CENTRAL INSTRUMENTATION FACILITY

(CIF)

Nehru Gram Bharati
(Deemed to be University),
Prayagraj-221505,
Uttar Pradesh
India
www.ngbv.ac.in

Central Instrumentation Facility
At a glance

For excellence in teaching and research in Nehru Gram Bharati (Deemed to be University), Prayagraj, Uttar Pradesh state-of-the-art sophisticated equipment(s), and various support facilities have been created. These equipment(s) and facilities help the faculty, research scholars and students to carry out globally competitive R&D in basic and applied science. Since individual researcher may not be able to generate huge research funds for the research instruments, Central Instrumentation Facility (CIF) was started in 2028.

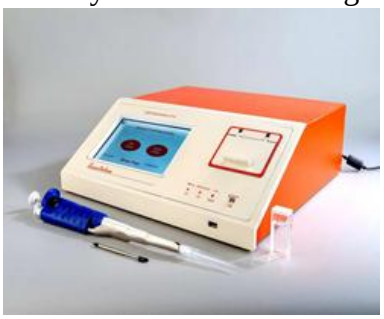
Mission: To enrich the resources on a shared basis for promoting R& D

Objectives:

- To strengthen technical infrastructure to carry out advanced research in various science disciplines under one roof and make their services available to academic schools and Departments.
- To organize short-term courses / workshops on the use and application of various spectroscopic and analytical technique for students, teachers and technical personnel from our university, affiliated institutions, Universities and Industry in the region.
- To develop new measurement / analytical techniques: Efforts are being made by the CIF to develop new techniques / methods of analysis to put the instruments to their full use and offer them to the scientists for exploring new dimensions in research in various areas of science and technology.
- To allow outside users to utilize CIF equipment on a nominal payment basis.

Instruments:

1. **Light Emitting Diode Fluorimeter (Uranium Analyser)**
2. **Phase Contrast Microscope**
3. **Laminar Hood**
4. **Bacteriological Incubator**
5. **UV- Vis Spectrophotometer**
6. **Thermal Cycler PCR**
7. **Elisa Reader and Washer**
8. **Refrigerated Centrifuge**
9. **Horizontal and Vertical Electrophoresis unit**

Name of the Equipment	**Light Emitting Diode Fluorimeter (Uranium Analyser)**
Model Name	M/s UA-01
Make	Quantalase
Specification	Detector - Photomultiplier tube Excitation source - LEDs Wavelength of emission - As required by the user. Wavelength can be selected between 200nm to 500 nm. Bandwidth of emission - Typically 10-20 nm. Pulse duration - Between 2 to 50 microsecs. To be set by operator. Pulse repetition rate - 1 KHzs. 
Major Applications	
Details of Sample Analysis	Fluorimeters which use banks of pulsed LEDs to excite fluorescence in sample under study. The wavelength, pulse duration and peak power of the LED output can be set to match the excitation requirements of the sample. The fluorescence is detected by a pulsed photomultiplier. Suitable filters after the LEDs and before the photomultiplier tube prevent LED light from reaching the photomultiplier tube directly. The filters can be broad band coloured glass filters or multilayer narrow band filters. The instrument is controlled by a microcontroller which pulses the LEDs and photomultiplier tube.

Phase Contrast Microscope

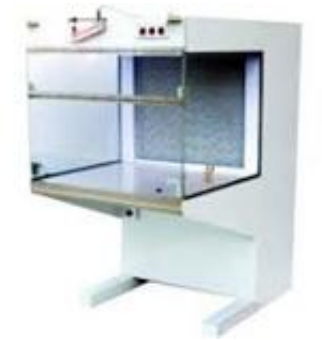
Name of the Equipment	**Phase Contrast Microscope**
Model Name	Eclips 201, 2012
Make	M/s Nikkon
Specification	Episcopic illumination models: ECLIPSE LV150N (manual control types) 
Major Applications:	

Phase contrast, by "converting" phase specimens such as living material into amplitude specimens, allowed scientists to see details in unstained and/or living objects with a clarity and resolution never before achieved.

Details of Sample Analysis

Unstained specimens that do not absorb light are called phase objects because they slightly alter the phase of the light diffracted by the specimen, usually by retarding such light approximately 1/4 wavelength as compared to the un deviated direct light passing through or around the specimen unaffected. Unfortunately, our eyes as well as camera film, are unable to detect these phase differences. To reiterate, the human eye is sensitive only to the colors of the visible spectrum (variations in light frequency) or to differing levels of light intensity (variations in wave amplitude). In phase specimens, the direct zeroth order light passes through or around the specimen undeviated. However, the light diffracted by the specimen is not reduced in amplitude as it is in a light-absorbing object, but is slowed by the specimen because of the specimen's refractive index or thickness (or both). This diffracted light, lagging behind by approximately 1/4 wavelength, arrives at the image plane out of step (also termed out of phase) with the undeviated light but, in interference, essentially undiminished in intensity. The result is that the image at the eyepiece level is so lacking in contrast as to make the details almost invisible.

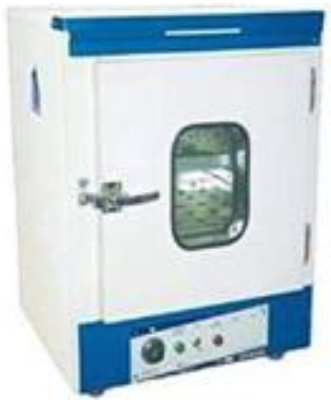
Name of the Equipment	**Laminar Hood**
Model Name	Vertical Laminar Flow system
Make	M/s Alpha Linear
Specification	Pre filter (90% down to 10 micron) HEPA filter (99.97% down to 0.3 micron) Front Side door Polycarbonate/Glass window Manual Operation/ Counterweight Mechanism UV light 5A Power Socket Differential Pressure Gauge



Major Applications:

1. Laminar flow cabinets are used in laboratories for contamination sensitive processes like plant tissue culture.
2. Other laboratories processes like media plate preparation and culture of organisms can be performed inside the cabinet.
3. Operations of particle sensitive electronic devices are performed inside the cabinet.

Details of Sample Analysis	Microbial Load

Name of the Equipment	Bacteriological Incubator
Model Name	ACM 22062-1
Make	ACMAS, Pvt.Ltd.
Specification	An incubator is an insulated and enclosed device used in biological laboratories. It creates an optimum environment which is required for the growth of microorganisms by providing optimum temperature, humidity, and other environmental conditions such as the CO2 and oxygen content inside's atmosphere. 

Major Applications: it is used to grow and maintain microbiological cultures or cell cultures. Both bacterial and eukaryotic cell organisms are cultivated by using an incubator.	
Details of Sample Analysis	Bacterial Culture

UV- Vis Spectrophotometer

Name of the Equipment	UV- Vis Spectrophotometer	
Model Name	Genesys-50	
Make	M/s. Thermo Fisher	
Specification	Accuracy (Photometric)	3% (at 0.97 A)
	Certifications/Compliance	All Nano Drop instruments are approved to CE and UL/CSA.
	Compatibility	DYMO Label Writer 450 printer, Bluetooth keyboard, mouse and barcode reader
	Connections	1.Three USB-A ports, Ethernet, Bluetooth™ and Wi-Fi 2.(Only available on instruments with Wi-Fi/Bluetooth support)
	Detector Type	2048-element CMOS linear image sensor
	Display	7-inch, 1280 x 800 high-definition color display

Operating System	Android™
Photometric Accuracy Instrument	1. 3% at 0.97 A, 302 nm 2. (Absorbance expressed at Abs/mm at 25°C)
Printer	External Printer: DYMO Label Writer 450
System Requirements	Windows™ 8.1 and 10, 64 bit
Wavelength Accuracy	±1 nm
Wavelength Range	190–850 nm
Applications	1. Nucleic Acid A260, A260/A280, A260/A230 and Labeled Nucleic Acids; 2. Protein A280 and A205, Protein Pierce 660, Protein Bradford, Protein BCA, Protein Lowry, Labeled Proteins, OD600, Kinetics, UV-Vis, and Custom Methods
Concentration	1. Maximum 2. dsDNA: Pedestal: 27,500 ng/µL 3. BSA (IgG): Pedestal: 820 (400) mg/mL
Description	Nano Drop One Micro volume UV-Vis Spectrophotometer with Wi-Fi
Detection Range	1. dsDNA: Pedestal: 2.0 ng/µL; Cuvette: 0.2 ng/µL 2.BSA (IgG): Pedestal: 0.06 (0.03) mg/mL; Cuvette: 0.006 (0.003) mg/mL
Dimensions (L x W x H)	20 x 25.4 x 32.3 cm (8 x 10 x 12.7 in.)
Keypad	Built-in touch screen, multipoint capacitive touch
Lamp	Xenon flash lamp

Major Applications: -Quantify and qualify DNA, RNA, and protein samples. -Identify sample contaminants and obtain corrected concentration results.

Details of Sample Analysis	Biological samples

Thermal Cycler PCR:

Name of the Equipment	**Thermal Cycler PCR**
Model Name	T 100 Thermal cycler
Make	M/s. Biorad
Specification	Thermal Cycler: S1000 Input power, W, maximum: 700 Frequency, Hz, single phase: 50–60 Display (LCD): Yes Temperature control modes: Calculated and block PCR license: Yes PC compatibility: (Windows XP or higher)Yes Faster ramping:96-well: 0.2 ml Higher volume:96–deep well: 0.2 and 0.5 ml Accuracy:±0.2°C Uniformity:±0.4°C well-to-well within 10 sec Max ramp rate:up to 5°C/sec Temperature range:0–100°C

Major Applications	Amplification/PCRCloning, Cycle sequencing, Gene expression studies, Mutagenesis
Details of Sample Analysis	Biological samples

Elisa Reader and Washer

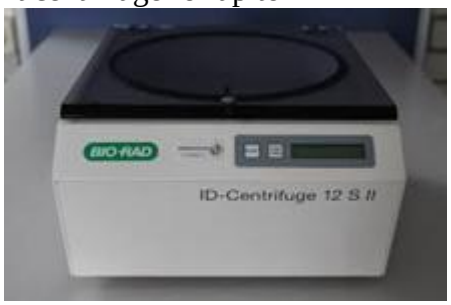
Name of the Equipment	Elisa Reader and Washer
Model Name	iMark
Make	M/s. Biorad

Specification: Wavelength range - 400–750 nm, Photometric range- 0.0–3.5 OD, Linearity - ≤1.0% from 0.0–2.0 OD; ≤2.0% from 0.0–3.0 OD, Accuracy- ≤1.0% or 0.010 from 0.000–3.000 OD at 490 nm, Precision - 1.0% or 0.005 OD from 0.0–2.0 OD; 1.5% from 2.0–3.0 OD, Resolution- 0.001 OD, Filter wheel capacity- 8
Plate shaking (3 speeds)- Low, mid, high, Duration, sec- 0–999
Read time - 6 sec at single wavelength, 10 sec at dual, wavelengths, Data output - Onboard graphical thermal printer and USB2 interface with PC or Mac data stations, Data storage - Calender/clock functions; 64 assay protocols, Multilanguage support - 4 languages, LCD indication supported; printout report supportedDimensions (W x D x H), cm (in)- 34.6 x 37.7 x 16.4 (13.6 x 14.8 x 6.5), Weight, kg (lb)- 5.5 (12)

Major Applications:	Immunological Studies
Details of Sample Analysis:	Biological samples

Refrigerated Centrifuge

Name of the Equipment	**Refrigerated Centrifuge**
Model Name	Sorvall legend micro.17R
Make	M/s. Biorad
Specification	ID-Centrifuge 12 S II is a silent centrifuge for up to 12 ID-Cards with automatic balance control. The centrifugation timeis 10 minutes.Speed: 1030 rpm (85 g), Dimensions (w/h/d): 30 cm / 18 cm / 36 cm, Weight: 6.2 kg, Power requirements: 100-240 V / 50-60 Hz



Major Applications

- Separation of mixtures with close densities.
- Separate immiscible liquids.
- Sediment suspended solids.
- Separation of blood.
- Separation insoluble particles (e.g. insoluble proteins in a protein solution)
- Isotope Separation.

Details of Sample Analysis	Biological samples

Horizontal and Vertical Electrophoresis unit

Name of the Equipment	**Horizontal and Vertical Electrophoresis unit**
Model Name	Mini-Protrean Tetra cell and Mini-Sub cell GT Respectively
Make	M/s. Biorad
Specification	Number of gels, 1–4Precast gels, Ready Gel precast gels Handcast gels, Cast using Mini-PROTEAN spacer plates Gel size (W x L), Precast: 8.6 x 6.8 cm Handcast: 8.3 x 7.3 cm Glass plate size (W x L), Short plate, 10.1 x 7.3 cm, Spacer plate, 10.1 x 8.2 cm, Total buffer volume for 2 gels, 700 ml Total buffer volume for 4 gels, 1,000 ml, Typical run times for SDS-PAGE, 35–45 min (at 200 V constant), Recommended power supply, PowerPac Basic or PowerPac HC (High Current) Dimensions (W x L x H), 12 x 16 x 18 cm  
Major Applications	horizontal gel electrophoresis is an ideal choice for DNA and RNA separation, while vertical systems are ideal for proteins
Details of Sample Analysis	DNA, RNA and Proteins

Nehru Gram Bharati (Deemed to be University), Prayagraj
CIF Facilities

Sr. No.	Sample Analysis	*Operational Charges*			
		NGBDU Students &Teachers INR (₹)	**Other Educational Institutions INR (₹)**	**R &D Labs INR (₹)**	**Industries INR (₹)**
1.	Media preparation and Growth curve analysis by spectroscopic method of the bacteria/ cyano bacteria/fungi/micro algae/plant tissue culture/ Zarrouk media/Allen & Arnon's media/CFTRI media/ CHU-10/Basal Boltz media/Nutrient Agar/ Malt yeast extract agar/Yeast extract mannitol agar/CMC/xylon agar Luria Broth/PDA/MS etc.	500	800	1200	2000
2.	4Genomic DNA Isolation from Gram(+) and (-) bacteria	700	1000	1400	1800
3.	Extraction of genomic DNA Isolation from BG 11(+) and (-) cyano bacteria /algae/macro algae	800	1100	1500	2000
4.	Quantification of DNA/ Purity of DNA /RNA etc	100	200	400	500
5.	PCR amplification	500	800	1200	1500
6.	16S r DNA PCR reaction mixture	500	800	1200	1500
7.	Purification of PCR products	500	800	1200	1500
8.	Sequencing of PCR products (Sanger method)	800	1100	1500	2000
9.	Purification and condition of PCR products (Sanger method)	800	1100	1500	2000
10.	DNA sequencing of community DNA/mixed DNA/soil DNA	800	1100	1500	2000
11.	Sub cloning DNA targets using PCR	800	1100	1500	2000
12.	ARDRA(Amplified ribosomal DNA restriction analysis) or Ribo typing/ RFLP mapping	200	400	600	1000
13.	Competent cell preparation from DH5 ALPHA jm109, NCIM 2428	500	800	1200	1500
14.	Competent cell preparation from cyanobacteria	500	800	1200	1500
15.	Transformation in E. Coli DH5 ALPHA jm109, NCIM 2428	800	1100	1500	1800
16.	Transformation in Unicellular Cyanobacteria	800	1100	1500	1800
17.	Ligation/cloning of PCR product in p GEMT @ easy vecto	500	800	1200	1500
18.	Plasmid isolation by Bimboin & Dolly method	800	1100	1500	2000

	of alkaline denaturation				
19.	RFLP marker development /RFLP mapping/ Genome mapping Pure g DNA(S. dimorphus)	400	600	800	1000
20.	Lipid extraction from microalgae & cyanobacteria by Folch method/Bligh & Dyer method	400	600	800	1000
21.	Biodiesel/Transdesertification/FAMEs formation	800	1100	1500	2000
22.	Cellulase gene primer designing with Shine delgarno sequence 25 uts (ORF)	400	600	800	1000
23.	Amplification of cellulase gene from B. sub tilis SSA7 and Ligation of gel purified cellulase-rbs gene into PGEMT@easy vector	800	1100	1500	2000
24.	Total carbohydrate estimation by Anthrone method	200	300	400	500
25.	Reducing sugar estimation by DNS & Nelson Sammyogi method	200	300	400	500
26.	Protein Estimation by Lowry/ Bradford/ Spectroscopic method	300	400	500	800
27.	Prolin & Antioxidant test	500	700	1000	1500
28.	Phyto-chemicals Test : 1-Total Phenolic Contant (TPC) Ibrahim Khalil,et.al.,2012 2-Total Flavonoid Contant (TFC) Change et .al,2002; Stakovic,2011 3-Total Flavonol Contant (TF) Pattanayak et. al;2011& Kalita et. al;2013 4-DPPH Assay (2,2-diphenyl-1-picrylhydrazyl) Mensor LL,et.al,2001 5-Hydrogen peroxide (H2O2) Ruch RT,et.al,1984 6-Reducing Power Assay(RPA) Yen GC,Duh PD;1994 7-ABTS assay Thaipong et al 2006; Gan et.al. 2010 8-Phosphomolybdenum(PM) Assay Prieto P et al.1999 9-Ferric reducing antioxidant power (FRAP) assay Benzie & Strain;1996	1000	1200	1500	2000

29.	Pigment Estimation/ quantification: Chloroph]yll-a, b/ Carotenoid/ Phycobili protein	400	600	800	1000
30.	Culture Facility: Cyanobacteria, Synechococcus PPC 6803, Synechococcus PCC 7942, *Oscillatoria* sp., *Lyngbya* sp., *Anabaena cylindrical, Anabaena varibilis, Anabaena HKAR, Nostoc muscorum, Spirulina platensis, Scytonema sp., Calothrix sp., Glycothecium sp., Westeillopsis prolifica, ,Microcystis sp., Aphanotheceae Nageli Green Algae: Scenedesmus dimorphus, Scenedesmus quadricauda, Scenedesmus abundance, Chlorella sp., Chlamydomonas reinhardtii, Nannochloropsis sp. Bacteria: Bacillus sp.,Pseudomonas aeruginosa, E. coli, Klebsiella pneumonia, Salmonella typhi*	200 (10 Unit each)	300	500	700
31.	Morphological identification of Microbes by Phase contrast Microscope	300	400	500	700
32.	Anti- Bacteria Activity (Irobio.,et al.,1996; Verpet.al.,1988; Russel et al.,1977; Pelzar MJ& Reid JD1974; Gupta et.al, 2017) 1) Bacillus subtilus (gram positive) 2) Salmonella typhi (gram negative) 3) Pseudomonas aeruginosa (gram negative) 4) Klebsiella pneumonia (gram negative) 5) Escherichia coli (gram negative)	1000	1200	1500	2000
33.	Laboratory Visit	Free With Prior Permission			

N.B.: Demand Draft to be made in the name of .....**Registrar, Nehru Gram Bharati University, Prayagraj"** Payable at Prayagraj

Requisition Form for use of CIF

Nehru Gram Bharati (Deemed to be University), Prayagraj-221505

Date:….....

Name of Requisitioner:……..

Name of Supervisor: …….....

Affiliation : …….....

Contact Number :……E-mail…….....

To,
Director
Central Instrumentation Facility (CIF)
Nehru Gram Bharati (Deemed to be University)
Kotwa -Jamunipur- Dubawal, Prayagraj -221505

Sir/Madam,
I/We shall appreciate if you could allow to use the .....facility available in CIF, Nehru Gram Bharati (Deemed to be University).

Sample Information

Number of sample :
Nature of sample :

I/we shall take responsibility for maintaining the instrument and helping other students
Recommendation (if any)...…….

Signature of Supervisor
(With seal)

Signature of Requisitioner

Important:

- Bring blank CDs for data.
- This request is valid for one turn on the instrument.
- The appointment would be give on first come basis or depending on the load on the instrument.

Terms & Conditions:-

1. Sample preparation and Method development will be charged extra. Varies from material and method to method depending on the sample if required so.
2. Report will be send via registered Post (charges extra depend on destination, Rs.50.00 minimum)
3. Digital copy of data will be charged Rs.50.00 per sample (excluding media cost)
4. Overlay charges-Rs.50.00
5. GST: extra(as per government rule)
6. Payment: advance
7. Urgent service: 100% extra charges.
8. **The analytical data /spectra are provided only for research / development purposes. These cannot be used as certificates in legal disputes.**
9. Analysis charges including GST are payable in advance by crossed **bank draft in favor of Registrar, Nehru Gram Bharati (Deemed to be University), Prayagraj "**,Payable at Prayagraj.
10. **Sample and payment should be sent preferably in the same cover. Separate samples should be sent for different analysis. Sample will not be analyzed until payment is received.**
11. In all correspondence related to analysis our reference number must be mentioned.
12. **Radio-active material, unstable and explosive compounds are not accepted for analysis.**
13. Research fellows and students are advised to send download from the official website (www.ngbv.ac.in) of Nehru Gram Bharati (Deemed to be University) and send their application and samples are recommended by their supervisor and Head of Department.
14. Interpretation of spectra is NOT undertaken.
15. As per the recent decision of CIF committee it is mandatory for user of CIF facility to acknowledge the facility in their research work and communicates the same to CIF, Nehru Gram Bharati (Deemed to be University), Prayagraj, Uttar Pradesh.
16. For Lab visit, it is mandatory to take prior appointment from In-charge, CIF before your visit. The application should be send through department/Senior official of institute / Company. No deviation will be allowed for the timings.

All the communication should be addressed to:

To,
Dr. Asheesh Shivam
Director, Research Centre
Nehru Gram Bharati, (Deemed to be University), Prayagraj-221505. Uttar Pradish
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Email: research006@gmail.com, Web site: www.ngbv.ac.in