

4.1.1 TEACHING

These few lines exactly depict the way students learn here at Visva-Bharati. Santiniketan in many ways is still quite different compared to other universities in the country. The university still has the rural trappings that Tagore dreamt of. Many classes are still held in the open under the shade of huge mango trees and students and tutors alike still travel by cycles to keep pollution at bay. The most valuable part of our teaching system is that students are free to interact with their teachers at any hours. There are many umbrella shaped study place (known as *Chhata*), all around the university where students are always found to study and learning through discussion in open air with their teachers, friends. To encourage both the online teaching learning process, the University is having a free Wi-Fi access to students and teachers throughout the campus. There is an excellent world-class central library having large number of books, journals etc. There are other libraries as well at the Bhavana (institution) level. In addition, most of the departments have subject-specific in-house libraries with books, periodical and journals etc accessed by the students and teachers. University is having sufficient number of classroom, laboratories and hostels. Many classrooms at various departments are equipped with audio-visual system as well as LCD projectors. Most of the classrooms are having the air

condition facilities. There are a few smart classrooms as well at various departments. There are many seminar halls and small auditoriums modern facilities, LCD projectors etc at various department and Bhavana to have lecture series, seminar or small conferences. There are two large auditoriums of international standard, each of that can accommodate more than three hundred

Fig 1: General Classroom



people. The University has prepared a plan to enhance the infrastructure to accommodate the increased number of students, faculty members as well as to include new courses at various departments. Various science laboratories are equipped with modern instruments to do experiments related to theories discussed in theory classes. There are various central experimental facilities available at the University.

A. Central facilities for lab subject

1. Advanced instrumentation Facilities for research and teaching



Fig 2: FESEM facility under DST-PURSE project

(i) Field Emission Scanning Electron Microscope (FESEM) facility with necessary accessories was procured in 2019 under DST-PURSE Program. This instrument was installed during 22nd- 24th January, 2020 at New Siksha-Bhavana Complex. This FESEM is ZEISS make and the model name is GeminiSEM 450 which costs around Rs. 220 Lakhs. At present around 80 faculty members and researchers from different departments of Siksha

Bhavana and Palli-Siksha Bhavana are using this facility for research purposes. This system is equipped with Gold Sputter Coater (Quorum make), Critical Point Drying (CPD) facility for Biological samples (Quorum make) and Energy dispersive spectroscopy (EDS) attachment (EDAX make).

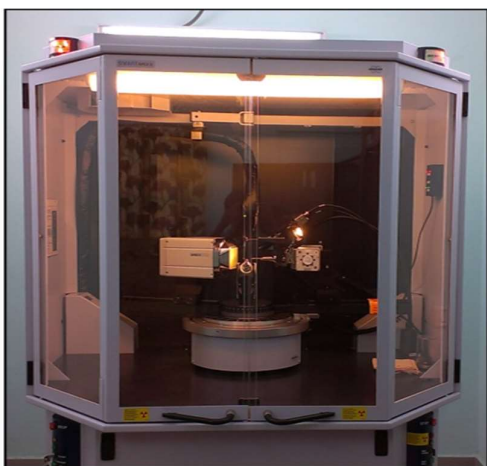
(ii) 400 MHz Nuclear Magnetic Resonance Spectrophotometer (NMR)

(Make: Bruker International, Model: AV 400N (AVANCE-III) NANOBAAY) was procured under DST-FIST project and installed in December 2011 at the Department of chemistry. Total cost of this instrument along with software and accessories was 130 Lakhs.

The faculty members and research scholars of various departments of Visva-Bharati have been extensively using it since its installation and presently the number of users is around 50. Researchers from other institutes/universities can also use this facility after depositing requisite changes online.



Fig 3: NMR facilities of the Department of Chemistry



(iii) Single Crystal X-ray Diffractometer was procured under the DST-FIST project of the Department of Chemistry in 2014. It was installed in December 2014 at the same department. It costs around 129 Lakhs during the time of purchase and currently it is used by 20 research scholars and faculty members for research purpose.

Fig 4: Single Crystal X-ray Diffractometer under DST-FIST project of Department of Chemistry



Fig 5: Confocal Microscope, of the Department of Zoology

(iv) Confocal microscope is one of the top-level equipment for biomedical research and surface analysis in material science applications, offering unprecedented precision in three-dimensional imaging and exact examination of subcellular structures and dynamic processes. This has been purchased from the Leica Microsystems (Model Leica TCS SP8 DLS) on March 24, 2016 and installed in a dedicated microscopic facility in the Department of

Zoology. The benefit of confocal imaging is a dramatically increased contrast by removal of out-of-focus haze. Z-sequences of optical slices (3D image stacks) are used for depth-coded maps or 3D movies. The Department of Zoology has been carrying in-depth analysis of the tissue or cellular architecture, apoptosis, DNA fragmentation or probing cellular proteins and in collaboration with other departments has been involved in developing fluorescent probes or nano-material related studies.

(v) Real-time PCR has been purchased by the Department of Zoology, Visva-Bharati from Applied Biosystems (Model QuantStudio 5) on 20.07.2016 from its DST-FIST Phase-III grant and installed in the common instrument facility of the department on March 24, 2020. This instrument is cost around Rs. 17.0 lakhs. Quantitative PCR (qPCR) or Real-time PCR system provides a modern usability



Fig 6: Real-time PCR of the Department of Zoology

experience whereby the amount of the PCR product can be determined, in real-time, and is very useful for investigating gene expression. This PCR-based technique couples amplification of a target DNA sequence with quantification of the concentration of that DNA species in the reaction. Faculties of the Department of Zoology, Botany, Biotechnology and Environmental Studies are using this instrument for their respective research area and publishing well in high impact journals.

vi) X-Ray powder Diffractometer (Rigaku, Japan make, model D/Max Ultima IV Automatic high resolution type) was installed in Physics Department under the DST-FIST Scheme.



Fig6:X-ray powder Diffractometer under DST-FIST project of Department

Approximate cost of the instruments was 44.3 Lakhs. The facilities have been utilized for teaching and research work. Microstructure of powder is characterized at room temperature with this set up. Few softwares are also available for the analysis of crystalline phases, grain size, strain of the specimens. The instrument is working satisfactorily at present. Users from other departments of the Visva-Bharati also use this facility

B. Departmental facilities

1. ICT enabled classrooms and seminar rooms

(i) Most of the departments have Information and Communication Technology (ICT) enabled classrooms with LCD projectors, Wi-Fi Internet connectivity, Laptops. Some of the departments also have smart classrooms with smart board and dedicated projection arrangement system installed in it. Most of the departments have ICT enabled seminar rooms with LCD projectors, PA system, Wi-Fi Internet and speaker systems.



Fig 8: Auditorium and the seminar room at the Department of Physics



Fig 9: Seminar rooms of the Department of Mathematics



Fig 10: Seminar room of the Department of Botany and classroom of the Department of Computer Science



Fig 11: Classroom of the Integrated Science Building and the Department of Statistics

2. Departmental laboratories and computing facilities

- (i) All the science departments under Siksha-Bhavana have well-equipped experimental laboratories for undergraduate and postgraduate teaching. In addition to that there are research laboratories, which are developed by the individual faculty members out of their individual projects. Almost all the science departments have instrumentation rooms that houses high-end sophisticated instruments which are purchased under departmental schemes

like DST-FIST, DBT etc, and required by the larger group of post-graduate students, research scholars and faculty members.



Fig 12: Laboratories of the Department of Chemistry

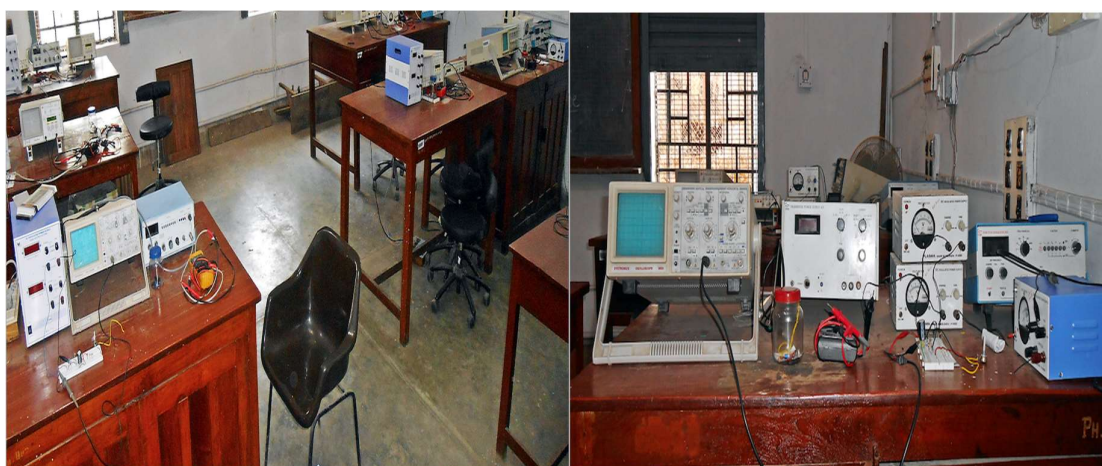


Fig 13: Laboratories of the Department of Physics

Glimpses of the laboratory equipments are shown in Plate 1

(ii) Following departments under Siksha-Bhavana have their own computing laboratories with WLAN/Wi-Fi facilities

- (a) Department of Computer Science
- (b) Department of Mathematics
- (c) Department of Physics
- (d) Integrated Science Education and Research Centre.



Fig 14: Computer Lab of the Department of Mathematics and of the Department of Physics

The faculty members use the departmental computer labs for teaching at the UG/PG levels students. The faculty members as well as research scholars for research purpose also use these computers.

(iii) China Bhavana has a modern language laboratory, which was started in 2016, equipped with ICT facility. In this Laboratory, there are 1 main system computer for the teacher and 22 computers for students, which are connected to the main system computer through local area network.

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Classrooms
& Seminar
halls

Glimpses



Ranger Office






Bolpur, West Bengal, India

Physics Department, SIKSHA BHAVANA Road, Bolpur, West Bengal 731204, India

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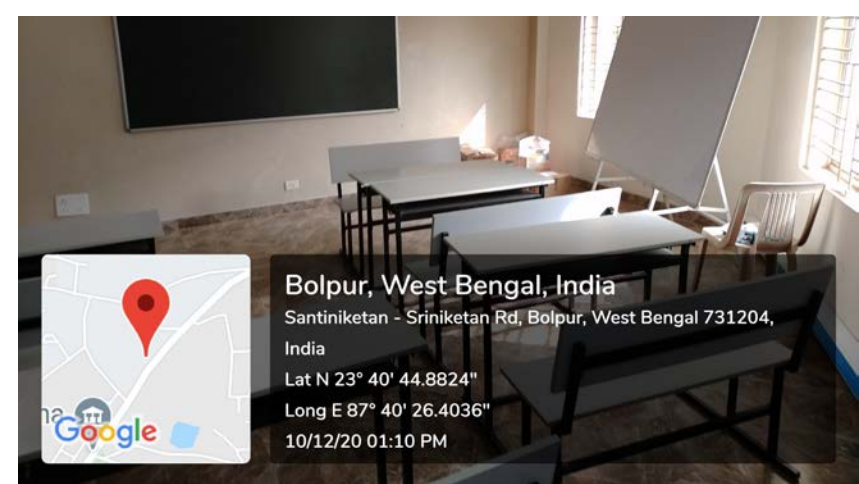


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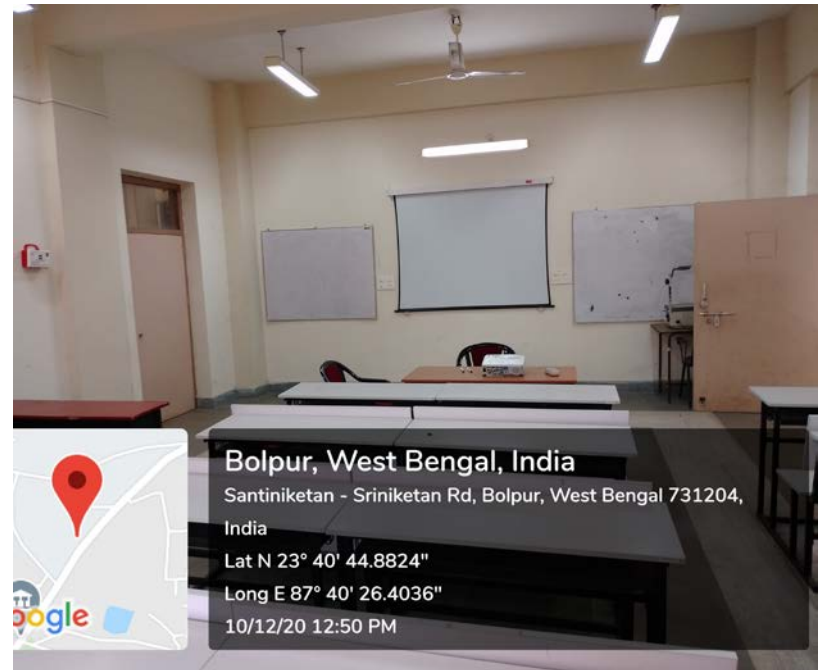
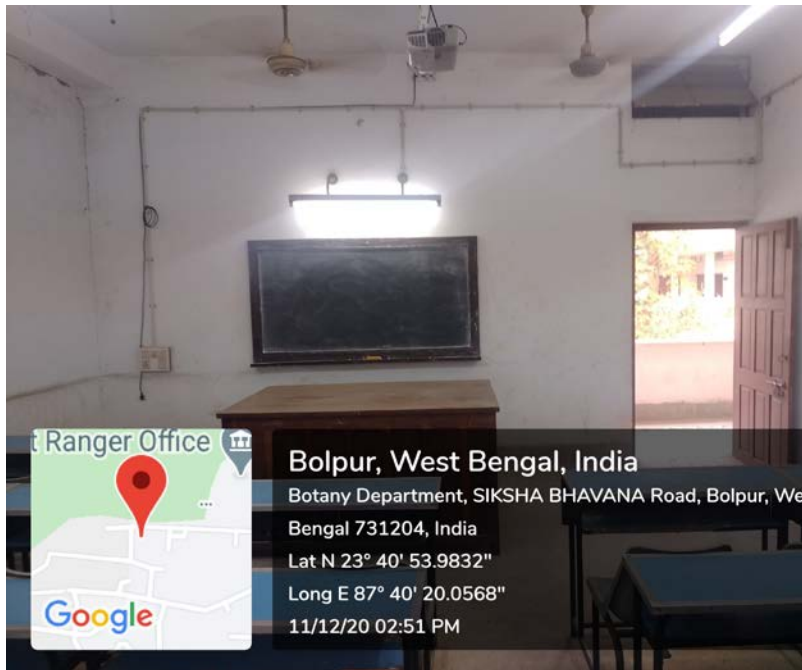
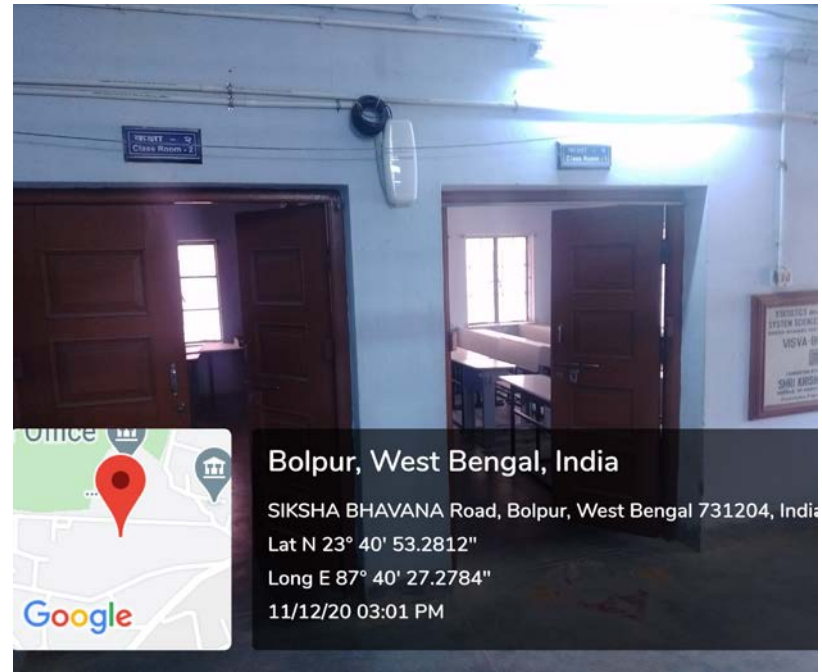
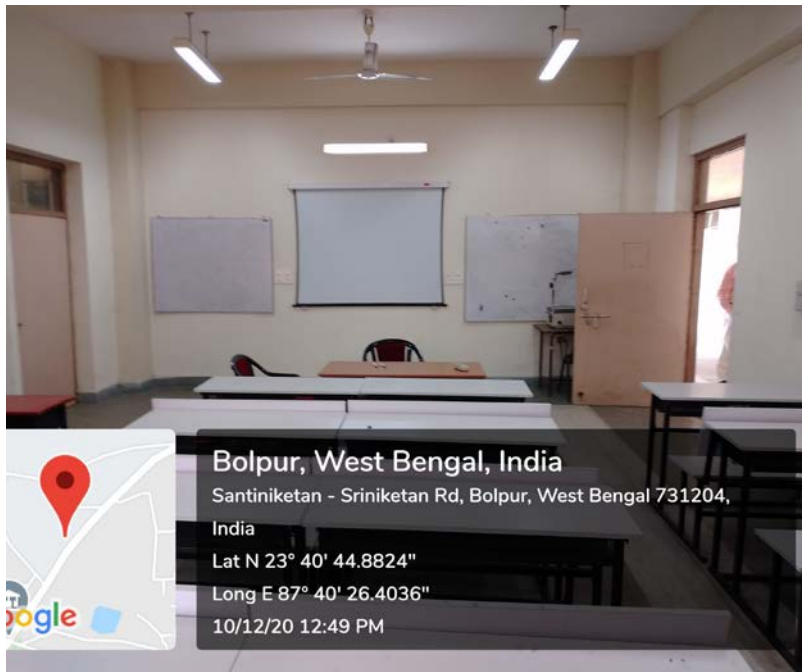
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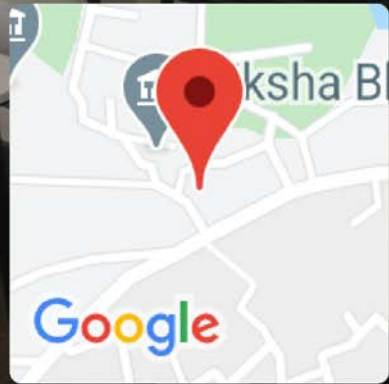
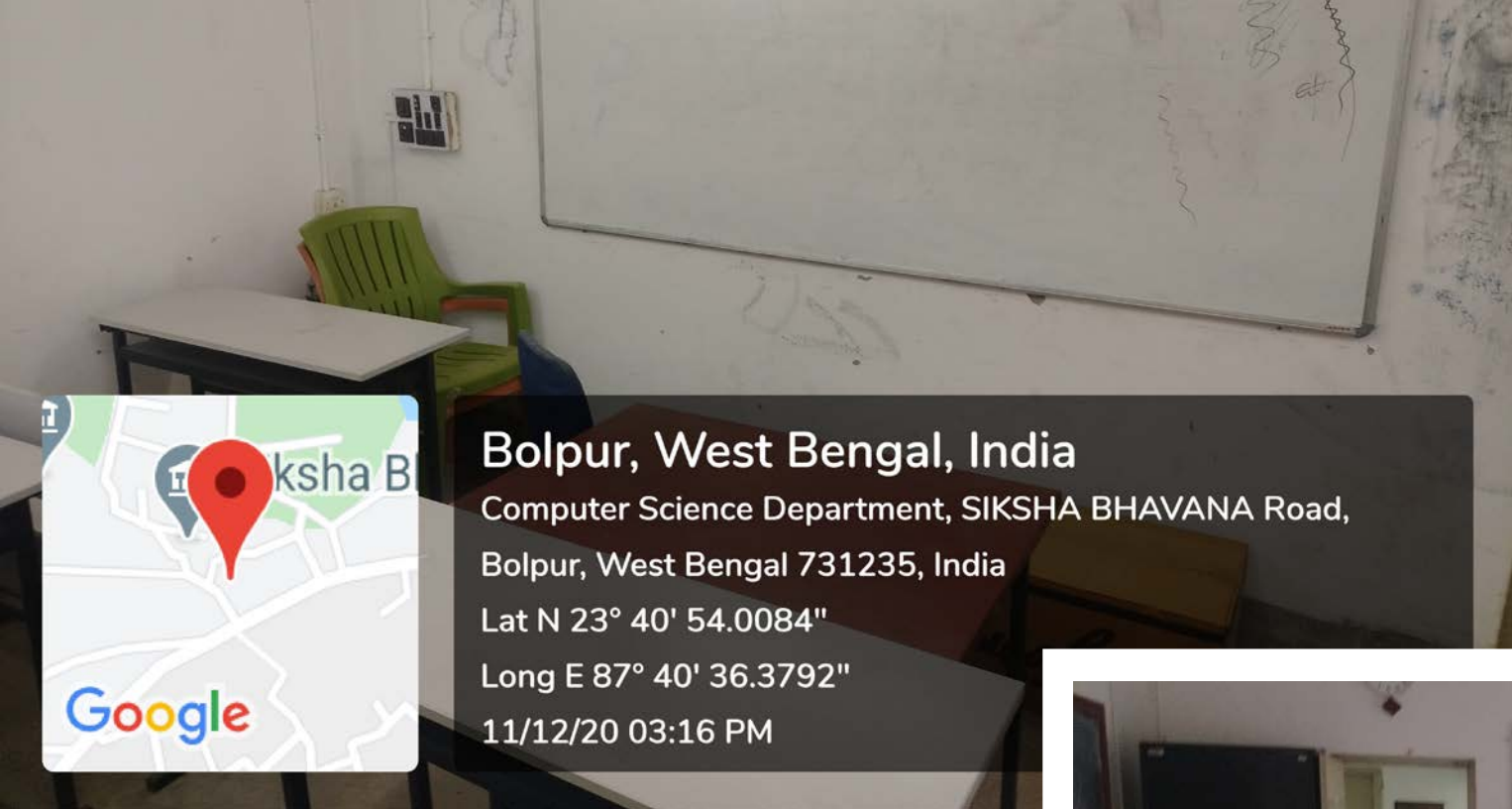
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Open air classrooms—a distinct feature
of Visva-Bharati learning







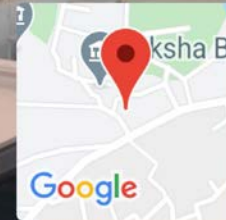
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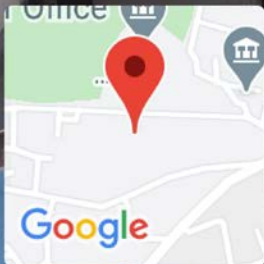
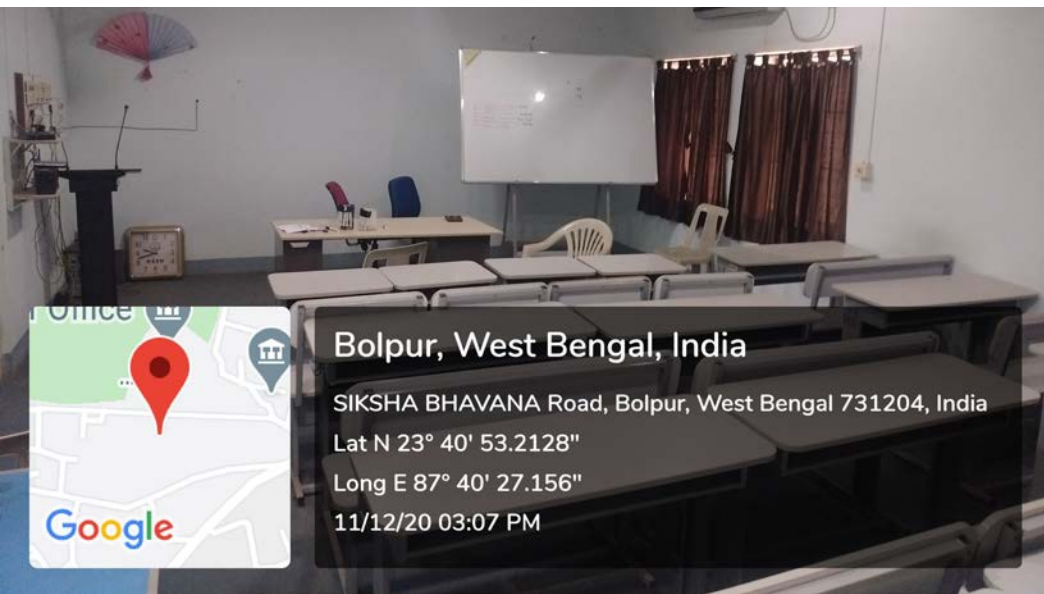
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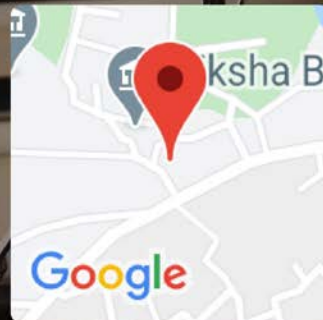
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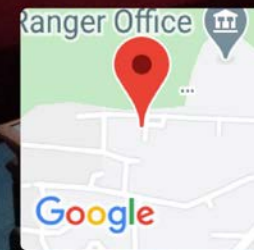
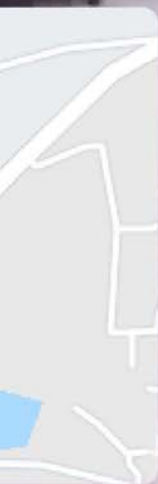
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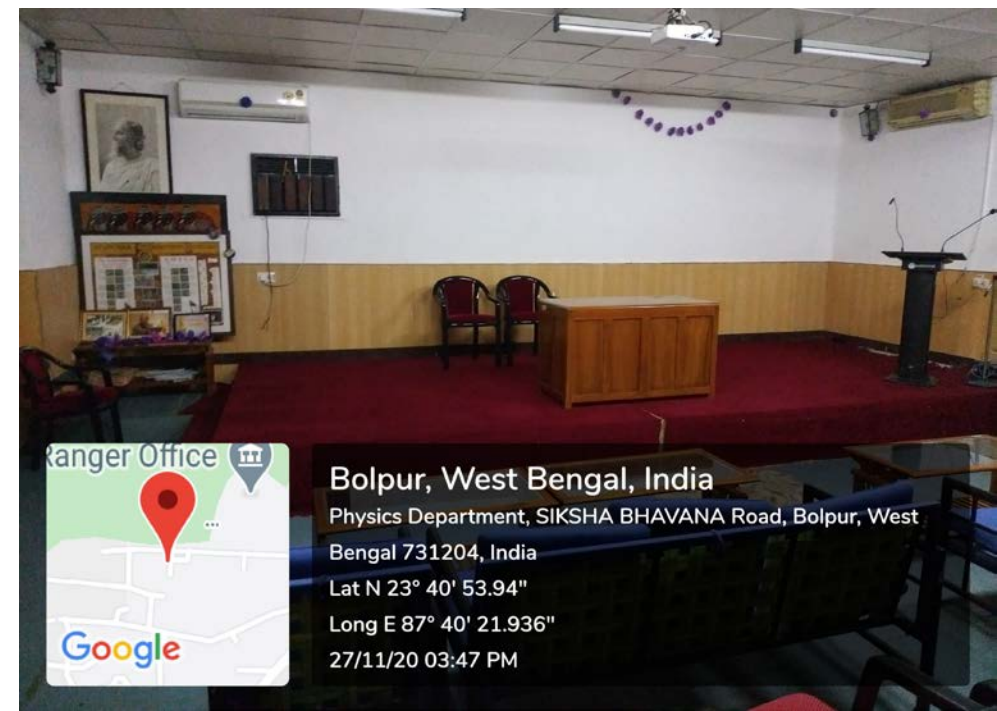
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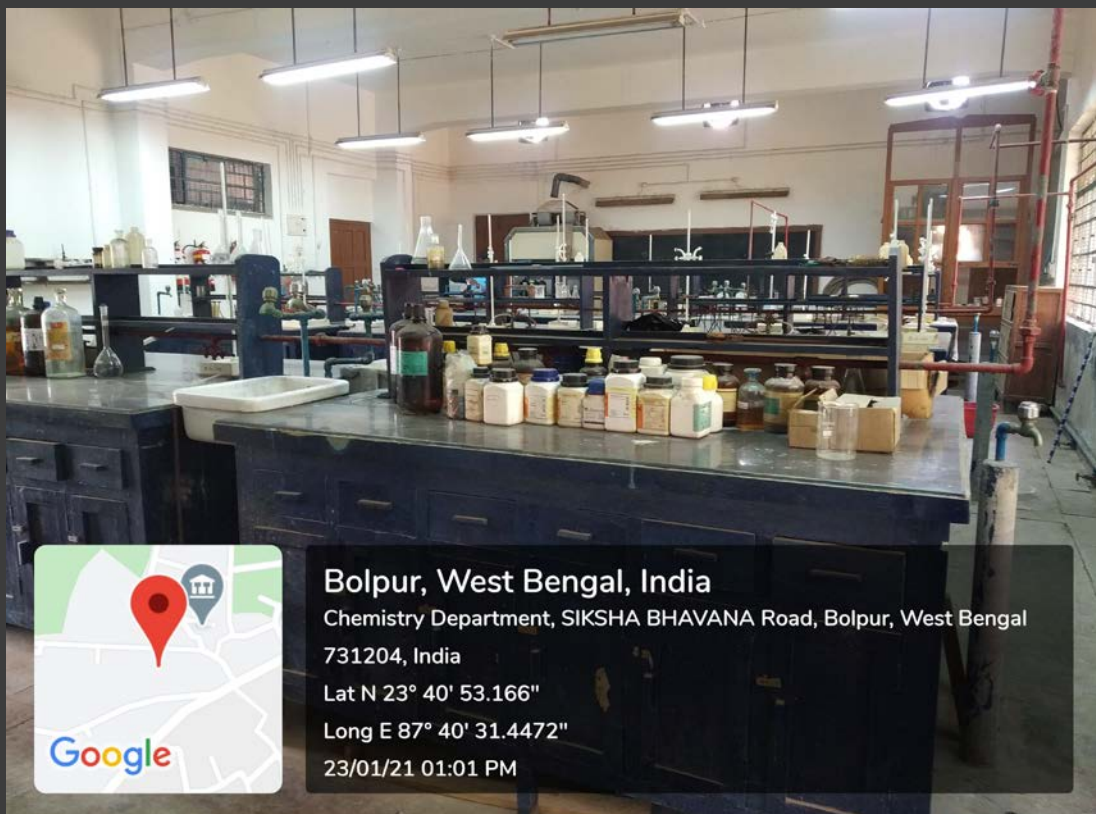
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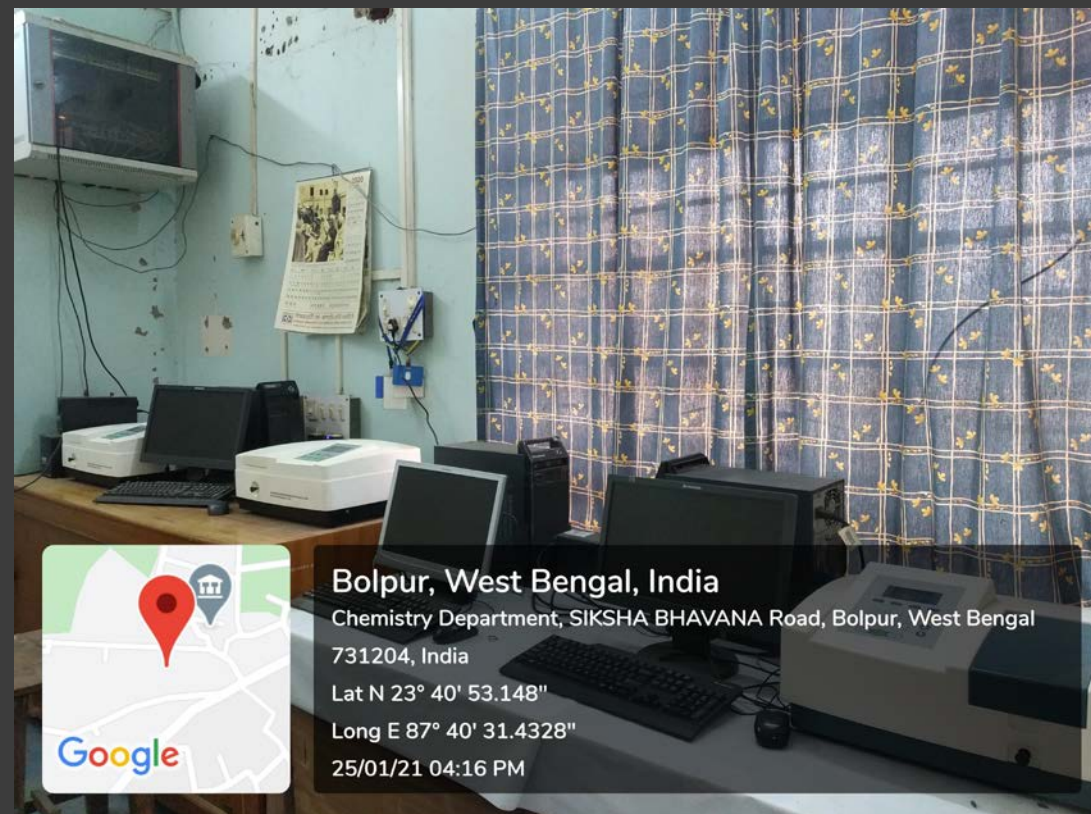
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Students' laboratories

M.Sc. Chemistry laboratory



M.Sc. Physics laboratory



Physical Lab , Dept of Chemistry

