ITM UNIVERSITY
GWALIOR • MP • INDIA
"CELEBRATING DREAMS"

Facilities for **e-Content and Other Resource Development**

www.itmuniversity.ac.in

Index

CENTRAL INSTRUMENTATION CENTRE

P C Ray Center for Research

ITM University, Gwalior, has established cutting-edge facilities and state-of-the-art equipment to elevate standards in both teaching and research endeavors. The pinnacle of this initiative is the P.C. Ray Center for Research, ITM University, which houses an advanced analytical lab furnished with the latest instrumentation.

These facilities serve as a backbone for faculty members, research scholars, and students alike, fostering globally competitive research and development activities across a spectrum of basic and applied sciences. Notably, the equipment within the advanced analytical lab boasts exceptional features including fast scanning capabilities, high stability, and remarkable accuracy and reproducibility.

This infrastructure is not confined solely to the university community but extends its services to researchers from neighboring institutions, encouraging collaborative research initiatives. Recognizing the financial constraints often associated with procuring research instruments, ITM University is committed to spearheading outstanding research at the P.C. Ray Center for Research.

Faculty members and research scholars are actively involved in a diverse array of R&D activities spanning biotechnology, microbiology, biochemistry, plant science, animal science, environmental science, food technology, pharmaceutical science, physical science, and engineering & technology.

Various projects sanctioned by prestigious organizations such as MPCST, DST, AICTE, etc., are currently underway at ITM University. The availability of sophisticated equipment not only enhances research capabilities but also facilitates the successful execution of these projects.

These instruments find extensive applications across numerous sectors, including environmental science, chemical industries, agriculture, food industry, pharmaceuticals, material studies, quality control, clinical diagnosis, biochemistry, physical science, optical industries, and electronic engineering.

Moreover, the institution endeavors to extend its support to colleges, universities, and higher education centers by offering quality analysis of chemical compounds using these advanced instruments. Through such collaborative efforts, ITM University aims to cultivate a culture of innovation, excellence, and impactful research within the academic community.

PC Ray Research Center (PCRC) has been developed with the primary objective of fostering interdisciplinary research collaborations and driving innovation in various scientific disciplines.

- To strengthen technical infrastructure to carry out advanced research in various science disciplines.
- To carry out analysis of samples received from the academic institutes.
- To provide facilities of analytical instruments to academic institutes to enable them to carry outmeasurements for R&D work;
- To organize short-term training /workshops on the instrument handling and application of various instruments and analytical techniques;
- To train researchers for the maintenance and operation of instruments.

The research center is further open to work in collaboration with other university research institute industries to facilitate technology transfer from the lab field.

a) Fourier-transform infrared spectroscopy (FTIR)
b) UV-VIS spectrophotometer
c) Fluorescence Spectrophotometer
d) Comparison Microscope (RCM-505T)
e) Trinocular Stereo Zoom Microscope (Model- T- 5MP)

a) Fourier-transform infrared spectroscopy (FTIR)

Make: Perkin Elmer

Model: Spectrum Two

Picture 1. Fourier-transform infrared spectroscopy (FTIR)

Infrared Spectroscopy serves as a powerful tool for analyzing molecular structures, providing valuable insights into their vibrational and rotational modes of motion. This technique plays a pivotal role in the identification and characterization of functional groups within organic compounds. By generating unique fingerprint spectra, Infrared spectroscopy enables the differentiation of compounds based on their absorption patterns.

The recorded Infrared spectrum serves as a comprehensive record, offering crucial information about both organic and inorganic compound structures. It facilitates the identification of functional groups, and chemical bonding, and aids in the quality control of raw materials. The absorption of specific wavelengths of the IR beam by a sample directly correlates to the presence of particular functional groups within the compound.

Fourier Transform Infrared (FTIR) Spectroscopy has emerged as a sensitive and rapid technique for characterizing materials across a wide range of samples and molecular species. Its high signal-to-noise ratio enhances its utility, especially for challenging sample analyses. FTIR capitalizes on the unique absorption or transmission spectral fingerprints generated by the functional groups of each molecule, enabling precise compound identification.

Increasingly, FTIR is becoming the preferred technology for compound testing due to its speed, accuracy, and reliability. Its ability to swiftly and accurately characterize compounds makes it indispensable for various applications, ranging from material characterization to quality control processes. FTIR's versatility and efficiency make it an invaluable asset in research, development, and industrial settings alike.

Spectrum Two FT-IR spectrometer

The Spectrum Two FT-IR spectrometer is designed to revolutionize your material analysis, offering unmatched ease of use, power, and portability. This compact and robust system delivers exceptional performance in both laboratory and remote settings, making it the ideal choice for a wide range of applications. Spectrum Two simplifies your workflow with its intuitive interface and fully integrated universal sampling.

Key Benefits:

Simple operation: Intuitive interface and automated features streamline analysis.

Unmatched versatility: Perform a wide range of applications with ease.

Applications

- Chemical Identification: Analyse paints, adhesives, resins, polymers, coatings, and drugs to determine their composition.
- Contamination Control: Isolate and characterize organic contaminants in materials,
- Material Characterization: Identify mixtures of organic and inorganic compounds, solid or liquid.
- Polymer Analysis: Decipher the building blocks of polymers and their blends
- Surface Trace Detection: Indirectly verify the presence of trace organic contaminants on surfaces,
- Routine Analysis: Perform qualitative and quantitative analyses with ease, s
- Thin Film Studies: Investigate the composition and structure of thin films.

Detector:

- Standard, high-performance, room temperature LiTa3 (Lithium Tantalate) MIR Detector

Window Options:

1. KBr windows:

- Enable data collection over a spectral range of 8300 to 350 cm-1
- Best resolution: 0.5 cm-1
- Ideal for most applications

2. ZnSe windows (for exceptionally humid environments):

- Enable data collection over a spectral range of 6000 to 550 cm-1
- Best resolution: 0.5 cm-1
- Recommended for use in high humidity environments to prevent moisture damage to the detector

Key Points:

- The LiTa3 detector offers a good balance of performance and affordability.
- KBr windows provide a wider spectral range for most applications.
- ZnSe windows are ideal for humid environments to protect the detector from moisture damage, but offer a slightly smaller spectral range.

Sample Requirements

Solid Samples:

- Form: Powder
- Minimum Amount: 1-2 mg

Liquid Samples (Oily Only):

- Form: Oil
- Minimum Amount: 0.1 mL

Thin Films:

- Accepted directly, following specific guidelines provided upon analysis request.

Additional Tips:

- For best results, ensure your solid samples are homogenous and finely ground (particle size less than 10 microns).
- If your sample is larger than the recommended amount, a smaller portion will be used for analysis.
- Consult the instrument manual or your service provider for specific recommendations on preparing thin films for analysis.

b) UV/Vis Spectrophotometer

Picture 2. UV/Vis Spectrophotometer

The UV-VIS spectrum is due to the electronic transitions of the molecule. This is characteristic of a compound. Qualitative and quantitative estimations of compounds are possible by this nondestructive technique. The optical absorption by samples in the ultraviolet and visible are measured with this instrument. This region finds wide acceptance in the food and grain industry for the determination of protein, fat, moisture, sugar, etc. Absorption measurements in the UV and visible regions provide information about electronic transitions in a sample For fast and reliable results time after time, choose the LAMBDA 25for routine UV/Vis applications, pharmacopeia and regulatory tests, and liquids analysis. The comprehensive range of operating

modes provides trustworthy results for a range of analyses including quantitative measurements and kinetics studies.

Lambda 25 UV/Vis Spectrophotometer

The Lambda 25 UV/Vis Spectrophotometer is designed to streamline your routine ultraviolet-visible (UV/Vis) analyses, delivering dependable results with exceptional ease of use. Caters to a broad spectrum of applications, making it a valuable asset for any laboratory seeking efficient and reliable performance.

The Lambda 25 tackles a wide range of UV/Vis applications, including:

- Quantitative analysis: Accurately determine the concentration of various analytes in solution.
- Qualitative analysis: Identify unknown compounds based on their unique UV/Vis absorption profiles.
- Kinetic studies: Monitor chemical reactions in real-time by observing changes in absorbance over time.

Key specifications:

- Spectral Range:
- 190 nm (near-ultraviolet) to 1100 nm (visible and near-infrared)
- This broad range allows you to analyze samples that absorb light across a wide spectrum of wavelengths.

Resolution:

- 1 nm
- This exceptional resolution enables you to differentiate between closely spaced absorption peaks, providing detailed information about your sample's composition.
- Bandwidth: 1 nm (fixed)
- Modes Of Operation: scanning, wavelength program, time-drive, rate, quant, scanning quant
- True double-beam operation, High throughput, low stray-light opticsPre-aligned deuterium and tungsten-halogen lamps

Applications:

- Widely used in analytical chemistry for:
- Quantitative analysis: Determining concentrations of various analytes, like transition metal ions, conjugated organic compounds, and biological macromolecules.
- **Qualitative analysis:** Identifying unknown compounds based on their unique UV/Vis absorption patterns.
- **Material studies:** Investigating properties of materials, including molecular structure, reaction kinetics, defects in solids, and color centers.
- **Samples:** Primarily analyzes solutions, but can also be used for solids and gases.

Underlying Principle: Electronic Transitions

- Process: UV or visible light is absorbed by a molecule, promoting an electron from its ground state to a higher energy state.
- Information obtained:
- Conjugation: The number of conjugated double bonds and aromatic character can be determined by analyzing the UV-Vis spectrum.
- Conjugation vs. Non-conjugation: The presence or absence of conjugation can be distinguished based on the absorption pattern.

Picture 3. Fluorescence Spectroscopy

c) Fluorescence Spectroscopy

Molecules have various states referred to as energy levels. Fluorescence spectroscopy isprimarily concerned with electronic and vibrational states. Generally, the species being examined has a ground electronic state (a low-energy state) of interest and an excited electronic state of higher energy. Within each of these electronic states are various vibrational states. In fluorescence spectroscopy, the species is first excited, by absorbing a photon, from its ground electronic state to one of the various vibrational states in the excited electronic state. Collisions with other molecules cause the excited molecule to lose vibrational energy until it reaches the lowest vibrational state of the excited electronic state. This process is often visualized with a Jablonski diagram.

Perkin Elmer LS 55 Spectrofluorometer:

A powerful technique for analyzing a wide range of samples. This versatile instrument caters to the demanding needs of researchers in biophysics, chemistry, materials science, and beyond.

Applications, including:

- Measure fluorescence emission and excitation spectra to understand the photophysical properties of your samples.
- Quantify biomolecules like proteins and DNA with high sensitivity.
- Characterize complex materials by investigating their fluorescence properties.
- Study fluorescence lifetimes to gain deeper insights into molecular dynamics.

Specifications:

- Wavelength accuracy + 1 nm
- Wavelength reproducibility Spectral bandpass + 0.5 nm the excitation slits 2.5-15 nm and emission slits 2.5-20 nm
- Scanning speed,the scanning speed can be selected in increments of 1 nm from 10–1500 nm/minute.
- Data can also be collected with respect to time.
- Emission cut-off filters, 290, 350, 390, 430 and 515 nm,
- Sensitivity Minimum signal-to-noise level using the Raman band of water, excitation 350 nm, is 750:1 RMS measuring noise on the Raman peak, and 2500:1 RMS measuring noise on the baseline

d) Comparison Microscope (RCM-505T)

The comparison microscope is a specialized tool used in forensic science and investigation for side-by-side comparison of two microscopic specimens. It consists of two compound microscopes linked by an optical bridge that allows simultaneous viewing of two specimens. This setup enables forensic scientists to compare samples, such as fibers, hairs, bullets, tool marks, and documents, to determine if they share common characteristics or if they are identical. comparison microscopes play a crucial role in forensic science and investigation by enabling detailed analysis and comparison of microscopic evidence. Their ability to provide precise and objective comparisons helps forensic examiners in identifying and linking evidence to suspects, victims, or crime scenes, contributing to the investigation and resolution of criminal cases.

Components of a Comparison Microscope:

1. Binocular Microscope Heads: Each side of the microscope has a binocular eyepiece for comfortable viewing.
2. Objective Lenses: These lenses provide magnification of the specimens. Different objective lenses with varying magnifications can be used based on the requirements of the examination.
3. Stage: The stage holds the specimens in place for examination.
4. Light Source: A light source illuminates the specimens, typically from below, to enhance visibility.
5. Optical Bridge: This component connects the two microscopes, allowing the simultaneous viewing of the specimens.

Picture 4: Comparison Microscope

Benefits:

1. Simultaneous Viewing: The ability to view two specimens simultaneously allows for quick and accurate comparisons.
2. Enhanced Precision: The high magnification and clarity provided by comparison microscopes enable forensic scientists to identify subtle similarities and differences between specimens.
3. Objective Analysis: Comparison microscopy provides an objective method for evaluating evidence, reducing the risk of subjective interpretation.
4. Versatility: Comparison microscopes can be used for a wide range of forensic examinations, making them a versatile tool in forensic laboratories.

Application:

1. Firearm Examination: Comparison microscopes are extensively used in firearm examination in ballistics to analyze bullets and cartridge cases. Forensic examiners compare striation marks left on bullets and cartridge cases by the barrel of a gun to determine if they originate from the same firearm.
2. Tool Mark Analysis: When tools are used in crimes such as burglary or vandalism, they often leave distinctive marks on surfaces. Comparison microscopes help forensic experts compare these tool marks to tools recovered from suspects or crime scenes, aiding in identifying the tool used.
3. Fiber and Hair Analysis: Fibers and hairs can be transferred during criminal activities and can provide valuable evidence. Comparison microscopes allow forensic analysts to compare the characteristics of fibers and hairs found at a crime scene with those found on suspects or victims.
4. Document Examination: In cases involving forged documents or altered writings, comparison microscopes aid forensic document examiners in comparing the handwriting, ink, paper, and other features of questioned documents with known samples.
5. Trace Evidence Examination: Various types of trace evidence, such as paint chips, glass fragments, and soil particles, can be compared using a comparison microscope to link them to a particular source or crime scene.

e) Trinocular Stereo Zoom Microscope (Model- T- 5MP)

The trinocular stereo zoom microscope is an advanced variation of the stereo zoom microscope, featuring an additional optical port (trinocular head) that allows for the attachment of a camera or other imaging device. This configuration enables users to simultaneously view specimens through the binocular eyepieces while also capturing images or videos of the specimens for documentation, analysis, and presentation purposes. Trinocular stereo zoom microscopes find extensive use in various fields, including forensic science and investigation, due to their versatility and enhanced imaging capabilities. trinocular stereo zoom microscopes are indispensable tools in forensic science and investigation, offering advanced imaging capabilities for documentation, analysis, and comparison of forensic evidence. Their ability to simultaneously view specimens and capture high-resolution images or videos makes them valuable instruments in forensic laboratories and crime scene investigations, contributing to the identification, analysis, and interpretation of forensic evidence.

Picture 5: Trinocular Stereo Zoom Microscope

Components of a Trinocular Stereo Zoom Microscope:

1. Binocular Eyepieces: Trinocular stereo zoom microscopes typically feature two binocular eyepieces for comfortable viewing with both eyes, providing a three-dimensional perception of the specimen.
2. Zoom Objective Lenses: These lenses can be adjusted to vary the magnification

level continuously, allowing users to zoom in and out on the specimen to examine details at different levels of magnification.

3. Trinocular Head: The trinocular head contains an additional optical port, allowing for the attachment of a camera or imaging device. It typically has a beam splitter mechanism that directs a portion of the light to the camera while maintaining simultaneous viewing through the eyepieces.
4. Illumination: Trinocular stereo zoom microscopes may have built-in illumination sources, such as LED lights, positioned above or below the stage to illuminate the specimen. Adjustable lighting options enhance visibility and contrast for imaging.
5. Articulating Arm: These mounting systems provide flexibility in positioning the microscope and allow for easy manipulation of the specimen during examination and imaging.

Benefits Trinocular Stereo Zoom Microscopes:

1. Simultaneous Viewing and Imaging: The trinocular configuration enables users to view specimens through the eyepieces while simultaneously capturing images or videos using a camera, enhancing workflow efficiency.
2. High-Resolution Imaging: Trinocular stereo zoom microscopes produce high-resolution images suitable for detailed documentation and analysis of forensic evidence.
3. Versatility: These microscopes can accommodate various imaging devices, including digital cameras, CCD cameras, and digital video cameras, allowing for flexible imaging options based on the specific requirements of forensic examinations.
4. Non-Destructive Examination: Trinocular stereo zoom microscopes enable non-destructive examination of forensic evidence, preserving the integrity of samples while obtaining valuable imaging data.

Applications in Forensic Science:

1. Documentation of Evidence: Trinocular stereo zoom microscopes are used in forensic science to document evidence, such as fingerprints, hair, fibers, and tool marks, with high-resolution images or videos. Capturing detailed images of forensic evidence aids in documentation, analysis, and presentation in court proceedings.
2. Comparison and Analysis: Forensic investigators use trinocular stereo zoom microscopes to examine and compare evidence, such as ballistic materials, tool marks, and trace evidence. High-quality imaging capabilities allow for detailed analysis of microscopic features and facilitate comparisons between questioned and known samples.
3. Fingerprint Examination: Trinocular stereo zoom microscopes are essential for analyzing fingerprints, both latent and visible. Forensic experts can capture clear images of fingerprint impressions, ridge patterns, and minutiae details for identification and comparison purposes.
4. Trace Evidence Examination: In cases involving trace evidence, such as soil, glass fragments, or paint chips, trinocular stereo zoom microscopes enable forensic scientists to document and analyze microscopic features. Precise imaging helps in linking trace materials to specific sources or locations.
5. Forensic Document Examination: Trinocular stereo zoom microscopes are used by forensic document examiners to examine documents for alterations, forgeries, or counterfeit features. Detailed imaging allows for the analysis of ink characteristics, paper fibers, and printing patterns

HOW TO SUBMIT THE SAMPLES

The samples should be submitted in the prescribed format indicating the information called for as well as your Special requirement if any. If you are sending them by mail, please enclose the payment along with the samples and address the same to:

The Coordinator

PC Ray Research Centre

ITM University, AH 43, Jhansi Road, Turari, Gwalior

Term & Condition:

- Submit samples in air-tight vials.
- Samples should be submitted along with a duly filled requirement form
- Submit samples and work orders separately for each analysis technique
- Users (for educational purposes) should mention the name of the student who

needs the analysis.

- e-mail ID of the user is mandatory (SPECIFY THE EMAIL ID LEGIBLY)
- Mention the details of the samples (ingredients, presence of halogen, nitrates, amino group, hydrazine, solvents used for preparation,etc.) (SAMPLES SUBMITTED WITHOUT THESE DETAILS WILL BE REJECTED)

Only on receipt of the payment along with the samples, they will be registered for analysis and taken upfor measurement as per the seniority/queue of the users of the instrument concerned. As soon as the analysis is over, the spectra along with the receipt/bill will be sent to the users. While submitting samples for more than one analysis clearly specify and label properly in the sample tube.

Important notice:

- The data collected at PC Ray Research Center will find proper attribution (facility, instrument location, and concernedscientists willbe explicitly mentioned) when the same is posted in the public domain in any form
- (Figures, tables numbers quoted in text or characterization meeting standards). This applies to thesis, report, conference presentation & proceeding reference journal papers, etc.
- PC Ray Research Center. ITM University as an institute will be acknowledged for extending its facilities:
- Acknowledgment by designation would be avoided. The concerned scientist will be informed before the Submission for publication to avoid ethical problems. Co-authorship from CSR will be discussed mutually.
- soft copies of all such publication material and details of any thesis / dissertation with such Data will be sentto the concerned PC Ray research center

Mode of Payment:

Please make sure that the payment is received along with the samples. Payments are to be made By crossed-demand draft (DD) or cash payment to the account office. The DD must be drawn in favor of: "The Registrar, ITM University, Gwalior" payable at Gwalior and must be sent along with samples and the Registration form to The Head of PC ray research center, ITM University, Turari, Gwalior

CHARGES FOR EXTERNAL SAMPLE ANALYSIS

The following charges are recommended for using UV Vis spectrophotometer, FTIR, andfluorescence spectrometer (Users from other organizations) in PC Ray Center for Research.

S. No	Name of Instrument	For Educational Institutes	For Industries
1	UV Vis Spectrophotometer	50/Sample	100/Sample
2	FTIR	100/ Sample	150 Sample
3	Fluorescent Spectrophotometer	75/ Sample	125 Sample

ITM UNIVERSITY
GWALIOR • MP • INDIA
"CELEBRATING DREAMS"

ITM UNIVERSITY
GWALIOR • MP • INDIA
"CELEBRATING DREAMS"

FORMAT REPORT PC RAY RESEARCH LAB USER

1. Name of Scholar:.....
2. Name of Guide: .....
3. Name of facilities used: .....
4. No. of Samples done: .....
5. Results obtained: (details point wise)
6. Highlights of the result: .....

(Uniqueness and potential for publications & Patents)

7. Whether submitted for Publications/Patents (Yes/No)

If yes details

- Name of Journal: .....
- Publication house: .....
- Impact factor.....
- Status .....
- Details of Characterization done in PC Ray lab:.....
- I• f no, future plans .....

.....

.....

8. Whether submitted for Seminar/Conference (Yes/No)
- Name of Seminar.....
- Date & Place .....
- Details of Characterization done in PC Ray lab.....

9. Other Characterization was done on the same sample

Name of Characterization .....

Name of lab (where done).....

10. Whether the results used in any, Progress report

If yes, details

11. Whether any Projects submitted with characterization based on these instruments Yes/No

Title: .....

Details: .....

Funding Agency: .....

Cost .....

12. Any other, (wish to mention)

Enclosure: (Required to submit along withrelevant graphs, reports & papers

(Name of Scholar)

P.C. RAY RESEARCH CENTRE, ITM UNIVERSITY, GWALIOR

Request for the use of the characterization facilities at the center (user form of UV - VIS)

User Information

Name: .....

Designation :.....

Address (official).....

Phone number .....

Email address .....

Type of measurement.....

No. of Sample..... Sample code(s) .....

Type of experiment: Solution [ ] Thin film [ ] *Solvent to be used in case of Solution Spectrum _____

Amount to be paid: ...../ Exempted.....

(* Results will be given in soft copy , Kindly bring the CD for the copy of the Results)

User Signature
Signature
In-charge Lab

(HOD/Principal / Guide)
Signature
(Coordinator)

P.C. RAY RESEARCH CENTRE, ITM UNIVERSITY, GWALIOR

Request for the use of the characterization facilities at the center (user form of FTIR)

User Information

Name.....
Designation.....
Address (Official) .....
Phone number .....
Email address .....
No. of Sample.....
Sample code(s) .....
Region of measurement for IR .....
(Normal IR – 4000 to 450 cm-1 / HATR IR 4000 to 600 cm -1)

Detail of sample measurement: Transmission [ ] Absorption [ ] HATR [ ]

Amount to be paid:..... / Exempted .....

(* Results will be given in soft copy, Kindly bring the CD for the copy of the Results)

User Signature
Signature
In-charge Lab

(HOD/Principal / Guide)
Signature
(Coordinator)

UNIVERSITY
GWALIOR • MP • INDIA
"CELEBRATING DREAMS"

P.C. RAY RESEARCH CENTRE, ITM UNIVERSITY, GWALIOR

Request for the use of the characterization facilities at the center

(user form of FLUORESCENCE)

RUser Information

Name:.....

Designation: .....

Address (official):.....

Phone number: .....

Email address: .....

No. of Sample:.....

Sample code(s): .....

Region of measurement: .....

Excitation wavelength: .....

Emission wavelength: .....

Amount to be paid:..... /
Exempted .....

(* Results will be given in soft copy, Kindly bring the CD for the copy of the Results

User Signature
Signature
In-charge Lab

(HOD/Principal / Guide)
Signature
(Coordinator)

ANIMAL HOUSE FACILITY

Scope:

- Developing new therapeutic molecules from natural/synthetic/biological sources for management of diseases.
- Studying the characteristic features, safety and efficacy of new chemical entities.
- Establishing PK-PD correlation of a drug and its formulations.
- Developing animal models to study the putative mechanism(s) involved in the disease progression.

Animal ethics:

The Animal House is registered with the Committee for the Purpose of Control and Supervision of Experiments on Animals (CPCSEA), Ministry of Environment and Forests, Govt. of India (Reg. No.1894/PO/Re/S/16/CCSEA) and has an established Institutional Animal Ethics Committee (IAEC) that advises the students, teachers/ researchers on facilities, policies and practices concerning the care and use of animals.

IAEC School of Pharmacy, ITM University, Gwalior, M.P.

1. IAEC members accepted by CCSEA

S.N.	NAME OF THE IAEC MEMBER	DESIGNATION IN IAEC
1.	Dr. M. Alagusundaram	Biological scientist, Chairperson
2.	Dr. Sonia Johri	Scientist from different biological discipline
3.	Mr. Nem Kumar Jain	Scientist In-charge of Animal House Facility
4.	Dr. S.P. Upadhyaya	Veterinarian

2. IAEC nominees nominated by CCSEA

S.N.	DEATAILS OF NOMINEES	NOMINATED
1.	Prof. Suman Jain C/o Shri Mukesh Kumar Jain, Ludhiya Bhawan, Dana Oli, Lashkar, Gwalior, Madhya Pradesh	Main Nominee
2.	Dr. Sunil Kumar Dhiman VMD, Defence R&D Establishment (DRDE), Jhansi Road, Gwalior, Madhya Pradesh Contact No. :09435521588 Email :sunildhiman81@gmail.com	Link Nominee
3.	Shri Deepesh Parashar IPS College of Technology & Management, Shivpuri Link Rd, Gwalior, Madhya Pradesh,474001 Contact No. :7000746883 Email :parashardeepesh85@gmail.com	Scientist from outside the Institute
4.	Mr. Rajesh Singh Jadon 18K, Gaytri Vihar, Jaderua Road, Pinto Park, Gwalior, Madhya Pradesh, 474006 Contact No. :9300631006 Email :drjadon@gmail.com	Socially aware Nominee

Animal Care:

Animals purchased from vendors and houses in a facility after being properly examine by an attending veterinarian and becoming acclimated in a quarantine room. All animal species are kept apart in individually maintain rooms with barriers to prevent the spread of diseases and conflicts between different species. The animals are kept in rooms with 100% fresh air exchange, constant power and water supply, and controlled climatic conditions (temperature (22–26°C), relative humidity (60 ± 10%), and a 12-hour light and dark cycle). Every aspect of animal care, such as feeding, watering, restraining, cleaning cages, maintaining records, and ordering animals, feeds, bedding, and equipment from outside sources, is watched over by the support personnel. The animals themselves are kept off from populated areas and protected from untamed rats, dust, smoke, and noise.

Veterinary Care :

To ensure the animals' state of health, routine health monitoring is done on them. Animal happiness and health depend on veterinary treatment. Every day, animals are being monitor to check the changes in behavior or symptoms of illness. A full-time veterinarian keeps a close eye on the housing animals' health to make sure they are free from illness or injury. Under the veterinarian's supervision, post-surgical animals get veterinary care. Along with helping to create suitable rules and processes for supplementary veterinary care, he oversees their diet and sanitation.

Animal House Facilities :

The school of pharmacy has the animal house facility available to improve the facilities for research, teaching, and training. It also serves to address the growing need for high-quality laboratory animals in the rapidly developing field of experimental pharmacology. Technical staff and qualified academics are always available to assist with research and ensure that it adheres to the guidelines set by the Committee for the Purpose of Control and Supervision of Experiments on Animals (CCSEA).

Standard operating procedure (SOP), IAEC

As defined in “Breeding of and Experiments on Animals (Control and Supervision) Rules, 1998” "Institutional Animals Ethics Committee (IAEC)" means a body

comprising of a group of persons recognized and registered by the Committee for the purpose of control and supervision of experiments on animals (CPCSEA) performed in an establishment which is constituted and operated in accordance with procedures specified for the purpose by the Committee.

Objective: This SOP provides guidelines to IAEC for effective functioning so that a quality and consistent ethical review mechanism for research on animals is put in place for all proposals dealt by the Committee as prescribed by the CPCSEA under PCA Act 1960 and Breeding of and Experimentation (Control and Supervision) Rules 1998, as amended in 2001 and 2006.

OTHER IMPORTANT LINKS:

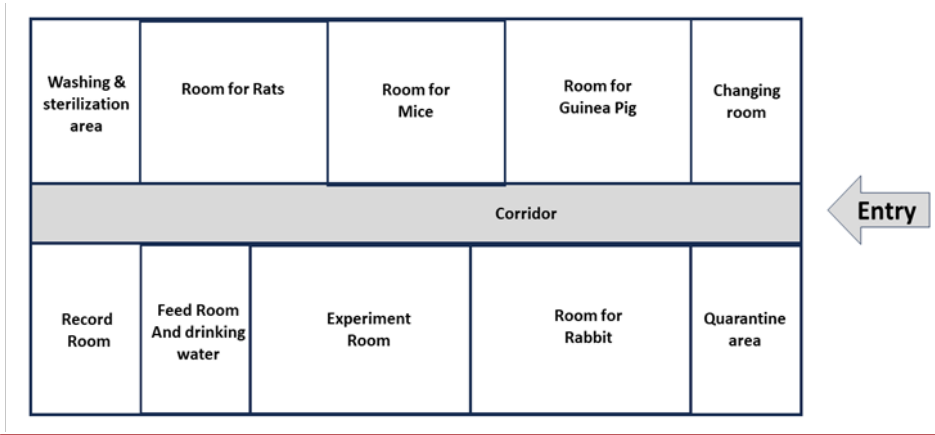
Rules and Guidelines

- The Prevention of Cruelty to Animals Act- 1960 https://dahd.nic.in/sites/default/filess/The%20Prevention%20of%20Cruelty%20to%20Animals%20Act%2C%201960.pdf
- The Breeding of and Experiments on Animals (Control and Supervision) Rules, 1998 https://dahd.nic.in/sites/default/filess/The%20Breeding%20of%20and%20Experiments%20on%20Animals%20%28Control%20and%20Supervision%29%20Rules%2C%201998.pdf
- CPCSEA Guidelines for Laboratory Animal Facility https://ccsea.gov.in/WriteReadData/userfiles/file/Compendium%20of%20CPCSEA.pdf
- The Recommendations of the 'Sub-Committee on the Rehabilitation of Animals after Experiments' setup by CPCSEA http://envfor.nic.in/divisions/awd/Rehabiliaion_Guidelines_new.pdf
- Bio-Medical Waste (Management and Handling) Rules, 2016https://dhr.gov.in/sites/default/files/Bio-medical_Waste_Management_Rules_2016.pdf

Forms and application

- Application for Permission for Animal Experiments (Form B) https://ccsea.gov.in/WriteReadData/userfiles/file/New%20Form%20BFeb_2022.pdf
- Record of Animals bred / acquired (Form C): (to be maintained by the Breeder/ Establishment) https://ccsea.gov.in/WriteReadData/userfiles/file/Form%20C%20Revised.pdf
- Record of Animals Acquired and Experiments performed (Form D): (to be maintained by the Investigator) https://ccsea.gov.in/WriteReadData/userfiles/file/From%20D%20Revised.pdf

Layout of Animal House:



Picture 6 Animal House

Picture 7 Faculty of School of pharmacy demonstrating experiments on rodents to students

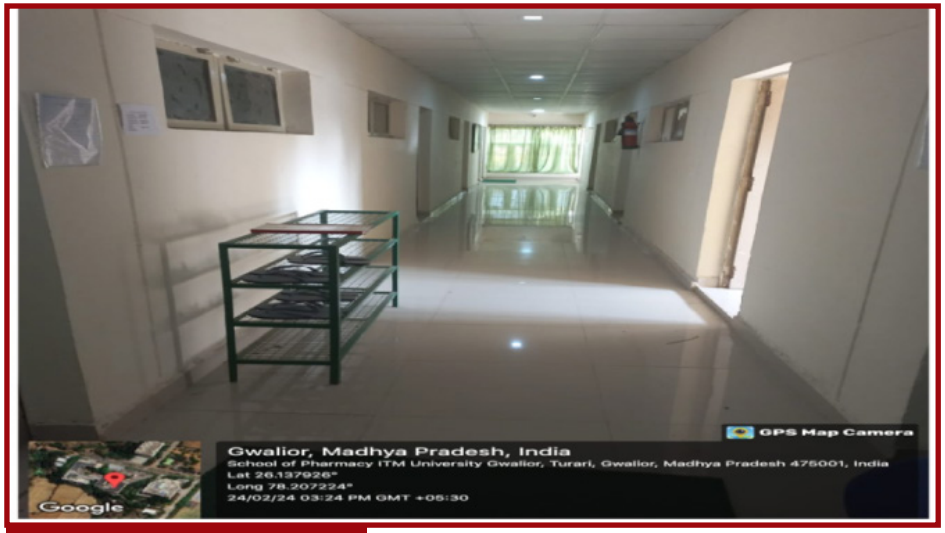
Picture 9 : Apron and gloves in changing room for staff

Picture 8 Proper housing facility for animal

Picture 10 Feed room for storing the feed and husk required for the animals

Picture 11 Cages for rabbit

Picture 13 : Entrance of animal house



Picture 12 Clean corridor

Picture 14 Faculty of school of pharmacy demonstrating handling of animals

Picture 15 Regular inspection

Picture 16 Faculty and students of school of pharmacy

GREEN HOUSE

The Animal House/Green House facility at ITM University Gwalior serves as a cornerstone for research, education, and sustainable practices in the field of agriculture and environmental sciences. This innovative facility embodies the university's commitment to fostering academic excellence while promoting environmental stewardship and technological innovation.

The Animal House component of the facility provides state-of-the-art infrastructure for the housing and care of research animals, facilitating studies in areas such as animal physiology, nutrition, genetics, and behavior. Equipped with modern amenities and adhering to strict ethical standards, the Animal House ensures the well-being and welfare of the animals while enabling cutting-edge research that contributes to advancements in animal sciences and allied disciplines.

Complementing the Animal House is the Green House, a controlled environment facility designed to support research and experimentation in plant biology, agronomy, horticulture, and environmental conservation. Utilizing advanced technologies for climate control, irrigation, and nutrient management, the Green House offers researchers a versatile platform to investigate plant growth, development, stress responses, and crop management practices. Moreover, the Green House serves as a living laboratory for studying the effects of environmental factors on plant health, productivity, and resilience in the face of climate change and other challenges.

Together, the Animal House/Green House facility at ITM University Gwalior fosters interdisciplinary collaboration and knowledge exchange among students, faculty, and researchers. By integrating hands-on learning experiences with theoretical knowledge, the facility enriches the academic curriculum and empowers learners to address real-world issues in agriculture, animal husbandry, and environmental sustainability. Furthermore, the facility exemplifies the university's commitment to promoting sustainable practices and ethical research conduct, thereby contributing to the advancement of science and the well-being of society.

Polyhouse: The School of Agriculture has 3 polyhouses with a capacity of 2000 sq.feet. The polyhouse was established in 2019 for the Master's research and UG students to provide first-hand knowledge on High-Tech Horticulture.

Picture 17 Fan Pad Polyhouse

Picture 18. Fan Pad Polyhouse

Picture 19. Polyhouse

Picture 20. Polyhouse

The animal house is part of the integrated farming system under the School of Agriculture, ITM University. This includes beekeeping, poultry farms, and fish ponds. This provides insight into the apiculture, fisheries, and poultry to the UG students and for research purposes.

Picture 21. Fisheries Unit

Picture 22. Fisheries Unit

Picture 23. Poultry Unit

Picture 24. Poultry Unit

MEDIA LABORATORY/STUDIOS

The Media Laboratory/Studios at ITM University Gwalior stands as a hub of creativity, innovation, and technological excellence in the realm of media and communication studies. This dynamic facility epitomizes the university's commitment to providing a cutting-edge learning environment that prepares students for careers in media production, journalism, advertising, and digital content creation.

Equipped with state-of-the-art equipment and software, the Media Laboratory offers students hands-on experience in audiovisual production, graphic design, multimedia editing, and animation. From professional-grade cameras and recording equipment to industry-standard editing suites and sound studios, the facility provides students with the tools and resources they need to unleash their creativity and produce high-quality media content.

Furthermore, the Media Studios within the facility serve as versatile spaces for live broadcasting, recording podcasts, conducting interviews, and hosting multimedia presentations. These studios are equipped with advanced lighting systems, green screens, and soundproofing materials, allowing students to experiment with different production techniques and develop their skills in a collaborative and supportive environment.

In addition to its role in supporting academic coursework, the Media Laboratory/Studios at ITM University Gwalior serves as a platform for research, experimentation, and innovation in media technology and content creation. Faculty members and students collaborate on projects that explore emerging trends in media production, digital storytelling, virtual reality, and interactive media. Through these initiatives, the facility fosters interdisciplinary collaboration and encourages the exploration of new frontiers in media and communication studies.

Moreover, the Media Laboratory/Studios play a vital role in facilitating industry partnerships, internships, and experiential learning opportunities for students. By engaging with professionals in the field and gaining hands-on experience in real-world settings, students develop the practical skills, industry knowledge, and professional networks necessary to excel in their chosen careers.

In summary, the Media Laboratory/Studios at ITM University Gwalior are integral to the university's mission of providing a comprehensive education that combines academic rigor with practical experience. Through state-of-the-art facilities, innovative programs, and industry collaborations, the facility prepares students to become skilled and adaptable professionals in the rapidly evolving field of media and communication.

Picture 25 Video Lecture Recording

Picture 26. Live Radio

Picture 27. News Reading and Audio Editing

Picture 28. Video Editing

BUSINESS LAB

The Business Lab at ITM University Gwalior stands as a beacon of innovation and entrepreneurship, providing a dynamic environment where students, faculty, and industry partners converge to explore, experiment, and innovate in the realm of business and management. This cutting-edge facility serves as a hub for research, learning, and collaboration, empowering future business leaders to thrive in a rapidly evolving global landscape.

Equipped with state-of-the-art technology and resources, the Business Lab offers a diverse range of amenities and services tailored to support entrepreneurship, experiential learning, and industry engagement. From interactive learning spaces and multimedia-equipped classrooms to dedicated project rooms and networking areas, the facility provides students with a conducive environment to ideate, strategize, and execute business initiatives.

Central to the Business Lab's mission is its focus on experiential learning and practical application of business concepts. Through immersive simulations, case studies, and hands-on projects, students gain valuable insights into real-world business challenges and develop critical skills in problem-solving, decision-making, and teamwork. Moreover, the lab serves as a launchpad for student-led ventures and start-up incubation, offering mentorship, funding opportunities, and access to a network of industry experts and investors.

In addition to its role in supporting student entrepreneurship, the Business Lab fosters collaboration between academia and industry through research partnerships, consultancy projects, and executive education programs. By facilitating knowledge exchange and collaboration, the lab bridges the gap between theory and practice, ensuring that academic insights are translated into tangible business outcomes and societal impact.

Furthermore, the Business Lab serves as a catalyst for innovation and thought leadership, hosting seminars, workshops, and conferences that bring together thought leaders, practitioners, and policymakers to discuss emerging trends, best practices, and future directions in business and management. Through these initiatives, the lab contributes to the advancement of knowledge and the development of sustainable business practices that drive economic growth and social progress.

In essence, the Business Lab at ITM University Gwalior embodies the institution's commitment to excellence in business education, entrepreneurship, and industry engagement. By providing a platform for innovation, collaboration, and experiential learning, the lab equips students with the skills, knowledge, and mindset needed to succeed in today's dynamic and competitive business environment, while also fostering a culture of innovation and entrepreneurship that fuels economic development and societal progress.The Business Lab comprises software latest software such as Tally, E-View-7, and SPSS.

Picture 29. Business Lab

Picture 30. Business Lab

RESEARCH/STATISTICAL DATABASES

1. Web of Science and DELNET (Developing Library Network) serve as essential assets for academic research endeavors available at ITM University Gwalior.Web of Science functions as a comprehensive citation database spanning diverse scholarly literature. Accessing the Web of Science at ITM University Gwalior typically entails logging in through the university library's website or portal. Access may be granted directly or through authentication using ITM University credentials.

2. DELNET, on the other hand, constitutes a network of libraries across India, offering access to an extensive array of resources, including books, journals, theses, and databases. ITM University Gwalior holds membership within DELNET, thereby enabling faculty, students, and staff members to avail themselves of its resources through the university library. To explore and utilize DELNET resources, individuals usually log in to the DELNET portal using ITM University credentials.

3. INFLIBNET hosts ITM University Gwalior's doctoral research data, encompassing diverse subjects from science to humanities. Situated in Gwalior, Madhya Pradesh, ITM University is esteemed for its academic excellence. Accessible through INFLIBNET, this repository fosters collaboration and dissemination of knowledge, benefiting researchers, scholars, and students worldwide. By providing a platform for accessing and sharing research output, INFLIBNET promotes academic transparency and interdisciplinary dialogue, contributing to the advancement of scholarship and societal progress.

4. At ITM University Gwalior, Turnitin software plays a crucial role in upholding academic integrity and quality. Used widely across disciplines, Turnitin aids in detecting and preventing plagiarism by comparing submitted work against a vast database of academic content. Faculty members utilize Turnitin to assess student submissions, ensuring originality and adherence to academic standards. Moreover, students benefit from Turnitin's feedback, helping them improve their writing and research skills. Through its implementation, ITM University reinforces the importance of ethical scholarship and fosters a culture of academic honesty, integrity, and excellence among its faculty and student community.

ITM UNIVERSITY
GWALIOR • MP • INDIA
"CELEBRATING DREAMS"

THEATRE

The theatre at ITM University Gwalior is a dynamic hub for artistic expression, creativity, and cultural engagement. It serves as a vibrant space where students, faculty, and members of the university community come together to explore the performing arts, showcase their talents, and foster a sense of camaraderie.

Equipped with state-of-the-art facilities and resources, the theatre provides a platform for various theatrical activities, including stage plays, musical performances, dance recitals, and dramatic productions. Students interested in acting, directing, stagecraft, or other aspects of theatre production have the opportunity to participate in a wide range of performances and projects throughout the academic year.

The theatre also hosts workshops, seminars, and masterclasses conducted by seasoned professionals and industry experts to enhance students' skills and knowledge in the performing arts. These events offer valuable learning experiences and networking opportunities for aspiring artists and performers.

Furthermore, the theatre at ITM University Gwalior serves as a cultural hub, promoting diversity, inclusion, and artistic expression within the campus community. It plays a pivotal role in organizing cultural festivals, drama competitions, and other events that celebrate the rich heritage and traditions of Indian performing arts.

Overall, the theatre at ITM University Gwalior provides a dynamic and enriching environment where students can explore their passion for the performing arts, develop their talents, and create memorable experiences that contribute to their personal and artistic growth.

Picture 31. NAAD Theater

Picture 23. NAAD Theater

ART GALLERY

The Art Gallery at ITM University Gwalior stands as a captivating space dedicated to the appreciation and exploration of visual arts. It serves as a cultural focal point within the university, offering students, faculty, and visitors an opportunity to immerse themselves in a diverse array of artistic expressions and creative endeavors.

Featuring a curated collection of artworks spanning various mediums, styles, and genres, the Art Gallery provides a platform for emerging and established artists to showcase their talents and share their perspectives with the community. Exhibitions hosted in the gallery encompass a wide range of themes, from traditional and contemporary art to experimental and interdisciplinary projects, fostering dialogue, reflection, and appreciation for the arts.

The Art Gallery also plays a vital role in supporting artistic education and enrichment initiatives at ITM University Gwalior. It serves as a resource for students studying fine arts, design, art history, and related disciplines, offering opportunities for hands-on learning, research, and creative exploration. Additionally, the gallery may host workshops, lectures, and artist residencies aimed at inspiring creativity, nurturing talent, and fostering a deeper understanding of the artistic process.

Furthermore, the Art Gallery serves as a venue for community engagement and cultural exchange, inviting participation from local artists, schools, and organizations. Through collaborative exhibitions, outreach programs, and community events, the gallery contributes to the cultural vibrancy and diversity of the region, forging connections between the university and the broader community.

Overall, the Art Gallery at ITM University Gwalior serves as a dynamic and inclusive space that celebrates the power and beauty of visual arts, enriching the campus experience and fostering a deeper appreciation for creativity, expression, and cultural dialogue.

Picture 33. -Sculpture (Mr. Giorgie C Pajak, Serbia – ISS 2023) LDV Block

Picture 34. -Sculpture (Mr. Robin David, Bhopal India – ISS 2023) LDV Block

Picture 35. -Sculpture (Mr. Sodong Choe, South Korea – ISS 2014) LDV Block

Picture 36. -Sculpture LDV Block
A. (Mr. Anil Kumar, Gwalior – ISS 2010)
B. (Mr. Adelaido HernandezUrban, Mexico – ISS 2010)

Picture 37. -Sculpture (Mr. Robin David, Bhopal India – ISS 2023) LDV Block

Picture 38. -Sculpture (Mr. Bhopesh Kavadia, Udaipur – ISS 2023) LDV Block

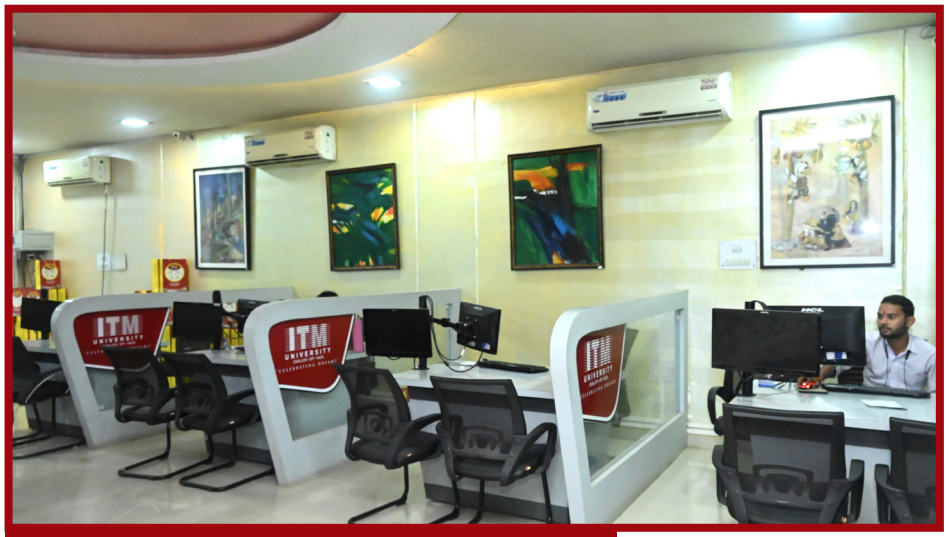
Picture 39. -Sculpture (Mr. JanakJhankar Narzani, Shantiniken – ISS 2006) LDV Block

Picture 40. -Sculpture (Mr. Vencent Di Vincenzo, France – ISS 2010) Mahatma Gandhi Block

Picture 41-Sculpture (Mr. Yurly Mysko, Ukraine)ISS 2023 (LDV Block)

42.-Sculpture (Mr. Fraser Colin Fiue) ISS 2014 (LDV Block)

Picture 43. Exhibited at LDV Block-Gallery

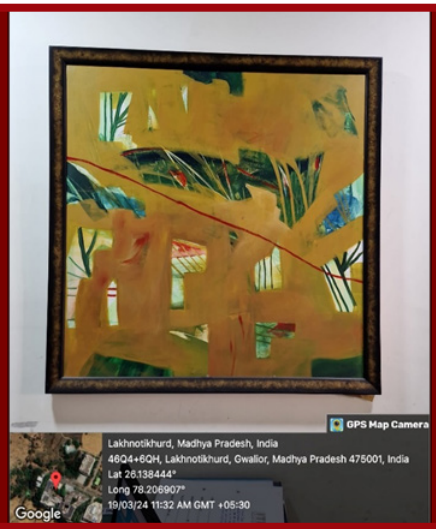


Picture 45. Exhibited at Councilling Cell

Picture 44. Exhibited at Pro-Chancellor Office

Picture 46. J C Bose Block-Art Gallery

Picture 47. Mahatma Gandhi Block-Art Gallery



Picture 48. Mahatma Gandhi Block-Art Gallery

Picture 49. Mahatma Gandhi Block-Art Gallery

Picture 50. Mahatma Gandhi Block-Art Gallery