

List of Major Equipment / Software / Computing Facilities

A. Equipment

No.	Equipment	Image	Key Features / Use
Vehicle Dynamics & Traffic Measurement			
1	Inertial Measurement Unit (IMU) & VBOX Input Module		Used to measure acceleration, angular velocity, and orientation; integrates with the VBOX. Includes an input module for acquiring tyre pressure, temperature, voltage, current, and suspension force data from external sensors for vehicle dynamics and powertrain testing.
2	Video VBOX HD2 Data-Logging System		Used to record synchronised video, speed, position, and vehicle dynamics data for transportation and road research.
3	Radar Gun		Used to measure the speed of moving vehicles or objects using radar technology; particularly useful for traffic and transportation studies.
Noise, Vibration & Environmental Monitoring			
4	24-Channel Noise and Vibration Data Acquisition System		The m+p VibMobile (m+p International, Germany) is a portable 24-channel system for noise and vibration measurement, equipped with G.R.A.S. microphones and MMF accelerometers. It supports field data acquisition, acoustic analysis, and vibration analysis.
5	Sound Level Meter		Used to measure and monitor sound pressure levels and noise intensity in the surrounding environment.
6	Pollution Meter		Used to measure and monitor air quality by detecting pollutants and assessing pollution levels in the surrounding environment.

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7	Digital Lux Meter (Illumination Meter)		Used to measure the intensity of light (illuminance) in indoor and outdoor environments for lighting and field studies.
Human Factors & Physiological Measurement			
8	Biosignal Plux		A professional 4-channel wireless data acquisition hub supporting ECG, EDA, and respiration signals for physiological research.
9	Actigraphy Watch		The SOMNOwatch® eco (SOMNOmedics) is a compact, waterproof, wrist-worn actigraph with a 3-axis accelerometer and ambient light sensor, recording activity and body position at sampling rates adjustable up to 256 Hz (e.g., 32 Hz sampling with 1 Hz storage).
10	Elite Novo Force Indoor Cycle Trainers		Used to simulate cycling conditions and assess cyclist performance, speed, and physiological responses in controlled laboratory environments.
11	Cadence Sensor Systems		Used to measure cycling cadence (pedalling rate) and support analysis of cyclist performance and riding behaviour.
12	Smart Voice Recorder		Used for capturing, storing, and analysing voice recordings for research and transportation-related studies.
Field Survey, Pavement & Documentation			
13	Road Measuring Data Acquisition System (ROMDAS) with Mounting Vehicle		Used to collect and analyse road condition, pavement performance, and geometric data for comprehensive road surveys.

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14	Trimble 5600 High-Precision IR Robotic Total Station		Used for automated measurement of angles, distances, and coordinates in surveying and infrastructure studies.
15	Ground Penetrating Radar (GPR)		Used to detect and map subsurface features, utilities, and structural layers using electromagnetic waves.
16	Core Drilling System		Used to extract cylindrical core samples from concrete, asphalt, soil, and other materials for testing and structural assessment.
17	Measuring Wheel		Used to accurately measure distances along roads, pathways, and other surfaces during field surveys and site assessments.
18	Bosch Laser Measure (Distometer)		Used to measure distances, dimensions, and heights accurately for laboratory and field-based research.
19	DSLR Camera		Used for capturing high-resolution images and videos for research, documentation, and field surveys.
20	Action Camera		Used for capturing high-resolution images and videos for research, documentation, and field surveys.

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Bioprocess & Analytical Laboratory			
21	Hydrothermal Liquefaction (HTL) System	 A complex industrial-scale laboratory setup for hydrothermal liquefaction. It features a large stainless steel reactor vessel mounted on a frame, with various pipes, valves, and control panels. The system is designed to operate at high temperatures and pressures to convert biomass into bio-crude.	Used to convert biomass and other organic materials into bio-crude and other valuable products under elevated temperature and pressure conditions.
22	High Performance Liquid Chromatography (HPLC)	 A high-performance liquid chromatography (HPLC) system. It consists of several interconnected modules, including a pump, injector, column, and detector, all housed in a compact, professional-grade unit. The system is used for the separation and analysis of complex liquid samples.	Used to separate, identify, and quantify components of complex liquid samples.
23	Bioreactor	 A laboratory-scale bioreactor. It is a cylindrical vessel with a stirrer and various ports for monitoring and controlling the environment. The bioreactor is used for cultivating biological materials or microorganisms under regulated conditions of temperature, pH, aeration, and agitation.	Used for cultivating biological materials or microorganisms under regulated conditions of temperature, pH, aeration, and agitation.
24	Thermocycler	 A thermocycler, a specialized instrument used in molecular biology. It has a digital display and a keypad, and is designed to perform precise, repeated temperature cycles for DNA amplification and related molecular biology applications.	Used to perform precise, repeated temperature cycles for DNA amplification and related molecular biology applications.
25	CO₂ Incubator	 A CO ₂ incubator, a specialized environmental chamber. It is a tall, rectangular unit with a digital display and a control panel. It is used for the growth and maintenance of cell cultures under controlled laboratory conditions, specifically maintaining a constant CO ₂ concentration.	Used for the growth and maintenance of cell cultures under controlled laboratory conditions.
26	Laminar Airflow Cabinet	 A laminar airflow cabinet, a specialized piece of laboratory equipment. It is a large, rectangular unit with a glass front and a control panel. It provides a clean, particle-controlled airflow environment for aseptic handling and preparation of biological samples.	Provides a clean, particle-controlled airflow environment for aseptic handling and preparation of biological samples.
27	Centrifuge	 A centrifuge, a specialized instrument used in laboratory settings. It consists of a motor and a rotor that spins samples at high speeds. The centrifuge is used to separate components of samples based on their density by applying centrifugal force.	Used to separate components of samples based on their density by applying centrifugal force.

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28	Vacuum Concentrator		Used to concentrate samples by removing solvents under reduced pressure and controlled temperature.
29	Autoclave		A laboratory sterilisation unit that uses high-pressure steam and elevated temperature to sterilise equipment, samples, and other materials.
30	Hot Air Oven		Used for drying, heating, and sterilising glassware, instruments, and other heat-resistant materials.
31	Cold Storage		Used for preserving samples, materials, and other research-related items under low-temperature conditions.