# INSTITUTE OF INFRASTRUCTURE, TECHNOLOGY, RESEARCH AND MANAGEMENT

***An Autonomous University established by Government of Gujarat***

- ***Department of Basic Sciences***
- ***Department of Civil Engineering***
- ***Department of Electrical and Computer Science Engineering***
- ***Department of Humanities and Social Sciences***
- ***Department of Mechanical and Aerospace Engineering***
- ***Centres of Excellence (CoEs)***


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# INSTITUTE OF INFRASTRUCTURE, TECHNOLOGY, RESEARCH AND MANAGEMENT

**An Autonomous University established by Government of Gujarat**

## *Department of Basic Sciences*

*Laboratory facilities available for External Institutions/Organizations*


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**For enquiries: hod_bsciences@iitram.ac.in |dean_research@iitram.ac.in|Phone: +91-79-67775-434**


**2024**

**About:**

The Department of Basic Sciences comprises of Physics, Chemistry and Mathematics disciplines.

**Mathematics:**

Mathematics discipline has a very dynamic and strong team of faculties with specialization in diverse areas of Mathematics. There are five faculty members who have research specialization in areas like Banach Algebras, Harmonic Analysis, Fuzzy Sets and its applications in Reliability, Multi-Criteria Decision Making, Optimization, and Statistics, Intuitionistic fuzzy Set Theory, Partial Differential Equations, Finite Element Methods, Isogeometric Analysis (IGA), Mesh-free methods. Number theory, Modular Representation Theory, Mod-p-Local Langlands Program. Number Theory and Dynamical Systems, Lie Groups and Topological Groups.

**Chemistry:**

Chemistry discipline at IITRAM supports the engineering curriculum and engages the cutting-edge research in various fields. Faculty members in Chemistry have expertise in the field of Physical, Inorganic, Applied and Material Chemistry. Chemistry laboratory is designed to support and illustrate chemical concepts studied in the lecture portion. This laboratory is equipped with high end equipment like Gas-Chromatography, UV-visible Spectrophotometer, Heating Oven, Muffle Furnace, High Vacuum Pump, Rota Evaporator, Heat Controlled Magnetic Stirrer, Heating Mental, pH Meter, Conductivity Meter, Potentiometer, UV Chamber etc.

**Physics:**

The discipline of Physics was established with an aim to carry out experimental and theoretical physics. Currently, the physics discipline has two faculty members working in the area of theoretical and experimental fields. The theoretical research is focused on the investigation of material properties through Density Functional Theory. We currently use packages like Quantum Espresso and Wien2k to carry out the simulations at the Institute's High-Performance Computing Facility.

**Laboratories:**

- Chemistry Laboratory
- Physics Laboratory
- Mathematics Laboratory

# CHEMISTRY LABORATORY

## Gas Chromatograpghy: (Thermo Fishar Scientific-trace 1310 gc)

| Usage | Charges for Academic institutions & Government organizations (INR) | Charges for Industry (INR) |
|---|---|---|
| For separating and analyzing compounds | INR. 2000/- per measurement | INR. 4000/- per measurement |

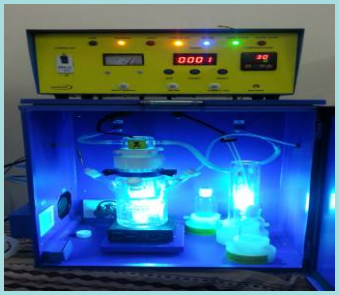
## UV Visible Spectroscopy: (Agilent Cary 60)

| Usage | Charges for Academic institutions & Government organizations (INR) | Charges for Industry (INR) |
|---|---|---|
| Analyzing chemical properties of material | INR. 2000/- per measurement | INR. 5000/- per measurement |

## FT-IR: (Parkin Elmer-Two Spectrum)

| Usage | Charges for Academic institutions & Government organizations (INR) | Charges for Industry (INR) |
|---|---|---|
| Identification of unknown material | INR. 1500/- per measurement | INR. 4000/- per measurement |

## Photo Chemical Reactor (Lelesil Innovative Systems)



| Usage | Charges for Academic institutions & Government organizations (INR) | Charges for Industry (INR) |
|---|---|---|
| For photochemical reactions | INR. 1000/- per measurement | INR. 2500/- per measurement |

## Electrochemical Workstation (Corretest – CS2350 Bipotentiostat)


| Usage | Charges for Academic institutions & Government organizations (INR) | Charges for Industry (INR) |
|---|---|---|
| Advanced electrochemical studies | INR. 2200/- per measurement | INR. 5000/- per measurement |

**All charges mentioned above are excluding GST | Charges may be revised from time to time as per Institute norms**

# INSTITUTE OF INFRASTRUCTURE, TECHNOLOGY, RESEARCH AND MANAGEMENT

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## *Department of Civil Engineering*

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*2024*

## About:

The Government of India is emphasizing on up gradation of infrastructure by focusing on schemes such as development of Smart Cities, Atal Mission for Rejuvenation and Urban Transformation (AMRUT), National Highways Development Project (NHDP), and Setu Bharatam. With a view to contribute in such initiatives of the Government, by developing technical qualified human resource and state-of-the-art infrastructural facilities, the Department of Civil Engineering at IITRAM started along with the inception of the Institute in the year 2013. Presently, the Department offers three academic programmes leading to B.Tech. in Civil Engineering, M.Tech. in Civil Engineering (with specializations in Urban Infrastructure) Geotechnical and Engineering and Ph.D. in all major Civil Engineering sub-specializations.

Since, Civil Engineering is the professional engineering discipline that constitutes the backbone of the infrastructural and economic development of the society, the Department is well equipped with state-of-the-art facilities to fulfill requirements of both academics, industries and cutting edge research. The well qualified and experienced faculty members in the Department also aspire to share their expertise for consultancy services and involve in the R&D activities in the field of Soil Mechanics, Roads and Building, Traffic Engineering, Water Resources, Structural Engineering, Environmental Engineering and allied areas.

## Laboratories:

- Hydraulics Laboratory
- Surveying & Geoinformatics Laboratory
- Soil Mechanics Laboratory
- Transportation Engineering Laboratory
- Smart & Sustainable Materials Laboratory
- Advanced Instrumentation Laboratory
- Environmental Engineering Laboratory
- Construction Materials Laboratory

# HYDRAULICS LABORATORY

## Recirculating flume with dimensions of 10m (length) x 1m (width) x 0.8m (depth)

**Key capabilities:**

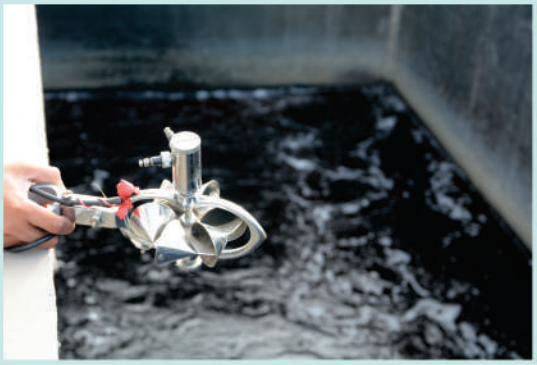
1. Hydrodynamic Experiments - Turbulent flow studies, Vortex and wave generation etc.
2. Sediment Transport Studies - Sediment supply and recirculation, Sediment scouring around hydraulics structures, Morphodynamics modelling etc.
3. Environmental Hydraulics - Pollutant transport studies etc.
4. Model Testing and Validation - Scaled physical models, Hydraulic structure efficiency etc.

## Advanced Hydrological Simulator

**Key capabilities:**

1. Hydrological Process Simulation - Precipitation-runoff modelling, Infiltration and percolation estimation etc.
2. Surface and Groundwater Interaction - Surface water flow modelling, Groundwater flow, Aquifer and well dynamics etc.
3. Sediment Transport and Erosion Modeling - Sediment transport dynamics, Soil erosion processes etc.
4. Urban Hydrology - Stormwater management studies, Small scale flood risk management studies

**Make / model – GUNT, Germany**



## Pigmy/ Cup type Water Current Meter

**Key capabilities:**

1. Measurement of wide range of velocities of flowing water
2. Range for Pigmy type water current meter-0-2.5 m/s
3. Range for Cup type water current meter-0-3.5 m/s

## Charges

| Sr. No. | Name of equipment / facility | Charges for Academic institutions & Government organizations (INR) | Charges for Industry (INR) | Remarks if any |
|---|---|---|---|---|
| 1 | Advanced Hydrological Simulator | 5000 | 10,000* | *per day charges |
| 2 | Pigmy/ Cup type Water Current Meter | 3000* | 6000* | *per day charges |
| 3 | Recirculating Flume with ADV | 15000* | 25000* | *per day charges **consumable charges extra |

**(All charges mentioned above are excluding GST)**

# SURVEYING AND GEOINFORMATICS LABORATORY

## Automatic Level

Sokkia B40 Automatic Level

**Key capabilities**

- Reliable and precise instrument widely used for measuring elevation, slope angle, and horizontal distance in surveying.
- **Make / model - Sokkia B40 Automatic Level**

## Total Station

Leica MS60 Total Station

Prism

**Key capabilities:**

- Good accuracy and advanced performance, making it ideal for most of the surveying tasks.
- **Make / model – Leica MS60**

**Charges**

| Sr. No. | Name of equipment / facility | Charges for Academic institutions & Government organizations (INR) | Charges for Industry (INR) | Remarks if any |
|---|---|---|---|---|
| 1 | Automatic Level | 2000 | 3000 | *Per day charges |
| 2 | Total Station | 25000 | 35000 | *Per day charges |

**(All charges mentioned above are excluding GST)**

# SOIL MECHANICS LAB

## Universal Automatic Soil Compactor

| Sr. No. | Key capabilities | Charges for Academic institutions & Government organizations (INR) | Charges for Industry (INR) | Remark (if any) |
|---|---|---|---|---|
| 1 | It is designed to compact specimens automatically and uniformly for standard and modified proctor tests. | 1500 | 3000 | For Light Compaction Test, Rates are per test set |
| | | 1750 | 3500 | For Heavy Compaction Test, Rates are per test set |

## California Bearing Ratio Test


| Sr. No. | Key capabilities | Charges for Academic institutions & Government organizations (INR) | Charges for Industry (INR) | Remark (if any) |
|---|---|---|---|---|
| 1 | This test setup helps to measure the strength of soil and other paved materials by determining the pressure required to penetrate a soil sample with a plunger | 2560 | 3200 | Unsoaked – Light compaction, Rates are per test set |
| | | 3200 | 4000 | Soaked – Light compaction, Rates are per test set |
| | | 3200 | 4000 | Unsoaked – Heavy Compaction, Rates are per test set |
| | | 4000 | 5000 | Soaked – Heavy Compaction, Rates are per test set |

## Unconfined Compression Shear Test

| Sr. No. | Key capabilities | Charges for Academic institutions & Government organizations (INR) | Charges for Industry (INR) | Remark (if any) |
|---|---|---|---|---|
| 1 | The test measures the unconfined compressive strength (UCS) of a soil/cemented soil specimen. The maximum loading capacity is 10 kN. | 800 | 1000 | Set of three tests |

**(All charges mentioned above are excluding GST)**

# SOIL MECHANICS LAB

## Direct Shear Apparatus (60 mm × 60 mm) - Motorised

| Sr. No. | Key capabilities | Charges for Academic institutions & Government organizations (INR) | Charges for Industry (INR) | Remark (if any) |
|---|---|---|---|---|
| 1 | The test measures geotechnical properties of soil/cemented soils | 1600 | 2000 | Rates are per test set |

## Swelling Pressure Apparatus


| Sr. No. | Key capabilities | Charges for Academic institutions & Government organizations (INR) | Charges for Industry (INR) | Remark (if any) |
|---|---|---|---|---|
| 1 | To determine the swelling pressure developed by soil specimens moulded to desired densities at known moisture content | 2400 | 3000 | Rates per test Sample |

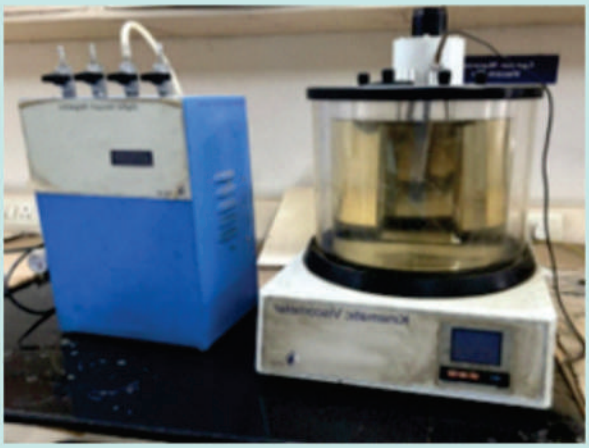
## Autotriax Test Apparatus


| Sr. No. | Key capabilities | Charges for Academic institutions & Government organizations (INR) | Charges for Industry (INR) | Remark (if any) |
|---|---|---|---|---|
| 1 | The AUTOTRIAX test apparatus can perform variety of triaxial tests (UU / CU / CD and measure permeability) on up to 100 mm samples. | 5760 | 7200 | UU Triaxial tests on 3 Specimen of 38 mm × 76 mm |
| | | 6800 | 8500 | UU Triaxial tests on 3 Specimen of 50 mm × 100 mm) |
| | | 14400 | 18000 | CU Triaxial tests on 3 Specimen of 38 mm × 76 mm |
| | | 16800 | 21000 | CU Triaxial tests on 3 Specimen of 50 mm × 100 mm |

**(All charges mentioned above are excluding GST)**

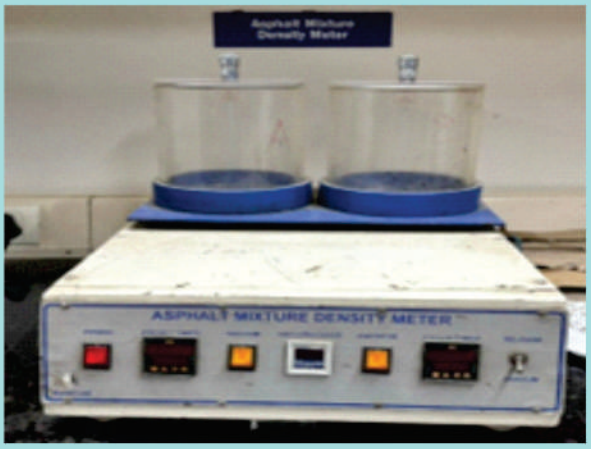
# TRANSPORTATION ENGINEERING LAB

## Cannon-Manning Viscometer-Make: AIMIL (XMT/F9000)



| | |
|---|---|
| **Key capabilities** | Measures the viscosity of highly viscous materials |
| **Charges for Academic institutions & Government organizations (INR)** | 2460 |
| **Charges for Industry (INR)** | 3080 |
| **Remark (if any)** | Per sample |

## Asphalt Density Meter Make: AIMIL (AIM 582)




| | |
|---|---|
| **Key capabilities** | Used for determination of theoretical density of asphalt mixer by vacuum method |
| **Charges for Academic institutions & Government organizations (INR)** | 3000 |
| **Charges for Industry (INR)** | 5000 |
| **Remark (if any)** | Per sample |

## Rolling Thin-Film Oven (RTFO) Make: Controls (81-PV1612/230V/50Hz/1ph)

| | |
|---|---|
| **Key capabilities** | To measure the short-term effect of heat and air on pavement performance |
| **Charges for Academic institutions & Government organizations (INR)** | 12000 |
| **Charges for Industry (INR)** | 15000 |
| **Remark (if any)** | Set of 5 samples |

**(All charges mentioned above are excluding GST)**

# TRANSPORTATION ENGINEERING LAB

## Pressure Aging Vessel (PAV) Make: Prentex-PAV 9500/EN 14769. 230 V, 50-60 Hz, 1 ph)

| | |
|---|---|
| **Key capabilities** | To simulate the long-term aging of asphalt binder after 5 to 10 years. |
| **Charges for Academic institutions & Government organizations (INR)** | 18400 |
| **Charges for Industry (INR)** | 23000 |
| **Remark (if any)** | Set of 8 samples |

## Dynamic Shear Rheometer Make: Malvern/Kinexus DSR+/20-44404)

| | |
|---|---|
| **Key capabilities** | To characterize the viscous and elastic behaviour of binder material |
| **Charges for Academic institutions & Government organizations (INR)** | 6000 |
| **Charges for Industry (INR)** | 8000 |
| **Remark (if any)** | Per sample & Per test |

## Marshal Mix Make: HEICO: (MB64.505)

| | |
|---|---|
| **Key capabilities** | Bituminous Mix design |
| **Charges for Academic institutions & Government organizations (INR)** | 52800 |
| **Charges for Industry (INR)** | 66000 |
| **Remark (if any)** | Per design |

**(All charges mentioned above are excluding GST)**

# SMART AND SUSTAINABLE MATERIALS LABORATORY

## 200 kN capacity Loading Frame With Tank (1m x 1m x 1m) and Hydraulic Assembly

**Key capabilities**

1. Performing plate load tests on soil and other geomaterials
2. Performing plate load tests on geosynthetics reinforced or stabilized soil/geomaterials

## Large Direct Shear Apparatus

**Key capabilities**

1. Performing direct shear test for soils and other geo materials
2. Performing direct shear test for aggregates
3. Performing interface shear tests for soil/geomaterial with geo synthetics
4. Sample size 300 mm x 300 mm x 300 mm

**Make: AIMIL**

## 5 Ton Capacity Loading Frame (Tank size: 40 cm diameter, 30 cm height)

**Key capabilities**

1. Performing plate load tests on soil and other geomaterials
2. Performing plate load tests on geosynthetics reinforced or stabilized soil/geomaterials

## PH /EC/TDS Multi Meter

**Key capabilities**

1. Measuring pH, Electrical conductivity and Total dissolved solids for supernatant extracted from soil/geomaterial, leachate, etc.

**Note:** Supernatant/liquid for measurement shall be free of solid particles

## Charges (*GST extra as applicable)

| Sr. No. | Name of equipment / facility | Charges for Academic institutions & Government organizations (INR) | Charges for Industry (INR) | Remarks if any |
|---|---|---|---|---|
| 1. | 200 kN capacity Loading Frame with Tank and Hydraulic Assembly | 4000/- per day | 8000/- per day | Labour charges are excluded |
| 2. | 5 Ton Capacity Loading Frame | 2000/- per day | 4000/- per day | Labour charges are excluded |
| 3. | Large Direct shear Apparatus | 4800/- (for set of 3 tests) | 6000/- (for set of 3 tests) | - |
| 4. | PH /EC/TDS Multi Meter | Minimum charges 500/- per day (For more than 10 samples Rs. 50/sample) | Minimum charges 1000/- per day (For more than 10 samples, Rs. 100/sample) | The supernatant/ liquid shall be free of solid particles |

**(All charges mentioned above are excluding GST)**

# CONSTRUCTION MATERIALS LAB

## Compression Testing Machine (3000 kN) and Flexure Frame (300 kN)

**Key capabilities**

1. Stress strain curve determination of cementitious materials.
2. Accessories for determination of elastic modulus and poisons ratio
3. Three point and Four flexure testing assembly
4. Provisions for determination of bond strength of cementitious composites

**Make/Model –** M/s Controls, Italy, MCC8 multi test

## Universal Testing Machine (600 kN)

**Key Capabilities**

1. Stress strain curve: Reinforcement steel, Hot/cold rolled steel steel bars, angles, flats, plates etc
2. On sample deformation measurement for accurate strain prediction
3. Suitable for determination of stress strain curves in tension, compression and flexure

**Make/Model:** Heico, India

## Creep Testing Machine (1000 kN)

**Key Capabilities**

1. Capable to measuring short term and long-term creep performance of cementitious systems
2. Ability to hold load with an accuracy of ±2% upto a period of 6 months
3. Continuous data measurement for accurate prediction on the rate of creep

**Make/Model:** Chirayu Controls and M/s. Controls Italy

## Compression Testing Machine (3000 kN)

**Key Capabilities**

1. Auto pace-controlled compression testing machine for testing compressive strength of construction materials
2. Measures compressive strength under load control
3. Provisions of auto load control, peak load protection, autostop,

**Make/ Model**: M/s Controls, Italy, Auto Pilot

**(All charges mentioned above are excluding GST)**

# CONSTRUCTION MATERIALS LAB

## Permeability Apparatus

**Key Capabilities**

1. Simultaneous measurements of upto 6 specimens
2. Permeability measurements against water upto 8 bar pressure

**Make/Model:** M/s. Controls., Italy

## Rapid Chloride Penetration Test (RCPT)

**Key Capabilities**

1. Measure chloride penetration of concrete specimens at constant voltage
2. Measure chloride migration of concrete specimens at variable voltage (RCMT)
3. Provisions for preconditioning of specimens as per relevant IS/ASTM/EN codes

**Make/Model:** Vedantrik Technologies | **Make/Model:** M/s. Controls Italy

### Charges

| Sr. No. | Name of equipment / facility | *Charges for academic institutions excluding GST (INR) | *Charges for industry excluding GST (INR) |
|---|---|---|---|
| 1 | 3000 kN capacity Strain Controlled Compression Testing Machine | 3000-6000/set (Depending on the test) | 5000-12000/set (Depending on the test) |
| 2 | 300 kN capacity Strain Controlled Flexure Testing Machine | 2000/- per set | 3500/- per set |
| 3 | 600 kN capacity Universal Testing Machine | 2000/- per set | 5500/- per set |
| 4. | 1000 kN capacity Creep Testing Machine | 3000-50,000/set (Price depending on the test duration) | 10000-2,00,000/set (Price depending on the test duration) |
| 5 | 3000 kN capacity Compression Testing Machine (Load Control) | 462/set (concrete) 1276-2068/set (bricks) | 583/set (concrete) 1595-2585/set (bricks) |
| 6 | 6 Cell Permeability Apparatus | 4444 - 10340/- per set | 5555 - 12925/- per set |
| 7 | Rapid Chloride Penetration Test Setup | 2000/- set | 7500/-set |
| 8 | Rapid Chloride Migration Test Setup | 2000/- set | 7500/-set |

Note: Charges for Government organizations are same as that for academic institutions

**(All charges mentioned above are excluding GST)**

# INSTITUTE OF INFRASTRUCTURE, TECHNOLOGY, RESEARCH AND MANAGEMENT

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# Department of Electrical and Computer Science Engineering

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**2024**

**About:**

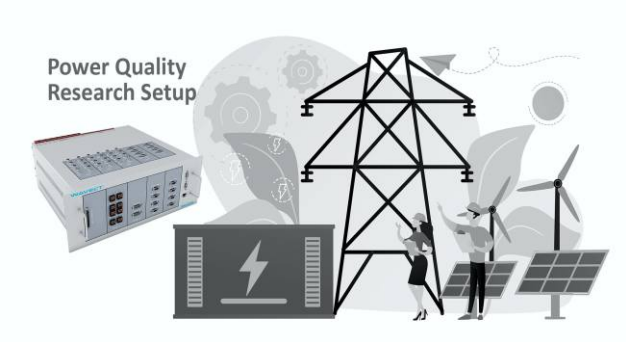
The Electrical and Computer Science Engineering Department at IITRAM offers B.Tech, M.Tech. and PhD programs in Electrical Engineering and B.Tech. and PhD programs in Computer Engineering to cater the need of industries and research organizations. The department imparts a strong theoretical foundation and hands-on training to the students in the domain of Electrical and Computer Engineering. The department currently has 16 faculty members having PhD from premier institutions of India like IITs, NITs, IISc and overseas universities.

The faculty members have specialization in the domains of VLSI, Control Systems, Power Electronics, Power Systems, Communication Systems, Signal Processing, Electrical Machines, Deep learning, IoT, ICT, Image Processing, Drone Technology, Artificial Intelligence, and Edge Computing. The laboratories in the department are equipped with the most modern equipment and computational facilities with the latest tools like MATLAB, ANSYS, Visual TCAD and many open source software. Many faculty members were/are engaged in research and development consultancy for industries and utilities. Some of the prominent ones are Rolls-Roys Singapore, Solidpro Pvt Ltd Chennai, SAC - ISRO Ahmedabad, Aztech Fluids and Machinery Ltd, Goginie Pvt Ltd, Gujarat Cancer Research Institute, etc. The department has strong interaction with industry leaders to understand the future challenges as well as expectations of the industry by organizing Expert talks, Seminars, Colloquium, and Workshops.

**Laboratories:**

- Power Systems Laboratory
- Communication Systems Laboratory
- Control Systems Laboratory
- Electrical Machines Laboratory
- Electronics Devices & Circuits Laboratory

# POWER SYSTEMS LABORATORY



## WAVECT High-end FPGA Controller

**Functionality:**

Rapid Control Prototyping of Electrical Systems

**Specifications:**

WAVECT (WCU300HD) Controller Box with

- 16 voltage sensors
- 16 Current sensors
- 24 PWM channels
- 2 Encoder channels
- 8 Relay channels
- 16 Analog input/output channels
- WAVECT Suite for measurements and analysis
- Device library for MATLAB/Simulink environment

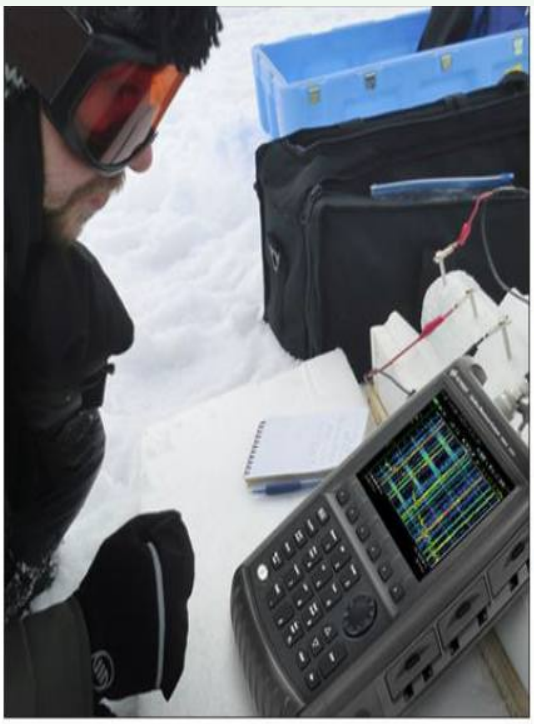
**Charges:**

- **For Academic Institutions/Govt. Organizations:** INR. 400/hr
- **For Industry:** INR. 600/hr

**All charges mentioned above are excluding GST | Charges may be revised from time to time as per Institute norms**

# COMMUNICATION SYSTEMS LABORATORY

Verify LTE uplink control and traffic channel operations



Quickly locate interfering signals

Detect and difference multiple pulses at the same time

## FieldFox Handheld Spectrum Analyzer

- Standard models include cable and antenna analyzer
- Expand capabilities with VNA, spectrum analyzer, built-in power meter, vector voltmeter, and more.
- Save time by measuring DTF and TDR in the same sweep.
- Measure all four S-parameters simultaneously.
- Make accurate spectrum analyzer measurements (± 0.5 dB) without warm-up also calibrate easily with QuickCal
- Use the industry's lightest all-in-one analyzer at only 3.0 kg.

**Charges:**
**For Academic Institutions/ Govt. Organizations:**
INR. 4000/ antenna module test

**For Industry:**
INR. 6000/ antenna module test

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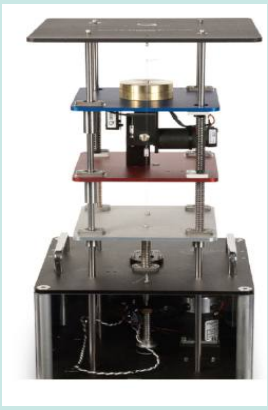
# CONTROL SYSTEMS LABORATORY



## Active suspension system

Double mass, spring, damper system analysis + Industry-relevant control requirements (ride comfort, suspension travel, road handling) «Derivation of dynamic model -representation + System transfer functions *Open-loop system analysis * Time domain and frequency-domain open-loop and closed-loop system identification + Full-state/two state feedback LQR control design(with real-time control parameter tuning)

## Magnetic Levitation Workstation

* Transfer function representation * Linearization FEATURES Electromagnet made of a solenoid coil and a steel core Pedestal embedded with photo-sensitive position sensor * Solid stainless steel ball Interior lights * Current control * Position control * PID * Feed-forward * Control parameter tuning.


## 2-DOF Serial Flexible Link Robotic Arm

*Disturbance Rejection + Tracking Control & Regulation + Full-State Feedback * ObserverDesign & Implementation + Frequency Analysis * Lead / Lag Compensation * Vibration &Resonance + System Modeling & Simulation + Root Locus Design + Nyquist Stabilitymeter-0-3.5 m/s
Robotics + Real-Time Control « Discrete Time Sampling.

## Coupled Tank System

* Derivation of dynamic model from first-principles CURRICULUM TOPICS PROVIDED + Transfer function representation -Linearization + Level control PID -Feed-forward * Two tanks and single pump design °Control parameter tuning.

**Charges:**

**For Academic institutions/**

**Govt. Organizations:**

INR. 1000/hr, for demo,

INR. 5000/ experimental work,

INR. 10000 for validation of algorithm

**For Industry:**

INR. 25000 consolidated

**All charges mentioned above are excluding GST | Charges may be revised from time to time as per Institute norms**

# ELECTRICAL MACHINES LABORATORY

## SFRA Test Kit (PDIC PFRS-25)

- Detailed Specs: https://shorturl.at/hoFMO
- Diagnose transfromer's mechanical integrity by analyzing its frequency response.
- Capture transfer function over wide frequency range from 0.1Hz to 25MHz.

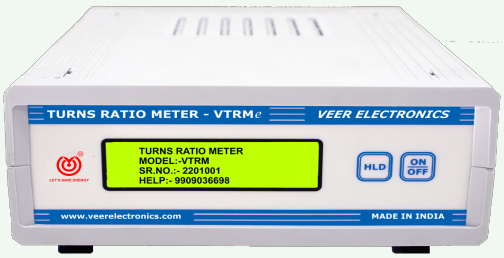
**Academic/Govt. Institutions:** INR.500/hr
**Industry:** INR.750/hr

## Transformer Windings
## 1 MVA 11/6.6 KV Disc Winding (LV and HV)

- Set up for isolated winding, 1-Ph or 3-Ph transformer on wooden core with disc winding.
- Provision of tappings to collect voltage data.
- Provision for including axial and radial deformations.

**Academic/Govt. Institutions:** INR.500/hr
**Industry:** INR.750/hr

## Single Phase Transformer Turns Ratio Meter




Mechanical Integrity verification, research purpose, test and calibration purpose

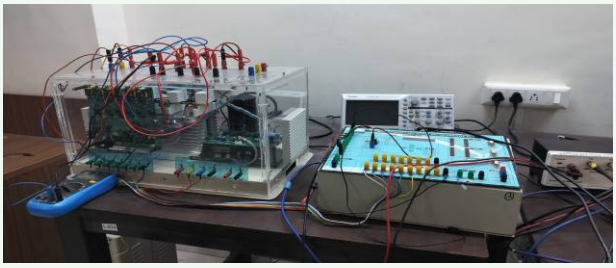
**Academic/Govt. Institutions:** INR.200/hr
**Industry:** INR.300/hr

## Control Panels for various Electrical Machines

Control Panels for Induction Motors, Transformers, Synchronous Motors, DC Motors

**Academic/Govt. Institutions:** INR.300/hr
**Industry:** INR.500/hr

## PMSM Control setup



10 kVA 3/4-leg converter with STM-32 controller for real-time control of PMSM .

**Academic/Govt. Institutions:** INR.500/hr
**Industry:** INR.750/hr

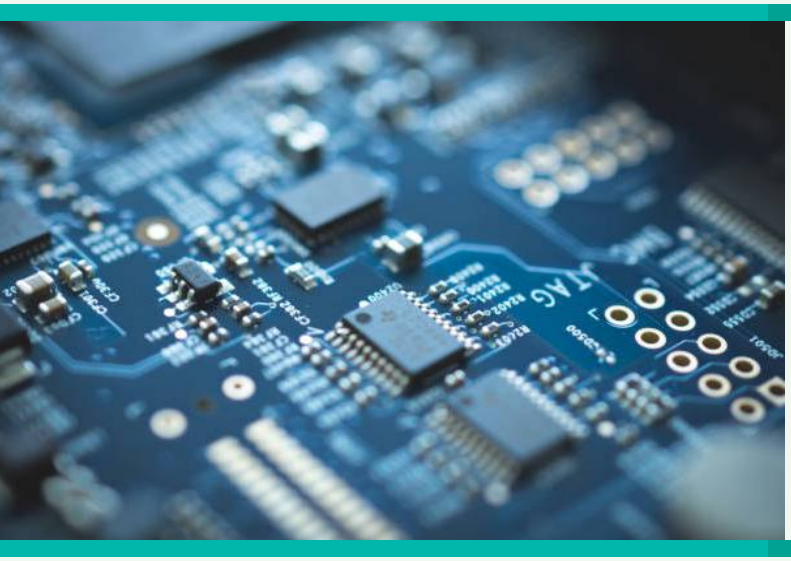
## High bandwidth AC Current Probe (Tektronix P6021A)

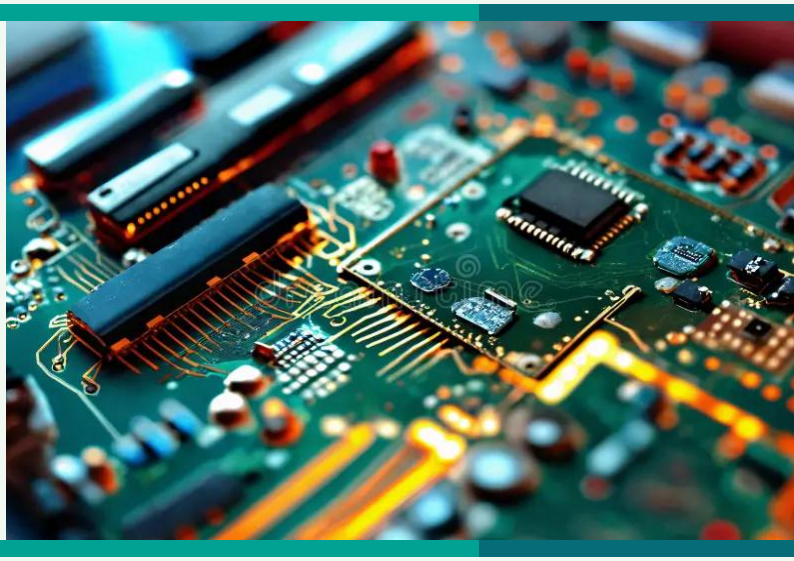
Current measurements for wide-band performance characteristics120 Hz to 60 MHz with excellent low-frequency sensitivity of 2mA/mV and 10 mA/mV switchable options.

**Academic/Govt. Institutions:** INR.500/hr
**Industry:** INR.750/hr

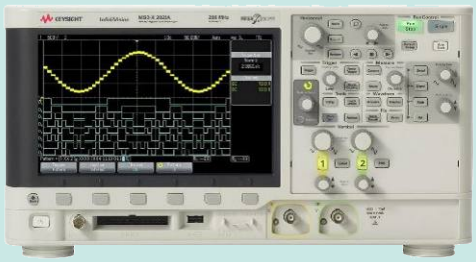
**All charges mentioned above are excluding GST | Charges may be revised from time to time as per Institute norms**

# ELECTRONICS DEVICES AND CIRCUITS LABORATORY





## Digital Storage Oscilloscope



DSO is an instrument used to display and analyze electronic signals.It draws waveforms or a graph of an instantaneous signal voltage against time.

**Charges:**
**Academic/Govt. Institutions:** INR. 1000/hr
**Industry:** INR. 2000/hr

## Function Generator

A function generator is a piece of electronic test instrument used to generate and deliver standard waveforms, typically sine and square waves, to a device under test.

**Charges:**
**Academic/Govt. Institutions:** INR. 1000/hr
**Industry:** INR. 2000/hr

## DC Power Supply

A DC power supply provides direct current (DC) voltage to power and test a device under test such as a circuit board or electronic product.

**Charges:**
**Academic/Govt. Institutions:** INR. 750/hr
**Industry:** INR. 1500/hr

**All charges mentioned above are excluding GST | Charges may be revised from time to time as per Institute norms**

For enquiries: hod_ele_cs@iitram.ac.in | dean_research@iitram.ac.in|Phone: +91-79-67775- 442

# INSTITUTE OF INFRASTRUCTURE, TECHNOLOGY, RESEARCH AND MANAGEMENT

**An Autonomous University established by Government of Gujarat**

# *Department of Humanities and Social Sciences*

## *Laboratory facilities available for External Institutions/Organizations*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**For enquiries: hod_hss@iitram.ac.in | dean_research@iitram.ac.in|Phone: +91-79-67775-458**



**2024**

## About:

The Department of Humanities and Social Sciences (HSS) at IITRAM houses the disciplines of Economics, English Literature, Psychology and Sociology. At present, the Department has five faculty members who teach a diverse range of courses at both the graduate and postgraduate levels. In addition to the compulsory undergraduate courses, HSS also offers Department Electives and Open Electives during the 6th and 7th semesters of B.Tech. program. Some of the Department's most sought-after courses include Indigenous Short Stories from India, Bhagwat Gita for Life, Mysticism in Bhakti Poetry, Engineering Ethics, and Infrastructure Planning and Management. The Department is also offering a Minors program in Management for students from all branches of engineering.

The Department offers doctoral program in all four disciplines. The Ph.D. Program of the Department has been running since 2017. At present, there are 13 research scholars working towards their Ph.D. degrees and 4 students have already been awarded their degrees.

## ICT-Enabled Skills Lab:


ITRAM has envisaged the concept of 'Skills Lab'. For efficacy of teaching-learning of soft skills, we have adopted a futuristic Skills Lab that categorically focuses on imparting skills to the learners through activity based learning and advanced technology. This ICT-enabled Skills Lab is an innovative skills development concept. It comprises of training modules on life and soft skills such as Communication Skills in English, Leadership, Team Work, Goal Setting, Adaptability, Personality Development etc. It serves to provide hands-on training in an interactive manner. With role plays, discussions and activities, learning becomes learner-centric in Skills Lab.

As the name suggests, the Skills Lab is completely ICT-enabled fully powered by a set of next generation tech tools. Modules are transacted using the high-end equipment and technology-aided processes. Learners can keep track of their learning and progress can be monitored with the help of the tech tools used. In all, ICT-enabled Skills Lab caters to the skill development needs of the youth for enhancing their soft skills and rendering them readily acceptable in the industry and other organizations.

# ICT-ENABLED SKILLS LABORATORY


**This lab is instrumental in enhancing the following skills:**

- Communicative English
- Leadership Skills
- Team Work
- Interview Skills
- Group Discussion Skills
- Other Soft Skills

**Certified Courses offered:**

1. Communication Skills for Placements
2. Conversational English
3. Interview Skills Enhancement
4. Grammar for High School Teaching

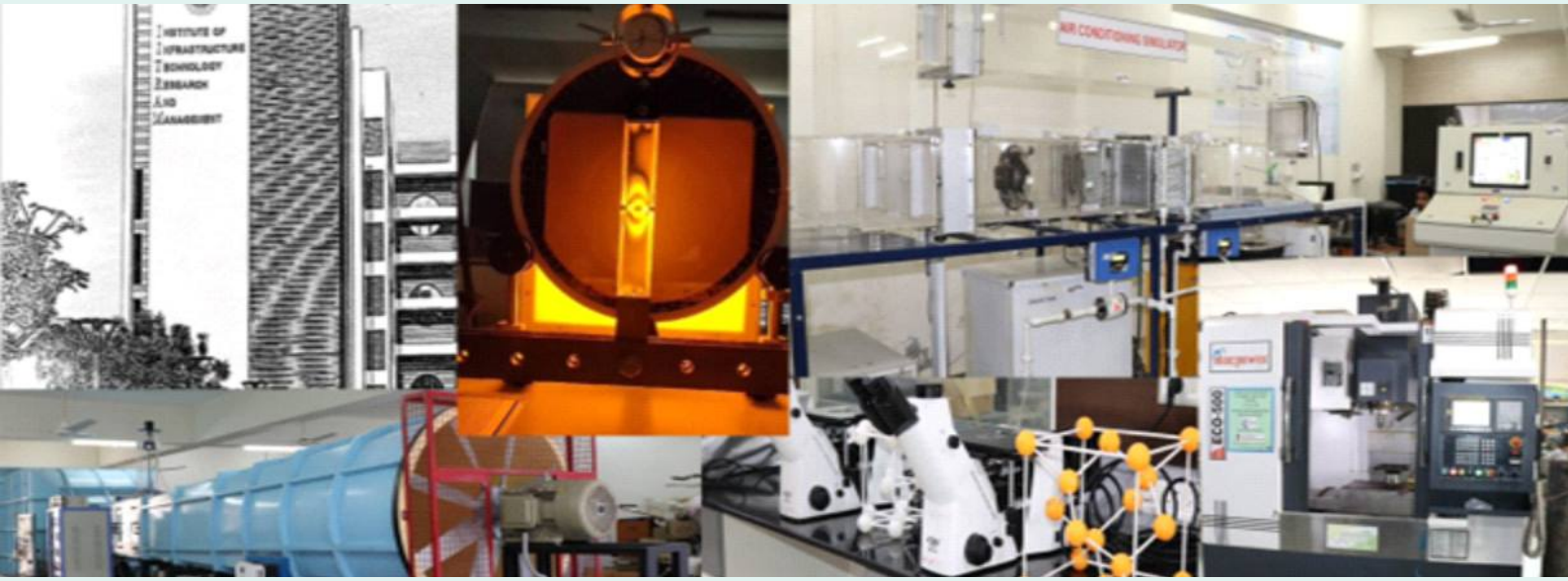
| Lecture + Practice | No of Days | Weeks | Batch Size | Charges per person |
|---|---|---|---|---|
| 3 hours/day | 5 | 4 | 10 | INR. 2500/-* |

* Charges excluding food and accommodation

**All charges mentioned above are excluding GST | Charges may be revised from time to time as per Institute norms**

# INSTITUTE OF INFRASTRUCTURE, TECHNOLOGY, RESEARCH AND MANAGEMENT

**An Autonomous University established by Government of Gujarat**



# *Department of Mechanical and Aerospace Engineering*

## *Laboratory facilities available for External Institutions/Organizations*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**For enquiries: hod_mech_aero@iitram.ac.in | dean_research@iitram.ac.in|Phone: +91-79-67775-469**



***2024***

## About:

Mechanical engineers drive infrastructure development across critical sectors, including power generation, manufacturing, and industrial refrigeration. With India's rapid economic expansion and the rising societal demand for energy and manufactured goods, there is an increasing need for mechanical engineering graduates proficient in advanced technologies and contemporary practices. To address this demand the Department of Mechanical Engineering at IITRAM offers a comprehensive B.Tech. to address this demand. program in Mechanical Engineering and a specialized postgraduate pathway leading to M. Tech. degree in Mechanical Engineering (Specialization in Industrial Infrastructure) and Ph.D. in various cutting-edge research areas of Mechanical and Aerospace Engineering. These programs are complemented by additional academic enrichment options, including Honors in Mechanical Engineering, Minors in Drone Technology, Micro-specializations in cutting-edge fields such as Nanotechnology, Robotics and Human Interaction, Industrial Safety etc. The curriculum builds upon a strong foundation in traditional Mechanical Engineering while incorporating modern advancements tailored to industrial infrastructure. With an emphasis on infrastructure development and management, aligned with the institute's strategic goals, the program equips students to pursue diverse career paths.

## Laboratories:

- Advanced Refrigeration and Air Conditioning Laboratory
- Central Workshop Facility
- Aerodynamics And Propulsion Laboratory
- Internal Combustion Engine Laboratory
- Heat And Mass Transfer Laboratory
- State Of Arts Facilities Robotics and Automation Laboratory
- Theory Of Machines And Mechanisms Laboratory
- Fluid Machinery Laboratory
- Advanced Manufacturing Processes Laboratory

# ADVANCED REFRIGERATION AND AIR CONDITIONING LABORATORY


**Equipments:**

- Computerized Air Conditioning Setup. Computerized Cold Storage Setup.
- Cold room for precooling storage and ripping and ducting facility.
- Vapour Compression Test Rig.
- Heat Pump Test Rig.
- Ice Plant Test Rig.
- Tool Kit and Training Setup.

**Features:**

- Access to Advanced Equipment for Refrigeration and Air Conditioning.
- Comprehensive Testing and Research Capabilities.
- Guided by Experienced Faculties
- We offer services for Cold Chain Applications.
- Open for Industry and Educational Institutions.

**Charges:**

- **Academic Institution & Government Organization:** INR. 5000/- per day
- **Industry:**

  INR. 8000/- per day

**All charges mentioned above are excluding GST | Charges may be revised from time to time as per Institute norms**
**Charges may vary based on the nature of work**

For enquiries: hod_mech_aero@iitram.ac.in | dean_research@iitram.ac.in|Phone: +91-79-67775-469

# CENTRAL WORKSHOP







**CNC Turning Machine**
Make:VX200
Max RPM:6000 Range:
X Axis 250 mm Z Axis 500mm
**For Academic Institution & Government Organization:**
INR. 750/hr
**For Industry:** INR. 1000/hr
(Charges for Material & Tools extra)


**Vertical Milling Machine**
Make:V544
MaX RPM:8000 Range:
Z Axis 450 mm X Axis 400,
Y-Axis 300mm
**For Academic Institution & Government Organization:** INR.900/hr
**For Industry:** INR. 1200/hr
(Charges for Material & Tools extra)

**Facilities:**

The Workshop comprises of the following fully equipped shops.

- CNC Turning Machine
- Vertical Milling machine
- Machine Shop
- Welding shop
- Carpentry Shop
- Fitting Shop
- Wiring Shop
- Plumbing Shop
- Sheet Metal Shop

**Features:**

- Comprehensive Research Capabilities
- Guided by Experienced Faculties for Technical Support
- To support the Industry, Define Problems, Training, and Academics
- Enables students to experience the challenges and demands of a real industrial work environment
- Strengthens students' confidence by engaging them in various manufacturing processes through hands-on learning
- Open for Industry and Educational Uses

**All charges mentioned above are excluding GST | Charges may be revised from time to time as per Institute norms**
**Charges may vary based on the nature of work**

# AERODYNAMICS AND PROPULSION LABORATORY

## (Developed under CoE: Aerospace & Defence, IITRAM)
## Funded by Government of Gujarat

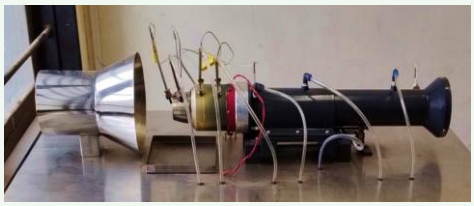
### Low-Speed Subsonic Wind Tunnel

It is tailored for scenarios such as takeoff, landing, and other low-speed flight regimes. This tunnel typically features a carefully controlled environment with adjustable wind speeds, to investigate the aerodynamic behavior of models, airfoils, and vehicles at reduced velocities.

### Aerodynamics Trainer

provide the practical insights into the principles and applications of aerodynamics. It consists of scaled-down models, representing components like wings, airfoils, or complete aircraft. Understanding the practical application, preparing for challenges in aircraft design, performance optimization, and related aerospace engineering tasks.

### Axial Flow Gas Turbine Test Rig



The axial-flow gas turbine test rig is a specialized facility designed for the experimental study and analysis of axial-flow gas turbine engines. The rig is crucial in the field of aerospace engineering, providing a controlled environment for researchers and engineers to assess the performance, efficiency, and characteristics of axial-flow turbines. Detailed investigations into the aerodynamics, combustion processes, and overall behavior of the turbine.

**Features:**

- Comprehensive Testing and Research Capabilities available
- Guided by Experienced Faculties for Technical Suppor
- To support the Industry, Define Problems, training, and academics
- Enables students to experience the challenges and demands of a real industrial work environment
- Open for Industry and Educational Uses

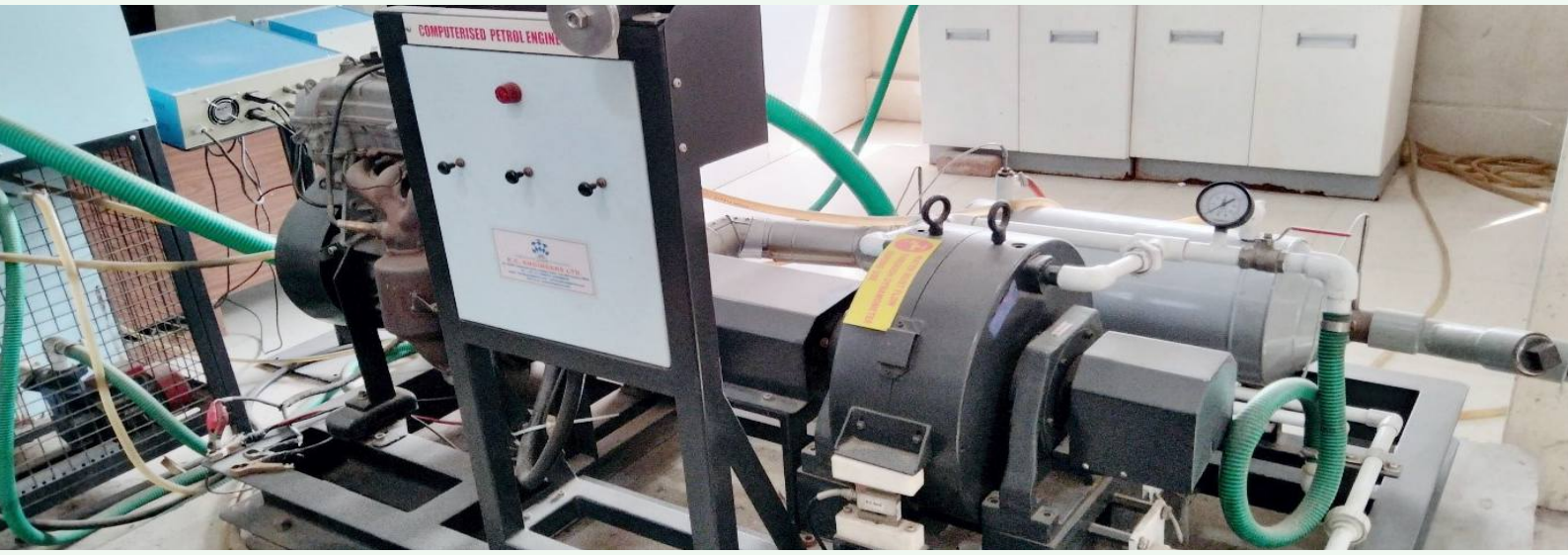
**Charges:**

- **Academic Institution & Government Organization**: INR. 6000/- per day
- **Industry:** INR. 10,000/- per day

**All charges mentioned above are excluding GST | Charges may be revised from time to time as per Institute norms**
**Charges may vary based on the nature of work**

For enquiries: hod_mech_aero@iitram.ac.in | dean_research@iitram.ac.in|Phone: +91-79-67775-469

# INTERNAL COMBUSTION ENGINE LABORATORY




**Computerized Testing Facility Petrol Engine**

**Computerized Testing Facility Diesel Engine**

**Charges:**

**Academic Institution & Government Organization**:

INR. 7500/- per day+ consumable charges

**Industry:**

INR. 2500/hr + consumable charges

**Features:**

- The lab conducts experimental performance evaluations on a wide range of internal combustion (IC) engines using various fuels, including biofuels.
- It also supports the analysis of exhaust smoke, emissions, and diagnostic evaluations of IC engines, along with component testing for IC engine-based vehicles.
- Equipped with computer-assisted tools and dynamometers, the lab meets the needs of undergraduate, postgraduate, and research students at IITRAM.
- Its state-of-the-art facilities make it capable of undertaking consultancy projects related to the performance testing of IC engines and vehicles powered by conventional fuels and biofuels.
- Available equipment include: AVL smoke meter, Five gas analyser, Computerized multi Cylinder 4 Stroke petrol engine Test Rig; Computerized twin Cylinder 4 Stroke Water cooled Diesel engine Test Rig with multi fuel (Diesel + CNG) facility and exhaust gas recirculation.
- Comprehensive Testing and Research Capabilities available.
- Guided by Experienced Faculties for Technical Support.
- To support the Industry, Define Problems, Training, and Academics.
- Enables students to experience the challenges and demands of a real industrial work environment.
- Open for Industry and Educational Uses.

**All charges mentioned above are excluding GST | Charges may be revised from time to time as per Institute norms**
**Charges may vary based on the nature of work**

# HEAT AND MASS TRANSFER LABORATORY


**Pulsating heat pipe**

**Pool boiling set up**

**Heat Conduction apparatus for Bi-metallic rods**

**Equipments:**

- Free and forced convection apparatus
- Radiation heat transfer apparatus
- Pool boiling set up
- Heat exchanger apparatus
- Pulsating heat pipe
- Heat Conduction apparatus for Bi-metallic rods

**Features**

- The Heat Transfer Laboratory is equipped with several experimental setups focused on fundamental heat transfer concepts and their practical applications.
- These setups are integrated into the curriculum for third-year undergraduate students enrolled in the heat transfer course.
- it also meets the needs of postgraduate and research students at IITRAM.
- Comprehensive Testing and Research Capabilities available.
- Guided by Experienced Faculties for Technical Support
- To support the Industry, Define Problems, training, and academics.
- Enables students to experience the challenges and demands of a real industrial work environment.
- Open for Industry and Educational Uses

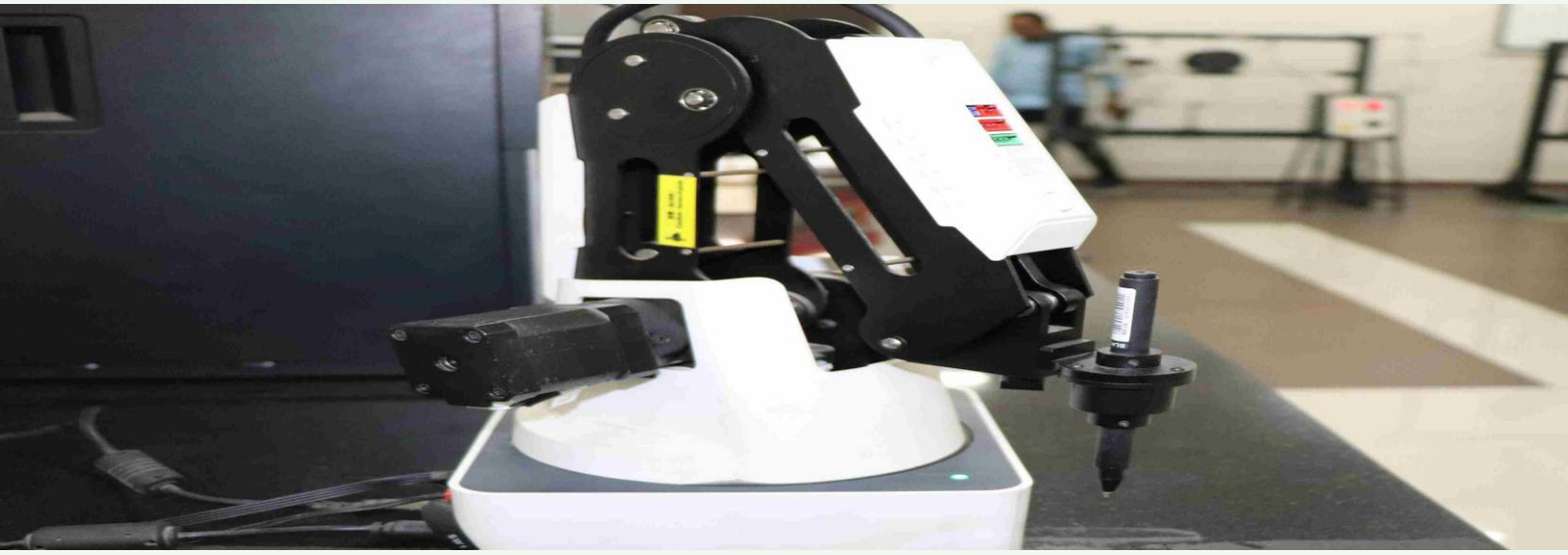
**Charges:**

**Academic Institution & Government Organization**: INR. 500/-per hour +consumable charges

**Industry:** INR. 750/-per hour + consumable charges

**All charges mentioned above are excluding GST | Charges may be revised from time to time as per Institute norms**
**Charges may vary based on the nature of work**

# ROBOTICS AND AUTOMATION LAB



Dobot M1 Scara Robot

Dobot Magician Robot

**Major Equipment:**

1. Dobot Magician
2. Dobot M1
3. SCARA-Based Configuration

**Features:**

1. Hands-On Access to Advanced Robotics
2. Multi functional Capabilities
3. Precise and High-Speed Operations
4. Experienced Faculty Guidance
5. Open for Industry and Educational Uses

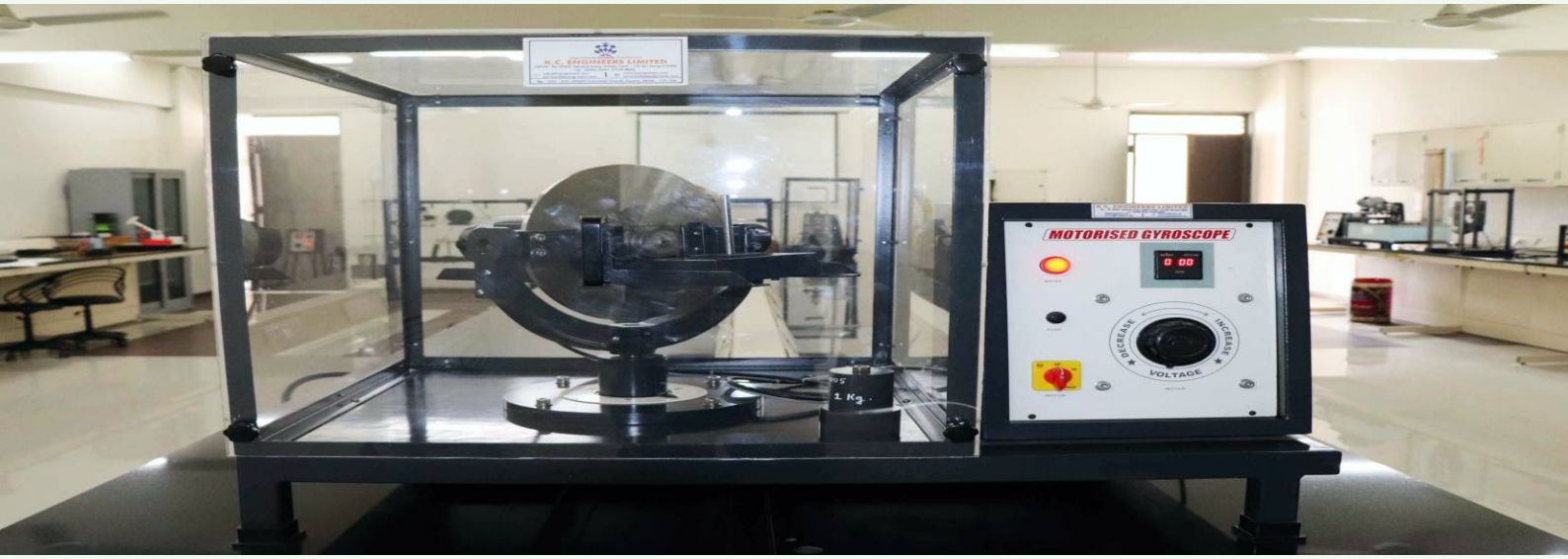
**Charges:**

**Academic Institution & Government Organization**: INR. 6000 per day

**Industry:** INR. 10,000 per day

**All charges mentioned above are excluding GST | Charges may be revised from time to time as per Institute norms**
**Charges may vary based on the nature of work**

# THEORY OF MACHINES AND MECHANISMS LABORATORY




**Universal Vibration apparatus**

**Journal bearing test Rig**

**Rotating mass balancing Machine**

**Equipment:**

1. Universal Vibration apparatus
2. Journal bearing test Rig
3. Rotating mass balancing Machine
4. Cam Analysis Apparatus
5. Epicyclic Gear Train Apparatus (With Digital Rpm Indicator)
6. Digital Stroboscope
7. Digital Tachometer:
8. Universal Vibration Apparatus
9. Universal Vibration Apparatus (Free and Forced Vibration System)
10. Whirling of Shaft Demonstrator (With Digital Rpm Indicator)
11. Static & Dynamic Balancing Demonstrator
12. Motorised Gyroscope (With Digital Rpm Indicator)
13. Journal Bearing Apparatus (With Digital Rpm Indicator)
14. Michell Tilting Pad Bearing Apparatus

**Features:**

1. Hands-On Access to Advanced Machinery:
2. Comprehensive Testing Capabilities:
3. Precise Measurement Tools:
4. Experienced Faculty Guidance:
5. Open for Industry and Educational Use

**Charges:**

**Academic Institution & Government Organization:**

INR. 6000 per day

**Industry:**

INR. 10,000 per day

**All charges mentioned above are excluding GST | Charges may be revised from time to time as per Institute norms**
**Charges may vary based on the nature of work**

# FLUID MACHINERY LABORATORY

**Pelton Wheel Turbine Test Rig**

**Specifications:**
Output power: 1 kW
Max discharge: within 1000-1500 LPM
Supply head: 5-8 M
Normal speed: 1500-2000 RPM

**Kaplan Turbine Test Rig**

**Specifications:**
Output power: 1 kW
Max discharge: within 1000-1500 LPM
Supply head: 5-8 M
Normal speed: 1500-2000 RPM

**Francis Turbine Test Rig**

**Specifications:**
Output Power: 1 kW
Discharge: 1000 LPM (approx.)

**Equipment:**

1. Pelton Wheel Turbine Test Rig
2. Kaplan Turbine Test Rig
3. Francis Turbine Test Rig
4. Hydraulic Ram Test Rig
5. Centrifugal Pump Test Rig
6. Reciprocating Pump Test Rig
7. Gear Pump Test Rig
8. Submersible Pump Test Rig
9. Lobe Pump Test Rig
10. Hydraulic Press Machine (power operated)
11. Pneumatic Trainer
12. Hydraulic Trainer

**Features:**

- Comprehensive Training/Experimental Capabilities
- Guided by Experienced Faculties for Technical Support
- Open for Industry and Educational Uses

**Charges:**

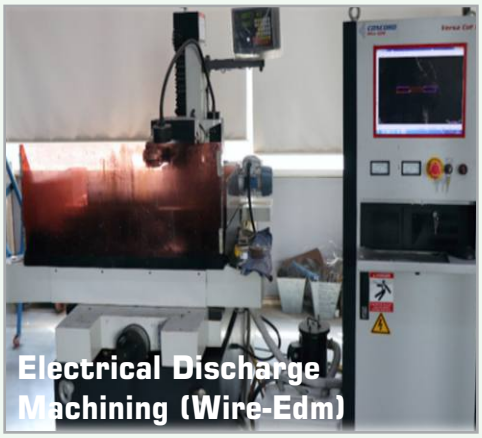
**Academic Institution & Government Organization:**

INR. 5000 (per session of 3 hours)

**All charges mentioned above are excluding GST | Charges may be revised from time to time as per Institute norms**
**Charges may vary based on the nature of work**

# ADVANCED MANUFACTURING PROCESSES LABORATORY

Cryogenic Machining Facility set-up


Electrical Discharge Machining (Wire-Edm)

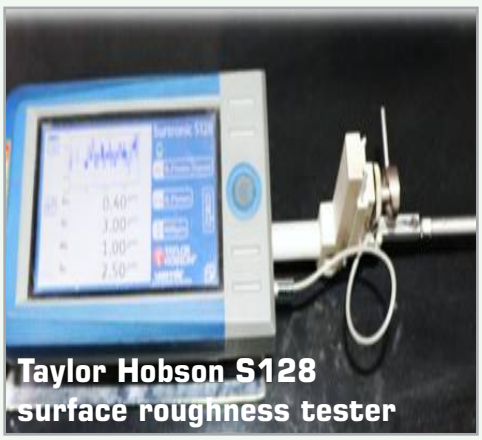
Fluke 435-II Energy Analyser Power Quality and Energy Analyzer


Mitutoyo's Toolmakers Microscopes

Ultrasonic Assisted Turning Facility


Electrostatic minimum quantity lubrication set up


4-Component Dynamo-meter


Taylor Hobson S128 surface roughness tester

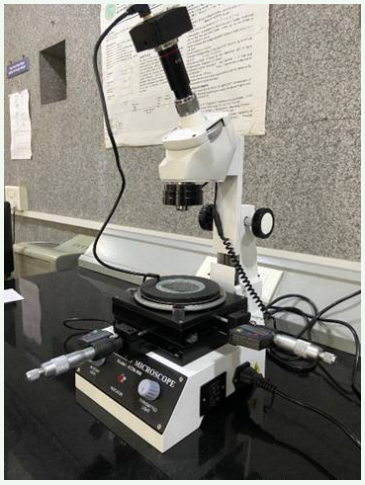

Electrostatic lubrication set up


Minimum Quantity Lubrication set up

**All charges mentioned above are excluding GST | Charges may be revised from time to time as per Institute norms**
**Charges may vary based on the nature of work**

# ADVANCED MANUFACTURING PROCESSES LABORATORY

## (Developed under CoE: Aerospace & Defence, IITRAM)
## Funded by Government of Gujarat



**Vision-based Digital Tool Maker Microscope**

**Features:**

- Too wear measurement with accuracy of 1 micron.
- Equipped with 5 MP CMOS camera for clear and real time image capturing.
- CMOS Color Camera and Calibration Slide 10/100 mm

**Charges:**

**Academic Institution & Government Organization:** INR. 1500/- per sample

**Industry:** INR. 2000/- per sample

**Equipments:**

- Cryogenic Machining Facility set-up
- Wire Cut: Electrical discharge machining
- Fluke 435-II Energy Analyzer Power Quality & Energy Analyzer
- 4-Component dynamo-meter.
- Taylor Hobson S128 surface roughness tester:
- Mitutoyo's Toolmakers Microscopes.
- Ultrasonic Assisted Turning Facility
- EMQL Assisted Machining Facility
- EL Assisted Machining Facility
- MQL Assisted Machining Facility

**Features:**

- Access to Advanced Equipment for Advanced Manufacturing processes.
- Comprehensive Research Capabilities.
- Guided by Experienced Faculties.
- Open for Industry and Educational Institutions.

**Charges**

| Sr. No. | Name of Test/Instrument | Unit (Per Sample/ Hour) | Charges for Academic institutions & Government organizations (INR) | Charges for Industry (INR) |
|---|---|---|---|---|
| 1 | Vertical Machining Centre: VMC | Per hour | 900 | 1500 |
| 2 | CNC Electro Discharge Machining -Wire Cut | Labour+machine charges | 16 per 100 mm +350/hour | 25 per 100 mm +500/hour |
| 3 | Surface Roughness Tester | Per hour | 2850 | 3500 |
| 4 | Tool Maker Micro -Scope | Per hour | 2800 | 3500 |
| 5 | Fluke 435 -II Power Quality and Energy Analyser | Per hour | 2500 | 3500 |
| 6 | EMQL (Electrostatic spraying and minimum quantity lubrication) Assisted Machining Facility | Per hour | 2500 | 3500 |
| 7 | EL(Electrostatic) Assisted Machining Facility | Per hour | 2500 | 2950 |
| 8 | MQL Assisted Machining Facility | Per hour | 1000 | 1100 |
| 9 | Cryogenic Machining Set -up (LN2 Cylinder, LCO2 Cylinder) | Per hour | 2500 | 3500 |
| 10 | 4-Component Dynamometer | Per hour | 3100 | 4000 |

**All charges mentioned above are excluding GST | Charges may be revised from time to time as per Institute norms**
**Charges may vary based on the nature of work**

# INSTITUTE OF INFRASTRUCTURE, TECHNOLOGY, RESEARCH AND MANAGEMENT

***An Autonomous University established by Government of Gujarat***

# *Centres of Excellence (CoEs) @ IITRAM*

## *Laboratory facilities available for External Institutions/Organizations*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**For enquiries: dean_research@iitram.ac.in|Phone: +91-79-67775- 430**



***2024***

## About:

IITRAM presently has five centres of excellence (CoEs) with state-of-the-art laboratories and facilities in the following areas that are established with financial support from Government of Gujarat and support from industries.

1) **Centre of Excellence in Artificial Intelligence and Machine Learning (CoE: AIML)**
2) **Centre of Excellence in Drone Technology (CoE: DT)**
3) **Centre of Excellence in Aerospace and Defence (CoE: A&D)**
4) **Centre of Excellence for Advanced Defence Technology (CoE: CADT)**
5) **Siemens' Centre of Excellence in the field of Industrial Machinery, Industrial Automation, and Electrical Switchgear.**

The aim of the CoEs is to develop an advanced, self-sustaining, dynamic and industry-relevant learning platform. This will bridge the gap in technological skills that currently exists between industries and academia. The CoEs are actively pursuing several activities for knowledge sharing and skill development such as elective courses, minors' program, short term training programs, expert talks, workshops, demonstration sessions, internships, student projects, etc. The CoEs conducts extensive research on advance topics and current/futuristic problems in their respective domains. The CoEs aims to serve as nodal/coordinating centres for technical workforce such as scientists, engineers and technicians with an objective to contribute towards smart and sustainable infrastructure development of Gujarat state and our country.

# CENTRE OF EXCELLENCE: ADVANCE DEFENCE TECHNOLOGY

## Sensors And Signal Processing Laboratory

**Q Car SDRS package (Self-Driving Research Studio)**

**Function Generator**


**Data Acquisition System**

**Spectrum Analyzer**

**Digital Storage Oscilloscope**

| Sr. No. | Name of test / Instrument | Unit | Charges for Academic institutions & Government organizations (INR) | Charges for Industry (INR) |
|---|---|---|---|---|
| 1 | Q Car SDRS package (Self-Driving Research Studio) | Per 3 hours Session | 6000 | 9000 |
| 2 | Data Acquisition System | Per 3 hours Session | 2000 | 4000 |
| 3 | Digital Storage Oscilloscope | Per 3 hours Session | 2000 | 4000 |
| 4 | Function Generator | Per 3 hours Session | 2000 | 4000 |
| 5 | Spectrum Analyzer | Per 3 hours Session | 4000 | 6000 |

**All charges mentioned above are excluding GST | Charges may be revised from time to time as per Institute norms**

# CENTRE OF EXCELLENCE: ADVANCED DEFENCE TECHNOLOGY

## ADVANCED MATERIALS PROCESSING AND CHARACTERIZATION LABORATORY

**Planetary Ball Mill**

- **Key Features:**
- Size reduction, mixing, homogenization, mechanical alloying.
- Feed material: Soft, hard, brittle, fibrous, wet or dry
- Material feed size: less than 5 mm
- Final fineness: less than 1$\mu$m, for colloidal grinding less than 0.1 $\mu$m
- Maximum rotational speed 1300 rpm.
- Grinding jar made of tungsten carbide and zirconium oxide of size 250 ml.

**Make/model:** LABINDIA Analytical Instruments Pvt. Ltd/BM1100

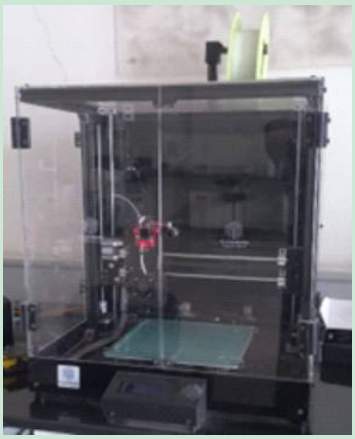
| Sr. No. | Name of the equipment | Charges for Academic institutions & Government organizations (INR) | Charges for Industry (INR) | Remarks |
|---|---|---|---|---|
| 1 | Planetary Ball Mill | 2000 per sample for 30 minutes of grinding | 3000 per sample for 30 minutes of grinding | INR. 1000/- for every additional 30 minutes grinding for each sample (for Academic institutions & Government organizations and industry)<br><br>Sample volume: minimum 25 ml and maximum 100 ml. |

**All charges mentioned above are excluding GST | Charges may be revised from time to time as per Institute norms**

# CENTRE OF EXCELLENCE: DRONE TECHNOLOGY

## Drone Technology Laboratory

### 3D printer PLA/ABS/PETG



- Compatible with PLA, ABS, and PETG for versatile printing.
- Supports large, detailed designs with minimal warping.
- Automatic bed levelling and temperature control for reliable prints.
- Maintains high-speed printing with excellent accuracy.
- Economical pricing for academic institutions to promote research and innovation.

**Testing Charges:**

- **Academic Institutions/ Govt. Organizations:** INR. 600 per 100 gram
- **For Industry:** INR. 1200 per 100 gram

### Different Types of Multirotor

- Supports various configurations, including quadcopters, hex copters, and octocopters for diverse applications.
- Equipped with advanced stabilization systems for improved flight control.
- Facilitates integration with multiple payload options, including cameras and sensors.
- Affordable access for academic institutions to enhance UAV research and development.

**Service Charges:**

- **For Academic Institutions/Govt.Organizations:** INR. 3,000 for 2 hours (For flying)

### Internships for the outside students


- Provides practical experience in a professional environment to enhance learning.
- Offers mentorship from experienced professionals in the field.
- Encourages skill development through hands-on projects and tasks.
- Facilitates networking opportunities with industry professionals.

**Internship charges:**

- **Academic Institutions/For Govt. Organizations:** INR. 2500 per month
- Affordable charges for outside students to gain valuable experience.

**All charges mentioned above are excluding GST | Charges may be revised from time to time as per Institute norms**

# CENTRE OF EXCELLENCE: DRONE TECHNOLOGY

## Drone Technology Laboratory

### Real time flight simulator

- Supports a variety of flight models for comprehensive training experiences.
- Provides realistic flight dynamics and controls for enhanced immersion.
- Allows for real-time performance analysis and feedback for skill improvement.
- Affordable access for academic institutions to enhance practical learning experiences.

**Testing Charges:**

- **Academic Institutions/Govt. Organizations:** INR. 1,000 per 3 hours session
- **For Industry:** Rs. 2,000 per 3 Hours session

### Lab Facility Utilization

- Access to advanced equipment for enhanced research productivity.
- Encourages collaboration among students, faculty, and industry.
- Flexible scheduling for diverse research needs.
- Hands-on learning through practical applications.
- Regular maintenance for equipment reliability.
- Affordable access to promote innovation and collaboration.

**Charges:**

- **Academic Institutions/Govt. Organizations:** INR. 1000 per person per day
- **For Industry:** INR. 2,000 per person per day

### Training facility for faculty/ industry persons

- Offers specialized training programs to enhance skills and knowledge.
- Facilitates access to advanced equipment and resources for practical learning.
- Provides expert-led workshops and seminars on the latest industry trends.
- Encourages collaboration and networking among professionals.
- Affordable training opportunities to promote continuous professional development.

**Training Charges:**

- **Faculty & Government Personnel:** INR. 2000 Per 5 hours session.
- **Industry Personnel:** INR. 3000 per 5 hours session.

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