Office of
Research, Innovation
& Commercialization

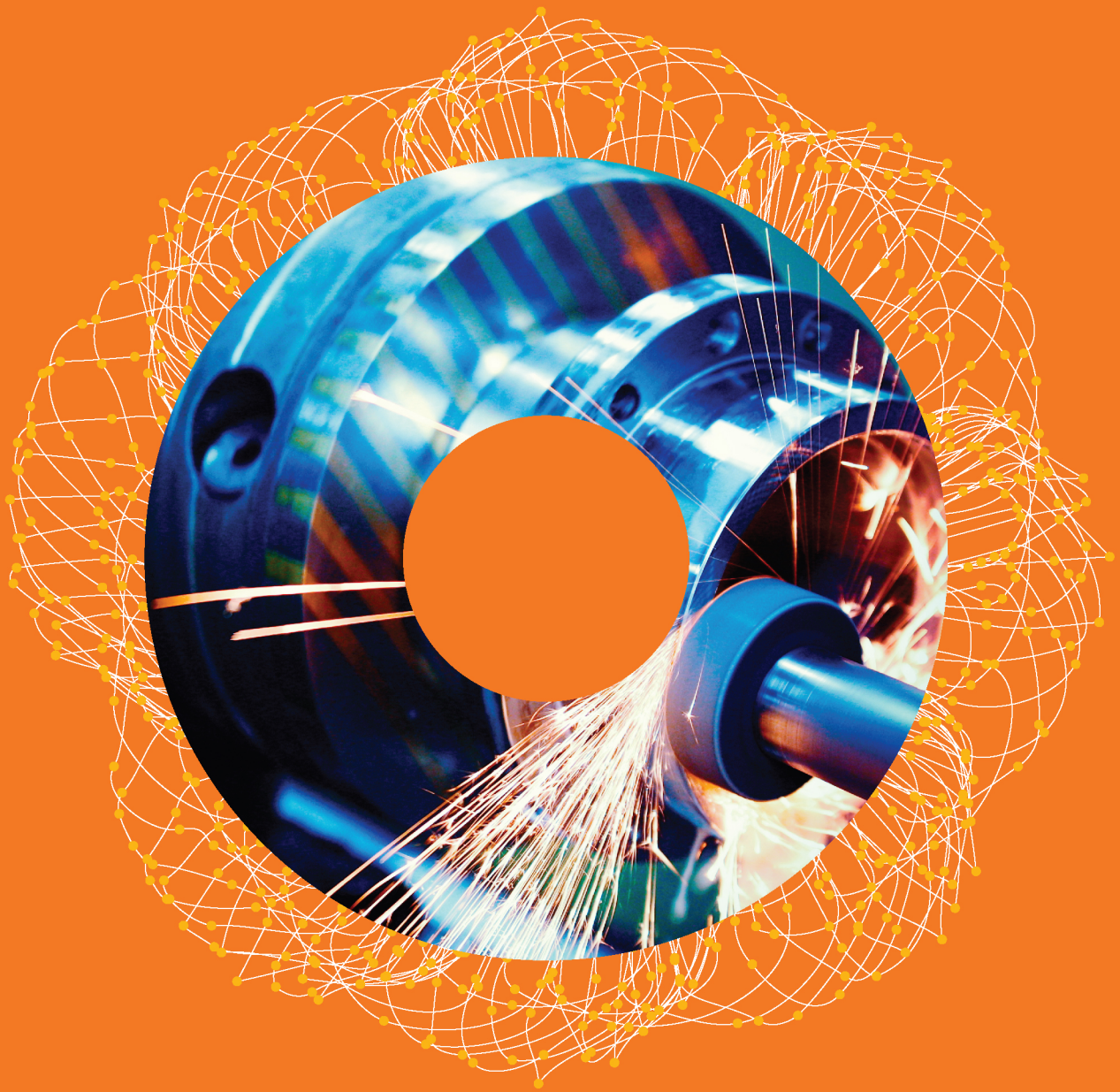
Commercialization Handbook

Faculty of Engineering

Prepared by

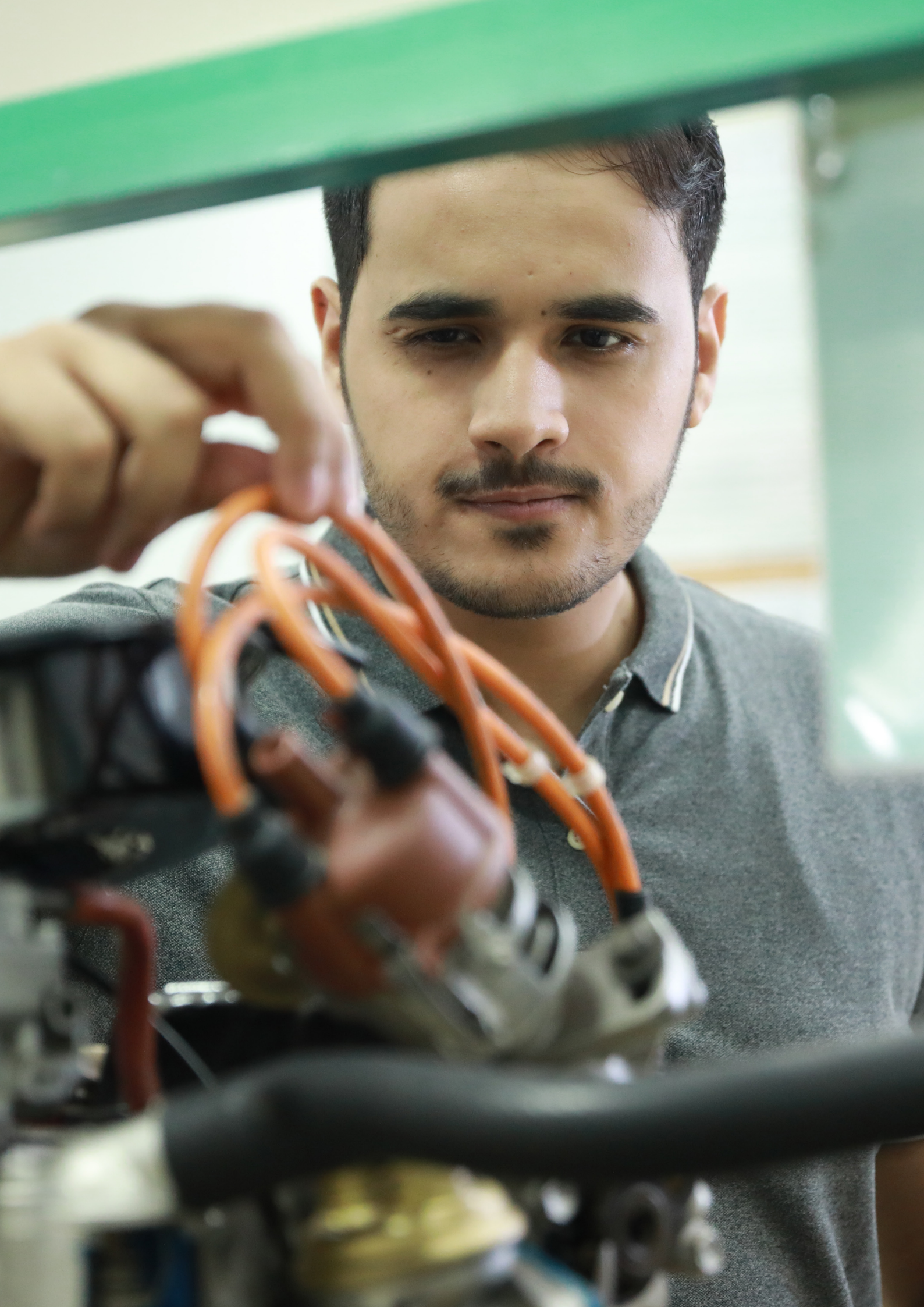
Office of Research, Innovation and Commercialization

Volume 01 | Issue 01



ORIC UCP

University of Central Punjab



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About ORIC

The Office of Research, Innovation, and Commercialization (ORIC) at the University of Central Punjab (UCP) serves as the driving force behind the university's research and innovation ecosystem. Guided by a clear vision of becoming a catalyst for transformative research and innovation, ORIC positions UCP as a hub where groundbreaking ideas not only advance academic knowledge but also shape industries and empower entrepreneurs with real-world impact.

In alignment with the Higher Education Commission's mandate, ORIC provides strategic, organizational, and technical support for all research activities at UCP. It ensures that faculty and students are equipped to pursue high-quality research, generate intellectual property, and translate discoveries into solutions that benefit both society and the economy. By fostering strategic partnerships and supporting sustainable commercialization, ORIC reinforces UCP's mission of building a future-ready ecosystem where ideas evolve into enterprises.

Anchored in the UCP Five-Year Strategic Plan (2025–2029), ORIC's efforts are centered on six key areas: Research Excellence, Commercialization and Intellectual Property, Industry–Academia Linkages, Entrepreneurship and Startups, Infrastructure and Core Facilities, and Internationalization. Together, these pillars provide a structured pathway for turning knowledge into impact, reinforcing UCP's role as a leader in research-driven societal development.

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1. Faculty of Engineering (FOE)

The Faculty of Engineering (FOE) at the University of Central Punjab was established in 2002 and has built a strong reputation for delivering quality education at both undergraduate and graduate levels. With a focus on research led teaching, the faculty integrates the latest advancements in innovative engineering to prepare graduates with practical experience and in demand skills suited to the evolving needs of the engineering industry. FOE is proud of its world class faculty, which includes 20 PhD scholars and more than 50 master's degree holders who have pursued their postgraduate education from renowned institutions across the globe.

FOE has been recognized by the Pakistan Engineering Council (PEC) and Higher Education Commission (HEC) for its progressive teaching methods that emphasize problem solving and activity-based learning. Its undergraduate programmes hold Washington Accord accreditation, giving graduates the opportunity to join the global engineering workforce with expertise in contemporary technologies. The faculty is committed to delivering engaging and innovative education that inspires curiosity, responsible leadership, and a spirit of citizenship among its students.

Through its Outcome Based Education System (OBE), FOE produces engineers who combine innovation with sustainability, contributing to economic growth, health, and overall, well being. The faculty continues to invest strategically in people, research, and teaching to achieve its mission of shaping engineers who can lead in both national and international contexts. With its blend of academic excellence, practical exposure, and global recognition, FOE stands as a hub of opportunity and innovation for aspiring engineers.

1.1. Fused Deposition Modeling (FDM) 3D Printer

The Milkoscan is a high-precision analytical instrument used to measure key compositional parameters of milk and dairy products, including fat, protein, lactose, solids-not-fat (SNF), and water content. It provides rapid, reliable analysis and is widely used for quality control in dairy processing.

Company/Make: Rawlix

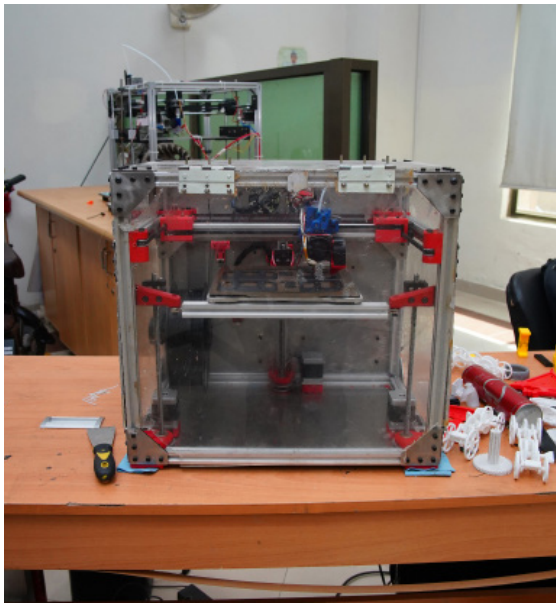
Model: Not specified

Key Specifications:
- Build Volume: 256 × 256 × 256 mm
- Supported Filament (Ideal): PLA, PETG, TPU, PVA, PET
- Supported Filament (Capable with enclosure): PA, PC, ABS, ASA

Applications:
- 3D printing for rapid prototyping using ABS and PLA
- Production of functional parts and components
- Fabrication of artificial heart pumps, jewelry collections, and customized products
- Engineering, mechanical design, and research applications

Location:
Faculty: FOE
Department: Mechanical Engineering
Location: ME-L002, Ground Floor, Mechanical Engineering Department
Lab: Thermodynamics Lab

Charges:
Rs. 15 per gram



1.2. Denford Easimill 3 CNC Milling Machine

The Polymerase Chain Reaction (PCR) system is a highly sensitive and versatile molecular biology instrument used for the amplification and detection of nucleic acids. It is widely applied in infectious disease diagnostics, genetic research, and mutation analysis.

Company/Make: Denford Ltd.
Model: Easimill 3

Key Specifications:
- Table Dimensions: 180 mm × 705 mm
- Travel: X-axis 375 mm, Y-axis 220 mm, Z-axis (quill) 70 mm
- Spindle: Bridgeport-style R8 taper

Applications:
- Face milling (to smooth surfaces or reduce thickness)
- Peripheral (contour) milling (shaping profiles, contours, and boundaries)
- Slot milling (making slots for mechanical assembly or alignment)
- Drilling (creating cylindrical holes)

Location:
Faculty: FOE
Department: Mechanical Engineering
Location: ME-L001, Ground Floor, Mechanical Engineering Department
Lab: Machine Shop

Charges:
As per sample

1.3. Bench-top CNC Lathe

Company/Make: Denford Ltd. (UK)
Model: Bench-top CNC Lathe

Key Specifications:
- Swing over bed: ~100 mm
- Distance between centers: ~300 mm
- Spindle bore: ~20 mm
- Spindle speed: Variable, typically up to 3000 RPM (via DC motor and control)
- Toolpost: Manual 4-way or quick-change
- Drive: Stepper motors for X and Z axes

Applications:
- Prototyping and product development
- Machining shafts, bushings, and pins
- Producing threaded parts

Location:
Faculty: FOE
Department: Mechanical Engineering
Location: ME-L001, Ground Floor, Mechanical Engineering Department
Lab: Machine Shop

Charges:
As per sample

1.4. Fatigue Testing Machine

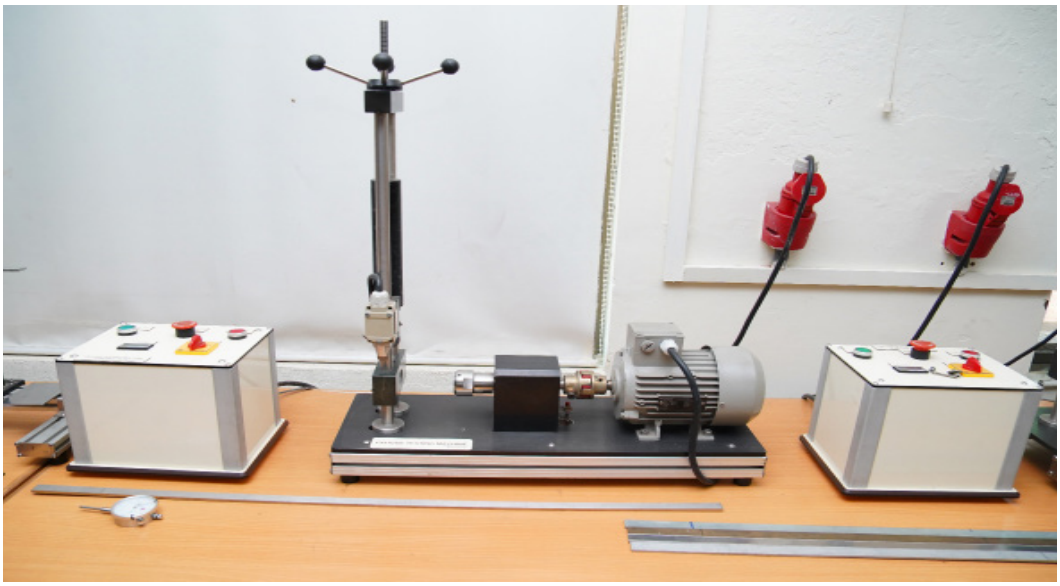
Model: ME-DY-4033

Key Specifications:
- Length of test section: 110 mm
- Diameter of specimen: 8 mm

Applications:
- Used to study the effects of fatigue using a rotating cantilever specimen
- To draw stress amplitude versus cycles of failure curve to check the fatigue limit of a specimen

Location:
Faculty: FOE
Department: Mechanical Engineering
Location: ME-L301, Third Floor, Mechanical Engineering Department
Lab: Mechanics Lab

Charges:
As per sample



1.5. Hardness Testing Machine

Description:
Motorized Brinell, Rockwell, and Vickers Hardness Tester. A multifunctional hardness tester with three testing methods and seven steps of testing force, suitable for a wide range of hardness measurements.

Model: SHR-187.5

Specifications:
- Rockwell Scales: HRA, HRB, HRC
- Rockwell Testing Force: 588.4 N, 980.7 N, 1471 N
- Brinell Scales: HBW 1/30, HBW 2.5/31.25 & 187.5, HBW 5/62.5
- Vickers Scale: HV30, HV100

Applications:
- To test the quality of metallic materials in order to measure their hardness

Location:
Faculty: FOE
Department: Mechanical Engineering
Location: ME-L301, Third Floor, Mechanical Engineering Department
Lab: Mechanics Lab

Charges:
As per sample

1.6. Pendulum Impact Tester

Description:
The Pendulum Impact Tester is used to determine the impact strength of various materials with different notch shapes. It helps in calculating ductile and brittle fractures as well as the toughness of the material. The Charpy test is commonly preferred in practice as a quality control tool and for evaluating susceptibility to brittle fractures.

Model: ME-DY-4059

Specifications:
- Hammer Impact Range: Up to 24 Nm
- Notch Geometries: U-shaped, V-shaped

Applications:
- Determining impact strength of materials
- Calculating ductile and brittle behavior
- Evaluating toughness and quality control

Location:
Faculty: FOE
Department: Mechanical Engineering
Location: ME-L301, Third Floor, Mechanical Engineering Department
Lab: Mechanics Lab

Charges:
As per sample

1.7. RehbarSAT Educational Kit

Description:
The RehbarSAT Educational Kit is an innovative training and learning tool designed and developed by SRC-UCP. It provides hands-on exposure to satellite system design, microcontroller programming, and satellite communications. The kit is suitable for school, college, and university-level students and helps learners understand real-world applications of satellite technology.

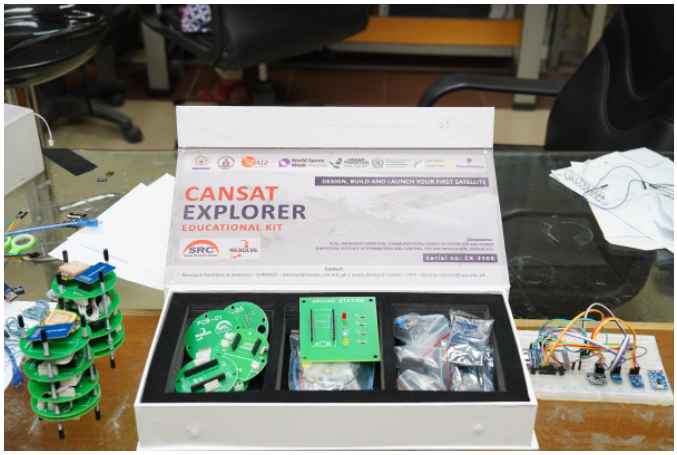
Model: RehbarSAT
Company: SRC-UCP

Specifications and Features:
- Microcontroller programming
- Sensor integration
- Image processing
- Satellite system design
- Satellite communications
- Satellite remote sensing
- Satellite data analysis

Applications:
- Training in satellite design and communication
- Educational tool for STEM development
- Research and project-based learning

Location:
Faculty: FOE
Department: EED
Location: CL-306, Building A, 3rd Floor
Lab: Space Research Center

Charges:
Rs. 25,000/- per unit



1.8. YL – 195 Motor, Electric Traction and Electrical Control Trainer

Description:
The YL-195 Trainer is a complete mobile electrical lab for testing electrical machines including transformers, motors, and generators under various load conditions. It allows performance analysis of machines to evaluate efficiency, regulation, and losses.

Model: YL-2015
Company: Yalong, China

Specifications:
- Transformers: 50/127 V, 4/1.6 A, 50 Hz
- DC Motors: ½ kW, 110 V, 2800 rpm
- AC Motors: ½ hp, 400 V, 1450 rpm

Performance Analysis Parameters:
- Iron and copper losses
- Voltage regulation
- Efficiency
- Torque
- Speed regulation
- Load characteristics
- No-load characteristics
- Resistance and reactance

Applications:
- Performance analysis of electrical machines
- Hands-on testing of transformers, motors, and generators
- Training in electrical traction and control systems

Location:
Faculty: FOE
Department: Electrical Engineering
Location: Building A, Ground Floor
Lab: Electrical Machines

Charges: Rs. 1000 per test per electrical machine

1.9. Total Station

Description:
Advanced electro-optical surveying instrument used for measuring distances, angles, and coordinates with high accuracy.

Company/Make Name:
SOKKIA & MATO

Key Specifications:
- Angular accuracy: ±2″
- Distance range: up to 5000 m with prism
- Reflectorless range: up to 500 m
- Data storage: internal memory + USB
- Electronic tilt compensator, laser plummet
- Integrated LCD and keypad interface

Applications:
- Topographic surveys
- Construction site layout
- Boundary and alignment checks
- Road, canal, and building works

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Store: Survey Equipment Store
Location: CE-L-202, Old Civil Engineering Block, Second Floor

Charges:
- Rs. 1000 per instrument per day (external use)
- Free for UCP Civil Engineering students for academic projects
- Logbook entry and same-day return required

1.10. Electronic Digital Theodolite

Description:
Digital instrument used for precise measurement of horizontal and vertical angles.
Company/Make Name:
SUNDER TRADING COMPANY

Key Specifications:
- Angular accuracy: ±2″ to ±5″
- Digital display with backlight
- Internal rechargeable battery
- Dual axis compensator

Applications:
- Traversing and control surveys
- Building layout and angle observation
- Bridge and tunnel alignment

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Store: Survey Equipment Store
Location: CE-L-202, Old Civil Engineering Block, Second Floor

Charges:
- Rs. 800 per instrument per day
- Free for student projects with approval

1.11. Auto Level

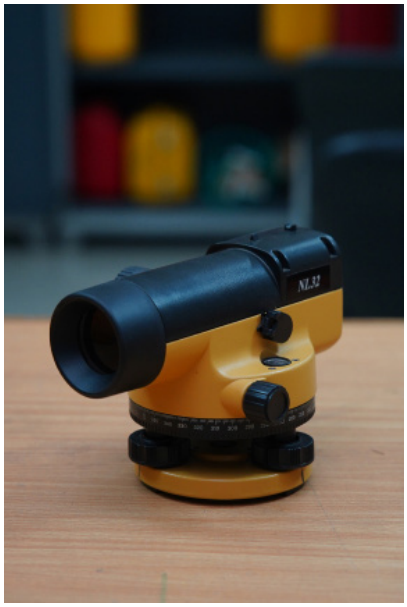
Description:
Optical leveling instrument for establishing elevations and contours.
Company/Make Name:
SUNDER TRADING COMPANY & SOKKIA

Key Specifications:
- Accuracy: ±2 mm/km
- 20X to 32X magnification
- Automatic compensator
- Tripod mount compatible

Applications:
- Leveling for road, canal, and foundation work
- Contour mapping
- Spot height determination

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Store: Survey Equipment Store
Location: CE-L-202, Old Civil Engineering Block, Second Floor

Charges:
- Rs. 500 per unit per day



1.12. Metric Chain

Description:
Used for measuring distances in land surveying.
Company/Make Name:
LOCAL

Key Specifications:
- Length: 20 m or 30 m
- Galvanized steel links
- Brass handles and tags every meter

Applications:
- Offset and baseline measurements
- Plotting field boundaries
- Traverse survey support

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Store: Survey Equipment Store
Location: CE-L-202, Old Civil Engineering Block, Second Floor

Charges:
- Rs. 100 per day

1.13. Prismatic Compass

Description:
Magnetic compass with prism for angle measurement.

Company/Make Name:
SUNDER TRADING COMPANY

Key Specifications:
- 360° graduated circle
- Adjustable sighting prism
- Brass or aluminum housing

Applications:
- Traversing using bearings
- Magnetic angle measurement
- Orientation of maps

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Store: Survey Equipment Store
Location: CE-L-202, Old Civil Engineering Block, Second Floor

Charges:
- Rs. 150 per use

1.14. Laser Distance Meter

Description:
Handheld device for electronic distance measurement.

Company/Make Name:
SUNDER TRADING COMPANY

Key Specifications:
- Range up to 200 m
- Accuracy ±2 mm
- Digital display and memory storage

Applications:
- Rapid distance checks on-site
- Volume and area computation
- Indoor and outdoor use

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Store: Survey Equipment Store
Location: CE-L-202, Old Civil Engineering Block, Second Floor

Charges:
- Rs. 200 per day

1.15. Plane Table with Accessories

Description:
Used for direct plotting of field data at survey site.

Company/Make Name:
SUNDER TRADING COMPANY

Key Specifications:
- Wooden or metal board
- Tripod stand
- Alidade, plumbing fork, spirit level included

Applications:
- Topographic surveys
- Field data plotting
- Small area mapping

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Store: Survey Equipment Store
Location: CE-L-202, Old Civil Engineering Block, Second Floor

Charges:
- Rs. 300 per table per day

1.16. Digital Planimeter

Description:
Electronic device to measure area from maps and drawings.

Company/Make Name:
SUNDER TRADING COMPANY

Key Specifications:
• LCD display
• Precision tracing needle
• Memory for multiple calculations
Applications:
• Area calculation of irregular plots
• Used in cadastral and planning departments

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Store: Survey Equipment Store
Location: CE-L-202, Old Civil Engineering Block, Second Floor

Charges:
• Rs. 400 per session

1.17. Abney Level

Description:
Handheld inclinometer for measuring slopes.

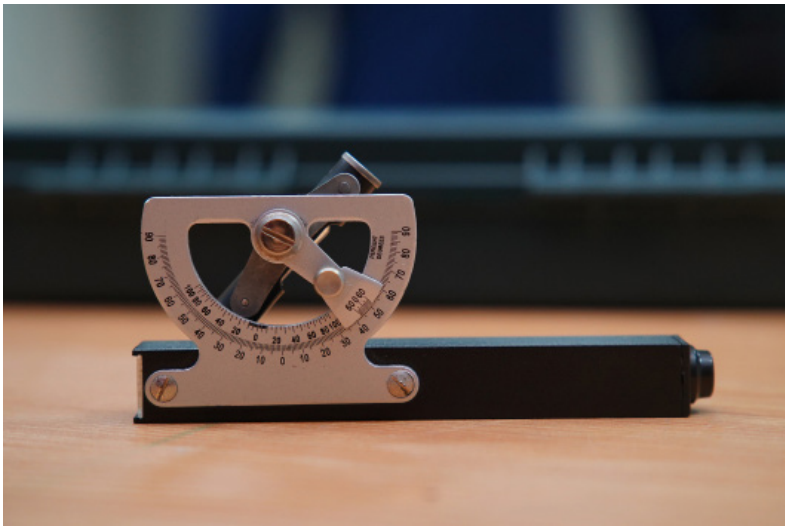
Company/Make Name:
SUNDER TRADING COMPANY

Key Specifications:
- Angle range: 0° to 90°
- Built-in spirit level and protractor
- Compact brass or aluminum build

Applications:
- Slope angle measurements
- Drainage and hill road surveys

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Store: Survey Equipment Store
Location: CE-L-202, Old Civil Engineering Block, Second Floor

Charges:
- Rs. 100 per day



1.18. Optical Square

Description:
Used to set out right angles in surveying.

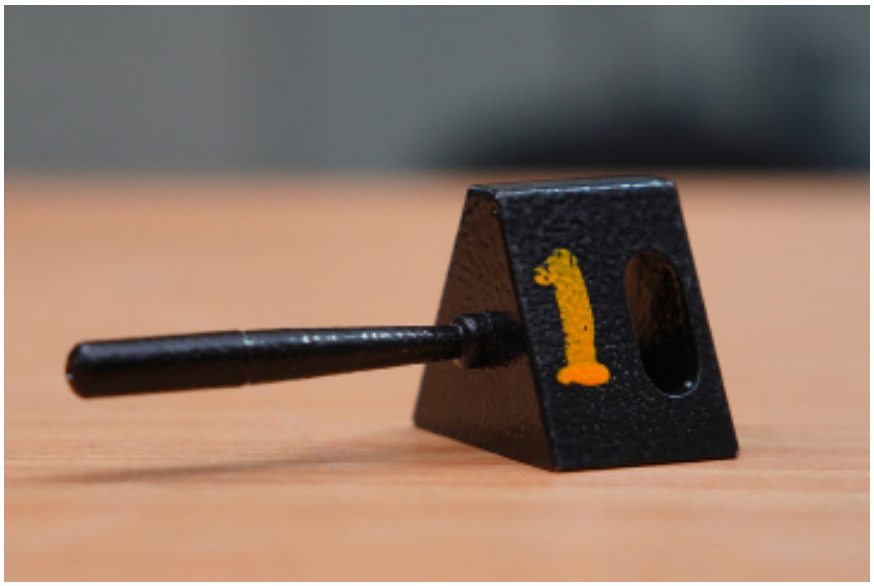
Company/Make Name:
SUNDER TRADING COMPANY

Key Specifications:
- Dual prism system
- Light metal housing
- Portable and easy to use

Applications:
- Perpendicular offsets in chaining
- Right angle setups

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Store: Survey Equipment Store
Location: CE-L-202, Old Civil Engineering Block, Second Floor

Charges:
- Rs. 100 per unit



1.19. Steel Tape

Description:
Flexible steel measuring tape for linear measurements.

Company/Make Name:
LOCAL

Key Specifications:
• Length: 30–50 m
• Metric graduations
• PVC or steel case

Applications:
• Distance measurement in site layouts
• Auxiliary measurements with levels or chains
Location at UCP:
Faculty: FOE
Department: Civil Engineering
Store: Survey Equipment Store

Location: CE-L-202, Old Civil Engineering Block, Second Floor

Charges:
• Rs. 50 per tape

1.20. Metallic Tape

Description:
Reinforced measuring tape for field measurements.

Company/Make Name:
LOCAL

Key Specifications:
• Fiber or cloth tape with brass fittings
• Graduated in meters and centimeters

Applications:
• Baseline and offset measurements
• Light-duty field surveys

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Store: Survey Equipment Store
Location: CE-L-202, Old Civil Engineering Block, Second Floor

Charges:
• Rs. 50 per unit

1.21. Leveling Staff

Description:
Used for reading elevation changes during leveling.

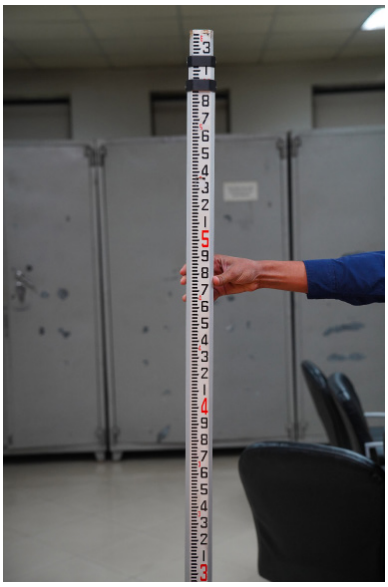
Company/Make Name:
LOCAL

Key Specifications:
- Telescopic aluminum body
- Graduated in meters and centimeters
- Foldable sections

Applications:
- Staff readings with Auto Level
- Cross-sectional leveling

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Store: Survey Equipment Store
Location: CE-L-202, Old Civil Engineering Block, Second Floor

Charges:
- Rs. 100 per day



1.22. Ranging Rod

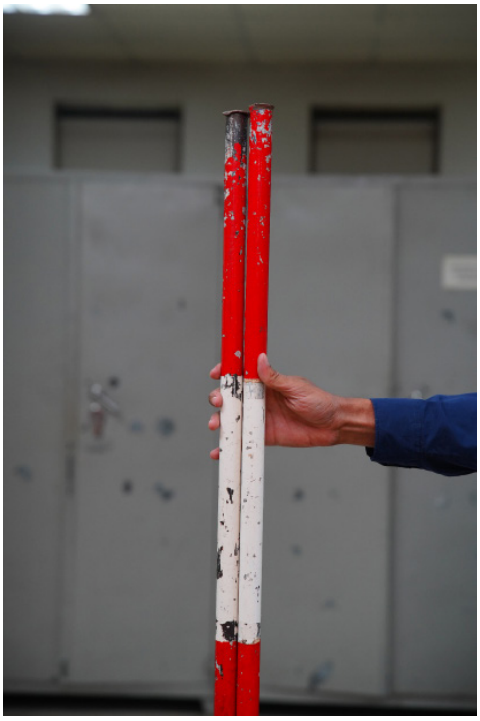
Description:
Vertical rods used for line alignment in surveys.

Company/Make Name:
LOCAL
Key Specifications:
• Height: 2 to 3 m
• Painted in alternating red and white sections
• Pointed base for soil insertion

Applications:
• Visual line alignment
• Chaining and offset marking

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Store: Survey Equipment Store
Location: CE-L-202, Old Civil Engineering Block, Second Floor

Charges:
• Rs. 20 per rod per day



1.23. Steel Arrow

Description:
Markers used to indicate chain lengths.

Company/Make Name:
LOCAL

Key Specifications:
- Length: ~400 mm
- Steel wire with circular head
- Tapered ends

Applications:
- Intermediate marking in chain survey

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Store: Survey Equipment Store
Location: CE-L-202, Old Civil Engineering Block, Second Floor

Charges:
- Rs. 5 per set per day

1.24. Tripod Stands

Description:
Support stands for Total Station, Auto Level, and Plane Table.

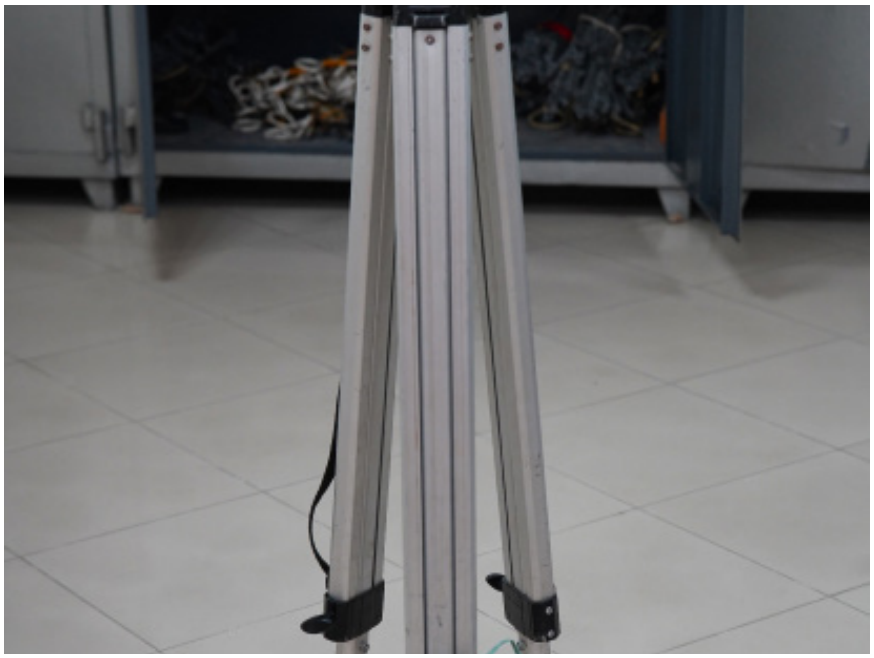
Company/Make Name:
SUNDER TRADING COMPANY

Key Specifications:
- Adjustable legs
- Aluminum or wooden build
- Mounting head with standard thread

Applications:
- Stable platform for instruments
- Used in all field setups

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Store: Survey Equipment Store
Location: CE-L-202, Old Civil Engineering Block, Second Floor

Charges:
- Rs. 50 per tripod



1.25. Plane Table Stand

Description:
Dedicated tripod for plane table mounting.
Company/Make Name:
SUNDER TRADING COMPANY

Key Specifications:
• Wide head plate
• Screw clamp fixture
• Compatible with all standard tables

Applications:
• Field map plotting
• Plane table surveying

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Store: Survey Equipment Store
Location: CE-L-202, Old Civil Engineering Block, Second Floor

Charges:
• Rs. 50 per unit

1.26. Total Station Prism

Description:
Reflective prism used for distance measurement with Total Station.

Company/Make Name:
SUNDER TRADING COMPANY

Key Specifications:
- Circular prism
- Mountable on pole or tripod
- Protective housing included

Applications:
- Distance targeting with Total Station
- Traversing and triangulation

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Store: Survey Equipment Store
Location: CE-L-202, Old Civil Engineering Block, Second

Charges:
- Rs. 100 per prism

1.27. Prism Stand Small

Description:
Used to hold mini prisms at lower elevations.

Company/Make Name:
SUNDER TRADING COMPANY

Key Specifications:
- Compact stand
- Adjustable height
- Stable tripod legs

Applications:
- Urban construction surveys
- Close-range readings

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Store: Survey Equipment Store
Location: CE-L-202, Old Civil Engineering Block, Second Floor

Charges:
- Rs. 50 per unit

1.28. Stand Holder

Description:
Accessory to hold prisms or instruments on uneven ground.

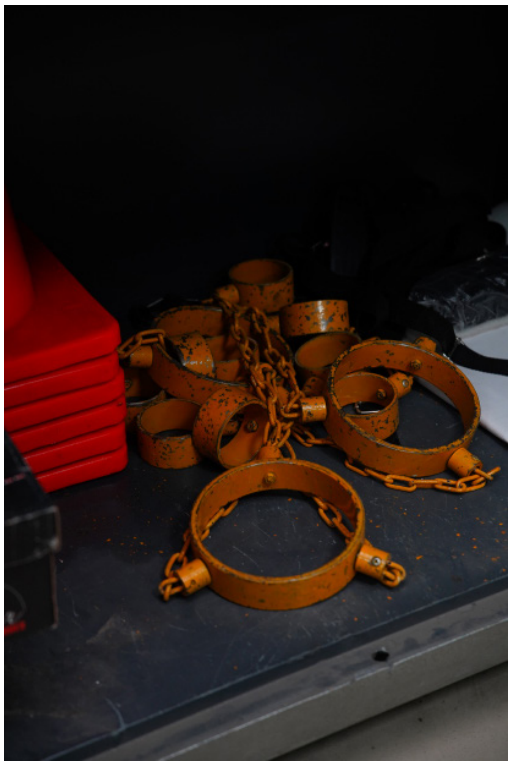
Company/Make Name:
SUNDER TRADING COMPANY

Key Specifications:
• Stable grip
• Compatible with rods or prisms
• Extendable legs

Applications:
• Utility in uneven terrain surveys
Location at UCP:
Faculty: FOE
Department: Civil Engineering
Store: Survey Equipment Store

Location: CE-L-202, Old Civil Engineering Block, Second Floor

Charges:
• Rs. 30 per holder



1.29. Wooden Peg

Description:
Used for marking survey stations on ground.

Company/Make Name:
LOCAL

Key Specifications:
• Size: 25x25 mm cross-section
• Length: 150–300 mm
• Painted tip for visibility

Applications:
• Fixing control points
• Benchmark markers
Location at UCP:
Faculty: FOE
Department: Civil Engineering
Store: Survey Equipment Store

Location: CE-L-202, Old Civil Engineering Block, Second Floor

Charges:
• Rs. 5 per peg

1.30. Spring Balance

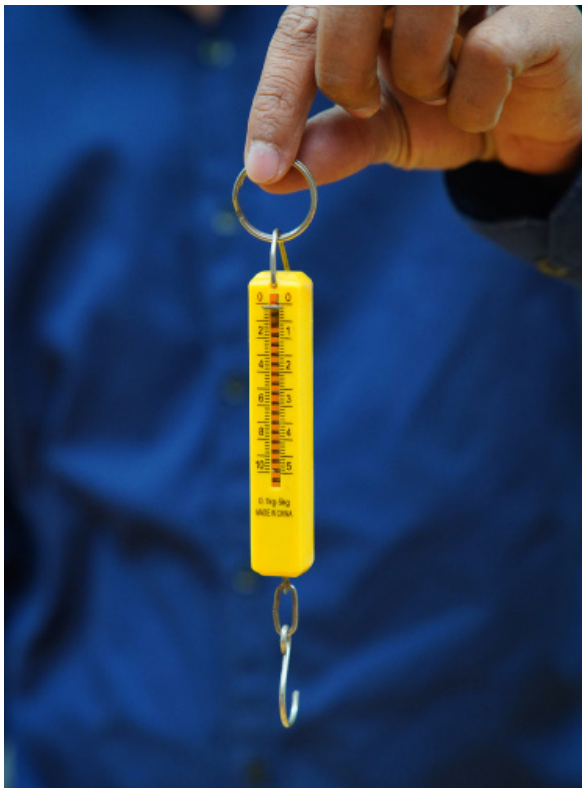
Description:
Used for tension or force measurement in chains or ropes.

Company/Make Name:
LOCAL
Key Specifications:
• Graduated scale in kg or N
• Metal casing
• Hook and ring ends

Applications:
• Pull force measurements
• Calibration of chain tension

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Store: Survey Equipment Store
Location: CE-L-202, Old Civil Engineering Block, Second Floor

Charges:
• Rs. 50 per day



1.31. Redwood Viscometer Apparatus

Description:
Used to determine the viscosity of petroleum products by measuring the time taken for a specific volume of liquid to flow through a calibrated orifice under gravity. Based on IS 1448 standards.

Key Specifications:
- Nozzle sizes: Redwood No. 1 and No. 2
- Temperature range: Ambient to 100°C
- Heating unit with thermostat
- Stopwatch and receiver flask
- Manual or semi-automated operation

Applications:
- Measurement of kinematic viscosity of oils and fuels
- Standard testing in petrochemical labs
- Calibration of fluid flow properties in hydraulic studies
- Educational demonstrations in fluid mechanics

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Structural Engineering Lab
Location: CE-L-105, New Old Civil Engineering Block, Second Floor

Charges:
- Rs. 300 per sample (external users)
- No charge for internal student lab use
- Prior booking required for demonstrations

1.32. Hydraulics Bench

Description:
Base unit for various experiments related to fluid flow.

Key Specifications:
- Volumetric tank
- Recirculating pump
- Flow control valves
- Transparent piping system

Applications:
- Used with multiple modules: Bernoulli, Friction Loss, Orifice
- Teaching and testing hydraulic flow principles

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Structural Engineering Lab
Location: CE-L-105, New Old Civil Engineering Block, Second Floor

Charges:
- Rs. 500 per session
- Integrated with other apparatus

1.33. Pelton Wheel Turbine

Description:
Impulse type hydraulic turbine to study energy conversion from jet to mechanical power.

Key Specifications:
- Stainless steel buckets
- Needle nozzle and spear arrangement
- Dynamometer to measure output power

Applications:
- Study of high head hydro turbines
- Efficiency testing
- Turbine performance analysis

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Structural Engineering Lab

Location: CE-L-105, NewOld Civil Engineering Block, Second Floor

Charges:
- Rs. 500 per session

1.34. Pipe Friction Apparatus

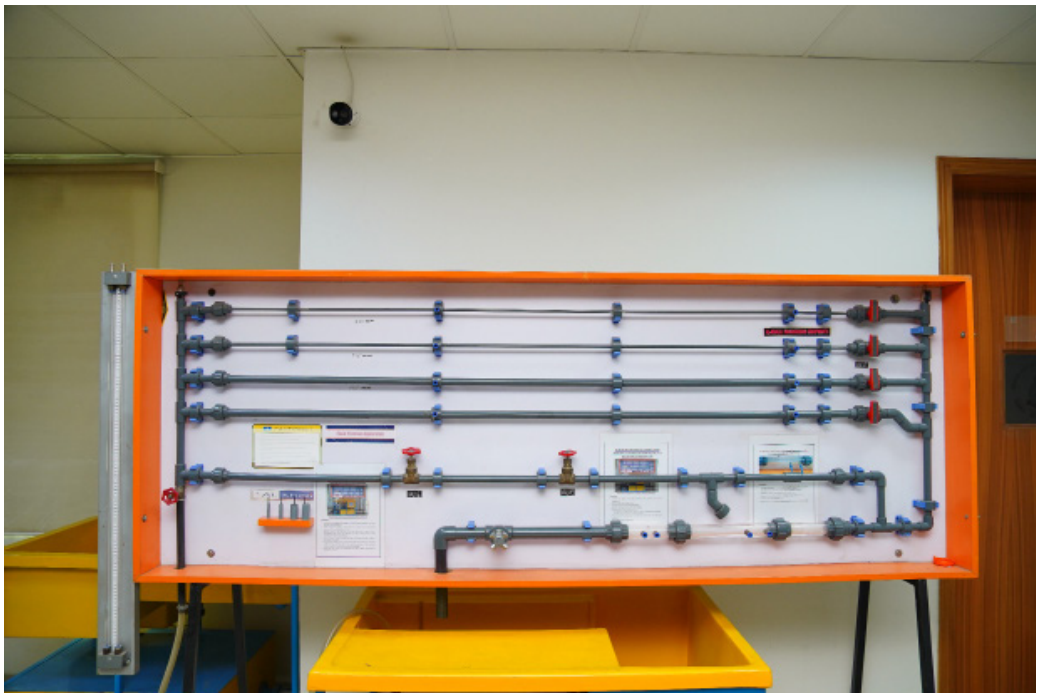
Description:
Used to investigate head loss due to friction in different pipes.

Key Specifications:
- Multiple test pipes
- Differential manometer
- Variable flow setup

Applications:
- Verification of Darcy Weisbach equation
- Comparison of friction factors

Location:
Faculty: FOE
Department: Civil Engineering
Lab: Structural Engineering Lab
Location: CE L 105, NewOld Civil Engineering Block, Second Floor

Charges:
Rs. 350 per session



1.35. Adjustable Bed Flow Channel Apparatus

Description:
Tilting flume for analyzing flow and slope relationships.

Key Specifications:
• Tilting bed with flow measurement system
• Variable slope
• Channel width 30 cm, Length 5 m

Applications:
• Flow pattern analysis
• Hydraulic jump and bed slope experiments

Location:
Faculty: FOE
Department: Civil Engineering
Lab: Hydraulics Engineering Lab
Location: CE L 002, Old Civil Engineering Block, Ground Floor

Charges:
Rs. 500 per session (Academic)

1.36. Basic Hydrology System Apparatus

Description:
Simulator for rainfall runoff modeling and watershed behavior.

Key Specifications:
- Rainfall simulator
- Runoff collection system
- Catchment models

Applications:
- Basic hydrology experiments
- Runoff infiltration modeling

Location:
Faculty: FOE
Department: Civil Engineering
Lab: Hydraulics Engineering Lab
Location: CE L 002, Old Civil Engineering Block, Ground Floor

Charges:
Rs. 500 per session (Academic)

1.37. Centrifugal Pump

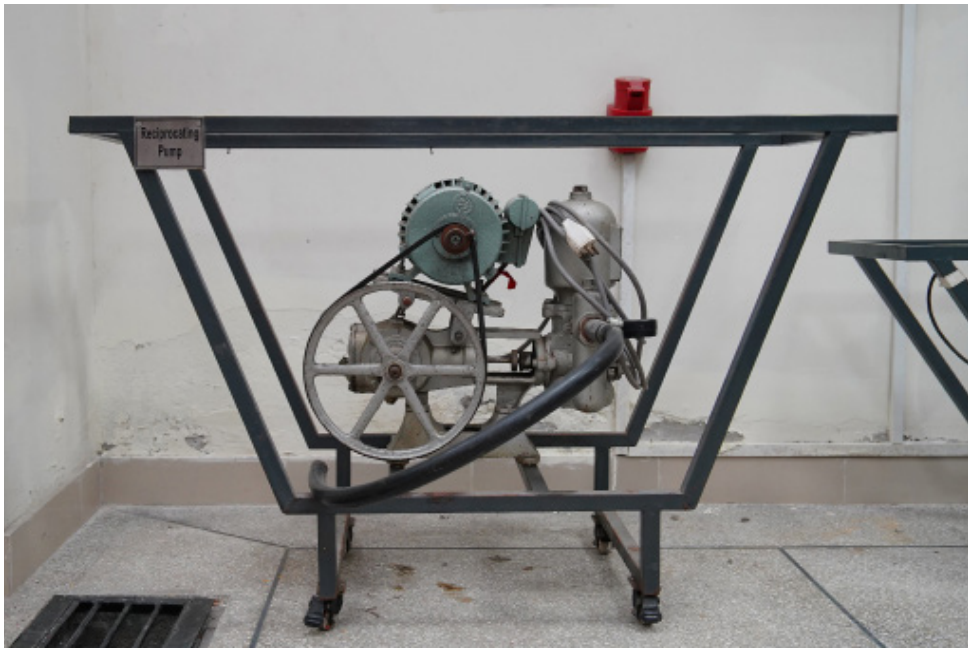
Description:
Flow generation pump with radial impellers for water circulation.

Key Specifications:
- Centrifugal pump
- 1 HP motor
- Flow capacity 40 L/min
- Head 10 m

Applications:
- Flow circulation in flume or tank experiments

Location:
Faculty: FOE
Department: Civil Engineering
Lab: Hydraulics Engineering Lab
Location: CE L 002, Old Civil Engineering Block, Ground Floor

Charges:
Rs. 200 per use (Academic)



1.38. Reciprocating Pump

Description:
Positive displacement pump with piston movement for controlled discharge.

Key Specifications:
• Reciprocating pump with 2 cylinder piston action
• Maximum pressure 6 bar

Applications:
• Positive displacement flow studies

Location:
Faculty: FOE
Department: Civil Engineering
Lab: Hydraulics Engineering Lab
Location: CE L 002, Old Civil Engineering Block, Ground Floor

Charges:
Rs. 200 per use (Academic)

1.39. Francis Reaction Turbine

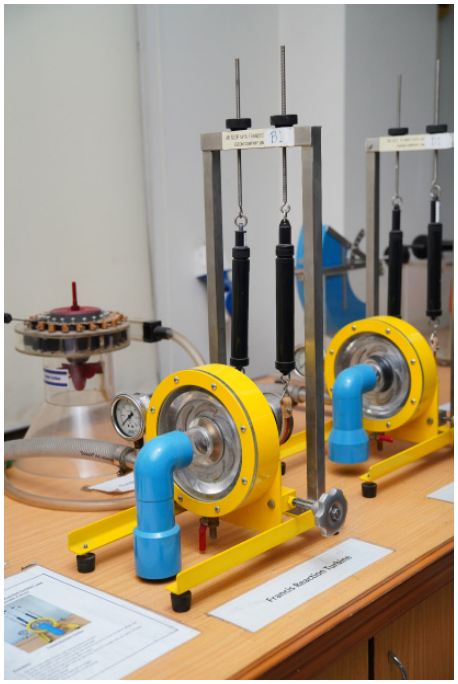
Description:
Lab scale turbine to study efficiency and reaction flow performance.

Key Specifications:
- Lab scale turbine with transparent casing
- Flow 30 L/min
- Head 5 m

Applications:
- Efficiency testing
- Performance curve analysis

Location:
Faculty: FOE
Department: Civil Engineering
Lab: Hydraulics Engineering Lab
Location: CE L 002, Old Civil Engineering Block, Ground Floor

Charges:
Rs. 500 per test (Academic)



1.40. Fluid Friction Apparatus

Description:
Apparatus for investigating head loss due to pipe friction.

Key Specifications:
• PVC piping with friction elements
• Flow meters and pressure taps included

Applications:
• Study of head losses due to friction

Location:
Faculty: FOE
Department: Civil Engineering
Lab: Hydraulics Engineering Lab
Location: CE L 002, Old Civil Engineering Block, Ground Floor

Charges:
Rs. 300 per test (Academic)

1.41. Hydraulics Bench

Description:
Base platform for performing various fluid mechanics experiments.

Key Specifications:
• Bench mounted with supply tank and pump
• Discharge measurement tank

Applications:
• Base for multiple hydraulics experiments

Location:
Faculty: FOE
Department: Civil Engineering
Lab: Hydraulics Engineering Lab
Location: CE L 002, Old Civil Engineering Block, Ground Floor

Charges:
Rs. 500 per session (Academic)

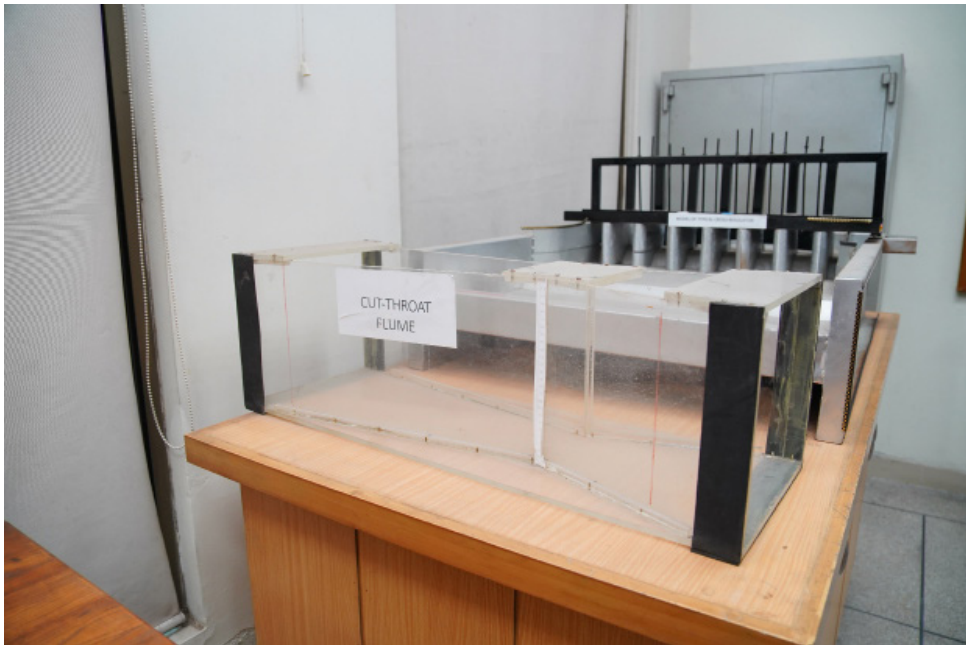
1.42. Cut-throat Flume Apparatus

Description:
Discharge measurement device without throat contraction.

Key Specifications:
• Portable flume with adjustable head and tail gates
• Discharge measuring flume
Applications:
• Flow rate estimation in open channels

Location:
Faculty: FOE
Department: Civil Engineering
Lab: Hydraulics Engineering Lab
Location: CE L 002, Old Civil Engineering Block, Ground Floor

Charges:
Rs. 300 per sample (Academic)



1.43. Model of Typical Cross Regulator

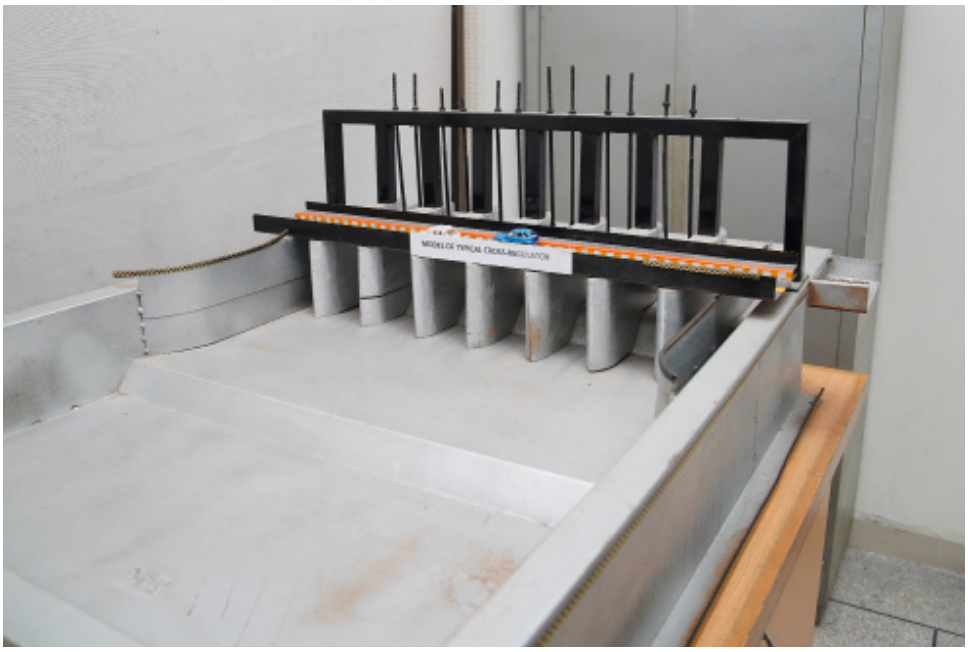
Description:
A scale hydraulic structure model demonstrating canal regulation.

Key Specifications:
- Scale model of canal cross regulator
- Material: Acrylic with Aluminum frame
- Flow controlled via sluice gates

Applications:
- Training on canal control structures
- Understanding hydraulic behavior at regulators

Location:
Faculty: FOE
Department: Civil Engineering
Lab: Hydraulics Engineering Lab
Location: CE L 002, Old Civil Engineering Block, Ground Floor

Charges:
Demonstration only (No sample charge)



1.44. Standard Rain Gauge

Description:
Manual cylindrical rain gauge for measuring precipitation.

Key Specifications:
- Capacity: 200 mm
- Non recording type
- Manual reading

Applications:
- Measurement of precipitation

Location:
Faculty: FOE
Department: Civil Engineering
Lab: Hydraulics Engineering Lab
Location: CE L 002, Old Civil Engineering Block, Ground Floor

Charges:
Demonstration use

1.45. Evaporation Pan

Description:
Open pan used for determining evaporation rates from water surfaces.

Key Specifications:
- Steel pan, diameter 120 cm
- Evaporation measurement stick included

Applications:
- Evaporation rate estimation

Location at UCP:
Faculty: FOE
Department: Civil Engineering

Lab: Hydraulics Engineering Lab
Location: CE-L-002, Old Civil Engineering Block, Ground Floor

Charges:
Demonstration use

1.46. Barometer

Description:
Instrument for measuring atmospheric pressure for weather predictions.

Key Specifications:
• Analog barometer
• Pressure range: 960 to 1060 hPa

Applications:
• Atmospheric pressure monitoring

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Hydraulics Engineering Lab
Location: CE-L-002, Old Civil Engineering Block, Ground Floor

Charges:
Demonstration use

1.47. Instrument Shelter

Description:
Protective outdoor unit to house weather instruments.

Key Specifications:
• Steel/aluminum frame with weather protection
• Suitable for storing field instruments

Applications:
• Protective housing for field data loggers and devices

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Hydraulics Engineering Lab
Location: CE-L-002, Old Civil Engineering Block, Ground Floor

Charges:
Demonstration purpose

1.48. Taunsa Barrage Model

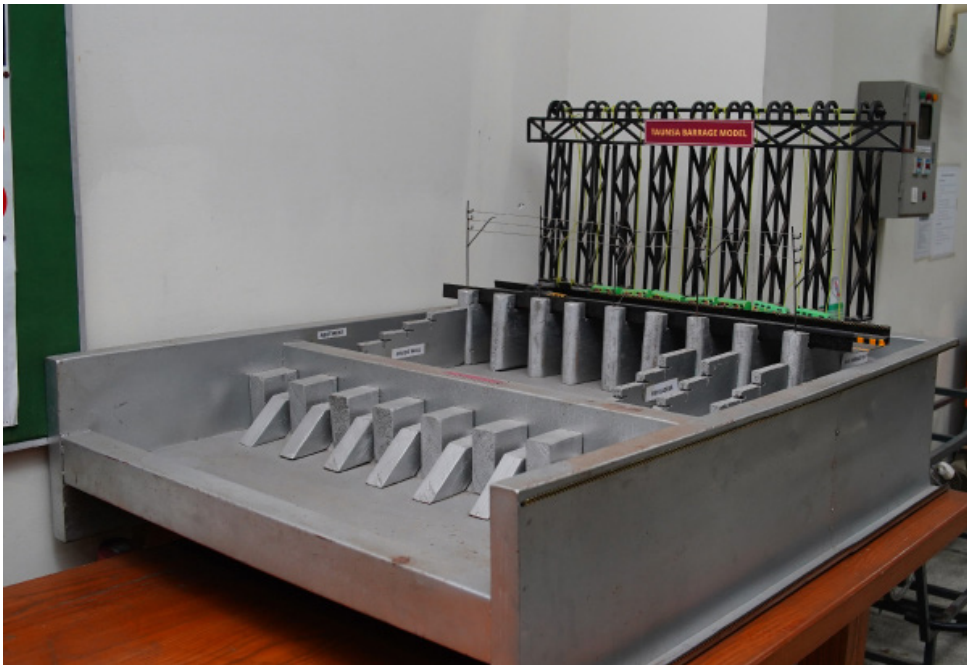
Description:
Scaled physical model of the Taunsa barrage for flow simulations.

Key Specifications:
• Physical model of barrage gates and piers
• Operated by flow recirculation system

Applications:
• Demonstrating barrage operations
• Gate regulation

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Hydraulics Engineering Lab
Location: CE-L-002, Old Civil Engineering Block, Ground Floor

Charges:
Demonstration purpose



1.49. Head Balloki Model

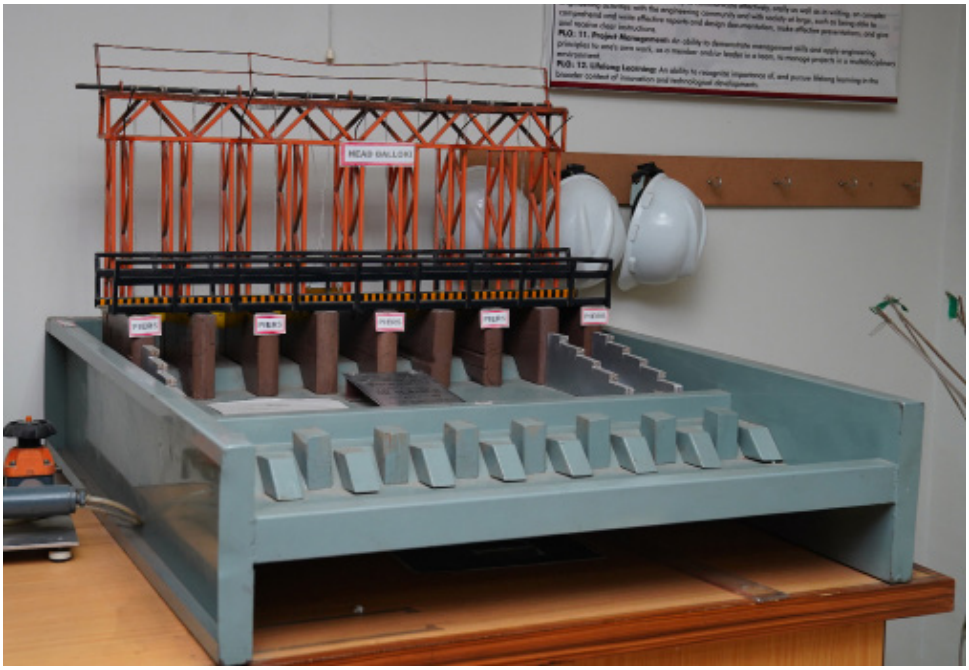
Description:
Hydraulic model representing Head Balloki for teaching and research.

Key Specifications:
• Scale model of Head Balloki barrage
• Includes gates and flow channel

Applications:
• Flow control education
• Sediment modeling

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Hydraulics Engineering Lab
Location: CE-L-002, Old Civil Engineering Block, Ground Floor

Charges:
Demonstration purpose



1.50. 1000 kN Universal Testing Machine, Analogue

Description:
Used for compressive and tensile strength testing of construction materials.

Key Specifications:
• Load capacity: 1000 kN
• Analogue dial
• Manual operation

Applications:
• Testing compressive and tensile strength of concrete, steel, and other materials

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Engineering Materials Lab
Location: CE-L-001, Old Civil Engineering Block, Ground Floor

Charges:
PKR 2000 per sample

1.51. 3000 kN Compression Testing Machine

Description:
High-capacity machine for testing compressive strength of concrete cylinders and cubes.

Key Specifications:
• Load capacity: 3000 kN
• High strength steel frame

Applications:
• Testing compressive strength of large concrete specimens

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Engineering Materials Lab
Location: CE-L-001, Old Civil Engineering Block, Ground Floor

Charges:
PKR 2500 per sample

1.52. Compacting Factor Apparatus

Description:
Used for determining the workability of concrete mixes with low workability.

Key Specifications:
• Mild steel cylinder, 30 cm height
• Calibrated cones

Applications:
• Evaluate workability of concrete with low slump

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Engineering Materials Lab
Location: CE-L-001, Old Civil Engineering Block, Ground Floor

Charges:
PKR 800 per sample

1.53. Vicat Apparatus

Description:
High-capacity machine for testing compressive strength of concrete cylinders and cubes.

Key Specifications:
• Load capacity: 3000 kN
• High strength steel frame

Applications:
• Testing compressive strength of large concrete specimens

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Engineering Materials Lab
Location: CE-L-001, Old Civil Engineering Block, Ground Floor

Charges:
PKR 2500 per sample

1.54. Cylinder Capping Apparatus

Description:
Ensures smooth and parallel end surfaces of concrete test cylinders for compressive testing.

Key Specifications:
• Steel capping frame
• Compliant with ASTM C617

Applications:
• Prepare flat surfaces for compressive tests

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Engineering Materials Lab
Location: CE-L-001, Old Civil Engineering Block, Ground Floor

Charges:
PKR 300 per sample

1.55. Flow Table Test Apparatust

Description:
Used to determine the consistency and workability of cement mortar or concrete.

Key Specifications:
• Diameter: 300 mm
• Table drop: 12.5 mm

Applications:
• Assess workability of cement mortars

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Engineering Materials Lab
Location: CE-L-001, Old Civil Engineering Block, Ground Floor

Charges:
PKR 700 per sample

1.56. Unit Weight Measure Apparatus

Description:
Measures the unit weight (density) of fresh or compacted concrete.

Key Specifications:
• Capacity: 1 cu. ft.
• Steel construction

Applications:
• Measure density of fresh concrete

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Engineering Materials Lab
Location: CE-L-001, Old Civil Engineering Block, Ground Floor

Charges:
PKR 400 per sample

1.57. Air Entrainment Apparatus

Description:
Determines air content in freshly mixed concrete by pressure method.

Key Specifications:
• Chamber capacity: 0.25 cu. ft.
• Pressure gauge with release valve

Applications:
• Measure air content in fresh concrete mix

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Engineering Materials Lab
Location: CE-L-001, Old Civil Engineering Block, Ground Floor

Charges:
PKR 600 per sample

1.58. Specific Gravity Apparatus

Description:
Used to determine the specific gravity of cement or fine aggregate.

Key Specifications:
• 500 mL pycnometer
• Borosilicate glass

Applications:
• Determine specific gravity of cement or aggregates

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Engineering Materials Lab
Location: CE-L-001, Old Civil Engineering Block, Ground Floor

Charges:
PKR 300 per sample

1.59. Concrete Test Hammer (Schmidt Hammer) with Test Anvil

Description:
Non-destructive test for estimating surface hardness and compressive strength of concrete.

Key Specifications:
• Impact energy: 2.207 Nm
• Rebound scale: 10–100

Applications:
• Non-destructive evaluation of concrete compressive strength

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Engineering Materials Lab
Location: CE-L-001, Old Civil Engineering Block, Ground Floor

Charges:
PKR 1000 per sample

1.60. Sieve Shaker with Sieve Set for Fine and Coarse Aggregate

Description:
Performs particle size distribution of aggregates by mechanical shaking.

Key Specifications:
• Mechanical sieve shaker with timer
• Supports up to 8 sieves

Applications:
• Particle size analysis of fine and coarse aggregates

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Engineering Materials Lab
Location: CE-L-001, Old Civil Engineering Block, Ground Floor

Charges:
PKR 800 per sample

1.61. Flakiness and Elongation Index Gauges

Description:
Determines shape characteristics of coarse aggregates.

Key Specifications:
• Steel gauges
• Slot ranges: 6.3 to 50 mm

Applications:
• Assess shape characteristics of aggregates

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Engineering Materials Lab
Location: CE-L-001, Old Civil Engineering Block, Ground Floor

Charges:
PKR 500 per sample

1.62. Le-Chatelier Apparatus

Description:
Measures the soundness (volume expansion) of cement.

Key Specifications:
• Split cylinder
• Indicator needle
• Brass parts

Applications:
• Test cement for unsoundness (volume stability)

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Engineering Materials Lab
Location: CE-L-001, Old Civil Engineering Block, Ground Floor

Charges:
PKR 400 per sample

1.63. Vibrating Table

Description:
Compacts concrete specimens by vibration to remove air voids.

Key Specifications:
• Table top size: 1 m x 1 m
• 3000 RPM motor

Applications:
• Compaction of concrete samples for strength testing

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Engineering Materials Lab
Location: CE-L-001, Old Civil Engineering Block, Ground Floor

Charges:
PKR 600 per sample

1.64. Portable Concrete Mixer

Description:
Used for uniform mixing of concrete batches for testing.

Key Specifications:
• Drum capacity: 100 L
• Portable wheels

Applications:
• Mixing of small batches of concrete on site

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Engineering Materials Lab
Location: CE-L-001, Old Civil Engineering Block, Ground Floor

Charges:
PKR 700 per sample

1.65. Different Sizes Concrete Molds

Description:
Used to cast specimens for testing mechanical properties of concrete and mortar.

Key Specifications:
• Steel molds in multiple standard dimensions

Applications:
• Casting and testing of concrete cubes, cylinders, and beams

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Engineering Materials Lab
Location: CE-L-001, Old Civil Engineering Block, Ground Floor

Charges:
Varies by mold type

1.66. Vibrating Poker

Description:
Removes trapped air in concrete during casting using vibration.

Key Specifications:
- Steel vibrator
- Flexible shaft
- 1.5 HP motor

Applications:
- Compaction of concrete using vibration

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Engineering Materials Lab
Location: CE-L-001, Old Civil Engineering Block, Ground Floor

Charges:
PKR 600 per sample

1.67. Charpy Impact Testing Apparatus

Description:
Determines toughness of metal specimens by measuring energy absorbed during fracture.

Key Specifications:
• Hammer energy: 300 J
• Digital timer

Applications:
• Impact testing of metal and structural samples

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Engineering Materials Lab
Location: CE-L-001, Old Civil Engineering Block, Ground Floor

Charges:
PKR 1200 per sample

1.68. Vebe Apparatus

Description:
Evaluates the consistency of very dry concrete mixes.

Key Specifications:
• Stainless steel pan
• Vibration frequency adjustable

Applications:
• Consistency measurement of very dry concrete

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Engineering Materials Lab
Location: CE-L-001, Old Civil Engineering Block, Ground Floor

Charges:
PKR 700 per sample

1.69. Impact Value Apparatus

Description:
Measures toughness of aggregates to resist sudden impact.

Key Specifications:
- Cylindrical mold
- Hammer
- Baseplate

Applications:
- Evaluate toughness of coarse aggregate

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Engineering Materials Lab
Location: CE-L-001, Old Civil Engineering Block, Ground Floor

Charges:
PKR 500 per sample

1.70. Split Tensile Apparatus

Description:
Evaluates tensile strength of concrete by indirect loading.

Key Specifications:
• Horizontal load setup
• LVDTs for measurement

Applications:
• Indirect testing of tensile strength of concrete

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Engineering Materials Lab
Location: CE-L-001, Old Civil Engineering Block, Ground Floor

Charges:
PKR 700 per sample

1.71. Compresso Meter Apparatus

Description:
Measures deformations in concrete under compressive loads.

Key Specifications:
• 0.001 mm resolution
• Measurement range: 0–10 mm

Applications:
• Measure strain in compression tests

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Engineering Materials Lab
Location: CE-L-001, Old Civil Engineering Block, Ground Floor

Charges:
PKR 1000 per sample

1.72. Ultra Sonic Pulse Velocity Apparatus

Description:
Non-destructive test to assess quality and homogeneity of concrete.

Key Specifications:
• Pulse velocity range: 1000–5000 m/s

Applications:
• Detect internal cracks and evaluate homogeneity of concrete

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Engineering Materials Lab
Location: CE-L-001, Old Civil Engineering Block, Ground Floor

Charges:
PKR 1200 per sample

1.73. Pull Off Concrete Apparatus

Description:
Determines tensile strength of concrete surface using the pull-off method.

Key Specifications:
• Load cell with pull head
• Adhesive pads

Applications:
• Assess surface tensile strength of concrete

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Engineering Materials Lab
Location: CE-L-001, Old Civil Engineering Block, Ground Floor

Charges:
PKR 1500 per sample

1.74. Slump Test Apparatus

Description:
Quick assessment of workability of fresh concrete mix.

Key Specifications:
• Cone height: 300 mm
• Base diameter: 200 mm

Applications:
• Measure slump to assess concrete workability

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Engineering Materials Lab
Location: CE-L-001, Old Civil Engineering Block, Ground Floor

Charges:
PKR 500 per sample

1.75. Weighing Balance – Capacity 100 kg

Description:
Used to weigh bulk materials like aggregates and cement.

Key Specifications:
• Digital
• Capacity: 100 kg
• Accuracy: 0.01 kg

Applications:
• Weighing cement, aggregates, and concrete

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Engineering Materials Lab
Location: CE-L-001, Old Civil Engineering Block, Ground Floor

Charges:
PKR 100 per sample

1.76. Flexure Test Apparatus with Adjustable

Description:
Measures flexural strength of concrete beams.

Key Specifications:
• Loading frame
• Flexural beam support

Applications:
• Measure flexural strength of concrete beams

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Engineering Materials Lab
Location: CE-L-001, Old Civil Engineering Block, Ground Floor

Charges:
Included with UTM use

1.77. Tie Rod Length 37”

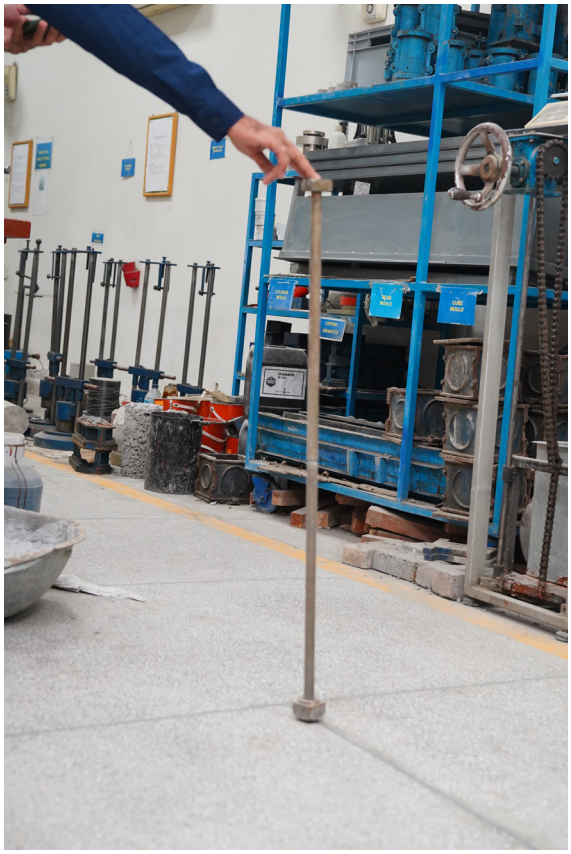
Description:
Used in load frame assembly for tension and compression testing.

Key Specifications:
• Mild steel tie rods
• Threaded ends

Applications:
• Hold samples during load frame testing

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Engineering Materials Lab
Location: CE-L-001, Old Civil Engineering Block, Ground Floor

Charges:
Included with UTM use



1.78. H – Section Grips (4 pieces)

Description:
Holds specimen during tensile testing in Universal Testing Machine.

Key Specifications:
• Mild steel H-sections
• Clamping screws

Applications:
• Grip for tensile specimens in testing machines

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Engineering Materials Lab
Location: CE-L-001, Old Civil Engineering Block, Ground Floor

Charges:
Included with dial use

1.79. Dial Gauge 0.0001″ to 0.25″

Description:
Measures small linear displacements in materials testing.

Key Specifications:
• Dial reading: 0.0001″–0.25″

Applications:
• Measure deflection in structural testing

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Engineering Materials Lab
Location: CE-L-001, Old Civil Engineering Block, Ground Floor

Charges:
Included with dial use

1.80. Dial Gauge 0.01 mm to 30 mm

Description:
Used for deflection or deformation measurement.

Key Specifications:
• Precision: 0.01 mm
• Measurement range: 30 mm

Applications:
• Deflection or deformation measurement

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Engineering Materials Lab
Location: CE-L-001, Old Civil Engineering Block, Ground Floor

Charges:
Included with dial use

1.81. Dial Gauge 0.001 mm to 5 mm

Description:
Precision measurement for small deflections or cracks.

Key Specifications:
• Sensitivity: 0.001 mm
• Maximum range: 5 mm

Applications:
• Precision crack or displacement measurement

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Engineering Materials Lab
Location: CE-L-001, Old Civil Engineering Block, Ground Floor

Charges:
Included with dial use

1.82. Dial Gauge 0.01 mm to 50 mm

Description:
Longer range gauge for structural deflection monitoring.

Key Specifications:
• Graduation: 0.01 mm
• Travel range: 50 mm

Applications:
• Measure deflection under load in large samples

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Engineering Materials Lab
Location: CE-L-001, Old Civil Engineering Block, Ground Floor

Charges:
Included with extensometer

1.83. Extensometer 0.0001" to 0.200"

Description:
Measures strain during tensile testing with high accuracy.

Key Specifications:
• Accuracy: 0.0001"–0.200"
• Stainless steel body

Applications:
• Strain measurement in tensile tests

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Engineering Materials Lab
Location: CE-L-001, Old Civil Engineering Block, Ground Floor

Charges:
Included with UTM use

1.84. Digital Indicator 0.001 mm to 25 mm

Description:
Electronic device for precision deflection or extension measurement.

Key Specifications:
• LCD display
• Magnetic base

Applications:
• Precise measurement in compression and tension tests

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Engineering Materials Lab
Location: CE-L-001, Old Civil Engineering Block, Ground Floor

Charges:
PKR 300 per use

1.85. Vernier Caliper 12”

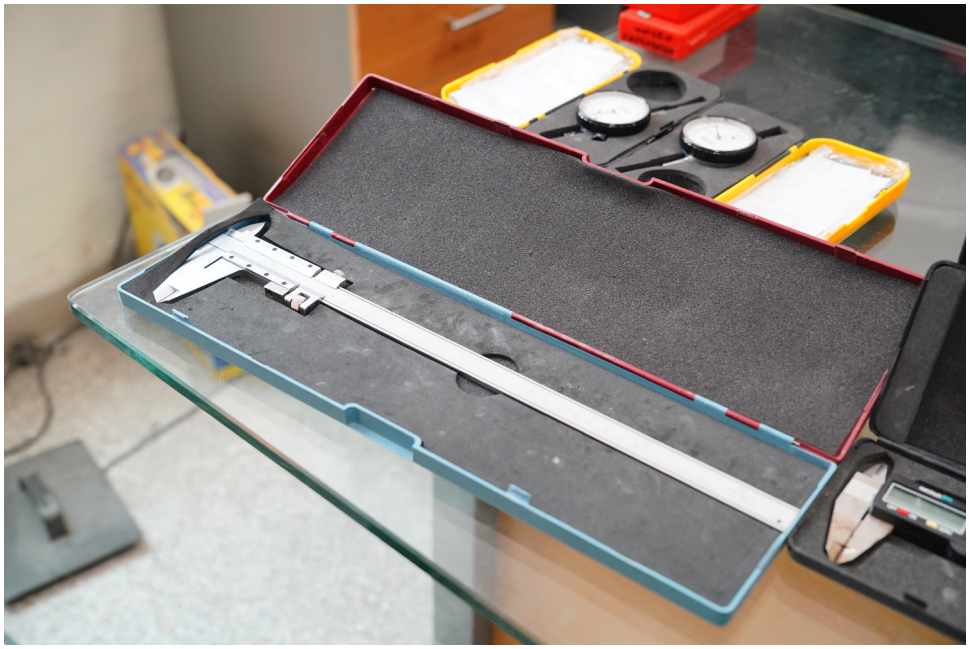
Description:
Manually measures length, width, or diameter of samples.

Key Specifications:
• Manual caliper
• Least count: 0.02 mm

Applications:
• Measure dimensions of specimens

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Engineering Materials Lab
Location: CE-L-001, Old Civil Engineering Block, Ground Floor

Charges:
PKR 300 per use



1.86. Digital Vernier Caliper 8”

Description:
Digitally reads external and internal dimensions of components.

Key Specifications:
• Digital display
• Stainless steel body

Applications:
• Measure internal and external dimensions of specimens

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Engineering Materials Lab
Location: CE-L-001, Old Civil Engineering Block, Ground Floor

Charges:
PKR 300 per use

1.87. Micrometer 0.00 mm to 25 mm

Description:
Used for precise measurement of small thicknesses.

Key Specifications:
• Micrometer head with ratchet stop
• Accuracy: 0.01 mm

Applications:
• Measure small part thickness or diameter

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Engineering Materials Lab
Location: CE-L-001, Old Civil Engineering Block, Ground Floor

Charges:
PKR 300 per use

1.88. Micrometer 25 mm to 50 mm

Description:
Measures external dimensions with high accuracy.

Key Specifications:
• Micrometer with carbide tips
• Resolution: 0.01 mm

Applications:
• Precision measurement of external dimensions

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Engineering Materials Lab
Location: CE-L-001, Old Civil Engineering Block, Ground Floor

Charges:
PKR 300 per use

1.89. Micrometer 50 mm to 75 mm

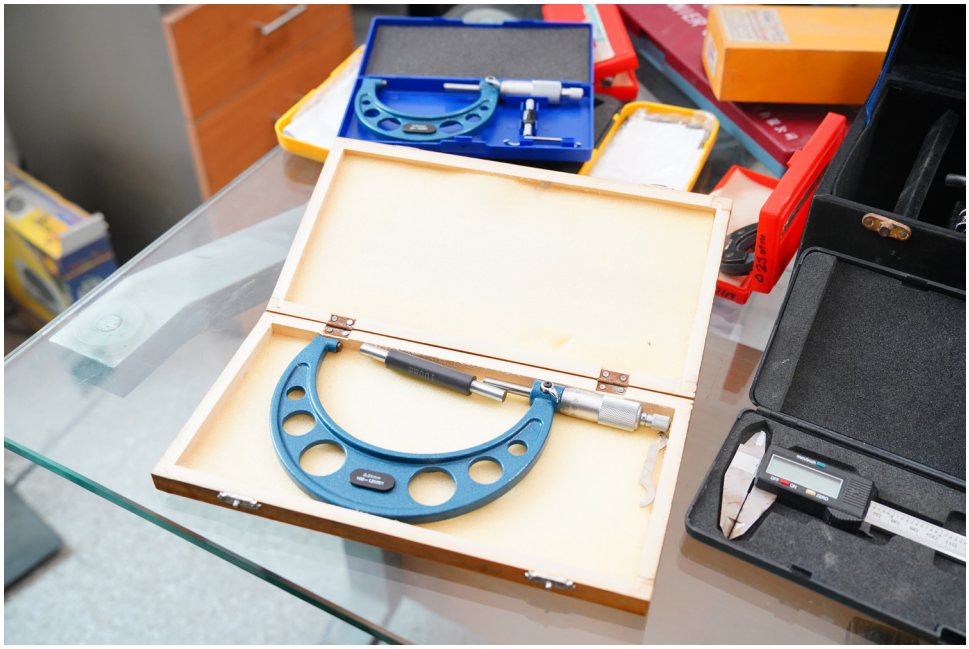
Description:
Measures external dimensions with high accuracy.

Key Specifications:
• Micrometer with carbide tips
• Resolution: 0.01 mm

Applications:
• Precision measurement of external dimensions

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Engineering Materials Lab
Location: CE-L-001, Old Civil Engineering Block, Ground Floor

Charges:
PKR 300 per use



1.90. Micrometer 75 mm to 100 mm

Description:
Measures external dimensions with high accuracy.

Key Specifications:
• Micrometer with carbide tips
• Resolution: 0.01 mm

Applications:
• Precision measurement of external dimensions

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Engineering Materials Lab
Location: CE-L-001, Old Civil Engineering Block, Ground Floor

Charges:
PKR 300 per use

1.91. Micrometer 100 mm to 125 mm

Description:
Measures external dimensions with high accuracy.

Key Specifications:
• Micrometer with carbide tips
• Resolution: 0.01 mm

Applications:
• Precision measurement of external dimensions

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Engineering Materials Lab
Location: CE-L-001, Old Civil Engineering Block, Ground Floor

Charges:
PKR 300 per use

1.92. Micrometer 125 mm to 150 mm

Description:
Measures external dimensions with high accuracy.

Key Specifications:
• Micrometer with carbide tips
• Resolution: 0.01 mm

Applications:
• Precision measurement of external dimensions

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Engineering Materials Lab
Location: CE-L-001, Old Civil Engineering Block, Ground Floor

Charges:
PKR 300 per use

1.93. Simply Supported Beam Apparatus

Description:
Used to study bending and shear in a beam under various loading conditions. Includes adjustable load application points and measurement dial indicators.

Key Specifications:
• Beam length: 1–1.2 m
• Supports: Knife-edge (pin and roller types)
• Load hangers and weights included
• Dial indicators for deflection measurement
• Rigid steel frame for stability

Applications:
• Analysis of deflection and slope under point and uniform distributed loads
• Validation of bending moment and shear force theory
• Used in Mechanics of Solids and Structural Analysis courses

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Engineering Mechanics Lab
Location: CE-L-303, New Civil Engineering Block, Third Floor

Charges:
• Rs. 300 per demonstration (external users)
• No charges for regular semester labs
• Advance scheduling required for project use or demonstrations

1.94. Principle of Moment Apparatus

Description:
Used to verify the law of moments by balancing moments on a beam.

Key Specifications:
• Beam with graduated scale
• Fulcrum and adjustable weights
• Lightweight metal construction

Applications:
• Study of torque and equilibrium
• Verification of moment principles in statics
• Educational demonstration in engineering mechanics

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Engineering Mechanics Lab
Location: CE-L-303, New Civil Engineering Block, Third Floor

Charges:
• Rs. 200 per demonstration (external users)
• No charges for in-course use

1.95. Simple Jib Crane Apparatus

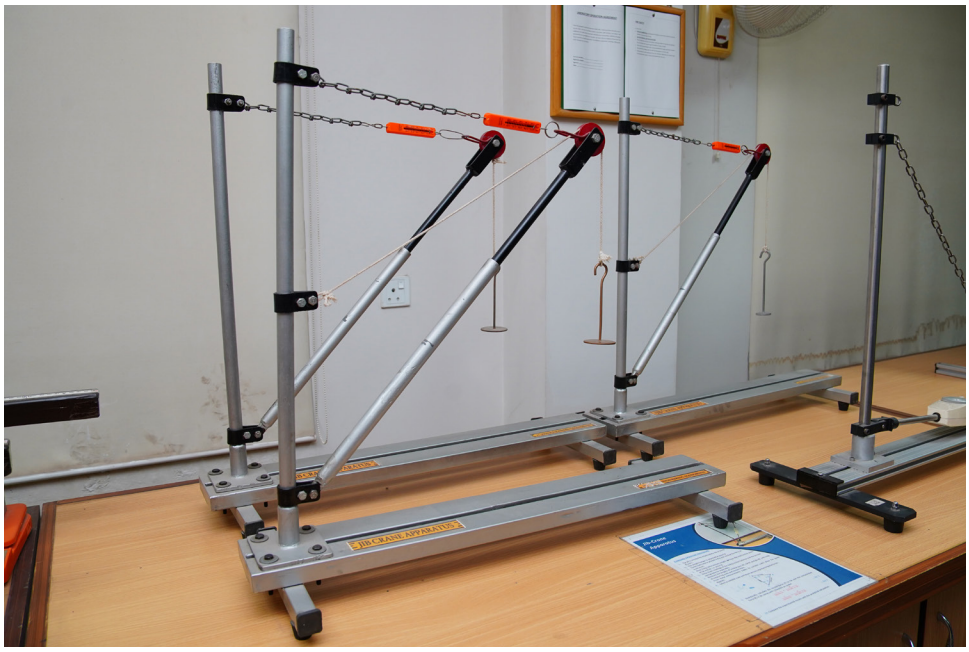
Description:
Used to study force analysis in a jib crane setup under static load.

Key Specifications:
• Simulated jib and tie system
• Load application hook
• Tension and compression indicator gauges

Applications:
• Study force distribution in cranes
• Application of vector mechanics
• Truss and frame analysis

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Engineering Mechanics Lab
Location: CE-L-303, New Civil Engineering Block, Third Floor

Charges:
• Rs. 300 per use
• Advance booking required for final year project work



1.96. Centre of Gravity Apparatus

Description:
Demonstrates how the center of gravity varies with body shape and orientation.

Key Specifications:
- Set of shaped plates with suspension points
- Plumb line and frame
- Adjustable mounting system

Applications:
- Study mass distribution
- Methods to locate center of gravity
- Basic statics and stability demonstrations

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Engineering Mechanics Lab
Location: CE-L-303, New Civil Engineering Block, Third Floor

Charges:
- Rs. 150 per session (external users)
- Free for teaching lab use

1.97. Universal Force Table

Description:
For vector resolution and equilibrium of forces using a circular table setup.

Key Specifications:
• Circular table with angle markings
• Pulleys, weights, and strings
• Adjustable ring and center pin

Applications:
• Study force equilibrium in 2D
• Demonstrate law of polygon of forces
• Resolution of multiple forces

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Engineering Mechanics Lab
Location: CE-L-303, New Civil Engineering Block, Third Floor

Charges:
• Rs. 250 per setup
• Batch use permitted for regular lab sessions

1.98. FlyWheel Apparatus

Description:
Used to determine moment of inertia and angular deceleration of a flywheel.

Key Specifications:
- Heavy metal wheel
- String and load arrangement
- Speed and time measurement system

Applications:
- Study rotational motion
- Determine inertia and energy dissipation
- Demonstration of mechanics dynamics

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Engineering Mechanics Lab
Location: CE-L-303, New Civil Engineering Block, Third Floor

Charges:
- Rs. 350 per use
- Project-based use allowed

1.99. Hanging Rope Apparatus

Description:
Demonstrates the shape of a freely hanging rope (catenary curve).

Key Specifications:
- Adjustable rope length
- Fixed end supports
- Measurement scale for curve plotting

Applications:
- Analysis of cable structures
- Study of tension forces in ropes
- Form-finding techniques

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Engineering Mechanics Lab
Location: CE-L-303, New Civil Engineering Block, Third Floor

Charges:
Rs. 200 per experiment

1.100. Friction Apparatus

Description:
Used to demonstrate laws of static and dynamic friction using an inclined plane.

Key Specifications:
- Inclined plane with pulley system
- Weights and sliders
- Adjustable surface finish

Applications:
- Study coefficient of friction
- Mechanics of inclined planes
- Demonstrate Newtonian principles of motion

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Engineering Mechanics Lab
Location: CE-L-303, New Civil Engineering Block, Third Floor

Charges:
Rs. 250 per use

1.101. Principle of Superposition Apparatus

Description:
Used to verify the principle of superposition of forces.

Key Specifications:
- Beam with multiple loading points
- Dial gauge to measure displacement
- Includes calibrated weights

Applications:
- Fundamentals of structural analysis
- Study linear load response
- Demonstrate bending and elastic behavior

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Engineering Mechanics Lab
Location: CE-L-303, New Civil Engineering Block, Third Floor

Charges:
Rs. 300 per demonstration (external users)

1.102. Cord Tension Apparatus

Description:
Used to study tensions in cords under varying loading and angles.

Key Specifications:
- Multi-cord setup with load hanger
- Angle adjustable pulleys
- Spring balances for force measurement

Applications:
- Static equilibrium analysis
- Vector resolution of forces
- Mechanics education demonstration

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Engineering Mechanics Lab
Location: CE-L-303, New Civil Engineering Block, Third Floor

Charges:
Rs. 200 per session

1.103. pH Test Apparatus

Description:
Used for measuring hydrogen ion concentration in water samples.

Key Specifications:
• Range: 0–14 pH
• Automatic temperature compensation
• Digital display
• Glass electrode with refillable solution

Applications:
• Drinking water and wastewater monitoring
• Process control and environmental compliance

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Environmental Engineering Lab
Location: CE-L302, Old Civil Engineering Block, Third Floor

Charges:
Rs. 200 per sample

1.104. Turbidity Test Apparatus

Description:
Determines turbidity level in water by light scattering.

Key Specifications:
• Range: 0–1000 NTU
• LED-based light source
• Digital readout
• EPA/ISO compliant

Applications:
• Clarity testing in water treatment
• Suspended solids estimation

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Environmental Engineering Lab
Location: CE-L302, Old Civil Engineering Block, Third Floor

Charges:
Rs. 250 per sample

1.105. Hardness Test Apparatus

Description:
Used for measuring calcium and magnesium concentrations.

Key Specifications:
• Titration method setup
• Includes buffer, indicators, EDTA
• Burette and conical flask

Applications:
• Boiler feed water analysis
• Drinking water hardness classification

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Environmental Engineering Lab
Location: CE-L302, Old Civil Engineering Block, Third Floor

Charges:
Rs. 200 per sample

1.106. Alkalinity Test Apparatus

Description:
Determines bicarbonate, carbonate, and hydroxide concentrations in water.

Key Specifications:
• Acid titration method
• Burette, pipette, indicators (methyl orange, phenolphthalein)

Applications:
• Assess water buffering capacity
• Lime-soda softening analysis

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Environmental Engineering Lab
Location: CE-L302, Old Civil Engineering Block, Third Floor

Charges:
Rs. 200 per sample

1.107. Chlorides Test Apparatus

Description:
Measures chloride content using argentometric titration.

Key Specifications:
• Silver nitrate titrant
• Potassium chromate indicator
• Standard laboratory glassware

Applications:
• Corrosion control
• Drinking water quality check

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Environmental Engineering Lab
Location: CE-L302, Old Civil Engineering Block, Third Floor

Charges:
Rs. 200 per sample

1.108. Solids Test Apparatus

Description:
Used to measure Total, Suspended, and Dissolved solids.

Key Specifications:
• Drying oven, crucibles, balance
• Filter paper and membrane filters

Applications:
• Wastewater characterization
• Effluent compliance checks

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Environmental Engineering Lab
Location: CE-L302, Old Civil Engineering Block, Third Floor

Charges:
Rs. 300 per sample

1.109. DO Test Apparatus

Description:
Measures dissolved oxygen in water using Winkler or probe method.

Key Specifications:
• DO probe/meter or chemical reagents
• Digital or analog readout

Applications:
• Water quality assessment
• Biological treatment monitoring

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Environmental Engineering Lab
Location: CE-L302, Old Civil Engineering Block, Third Floor

Charges:
Rs. 300 per test

1.110. BOD Test Apparatus

Description:
Measures oxygen consumed by microorganisms over 5 days.

Key Specifications:
- BOD incubator at 20°C
- DO meters and dilution bottles
- Seed and buffer solutions

Applications:
- Indicator of organic pollution
- Design and monitoring of wastewater treatment

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Environmental Engineering Lab
Location: CE-L302, Old Civil Engineering Block, Third Floor

Charges:
Rs. 600 per test

1.111. COD Test Apparatus

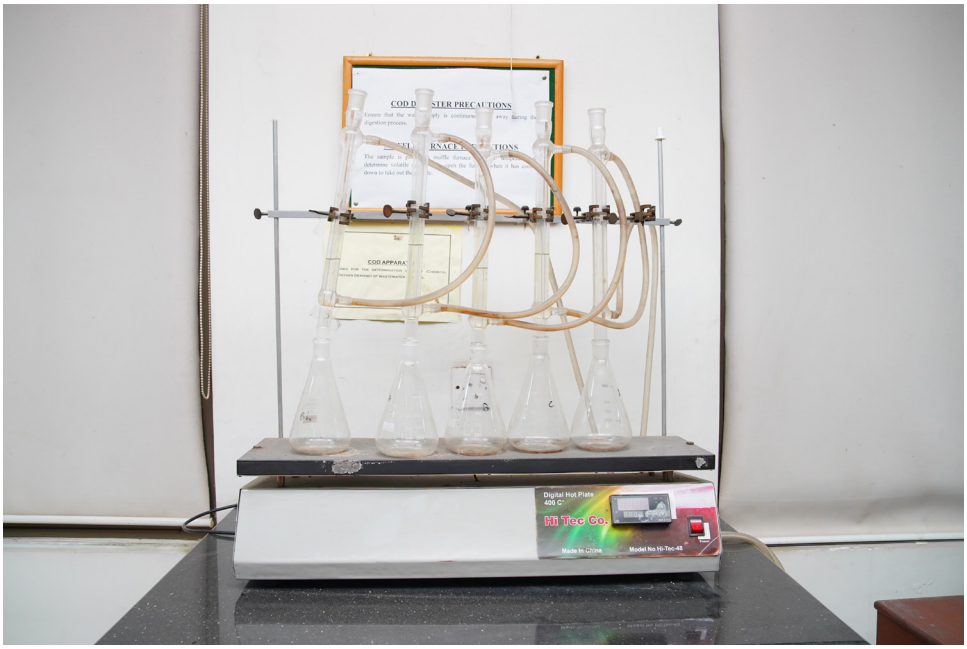
Description:
Measures chemical oxygen demand using dichromate reflux.

Key Specifications:
- COD digester block
- Reagents: dichromate, sulfuric acid, mercuric sulfate
- Glassware and reflux condenser

Applications:
- Assess industrial wastewater strength
- Process control and monitoring

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Environmental Engineering Lab
Location: CE-L302, Old Civil Engineering Block, Third Floor

Charges:
Rs. 700 per test



1.112. Kjeldahl Nitrogen Test Apparatus

Description:
Used to measure nitrogen in wastewater and sludge.

Key Specifications:
- Digestion and distillation unit
- Scrubber and condenser tubes
- Titration unit

Applications:
- Estimate nitrogen load
- Nutrient analysis for wastewater

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Environmental Engineering Lab
Location: CE-L302, Old Civil Engineering Block, Third Floor

Charges:
Rs. 800 per test

1.113. Coliform and Fecal Coliform Test Appa-

Description:
Detects bacterial contamination in water.

Key Specifications:
• Multiple-tube fermentation setup
• Incubation jars and MPN counting
• Culture media and sterilized glassware

Applications:
• Drinking water quality testing
• Assessment of surface and recreational waters

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Environmental Engineering Lab
Location: CE-L302, Old Civil Engineering Block, Third Floor

Charges:
Rs. 400 per sample

1.114. Binocular Microscope

Description:
Used for microbial observation and plankton analysis.

Key Specifications:
• 40X–1000X magnification
• LED illumination
• Coarse and fine focus knobs

Applications:
• Identification of algae, bacteria, and protozoa
• Academic and research purposes

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Environmental Engineering Lab
Location: CE-L302, Old Civil Engineering Block, Third Floor

Charges:
Rs. 300 per session

1.115. Binocular Microscope with Camera

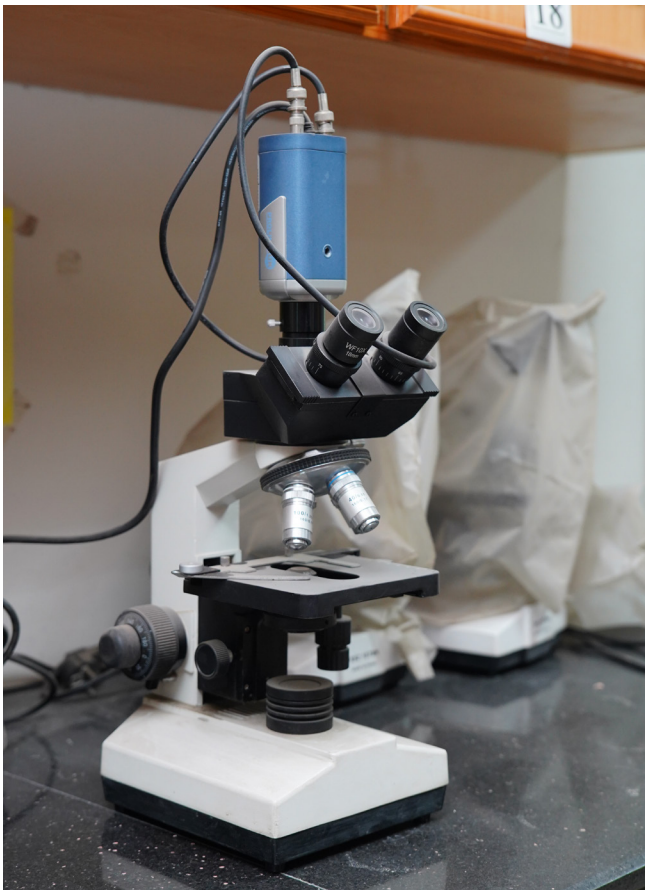
Description:
Microscope with digital imaging for teaching and documentation.

Key Specifications:
• 5MP or 10MP camera
• USB or HDMI output
• Imaging software integration

Applications:
• High-resolution microbial observation
• Image capture for reports and documentation

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Environmental Engineering Lab
Location: CE-L302, Old Civil Engineering Block, Third Floor

Charges:
Rs. 400 per session



1.116. Cool Incubator 0–50°C

Description:
Used for microbial culture at specific temperatures.

Key Specifications:
• Temperature range: 0–50°C
• Digital controller
• Insulated chamber

Applications:
• Incubation for coliform and BOD tests
• Controlled microbial studies

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Environmental Engineering Lab
Location: CE-L302, Old Civil Engineering Block, Third Floor

Charges:
Rs. 300 per setup

1.117. Autoclave

Description:
Sterilizes lab instruments and media using pressurized steam.

Key Specifications:
• Capacity: 20–40 L
• Pressure: 15 psi
• Timer and safety lock

Applications:
• Sterilization of glassware and culture media
• Preparation for coliform and other microbial testing

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Environmental Engineering Lab
Location: CE-L302, Old Civil Engineering Block, Third Floor

Charges:
Rs. 200 per batch

1.118. Air Compressor 4–6 Gallons

Description:
Provides pressurized air for lab filtration and aeration.

Key Specifications:
• Capacity: 4–6 gallons
• Output: 90 psi
• Regulator and pressure gauge

Applications:
• Aeration in DO and BOD setups
• Filtration using vacuum apparatus

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Environmental Engineering Lab
Location: CE-L302, Old Civil Engineering Block, Third Floor

Charges:
Rs. 150 per session

1.119. Electric Incubator 37°C

Description:
Maintains stable temperature for microbial growth.

Key Specifications:
• Fixed 37°C thermostat
• Inner chamber racks
• Thermostatic control

Applications:
• Bacterial culture growth
• Support for biological testing

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Environmental Engineering Lab
Location: CE-L302, Old Civil Engineering Block, Third Floor

Charges:
Rs. 200 per use

1.120. Distillation Still 4L

Description:
Provides distilled water for reagent preparation and testing.

Key Specifications:
• Capacity: 4 L/hr
• Quartz glass or stainless steel construction
• Overheat protection

Applications:
• Production of lab-grade distilled water

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Environmental Engineering Lab
Location: CE-L302, Old Civil Engineering Block, Third Floor

Charges:
Rs. 150 per batch

1.121. Water Bath

Description:
Maintains constant temperature for reagent incubation.

Key Specifications:
• Temperature range: up to 100°C
• Stainless steel chamber
• Digital control

Applications:
• Sample digestion
• Media warming

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Environmental Engineering Lab
Location: CE-L302, Old Civil Engineering Block, Third Floor

Charges:
Rs. 100 per use

1.122. Electric Oven 53L

Description:
Used for sample drying and sterilization.

Key Specifications:
• Volume: 53 L
• Maximum temperature: 250°C
• Digital timer and thermostat

Applications:
• Determination of moisture content
• Sterilization of glassware

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Environmental Engineering Lab
Location: CE-L302, Old Civil Engineering Block, Third Floor

Charges:
Rs. 150 per cycle

1.123. Muffle Furnace 1000°C

Description:
High-temperature furnace for residue analysis.

Key Specifications:
• Maximum temperature: 1000°C
• Programmable control
• Ceramic fiber insulation

Applications:
• Total solids and volatile solids testing
• Ash content determination

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Environmental Engineering Lab
Location: CE-L302, Old Civil Engineering Block, Third Floor

Charges:
Rs. 500 per session

1.124. Vacuum Pump with Filtration Assembly, 1000 mL

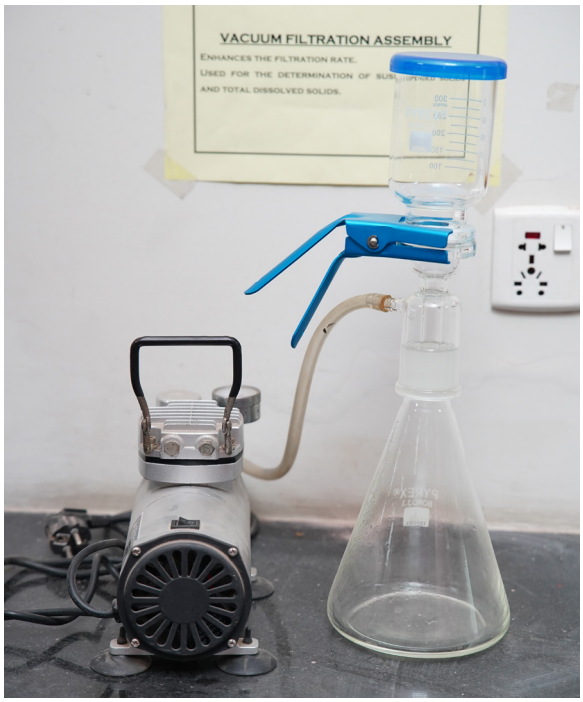
Description:
Used for filtering microbial samples.

Key Specifications:
• Filtration flask: 1000 mL
• Oil-free vacuum pump, 20–25 inHg
• Membrane filter holder

Applications:
• Isolation of coliforms and bacteria
• Separation of suspended solids

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Environmental Engineering Lab
Location: CE-L302, Old Civil Engineering Block, Third Floor

Charges:
Rs. 200 per use



1.125. Liquid Handling Kit

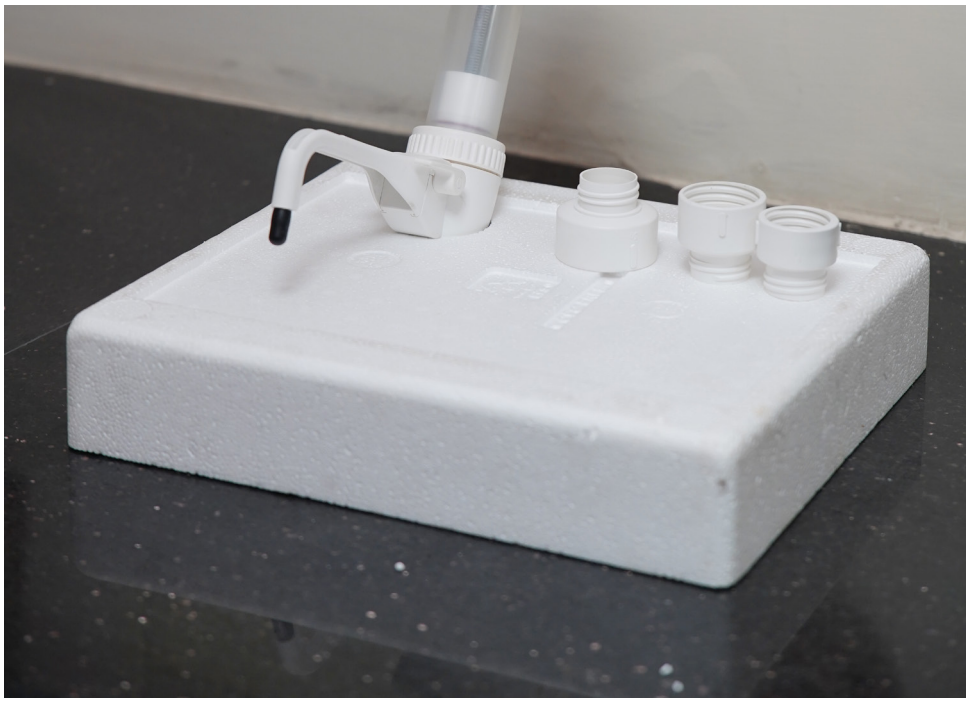
Description:
Pipettes and dispensers for accurate sample preparation.

Key Specifications:
• Volume range: 10 µ L to 50 mL
• Adjustable micropipettes
• Tip ejector and calibration tool

Applications:
• Accurate dosing of analytical solutions
• Reagent and sample preparation

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Environmental Engineering Lab
Location: CE-L302, Old Civil Engineering Block, Third Floor

Charges:
Rs. 100 per use



1.126. Digital Burette 50 mL

Description:
Used for high-precision titration in water analysis.

Key Specifications:
• Volume: 50 mL
• Digital display with 0.01 mL resolution
• Chemical-resistant body

Applications:
• Titrimetric analysis including hardness, chloride, and alkalinity

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Environmental Engineering Lab
Location: CE-L302, Old Civil Engineering Block, Third Floor

Charges:
Rs. 200 per test

1.127. Analytical Balance

Description:
Used for weighing reagents and samples with high accuracy.

Key Specifications:
• Accuracy: 0.1 mg
• Draft shield and LCD display
• Auto calibration

Applications:
• Gravimetric analysis
• Precise chemical dosing

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Environmental Engineering Lab
Location: CE-L302, Old Civil Engineering Block, Third Floor

Charges:
Rs. 100 per session

1.128. Digital Balance

Description:
General lab balance for routine measurements.

Key Specifications:
• Capacity: up to 500 g
• Accuracy: 0.01 g
• Tare and overload protection

Applications:
• Reagent preparation
• Weighing solids

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Environmental Engineering Lab
Location: CE-L302, Old Civil Engineering Block, Third Floor

Charges:
Rs. 50 per use

1.129. 30 kN Medium Pressure Triaxial Test Set

Description:
Used to determine shear strength parameters of soil under controlled drainage and loading conditions.

Key Specifications:
- Maximum axial load: 30 kN
- Cell pressure: up to 1 MPa
- Sample size: 38–100 mm
- Digital displacement and load cell
- Complete with control panel and data acquisition system

Applications:
- Determination of soil shear strength
- Stress-strain analysis under triaxial loading

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Geotechnical Engineering Lab
Location: CE-L301, Old Civil Engineering Block, Third Floor

Charges:
Rs. 1500 per sample
Free for final year projects

1.130. Digital Electrical Strain Direct Shear Apparatus

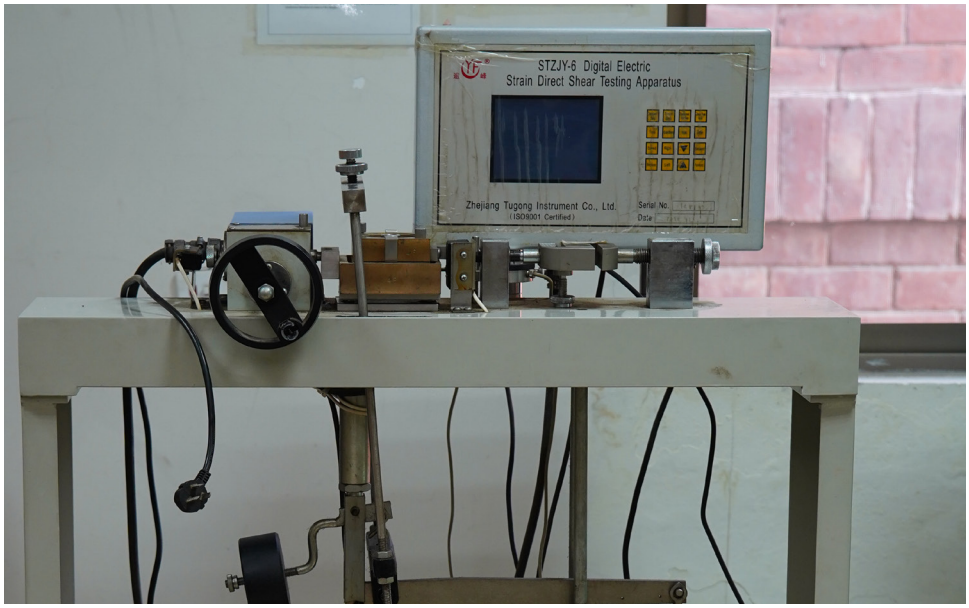
Description:
Used to measure the shear strength of soil under controlled loading and displacement conditions.

Key Specifications:
- Load capacity: 2 kN
- Digital displacement and strain reader
- Shear box size: 60 mm x 60 mm
- Variable shear rate: 0.1–1.25 mm/min

Applications:
- Determination of cohesion and angle of internal friction
- Used in slope stability and retaining wall design

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Geotechnical Engineering Lab
Location: CE-L301, Old Civil Engineering Block, Third Floor

Charges:
Rs. 1200 per test
Supervisor approval needed



1.131. Pavement Material Strength Tester

Description:
Used to evaluate the strength characteristics of pavement subgrade and base materials.

Key Specifications:
- Load cell up to 50 kN
- Compatible with CBR and Marshall molds
- Manual and digital recording options

Applications:
- Subgrade strength analysis
- Pavement layer design validation

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Geotechnical Engineering Lab
Location: CE-L301, Old Civil Engineering Block, Third Floor

Charges:
Rs. 1000 per sample

1.132. Capillary Water Rise Height Tester

Description:
Measures height of water rise in soil to determine capillarity and suction potential.

Key Specifications:
• Transparent capillary tubes
• Height scale and mounting rack
• Easy to assemble and clean

Applications:
• Soil water suction tests
• Used in unsaturated soil and irrigation studies

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Geotechnical Engineering Lab
Location: CE-L301, Old Civil Engineering Block, Third Floor

Charges:
Rs. 300 per sample

1.133. Large Pulverizing Machine

Description:
Used for grinding and pulverizing soil samples for sieve and consistency analysis.

Key Specifications:
• Heavy-duty steel housing
• Detachable bowl and internal blades
• Motor: 1 HP
• Capacity: 2–3 kg per batch

Applications:
• Sample preparation for analysis
• Granular size reduction for compaction and Atterberg tests

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Geotechnical Engineering Lab
Location: CE-L301, Old Civil Engineering Block, Third Floor

Charges:
Rs. 200 per batch

1.134. CBR Tester

Description:
Used to evaluate the California Bearing Ratio of soil for subgrade strength determination.

Key Specifications:
- Load frame: 50 kN
- Penetration piston: 50 mm diameter
- Digital/dial gauge options
- Standard mold and surcharge weights

Applications:
- Subgrade and subbase pavement design
- Used in road construction testing

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Geotechnical Engineering Lab
Location: CE-L301, Old Civil Engineering Block, Third Floor

Charges:
Rs. 1000 per test

1.135. Field Plate Load Testing Machine

Description:
Used to determine bearing capacity and settlement of soils in the field.

Key Specifications:
• Circular plates: 300–750 mm
• Hydraulic jack with load cell
• Dial gauges for deflection

Applications:
• Field bearing capacity determination
• Settlement estimation for shallow foundations

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Geotechnical Engineering Lab
Location: CE-L301, Old Civil Engineering Block, Third Floor

Charges:
Rs. 2000 per setup

1.136. PH Meter

Description:
Measures acidity or alkalinity of soil and water samples.

Key Specifications:
• Range: 0–14 pH
• Digital display
• Electrode with temperature compensation

Applications:
• Soil and water quality testing
• Agricultural and environmental assessments

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Geotechnical Engineering Lab
Location: CE-L301, Old Civil Engineering Block, Third Floor

Charges:
Rs. 200 per sample

1.137. Specific Surface Tester

Description:
Used to determine the fineness of soil and powder materials.

Key Specifications:
• Blaine-type permeability setup
• Graduated manometer tube
• Precision timer

Applications:
• Surface area estimation of soil particles
• Clay activity classification

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Geotechnical Engineering Lab
Location: CE-L301, Old Civil Engineering Block, Third Floor

Charges:
Rs. 300 per test

1.138. Speed Moisture Tester

Description:
Portable device for determining moisture content of soil.

Key Specifications:
• Pressure gauge type
• Steel container with reagent capsule chamber

Applications:
• Rapid onsite moisture testing
• Used in field compaction control

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Geotechnical Engineering Lab
Location: CE-L301, Old Civil Engineering Block, Third Floor

Charges:
Rs. 250 per use

1.139. Electric Oven Capacity 53 L

Description:
Used for drying soil samples before testing.

Key Specifications:
• Temperature range: ambient to 250°C
• Digital thermostat control
• Double-walled insulated chamber

Applications:
• Sample drying for consistency and classification tests

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Geotechnical Engineering Lab
Location: CE-L301, Old Civil Engineering Block, Third Floor

Charges:
Rs. 100 per session

1.140. Soil Hydrometer 152H

Description:
Used for particle size distribution of fine-grained soils.

Key Specifications:
• Graduated hydrometer scale
• Glass body
• ASTM D422 compliant

Applications:
• Fine soil classification
• Silt and clay content analysis

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Geotechnical Engineering Lab
Location: CE-L301, Old Civil Engineering Block, Third Floor

Charges:
Rs. 300 per sample

1.141. Electric Soil Dispersion Device

Description:
Disperses soil samples for hydrometer analysis

Key Specifications:
• Motorized stirring head
• Stainless steel beaker holder

Applications:
• Soil particle separation
• Preparation for sedimentation tests

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Geotechnical Engineering Lab
Location: CE-L301, Old Civil Engineering Block, Third Floor

Charges:
Rs. 200 per use

1.142. Shrinkage Limit Apparatus

Description:
Determines the minimum moisture content at which soil volume remains constant

Key Specifications:
• Shrinkage dish, mercury, glass plate
• Straight edge and calibration tools

Applications:
• Soil consistency limit classification
• Swelling and shrinkage behavior studies

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Geotechnical Engineering Lab
Location: CE-L301, Old Civil Engineering Block, Third Floor

Charges:
Rs. 250 per test

1.143. Plastic Limit Apparatus

Description:
Used for determining the plastic limit of soil

Key Specifications:
• Glass plate, spatula, moisture containers
• Roller and balance

Applications:
• Soil classification using Atterberg limits

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Geotechnical Engineering Lab
Location: CE-L301, Old Civil Engineering Block, Third Floor

Charges:
Rs. 100 per test

1.144. Liquid Limit Apparatus

Description:
Used to determine the liquid limit of cohesive soils

Key Specifications:
- Casagrande device
- Grooving tool
- Brass cup and counter

Applications:
- Soil plasticity classification
- Foundation soil design

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Geotechnical Engineering Lab
Location: CE-L301, Old Civil Engineering Block, Third Floor

Charges:
Rs. 150 per test

1.145. Sand Replacement Equipment (Sand

Description:
Used to determine in-situ density of soil

Key Specifications:
• Sand cone, metal tray, calibration jar
• Cone valve with detachable base

Applications:
• Field compaction control
• Earthwork and roadbed compaction quality check

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Geotechnical Engineering Lab
Location: CE-L301, Old Civil Engineering Block, Third Floor

Charges:
Rs. 300 per field test

1.146. Plate & Collar with Standard Compaction Hammer 5.5 lbs

Description:
Used for Proctor compaction test

Key Specifications:
- Drop height: 12 inches
- Mold volume: 1000 cc
- Compaction energy: 592 kJ/m^3

Applications:
- Determine optimum moisture content
- Measure maximum dry density of soil

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Geotechnical Engineering Lab
Location: CE-L301, Old Civil Engineering Block, Third Floor

Charges:
Rs. 300 per sample

1.147. Modified Rammer 10 lbs, Free Fall 18 Inch

Description:
Used for Modified Proctor test to simulate heavier compaction

Key Specifications:
• Mold and hammer per ASTM D1557
• Compaction energy: 2700 kJ/mμ

Applications:
• Determine compaction specifications for highways and airfields

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Geotechnical Engineering Lab
Location: CE-L301, Old Civil Engineering Block, Third Floor

Charges:
Rs. 350 per sample

1.148. Sieve Set

Description:
Used to determine particle size distribution of soil

Key Specifications:
- IS sieves ranging from 4.75 mm to 75 micron
- Brass or stainless steel frames
- Compatible with mechanical shaker

Applications:
- Grain size analysis
- Classification of coarse and fine soils

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Geotechnical Engineering Lab
Location: CE-L301, Old Civil Engineering Block, Third Floor

Charges:
Rs. 250 per test

1.149. Permeability Apparatus (Constant and Falling Head)

Description:
Used to determine the coefficient of permeability in soils

Key Specifications:
- Cylindrical standpipes
- Valves and tubing
- Standard molds and porous stones

Applications:
- Drainage and seepage studies
- Groundwater movement estimation

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Geotechnical Engineering Lab
Location: CE-L301, Old Civil Engineering Block, Third Floor

Charges:
Rs. 400 per sample

1.150. Universal Soil Sample Extruder

Description:
Used to remove soil samples from standard molds

Key Specifications:
• Lever-based extractor
• Compatible with CBR and compaction molds

Applications:
• Sample recovery for further testing

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Geotechnical Engineering Lab
Location: CE-L301, Old Civil Engineering Block, Third Floor

Charges:
Rs. 100 per sample

1.151. Laboratory Oven (min 416L, 0–200°C)

Description:
Used to dry soil samples and perform moisture content tests

Key Specifications:
• Digital thermostat
• Capacity: 416 L
• Double-wall insulation

Applications:
• Drying for consistency, compaction, and hydrometer tests

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Geotechnical Engineering Lab
Location: CE-L301, Old Civil Engineering Block, Third Floor

Charges:
Rs. 200 per batch

1.152. Specific Gravity Pycnometers with Cap (50 mL)

Description:
Used to determine specific gravity of fine-grained soils

Key Specifications:
• 50 mL glass bottle with screw cap
• Graduated for precise volume

Applications:
• Soil density and mineral classification

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Geotechnical Engineering Lab
Location: CE-L301, Old Civil Engineering Block, Third Floor

Charges:
Rs. 150 per test

1.153. Mechanical Soil Pulverizer with Detach able Bowl

Description:
Used to grind dry soil samples for sieve analysis

Key Specifications:
• Steel grinding mechanism
• Removable chamber

Applications:
• Sample preparation for gradation and plasticity tests

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Geotechnical Engineering Lab
Location: CE-L301, Old Civil Engineering Block, Third Floor

Charges:
Rs. 150 per batch

1.154. Electric Strain Unconfined Compression Test Apparatus

Description:
Used for unconfined compression tests on cohesive soils

Key Specifications:
- Load frame with motor
- Load capacity: 2 kN
- Digital strain gauge

Applications:
- Quick estimate of undrained shear strength

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Geotechnical Engineering Lab
Location: CE-L301, Old Civil Engineering Block, Third Floor

tCharges:
Rs. 600 per sample

1.155. Consolidation Test Apparatus

Description:
Used to determine consolidation characteristics of soil

Key Specifications:
- Oedometer ring with porous stones
- Load lever assembly
- Dial gauge for settlement measurement

Applications:
- Estimation of settlement under load
- Calculation of compression index

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Geotechnical Engineering Lab
Location: CE-L301, Old Civil Engineering Block, Third Floor

Charges:
Rs. 800 per sample

1.156. Universal Structural Frame

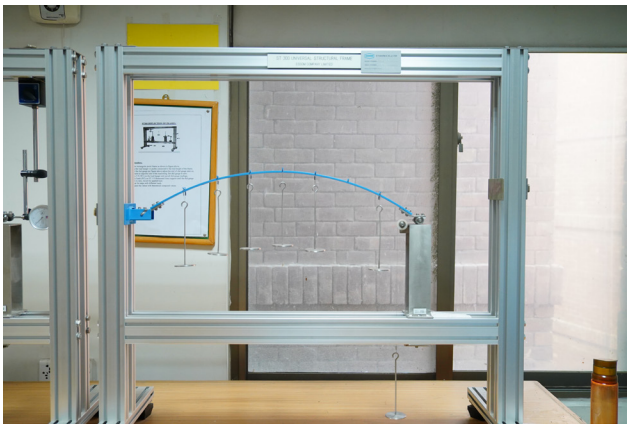
Description:
A modular structural testing frame for analyzing different structural elements such as beams, arches, and trusses under various support and loading conditions.

Key Specifications:
• Steel modular frame with adjustable members
• Load application points with calibrated weights
• Integrated dial gauges and load cells
• Compatible with additional accessories for diverse experiments

Applications:
• Experimental study of structural systems under static load
• Used for validating theoretical concepts of stress, strain, deflection, and support reactions
• Supports advanced coursework and capstone design projects in structural mechanics

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Structural Engineering Lab
Location: CE-L-201, Old Civil Engineering Block, Second Floor

Charges:
• Rs. 500 per test setup (external use)
• Prior booking needed for research or project use



1.157. Universal Base Frame

Description:
A modular base platform for supporting different structural testing apparatus.

Key Specifications:
- Steel construction with slots for fixing attachments
- Compatible with multiple test modules
- High rigidity and stability

Applications:
- Acts as support for various structural experiments
- Adaptable for beams, arches, frames, and column tests

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Structural Engineering Lab
Location: CE-L-201, Old Civil Engineering Block, Second Floor

Charges:
- Rs. 400 per use

1.158. Shear Force & Bending Moment Apparatus

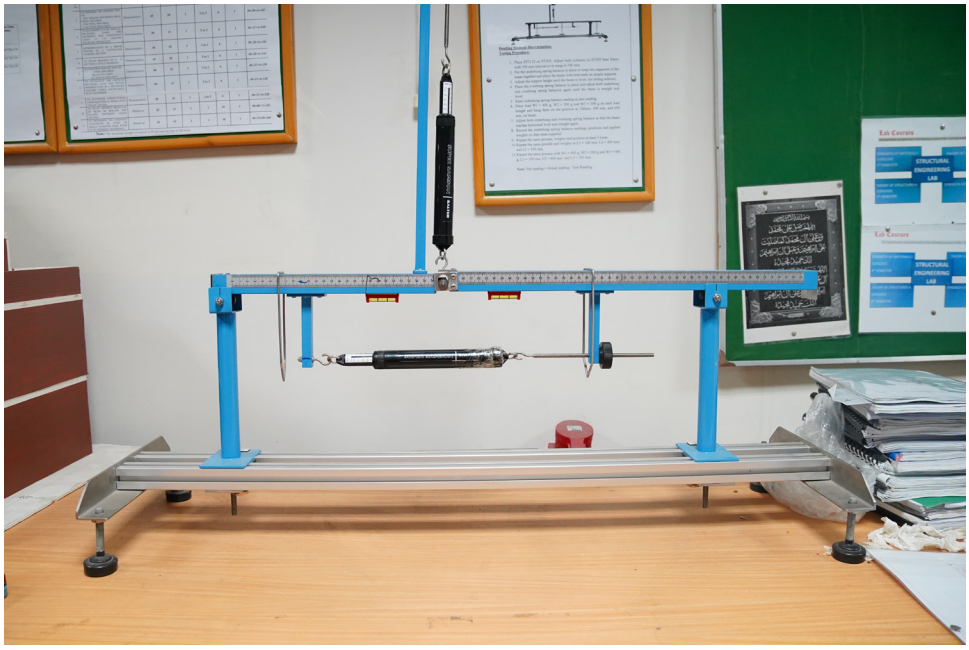
Description:
Used to demonstrate variation of shear force and bending moment along a beam.

Key Specifications:
- Beam supported with measuring arms and sliding loads
- Graduated scale
- Dial gauges for force readings

Applications:
- Study of internal forces in beams
- Educational tool for mechanics of materials

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Structural Engineering Lab
Location: CE-L-201, Old Civil Engineering Block, Second Floor

Charges:
Rs. 300 per demonstration



1.159. Influence Line Apparatus

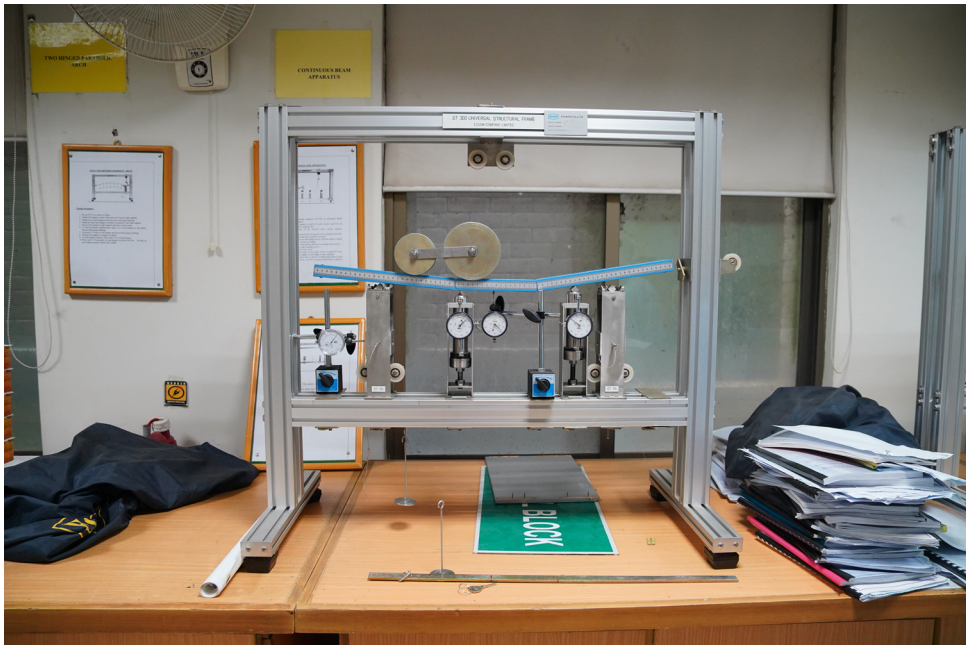
Description:
Demonstrates influence lines for various support reactions and internal forces.

Key Specifications:
• Sliding weight system
• Graduated scale for position and force measurement

Applications:
• Structural analysis for moving loads
• Ideal for bridge engineering principles

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Structural Engineering Lab
Location: CE-L-201, Old Civil Engineering Block, Second Floor

Charges:
Rs. 400 per setup



1.160. Continuous Beam Apparatus

Description:
Used to study behavior of continuous beams over multiple supports.

Key Specifications:
• Adjustable supports and loading points
• Measurement gauges for deflection

Applications:
• Verification of moment distribution method
• Study of load sharing in statically indeterminate systems

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Structural Engineering Lab
Location: CE-L-201, Old Civil Engineering Block, Second Floor

Charges:
Rs. 350 per test

1.161. Moment Area Method Apparatus

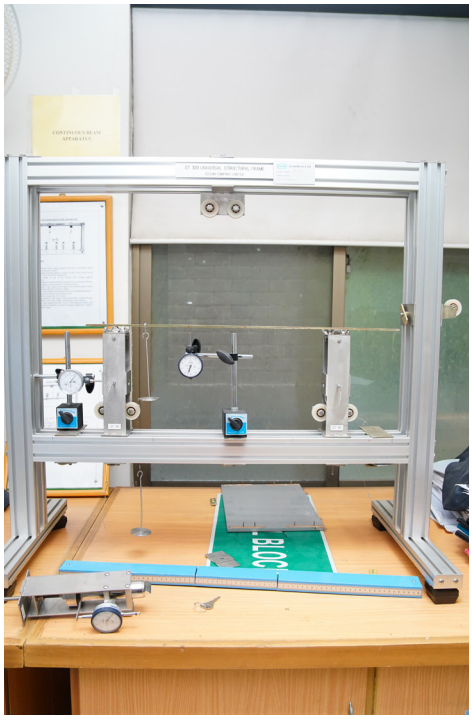
Description:
Demonstrates the application of moment-area theorems for beam deflections.

Key Specifications:
• Beam with loading and measuring features
• Precision indicators for angular displacement

Applications:
• Beam deflection analysis using moment area theory
• Useful in advanced structural mechanics courses

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Structural Engineering Lab
Location: CE-L-201, Old Civil Engineering Block, Second Floor

Charges:
Rs. 300 per use



1.162. Two Hinged Parabolic Arch Apparatus

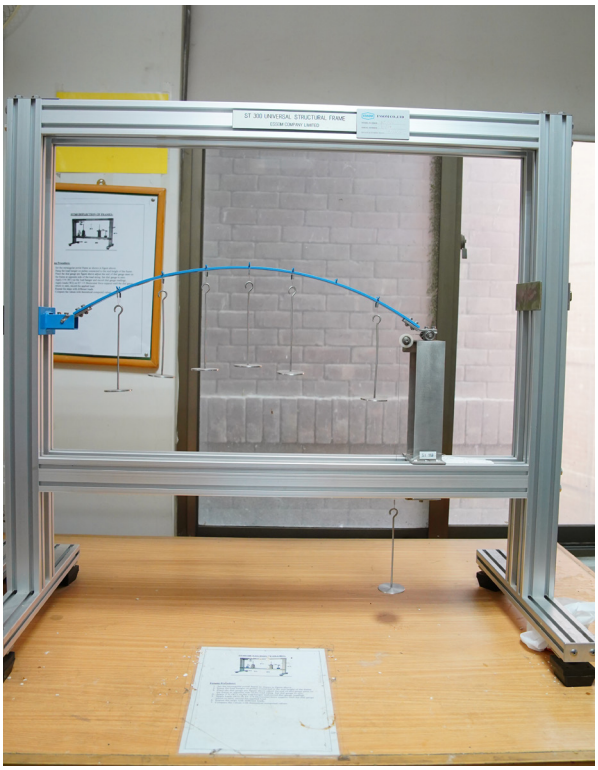
Description:
Simulates a parabolic arch with pinned supports to study arch behaviour.

Key Specifications:
• Parabolic profile with support hinges
• Load application hooks and force measurement devices

Applications:
• Structural form behaviour under vertical loads
• Arch theory demonstration

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Structural Engineering Lab
Location: CE-L-201, Old Civil Engineering Block, Second Floor

Charges:
Rs. 400 per setup



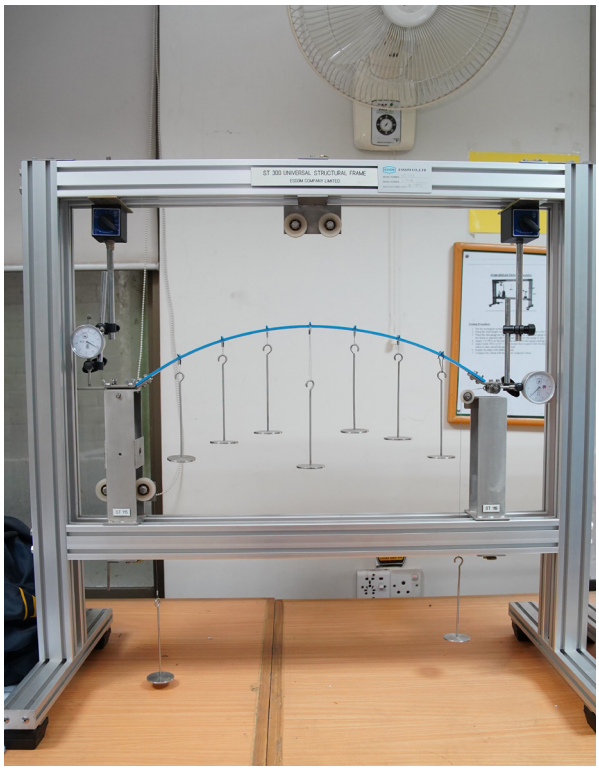
1.163. Two Hinged Parabolic Arch Fixed Ends

Description:
Examines effect of end fixity on parabolic arch behavior.

Key Specifications:
• Similar to standard arch with fixed-end conditions
• Enhanced instrumentation for stress and displacement
Applications:
• Comparison of fixed vs hinged support reactions
• Stability study under static loads

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Structural Engineering Lab
Location: CE-L-201, Old Civil Engineering Block, Second Floor

Charges:
Rs. 450 per use



1.164. Three Hinged Arch Apparatus

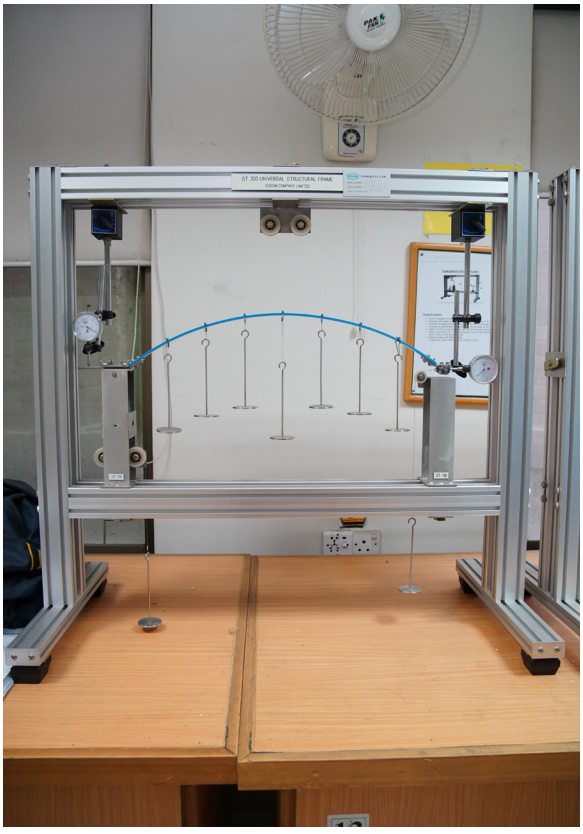
Description:
Used for demonstrating stability and load transfer in three-hinged arches.

Key Specifications:
• Central hinge with supports and instrumentation
• Load hangers for static experiments

Applications:
• Redundant structural systems
• Horizontal thrust and vertical reaction study

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Structural Engineering Lab
Location: CE-L-201, Old Civil Engineering Block, Second Floor

Charges:
Rs. 400 per experiment



1.165. Forces in Truss Apparatus

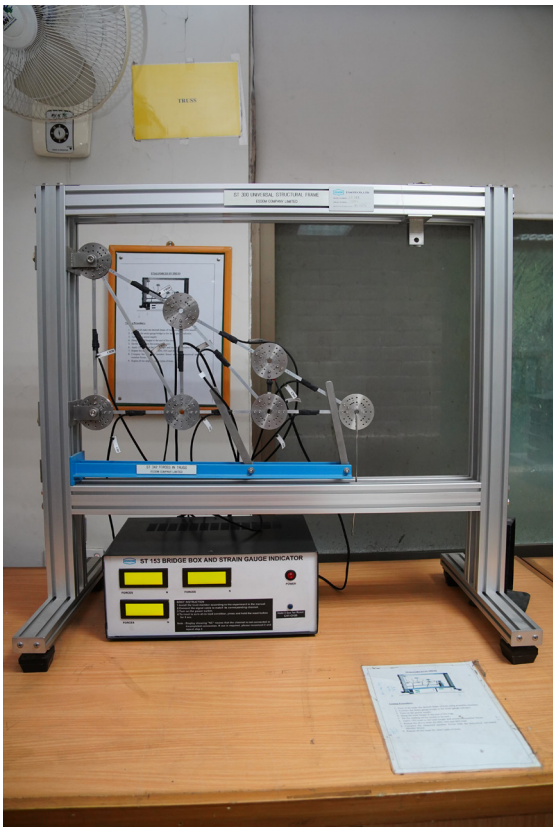
Description:
Used to analyse member forces in different types of trusses.

Key Specifications:
• Pin-jointed framework
• Load cells or spring balance gauges on members

Applications:
• Internal axial force analysis
• Truss design validation

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Structural Engineering Lab
Location: CE-L-201, Old Civil Engineering Block, Second Floor

Charges:
Rs. 350 per setup



1.166. Deflection of Frames Apparatus

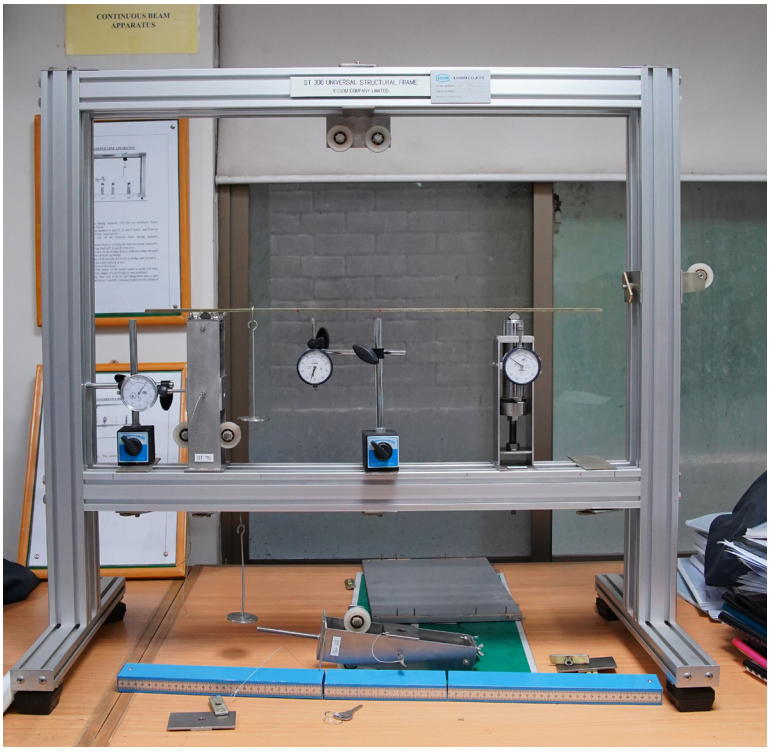
Description:
Demonstrates lateral and vertical deflection of rigid frames.

Key Specifications:
• Frame with variable load points and dial indicators
• Rigid and flexible joint modelling

Applications:
• Study of frame deformation
• Bending and shear interaction

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Structural Engineering Lab
Location: CE-L-201, Old Civil Engineering Block, Second Floor

Charges:
Rs. 400 per demonstration



1.167. Column Buckling Apparatus

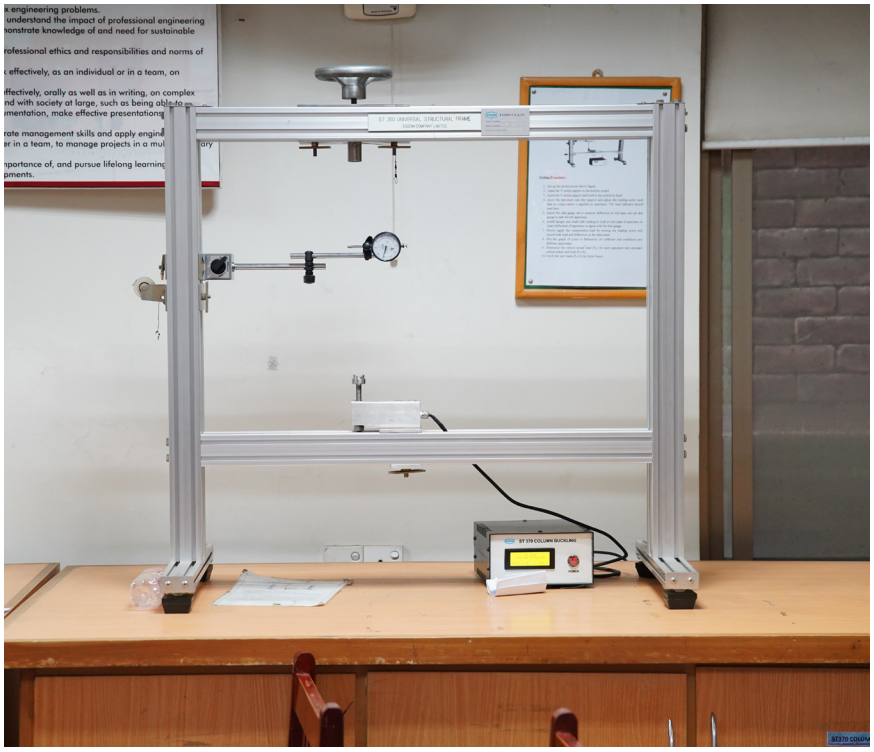
Description:
Used to study buckling behaviour of columns under axial loads.

Key Specifications:
• Slender columns with end condition variations
• Load application and deflection measurement tools

Applications:
• Euler buckling theory validation
• Critical load determination

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Structural Engineering Lab
Location: CE-L-201, Old Civil Engineering Block, Second Floor

Charges:
Rs. 400 per experiment



1.168. Torsion & Bending Apparatus

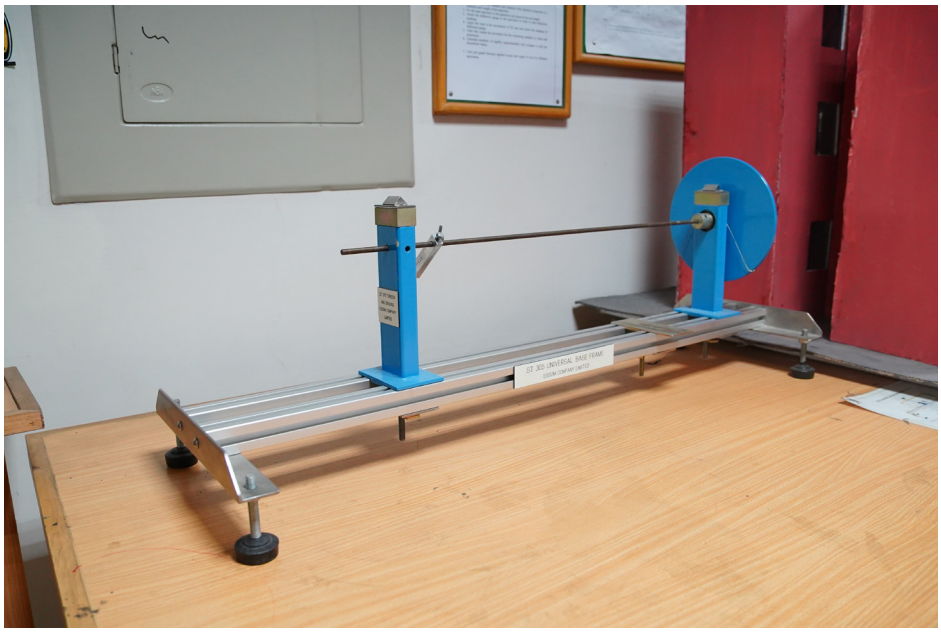
Description:
Used to compare combined torsional and bending stresses.

Key Specifications:
- Shaft system with loading points
- Torque and bending moment gauges

Applications:
- Combined stress analysis
- Shaft behaviour under multi-axis loading

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Structural Engineering Lab
Location: CE-L-201, Old Civil Engineering Block, Second Floor

Charges:
Rs. 450 per setup



1.169. Torsion Machine

Description:
Performs torsion tests on circular sections to determine shear modulus.

Key Specifications:
• Motorized or manual operation
• Torque indicator and angular displacement scale

Applications:
• Material property testing (G modulus)
• Structural component design validation

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Structural Engineering Lab
Location: CE-L-201, Old Civil Engineering Block, Second Floor

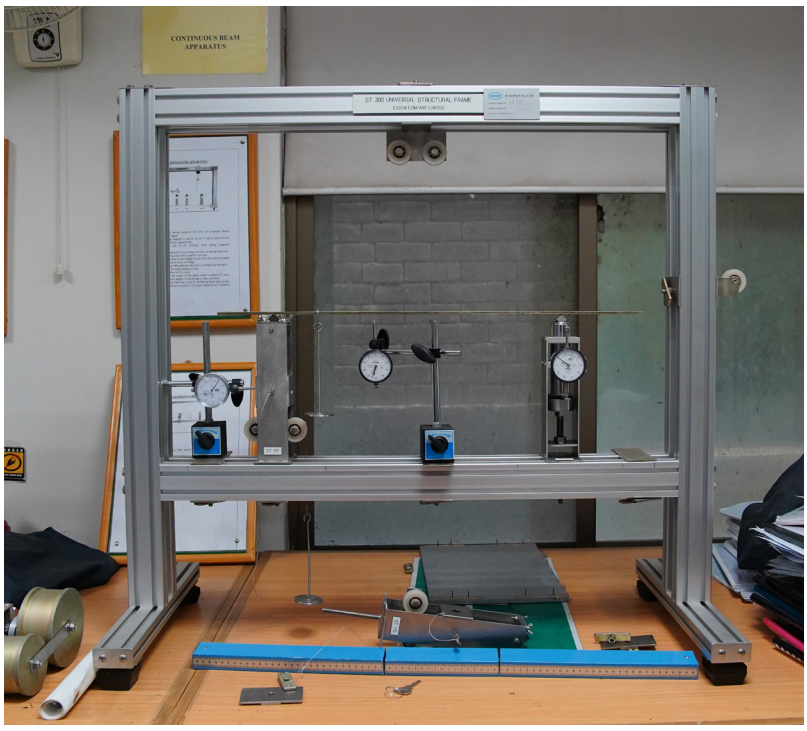
Charges:
Rs. 600 per sample

1.170. Rockwell Hardness Tester, Analogue Apparatus

Description:
Used to measure hardness of materials using Rockwell scale.
Key Specifications:
• Manual lever system
• Dial gauge readout
• Different indenters for B/C scales
Applications:
• Hardness classification of metals
• Mechanical testing labs
Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Structural Engineering Lab
Location: CE-L-201, Old Civil Engineering Block, Second Floor
Charges:
Rs. 300 per test

1.171. Unsymmetrical Bending Apparatus

Description:
Demonstrates deflection in beams subjected to off-axis loading.
Key Specifications:
• Beam with eccentric load and gauges
• Sectional shape variations
Applications:
• Biaxial bending studies
• Section behavior under non-uniform loading
Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Structural Engineering Lab
Location: CE-L-201, Old Civil Engineering Block, Second Floor
Charges:
Rs. 400 per session



Mi 1.172. Small Instruments: Vernier Callipers, Micrometres, Strain Gauges

Description:
Precision measurement tools including vernier callipers, micrometers, and strain gauges.

Key Specifications:
• Digital/analog micrometres and verniers
• Electrical resistance-type strain gauges

Applications:
• Dimensional analysis
• Strain measurement and instrumentation setups

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Structural Engineering Lab
Location: CE-L-201, Old Civil Engineering Block, Second Floor

Charges:
Rs. 100–200 per instrument usage

1.173. Supporting Frame for Z, I, Channel Sections with Load Cell, Datalogger Apparatus

Description:
Used for load testing and strain measurement in structural sections.

Key Specifications:
- Load cell integrated frame
- Z, I, Channel holders
- Datalogger and PC interface for live monitoring

Applications:
- Load-deflection relationship
- Sectional strength evaluation
- Used in senior projects

Location at UCP:
Faculty: FOE
Department: Civil Engineering
Lab: Structural Engineering Lab
Location: CE-L-201, Old Civil Engineering Block, Second Floor

Charges:
Rs. 800 per full setup with data logging

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