petrological Microscope	Improvement in Equipment: student ratio due to purchase of multiple copies of the equipment

Nivedita Acharjee

Dr. Nivedita Acharjee
Coordinator, DBT STAR COLLEGE SCHEME
Durgapur Government College

COORDINATOR
DBT STAR SCHEME
DURGAPUR GOVERNMENT COLLEGE
J.N. AVENUE, DURGAPUR 713214

Dr. Debnath Palit
Principal
Durgapur Government College

Principal
Durgapur Govt. College



Sl No.	Department	Course/ Semester	Name of the Practical Experiment	Status of the conduction of the practical/ experiment pre support	Equipment/ Chemical/Consumabl e/Computer/printer/ Software purchased from DBT support	Status after receiving the DBT support
3	Geology	UG Honours/S emester-III	Field Study	Done by students in groups(poor equipment: student ratio)	GPS	Improvement in Equipment: student ratio due to purchase of multiple copies of the equipment
4	Geology	UG Honours/S emester-VI	Megascopic and microscopic study (textural and mineralogical) of the metamorphic rocks	Done by students in groups(poor equipment : student ratio)	Binocular Petrological Microscope	Improvement in Equipment: student ratio due to purchase of multiple copies of the equipment
5	Geology	UG Honours/S emester-VI	Field Study	Done by students in groups(poor equipment: student ratio)	GPS	Improvement in Equipment: student ratio due to purchase of multiple copies
7	Geology	UG Honours/S emester-V	Study of microscopic properties of ore forming minerals.	Done by students in groups(poor equipment: student ratio)	Ore-0 Microscope and Binocular Ore Microscope	Improvement in Equipment: student ratio due to purchase of multiple copies of the equipment
8	Geology	UG Honours/S emester-V	Introduction to DIP and GIS softwares, Digital Image Processing exercises including analysis of satellite data in different bands and interpretation of various objects on the basis of their spectral signatures, Creating a FCC from raw data, Registration of satellite data with a toposheet of the area	Demonstrated	Desk Top Computer	Done by students after purchase of Desktop Computers from the DBT grant

Nivedita Acharjee

Dr. Nivedita Acharjee
Coordinator, DBT STAR COLLEGE SCHEME
Durgapur Government College

COORDINATOR
DBT STAR SCHEME
DURGAPUR GOVERNMENT COLLEGE
J.N. AVENUE, DURGAPUR 713214

Dr. Debnath Palit
Principal
Durgapur Government College

Principal
Durgapur Govt. College



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1	Mathematics	UG Mathematics Honours and Program	Graphical Representation and Data interpretation	No software facility and poor Computer:student ratio	Purchase of Desktop Computers, MATLAB and Mathematica Software	Students are now able to use the software applications
1	Physics	UG Honours & Program (Semester-VI)	Synthesis of Semiconductor nanoparticles (Preparation of ZnO nanoparticles by chemical co-precipitation method).	Demonstrated only due to lack of chemicals	Chemicals, Consumables, Oil free vacuum pump	Experiment can now be performed by students
2	Physics	UG Honours (Semester-III & V)	Preparation of NiO nanoparticles by Sol-Gel method.	Demonstrated only due to lack of equipment	Magnetic Stirrer with hot plate and digital speed indicator	Experiment can now be performed by students
3	Physics	UG Honours (Semester III)	Determination of coefficient of linear expansion with travelling microscope/Telescope	Demonstrated only due to lack of equipment	Set-up of Coefficient of linear expansion with travelling microscope/Telescope	Experiment can now be performed by students
4	Physics	UG Honours (Semester V)	Measurement of Planck's constant using black body radiation and photo detector-	Equipment Student ratio was poor	Set up for the Experiment	Equipment Student ratio has been improved
5	Physics	UG Honours (Semester V)	Photo-electric effect: photo current versus intensity and wavelength of light; maximum energy of photo-electrons versus frequency of light	Equipment Student ratio was poor	Set up for the Experiment	Equipment Student ratio has been improved
6	Physics	UG Honours (Semester V)	To determine work function of material of filament of directly heated vacuum diode	Equipment Student ratio was poor	Set-up for determination of work function of material of filament of directly heated vacuum diode	Equipment Student ratio has been improved

Nivedita Acharyee

Dr. Nivedita Acharyee
Coordinator, DBT STAR COLLEGE SCHEME
Durgapur Government College

COORDINATOR
DBT STAR SCHEME
DURGAPUR GOVERNMENT COLLEGE
J.N. AVENUE, DURGAPUR 713214

Dr. Debnath Palit
Principal
Durgapur Government College

Principal
Durgapur Govt. College



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7	Physics	UG Honours (Semester V)	Diffraction Grating-	Equipment Student ratio was poor	Set-up of Diffraction Grating-	Equipment Student ratio has been improved
8	Physics	UG Honours (Semester III)	To study response curve of a Series LCR circuit and determine its (a) Resonant frequency, (b) Impedance at resonance, (c) Quality factor Q, and (d) Band width	Equipment Student ratio was poor	Set up for the Experiment	Equipment Student ratio has been improved
9	Physics	UG Honours (Sem I & II)	Three motion travelling microscope	Equipment Student ratio was poor	Three motion travelling microscope	Equipment Student ratio has been improved
10	Physics	UG Honours (Semester I & II)	ICT enabled classes	Classes using ICT tools could not be taken	Smart Board	ICT enabled teaching process
11	Physics	UG Honours (Semester V)	High Intensity Discharge Tube with Compatible voltage source and stand	Equipment Student ratio was poor	High Intensity Discharge Tube with Compatible voltage source and stand	Equipment Student ratio has been improved
12	Physics	UG Honours (Semester I to VI)	To determine the velocity of light	Demonstrated only due to lack of equipment	Microwave oven to determine the velocity of light	Equipment Student ratio has been improved
13	Physics	UG Honours (Semester V& VI)	Electronic experiments to measure voltage, current, frequency, etc.	Equipment Student ratio was poor	CRO (Analog dual trace 4 channel-60MHz Bandwidth with probes) -Systronics	Equipment Student ratio has been improved
14	Physics	UG Honours (Semester III & IV)of Physics, Chem & Math	To compare capacitances using De'Sauty's bridge	Demonstrated only due to lack of equipment	De'Sauty's bridge	New experiment performed

Nivedita Acharjee

Dr. Nivedita Acharjee
Coordinator, DBT STAR COLLEGE SCHEME
Durgapur Government College

COORDINATOR
DBT STAR SCHEME
DURGAPUR GOVERNMENT COLLEGE
J.N. AVENUE, DURGAPUR 713214

Dr. Debnath Palit
Principal
Durgapur Government College

Principal
Durgapur Govt. College



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15	Physics	UG Honours (Semester I to VI)	Computational Classes prescribed in curriculum	Poor Computer: student ratio	Desktop Computer	Computer: student ratio improved
16	Physics	UG Honours (Semester III to VI)	Charge Discharge Key	Equipment Student ratio was poor	Charge Discharge Key	Equipment Student ratio improved
17	Physics	UG Honours (Semester I)	Determination of coefficient of linear expansion with travelling microscope/Teles cope	Equipment Student ratio was poor	Set up for determination of coefficient of linear expansion with travelling microscope/Telescope	Equipment Student ratio improved
1	Zoology	UG SEMETER-I (HONOURS) (LOCF)	Ecology: To measure microclimatic variables viz., temperature, humidity and light conditions in a microhabitat.	Done by students in groups(poor equipment : student ratio)	Chemicals and Consumables, Glass instruments	Improvement in real time practical aptitude due to purchase of consumables
2	Zoology	UG SEMESTER -I (HONOURS) I(LOCF)	Ecology: Constructing distribution map of species of a genus through GPS by estimating the coordinates	Done by students in groups(poor equipment : student ratio)	Arc-GIS SOFTWARE	Experiment can now be performed by students
3	Zoology	UG SEMETER- II (HONOURS) (LOCF)	Cytology And Histology: Experiment: Isolation (Ethanol ppt) and estimation (Diphenylamine reaction) of DNA (blood/liver tissue).	Done by students in groups(poor equipment : student ratio)	Vortex cyclomixer, Chemicals and Consumables	Experiment can now be performed by students

Nivedita Acharjee

Dr. Nivedita Acharjee
Coordinator, DBT STAR COLLEGE SCHEME
Durgapur Government College

COORDINATOR
DBT STAR SCHEME
DURGAPUR GOVERNMENT COLLEGE
J.N. AVENUE, DURGAPUR 713214

Dr. Debnath Palit
Principal
Durgapur Government College

Principal
Durgapur Govt. College



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4	Zoology	UG SEMETER- IV (LOCF)	Developmental Biology & Evolution Study of development of chick embryo through incubated chick eggs at 24, 48, 72 & 96 h.	Demonstrated only due to lack of equipment	Incubator, Chemicals and Consumables	Experiment can now be performed by students
5	Zoology	UG SEMETER- IV(LOCF)	Molecular Biology Isolation of genomic DNA by ethanol precipitation method.	Demonstrated only due to lack of chemicals	Chemicals and Consumables	Experiment can now be performed by students
6	Zoology	UG SEMETER- IV IV(LOCF) 	Bio techniques: Identification of amino acids in the mixture using paper chromatography.	Demonstrated only due to lack of chemicals	Chromatographic Tank with Lid, Chemicals and Consumables	Experiment can now be performed by students
7	Zoology	UG SEMETER- IV IV(LOCF)	Microbiology, Parasitology & Immunology Demonstration of antigen-antibody interaction in gel.	Demonstrated only due to lack of chemicals	Chemicals and Consumables	Experiment can now be performed by students

Nivedita Acharjee

Dr. Nivedita Acharjee
Coordinator, DBT STAR COLLEGE SCHEME
Durgapur Government College

COORDINATOR
DBT STAR SCHEME
DURGAPUR GOVERNMENT COLLEGE
J.N. AVENUE, DURGAPUR 713214

Dr. Debnath Palit
Principal
Durgapur Government College

Principal
Durgapur Govt. College



Annexure-III

Seminars /Workshops/ Invited lectures organized during the year (29-09-2022 to 28-09-2023)

[Purchase of equipment, computer, printer, software, chemicals, consumables, contingency items, travel, remuneration to resource persons from DBT support]

No.	Date of the event	Organizing Department	Name of the Event	Resource Persons/In House Faculty members	No. of participants	Outcome
1	12-11-2022 and 13-11-2022	Botany	Workshop on "Mushroom Cultivation and Entrepreneurship"	Professor Krishnendu Acharya, Department of Botany, University of Calcutta	114	Students learnt procedure to be followed at all stages of mushroom cultivation such as preparing compost, soaking of wheat straw, laying of mushroom spawn and harvesting and how to cultivate mushroom at very low budget. They got an idea to become an entrepreneur at minimum investment
2	05-12-2022	Chemistry, Botany and Zoology	Workshop on "Soil Testing and Fundamentals of Fertilizer Recommendation" and "Observance of World Soil Day"	(1) Prof. Biswapati Mandal (Ex Pro-Vice Chancellor, Bidhan Chandra, Krishi Viswavidyalaya) (2) Dr. Subhendu Bhadraroy (Senior Consultant, Rallis India Ltd, Bengaluru); (3) Dr. F. H. Rahman (Principal Scientist, Indian Council of Agricultural Research (ICAR)-Agricultural Technology Application Research Institute (ATARI) Kolkata) and(4) Partha Bhattacharya (Ex Deputy General Manager, IFFCO, Kolkata)	57	The eminent resource persons provided demonstration on the process of soil testing, soil composition and the concept of the use of fertilizer to the students

Nivedita Acharjee

Dr. Nivedita Acharjee
Coordinator, DBT STAR COLLEGE SCHEME
Durgapur Government College

COORDINATOR
DBT STAR SCHEME
DURGAPUR GOVERNMENT COLLEGE
J.N. AVENUE, DURGAPUR 713214

Dr. Debnath Palit
Principal
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No.	Date of the event	Organizing Department	Name of the Event	Resource Persons/In House Faculty members	No. of participants	Outcome
3	07-12-2023	Chemistry	Invited Lecture on "From Atoms to proteins: Molecular Dynamics as a tool"	Professor Jaydeb Chakrabarti, Senior Professor, S. N. Bose National Centre for Basic Sciences, Kolkata, under DST, Government of India	37	Students learnt the basics of molecular dynamics and they also received the basic idea of the conjunction of computational chemistry and biology in molecular dynamics
4	17-01-2023	Zoology and Chemistry	Workshop on "biological and chemical waste handling and vermicomposting"	Dr.Roli Shukla Ray, Coordinator, DBT Star College Scheme and Dept of Zoology, and Dr. Nivedita Acharjee, Dept of Chemistry, Durgapur Government College	22	Students were taken for visit to organic farm to learn vermicomposting and in-house faculty members explained the methods of biological and chemical waste disposal to the students.
5	20-01-2023	Mathematics	Workshop on "Basics in Excel and its applications"	Prof. Sibaji Rit, Department of Mathematics, Durgapur Government College	33	Students learnt the basic formula and data representation and graphical analysis using Microsoft Excel.
6	28-01-2023	Physics and Mathematics	Seminar on "Solitons and its applications in Biophysics and Telecommunications"	(1) Prof. (Dr.) Sourangshu Mukhopadhyay, Department of Physics, The University of Burdwan. (2) Prof. (Dr.) Prasanta Chatterjee, Department of Mathematics, Visva-Bharati University, and (3) Dr. Mrinal Kanti Mandal, Department of Physics, NIT, Durgapur	22	Students learnt the applications of solitons in biophysics such as in DNA lattice to describe the survival of cellular life

Nivedita Acharjee

Dr. Nivedita Acharjee
Coordinator, DBT STAR COLLEGE SCHEME
Durgapur Government College

COORDINATOR
DBT STAR SCHEME
DURGAPUR GOVERNMENT COLLEGE
J.N. AVENUE, DURGAPUR 713214

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Principal
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7	08-02-2023	Chemistry	Invited Lecture on "A brief research on bio-physical study on soft and bio-materials to design and develop Pt(II) based anticancer drug"	Professor Sankar Chandra Moi, Professor and Head, Department of Chemistry, NIT, Durgapur	32	Students learnt the basics of research areas related to the designing and development of anticancer drugs in research laboratories
8	15-02-2023, 16-02-2023 and 17-02-2023	Physics and Mathematics	Three Day Workshop on "Telescope making and stargazing"	Dr. Debiprosad Duari, Director, IASES, Kolkata, Prof. Kollol Bhattacharya, Calcutta University, Prof. Biswajit Maiti, Associate Professor of Physics, Maulana Azad College, Kolkata and Mr. Palash Chatterjee	45	Workshop provided the scope of hands-on training on live steps of telescope making by the technicians. A session was organized at college play ground to observe the night sky and for stargazing.
9	16-02-2023	Botany	Seminar on "Improvement in the State of Art Knowledge on Plant Sciences"	(1) Professor Sudhendu Mandal, Advisor Academic and Administrative Central University of Odisha, Korapur and Professor (2) Professor Swapan Kumar Dutta, Vice-Chancellor, Biswa Bangla Biswabidyalay	143	Students learnt the significance of identification, characterization and documentation of flora specimens and the modern horizons of Botany in the area of plant biotechnology. Students got to know about the various methods of crop improvement from conventional breeding approaches to biotechnology, and genome editing.
10	25-02-2023	Zoology	Invited lecture along with poster competition in commemoration of National Science Day	(1) Professor (Dr.) Dipak Ranjan Mondal, President, SD Marine Biological Research Institute, Sagar Island Former: Vice-Chancellor, Sidho-Kano-Birsha University (2) Dr. Istkhkar Rao, Assistant Professor, Department of Zoology, Banasthali Vidyapeeth, Jaipur, Rajasthan	25	Students prepared and participated in poster competition on different scientific themes and get acquainted with the concept of interdisciplinary dimension in the field of global science

Nivedita Acharjee

Dr. Nivedita Acharjee
Coordinator, DBT STAR COLLEGE SCHEME
Durgapur Government College

COORDINATOR
DBT STAR SCHEME
DURGAPUR GOVERNMENT COLLEGE
J.N. AVENUE, DURGAPUR 713214

Dr. Debnath Palit
Principal
Durgapur Government College

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No.	Date of the event	Organizing Department	Name of the Event	Resource Persons/In House Faculty members	No. of participants	Outcome
11	01-03-2023	Physics	National Conference on Material Science, nanomaterials and its applications in Biological Science	(1) Prof. (Dr.) Pabitra Kumar Chakrabarti (Department of Physics, The University of Burdwan), (2) Dr. K. Sethuraman (Department of Materials Science, Central University of Tamil Nadu) and (3) Dr. Santanu K. Maiti, Physics and Applied Mathematics Unit, Indian Statistical Institute, Kolkata,	18	Students got the opportunity to interact with national and state level leading experts of the field on the use of nanotechnology for biological sciences
12	13-03-2023	Chemistry	Workshop on "Fundamentals and applications of Computational Chemistry	Prof. (Dr.) Haydar A. Mohammad-Salim Presently Post Doctoral Fellow, University of Valencia, Spain and Faculty, University of Zakho, Iraq	46	Students got tutorial and hands on training on use of Gauss View & Gaussian software
13	15-03-2023	Zoology	Invited Lecture on Toxinology-An emerging area in Biomedical Sciences and Therapeutic Applications	Professor Subir Chandra Dasgupta, Professor (West Bengal Senior Educational Service) Maulana Azad College, Kolkata	25	Students got introduced to the concept of Toxinology

Nivedita Acharjee

Dr. Nivedita Acharjee
Coordinator, DBT STAR COLLEGE SCHEME
Durgapur Government College

COORDINATOR
DBT STAR SCHEME
DURGAPUR GOVERNMENT COLLEGE
J.N. AVENUE, DURGAPUR 713214

Dr. Debnath Palit
Principal
Durgapur Government College

Principal
Durgapur Govt. College



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14	16-03-2023 and 18-03-2023	Physics and Mathematics	International Conference on Nonlinear Dynamics and its Applications in Physics and Biological Sciences	(1) Prof. (Dr.) S. K. Bhadra, Professor Emeritus, Indian Association of Cultivation of Science (2) Prof. (Dr.) Ajoy Ghatak, Ex-Professor of Indian Institute of Delhi, (3) Prof. (Dr.) Saverio Pascazio, dipartimento di Fisica, Universita di Bari, Italy, (4) Prof. (Dr.) Avinash Khare, Ex-Professor of Institute of Physics, Bhubhaneswar, Odisha, (5) Prof. (Dr.) Jayanta Sahu, University of Southampton, United Kingdom	78	Students got the opportunity to interact with national, international and state level leading experts of the field. 53 oral and 27 posters were presented in the event.
15	23-03-2023	Geology	Seminar cum workshop on "Working Principle of Resistivity Meter"	Dr. Samiran Mahapatra, Department of Geology, Hooghly Mohsin College	36	Students learnt the working principle with demonstration of resistivity meter.
16	24-03-2023	Geology	Seminar cum workshop on "Aspects of Micropalaentology"	Dr. Anupam Ghosh, Department of Geological Sciences, Jadavpur University	33	Students learnt the basics of micropalaentology to study microscopic fossils of underlying rocks.

Nivedita Acharjee

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Durgapur Government College

COORDINATOR
DBT STAR SCHEME
DURGAPUR GOVERNMENT COLLEGE
J.N. AVENUE, DURGAPUR 713214

Dr. Debnath Palit
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Durgapur Government College

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Durgapur Govt. College



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17	27-03-2023	Chemistry	Seminar cum workshop on " Excited state intra-molecular proton transfer in Schiff base metal complexes: Mechanistic aspects & Future prospects and A greener approach to organic synthesis and utilization of spectroscopic techniques in mechanistic understanding	Professor Pranesh Chaudhuri, Professor, Department of Chemistry Visva Bharati, and Dr. Paresh Nath Chatterjee, National Institute of Technology, Durgapur	41	Students learnt the reaction mechanism for proton transfer in metal complexes and their industrial applications. Students learnt the use of spectroscopic techniques such as UV, IR, NMR and mass spectrometry to reveal mechanism of organic reactions and also got idea on green synthesis.
18	31-03-2023	Chemistry	Seminar cum workshop on Fluorescence Spectroscopy and Biodegradability Enhanced by Advanced Oxidation Process for Highly Toxic Organics	Professor Debashis Das, Department of Chemistry, The University of Burdwan and Professor, Rajnarayan Saha, Department of Chemistry, National Institute of Technology, Durgapur	33	Students learnt about the working principle of fluorescence spectroscopy. Students learnt the process adopted to enhance biodegradability of highly toxic organics
19	31-03-2023	Physics	Workshop on Electrical House Wiring and Electrical Safety	Prof. Kingsuk Majumdar, Assistant Professor, Department of Electrical Engineering (EE), Dr. B.C.Roy Engineering College (BCREC), Durgapur	25	Students learnt the safety measures on electrical house wiring

Nivedita Acharjee

Dr. Nivedita Acharjee
Coordinator, DBT STAR COLLEGE SCHEME
Durgapur Government College

COORDINATOR
DBT STAR SCHEME
DURGAPUR GOVERNMENT COLLEGE
J.N. AVENUE, DURGAPUR 713214

Dr. Debnath Palit
Principal
Durgapur Government College

Principal
Durgapur Govt. College



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20	20-05-2023	Zoology	Invited lecture on "The Caretaker of Brain: The Double edged sword"	Dr. Anirban Ghosh, Associate Professor, Department of Zoology, School of Sciences, Netaji Subhas Open University	35	Student got the opportunity to learn and interact with the external expert on the topic
21	09-08-2023	Mathematics	Workshop on "MATLAB: An Introduction to Beginners"	Dr. Hrishikesh Mondal, Assistant Professor, Dept of Physics, Durgapur Government College	34	Students received hands on training on the basics of MATLAB software purchased from the DBT grant
22	16-08-2023	Mathematics	Workshop on "Basics of MATHEMATICA and Graphical demonstration using Mathematica"	Dr. Pratikshan Mondal, Assistant Professor, Department of Mathematics, Durgapur Govt College	21	Students received hands on training on the basics of MATHEMATICA software purchased from the DBT grant
23	17-08-2023	Botany, Geology, Chemistry	Seminar on "Aspects of Biogeochemistry"	Dr. Biswajit Roy, Department of Earth Science, IIT, Gandhinagar	43	Students got introduced to the interdisciplinary dimension and diverse applications of Biogeochemistry such as biogenic signals, biogeochemicals cycles
24	26-08-2023	Mathematics	Workshop on "First Step in mathematica"	Dr. Haradhan Kundu, Assistant Professor of Mathematics, Bankura Zilla Saradamani Mahila Mahavidyapith	21	Students received hands on training on the applications of MATHEMATICA software purchased from the DBT grant

Nivedita Acharjee

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Durgapur Government College

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25	28-08-2023 And 29-08-2023	Botany	Workshop on Restriction mapping of Plasmid DNA	Dr. Prosanta Saha, Assistant Professor, Department of Botany, Durgapur Government College	37	Students gained a deeper understanding of how restriction enzymes work, how they cut DNA at specific sites, and the principles behind restriction mapping. Students gained the ability to interpret restriction patterns to map the locations of restriction sites on a DNA molecule.. Students acquired practical skills in performing restriction digests, running agarose gel electrophoresis, and analyzing resulting DNA fragments.
26	31-08-2023	Botany	Workshop on "Herbarium techniques of Angiosperms and Modern Protocols for Pteridophytic Germplasm Identification and Conservation"	Dr. Ashoke Bhattacharya, Associate Professor, Department of Botany, Durgapur Government College and Anish Bhattacharya, Assistant Professor, Department of Botany, Durgapur Government College	6	Students prepared Herbarium Sheets, pasted plant specimen and consequently learnt the techniques of identification and conservation
27	01-09-2023	Chemistry	Workshop on Calibration and basic applications of Water Analyzer	Dr. Nivedita Acharjee, Assistant Professor, Department of Chemistry, Durgapur Government College, Bhaskar Mondal (PhD CSIR Junior Research Fellow and Asmita Mondal, PhD Junior Research Fellow (UGC Scholarship Fellow), Department of Chemistry, Durgapur Government College	14	Students learnt to determine different parameters of water and assess the water quality using the water analyzed purchased from the DBT support.

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Durgapur Government College

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DBT STAR SCHEME
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28	01-09-2023	Mathematics	Workshop on Basics of LATEX	Dr. Pratikshan Mondal, Assistant Professor, Department of Mathematics, Durgapur Government College	25	Students learnt the basic applications of LATEX
29	08-09-2023	Botany, Physics, Mathematics	Seminar on "Introduction to Biostatistics, with emphasis on Machine learning"	Dr. Tapabrata Lahiri, Professor, Department of Applied Science, Indian Institute of Information, Allahabad and Dr. Nupur Bhakta, Assistant Professor, Department of Physics, Durgapur Government College	23	Students got fundamental understanding of statistical methods and machine learning algorithms relevant to analyzing biological data. Students learnt different statistical methods using origin, such as descriptive statistics, hypothesis testing, regression, ANOVA, and other relevant statistical procedures; they got and also received hands on training to analyze biological datasets, and to create different types of graphs and visualizations using the imported data which included the customization options for axes, labels, titles and annotations.
30	11-09-2023	Mathematics	Invited lecture on "Some Zero-sum problems and elementary results in Additive Combinatorics"	Professor Sukumar Das Adhikari, Professor and Dean, School of Mathematical Sciences, Ramakrishna Mission Vivekananda Educational and Research Institute	25	Students learnt the classic questions in Additive Combinatorics and the early results on zero sum problems in Additive Combinatorics

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31	15-09-2023	Chemistry	Workshop on Kjeldahl Distillation cum Digestion Installation Set up	Bhaskar Mondal (NET CSIR, Junior Research Fellow, and Asmita Mondal, Junior Research Fellow (SJPSGC- UGC Scholarship), Department of Chemistry, Durgapur Government College	5	Students learnt the process of using the Kjeldahl distillation unit and also received the hands on training experience of the equipment purchased from the DBT support.
32	22-09-2023	Chemistry	Seminar cum workshop on Nanotechnology for Sustainable Development: Clean Energy and Environment and Elementary Concepts of Solid State Chemistry	Professor Amit K Chakraborty, Dept of Physics, National Institute of Technology, Durgapur and Professor Bidyut Saha, Dept of Chemistry, The University of Burdwan	25	Students were introduced to the elementary concepts of nanotechnology and solid state chemistry along with their potent applications
33	26-09-2023	Botany and Zoology	Invited lecture on "Effect of Climatic Amelioration on Environment, Biodiversity and Future of the Biosphere"	Professor Abhaya Prasad Das, Adjunct Professor (UGC), Rajiv Gandhi University	64	Students were introduced to the significance of biodiversity, its components and its role in sustaining life, threats to biodiversity, documentation of biodiversity assessment, monitoring and conservation, implementation of sustainable practices.

Nivedita Acharjee

Dr. Nivedita Acharjee
Coordinator, DBT STAR COLLEGE SCHEME
Durgapur Government College

COORDINATOR
DBT STAR SCHEME
DURGAPUR GOVERNMENT COLLEGE
J.N. AVENUE, DURGAPUR 713214

Dr. Debnath Palit
Principal
Durgapur Government College

Principal
Durgapur Govt. College



Annexure-IV

**Industrial Trainings, Field Visits and Visits to research laboratories undertaken during the year
(29-09-2022 to 28-09-2023)**

[Travel, contingency items and chemicals/equipment from DBT support]

No	Date of the event	Organizing Department	Visits conducted to	No. of Student Participants	Outcome
1	16-11-2022 to 21-11-2022	Botany, Chemistry and Zoology	Field visit training to Darjeeling and Adjoining Areas	29	Students learnt the identification and characterization of the species along with the conservation and breeding practices of the flora and fauna found in the visited areas
2	22-11-2022	Botany, Chemistry and Zoology	Field visit training to Organic farm	22	Students got the demonstration of the process of vermicomposting and several other aspects of organic farming
3	25-11-2022	Chemistry	Laboratory visit to Department of Chemistry, NIT, Durgapur	22	Students learnt the basic principle and use of sophisticated instruments such as atomic absorption spectrophotometer, GC-mass spectrometer, fluorescence spectrophotometer etc and got the demonstration of techniques applied in the chemistry research laboratories
4	09-12-2022	Physics and Chemistry	Research laboratory visit to Saha Institute of Nuclear Physics, Kolkata	41	Students visited three laboratories and got the demonstration, namely the laser molecular spectroscopy, scanning electron microscope laboratory and chemical physics laboratory
5	10-01-2023	Zoology	Field visit training to Ambuja Wetland, Durgapur	7	Students collected samples to study the physicochemical parameters in the laboratory
6	13-01-2023	Zoology	Field visit training Durgapur Barrage	5	
7	31-01-2023	Geology	Industrial training to Sonpurbazari Coal Mine Area	17	Students performed field visit (i) to identify the lithology of the host rocks and identify coal seams in field.(ii) to know about the current plan and set-up of the mine area.(iii)to get a basic idea about coal mine projects.(iv) to collect coal samples and fossils if any.
8	04-02-2023 and 05-02-2023	Zoology	Industrial training to Pearl Farming Training Centre, Kolkata, Smile Society	5	Students received the training of the industrial processes applied for pearl farming at the training center

Nivedita Acharjee

Dr. Nivedita Acharjee
Coordinator, DBT STAR COLLEGE SCHEME
Durgapur Government College

COORDINATOR
DBT STAR SCHEME
DURGAPUR GOVERNMENT COLLEGE
J.N. AVENUE, DURGAPUR 713214

Dr. Debnath Palit
Principal
Durgapur Government College

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Durgapur Govt. College



No	Date of the event	Organizing Department	Visits conducted to	No. of Student Participants	Outcome
9	08-02-2023	Botany	Laboratory visit to Department of Biotechnology, NIT, Durgapur	14	Students visited the laboratories of the Department of Biotechnology, NIT Durgapur. They got introduced to the processes of Skotomorphogenesis, photomorphogenesis, plant pathogen interaction, tissue culture, microbial treatment of waste management, biofuel from marine microorganisms, animal cell culture lab, bioinformatics lab and various research instruments
10	02-03-2023	Geology	Fossil Visit training near Mejia Coal Mine Area	30	Students performed field visit to understand the lithology of the area, identify the primary structural elements and measuring their attitudes, find and collect fossil specimens and determine paleocurrent direction and interpret paleo-environment.
11	15-03-2023 and 16-03-2023	Geology	Research laboratory visit to Geological Survey of India, Kolkata	26	Students got the understanding on the working principles and applications of the advanced petrological and geochronological instruments viz. LA-MC-ICPMS (Laser Ablation Multi-collector Inductively Coupled Plasma Mass Spectrometer), HR-SIMS (High Resolution Secondary Ion Mass Spectrometer) labs. During the training in each laboratory, stages of sample preparation, analytical setup and methodology as well as interpretation of acquired data were discussed by GSI scientists posted in the lab and by the Core Faculties of RTD-ER. During this training program students visited the Rock Museum and Fossil Gallery of GSI ER.
12	23-03-2023	Mathematics	Visit to Department of Mathematics, NIT, Durgapur	25	Students visited the PG and research laboratory of Department of Mathematics, NIT, Durgapur and got the opportunity to interact with the faculty members of Department of Mathematics, NIT, Durgapur. they also learnt about the various academic programs offered and the research activities conducted by NIT, Durgapur
13	11-04-2023	Chemistry	Visit to CSIR-Central Mechanical Engineering Research Institute (CMERI), Durgapur	22	Students visited three laboratories and got the demonstration of the atomic absorption spectrophotometer, UV-Visible spectroscopy, X-Ray Diffraction process

Nivedita Acharjee

Dr. Nivedita Acharjee
Coordinator, DBT STAR COLLEGE SCHEME
Durgapur Government College

COORDINATOR
DBT STAR SCHEME
DURGAPUR GOVERNMENT COLLEGE
J.N. AVENUE, DURGAPUR 713214

Dr. Debnath Palit
Principal
Durgapur Government College

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No	Date of the event	Organizing Department	Visits conducted to	No. of Student Participants	Outcome
14	03-05-2023 to 08-05-2023	Geology	Field training to Chandipur, Odhisa	15	During the field work, students observed and analyzed different types of molluscan shells in the beach and prepared report of their field work.
15	25-08-2023	Physics, Chemistry and Mathematics	Industrial Visit to cottage industry of rural areas of Shantiniketan	22	Students learnt the techniques of using natural colours for garments by visiting the cottage industries in rural areas and also analyzed the processes.
16	08-09-2023	Physics and Chemistry	Visit to CSIR-Central Mechanical Engineering Research Institute (CMERI), Durgapur	15	Students learnt about the "Aluminium composite and their structural evaluation through instrumentation"

Nivedita Acharjee

Dr. Nivedita Acharjee
Coordinator, DBT STAR COLLEGE SCHEME
Durgapur Government College

COORDINATOR
DBT STAR SCHEME
DURGAPUR GOVERNMENT COLLEGE
J.N. AVENUE, DURGAPUR 713214

Dr. Debnath Palit
Principal
Durgapur Government College

Principal
Durgapur Govt. College



Annexure-V
Training Courses for faculty and staff organized during the year
(29-09-2022 to 28-09-2023)

[Purchase of equipment, computer, printer, software, chemicals, consumables, contingency items, travel, remuneration to resource persons from DBT support]

No.	Organizing Department	Name of the Event	Resource Persons/In House Faculty who conducted the sessions	Date of the event	Total No. of Participants	Outcome
1	Mathematics	Invited lecture and interactive session on "Spreadsheet Processing and Application of MS-Excel" for faculty members and non-teaching staff	Professor Sunil Karforma, Department of Computer Science, the University of Burdwan, West Bengal and Prof. Sibaji Rit, Department of Mathematics, Durgapur Government College	11-02-2023	33	Faculty members and non-teaching staff learnt using Microsoft excel for calculation and different other applications of excel for academic and administrative activities
2	Zoology	Hands on Training on Laboratory practices for Non-Teaching Staff of Department of Zoology	Dr. Somnath Dhali, Assistant Professor, and Head, Department of Zoology, Durgapur Government College	08-03-2023	2	The laboratory staff received training to use different equipment procured under the DBT STAR COLLEGE SCHEME
3	All participating departments under DBT STAR COLLEGE SCHEME	Faculty Enrichment Programme and Mentoring for DBT Star College Scheme	Dr. Subir Chandra Dasgupta, Professor and Head, Department of Zoology, Maulana Azad College, Kolkata	15-03-2023	35	Resource person provided the complete overview to the participant about the scope and objectives of the DBT STAR COLLEGE SCHEME
4	Chemistry	Training Programme for laboratory staff on "Calibration and Working Principle of UV-Visible Spectrophotometer"	Dr. Nivedita Acharjee, Assistant Professor, Department of Chemistry, Durgapur Government College; Bhaskar Mondal (NET CSIR, Junior Research Fellow, and Asmita Mondal, UGC Junior Research Fellow Department of Chemistry, Durgapur Government College	03-05-2023	2	The laboratory staff got the training to calibrate and operate the UV-Visible Spectrophotometer for measurement of absorbance

Nivedita Acharjee

Dr. Nivedita Acharjee
Coordinator, DBT STAR COLLEGE SCHEME
Durgapur Government College

COORDINATOR
DBT STAR SCHEME
DURGAPUR GOVERNMENT COLLEGE
J.N. AVENUE, DURGAPUR 713214

Dr. Debnath Palit
Principal
Durgapur Government College

Principal
Durgapur Govt. College



No.	Organizing Department	Name of the Event	Resource Persons/In House Faculty who conducted the sessions	Date of the event	Total No. of Participants	Outcome
5	Botany	Hands on Training of laboratory staff on operation of Autoclave and pH meter	Dr. Prosanta Saha, Assistant Professor of Botany, Dr. Sandipan Ray, Assistant Professor of Botany and Mr. Anish Bhattacharya, Assistant Professor of Botany, Durgapur Government College	03-05-2023	02	Laboratory staff understood safety protocols associated with operating these instruments, reducing the risk of accidents or mishandling that could harm personnel or compromise experiments
5	Physics	Training Programme on "Laboratory maintenance and Safety management"	Dr. Hrishikesh Mondal, Assistant Professor, Department of Physics, Durgapur Government College	24-06-2023	02	Dr. Hrishikesh Mondal conducted hands-on training on different features of laboratory maintenance like electric soldering, replacement of microscope crosswire, replacement of meter bridge wire, and alignment of physical balance, etc. Also, trained about the management of safety during handling electrical power and heater (for thermal experiments) to avoid unwanted accidents.

Nivedita Acharjee

Dr. Nivedita Acharjee
Coordinator, DBT STAR COLLEGE SCHEME
Durgapur Government College

COORDINATOR
DBT STAR SCHEME
DURGAPUR GOVERNMENT COLLEGE
J.N. AVENUE, DURGAPUR 713214

Dr. Debnath Palit
Principal
Durgapur Government College

Principal
Durgapur Govt. College



Annexure-VI

Outreach activities organized during the year (29-09-2022 to 28-09-2023)

[Purchase of equipment, computer, printer, software, chemicals, consumables, contingency items, travel, remuneration to resource persons from DBT support]

No.	Organizing Department	Name of the Event	Resource Persons/In House Faculty	Date of the event	Total No. of Participants	Outcome
1	Zoology	Outreach activity on "Hands on Blood Group Determination"	All faculty members of Department of Zoology, Durgapur Government College	05-12-2022	34	Participants from different Science back ground of UG courses learnt the process to determine blood group
2	Zoology	Campus Bird Count for Celebration of the occasion of Great Backyard Bird Count in collaboration with the Wildlife information and Nature Guide Society (WINGS)	Dr. Roli Shukla Ray, Department of Zoology, Durgapur Government College and members of the Wildlife information and Nature Guide Society (WINGS)	17-02-2023	22	Students participated in the Great backyard Bird Count Event
3	Zoology	Hands on training for college students: on Softwares for Biostatistics and Bioinformatics for students of Michael Madhusudan Memorial College, Durgapur	Dr. Kuntal Bhattacharya, Dr. Roli Shukla Ray, Dr. Saumabha Chatterjee, Department of Zoology, Durgapur Government College	23-03-2023, 24-03-2023 and 25-03-2023	20	Students of Michael Madhusudan Memorial College got hands on training on the use of software training
4	Geology and Chemistry	Outreach activity for school students: Laboratory Equipment Training ,Software Applications and Lab Safety Measures in Geological and Chemical Laboratories	All faculty members and laboratory staff of Departments of Chemistry and Geology, Durgapur Government College	03-08-2023	06 Students of Bidhannagar Government Girls' High School	Students received demonstration and hands on training on chemical equipment, software, geological microscopes and equipment etc

Nivedita Acharjee

Dr. Nivedita Acharjee
Coordinator, DBT STAR COLLEGE SCHEME
Durgapur Government College

COORDINATOR
DBT STAR SCHEME
DURGAPUR GOVERNMENT COLLEGE
J.N. AVENUE, DURGAPUR 713214

Dr. Debnath Palit
Principal
Durgapur Government College

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Durgapur Govt. College



No.	Organizing Department	Name of the Event	Resource Persons/In House Faculty	Date of the event	Total No. of Participants	Outcome
5	Botany, Mathematics, Physics	Outreach Program for school students on "Understanding the scientific facts underlying common superstitious beliefs"	Dr. Nivedita Acharjee, Assistant Professor of Chemistry, Durgapur Government College; Dr. Pratikshan Mondal, Assistant Professor, Department of Mathematics, Durgapur Government College, Dr. Somenath Bhattacharya, Associate Professor, Department of Physics, Durgapur Government College, Dr. Prosanta Saha, Assistant Professor, Department of Botany, Durgapur Government College and Sibaji Rit, Assistant Professor, Department of Mathematics, Durgapur Government College and members of Breakthrough Science Society	23-09-2023	182 students of Bidhannagar Government Sponsored Boys' High School	Faculty members of Durgapur Government College and members of Breakthrough Science Society demonstrated different experiments and explained the scientific basis of these experiments and correlated them with the common superstitious beliefs for school students. This was intended to promote scientific understanding, building awareness, critical thinking, empowering decision and ethical consideration among school students

Nivedita Acharjee

Dr. Nivedita Acharjee
Coordinator, DBT STAR COLLEGE SCHEME
Durgapur Government College

COORDINATOR
DBT STAR SCHEME
DURGAPUR GOVERNMENT COLLEGE
J.N. AVENUE, DURGAPUR 713214

Dr. Debnath Palit
Principal
Durgapur Government College

Principal
Durgapur Govt. College



Annexure-VII

Seminars/Workshops attended, paper presentations, publications and Students' achievements during the year

1. Dr. Somnath Dhali, Assistant Professor, Department of Zoology, Durgapur Government College, participated in Zoo Spectra 2022, Two Day International Conference organized by Department of Zoology, University of Calcutta on 05-12-2022 and 06-12-2022 and presented his research work on "*Leaf-footed bugs (Coreidae: Heteroptera: Hemiptera: Insecta of Reserve Forests of Doars, West Bengal, India)*"
2. Dr. Saumabha Chatterjee, Assistant Professor, Department of Zoology, Durgapur Government College, participated in Zoo Spectra 2022, Two Day International Conference organized by Department of Zoology, University of Calcutta on 05-12-2022 and 06-12-2022 and presented his research work on "*Chromosomal and Cytological Abnormalities in Onion Root Apical Meristem Induced by Aerial Parts' Hrdromethanolic extract of Synedrella nodiflora (L.) Gaertn*"
3. Dr. Sumana Dutta, Assistant Professor, Department of Zoology, Durgapur Government College, participated in Zoo Spectra 2022, Two Day International Conference organized by Department of Zoology, University of Calcutta on 05-12-2022 and 06-12-2022 and presented her research work on "*Amelioration of Bleomycin Induced Oxidative Stress and Cytotoxic effects in Allium cepa L. Root Tip Cells with Manikara hexandra (Roxb.) Dubard Methanolic Extract Fraction*"
4. Sibaji Rit, Assistant Professor, Department of Mathematics, Durgapur Government College participated in the International Conference on Fractional Calculus: Theory, Applications and Numerics from 27-01-2023 to 29-01-2023 organized by Department of mathematics, National Institute of Technology, Puducherry, Karaikal and presented a paper entitled "*Complex dynamics of a caputo derivative based fractional order sir model incorporating saturated incidence and recovery through virtual mode.*"
5. Debmalya Khan and Akash Chakraborty, UG Semester-I Honours Students, Department of Zoology attended the Virtual Conference on Molecular Neuroscience organized under Current protocols by Wiley on 30-03-2023
6. Angatra Mandal and Utsa Ghosh, UG Semester-IV Honours students, Department of Zoology and Debmalya Khan and Akash Chakraborty, UG Semester-I Honours Students, Department of Zoology attended the International Online Expert lecture organized by Kristu Jayanti College, Bengaluru under the DBT STAR COLLEGE SCHEME, Department of Biotechnology, Government of India.

Prize won by student

7. Kushal Mistry, UG Semester-VI student, Department of Zoology won third prize in the Photography Competition organized by PG Department of Botany, Madhab Choudhury College, Barpeta-781301, Assam on the occasion of World Forestry Day and The title of the photograph was "Himalayan Wolf"

Outstanding All India Rank of Students in JAM examinations (2023)

- Sanjukta Chel: Geology Honours: [All India Rank: 18](#)
- Shreejata Das: Geology Honours: [All India Rank: 31](#)
- Urmila Ghosh: Chemistry Honours: [All India Rank: 64](#)
- Mukul Dey: Geology Honours: [All India Rank: 99](#)
- Arijit Dey: Chemistry Honours: [All India Rank: 209](#)
- Debarchit Das: Geology Honours: [All India Rank: 219](#)
- Megha Chakraborty: Geology Honours: [All India Rank: 301](#)
- Niladree Shekhar Saha: Geology Honours: [All India Rank: 431](#)
- Nirupam Tikader: Geology Honours: [All India Rank: 803](#)
- Ranjan Halder: Physics Honours: [All India Rank: 1328](#)

Nivedita Acharjee

Dr. Nivedita Acharjee
Coordinator, DBT STAR COLLEGE SCHEME
Durgapur Government College

COORDINATOR
DBT STAR SCHEME
DURGAPUR GOVERNMENT COLLEGE
J.N. AVENUE, DURGAPUR 713214

Dr. Debnath Palit
Principal
Durgapur Government College

Principal
Durgapur Govt. College



Annexure-IX

Name, designation, host institutes of resource persons invited for different events

1. Professor Krishnendu Acharya, Department of Botany, University of Calcutta
2. Prof. Biswapati Mandal (Ex Pro-Vice Chancellor, Bidhan Chandra, Krishi Viswavidyalaya)
3. Dr. Subhendu Bhadraroy (Senior Consultant, Rallis India Ltd, Bengaluru);
4. Dr. F. H. Rahman (Principal Scientist, Indian Council of Agricultural Research (ICAR)-Agricultural Technology Application Research Institute (ATARI) Kolkata)
5. Partha Bhattacharya (Ex Deputy General Manager, IFFCO, Kolkata)
6. Professor Jaydeb Chakrabarti, Senior Professor, S. N. Bose National Centre for Basic Sciences, Kolkata, under DST, Government of India
7. Professor Sudhendu Mandal, Advisor Academic and Administrative Central University of Odisha, Korapur and Professor
8. Professor Swapan Kumar Dutta, Vice-Chancellor, Biswa Bangla Biswabidyalay
9. Prof. (Dr.) Sourangshu Mukhapadhyay, Department of Physics, The University of Burdwan.
10. Prof. (Dr.) Prasanta Chatterjee, Department of Mathematics, Visva-Bharati University
11. Dr. Mrinal Kanti Mandal, Department of Physics, NIT, Durgapur
12. Professor Sankar Chandra Moi, Professor and Head, Department of Chemistry, NIT, Durgapur
13. Dr. Debiprosad Duari, Director, IASES, Kolkata, Prof. Kollol Bhattacharya, Calcutta University,
14. Prof. Biswajit Maiti, Associate Professor of Physics, Maulana Azad College, Kolkata
15. Professor (Dr.) Dipak Ranjan Mondal, President, SD Marine Biological Research Institute, Sagar Island
Former: Vice-Chancellor, Sidho-Kano-Birsha University
16. Dr. Istkhhar Rao, Assistant Professor, Department of Zoology, Banasthali Vidyapeeth, Jaipur, Rajasthan
17. Prof. (Dr.) Pabitra Kumar Chakrabarti (Department of Physics, The University of Burdwan),
18. Dr. K. Sethuraman (Department of Materials Science, Central University of Tamil Nadu)
19. Dr. Santanu K. Maiti, Physics and Applied Mathematics Unit, Indian Statistical Institute, Kolkata
20. Prof. (Dr.) Haydar A. Mohammad-Salim, Presently Post Doctoral Fellow, University of Valencia, Spain and Faculty, University of Zakho, Iraq
21. Professor Subir Chandra Dasgupta, Professor (West Bengal Senior Educational Service) Maulana Azad College, Kolkata

Nivedita Acharyee

Dr. Nivedita Acharyee
Coordinator, DBT STAR COLLEGE SCHEME
Durgapur Government College

COORDINATOR
DBT STAR SCHEME
DURGAPUR GOVERNMENT COLLEGE
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Principal
Durgapur Government College

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Durgapur Govt. College



22. Prof. (Dr.) S. K. Bhadra, Professor Emeritus, Indian Association of Cultivation of Science
23. Prof. (Dr.) Ajoy Ghatak, Ex-Professor of Indian Institute of Delhi
24. Prof. (Dr.) Saverio Pascazio, dipartimento di Fisica, Universita di Bari, Italy,
25. Prof. (Dr.) Avinash Khare, Ex-Professor of Institute of Physics, Bhubhaneswar, Odisha,
26. Prof. (Dr.) Jayanta Sahu, University of Southampton, United Kingdom
27. Dr. Samiran Mahapatra, Department of Geology, Hooghly Mohsin College
28. Dr. Anupam Ghosh, Department of Geological Sciences, Jadavpur University
29. Professor Pranesh Chaudhuri, Professor, Department of Chemistry Visva Bharati,
30. Dr. Paresh Nath Chatterjee, National Institute of Technology, Durgapur
31. Professor Debashis Das, Department of Chemistry, The University of Burdwan
32. Professor, Rajnarayan Saha, Department of Chemistry, National Institute of Technology, Durgapur
33. Prof. Kingsuk Majumdar, Assistant Professor, Department of Electrical Engineering (EE), Dr. B.C.Roy Engineering College (BCREC), Durgapur
34. Dr. Anirban Ghosh, Associate Professor, Department of Zoology, School of Sciences, Netaji Subhas Open University
35. Dr. Biswajit Roy, Department of Earth Science, IIT, Gandhinagar
36. Dr. Haradhan Kundu, Assistant Professor of Mathematics, Bankura Zilla Saradamani Mahila Mahavidyalaya
37. Dr. Tapabrata Lahiri, Professor, Department of Applied Science, Indian Institute of Information, Allahabad
38. Professor Sukumar Das Adhikari, Professor and Dean, School of Mathematical Sciences, Ramakrishna Mission Vivekananda Educational and Research Institute
39. Professor Amit K Chakraborty, Dept of Physics, National Institute of Technology, Durgapur and
40. Professor Bidyut Saha, Dept of Chemistry, The University of Burdwan
41. Professor Abhaya Prasad Das, Adjunct Professor (UGC), Rajiv Gandhi University

Nivedita Acharjee

Dr. Nivedita Acharjee
Coordinator, DBT STAR COLLEGE SCHEME
Durgapur Government College

COORDINATOR
DBT STAR SCHEME
DURGAPUR GOVERNMENT COLLEGE
J.N. AVENUE, DURGAPUR 713214

Dr. Debnath Palit
Principal
Durgapur Government College

Principal
Durgapur Govt. College



Annexure-X

Equipments purchased by Departments from DBT grant

DEPARTMENT OF BOTANY

- Haemocytometer
- Laminar Air Flow – 2' x 2' x 2'
- Digital pH Meter
- DNA mini Gel Electrophoresis Apparatus
- Lux meter
- Digital Balance (0.0000 g)
- Digital Colorimeter
- Autoclave (SS)
- Tabletop Centrifuge
- Desktop Computer
- Protein Gel Electrophoresis Apparatus
- Stereo Microscope with Camera for Tissue Culture
- Magnetic Stirrer
- UV Transilluminator
- Paper Chromatography Chamber
- Pipetman Micropipettes
- Multi Tube Vortexer
- Ultra-Freezer (-20°C)
- Stage micrometer
- Camera Lucida Prism
- Digital Balance (0.000 g)
- Tissue Culture Rack
- Plant growth chamber

DEPARTMENT OF CHEMISTRY

- Digital Conductivity meter with Conductivity Cell (0.1)
- Digital Potentiometer
- Melting point apparatus
- Water analyzer (pH/EC/TDS/Salinity Meter)
- Laboratory water distillation apparatus (Borosil) (1.5 litre/hr)
- Heating Mantle

Nivedita Acharjee

Dr. Nivedita Acharjee
Coordinator, DBT STAR COLLEGE SCHEME
Durgapur Government College

COORDINATOR
DBT STAR SCHEME
DURGAPUR GOVERNMENT COLLEGE
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Dr. Debnath Palit
Principal
Durgapur Government College

Principal
Durgapur Govt. College



- Hot Air Oven
- Kjeldahl Digestion Unit of 3 test, 1 Regulator & 3 Kjeldahl flask
- Muffle furnace
- HP Laserjet Wi-Fi colour printer
- Oil free Vacuum Pump
- Oil bath with stirrer
- Digital Tensiometer
- Digital pH meter
- Digital Polarimeter
- Digital Colorimeter
- Digital Magnetic Stirrer with hot plate
- Electric Centrifugal Machine
- Boiling point apparatus
- Ion Exchange Resin
- Kjeldahl distillation unit
- Respirable dust sampler
- Ion exchange column 18mm × 12 inch sintered with bulb
- Digestion Chamber
- Soxhlet Extraction Apparatus
- Steam Distillation Set for Essential Oil
- TLC Set with Applicator
- Temperature controlled water bath

DEPARTMENT OF GEOLOGY

- GPS for Geological Field Study
- Ore-0 Microscope for study of ore minerals
- Binocular Microscope for study of ore minerals
- Binocular Petrological Microscope for study of rocks in thin sec
- Palaeontological Microscope- Stereo zoom for study of micro fossils
- Resistivity Meter for Ground Water survey
- Desktop Computer

Nivedita Acharjee

Dr. Nivedita Acharjee
Coordinator, DBT STAR COLLEGE SCHEME
Durgapur Government College

COORDINATOR
DBT STAR SCHEME
DURGAPUR GOVERNMENT COLLEGE
J.N. AVENUE, DURGAPUR 713214

Dr. Debnath Palit
Principal
Durgapur Government College

Principal
Durgapur Govt. College



DEPARTMENT OF MATHEMATICS

- MATLAB SOFTWARE
- MATHEMATICA SOFTWARE
- DESKTOP COMPUTERS
- HP LASER PRINTER

DEPARTMENT OF PHYSICS

- To determine the ionization potential of mercury
- CRO (Analog dual trace 4 channel-60MHz Bandwidth with probes) -Systronics
- Research Optical Bench
- Diffraction Grating-Hilger& Watt (Original) (England)
- Microwave oven to determine the velocity of light
- Ballistic Galvanometer (Low CDR)
- Smart Board
- Measurement of field strength B and its variation in a solenoid (determine dB/dx)
- To study response curve of a Series LCR circuit and determine its (a) Resonant frequency, (b) Impedance at resonance, (c) Quality factor Q, and (d) Band width
- Measurement of the velocity of sound by Kundt's tube
- To compare capacitances using De'Sauty's bridge
- Three motion travelling microscope
- High Intensity Discharge Tube with Compatible voltage source and stand
- Astronomical Telescope
- Photo-electric effect: photo current versus intensity and wavelength of light; maximum energy of photo-electrons versus frequency of light
- To determine work function of material of filament of directly heated vacuum diode
- To determine the Planck's constant using LEDs of at least 4 different colours- SES Roorkey
- To determine the absorption lines in the rotational spectrum of Iodine vapour
- Desktop Computer
- Planetary Ball Mill, 220V
- Charge Discharge Key
- Oil Free Pump
- Ultrasonic Cleaner
- Magnetic stirrer with hot plate and digital speed indicator (1L capacity)
- Binocular
- Determination of wavelength of light using laser and single slit/wire

Nivedita Acharyee

Dr. Nivedita Acharyee
Coordinator, DBT STAR COLLEGE SCHEME
Durgapur Government College

COORDINATOR
DBT STAR SCHEME
DURGAPUR GOVERNMENT COLLEGE
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Dr. Debnath Palit
Principal
Durgapur Government College

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Durgapur Govt. College



- Set up to measure Q of a coil and its dependence on frequency using a Q-meter
- Set up to verify the law of Malus for plane polarized light
- Determination of coefficient of linear expansion with travelling microscope/Telescope
- Measurement of Planck's constant using black body radiation and photo detector-SES Roorkey

DEPARTMENT OF ZOOLOGY

- Orbital Incubator Shaker
- Autoclave Portable
- Hand held homogenizer
- Canon EOS DSLR Camera
- Portable Lux meter
- Arc GIS Online for student use
- B.O.D. Incubator
- Vortex Cyclomixer
- Colorimeter
- Hectare Automatic Solar Insect Trap
- Desktop for Arc GIS use
- Micropipette
- Chromatography tank with Lid
- Deep Freezer Voltas 405 litres
- Turbidity Portable Meter
- Water Distillation Apparatus
- Backpack Lab Water Quality Educational Test Kit
- Backpack Lab Soil Quality Educational Test Kit
- Garmin GPS etrex 20
- Sechchi Disc
- Range Finder
- Olympus Binocular

Nivedita Acharjee

Dr. Nivedita Acharjee
Coordinator, DBT STAR COLLEGE SCHEME
Durgapur Government College

COORDINATOR
DBT STAR SCHEME
DURGAPUR GOVERNMENT COLLEGE
J.N. AVENUE, DURGAPUR 713214

Dr. Debnath Palit
Principal
Durgapur Government College

Principal
Durgapur Govt. College

EXPERIENTIAL LEARNING

(Training courses under **DBT STAR COLLEGE SCHEME**) 2022-2023



DEPARTMENT OF BIOTECHNOLOGY
MINISTRY OF SCIENCE & TECHNOLOGY, GOVERNMENT OF INDIA

Durgapur Government College

Accredited by NAAC with "A" Grade

Affiliated to Kazi Nazrul University | UGC 2(f) and 12(B) Recognized College

DBT STAR COLLEGE SCHEME

Winter School Training Course
involving Student Project on

**"Bioactivity of organic compounds by
Computational Studies"**

November 24, 2022 to November 30, 2022



Organized by

Department of Chemistry, Botany and Zoology
Durgapur Government College



DEPARTMENT OF BIOTECHNOLOGY
MINISTRY OF SCIENCE & TECHNOLOGY, GOVERNMENT OF INDIA

DBT STAR COLLEGE SCHEME

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Winter School Training Course
(involving Student Projects)

on

**"Application of Remote Sensing & GIS in
Land Use-Land Cover Mapping"**

January 17, 2023 to January 24, 2023



Organized by

Department of Geology
Durgapur Government College



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DBT STAR COLLEGE SCHEME

Winter School Training Course involving Student
Project

**"Characterization of Chemicals and
analysis of the Material safety Data Sheet
before performing experiments"**

November 24, 2022 to November 30, 2022



Organized by

Department of Chemistry, Botany and Zoology
Durgapur Government College



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DBT STAR COLLEGE SCHEME

Winter School Training Course
involving Student Project on

**"Learning Chemistry through Software
Applications"**

November 09, 2022 to November 16, 2022



Organized by

Department of Chemistry
Durgapur Government College

Winter School Training Courses involving Student Project

under DBT STAR COLLEGE SCHEME

EXPERIENTIAL LEARNING

(Training courses under **DBT STAR COLLEGE SCHEME**) 2022-2023



DEPARTMENT OF BIOTECHNOLOGY
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DBT STAR COLLEGE SCHEME

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**Winter School
 Training Course
 involving Student
 Project on**

"C Programming and applications"
March 10, 2023 to March 17, 2023



Organized by
Department of Mathematics
Durgapur Government College



DEPARTMENT OF BIOTECHNOLOGY
 MINISTRY OF SCIENCE & TECHNOLOGY, GOVERNMENT OF INDIA

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**Winter School Training Course
 involving Student Project**

"MS-Excel and Its Applications"
March 17, 2023 to March 22, 2023



Organized by
Department of Mathematics
Durgapur Government College

**Winter School Training Courses involving Student Project
 under DBT STAR COLLEGE SCHEME**



Field Study in the College Campus

EXPERIENTIAL LEARNING

(Several new experiments beyond course curriculum for enhancement of practical skills under **DBT STAR COLLEGE SCHEME: 2022-2023**)



EXPERIENTIAL LEARNING

(Several Hands on Training experiments/sessions under
DBT STAR COLLEGE SCHEME: 2022-2023)



EXPERIENTIAL LEARNING

(Several Student Projects under **DBT STAR COLLEGE SCHEME: 2022-23**)



ter Analysis

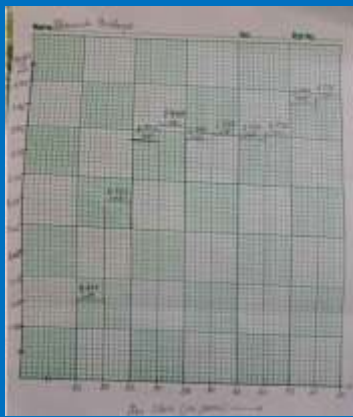


Vegetation Mapping

Wa



creening of some plant species



Graphical Representation



Study of Nests

S



Geological project in and around BagalGoria Jhor, Raniganz Gondwana Basin



Projects on C-Programing and MS-Excel Applications

EXPERIENTIAL LEARNING

(Several Workshops/Seminar Cum Workshops/Conferences/Invited Lectures under **DBT STAR COLLEGE SCHEME: 2022-2023**)



Two Days Workshop on "Mushroom Cultivation and Entrepreneurship"



Workshop on "Soil Testing and Fundamentals of Fertilizer Recommendation"



Invited lectures on "Molecular Dynamics" and "Bio-physical study on biomaterials to design and develop Pt(II) based anticancer drug"



Workshop on "Biological and Chemical Waste Disposal"

EXPERIENTIAL LEARNING

(Several Workshops/Seminar Cum Workshops/Conferences under
DBT STAR COLLEGE SCHEME: 2022-2023)



Workshop on "Basics in Excel and its applications"



Seminar on "Solitons and its applications in Biophysics and Telecommunications" and
Three Day Workshop on "Telescope making and stargazing"



National Seminar on "Improvement in the State of Art Knowledge on Plant Sciences"



Invited lecture along with poster competition
in commemoration of National Science Day

EXPERIENTIAL LEARNING

(Several Workshops/Seminar Cum Workshops/Conferences under
DBT STAR COLLEGE SCHEME: 2022-2023)



International Workshop on "Fundamentals and applications of Computational Chemistry"



International Conference on "Nonlinear Dynamics and its Applications in Physics and Biological Sciences"



EXPERIENTIAL LEARNING

(Several Workshops/Seminar Cum Workshops/Conferences under
DBT STAR COLLEGE SCHEME: 2022-2023)



Seminar cum workshop on "Aspects of Micropalaentology"



Seminar cum workshop on "Excited state intra-molecular proton transfer in Schiff base metal complexes: Mechanistic aspects & Future prospects and A greener approach to organic synthesis"



Seminar cum workshop on "Fluorescence Spectroscopy and Biodegradability Enhanced by Advanced Oxidation Process for Highly Toxic Organics"



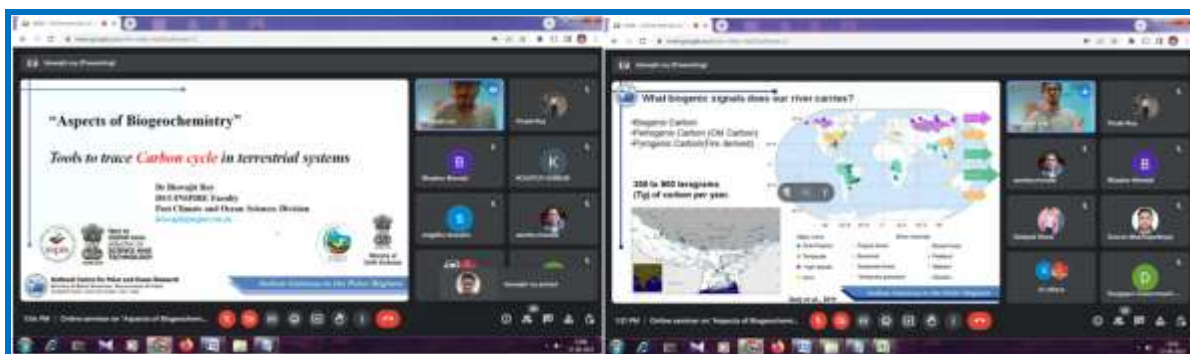
Workshop on "Electrical House Wiring and Electrical Safety"

EXPERIENTIAL LEARNING

(Several Workshops/Seminar Cum Workshops/Conferences under
DBT STAR COLLEGE SCHEME: 2022-2023)



Workshops on "MATLAB: An Introduction to Beginners"; "Workshop on Basics of LATEX", "Basics of MATHEMATICA and Graphical demonstration using Mathematica" and "First Step in Mathematica"



Seminar on "Aspects of Biogeochemistry"



Workshop on "Herbarium techniques of Angiosperms and Modern Protocols for Pteridophytic Germplasm Identification and Conservation"

EXPERIENTIAL LEARNING

(Several Workshops/Seminar Cum Workshops/Conferences under
DBT STAR COLLEGE SCHEME: 2022-2023)



Workshop on "Calibration and basic applications of Water Analyzer"



Seminar on "Introduction to Biostatistics, with emphasis on Machine learning"



Invited lecture on "Some Zero-sum problems and elementary results in Additive Combinatorics"



Workshop on "Kjeldahl Distillation cum Digestion Installation Set up"

EXPERIENTIAL LEARNING

(Several Workshops/Seminar Cum Workshops/Conferences under
DBT STAR COLLEGE SCHEME: 2022-2023)



Seminar cum workshop on "Nanotechnology for Sustainable Development and Elementary Concepts of Solid State Chemistry"



Invited lecture on "The Caretaker of Brain: The Double edged sword"



Invited lecture on "Effect of Climatic Amelioration on Environment, Biodiversity and Future of the Biosphere"

EXPERIENTIAL LEARNING

(Visits to research laboratories under
DBT STAR COLLEGE SCHEME (2022-2023))



Research Laboratory Visit to Department of Chemistry, NIT, Durgapur



Research Laboratory Visit to Saha Institute of Nuclear Physics, Kolkata

EXPERIENTIAL LEARNING

(Visits to research laboratories under
DBT STAR COLLEGE SCHEME (2022-2023))



Research Laboratory Visit to Department of Biotechnology, NIT, Durgapur



Research Laboratory Visit to Geological Survey of India, Kolkata

EXPERIENTIAL LEARNING

(Visits to research laboratories under
DBT STAR COLLEGE SCHEME (2022-2023))



Visit to Department of Mathematics, NIT, Durgapur and interactive session with Professors of NIT, Durgapur



Research Laboratory Visit to CSIR-Central Mechanical Engineering Research Institute (CMERI), Durgapur

EXPERIENTIAL LEARNING

(Visits to research laboratories under
DBT STAR COLLEGE SCHEME (2022-2023))



Laboratory Visit and Interactive Session at CSIR-Central Mechanical Engineering Research Institute (CMERI), Durgapur

EXPERIENTIAL LEARNING

(Field Visits under **DBT STAR COLLEGE SCHEME (2022-2023)**)



Field Visit to Darjeeling and adjoining areas



Field Visit to Organic Farm, Durgapur



Field Visit to Ambuja Wetland, Durgapur

EXPERIENTIAL LEARNING

(Field Visits under **DBT STAR COLLEGE SCHEME (2022-2023)**)



Fossil Visit training near Mejia Coal Mine Area



Geological Field Visit to Chandipur, Orissa

EXPERIENTIAL LEARNING

(Industrial training visit under **DBT STAR COLLEGE SCHEME (2022-2023)**)



Industrial Training Visit to Sonapur Bazari Coal Mine Area



Industrial training to Pearl Farming Training Centre, Kolkata, Smile Society



Industrial Training Visit to cottage industry of rural areas of Shantiniketan

TRAINING PROGRAMMES FOR FACULTY AND STAFF (2022-2023)



Invited lecture and interactive session on "Spreadsheet Processing" under
DBT STAR COLLEGE SCHEME

 <p>DURGAPUR GOVERNMENT COLLEGE (GOVERNMENT OF WEST BENGAL) <small>(NAAC Accredited College, HIRA, WB)</small></p> <p>DBT STAR COLLEGE SCHEME SPONSORED ONE DAY "FACULTY ENRICHMENT PROGRAMME AND MENTORING FOR DBT STAR COLLEGE SCHEME"</p> <p>MARCH 15, 2023</p> <p>ORGANIZED BY DURGAPUR GOVERNMENT COLLEGE</p> <p><i>Resource person</i> Dr. Subit Chandra Dasgupta, WBSES Professor and HoD Department of Zoology Manlana Azad College Kolkata</p> <p><i>TARGET AUDIENCE: FACULTY MEMBERS OF ALL PARTICIPATING DEPARTMENTS AND NEARBY COLLEGES</i></p> <p>REGISTRATION FEE: NIL <i>OFF LINE REGISTRATION WILL BE DONE AT VENUE</i> PLEASE REACH US: dgcprincipal2021@gmail.com</p>	<p>REGISTRATION: 2.00 PM to 2.30 PM DELIBERATIONS: 2.30 PM Onwards</p> <p>THIS FACULTY ENRICHMENT PROGRAMME IS INTENDED TO PROVIDE A COMPLETE OVERVIEW OF THE DBT STAR COLLEGE SCHEME AND MENTORING FOR THE FACULTY MEMBERS TO ENSURE EFFECTIVE IMPLEMENTATION IN LINE WITH THE STATED OBJECTIVES AND OUTCOMES OF THE SCHEME</p>	
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Faculty Enrichment and mentoring for **DBT STAR COLLEGE SCHEME**

TRAINING PROGRAMMES FOR STAFF (2022-2023)

DBT STAR COLLEGE SCHEME



Hands on Training for Laboratory Staff on "Operation of Autoclave and pH meter"



Hands on Training for Non-Teaching Staff of Department of Zoology



Training Programme on "Calibration and Working Principle of UV-Visible Spectrophotometer" for the laboratory Staff



Training Programme on "Laboratory maintenance and Safety management" (Physics)

Durgapur, WB, India
 Jawahar Lal Nehru Road, Amaratoli Colony,
 Durgapur, 713214, WB, India
 Lat: 23.542309, Long: 87.326884
 06/24/2023 13:56 GMT+05:30

OUTREACH ACTIVITIES (DBT STAR COLLEGE SCHEME) (2022-2023)

Target Students

Students of local schools in the district of Paschim Bardhaman, West Bengal

GEOLOGY

- Brief introductory presentation about geology, its branches and career scopes
- Exhibition of igneous, metamorphic and sedimentary rocks in hand specimens and under the microscope
- Exhibition of microfossils like foraminifera through microscope
- Exhibition of invertebrate and vertebrate fossils
- Visit to the geological museum, Department of Geology, Durgapur Government College

CHEMISTRY

- Brief introductory presentation on "Career Prospects of Chemistry"
- Demonstration of different laboratory equipment such as Visible Spectrophotometer, Water Analyzer, Digital Conductivity Meter, Digital pH meter, Digital Polarimeter, Magnetic Stirrer with Hot plate etc
- Demonstration and Hands on Training on the process of "Distillation", "Neutralization of Chemical Waste" and "Encapsulation for safe disposal of heavy metal chemical waste"
- Demonstration and Hands on Training on "Learning Chemistry through Software Applications"



DEPARTMENT OF BIOTECHNOLOGY
MINISTRY OF SCIENCE & TECHNOLOGY, GOVERNMENT OF INDIA



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DBT STAR COLLEGE SCHEME

Outreach Activity on

**"Laboratory Equipment Training ,
Software Applications and Lab Safety
Measures in Geological and Chemical
Laboratories"**

August 03, 2023



Organized by

Departments of Geology and Chemistry
Durgapur Government College

Objectives of the Outreach Activity

Laboratory equipment training is one of the most significant aspects of scientific understanding, which is essentially required to develop the laboratory skills of students and to encourage them in pursuing advanced scientific study and research. Moreover, students should also be well acquainted with the basic laboratory safety measures for good laboratory practices. This outreach activity aims to provide the training to school students on the laboratory equipment and lab safety measures used in Geological and Chemical laboratories.

- ✓ Lectures will be delivered by faculty members of Geology and Chemistry Departments
- ✓ Practical Hands on training will be provided to students in the laboratories of Geology and Chemistry Departments
- ✓ No Fee will be charged for the outreach activity
- ✓ Attendance will be taken in each class
- ✓ Certificates will be provided to students after successful completion of the outreach activity



Outreach Activity for Local School on Laboratory Equipment Training, Software Applications and Lab Safety measures in Geological and Chemical Laboratories

OUTREACH ACTIVITIES (DBT STAR COLLEGE SCHEME) (2022-2023)

Durgapur Government College

(Affiliated to Kazi Nazrul University, Asansol, West Bengal)

NAAC Accredited "A" Grade College

DBT STAR COLLEGE SCHEME sponsored outreach program on

"Understanding the scientific facts underlying common superstitious beliefs"

at Bidhannagar Government Sponsored Boy's High School

Date: 23.09.2023, Time: 11:00 a.m.

Organized by Departments of Botany, Mathematics and Physics, Durgapur Government College, in collaboration with Breakthrough Science Society



Outreach Activity for Local School



Outreach Activity for Local College on Software Training

Outreach Activity on Blood Group Determination