

University Science Instrumentation Centre The University of Burdwan

Burdwan University USIC was established as Level I USIC in the year 1980 in terms of UGC's sanction (No.F2-2/78(d-3a) dated 21st December 1978) during Vth Plan Period (cf. Burdwan University Council meeting, dated 16.02.1979) and through subsequent State Govt. approval of the whole scheme. As per UGC guidelines as also concurred by WB Govt, the department is operating as a non-vacation academic department and has the requisite functional autonomy for its day-to-day functioning towards achievement of the UGC stipulated objectives as below :

- To provide service to university Departments/Centres/Offices and affiliated colleges in repairs and maintenance of their instruments
- To provide and assist to provide analytical services on specialised instruments available in USIC and in the university
- To design and fabricate teaching aids and kits, and instruments required for research of the departments
- To provide training programmes in instrumentation for students, teachers and technicians of university departments as well as affiliated colleges

At present the USIC of Burdwan University is a well established centre promoting instrumentation culture not only within Burdwan University but throughout Eastern Region. In spite of having infrastructure and manpower of Level I USIC, it fulfills all the objectives of two step higher Level III USICs and is functioning full-fledgedly with the status of non-vacation academic department under the PG Faculty Council of Science as per UGC guidelines issued by the Commission from time to time. Within a short period in the year 1990 UGC upgraded the USIC from Level I to Level II with substantial grants and Technical Officers & Technical Assistants posts, the implementation of which could not be done for non-arrival of State Govt. concurrence in due time. However the State Govt. lately accorded approval for creation of 7 (seven) posts finally which is awaiting to be implemented shortly by the university.

This USIC has now established itself as a renowned Scanning Electron Microscopy Center in Eastern India. It has till date trained more than 500 research workers including very senior scientists/faculties from all over India in the field. It is also organising training/Workshops/Seminars and providing services with other sophisticated analytical instruments viz. Fluorescence Microscope, Luminescence Spectrophotometer, Phase Contrast Microscope, etc. The Center is also pioneer in introducing several instrumentation related courses to M Sc(Phy), M Sc(Chem), M Tech(ECE), MD/MS course of WB Health University, B Tech & PGDMLT courses. The Center's instrument repair and maintenance facility is availed by the University PG departments, its affiliated colleges and nearby universities and institutions. Thereby it earns quite a substantial amount by providing training & services through sophisticated instruments, extending consultancy & supervisory, design/fabrication services on specific instrumental needs and repair & maintenance facilities in addition to saving a much higher amount for the university on this account. More importantly the USIC with its all round specialized instrumental facilities has since been extending significant contribution/support towards successful timely implementation of numerous research programmes/projects and teaching courses of the university and also of outside institutions in a big way.

Personnel : Level I Posts : Reader – 1 [Vacant], Lecturer – 1 [Filled]
Electronics Engineer – 1 [Filled], STA - 2 [Filled-1, Vacant-1]
Technical Assistants – 5 [Filled], Office Staff – 2 [Filled]

Level II Posts: Tech. Officer III - 1 [Vacant], Tech Officer I - 2 [Vacant]
Tech. Asstt. Gr II – 2 [Vacant], Jr. Asstt. – 2 [Vacant]

Faculty Profile : Professor – I ; A K Bhattacharya, M Sc, Ph D, FIETE
(Spl. Electronic & Commn, Instr. Sc & Electron Microscopy)
Electronics Engineer – 1 ; P K Ghosh, M Sc, Ph D
(Spl. Electronic, Analytical & Cryogenic Instr.)
Sr. Teacher – 1 ; S Chakraborty, M Sc, Ph D
(Spl. Electron Microscopy & Parasitology)

Sophisticated Instrumentation Facilities Available* : a) Scanning Electron Microscopy (Hitachi S-530 Model) with Sputter Gold-coating and Critical Point Dryer
b) Luminescence Spectrophotometry (Perkin Elmer LS-55 Model)
c) Fluorescence Microscopy- 3 Filter System (Leika DM-1000 Model)
d) UV-VIS Spectrophotometry (Shimadzu UV-2600 Model)

*** Services are available on very moderate charging basis; charts of present rates appended on separate pages**

Areas of Activities

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|---|---|
| <ul style="list-style-type: none">➤ Analytical Services➤ Training/Workshop/Seminar Organization➤ Repair & Maintenance Services➤ Teaching/Research Aid/Gadget Development | <ul style="list-style-type: none">➤ Courses Conducted at USIC➤ Teaching Assignment in other Departments➤ Project Work Supervision➤ Publication |
|---|---|

Achievements (during last ten years, 2002 -2012) :

➤ Training/ Workshop/ Seminar Organization :

By USIC alone

i) Workshop : 17 nos.

- (a) National Workshop - 11 nos , (b) Special (On request- Need-based) National Workshop for ZSI Scientists - 1 no,
- (b) Zonal Workshop - 4 nos, (d) State Level Workshop – 1 no

Total No. of Participants (Faculty of Nat Univ/Colleges, Scientists, Industry Personnel, etc.) : 303

ii) Golden Jubilee National Seminar cum Exposition : Modern Microscopes and their Applications (NSEMMA)

iii) Golden Jubilee Seminar Lecture – Participants : Faculties, Research Scholars of State Universities

Jointly with

- i) Western Regional Instrumentation Centre, Mumbai- Seminar cum Workshop : *Introduction to Microcontrollers*
- ii) Inst. Electron. & Telecom. Engg (India) Burdwan Sub-Centre; Training Programme : *Microcontrollers and its uses in R & D Applications*

➤ Repair & Maintenance Facility :

Instruments Repaired - 1,609 nos., Sophisticated Instruments Maintenance Jobs – 111 nos.

➤ Analytical Services :

- (a) Scanning Electron Microscopy, (b) Fluorescence Microscopy, (c) Luminescence Spectrometry
- (d) UV-VIS Spectrophotometry

➤ Teach./Research Aid/Gadget Developed :

- (a) Experimental Set-ups – 134 nos., (b) Research Aids – 40 nos.

➤ Teaching Assignments at other PG Departments :

- (a) M Tech in ECE (Microwaves) – Physics Deptt., (b) M Sc in Physics - Physics Deptt.,
- (c) M Sc in Chemistry - Chemistry Deptt.

➤ Courses Conducted at USIC :

- (a) Maint. & Care of Medical Laboratory Instruments for PG DMLT students - 10 nos
- (b) Project Based Practical Course for M Sc (Chemistry) students - 6 nos,
- (c) Course on Basic Electronics to M Sc (Chemistry) students – 6 nos,
- (d) Course on SEM : Medical Applications for MD/MS course under WB Health Univ. – 4 nos,
- (e) Practical course on Analytical Instrumentation for BE (AEIE) students of UIT - 2 nos ,
- (f) Practical class session on SEM & FI.Microscopy for M Sc Zoology & Microbiology students – 5 nos,
- (g) Practical class session on SEM for Refresher/Orientation programmes of ASC,BU - 5 nos

➤ Project Work Supervision :

- (a) M Tech (ECE), (b) M Sc(Phy), (c) M Sc(Chem), (d) BE (ECE) – Total : 17 students

➤ Publication :

- (a) National Proceedings – 14 nos, (b) Resource Material – 5 nos,
- (c) Research Paper – 8 nos and (d) Tech. Paper – 37 nos

- Revenue :- (i) Earnings : Rs. 13,35,560/- ; (ii) Savings : Rs. 28,46,700/-
(in addition to provide significant support/contribution towards timely implementation of numerous research programmes/projects and teaching courses of the university and also other outside institutions)

Honours, Awards and Significant Achievements :

- Appreciated by NAAC peer team in its earlier report “ The USIC is a fairly well developed facility. It is equipped with a Scanning Electron Microscope. This facility is being extensively used for research work both within the university and outside. It is satisfying to note that most of the servicing, repair and maintenance works of the instruments including sophisticated electronic and optical ones of Burdwan university and also of the affiliated colleges are being carried out by this center. It also develops and fabricates research aid special equipment and experimental set up for physics and electronic courses. USIC has organized seven workshops on the theme of Scanning Electron Microscopy besides running a Diploma on maintenance and operation of medical laboratory analytical instruments.” [cf. pp. 9-10]
- Was approached by WB University of Health Sciences for conduction of a short course on ‘Scanning Electron Microscopy : Medical Applications’ for its MS/MD students.
- Was approached by Zoological Survey of India, Govt. of India for conduction of Workshop on SEM for its Scientists.
- Was identified by Western Regional Instrumentation Centre, University of Bombay, Mumbai as its collaborating institute for the joint training programmes from time to time.
- Members of USIC have been awarded with various awards like K S Krishnan Memorial Award, M N Saha Memorial Award/Bharat Jyoti Award, World Medal of Honor, Siksha Ratna Puroskar, etc., nominated/elected as Fellow/Office bearers/Technical Committee Members of different international/national and regional bodies like IEEE(USA), IETE(India) as also acted as Expert Committee Members/Ph D Examiners, etc of various institutions/universities
- SEM services is extensively utilized by institutes all over Eastern India even from places like BHU, Varanasi, Allahabad Univ., Kerala Univ., SGPGI Med. Sc., Lucknow, etc.
- More than 500 scientists/researchers including very senior members (of the rank of Director, HOD) from various reputed institutions across the country have been trained on SEM
- New academic Programme initiation :-
 - a) PG DMLT – Care & Maintenance of Medical Analytical Instruments
 - b) B E (ECE) – Term paper on *Remote Sensing*
 - c) SEM : Medical Applications – MD/MS course under WB Univ. of Health Sciences
 - d) Incorporation and conduction of instrumentation related courses in other PG departments of the university
- Innovations of Curricular design and Transaction;-
 - a) *Care & Maintenance of Medical Analytical Instruments (PG DMLT course)*
 - b) *M D/M S Course.; Introduction to Scanning Electron Microscopy: Medical Applications*
 - c) Basic Electronics Course for M Sc(Chemistry) students for NET/SET Exam

Future Projection :

- ***Establishment of Advanced Electron Microscopy Centre for Evolution of Nano-Technology Research and Education (AEM-CENTRE)*** with the following objectives :
- Ø To extend SEM services and training to researchers from eastern region to the entire country
 - Ø To provide tele-electron microscopy and to augment collaborative research with other institutes
 - Ø To organize National Workshops, Seminars and exchange programmes on SEM and related fields
 - Ø To create infrastructural facilities with USIC as nucleus for advanced research in Nano-Technology
 - Ø To generate revenue ; Expected income : Rs. 3.5 lakhs p.a.
- **Initiation of Full-time Masters Course in related areas**



University Science Instrumentation Centre
The University of Burdwan
Golapbag, Burdwan – 713 104

Scanning Electron Microscopic Analytical Service Charges

Service	Rates	
	Micrographs on C.D only 1 CD will be provided by USIC. Extra CD Rs. 10/- each	
	Burdwan University Users	External Users
Running of SEM (Time to be counted from switching on of the machine)	Rs. 80/- per hour or part thereof.(with a minimum of Rs. 80/- per Sample or whichever is higher- First 2 snaps per sample included). Each additional snap @ Rs. 10/-	Rs. 240/- per hour or part thereof. (Rs. 160/- per Sample or above whichever is higher-First 2 snaps per sample included). Each additional snap @ Rs. 20/-
	Micrographs on film only (120 size 125 ASA. Black & white film to be provided by user)	
	Rs. 80/- per hour or part thereof. (With a minimum of Rs. 60/- per Sample or whichever is higher)	Rs. 240/- per hour or part thereof. (Rs. 120/- per Sample or above whichever is higher)
	Micrographs on both film & CD (1CD to be provided by USIC) 120 size 125 ASA Black & White film to be provided by user	
Rs. 100 per hour or part thereof (With a minimum of Rs. 60/- per Sample or wherever is higher) Plus Rs. 50/- for down loading per CD. Each special snap (with measurement etc.) @ Rs. 10/- extra	Rs. 300/- per hour or part thereof. (Rs. 120/- per Sample or above whichever is higher) Plus Rs. 50/- for down loading per CD. Each special snap with measurement, etc. @Rs. 20/- extra	
Critical Point Drying	Rs. 50/- per Cassette	Rs. 150/- per Cassette
Gold Coating	Rs. 40/- per Stub	Rs. 120/- per Stub
Booking Charges	Rs. 100/- for a single day of booking (adjustable against actual working charges)	Rs. 300/- for a single day of booking (adjustable against actual working charges)
<u>Cancellation Charges:</u>		
a) If cancelled 15 days before the appointed date	Nil	Nil
b) If cancelled not earlier than 15 days of appointed date	Rs. 40/- per day of booking	Rs. 100/- per day of booking
<ul style="list-style-type: none"> ➤ The booking charges once deposited will not be refunded under any circumstances. However, it can be adjusted after deduction of cancellation charges, if any, against future work, the date for which should be booked afresh. ➤ No cancellation charges will be levied neither the booking charges will be refunded if USIC is unable to provide the services booked for due to any compelling eventuality such as machine breakdown, electricity failure etc. Under such circumstances USIC will allot another date(s) on priority basis. ➤ All the charges are to be deposited either at USIC office or at the cash counter, Rajbati, Burdwan University after obtaining a cash deposition slip from USIC. ➤ 125 ASA, 120 size Black and White film should be provided by the users; developing and printing is user's responsibility. 		

Procedure for Booking : The booking dates may be fixed with Dr S Chakraborty of USIC by appointment personally or through postal or telephonic correspondence well in advance. In case of difficulty please contact the Head, USIC, University of Burdwan, Golapbag, Burdwan 713 104.



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Fluorescence Microscopic and Fluorometric Analytical Service Charges

Services	Rates	
	Burdwan University Users	External Users
a) Fluorescence Microscopy :		
i) Non-fluorescence Mode (Running time to be counted from switching on of the machine)	Rs. 50/- per hour or part thereof.(with a minimum of Rs. 50/-)	Rs. 100/- per hour or part thereof.(with a minimum of Rs. 100/-)
ii) Fluorescence Mode (Running time to be counted from switching on of the mercury lamp)	Rs. 100/- per hour of running or part thereof.(with a minimum of Rs. 100/-)	Rs. 200/- per hour of running or part thereof.(with a minimum of Rs. 200/-)
<ul style="list-style-type: none"> • Print copy of CD (1 no) will be provided. Extra CD @ Rs. 10/- only • Deskjet color print (A-4 size) in photo quality paper - Rs. 30/- each 		
b) Luminescence Spectrophotometry : (Running time to be counted from switching on of the machine)	Rs. 20/- per sample or Rs. 200/- per hour of running time or part thereof, whichever is higher	Rs. 40/- per sample or Rs. 400/- per hour of running time or part thereof, whichever is higher
<u>Cancellation Charges :</u>		
a) If cancelled 7 days before the appointed date	Nil	Nil
b) If cancelled not earlier than 7 days of appointed date	Rs. 40/- per day of booking	Rs. 100/- per day of booking
<ul style="list-style-type: none"> ➤ The booking charges once deposited will not be refunded under any circumstances. However, it can be adjusted after deduction of cancellation charges, if any, against future work, the date for which should be booked afresh. ➤ No cancellation charges will be levied neither the booking charges will be refunded if USIC is unable to provide the services booked for due to any compelling eventuality such as machine breakdown, electricity failure etc. Under such circumstances USIC will allot another date(s) on priority basis. ➤ All the charges are to be deposited either at USIC office or at the cash counter, Rajbati, Burdwan University after obtaining a cash deposition slip from USIC. ➤ Dyes, Solvents and other materials required for work including spectrally pure water should be brought by the users. 		

Procedure for Booking : The booking dates may be fixed with Dr P K Ghosh of USIC by appointment personally or through postal or telephonic correspondence well in advance. In case of difficulty please contact the Head, USIC, University of Burdwan, Golapbag, Burdwan 713 104.