VINAYAKA MISSION'S RESEARCH FOUNDATION
(Deemed to be University under section 3 of the UGC Act 1956)

Major Research Infrastructure Available in VMRF (DU)

November 2024

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Major Research Infrastructure available in VMRF (DU)

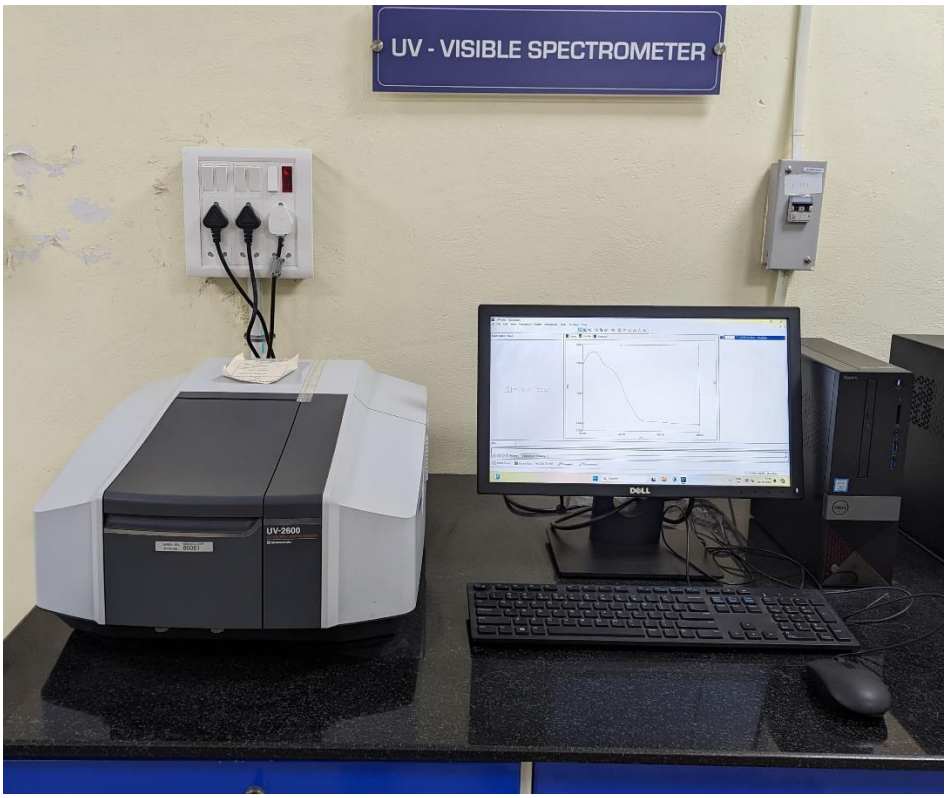
1. Nanotechnology, Material Science:

A) FOURIER TRANSFORM INFRA-RED SPECTROSCOPY: (FTIR)

1. **Name of the Institution:** AARUPADAI VEEDU INSTITUTE OF TECHNOLOGY
2. **Name, make & model number of the equipment:** Fourier transform Infra-red (FTIR) spectrometer, Shimadzu make, IR affinity IS model
3. **Thrust area of Research/Domain for which equipment will be useful**: Material Characterization, Nanotechnology, and Material Science.
4. **Major uses of the equipment:**
   It is a sophisticated compact instrument designed to be used for a wide range of structural analysis. ATR is a sampling technique used in conjunction with infrared spectroscopy which enables samples to be examined directly in solid state or in liquid state without further preparation. The surface-emitted IR spectrum recorded from the bond's natural vibration frequencies provides knowledge about the presence of various functional groups and chemical bonds in the sample. The spectrometer offers a high signal-to-noise ratio (30,000: 1) or higher. Despite its compact design, it offers full functionality for all FTIR techniques, including transmission and diffuse reflection.
5. **Important specifications of the equipment:**
   Interferometer : Michelson interferometer (30° incident angle) equipped with Dynamic Alignment system Sealed interferometer with auto dryer Beam splitter: Germanium-coated KBr Light source: High-energy ceramic light source Detector: DLATGS detector equipped with temperature control Wave number range: It operates in full mid-IR range from 7800 cm^{-1} to 350 cm^{-1}. Resolution : 0.5, 1, 2, 4, 8, 16 cm^{-1} .
6. **High-resolution color picture of the equipment:**

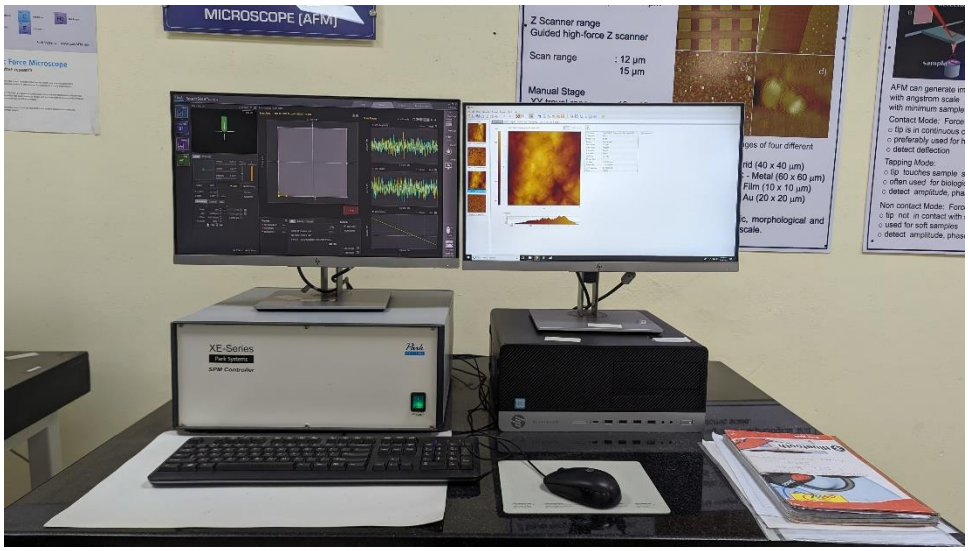
B) ULTRA VIOLET (UV – Vis) SPECTROMETER

1. **Name of the Institution:** AARUPADAI VEEDU INSTITUTE OF TECHNOLOGY
2. **Name, make & model number of the equipment:** UV-Visible spectrophotometer (UV-Vis 2600, Shimadzu make)
3. **Thrust area of Research/Domain for which equipment will be useful**: Nanotechnology, and Material Science.
4. **Major uses of the equipment:**
   It is an analytical tool used to measure the optical properties of the samples in the UV-visible range of electromagnetic radiation. It is the most widely used spectrometer for studying liquid medium, gas, and solids including semiconductors, films, glass, and absorbing materials. Importantly, the UV-Visible spectrometer determines how much light of a given wavelength or frequency passes through a sample and how much is absorbed. The optional facility of ISR-2600 plus integrating sphere attached with the main unit enables to measure absorbance or emission spectral features in a wider wavelength range 220 - 1400 nm. As a result, UV-Vis 2600 can accommodate measurements of solar cell anti-reflective films and polycrystalline silicon wafers.
5. **Important specifications of the equipment:**
   Wavelength Range: 185 to 900 nm or 220 to 1400 nm (when the ISR-2600 plus Integrating sphere attachment is used), Optical System: Double beam, Single monochromator, Resolution: 0.1 nm, Wavelength Accuracy: +/-0.1 nm (656.1 nm D2), +/-0.3 nm (all range), Scanning Speed: 4000 to 0.5 nm/min, Light Source: 50 W Halogen lamp, Deuterium lamp.
6. **High-resolution color picture of the equipment:**



C) ATOMIC FORCE MICROSCOPE

1. **Name of the Institution:** AARUPADAI VEEDU INSTITUTE OF TECHNOLOGY
2. **Name, make & model number of the equipment:** Atomic force microscope (AFM), Park XE7
3. **Thrust area of Research/Domain for which equipment will be useful**: Material Characterization studies & Analysis, Nanotechnology, and Material Science.
4. **Major uses of the equipment:**
   It is a surface mechanical property measuring tool designed to be used for measuring surface features of dimensions between 10 nanometers and 100 micrometers. It provides valuable information about three-dimensional topography as well as the physical properties of sample surfaces. The basic principle of the atomic force microscopy technique is to measure the forces or interaction between the probing AFM tip and the sample surface. The technique is also used to characterize electrical, magnetic, morphological, and mechanical surface properties in real space on the atomic scale. AFM modes available are: 1) True contact mode, 2) Non-contact mode, 3) Tapping mode.
5. **Important specifications of the equipment:**
   Single-module flexure XY scanner with closed-loop control. Scan range: 100 µm x 100 µm, 50 µm x 50 µm, 10 µm x 10 µm. Z Scanner range - Guided high-force Z scanner Scan range : 12 µm 15 µm. Typical AFM resolution: X-Y: 1 nm; Z: 0.1nm; Detection: sub-Å deflection, pN forces
6. **High-resolution color picture of the equipment:**



D) PHOTO REACTOR

1. **Name of the Institution:** AARUPADAI VEEDU INSTITUTE OF TECHNOLOGY
2. **Name, make & model number of the equipment: Annular-Type Photo Reactor**
3. **Thrust area of Research/Domain for which equipment will be useful**: Waste Water Treatment, Nanotechnology, and Material Science.
4. **Major uses of the equipment:**
   The exploration of photocatalysis under visible light illumination has been greatly enhanced by the use of specialized equipment. Among the notable advancements is the development of an annular-type photo reactor, a cutting-edge tool provided by Heber Scientific Company Ltd, based in Chennai, India. This reactor is specifically designed to optimize the photocatalytic processes under visible light.

5. **Important specifications of the equipment:**
   For the purpose of irradiation within this system, a 500 W tungsten halogen lamp is employed, offering a powerful and consistent source of visible light. The design of the reactor incorporates glass tubes, which are available in two sizes to accommodate different scales of experiments. The first set of tubes measures 1.5 cm in inner diameter and 30 cm in height, while the second set is slightly larger, with a 3.5 cm inner diameter and the same height. This versatility in tube size allows for a range of photocatalytic experiments to be conducted.
6. **High-resolution color picture of the equipment:**

E) Metallurgical Optical Microscope

A) Name of the Institution: Vinayaka Missions Kirupananda Variyar Engineering College, Salem.

Name, make & model number of the equipment:

Metallurgical Optical Microscope

Thrust area of Research/Domain for which equipment will be useful:

Materials

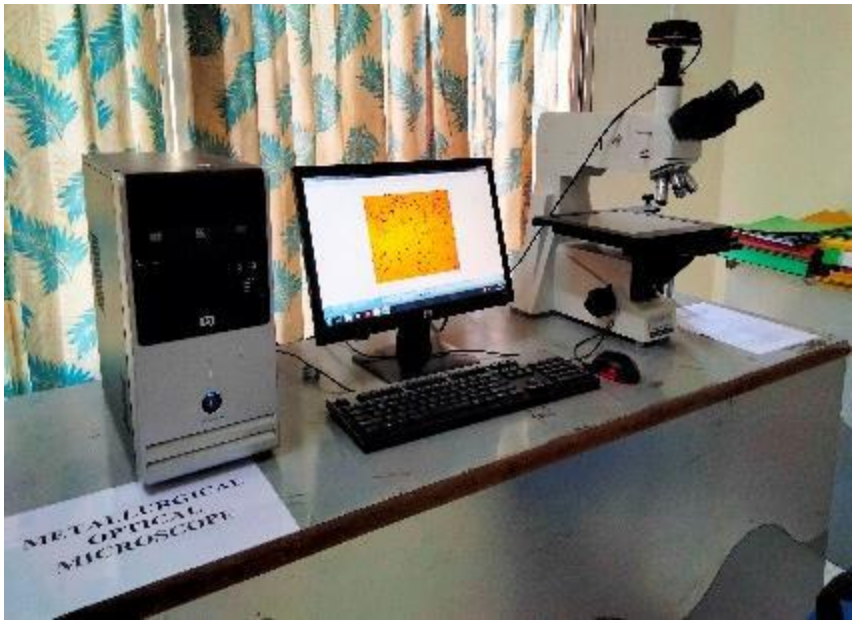
Major uses of the equipment:

Inspection of surface defects in metal surfaces, to determine crystal grain boundaries, grain size, distribution in metal alloys. Application areas: Metallography, Forensics, Plastics processing, inspection of metals

Important specifications of the equipment:

0.5X Reduction Lens Adaptor, Magnification range: 100X to 1000X, Eyepiece: 10X A

High resolution color picture of the equipment:



F) Salt Spray Corrosion Chamber

Name of the Institution: Vinayaka Missions Kirupananda Variyar Engineering College, Salem.

Name, make & model number of the equipment:

Salt Spray Corrosion Chamber

Thrust area of Research/Domain for which equipment will be useful:

Materials

Major uses of the equipment

To check corrosion resistance of material

Important specifications of the equipment:

Human Machine Interface Display | Construction material: Acrylic Clear | Chamber Temperature Range: Ambient to 40°C | Test Chamber Temperature Range: 35 ± 10°C | Chamber Temperature Least Count: 0.10°C | Chamber Temperature Repeatability: ± 20°C | pH value of salt solution maintained: 6.5 to 7.2 pH | Timer : 6 Digits Hour Meter | Air Regulator: 1 to 30 psi | Test air pressure: 0.7 kg/m_2 to 1.2 kg/cm_2

High resolution color picture of the equipment:

G) Stir Casting Furnace

Name of the Institution: Vinayaka Missions Kirupananda Variyar Engineering College, Salem.

Name, make & model number of the equipment:

Stir Casting Furnace

Thrust area of Research/Domain for which equipment will be useful: (Ex. Renewable Energy, Nanotechnology, Genetic Sequencing etc.)

Materials and Manufacturing

Major uses of the equipment:

Investigation of the effects by varying the type, size, and concentration of reinforcement materials Service

Important specifications of the equipment:

Rated Power 5 kW, Input Voltage 220 V AC | Furnace Capacity - 2Kg | Max. Temp. - 900°C | Manual Bottom Pouring Stirrer - 0 to 1000 rpm with SS Blade Temperature Control

High resolution color picture of the equipment:

H) GAS CHROMATOGRAPHY (GC)

1. **Name of the Institution:** Vinayaka Mission's Kirupananda Variyar Arts and Science College
2. **Name, make & model number of the equipment:** Gas Chromatography (GC), Perkin Elmer, Clarus-680.
3. **Thrust area of Research/Domain for which equipment will be useful**: Material Characterization, Nanotechnology, Material Science, Phytochemistry, food chemistry, Pharmaceutical Chemistry, Geochemistry and Agrochemistry.
4. **Major uses of the equipment:**
   It is a sophisticated compact instrument designed to be used for a wide range of structural analysis. Gas chromatography (GC) is widely used for analyzing volatile compounds in environmental samples, food and beverages, and pharmaceuticals. It's essential for quality control, forensic analysis, and research in chemical composition. The Clarus 680 GC can be used for many applications, including pharmaceuticals, cosmetics, and environmental toxins. It can be configured with two different detectors, such as FID, TCD, ECD, or MS, for simultaneous analysis.
5. **Important specifications of the equipment:**
   The Clarus 680 GC has a temperature control range of 5°C above ambient to 450°C, and can cool down from 450°C to 50°C in less than two minutes. It also has an electronic pressure control system for accurate gas flow, and a large color touchscreen interface.
   The Clarus 680 GC has a sample injection precision of less than 0.5% RSD, and a fast injection-to-injection time. It can analyze a wide range of compounds, including volatile organic compounds (VOCs).
   The Clarus 680 GC is compatible with PerkinElmer's TotalChrom software for data handling and reporting.

I) ULTRA-PERFORMANCE LIQUID CHROMATOGRAPHY (UPLC)

1. **Name of the Institution:** Vinayaka Mission's Kirupananda Variyar Arts and Science College
2. **Name, make & model number of the equipment:** Ultra-Performance Liquid Chromatography (UPLC), Waters Acquity, #H11CHA 277G.
3. **Thrust area of Research/Domain for which equipment will be useful**: Material Characterization, Nanotechnology, Material Science, Phytochemistry, food chemistry, Pharmaceutical Chemistry, Geochemistry and Agrochemistry.
4. **Major uses of the equipment:**

   Ultra-Performance Liquid Chromatography (UPLC) is utilized for high-resolution separation and quantification of pharmaceuticals, biomolecules, and complex mixtures. Its applications extend to food safety testing, environmental analysis, and proteomics. Ultra-Performance Liquid Chromatography (UPLC) has many uses, including: Analyzing samples. UPLC can be used to analyze samples for impurities, degradation products, and more.

   Estimating drugs

   UPLC can be used to estimate the amount of drugs and their active metabolites in biological fluids.

   Metabolic phenotyping

   UPLC-MS is a common analytical platform for metabolic phenotyping, which can be used to identify metabolites and analyze samples.

   Food quality control

   UPLC-MS can be used to determine the amino acid profile and vitamin content of food products.

   Screening for contaminants

   UPLC-MS can be used to screen pharmaceutical and environmental samples for contaminants.

   Biochemistry

   UPLC can be used to analyze the constituents of a compound.

   Separating and identifying substances

   UPLC can be used to separate and identify substances like amino acids, nucleic acids, proteins, hydrocarbons, pesticides, carbohydrates, antibiotics, and steroids.

   UPLC is a special version of HPLC that has several advantages, including:

   Efficiency: UPLC is more efficient than HPLC, with a shorter runtime and less consumption of mobile phase volume.

   Sensitivity: UPLC has increased sensitivity.

   Resolution: UPLC has increased resolution.

   Cost-effectiveness: UPLC is more cost-effective because it uses less solvent.

   Eco-friendliness: UPLC is more eco-friendly because it uses less solvent.

5. **Important specifications of the equipment:**

   The Waters Acquity Ultra Performance Liquid Chromatography (UPLC) System is a high-performance liquid chromatography (HPLC) instrument that separates and analyzes chemical compounds quickly and efficiently. It uses smaller particle size columns and operates at higher pressures than conventional HPLC:

   Particle size

   UPLC uses 1.7 µm particle size columns, while conventional HPLC uses 3–5 µm.

Pressure

UPLC operates at 6,000–15,000 psi, while conventional HPLC operates at 2,000–4,000 psi.

Performance

UPLC provides better peak resolution, increased speed, and higher sensitivity.

The Waters Acquity UPLC System includes:

Binary solvent manager: Uses two serial flow pumps to deliver a parallel binary gradient.

Sample manager: Includes a column heater and uses pressure assisted sample introduction to maintain low dispersion.

Detector: Part of the UPLC system.

The UPLC system can meet a variety of lab requirements, including: Ultra-fast analysis, increasing throughput while maintaining resolution, improving resolution while decreasing analysis time, and achieving ultra-high resolution.

6. High-resolution color picture of the equipment:

J) MUFFLE FURNACE

1. **Name of the Institution:** Vinayaka Mission's Kirupananda Variyar Arts and Science College.

2. **Name, make & model number of the equipment:** Muffle Furnace, Servo Scientific, 20220207.

3. **Thrust area of Research/Domain for which equipment will be useful**: Material Characterization, Nanotechnology, and Material Science.

4. **Major uses of the equipment:**
   Muffle furnaces are used for calcinating, Sintering and drying samples in laboratories, particularly in materials testing and chemistry. They are essential for determining inorganic content in soils, foods, and other materials.

5. **Important specifications of the equipment:**
   - Widely used for weight analysis & for measuring solid mass of organic material.
   - Placement of heating element helps in achieving uniform instant heat level.
   - Insulation in the outer cabinet and air-cooling safeguards the operator from heat.
   - Control box placed away from cabinet for its longer life.
   - Digital display enables precise temp. control of the furnace.
   - Drop down door/ Counterweight type door is as per the choice of the customer.

2. Automotive Research:

A) **AUTO ELECTRICAL TEST BENCH, BOSCH**

1. Name of the Institution: **AARUPADAI VEEDU INSTITUTE OF TECHNOLOGY**
2. Name, make & model number of the equipment: **AUTO ELECTRICAL TEST BENCH, BOSCH**
3. Thrust area of Research/Domain for which equipment will be useful:
   STARTER MOTOR AND ALTERNATOR TESTING BENCH
4. Major uses of the equipment:
   TESTING OF 12 VOLT AND 24 VOLT STARTER MOTOR AND ALTERNATOR TESTING WITH AC AND DC CURRENT SOURCE.
5. Important specifications of the equipment:
   Maximum capacity of alternators that can be tested. 75 amps at 12V
   15 Amperes 220V single phase, 2HP, 1440 RPM induction motor Protected with circuit breakers

B) **BOSCH SCANNER, BOSCH & KTS 590**

1. Name of the Institution: **AARUPADAI VEEDU INSTITUTE OF TECHNOLOGY**
2. Name, make & model number of the equipment:
   BOSCH SCANNER, BOSCH & KTS 590
3. Thrust area of Research/Domain for which equipment will be useful: (Ex. Renewable Energy, Nanotechnology, Genetic Sequencing etc.)
   CONTROLLER DIAGNOSIS TO READ AND ERASE ERROR MEMORIES, DISPLAY ACTUAL VALUES, INITIATE ACTUATORS AND OTHER CONTROLLER SPECIFIC FUNCTIONS
4. Major uses of the equipment:
   REFRIGERANT TOP UP, DRAIN AND REFILLING, AND LEAKAGE TEST
5. Important specifications of the equipment:
   BLUETOOTH WIRELESS & USB CABLE.
   TO DETERMINE MEASUREMENT VALUE AND TESTING THE CONTROLLER DIAGNOSIS INTERFACE.
   SUPPORT MS WINDOWS XP, VISTA, WINDOWS 7, WINDOWS 8, WINDOWS 10

6. High resolution color picture of the equipment:

c) BOSCH ROBINAIR A/C MACHINE

1. Name of the Institution: **AARUPADAI VEEDU INSTITUTE OF TECHNOLOGY**
2. Name, make & model number of the equipment:
   BOSCH ROBINAIR A/C MACHINE MODEL, BOSCH & (ACS 261)
3. Thrust area of Research/Domain for which equipment will be useful: (Ex. Renewable Energy, Nanotechnology, Genetic Sequencing etc.)
   AIR-CONDITIONING MAINTENANCE AUTOMATIC RECOVERY AND RECHARGE AND AUTOMATIC VACUUMING AND LEAK CHECK
4. Major uses of the equipment:
   Multi-brand car's ECU Diagnostic Scanner
5. Important specifications of the equipment:
   R134a 5 gm Oil, UV 1 gm
6. High resolution color picture of the equipment:

d. **BATTERY CHARGER**

1. Name of the Institution: **AARUPADAI VEEDU INSTITUTE OF TECHNOLOGY**
2. Name, make & model number of the equipment: **BATTERY CHARGER BML2415**
3. Thrust area of Research/Domain for which equipment will be useful: **Advanced high frequency SMPS design charger with 80% typical efficiency**
   Constant voltage charging system to reduce charging time and enhance battery life.
4. Major uses of the equipment:
   Bosch understand the requirements of the market and provide the best range of Battery Chargers for 2-Wheeler
5. Important specifications of the equipment:
   Charging free test for 6V and 12V lead acid batteries.
6. High resolution color picture of the equipment:

E) **BATTERY LOAD TESTER**

1. Name of the Institution: **AARUPADAI VEEDU INSTITUTE OF TECHNOLOGY**
2. Name, make & model number of the equipment: **BOSCH BATTERY LOAD TESTER (BLT 301)**
3. Thrust area of Research/Domain for which equipment will be useful: (Ex. Renewable Energy, Nanotechnology, Genetic Sequencing etc.)
   Regulator voltage testing during engine running at "No load" condition
   Testing of starter motor (cranking voltage test) at "No load" condition
4. Major uses of the equipment:
   The compact and technologically advanced battery load tester from Bosch simplifies the process of diagnosing batteries
5. Important specifications of the equipment:
   Load free test for 6V and 12V lead acid batteries.
6. High resolution color picture of the equipment:

F) **BATTERY TESTER**

1. Name of the Institution: AARUPADAI VEEDU INSTITUTE OF TECHNOLOGY
2. Name, make & model number of the equipment: **BOSCH BATTERY TESTER (BAT 131)**
3. Thrust area of Research/Domain for which equipment will be useful: (Ex. Renewable Energy, Nanotechnology, Genetic Sequencing etc.)
   Bosch is perfectly suitable for testing 6V and 12V starter batteries (lead-acid, gel and fleece batteries/AGM). The load-free test procedure provides fast, precise and reliable measurement results.
4. Major uses of the equipment:
   Easy-to-use robust housing; fast and accurate test results.
   Wide range of vehicle applications and testing norms.
5. Important specifications of the equipment:
   Load free test for 6V and 12V lead acid batteries
6. High resolution color picture of the equipment:

G) Important Application software available:

1. Name of the software: ESI 2.0 DIAGNOSTIC
2. Version number: 1987P12823999
3. Major uses of the software: VEHICLE COMMUNICATION TO DIAGNOSE INCLUDING ACCESS FOR SECURED VEHICLE.

G.. BOSCH – VMKVEC – Joint Training Center

1.Name of the Institution: Vinayaka Missions Kirupananda Variyar Engineering College, Salem.

2.Name, make & model number of the equipment:

Module 01 - Auto Electrical Systems,
Module 02 - Vehicle Diagnostics Basis (Obd) & System Diagnostics and
Module 03 - Vehicle Air Conditioning Systems and Functions

3.Thrust area of Research/Domain for which equipment will be useful:

Training for Skill Development and to motivate the students to become Entrepreneur

4.Major uses of the equipment (In brief in about 3 to 4 sentences):

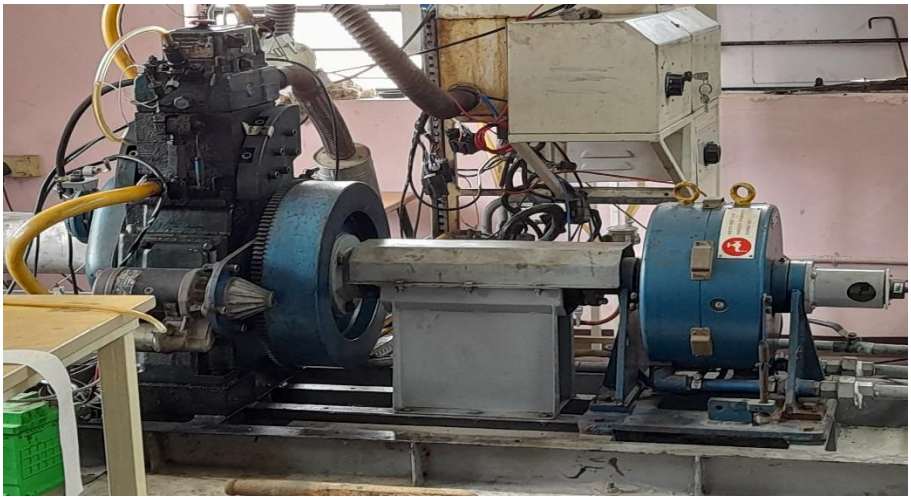
To get trained in servicing of Automobile with ICU units

High resolution color picture of the equipment:

3. Alternate fuels Testing Research:

A) CRDi VCR ENGINE

1. Name of the Institution: **AARUPADAI VEEDU INSTITUTE OF TECHNOLOGY**
2. Name, make & model number of the equipment**:**
   CRDi Injection system with -VCR Engine, **Apex Make&240PE and Programable open ECU.**
   ii) 5-Gas analyzer- AVL ,444,
   iii) Boi Fuel Esterification set up -Apex Instrument Ltd.
3. Thrust area of Research/Domain for which equipment will be useful:
   Alternative Bio Fuels Testing
4. Major uses of the equipment:
   This used for find out the Performance and characteristic of different bio fuel
   and find out the Emission Parameters.
5. Important specifications of the equipment:
   Make Kirloskar, Type 1 cylinder, 4 stroke Diesel, water cooled, power 3.5 kW at 1500 rpm, stroke 110 mm, bore 87.5 mm. 661 cc, CR 17.5, Modified to VCR engine
   CR range 12 to 18
6. High resolution color picture of the equipment:



B) 5-GAS ANALYZER & SMOKE METER

1. Name of the Institution: **AARUPADAI VEEDU INSTITUTE OF TECHNOLOGY**
2. Name, make & model number of the equipment**:**
   5-Gas analyzer and Smoke meter- AVL, DIGAS 444N.
3. Thrust area of Research/Domain for which equipment will be useful: (Ex. Renewable Energy, Nanotechnology, Genetic Sequencing etc.)-
   Alternative Bio Fuels Emission Testing
4. Major uses of the equipment:
   This used for find out the different bio fuel Emission Parameters
5. Important specifications of the equipment:
   The ´**CAL. GAS**´ connection for at the back of the **AVL DIGAS 444N.**
   Recommended calibration gas mixture for CO, CO2, and HC:
   - % vol CO
   - 14.0 % vol CO2
   - 2000 ppm vol C3H8 (propane)
   - remainder N2

6. High resolution color picture of the equipment:

C) BIO FUEL ESTERIFICATION SETUP

1. Name of the Institution: **AARUPADAI VEEDU INSTITUTE OF TECHNOLOGY**
2. Name, make & model number of the equipment**:**
   Boi Fuel Esterification set up -Apex Instrument Ltd.
3. Thrust area of Research/Domain for which equipment will be useful: (Ex. Renewable Energy, Nanotechnology, Genetic Sequencing etc.)-
   Alternative Bio Fuels Testing
4. Major uses of the equipment:

5. Important specifications of the equipment:
6. High resolution color picture of the equipment:

D) VCR Engine with Data Acquisitions System

Name of the Institution: Vinayaka Missions Kirupananda Variyar Engineering College, Salem.

Name, make & model number of the equipment:

VCR Engine with Data Acquisitions System

Thrust area of Research/Domain for which equipment will be useful: (Ex. Renewable Energy, Nanotechnology, Genetic Sequencing etc.)

Bio-Fuels

Major uses of the equipment:

To implement none sophisticated turbochargers.

Important specifications of the equipment:

Single Cylinder Engine, Power 3.7 KW & 1600rpm, Bore 85 mm, Stroke 80 mm, CR 18: 1 to 14:1

4. Concrete Research and Testing

A): <u>LOADING FRAME</u>

1. Name of the Institution: AARUPADAI VEEDU INSTITUTE OF TECHNOLOGY
2. Name, make & model number of the equipment: Loading Frame , Indian Make (Lawarence and Mayo), 50 Tonne capacity
3. Thrust area of Research/Domain for which equipment will be useful: Structural Engineering
4. Major uses of the equipment:
   - Apply controlled loads to test concrete samples' strength and behavior.
   - Conduct compressive, tensile, and flexural strength tests on concrete specimens.
   - Test load-bearing capacity and durability of concrete under various conditions.
   - Support structural integrity assessments for research and quality control purposes.
5. Important specifications of the equipment:
   - H- type; 50 tonnes capacity
   - AC LVDT sensor 0-100mm with magnetic stand
   - Steel beam
   - 1.2m length/SMB 200
   - Strain Gauge
   - (350 ohms, elements)
   - (10 Nos. – 1 set)
   - Digital 12 Channel Strain Indicator
   - Dial gauge
   - (0.01 X 50mm)
   - Column Testing & Flexure Testing set up (1 pair)
   - Steel Squire packing plate 6”X6”X2”(1 pair)
   - AC LVDT senor 0-50mm Magnetic Stand Measuring
   - AC LVDT Indicator
6. High resolution color picture of the equipment:

B): <u>UNIVERSAL TESTING MACHINE</u> (UTM)

1. Name of the Institution: AARUPADAI VEEDU INSTITUTE OF TECHNOLOGY
2. Name, make & model number of the equipment: universal testing machine, Indian Make (Lawarence and Mayo) , 100 Tonne capacity
3. Thrust area of Research/Domain for which equipment will be useful: Structural Engineering
4. Major uses of the equipment:

    Testing material tensile strength, compressive strength, and elongation.

    Evaluating mechanical properties of materials such as concrete, metals, and plastics.

    Conducting shear, flexural, and fatigue testing under varying load conditions.

    Supporting quality control, research, and development of construction and manufacturing materials.

5. Important specifications of the equipment:

    - Capacity - 100 tonnes

6. High resolution color picture of the equipment:

C): FLOW TABLE

1. Name of the Institution: AARUPADAI VEEDU INSTITUTE OF TECHNOLOGY
2. Name, make & model number of the equipment: FLOW TABLE , Indian Make (Lawerence and Mayo)
3. Thrust area of Research/Domain for which equipment will be useful: Structural Engineering
4. Major uses of the equipment:

    - Measure the workability and flowability of fresh concrete or mortar.
    - Assess the consistency of cement paste in terms of fluidity.
    - Evaluate the relative mobility of concrete mixtures for construction applications.
    - Ensure quality control in mortar and concrete mixes by comparing flow results to standards.

5. Important specifications of the equipment:

    The top table having diameter 750 mm and stainless steel cone has a 150 ±2 mm top diameter, 200 ±2 mm base diameter and 150 ±2 mm height and 1.5 mm thickness.

6. High resolution color picture of the equipment:

D): NON DESTRUCTIVE TESTING

1. Name of the Institution: AARUPADAI VEEDU INSTITUTE OF TECHNOLOGY
2. Name, make & model number of the equipment: Lawerence and Mayo
3. Thrust area of Research/Domain for which equipment will be useful: Structural Engineering
4. Major uses of the equipment:

 Evaluate material properties without causing damage, ensuring structural integrity.

 Detect internal flaws, cracks, or voids in materials like concrete, steel, and composites.

 Monitor the durability and performance of structures over time for safety.

 Support quality assurance, maintenance, and compliance with industry standards in construction and manufacturing.

5. Important specifications of the equipment:

   - Weight: 6 lbs. (2.7 kg)
   - Size: 5” x 3” x 14” (127 x 76 x 355 mm)
   - Carrying Case: 15 1/2” x 11 1/2” x 2 1/2”.
   - Dimensions: 8” x 7” x 14” (203 x 178 x 355 mm)

6. High resolution color picture of the equipment:

E): COMPACTION FACTOR

1. Name of the Institution: AARUPADAI VEEDU INSTITUTE OF TECHNOLOGY
2. Name, make & model number of the equipment: Compaction factor, Indian Make (Lawerence and Mayo)
3. Thrust area of Research/Domain for which equipment will be useful: Structural Engineering
4. Major uses of the equipment:
   - Measure the workability of concrete, especially low-workability mixes.
   - Assess the compaction ability of concrete under standard conditions.
   - Ensure the quality of concrete mixes for use in heavily reinforced sections or foundations.
   - Aid in adjusting concrete mix proportions for optimal performance in construction projects.
5. Important specifications of the equipment:
   Two rigid conical hoppers with opening at lower end and a cylinder mounted on a rigid metal frame.
6. High resolution color picture of the equipment:

F) Computerized Cum Analogue Universal Testing Machine of 1000 KN Capacity

Name of the Institution: Vinayaka Missions Kirupananda Variyar Engineering College, Salem.

Name, make & model number of the equipment:

Computerized Cum Analogue Universal Testing Machine of 1000 KN Capacity

Thrust area of Research/Domain for which equipment will be useful: (Ex. Renewable Energy, Nanotechnology, Genetic Sequencing etc.)

Testing of Materials

Major uses of the equipment:

- To determine the tensile strength, yield strength, and elongation of materials.
- To measure the material's ability to withstand compressive forces
- To determine the flexural strength or bending properties.
- To assess the material's resistance to shear forces.

Important specifications of the equipment:

Maximum force capacity: **1000 kN** (or 100 tons)

High precision load cell, class 1 and class 0.5 calibration

Load accuracy: ± 1% of the reading

Load resolution: 1/50000 of the full scale

Displacement resolution: 0.001 mm

Displacement accuracy: ± 1% of the reading

Crosshead positioning accuracy: ± 0.5% of set speed

Voltage: 220/380V, 50/60 Hz

Power consumption: Typically around 3-5 kW

Approximate weight: 1000-1500 kg

G) Digital Rebound Hammer

Name of the Institution: Vinayaka Missions Kirupananda Variyar Engineering College, Salem.

Name, make & model number of the equipment:

Digital Rebound Hammer

Thrust area of Research/Domain for which equipment will be useful: (Ex. Renewable Energy, Nanotechnology, Genetic Sequencing etc.)

Civil Engineering

Major uses of the equipment :

- Primarily to assess the compressive strength of concrete and other building materials. It measures the surface hardness of concrete by recording the rebound of a spring-loaded mass Which is then correlated to compressive strength
- To estimate the depth of cracks in concrete surfaces by assessing surface hardness near cracks.
- To assess the concrete strength of structural elements during building renovation projects.
- The Digital Rebound Hammer is widely used in construction, infrastructure maintenance, building inspections, structural repairs

Important specifications of the equipment:

Compressive Strength Range: 10 MPa to 100 MPa
Rebound Value Range: 10 to 100 rebound numbers
Rebound Value Accuracy: ±1 rebound number
Digital Display: LCD or OLED screen for direct reading of rebound values and calculated strength.
Battery Life: Typically lasts for 2000-4000 impacts on a single charge.
Operating Temperature - 0 to 50^0c

High resolution color picture of the equipment:

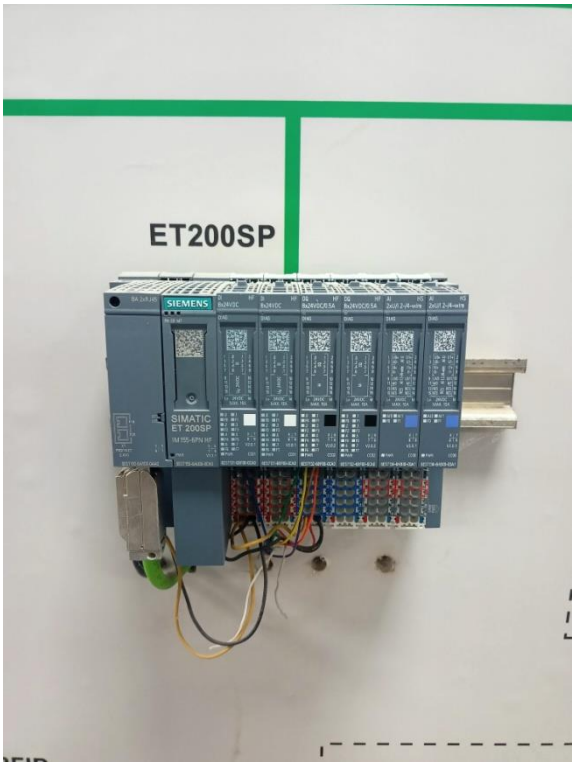
5. Integrated Engineering Design

A): DISTRIBUTED I/O

1. Name of the institute : AARUPADAI VEEDU INSTITUTE OF TECHNOLOGY
2. Name, make & model number of the equipment: ET 200SP
3. Thrust area of Research/Domain for which equipment will be useful:

   Industrial Automation
4. Major uses of the equipment:

   The ET200SP's modular design, extensive I/O options, and compatibility with different communication protocols (like PROFINET and PROFIBUS) make it a valuable component in a wide range of industrial and automation applications.
5. Important specifications of the equipment: -
6. High resolution color picture of the equipment:

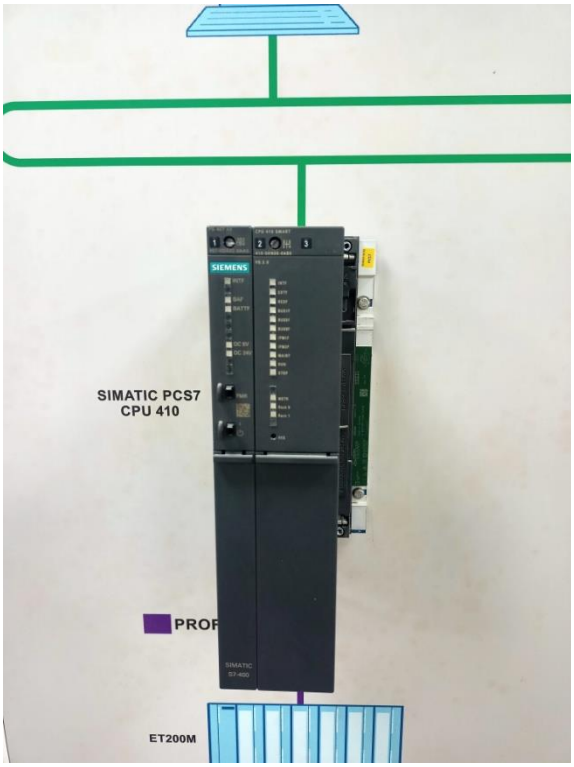


B) DISTRIBUTED CONTROL SYSTEM

1. Name of the Institution : AARUPADAI VEEDU INSTITUTE OF TECHNOLOGY
2. Name, make & model number of the equipment: Simatic PCS 7
3. Thrust area of Research/Domain for which equipment will be useful:

   Industrial Automation
4. Major uses of the equipment:
   - The CPU 410 is central to the SIMATIC PCS 7 Distributed Control System (DCS), which is used in complex process industries such as chemical, petrochemical, pharmaceutical, oil & gas, and water treatment.
   - It helps manage and control various processes to ensure safe, efficient, and reliable plant operations in the specific industry.

5. Important specifications of the equipment: - CPU 410
6. High resolution color picture of the equipment:

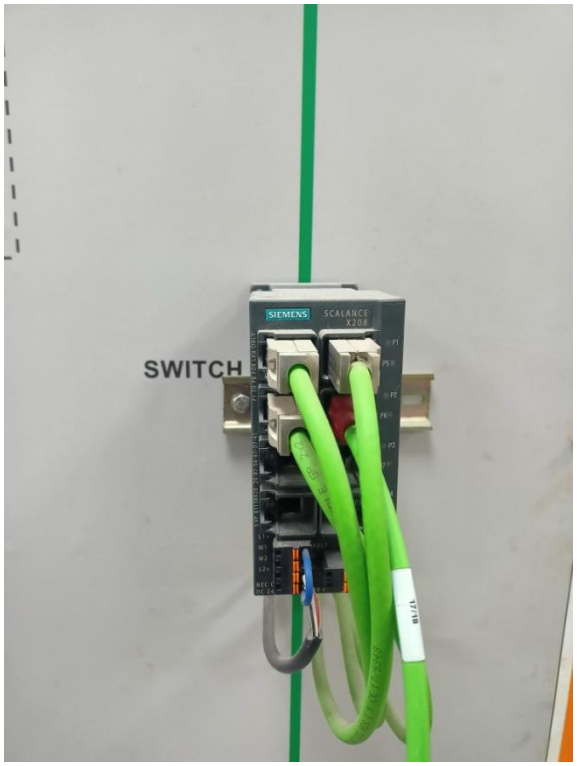


C) SIMATIC IOT

1. Name of the Institute : AARUPADAI VEEDU INSTITUTE OF TECHNOLOGY
2. Name, make & model number of the equipment: Simatic IOT 2000
3. Thrust area of Research/Domain for which equipment will be useful:
   Industrial Automation
4. Major uses of the equipment :
   - The **SIMATIC IOT 2000** is an industrial IoT gateway by Siemens, designed to connect machines, systems, and devices in industrial environments.
   - Data Collection and Monitoring, Predictive Maintenance and Condition Monitoring, Energy Management and Optimization, Remote Access and Monitoring are the key uses of the devices
5. Important specifications of the equipment: -
6. High resolution color picture of the equipment:

D) SCALENCE SWITCH

1. Name of the Institute : AARUPADAI VEEDU INSTITUTE OF TECHNOLOGY
2. Name, make & model number of the equipment: X203
3. Thrust area of Research/Domain for which equipment will be useful: Automation
4. Major uses of the equipment :
    - The **SCALANCE X208** is an industrial Ethernet switch by Siemens, designed for industrial automation networks.
    - The **SCALANCE X208** is widely valued for its durability, ease of integration and support for industrial communication protocols.
    - Industrial Network Expansion, Factory and Plant Automation and Energy Monitoring and Control Systems are the uses of the devices.
5. Important specifications of the equipment: -
6. High resolution color picture of the equipment:



E) Important Application software available:

1. Name of the software : SIMIT Simulation Frame work Trainer package
2. Version number : V9.0
3. Major uses of the software:
    - The SIMIT Simulation Framework Trainer Package is a training tool by Siemens designed to facilitate the simulation and testing of industrial automation systems.
    - It is commonly used in educational institutions and training environments, as well as by automation professionals who want to enhance their skills in simulation and virtual commissioning.

1. Name of the software : SIMATIC PCS 7 software trainer package
2. Version number : V 8.2
3. Major uses of the software:

    The SIMATIC PCS 7 Software Trainer Package is an invaluable tool for building proficiency in DCS configuration, programming, and operation. It provides a realistic, hands-on training environment that enhances users' understanding of process automation.

1. Name of the software : COMOS Plant Engineering Software
2. Version number : V 10.4.3
3. Major uses of the software:

    COMOS is an integrated software solution developed by Siemens for plant engineering and lifecycle management. It provides tools for various stages of plant design, operation, and maintenance.

6 Power Electronics & Drives:

1. Name, make & model number of the equipment:
   Intelligent Power module, (PEC16DSM01) Dual core Delfino Development Board, micro 28377D - Vi micro systems Pvt Ltd , Chennai,
2. Thrust area of Research/Domain for which equipment will be useful: Renewable Energy
3. Major uses of the equipment:

- Intelligent Power Modules (IPMs) are advanced hybrid power devices that combine high speed, low loss IGBTs with optimized gate drive and protection circuitry.
- MICRO-28377D is a powerful 32-bit floating-point microcontroller unit (MCU) designed for advanced closed-loop control applications such as industrial drives and servo motor control, solar inverters and converters.

4. Important Specifications of the equipment:

a. *Bridge Rectifier* - 3 Phase diode bridge Rectifier (60A,1200V)
b. *IGBT Intelligent power module (25A, 1200V)*

- ✓Switching frequency = 20 KHz (Max), 10 KHz Nominal
- ✓Braking of IGBT = 10A, 1200 V (Max), 6A Nominal
- ✓Fault output current (IFO) = 20mA (Max)
- ✓Fault output voltage (VFO) = 20V (Max)

c. *Voltage Transducer (LV25-P)*

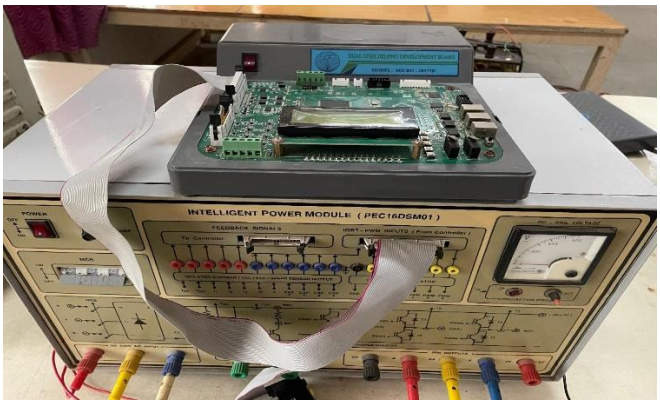
- ✓ Primary nominal R.M.S current (IPN) = 8-12-25A
- ✓ R.M.S rated voltage (Vb) = 525V
- ✓ Analog output voltage (Vout) = 2.5V (Ip=0)

d. *IPM Power Supply*

- ✓ Output = Four +15V supply Max power=3 W
- ✓ Primary to secondary isolation =2500 Vrms,one minute
- ✓ Secondary to Secondary isolation voltage= 1500 Vrms, one minute

e. *High voltage Input DC-DC Converter*

- ✓ Input voltage (Vin) =113 V to 400 V DC
- ✓ Output voltage (Vout) = 18 to 22 V DC
- ✓ Load Current = 220 mA

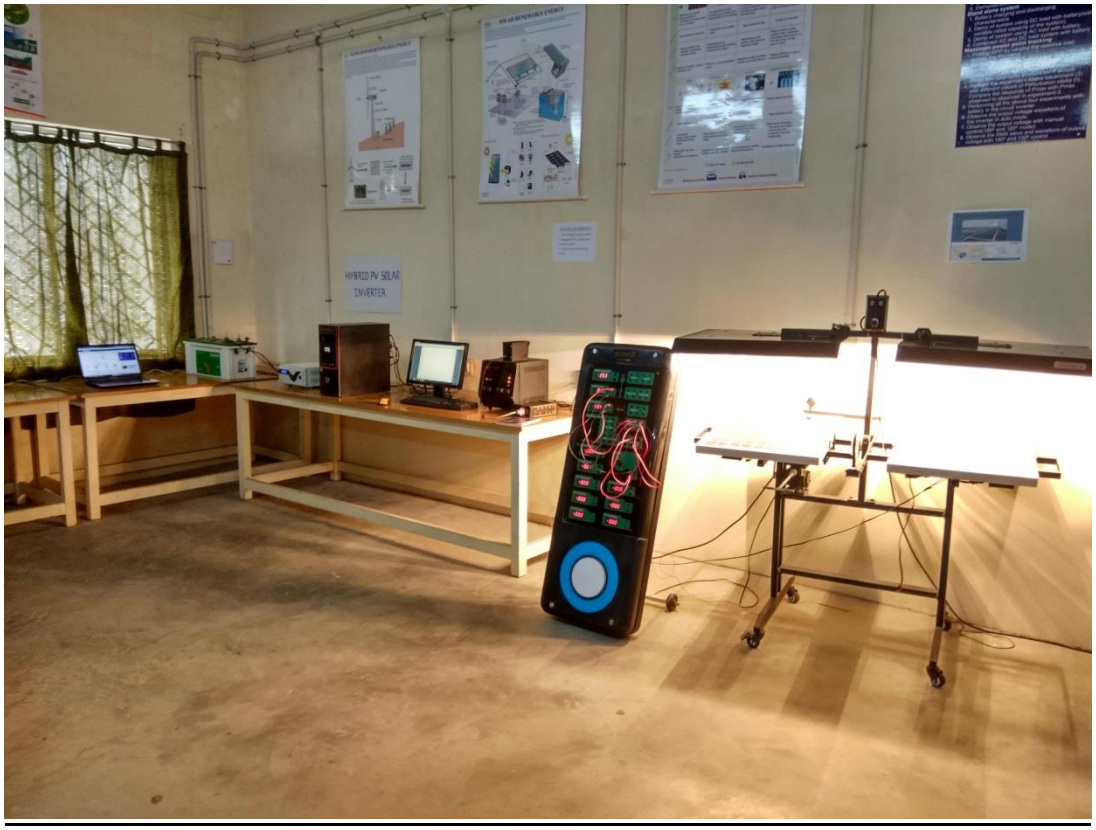


7. Renewable Energy Technology

A) Standalone PV training and research system

1. Name of the Institute: AARUPADAI VEEDU INSTITUTE OF TECHNOLOGY
2. Name, make & model number of the equipment: **Standalone PV training and research system**
3. Thrust area of Research/Domain for which equipment will be useful: Renewable Energy
4. Major uses of the equipment:
    - The setup can be used to get the VI Characteristics of a Solar panel up to 100 Watts
    - MPPT chargers can be tested for performance for any panel
    - The panels can be tested for different irradiance levels

5. Important specifications of the equipment:
   Rated Panel Voltage: 50 V
   No. of Panels: 2
   System Voltage: 230 V
   System Current: 2 A
6. High resolution color picture of the equipment:



B) Solar PV grid tied training system

1. Name of the Institution: AARUPADAI VEEDU INSTITUTE OF TECHNOLOGY
2. Name, make & model number of the equipment: Solar PV grid tied training system

3. Thrust area of Research/Domain for which equipment will be useful: **Renewable Energy**
4. Major uses of the equipment:
   Any type of PV Panels till 300 Watts can be tested under natural light.
   Grid Inverters unto 1 kW can be tested in the present setup under different conditions.
   Microgrid system parameters can be analyzed.
5. Important specifications of the equipment:
   Rated Panel Voltage: 245 V
   No. of Panels: 2
   System Voltage: 230 V
   System Current: 3.5 A
6. High resolution color picture of the equipment:

C) Wind energy training system

1. Name of the Institution : AARUPADAI VEEDU INSTITUTE OF TECHNOLOGY
2. Name, make & model number of the equipment: Wind energy training system
3. Thrust area of Research/Domain for which equipment will be useful: **Renewable Energy**
4. Major uses of the equipment:
    - Wind Energy Training System is a miniature replica of actual wind turbine power plant.
    - This system facilitates the researchers with working and configurable model of wind turbine.
    - Hybrid PV Solar – Wind System controller can be analyzed

5. Important specifications of the equipment:
   Turbine Voltage: 70 V
   Control Panel: 415 V
   Cut in Speed: 4.5 m/s
   Cut of Speed: 8.5 m/s
6. High resolution color picture of the equipment:

D) Solar PV Training and Research System

Name of the Institution: Vinayaka Missions Kirupananda Variyar Engineering College, Salem.

Name, make & model number of the equipment:

Solar PV Training and Research System

Thrust area of Research/Domain for which equipment will be useful:

Electrical and Electronics Engineering

Major uses of the equipment:

1. Street lighting and outdoor lighting
2. Communication system and components
3. Remote site electrification
4. Sign boards and traffic signals
5. Water pumping and other agricultural devices
6. Charging vehicle batteries
7. Disaster relief application
8. Refrigeration.

Important specifications of the equipment:

Component	Sub-Component	specification
Power generating unit	Modules	Solar PV module
	Type	Poly-crystalline
	Pmax	43.84 W
	Voc(voltage open circuit)	22.25 V
	Isc (current –short circuit)	2.53 A
	Vpm (maximum peak current)	18.33 V
	Ipm (maximum peak current)	2.39 A
	FF (fill factor)	0.78
	Eff, module	14.19%
	Eff, cell	17.95%

E) Pyranometer

Name of the Institution: Vinayaka Missions Kirupananda Variyar Engineering College, Salem.

Name, make & model number of the equipment:

Pyranometer

Thrust area of Research/Domain for which equipment will be useful:

Electrical and Electronics Engineering

Major uses of the equipment:

1. Used to measures the amount of irradiance on a flat surface.
2. In weather stations, Climatology, and atmospheric research.

Important specifications of the equipment:

LP PYRA 03

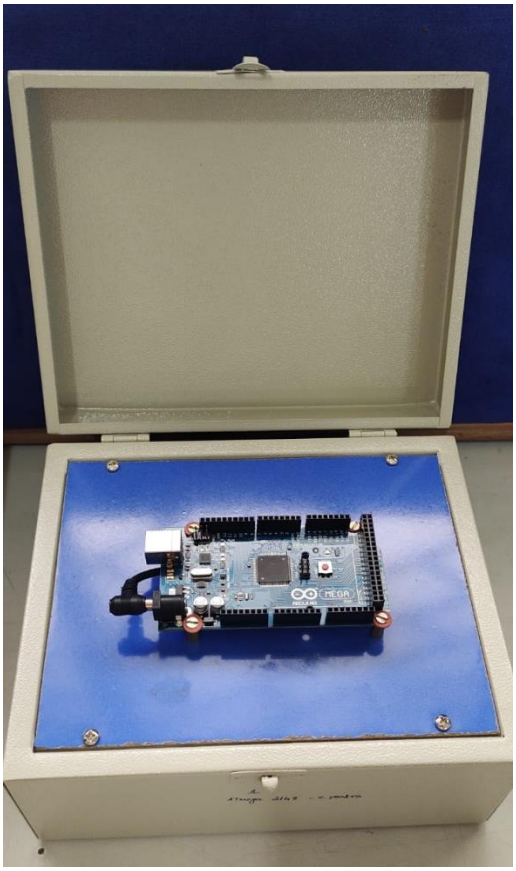
High resolution color picture of the equipment:

8. Robotics and Embedded Systems

IN ASSOCIATION WITH "E-YANTRA LAB SETUP INITIATIVE (E-LSI)" IIT BOMBAY

A): AtMega2560 – Microcontroller

1. Name of the Institution: AARUPADAI VEEDU INSTITUTE OF TECHNOLOGY
2. Name, make & model number of the equipment: AtMega2560 IC MCU 8BIT 256KB FLASH 100TQFP
3. Thrust area of Research/Domain for which equipment will be useful : **–Robotics & Embedded Systems**
4. Major uses of the equipment:
   Widely used in embedded systems and prototyping, the AtMega2560 is the microcontroller powering Arduino Mega boards. It supports a variety of sensors, actuators, and communication protocols, making it ideal for robotics, IoT projects, and control systems.
5. Important specifications of the equipment:
   The AtMega2560 is an 8-bit AVR microcontroller with a 16 MHz clock speed, 256 KB of Flash memory, 8 KB of SRAM, and 4 KB of EEPROM. It offers 54 digital I/O pins, 16 analog inputs, and supports a variety of communication interfaces including UART, SPI, and I2C.


MEGA

B.) **LPC2140 – Development Board**

1. Name of the Institution: AARUPADAI VEEDU INSTITUTE OF TECHNOLOGY
2. Name, make & model number of the equipment: NXP LPC2140 ,ARM Family
3. Thrust area of Research/Domain for which equipment will be useful : **– Robotics & Embedded Systems**

4. Major uses of the equipment:
   This equipment is known for its ARM7TDMI-S core, the LPC2140 microcontroller series is used in applications requiring real-time processing, such as industrial automation, motor control, and embedded systems where compact design and efficiency are critical.

5. Important specifications of the equipment:
   This ARM7TDMI-S based microcontroller operates at up to 60 MHz and features 32 KB to 512 KB of Flash memory, 16 KB of SRAM, and multiple communication peripherals like UART, SPI, I2C, and USB. Its low power consumption makes it suitable for embedded systems.

6. High resolution color picture of the equipment:

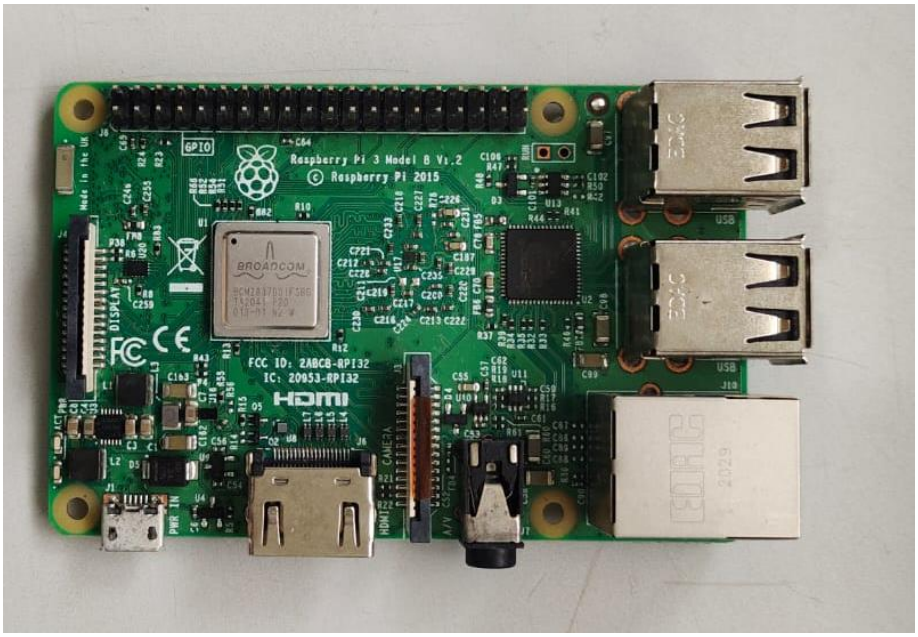
C.) **Raspberry Pi**

1. Name of the Institution: AARUPADAI VEEDU INSTITUTE OF TECHNOLOGY
2. Name, make & model number of the equipment: Raspberry Pi (A+)- BCM2835
3. Thrust area of Research/Domain for which equipment will be useful : **– Robotics & Embedded Systems**

4. Major uses of the equipment:
   This single-board computer is popular in education, IoT, and DIY electronics. It is used for applications such as home automation, media centers, programming education, and as a platform for software development and testing.

5. Important specifications of the equipment:
   Raspberry Pi features a Broadcom ARM Cortex-A53 quad-core processor (on Pi 3 and above) with clock speeds of up to 1.4 GHz, 1 to 8 GB of RAM depending on the model, and extensive connectivity options like HDMI, USB, Wi-Fi, and Bluetooth. It runs Linux-based OSes, enabling it to function as a mini-computer.

6. High resolution color picture of the equipment:



D.) **STM32 Nucleo Boards**

1. Name of the Institution: AARUPADAI VEEDU INSTITUTE OF TECHNOLOGY
2. Name, make & model number of the equipment: STM32 Nucleo Boards, STMicroelectronics, P89V51RD2
3. Thrust area of Research/Domain for which equipment will be useful : **– Robotics & Embedded Systems**

4. Major uses of the equipment:
   These boards provide a flexible platform for embedded systems and prototyping, particularly for low-power and real-time applications. They are widely used in industrial automation, wearable technology, and IoT devices

5. Important specifications of the equipment:
   These boards feature STM32 microcontrollers with ARM Cortex-M cores (ranging from M0 to M7), providing clock speeds up to 480 MHz, with Flash memory sizes up to 2 MB and SRAM up to 512 KB. They support multiple communication interfaces, USB connectivity, and are compatible with Arduino shields.

6. High resolution color picture of the equipment:

9. VLSI Design

A) Nexys 4DDR Artix-7 FPGA: Trainer Board

1. Name of the Institution: AARUPADAI VEEDU INSTITUTE OF TECHNOLOGY
2. Name, make & model number of the equipment: Nexys 4DDR Artix-7 FPGA: Trainer Board
3. Thrust area of Research/Domain for which equipment will be useful: VLSI DESIGN
4. Major uses of the equipment: Artix-7 FPGAs are ideal for products like portable medical equipment military radios and compact wireless infrastructure. Artix-7 FPGAs meet the needs of size, weight, power, and cost (SWaP-C) sensitive markets like avionics and communications. High speed serial connectivity with built-in-multi- gigabit transceivers from 600Mb/s to max. rates of 6.6 Gb/s up to 28.05 Gb/s, offering a special low-power mode, optimized for chip-to-chip interfaces.
5. Important specifications of the equipment:

FPGA (Xilinx Artix-7 XC7A100T-1CSG324C)

- Logic Cells: 101,440
- Flip-Flops: 126,800
- Slices: 15,850 (Each slice contains 4 LUTs and 8 flip-flops)
- Block RAM (BRAM): 4,860 KB (4860 Kbits)
- DSP Slices: 240
- Clock Management Tiles: 5 (MMCM/PLLs)
- On-chip clocking resources for high-speed and flexible clock distribution

- Memory Size: 128MB (16-bit data bus)
- Data Rate: 800 Mbps
- Memory Controller: Fully integrated, directly compatible with Artix-7's memory interface

Connectors and Interfaces

- USB-JTAG Programmer: Integrated programming and debugging via USB
- USB-UART Bridge: Integrated UART for communication with a host computer
- 100 MHz Clock Source with external oscillator
- 10/100 Ethernet PHY: Ethernet RJ-45 connector for network communication
- Audio Codec (ADAU1761): Stereo audio input and output, useful for DSP applications
- VGA Port: Standard 15-pin VGA connector
- Pmod Ports: Multiple PMOD connectors to expand I/O
- 4-digit 7-segment display
- 16 Slide Switches
- 5 Push Buttons
- 16 LEDs

Power Supply

- Input Voltage: 5V via USB or external power supply
- Onboard Power Regulators to provide the necessary core and I/O voltages

User I/O

- Micron MT41J128M16 SDRAM (DDR2, 128MB)
- External Ports:
    - 2x Micro SD card slot
    - VGA port
    - PWM audio output
- Expansion Ports: Multiple PMOD ports and high-density Hirose FX2 connectors for attaching peripheral modules (PMODs) or external hardware.

Development Environment

- Vivado Design Suite support for programming and configuration
- IP Cores and Libraries available through Xilinx

6. High resolution color picture of the equipment:

B). Xilinx Spartan 7 SP701 FPGA Trainer Kit

1. Name of the Institution: AARUPADAI VEEDU INSTITUTE OF TECHNOLOGY
2. Name, make & model number of the equipment: **Xilinx Spartan 7 SP701 FPGA Trainer Kit**
3. Thrust area of Research/Domain for which equipment will be useful: (Ex. Renewable Energy, Nanotechnology, Genetic Sequencing etc.): VLSI DESIGN

- Major uses of the equipment: The SP701 FPGA kit is well-suited for learning, development, and prototyping of low- to medium-complexity FPGA designs, including embedded systems, DSP, and basic I/O interfacing. The **Xilinx Spartan-7 SP701 FPGA Trainer Kit** is designed for cost-sensitive applications, providing a platform for basic FPGA design and prototyping. Designed for applications requiring low-cost solutions with moderate FPGA resources. Ideal for portable or compact designs. Spartan-7 series FPGAs are known for their energy efficiency, making this kit ideal for power-sensitive applications

4. Important specifications of the equipment:

. FPGA (Xilinx Spartan-7 XC7S100-1FGGA484C)

- Logic Cells: 102,400
- CLB Slices: 15,850 (Each slice contains four 6-input LUTs and eight flip-flops)
- Block RAM: 4.5Mb (576 KBytes) distributed across 60 Block RAM tiles
- DSP Slices: 160
- I/O Pins: 250 I/O pins with configurable I/O standards
- Clock Management Tiles: 5 (with MMCMs and PLLs for advanced clock management)
- Integrated Memory Controller for external memory interfaces
- Low-Power, Small Form-Factor suitable for space-constrained designs

Memory

- DDR3 SDRAM: 1GB (32-bit wide data bus) operating at 800Mbps (400MHz)
- MicroSD Card Slot: Allows storage expansion and file system usage

Connectivity and Interfaces

- USB-JTAG Programming Interface: Onboard JTAG for programming and debugging
- USB-UART Bridge: For serial communication between the FPGA and a host system
- 100 MHz Clock Source: Accurate clock generation for synchronous logic design
- 10/100/1000 Mbps Ethernet PHY: Supports Gigabit Ethernet communication via RJ-45 connector
- SPI Flash Memory: 128Mb (for storing configuration data and boot images)
- HDMI Output: Allows interfacing with external displays
- Pmod Ports: Two standard Pmod headers for external peripherals
- User LEDs: 8 LEDs for user-controlled status indication
- 4 Switches and 4 Push Buttons: For simple user interaction
- Expansion Header: Provides access to additional FPGA I/O pins

Power Supply

1. Input Voltage**:** 12V via external adapter
2. Onboard Voltage Regulators to supply core and I/O voltages for FPGA and peripherals

User Interfaces and I/O

1. Gigabit Ethernet Port: For network connectivity
2. HDMI Video Output: To interface with external monitors
3. 8 LEDs, 4 Switches, and 4 Push Buttons: For quick feedback and user interaction
4. Pmod Connectors: Expandable with various Pmod modules for extra I/O and functionality
5. MicroSD Card Slot: For additional data storage

Development Tools

- Vivado Design Suite Support: Includes Spartan-7 device support in Xilinx Vivado for design, simulation, synthesis, and bitstream generation
- Xilinx SDK Support: Can be used for embedded software development (e.g., MicroBlaze soft processor)
- Xilinx IP Libraries and pre-built IP cores can be used for rapid prototyping

D) Important Application software available:

1. Name of the software: Xilinx Vivado System Edition
   - Version number: Vivado 2019.1
   - Major uses of the software:

The **Xilinx Vivado System Edition** is a comprehensive suite for **FPGA and SoC design**, offering advanced tools for hardware description, verification, and embedded system development. The Vivado System Edition is heavily used in industries such as telecommunications, automotive, aerospace, defense, medical devices, and high-performance computing for developing complex FPGA-based systems.

Major uses are:

1. FPGA Design and Implementation
2. Embedded System Development
3. System-Level Design and Simulation
4. IP Block and Custom IP Management
5. Hardware Debugging and Prototyping
6. Board-Level Design (Designing with Multiple FPGAs)
7. Design for ASIC Prototyping

10.High Performance Computing System

A. Xeon Server:

1. Name of the Institution: AARUPADAI VEEDU INSTITUTE OF TECHNOLOGY, CSE
2. Name, make & model number of the equipment: SUPERMICRO, SYS-7049GP-TRT
3. Thrust area of Research/Domain for which equipment will be useful: Intel Server
4. Major uses of the equipment:

   Intel Xeon Gold processors are widely used in enterprise environments and data centers due to their high performance, scalability and reliability. Some of the major uses are: (i) Data Center Operations (ii) Cloud Computing (iii) AI and Machine Learning (iii) Virtualization (v) Database Management (vi) High Performance computing (vii) Enterprise applications (viii) Networking and security
5. Important specifications of the equipment: Intel XEON GOLD 6240c 2.60ghz [1*2], CENT OS 8.6 [ROCKY LINUX] and The Vector Engine Cards 2 Nos

D) Important Application software available: **Open source Software**

B. XEON Server

1)Name of the Institution: Vinayaka Mission's Kirupananda Variyar Engineering College, Salem.

Department: Computer Science and Engineering

2) Important Hardware and software available:

i. Name of the Hardware:

Intel® Xeon Scalable processor based tower server Gold Xeon 6130, 16 Core,32GB RAM

High resolution color picture of the equipment:

ii. Name of the software:

Intel® Parallel Studio XE Cluster Edition for Linux* - Floating Academic 2 seats

iii. Major uses of the software:

Code development on Linux in C++ and FORTRAN for parallel computing for Project development Implementation and Data analytics

11. IoT:

1.Name of the Institution: Vinayaka Mission's Kirupananda Variyar Engineering College, Salem.

Department: Computer Science and Engineering

2. **Name of the Hardware:**

Raspberry Pi 4 - 2GB RAM, Broadcom BCM2711, Quad core Cortex-A72 (ARM v8)64-bit SoC @ 1.5GHz with GrovePi+ Starter Kit for Raspberry Pi A+,B,B+&2,3 (CE certified)

High resolution color picture of the equipment:

2. Name of the software:

Raspberry Pi OS available in open source

3. Major uses of the software:

Used for developing hardware projects, IoT applications, home automation and monitoring, etc

12. Artificial Intelligence:

1.Name of the Institution: Vinayaka Mission's Kirupananda Variyar Engineering College, Salem.

Department: Computer Science and Engineering

2. Name of the Hardware:

Intel® Movidius™ Neural Compute Stick-2 (NCS2)

High resolution color picture of the equipment:

3. Name of the software:

Inbuilt with the device.

4. Major uses of the software:
Designed to build smarter AI algorithms, prototyping computer vision and is useful for accelerating deep learning inference.

13.Plant Tissue Culture and Bioprocessing

B) Incubator Shaker

1. Name of the Institution: AARUPADAI VEEDU INSTITUTE OF TECHNOLOGY
2. Name of the instrument: **Incubator Shaker**

   Make & model number of the equipment: Sunmuga labtech.
3. Thrust area of Research/Domain for which equipment will be useful: (Ex. Renewable Energy, Nanotechnology, Genetic Sequencing etc.): Cell and Molecular Biology
4. Major uses of the equipment: This device is essential to promote the growth of microorganisms or cell cultures under controlled temperature and agitation. It provides simultaneous shaking and incubation, ensuring uniform mixing of culture media and optimal oxygen transfer.
5. Important specifications of the equipment: 580 x 525 x 750 mm
6. High resolution color picture of the equipment:

Incubator Shaker

C) Incubator:

1. Name of the Institution: AARUPADAI VEEDU INSTITUTE OF TECHNOLOGY
2. Name, make & model number of the equipment: **Incubator**

   Make & Model – M.C.Dalal,
3. Thrust area of Research/Domain for which equipment will be useful: (Ex. Renewable Energy, Nanotechnology, Genetic Sequencing etc.) : Microbiology
4. Major uses of the equipment: This allows to control the environmental parameters and provide provision for their growth and maintenance.
5. Important specifications of the equipment: 18*18*18
6. High resolution color picture of the equipment:

Incubator

D) Laminar Air Flow

1. Name of the Institution: AARUPADAI VEEDU INSTITUTE OF TECHNOLOGY
2. Name, make & model number of the equipment: **Laminar Air Flow**,
   Make & Model – M.C. Dalal, DAH 1800
3. Thrust area of Research/Domain for which equipment will be useful: Microbiology
4. Major uses of the equipment: This provides a sterile environment for culturing the cells in a controlled environment to avoid contamination in the process.
5. Important specifications of the equipment: 4*2*2, 6*2*2
6. High resolution color picture of the equipment:

Laminar Air Flow

E) Cooling Centrifuge

1. Name of the Institution: AARUPADAI VEEDU INSTITUTE OF TECHNOLOGY
2. Name of the instrument: Cooling Centrifuge

   Make & model number of the equipment: REMI
3. Thrust area of Research/Domain for which equipment will be useful: (Ex. Renewable Energy, Nanotechnology, Genetic Sequencing etc.): Molecular Biology/Bioprocess
4. Major uses of the equipment: This device separates biological samples at high speeds while maintaining low temperatures to protect sensitive materials. It prevents heat damage during centrifugation. This is essential in labs for handling cells, proteins, and DNA.
5. Important specifications of the equipment: 480x585x530 REMI

Cooling Centrifuge

F) UV Spectrophotometer

1. Name of the Institution: AARUPADAI VEEDU INSTITUTE OF TECHNOLOGY
2. Name of the instrument: UV Spectrophotometer

   Make & model number of the equipment: Systronics 117
3. Thrust area of Research/Domain for which equipment will be useful: Molecular Biology, DNA, RNA Quantification
4. Major uses of the equipment: This is used to calculate the concentration of samples in any type of research which hold colour range between UV and Visible range.
5. Important specifications of the equipment: Single Beam
6. High resolution color picture of the equipment:

UV -Visible spectrophotometer

G) UV-VISIBLE Spectrophotometer

Name of the Institution: Vinayaka Missions Kirupananda Variyar Engineering College, Salem.

Name, make & model number of the equipment:

UV-VISIBLE Spectrophotometer

Thrust area of Research/Domain for which equipment will be useful:

Biotechnology

Major uses of the equipment:

Structure elucidation of organic compounds. |Quantitative analysis | Qualitative analysis |Dissociation constants of acids and bases | Chemical kinetics | Quantitative analysis of pharmaceutical substances | Molecular weight determination

Important specifications of the equipment:

Model (V 750), Wavelength range: 190 to 900 nm Wavelength accuracy: +/-0.2 nm (at 656.1 nm)

High resolution color picture of the equipment:

H) Rotary Vacuum Evaporator Diagonal with oil free pump

A) Name of the Institution: Vinayaka Missions Kirupananda Variyar Engineering College, Salem.

Name, make & model number of the equipment:

Rotary Vaccum Evaporator Diagonal with oil free pump

Thrust area of Research/Domain for which equipment will be useful:

Biotechnology

Major uses of the equipment:

Concentration of solutions and suspensions. | Solvent distillation and recycling | Chemical synthesis

Important specifications of the equipment:

Rotary vacuum evaporators employ rotational speeds of up to 280rpm with vacuum conditions of < 1 mm Hg to vaporize, condense, and ultimately distill solvents. Rotary evaporators can accommodate samples sizes of up to 1 litre

I) Hygene Fermentor

Name of the Institution: Vinayaka Missions Kirupananda Variyar Engineering College, Salem.

Name, make & model number of the equipment:

Hygene Fermentor

Thrust area of Research/Domain for which equipment will be useful: (Ex. Renewable Energy, Nanotechnology, Genetic Sequencing etc.)

Biotechnology

Major uses of the equipment :

Enzyme production | Production of primary and secondary metabolites | Design process control of instrumentation systems by various parameters such as temperature,aeration,agitation, pH

Important specifications of the equipment:

Liter total volume, 2.5L maximum and 1L minimum working volume

J) Fluorescence Spectrophotometer

A) Name of the Institution: Vinayaka Missions Kirupananda Variyar Engineering College, Salem.

Name, make & model number of the equipment:

Fluorescence Spectrophotometer

Thrust area of Research/Domain for which equipment will be useful:

Department of Physics

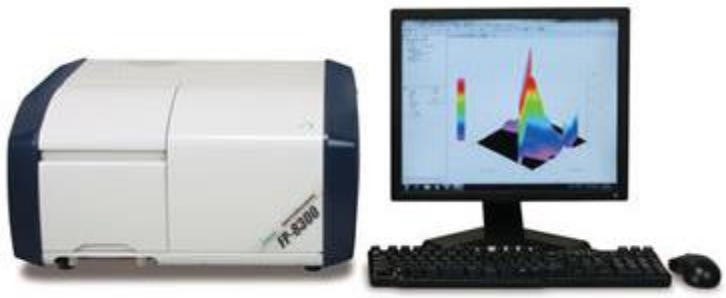
Major uses of the equipment:

i. Structure elucidation of organic compounds.
ii. Quantitative analysis and Qualitative analysis
iii. Dissociation constants of acids and bases.
iv. Chemical kinetics
v. Quantitative analysis of pharmaceutical substances
vi. Molecular weight determination

Important specifications of the equipment:

High sensitivity S/N > 2,800 (RMS), High resolution of 1.0 nm, Wavelength range: 200 to 750 nm (900 nm optional)

High resolution color picture of the equipment:



M) Important Application software available:

1. **Name of the software:** Orell Multilingual Digital Language lab
2. **Version number:** Max version
3. **Major uses of the software**:
   Develops and improves LSRW Skills (Listening, Speaking, Reading, Writing)
   Engages students in group discussions to express their ideas/knowledge in a particular subject.
   Built-in dictionary facility aids in learning new words and its synonyms and antonyms.
   A multi-lingual platform where any language can be learned based on the study materials.

1. Name of the software:

Point of Sale Software with Stock Management system along with enterprises

2. Version number: 2.0

3. Major uses of the software:

Project Implementation | Quantitative analysis | Qualitative analysis | Testing
Quality Testing I Stock Management

N) Important Application software available:

1. Name of the software:

An Analysis of Supervised Machine Learning Algorithms

2. Version number: 1.0

3. Major uses of the software:

Project Implementation | Quantitative analysis | Qualitative analysis | Testing

O) Important Application software available:

1. Name of the software:
Smart IoT Based Healthcare Monitoring and Decision making system using Augmented Data Recognition Algorithm

2. Version number: 3.0

3. Major uses of the software:

Project Implementation | Quantitative analysis | Qualitative analysis | Testing

14. Molecular Biology, Genetic Engineering, Genome sequencing:

A) Thermal PCR

1. Name of the Institution: Center for Biomedical Research,

Aarupadai Veedu Medical College & Hospital, Puducherry

2. Name, make & model number of the equipment: Thermal PCR,

Thermo Fisher Scientific &Veriti

3. Thrust area of Research/Domain for which equipment will be useful:

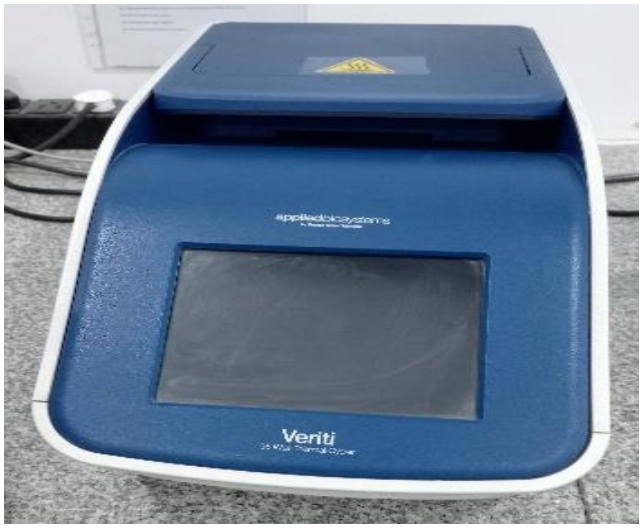
Molecular biology, Genetic Engineering & Genome Sequencing

4. Major uses of the equipment

1. It amplifies specific DNA sequences, making it easier to study small amounts of DNA.
2. Used in medical diagnostics to detect genetic disorders or mutations, including conditions like cystic fibrosis or sickle cell anemia.
3. In criminal investigations, PCR can amplify DNA from biological samples, aiding in identification.
4. It can detect and quantify microbial DNA in environmental samples, useful in assessing water quality or soil health.
5. PCR is essential for cloning genes into vectors for further analysis or protein production.

5. Important specifications of the equipment

1. Format 0.2 ml tubes,96-well plate
2. Dimensions: Height 24.5cm (9.6 in.)
3. Width: 23.7 cm (9.3), Depth: 48.5 cm (19.1 in.)



B) RT-PCR

1. Name of the Institution: Center for Biomedical Research,

Aarupadai Veedu Medical College & Hospital, Puducherry

2. Name, make & model number of the equipment: Real-Time PCR with PC,

Applied Biosystems& Quant Studio5

3. Thrust area of Research/Domain for which equipment will be useful:

Molecular biology, Genetic Engineering& Genome Sequencing

4. Major uses of the equipment

- Real-Time PCR using the QuantStudio platform allows for highly sensitive and specific quantification of nucleic acids, enabling researchers to monitor DNA and RNA amplification in real time.
- Its precision facilitates applications such as gene expression analysis, pathogen detection, and genetic variation studies.
- The QuantStudio's advanced software provides comprehensive data analysis and visualization tools, streamlining interpretation and reporting.
- Additionally, its versatility supports a wide range of applications across various fields, including clinical diagnostics, research, and biotechnology.

5. Important specifications of the equipment

- Display Type: Touchscreen
- Volume (Metric) Thermal Block Sample: 0.2 ml
- Format 0.2 ml tubes,96-well plate

C) Gel Documentation System

1. Name of the Institution: Center for Biomedical Research,

Aarupadai Veedu Medical College & Hospital, Puducherry

2. Name, make & model number of the equipment: Gel Documentation System

BioRad & Gel Doc EZ

3. Thrust area of Research/Domain for which equipment will be useful:

Molecular biology, Genetic Engineering & Genetic sequencer

4. Major uses of the equipment

1. Capture high-quality images of stained DNA, RNA, or protein gels.
2. Analyze band intensity and size for quantifying nucleic acids or proteins.
3. Provide permanent records of gel results for research and publication.
4. Use integrated software for further analysis, including lane and band measurement.

5. Important specifications of the equipment

- lumination control:3 modes (trans-UV, trans white, epi-white)
- Detector :CCD
- Image resolution:4 megapixels
- Pixel size (H x V) :4.65 x 4.65 µm

D) Genetic Analyzer System

1. Name of the Institution: Center for Biomedical Research,

Aarupadai Veedu Medical College & Hospital, Puducherry

2. Name, make & model number of the equipment: Genetic Analyzer System,

Thermo Fisher Scientific & SeqStudio

3. Thrust area of Research/Domain for which equipment will be useful:

Genome Sequencing

4. Major uses of the equipment

a. Thermo Fisher Scientific offers a range of genetic analyzer systems, primarily for applications in genomics and molecular biology.
b. These systems are designed for high-throughput DNA sequencing, fragment analysis, and genotyping. They utilize capillary electrophoresis technology, providing precise and reliable results for applications such as SNP detection, microsatellite analysis, and sequencing of PCR products.
c. Thermo Fisher also provides software solutions for data analysis, ensuring that researchers can interpret their genetic data effectively.

5. Important specifications of the equipment

- Electrical Requirements 100/240V, 100/240.
- Format 96 well plate,8 tube strip
- Software type Fragment Analysis

E) PCR Hood

1. Name of the Institution: Center for Biomedical Research,

Aarupadai Veedu Medical College & Hospital, Puducherry

2. Name, make & model number of the equipment: PCR Hood,

ORANGE& WST6671

3. Thrust area of Research/Domain for which equipment will be useful:

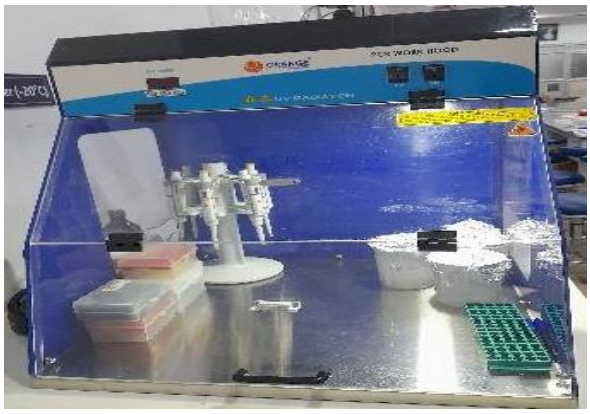
Molecular biology, Genetic Engineering & Genetic sequencer

4. Major uses of the equipment

a. The hood provides a clean environment, reducing the risk of contamination from environmental sources, which is crucial for the accuracy of PCR results.
b. Many PCR hoods are equipped with UV lights that can sterilize the work surface and equipment before and after use, killing any potential contaminants.
c. The hood allows for safe handling of PCR reagents, reducing the risk of cross-contamination between samples.
d. With a designated area for PCR setup, researchers can organize their materials and processes efficiently, minimizing the chances of errors.
e. The hood helps protect laboratory personnel from exposure to potentially hazardous chemicals and biological materials.

5. Important specifications of the equipment

- Very easy to clean
- Work station with bench tray
- Dimension 60x60x70 cm large
- Input voltage 220/240V,50HZ,Fuse 2A



F) Biophotometer

1. Name of the Institution: Center for Biomedical Research,

Aarupadai Veedu Medical College & Hospital, Puducherry

2. Name, make & model number of the equipment: Biophotometer,

Eppendorf & D30

3. Thrust area of Research/Domain for which equipment will be useful:

Molecular biology, Genetic Engineering & Genetic sequencer

4. Major uses of the equipment

a. To quantify and measure the quality of nucleic acids, proteins.
b. It measures the concentration of DNA and RNA in a sample by assessing absorbance at specific wavelengths (e.g., 260 nm).
c. The device can quantify proteins by measuring absorbance at 280 nm or using specific assays.
d. It can assess cell density by measuring absorbance or optical density (OD) of culture samples.
e. The Bio-Photometer can be employed to monitor reactions in real time by measuring absorbance changes.
f. It helps in creating and analyzing standard curves for quantifying various biomolecules.

5. Important specifications of the equipment

- Measuring wavelengths:230, 260, 280, 320, 340, 405, 490, 562, 595, 600 nm
- Dimensions (W x D x H):3.29.5 x 40 x 15cm Weight:11.9 lbs (5.4 kg)

G) Biosafety Cabinet - Class 2

1. Name of the Institution: Center for Biomedical Research,

Aarupadai Veedu Medical College & Hospital, Puducherry

2. Name, make & model number of the equipment: Biosafety Cabinet - Class 2,

ESCO& Class 2 BSC, AC2-4S8-NS

3. Thrust area of Research/Domain for which equipment will be useful:

Molecular Diagnostics

4. Major uses of the equipment

a. The Class II Type A2 BSC is the most common type of BSC. It works by exhausting 30% of the air from a common plenum and recirculating the remaining 70% back into the work area
b. Equipped with HEPA filters to remove airborne contaminants, ensuring a clean working area.
c. Maintains a constant flow of air, providing both personnel and product protection through a laminar airflow system.
d. Often includes easy-to-use controls and displays for monitoring airflow and filter status.
e. Accessible filters and surfaces for regular cleaning and maintenance.
f. Equipped with alarms for airflow issues, ensuring that users are alerted to any potential hazards.

5. Important specifications of the equipment

- Cabinet Size: 1200x600x600 mm
- Inflow Velocity: 129 fpm(0.52m/s)
- Dowm flow Velocity :(0.32m/s)
- Noise level: <60dba
- Filter: HEPA Filter 99.99%

H) Cooling Centrifuge

1. Name of the Institution: Center for Biomedical Research,

Aarupadai Veedu Medical College & Hospital, Puducherry

2. Name, make & model number of the equipment: Cooling Centrifuge,

Eppendorf & 5424R

3. Thrust area of Research/Domain for which equipment will be useful:

Genome Sequencing & Molecular Diagnostics

4. Major uses of the equipment

a. Ideal for preparing samples before analysis, including blood, serum, and urine samples.
b. Useful for spinning down cells from culture media to concentrate them or remove supernatants.
c. Frequently employed in molecular biology for isolating nucleic acids from cells or tissues.
d. Helps in concentrating proteins or precipitating them from solutions.
e. Effective for pelleting bacteria or yeast cells for further studies.
f. The cooling feature is crucial for temperature-sensitive samples, maintaining stability during centrifugation.
g. Accommodates various rotor types and sample tubes, enhancing versatility for different protocols.

5. Important specifications of the equipment

- Temperature control range: -10°C to 40°C
- Power supply: 120 V, 50/60 Hz
- Power consumption: max. 350 W

I) Deep freezer: - 80°C

1. Name of the Institution: Center for Biomedical Research,

Aarupadai Veedu Medical College & Hospital, Puducherry

2. Name, make & model number of the equipment: Deep freezer: -80◦C,

ESCO& UUS-597A-1-SS

3. Thrust area of Research/Domain for which equipment will be useful:

Molecular biology, Genetic Engineering & Genetic sequencer & Molecular Diagnostics

4. Major uses of the equipment

a. Storing biological specimens such as blood, tissues, and vaccines.
b. Preserving temperature-sensitive drugs and research materials.
c. Keeping enzymes, proteins, and other reagents stable for experiments.
d. Storing stem cells, embryos, and other biological materials for long-term preservation.

5. Important specifications of the equipment

- Overall dimensions (w x d x h in mm):1095/945/1980
- Internal dimension (WxHxD) (mm):740x620x1300

J) Thermal Cycler

1. **Name of the Institution:** Vinayaka Mission's Kirupananda Variyar Medical College & Hospitals, Salem.
2. **Name, make & model number of the equipment:** Thermal Cycler, Vertti 96W, Life Technologies Holdings Pvt. Ltd
3. **Thrust area of Research/Domain for which equipment will be useful:**
   Molecular biology, Genetic Engineering & Genome Sequencing
4. **Major uses of the equipment:**
   - Thermal cyclers are used for polymerase chain reaction (PCR) processes, enabling the amplification of DNA and RNA for various applications.
   - It facilitates genetic research, diagnostics and cloning by providing precise temperature control for denaturation, annealing, and extension steps.
   - Thermal cyclers are important in applications like qPCR for quantifying gene expression and in genotyping for genetic studies.
5. **Important specifications of the equipment:**
   - Thermal cyclers include precise temperature control, typically within ±0.5°C, to ensure accurate PCR processes.
   - It features a fast heating and cooling rate for efficient cycling times, often around 3–5°C per second.
   - It has the capacity for multiple samples, ranging from 12 to 96 wells, allows for high-throughput applications.
   - Eco-friendly interfaces with programmable protocols and real-time monitoring capabilities enhance its specification.
6. **High resolution color picture of the equipment:**

K) RT-PCR:

1. **Name of the Institution:**Vinayaka Mission's Kirupananda Variyar Medical College & Hospitals, Salem.
2. **Name, make & model number of the equipment:**RT-PCR (Real-Time), ThermoFisher Scientific
3. **Thrust area of Research/Domain for which equipment will be useful:**
   Molecular biology, Genetic Engineering& Genome Sequencing
4. **Major uses of the equipment:**
   - RT-PCR is used for quantifying gene expression, diagnosing viral infectionsand studying genetic variations.
   - It analyzes mRNA levels, aiding in cancer research and the detection of pathogens.
   - Additionally, it is used for single-cell analysis, providing insights into cellular heterogeneity and gene regulation.
5. **Important specifications of the equipment:**
   - RT-PCR include temperature control accuracy, typically between 0.1°C and 0.5°C, for precise thermal cycling.
   - The instrument possesses a high throughput capacity to accommodate multiple samples simultaneously.
   - Sensitivity and specificity features favors for detecting low RNA levels, as well user-friendly software for data analysis enhances specification of this instrument.
6. **High resolution color picture of the equipment:**

L). Biosafety cabinet:

1. Name of the Instrument: Vinayaka Mission's Kirupananda Variyar Medical College & Hospitals, Salem

2. Name, make & model number of the equipment: Biosafety cabinet class 2A, IR Instruments, India

Thrust area of Research/Domain for which equipment will be useful:

This equipment is essential for research that involves handling hazardous biological materials, such as pathogenic microorganisms, microbial cultures, and other biological agents. It is particularly useful in microbiology, molecular biology, and biotechnology labs.

3. Major uses of the equipment):

- The Biosafety Cabinet (Class 2A) is used to provide a contamination-free working environment by preventing both contamination of biological samples and exposure of the operator to potentially hazardous materials.
- It offers protection from airborne particles through HEPA filters, making it crucial for safely conducting research involving infectious agents or genetically modified organisms.
- It is also used for handling clinical samples, pharmaceutical preparations, and culture to ensure sterility.

4. Important specifications of the equipment:

- **Airflow:** Vertical laminar flow of air for maintaining sterility.
- **Filtration:** High-Efficiency Particulate Air (HEPA) filters with 0.3 microns.
- **Lighting:** UV germicidal lamp for sterilization, along with a fluorescent lamp for visibility during operation.
- **Work Surface:** Stainless steel, easy to clean and disinfect.

5. High-resolution color picture of the equipment:

M. RT-PCR

i) Name of the Institution: Vinayaka Mission's Medical College and Hospital, Karaikal.

ii) Name, make & model number of the equipment: **Real-Time PCR (RT-PCR), Applied Biosystems, Quant Studio-5**

iii) Thrust area of Research/Domain for which equipment will be useful: Genetic Sequencing, Molecular Biology, Cancer Research, Infectious Disease Research, Diagnostic Research

iv) Major uses of the equipment: Quant Studio-5 Real-Time PCR system is used for quantitative PCR applications; Enabling precise measurement of gene expression, genotyping, and viral load quantification. Employed in molecular diagnostics and genetic research, including mutation detection, copy number variation analysis, and microbial pathogen identification. It delivers high-quality, reproducible data for applications in clinical diagnostics and research.

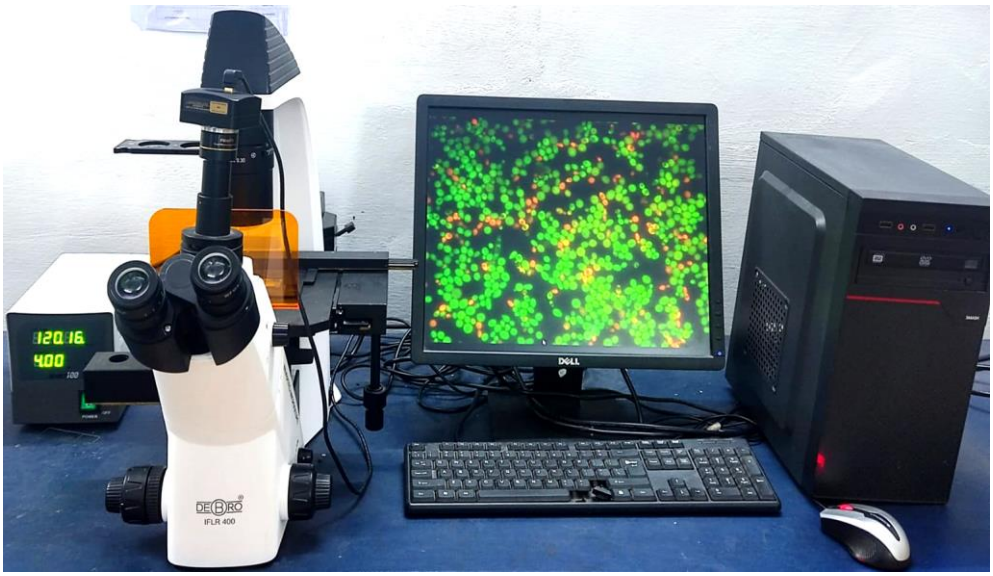
v) Important specifications of the equipment:96-well format for high-throughput analysis; Multiplexing capabilities (up to 6 targets); Sensitive detection and broad dynamic range; Intuitive software interface for data analysis; Touchscreen control and cloud-based connectivity for remote monitoring.

N) Fluorescence Microscope:

1. Name of the Institution: Vinayaka Mission's Medical College and Hospital Karaikal
2. Name, make & model number of the equipment: **Fluorescence Microscope - Debro (IFLR-400)**
3. Thrust area of Research/Domain for which equipment will be useful: (Ex. Microbiology, Molecular biology and biochemistry etc.)
4. Major uses of the equipment: Fluorescence microscopy has become an essential tool in cell biology. This technique allows researchers to visualize the dynamics of tissue, cells, individual organelles, and macromolecular assemblies inside the cell.
5. Important specifications of the equipment: Epi fluorescence illumination system with 100 W Hg illuminations, filter blocks for UV, blue and green excitation. The system should have filter blocks on a turret. Polarizer and analyzer for transmitted light.

   Optional accessories to be quoted separately:

   i. Digital Camera
   ii. Fire wire digital camera with the following features: Recent model with 7 mega pixels CCD camera with appropriate lens system mounted.
   iii. Image analysis: system for capture, morphometry, thresh holding (grey level profiling) and analysis, annotation, etc.
6. High resolution color picture of the equipment:



O) Biosafety cabinet class 2A:

1. Name of the Instrument: Vinayaka Missions Medical College & Hospitals, Karaikal
2. Name, make & model number of the equipment: **Biosafety cabinet class 2A, IR Instruments, India**

   Thrust area of Research/Domain for which equipment will be useful: This equipment is essential for research that involves handling hazardous biological materials, such as pathogenic microorganisms, microbial cultures, and other biological agents. It is particularly useful in microbiology, molecular biology, and biotechnology labs.
3. Major uses of the equipment):

   The Biosafety Cabinet (Class 2A) is used to provide a contamination-free working environment by preventing both contamination of biological samples and exposure of the operator to potentially hazardous materials.

   It offers protection from airborne particles through HEPA filters, making it crucial for safely conducting research involving infectious agents or genetically modified organisms.

   It is also used for handling clinical samples, pharmaceutical preparations, and culture to ensure sterility.
4. Important specifications of the equipment:

   Airflow: Vertical laminar flow of air for maintaining sterility.

   Filtration: High-Efficiency Particulate Air (HEPA) filters with 0.3 microns.

   Lighting: UV germicidal lamp for sterilization, along with a fluorescent lamp for visibility during operation.

   Work Surface: Stainless steel, easy to clean and disinfect.
5. High-resolution color picture of the equipment:

P) CO_2 Incubator:

1. Name of the Instrument: Vinayaka Missions Medical College & Hospitals, Karaikal
2. Name, make & model number of the equipment: **CO_2 Incubator, IGL50, USA**
3. Thrust area of Research/Domain for which equipment will be useful: This equipment is essential for cell culture and tissue engineering research, particularly for studies requiring controlled environmental conditions for the growth and maintenance of cells.
4. Major uses of the equipment:

   The CO2 incubator is primarily used to create optimal conditions for the growth of cell cultures by maintaining precise temperature, humidity, and CO2 levels.

   It is vital for culturing mammalian cells for cancer research, tissue regeneration, and in vitro testing of drugs and other treatments.
5. Important specifications of the equipment:

   Temperature Range: 5°C above ambient to 50°C.

   CO2 Control: Range from 0 to 20%, typically at 5%.

   Humidity Control: Maintains high relative humidity (~95%) to prevent evaporation from cell culture media.

   Display: Digital interface for temperature and CO2 settings.

   Alarms for temperature, CO2 deviation, and door open alerts.

15.Proteomics

A) Vertical Electrophoresis Unit

1. Name of the Institution: Center for Biomedical Research,

Aarupadai Veedu Medical College & Hospital, Puducherry

2. Name, make & model number of the equipment: Vertical Electrophoresis Unit

BioRad & PROTEAN Tetracell

3. Thrust area of Research/Domain for which equipment will be useful:

Proteomics

4. Major uses of the equipment

- It's utilized for analyzing protein samples through SDS-PAGE (sodium dodecyl sulfate-polyacrylamide gel electrophoresis), which separates proteins based on their molecular weight.
- Researchers can use it to purify proteins from complex mixtures, aiding in subsequent studies.
- The unit is often a precursor step for western blotting, where proteins are transferred to membranes for further analysis.It can be used for isoelectric focusing, separating proteins based on their isoelectric points.
- The Tetra Cell is frequently used in educational settings for teaching electrophoresis techniques.

5. Important specifications of the equipment

- Dimensions (W x L x H), cm12 x 16 x 18
- Weight, kg/lb1.0/2.2
- Typical run times for SDS-PAGE 35–45 min. (at 200 V constant)

B) Semi-Dry Transfer

1. Name of the Institution: Center for Biomedical Research,

Aarupadai Veedu Medical College & Hospital, Puducherry

2. Name, make & model number of the equipment: Semi-Dry Transfer

Apparatus, BioRad & Trans-Blot SD

3. Thrust area of Research/Domain for which equipment will be useful:

Proteomics

4. Major uses of the equipment

- Used to transfer the proteins from gel to membrane.
- Transfer proteins from SDS-PAGE gels to nitrocellulose or PVDF membranes for detection using antibodies. Transfer DNA from agarose gels to membranes for hybridization with specific probes.
- Transfer RNA from gels for analysis of gene expression through hybridization techniques.
- Faster transfer compared to traditional wet methods, with reduced protein loss.

5. Important specifications of the equipment

- Dimensions: 37 x 24 x 11 cm
- Weight: 3.6 kg/7.9 lb
- Power supply: Recommended power supply is the Power Pac HC (High Current)

16.Cell Culture:

A) Biosafety Cabinet - Class 2

1. Name of the Institution: Center for Biomedical Research,

Aarupadai Veedu Medical College & Hospital, Puducherry

2. Name, make & model number of the equipment: Biosafety Cabinet - Class 2,

TECHNICO & BSC//A2

3. Thrust area of Research/Domain for which equipment will be useful: Cell culture

4. Major uses of the equipment

- Ideal for procedures involving pathogenic microorganisms and cultures, such as bacterial and viral work.
- Suitable for cell culture operations that require a sterile environment.
- Used in pharmaceutical applications, particularly for preparing sterile compounds.
- Commonly employed in academic and industrial laboratories for various biological research tasks.

5. Important specifications of the equipment

- Controller: ON/Off switches for Cabinet, Light & Blower
- Air filtration: HEPA filter 99.99% efficiency
- Air recirculation: 70% recirculation and 30% exhaust
- Average Airflow Velocity: Inflow: Minimum 0.45 m/s (90 FPM) at 8" front opening Down flow: 0.30 m/s (65 FPM)

B) CO_2 Incubator

1. Name of the Institution: Center for Biomedical Research,

Aarupadai Veedu Medical College & Hospital, Puducherry

2. Name, make & model number of the equipment: CO2 Incubator,

ESCO & CCL-1708-8-HHS

3. Thrust area of Research/Domain for which equipment will be useful:

Cell culture

4. Major uses of the equipment

- Ideal for growing mammalian cells, where a controlled CO2 level (typically 5-10%) helps maintain physiological pH in culture media.
- Supports the growth of tissue constructs and organoids by providing a stable environment for cell proliferation and differentiation.
- Useful for cultivating specific bacteria and fungi that require a CO2-rich atmosphere.
- Facilitates the development and storage of stem cells and their derivatives.

5. Important specifications of the equipment

- SteriSafe™ ULPA filtration:Ensures the air chamber is clean
- In-line filters: Remove contaminants and gas impurities
- Maintenance-free sensors: Sensors are included in the sterilization process and don't need to be maintain.

C) Inverted Microscope

1. Name of the Institution: Center for Biomedical Research,

Aarupadai Veedu Medical College & Hospital, Puducherry

2. Name, make & model number of the equipment: Inverted Microscope,

Magnus & INVI

3. Thrust area of Research/Domain for which equipment will be useful:

Cell culture

4. Major uses of the equipment

a. observe cells and organisms in culture
b. Ideal for examining cells in culture dishes, as the design allows for easy access to the sample from above.
c. Enables real-time observation of cellular processes, interactions, and behaviors in live specimens.
d. Useful in analyzing scaffolds and constructs in three-dimensional tissue cultures.
e. Employed in various studies, including cancer research, microbiology, and developmental biology.

5. Important specifications of the equipment

1. Long working distance objective

2. Professional solution for clear micro-imaging and easy operation.

3. Wide field plan eyepiece - Plan 10X eyepiece with 22mm field of view.

4. 360° rotatable viewing head with 50mm-75mm adjustable inter-pupillary distance.

17. Cancer Research and Cell Culture:

A) CO_2 Incubator:

1. **Name of the Institution:** Vinayaka Mission's Kirupananda Variyar Medical College & Hospitals, Salem.
2. **Name, make & model number of the equipment:** CO_2 Incubator, RCO-150, REMI
3. **Thrust area of Research/Domain for which equipment will be useful:**
   Cell culture
4. **Major uses of the equipment:**
   - CO2 incubators are used for culturing and maintaining cells, tissues, and microorganisms in a controlled environment that mimics physiological conditions.
   - It provides a stable temperature, humidity, and CO2 levels, essential for optimal cell growth and metabolism.
   - These incubators are widely used in research laboratories for applications such as tissue engineering, stem cell research, and microbiology.
5. **Important specifications of the equipment:**
   - CO2 incubators include precise temperature control, typically ranging from 30°C to 60°C, to ensure optimal growth conditions.
   - It maintains stable CO2 levels, usually around 5% to 10%, with reliable monitoring systems.
   - Humidity control is thespecial feature, which prevent evaporation of cell cultures.
   - A built-in HEPA filter is important for maintaining a sterile environment, while a user-friendly interface allows for easy monitoring and adjustments of settings.
6. **High resolution color picture of the equipment:**

B). Fluorescent Microscope:

1. **Name of the Institution:** Vinayaka Mission's Kirupananda Variyar Medical College & Hospitals, Salem.
2. **Name, make & model number of the equipment:** Fluorescent Microscope, CX21IFS1, Olympus Op to Systems India Pvt. Ltd.
3. **Thrust area of Research/Domain for which equipment will be useful:**
   Molecular biology
4. **Major uses of the equipment:**
   - Fluorescent microscopes are used to visualize and analyze biological samples that have been tagged with fluorescent dyes or proteins.
   - It is essential in cell biology for studying the localization and dynamics of proteins, nucleic acids, and other cellular components.
   - These microscopes facilitate techniques like fluorescence in situ hybridization (FISH) and immunofluorescence, enabling researchers to investigate cellular structures and functions.
5. **Important specifications of the equipment:**
   - Fluorescent Microscopes include multiple excitation and emission wavelengths to accommodate various fluorophores, allowing for multi-label imaging.
   - High numerical aperture objectives enhance resolution and light-gathering ability, improving image clarity.
   - The system possesses an adjustable light intensity and filters for optimal fluorescence detection.
6. **High resolution color picture of the equipment:**

C). Cryostat Microtome:

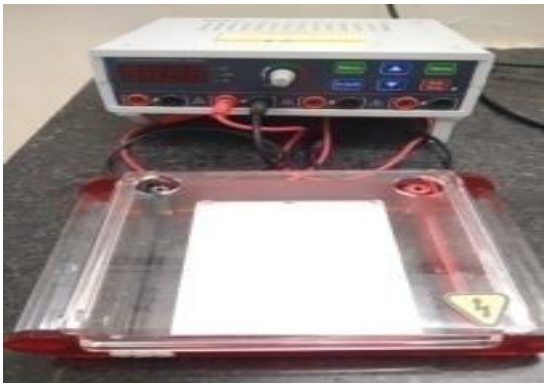
1. **Name of the Institution:** Vinayaka Mission's Kirupananda Variyar Medical College & Hospitals, Salem.
2. **Name, make & model number of the equipment:** Cryostat Microtome, Medimeas Instruments
3. **Thrust area of Research/Domain for which equipment will be useful: Histopathology:** Frozen Tissue Sectioning; Cancer Research; Clinical Diagnostics.
4. **Major uses of the equipment:**
    - The Cryostat Microtome is used to produce thin sections of frozen biological tissues for microscopic analysis.
    - This instrument is essential in rapid diagnosis of biopsies during surgeries, as well as in neuroscience and cancer research where tissue morphology must be preserved in its natural state.
    - The cryostat's refrigeration system ensures that tissue remains frozen during sectioning, enabling quick and accurate examination of delicate specimens without the need for embedding in paraffin.
5. **Important specifications of the equipment:**

    Precise sectioning capability from 1 µm to 50 µm; Integrated refrigeration system for maintaining tissue at sub-zero temperatures; Ergonomically designed handwheel for smooth sectioning; Compatible with various specimen holders; Digital display for controlling and monitoring temperature

6. **High-resolution color picture of the equipment:**

D). Gel Electrophoresis Apparatus:

1. **Name of the Institution:** Vinayaka Mission's Kirupananda Variyar Medical College & Hospitals, Salem.
2. **Name, make & model number of the equipment:** Gel Electrophoresis Apparatus, EPS/MIDI SUB 13x10/EPS – SGE-001, EPS BioSolutions
3. **Thrust area of Research/Domain for which equipment will be useful:**
   Molecular Biology, Genetics; Proteomics, Genomics, Bioinformatics
4. **Major uses of the equipment:**
   - Gel electrophoresis apparatus is used for separating and analyzing DNA, RNA, and proteins based on their size and charge.
   - It plays a major role in molecular biology for applications such as checking the quality and quantity of nucleic acids, preparing samples for sequencing, and conducting restriction fragment length polymorphism (RFLP) analysis.
   - It is importantfor protein studies for techniques like SDS-PAGE to analyze protein expression and purity
5. **Important specifications of the equipment:**
   - Gel Electrophoresis include adjustable voltage settings for optimal separation and compatibility with various gel sizes (typically up to 10x10cm) and types (Agarose or Polyacrylamide).
   - A cooling system is available to prevent overheating during runs, while built-in visualization options like UV or blue-light transilluminators aid in band detection.
6. **High resolution color picture of the equipment:**



E) Automated Blood Culture System

1. **Name of the Institution:** Vinayaka Mission's Kirupananda Variyar Medical College & Hospitals, Salem.
2. **Name, make & model number of the equipment:** Automated Blood Culture System, BACTEC™ FX40, BD Diagnostic Systems
3. **Thrust area of Research/Domain for which equipment will be useful:**
   Cell biology, molecular biology
4. **Major uses of the equipment:**
   - Automated blood culture systems are used for the rapid detection and identification of microbial infections in blood samples.
   - It allows for continuous monitoring of cultures, improving the speed of diagnosing bacteremia and fungemia.
   - It enhances workflow efficiency in clinical laboratories by automating sample handling and result reporting.
5. **Important specifications of the equipment:**
   - Automated blood culture systems include the ability to monitor multiple samples simultaneously, typically ranging from 20 to over 100 bottles.
   - It has a continuous monitoring capability with real-time alerts for positive cultures.
   - The system supports a variety of culture media for different pathogens and feature a user-friendly interface for easy operation and data management.
6. **High resolution color picture of the equipment:**

18. Diabetes Mellitus, Coronary Artery Disease:

D) Spectrophotometer (UV / VIS):

1. **Name of the Institution:** Vinayaka Mission's Kirupananda Variyar Medical College & Hospitals, Salem.
2. **Name, make & model number of the equipment:** Spectrophotometer, 371, Deep Vision
3. **Thrust area of Research/Domain for which equipment will be useful:**
   Molecular Biology / Biochemical Technology, etc.
4. **Major uses of the equipment:**
   - Spectrophotometers are used to measure the absorbance or transmission of light in a sample, enabling quantification of substances like nucleic acids, proteins, and metabolites.
   - It plays a crucial role in biochemical assays, determining concentration and purity of samples.
   - Further used in environmental monitoring to assess water quality and in various fields of research for analyzing chemical reactions
5. **Important specifications of the equipment:**
   - Spectrophotometers include wavelength range, typically from UV to visible light (200 to 800nm), allowing for versatile analyses.
   - It has a high optical resolution to distinguish between closely spaced wavelengths. Sensitivity and linearity are excellent specification for accurate concentration measurements, while a low baseline noise level ensures reliable results.
6. **High resolution color picture of the equipment:**

G) Semi Auto Analyzer

1. **Name of the Institution:** Vinayaka Mission's Kirupananda Variyar Medical College & Hospitals, Salem.
2. **Name, make & model number of the equipment:** Semi – Auto Analyser**,** Photometer 5010 V5+, Robert RieleGMbH& Co KG
3. **Thrust area of Research/Domain for which equipment will be useful:**
   Clinical Samples Biochemical Investigations
4. **Major uses of the equipment:**
   - Semi-automated analyzers are used in clinical laboratories for performing various biochemical tests on blood and other bodily fluids.
   - It facilitates the analysis of parameters such as enzymes, electrolytes, hormones, and metabolites, providing essential information for diagnosing diseases.
   - These analyzers improve workflow efficiency by reducing manual handling while allowing for operator intervention when needed.
5. **Important specifications of the equipment:**
   - Semi-automated analyzers include a flexible throughput capacity, typically handling 20 to 200 tests per hour, to accommodate varying lab demands.
   - It supports multiple test parameters and be compatible with various sample types, such as serum, plasma, and urine.
   - In addition, user-friendly interfaces with intuitive software for data entry and analysis are essential for efficient operation.
6. **High resolution color picture of the equipment:**

B). ELISA Reader

1. **Name of the Institution:** Vinayaka Mission's Kirupananda Variyar Medical College & Hospitals, Salem.
2. **Name, make & model number of the equipment:** ELISA Reader, Mindray MR– 96A, MR96A.
3. **Thrust area of Research/Domain for which equipment will be useful:**
   Protein and Antibody Quantification

4. Major uses of the equipment:

- Measures the concentration of specific antibodies in serum or plasma, crucial for diagnosing infections and autoimmune diseases.
- Identifies and quantifies proteins or pathogens in samples, aiding in infectious disease diagnostics and food safety testing.
- Assesses levels of cytokines in biological fluids, providing insights into immune responses and inflammation.

5. **Important specifications of the equipment:**
   - Typically operates between 400nm and 700nm to accommodate various assays and chromogenic substrates used in ELISA.
   - As a detection mode it supports multiple detection modes, including absorbance, fluorescence, and luminescence, allowing versatility in assay types.
   - Further it is equipped with integrated software.
6. **High resolution color picture of the equipment:**

19. Peripheral Neuropathy:

C) Nerve Conduction Apparatus

1. **Name of the Institution:** Vinayaka Mission's Kirupananda Variyar Medical College & Hospitals, Salem.
2. **Name, make & model number of the equipment:** Nerve Conduction Apparatus,Clarity Medical Pvt Ltd, CMEMG-01.
3. **Thrust area of Research/Domain for which equipment will be useful:**
   Neuropathy, Pathophysiology and Clinical Applications
4. **Major uses of the equipment:**
   - Nerve conduction studies help identify and assess conditions like carpal tunnel syndrome, peripheral neuropathy and multiple sclerosis by measuring the speed and strength of electrical signals in nerves.
   - Regular evaluations of nerve conduction can track the progression of neurological diseases, enabling healthcare providers to adjust treatment plans and improve patient outcomes.
   - Nerve conduction apparatus aids in planning and guiding surgical procedures, such as decompression surgeries, by providing detailed information about nerve function and integrity.
5. **Important specifications of the equipment:**
   - Utilizes surface or needle electrodes for precise measurement of electrical activity in nerves, with optimal placement crucial for accurate readings.
   - Equipped with amplifiers to enhance weak nerve signals and filters to eliminate noise, ensuring clear and reliable data during nerve conduction studies.
   - Includes advanced software for real-time data collection, analysis, and visualization, allowing for comprehensive assessment of nerve conduction velocities and latencies.
6. **High resolution color picture of the equipment:**

20. Diabetic Retinopathy:

A) Fluorescein Angiography

1. **Name of the Institution:** Vinayaka Mission's Kirupananda Variyar Medical College & Hospitals, Salem.
2. **Name, make & model number of the equipment:** Fluorescein Angiography, Clarity Medical Pvt Ltd, CMEMG-01.
3. **Thrust area of Research/Domain for which equipment will be useful:**
   Diabetic Retinopathy
4. **Major uses of the equipment:**
   - Essential in identifying conditions like diabetic retinopathy, age-related macular degeneration, and retinal vein occlusions by visualizing retinal blood vessel health and leakages.
   - Provides precise mapping of vascular abnormalities, aiding in laser treatments, anti-VEGF injections, and surgical planning.
   - Helps detect blood-retina barrier breakdown in uveitis and assess tumour vascularity in ocular tumours, supporting diagnosis and management.
5. **Important specifications of the equipment:**
   - Provides detailed visualization of retinal and choroidal blood vessels, allowing clinicians to detect microaneurysms, leakage, ischemia, and neovascularization.
   - Captures sequential images as fluorescein dye circulates through the retinal vasculature, helping evaluate blood flow dynamics and areas of blockage or leakage.
   - Utilizes fluorescein dye, which fluoresces under blue light, enhancing the contrast of blood vessels against retinal tissue and highlighting even subtle vascular abnormalities.
6. **High resolution color picture of the equipment:**

B) Optical Coherence Tomography

1. **Name of the Institution:** Vinayaka Mission's Kirupananda Variyar Medical College & Hospitals, Salem.
2. **Name, make & model number of the equipment:** Nerve Conduction Apparatus,Clarity Medical Pvt Ltd, CMEMG-01.
3. **Thrust area of Research/Domain for which equipment will be useful:**
   Retina Disease Diagnosis
4. **Major uses of the equipment:**
   - Utilized for diagnosing and tracking retinal conditions such as diabetic retinopathy, age-related macular degeneration, and macular edema by providing detailed cross-sectional images of retinal layers.
   - Measures the thickness of the retinal nerve fiber layer and evaluates the optic nerve head, essential for early detection and monitoring of glaucoma progression.
   - Offers high-resolution imaging of the cornea, iris, and anterior chamber, aiding in the diagnosis of conditions like corneal dystrophies and planning for surgeries such as cataract and refractive procedures.
5. **Important specifications of the equipment:**
   - Provides cross-sectional images of ocular structures with micrometer-level resolution, allowing detailed visualization of retinal and anterior segment layers.
   - OCT is a non-contact imaging technique that requires minimal patient cooperation, typically taking only a few minutes to perform.
   - Offers real-time imaging capability, enabling clinicians to quickly assess ocular conditions and make timely treatment decisions based on the immediate results.
6. **High resolution color picture of the equipment:**

5) **Important Application software available:**

A. Magnus Pro Software

1. Name of the software: Magnus Pro Software
2. Version number: USB 2.0 Viewer
3. Major uses of the software:
   - Magnus Pro Software is primarily used for managing and analyzing data from laboratory instruments, particularly in clinical and research settings.
   - It facilitates the integration of various analytical tools, streamlining workflows for data collection and interpretation.
   - The software is essential for generating reports, conducting statistical analyses, and ensuring compliance with regulatory standards.
   - Additionally, it provides tools for quality control and method validation, enhancing the accuracy and reliability of experimental results.
   - Overall, Magnus Pro Software enhances efficiency and productivity in laboratory operations.

B. Spiro Excel

1. Name of the software: Spiro Excel
2. Version number: -
3. Major uses of the software:
   - Spiro Excel software is used for managing and analyzing spirometry data, facilitating efficient record-keeping and reporting on lung function tests.
   - It generates comprehensive reports with graphical representations to aid in diagnosing and monitoring respiratory conditions, providing valuable insights for clinical decision-making.

C. Octopus

1. Name of the software: Octopus
2. Version number: -
3. Major uses of the software:
   - Octopus software is primarily used for managing and analyzing laboratory data, particularly in microbiology and clinical diagnostics.
   - It streamlines workflows by automating data entry, reporting, and result interpretation, enhancing efficiency in laboratories.
   - Additionally, it supports quality control and compliance with regulatory standards, ensuring accurate and reliable testing results.

D. Audacity

1. Name of the software: Audacity
2. Version number: -
3. Major uses of the software:
   - Audacity software is widely used for audio recording and editing, allowing users to capture sound, edit tracks, and apply various effects.
   - It's popular among podcasters, musicians, and educators for creating high-quality audio content.
   - Additionally, Audacity supports multi-track editing, making it a versatile tool for both professional and amateur audio projects.

21. Cancer Research:

A. **Automated Cell Counter**

1. Name of the Institution:Vinayaka Mission's Medical College & Hospital, Karaikal
2. Name, make & model number of the equipment: **Automated Cell Counter, RWD-C100, BR-C-100**
3. Thrust area of Research/Domain for which equipment will be useful: Cell biology, molecular biology, immunology, cancer research, stem cell research, drug discovery, and other life sciences fields.
4. Major uses of the equipment: Accurate and rapid counting of live and dead cells in various cell types and concentrations.Assessing cell viability and proliferation rates.Analyzing cell size distribution and morphology.Measuring transfection efficiency and cell fluorescence intensity.
5. Important specifications of the equipment:Counting range: 10^3 - 10^6 cells/mL
   Counting time: 9 seconds; Accuracy: ±5%; Precision: CV ≤ 5%; Counting chamber: Disposable counting slide; Imaging system: High-resolution camera; Software: User-friendly software for data analysis and reporting.

B. **Cryostat Microtome**

1. Name of the Institution: Vinayaka Mission's Medical College and Hospital, Karaikal.
2. Name, make & model number of the equipment: **Cryostat Microtome, Medimeas Instruments**
3. Thrust area of Research/Domain for which equipment will be useful: Histopathology; Frozen Tissue Sectioning; Cancer Research; Neuroscience; Clinical Diagnostics.
4. Major uses of the equipment: The Cryostat Microtome is used to produce thin sections of frozen biological tissues for microscopic analysis. This instrument is essential in rapid diagnosis of biopsies during surgeries, as well as in neuroscience and cancer research where tissue morphology must be preserved in its natural state. The cryostat's refrigeration system ensures that tissue remains frozen during sectioning, enabling quick and accurate examination of delicate specimens without the need for embedding in paraffin.
5. Important specifications of the equipment:Precise sectioning capability from 1 µm to 50 µm; Integrated refrigeration system for maintaining tissue at sub-zero temperatures; Ergonomically designed handwheel for smooth sectioning; Compatible with various specimen holders; Digital display for controlling and monitoring temperature
6. High-resolution color picture of the equipment:

C. **Gel Documentation System**

1. Name of the Institution: Vinayaka Mission's Medical College and Hospital, Karaikal.
2. Name, make & model number of the equipment: **Gel Documentation System, Yercaud Biotech**
3. Thrust area of Research/Domain for which equipment will be useful:Molecular Biology; Genetics; Proteomics; Genomics; Bioinformatics
4. Major uses of the equipment: The Gel Documentation System is used for imaging and analyzing nucleic acids and proteins separated by gel electrophoresis. It is equipped with UV and white light for fluorescent and visible gel imaging. This system is essential for documenting DNA/RNA band patterns, performing quantitative analysis, and obtaining high-resolution images for publication or further analysis. It supports studies in gene expression, cloning, and protein profiling.
5. Important specifications of the equipment:High-resolution imaging for both fluorescent and visible gels; UV transilluminator for nucleic acid visualization; Software for image capture, analysis, and quantification; Compact design with easy-to-use interface; Ability to save, compare, and quantify band intensities.

D. **Nano drop Spectrophotometer**

1. Name of the Institution: Vinayaka Mission's Medical College & Hospitals, Karaikal
2. Name, make & model number of the equipment: **Nano drop Spectrophotometer | Nabi | µ2 Microdigitalco**
3. Thrust area of Research/Domain for which equipment will be useful:

   Molecular Biology | Genetic engineering | Biochemical Technology, etc.
4. Major uses of the equipment: Rapid and accurate measurement of DNA & RNA purity and concentration in small volume of samples (1-2 µL) making it crucial for various applications, including PCR, cloning, sequencing, gene expression studies, and microarray analysis.

   Determining protein purity and its concentration for enzyme assays, protein purification, and other biochemical experiments.
5. Important specifications of the equipment:

   Absorbance Precision - 1% at 100 ng/µl | Absorbance Range - 0 to 300 Abs. (10 nm equivalent) | Detection Limit 2 ng/µl (dsDNA) | Maximum conc. 15,000 ng/µl (dsDNA) | Measurement Time 5 sec | Minimum Sample Size1 µl | Path Length 0.01 – 1.2 mm

E. **PCR 96 well thermal cycler**

1. Name of the Institution: Vinayaka Mission's Medical College &Hospital, Karaikal
2. Name, make & model number of the equipment: **PCR 96 well thermal cycler, Applied Biosystems, Veriti**
3. Thrust area of Research/Domain for which equipment will be useful: Molecular Biology &DNA amplication
4. Major uses of the equipment:

   The PCR Thermocycler is primarily used for the amplification of specific DNA sequences for downstream applications such as cloning, sequencing, and genotyping. It is essential for the identification of microbial pathogens in clinical and environmental samples, as well as the detection of genetic variants, mutations, or polymorphisms.
5. Important specifications of the equipment: The important specifications of a PCR Thermocycler include a 96-well block format, temperature range of 4°C to 99°C, high ramp rates (up to 5°C/sec), gradient functionality, and compatibility with a wide range of sample volumes (10-100 µL). It should also feature user-friendly programming, connectivity options like USB or Wi-Fi, and energy-efficient operation.
6. High resolution color picture of the equipment:

F. **Spectrophotometer**

1. Name of the Institution: Vinayaka Mission's Medical College &Hospital, Karaikal
2. Name, make & model number of the equipment: **Spectrophotometer, Shimadzu & UV-1800**
3. Thrust area of Research/Domain for which equipment will be useful: Drug Quantification, Kinetics studies & Calibration Curve Method
4. Major uses of the equipment: UV spectrophotometers measure light absorbance to analyze substances in fields like pharmaceuticals, biochemistry, and Microbiology. They ensure product safety, check drug stability, and assist in clinical diagnostics.
5. Important specifications of the equipment: The key specifications of a UV spectrophotometer include the wavelength range it can measure, its accuracy. Other important factors are the range of absorbance it can detect, how stable its baseline is, the type of detector it uses, and the options for data output.
6. High resolution color picture of the equipment:

G. **Multimode plate reader**

1. Name of the Institution: Vinayaka Mission's Medical College & Hospitals, Karaikal
2. Name, make & model number of the equipment: **Multimode plate reader | LTek | INNO-S™**
3. Thrust area of Research/Domain for which equipment will be useful: Biochemistry | Microbiology | Molecular Biology| Biochemical Technology | Biomolecular / Biochemical Toxicology, etc.
4. Major uses of the equipment: This is a versatile laboratory instrument capable of measuring various biological and chemical assays in microplates, ability to detect multiple modes of signal generation makes to determine the concentrations of DNA, RNA, Protein Quantification, enzyme assays, Cell-based assays, immunological assays, environmental monitoring, Gene expression analysis, epigenetics studies, Drug metabolism and pharmacokinetics
5. Important specifications of the equipment: Detection modes: Fluorescence, time-resolved fluorescence, luminescence, UV-Visible absorbance | Read Methods: End point, kinetic, spectral scanning, well-area scanning | Microplate types: 6- to 384-well plates, |Temperature control: 4-Zone™™™ incubation up to 50°C; ±0.2°C at 37°C | Shaking Function: Linear & Orbital

22. Protein and Antibody Quantification and Cancer Research:

A. Automated Enzyme-Linked Immunosorbent Assay Washer and Reader

1. Name of the Institution: Vinayaka Mission's Sankarachariyar Dental College, Salem

2. Name, Make & Model Number of the Equipment:

- ROBONIK Wash Well Plate Plus (Automatic ELISA Plate Washer), Model: Washwell Plate Plus, ROBONI Thane, SN: AWP00421221BRK

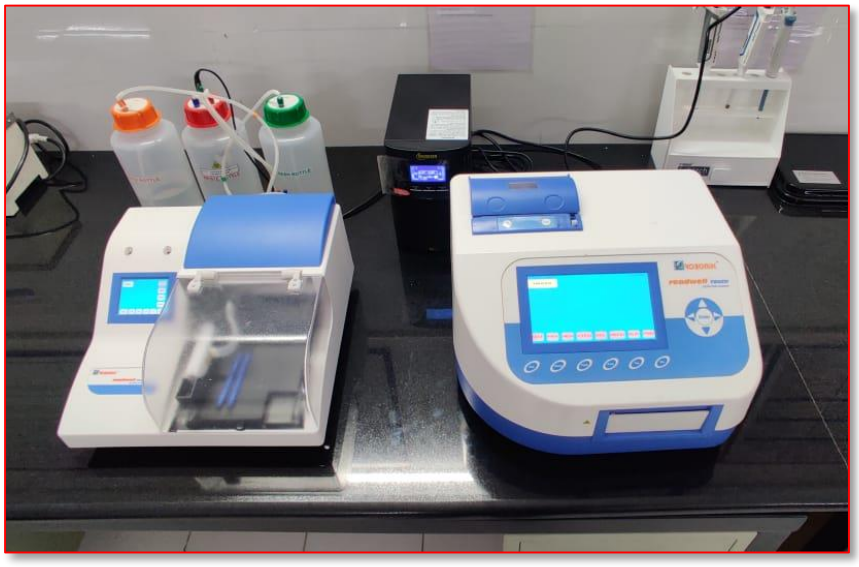
- ROBONIK Readwell TOUCH (ELISA Plate Analyser), Model: Readwell TOUCH, ROBONI Thane, SN: RTCD0470122RBK

3. Thrust Area of Research/Domain for Which Equipment Will Be Useful: Protein and Antibody Quantification

4. Major Uses of the Equipment: Research projects for detecting and quantifying proteins, peptides, antibodies, and hormones; cell signaling pathways in understanding biological processes and diseases.

5. Important Specifications of the Equipment: Automated ELISA provides speed, accuracy, and reduces human error in quantification.

6. High resolution color picture of the equipment:



B. Immuno – Histochemistry

1. Name of the Institution: Vinayaka Mission's Sankarachariyar Dental College, Salem

2. Name, Make & Model Number of the Equipment: Based on IHC marker manufacturer.

3. Thrust Area of Research/Domain for Which Equipment Will Be Useful: Cancer Research

4. Major Uses of the Equipment: Research on immunohistochemistry marker studies on tissues, visualizing and analyzing the distribution and localization of proteins within tissues.

5. Important Specifications of the Equipment: Enhances visualization of proteins for accurate tissue analysis.

23. Material and Sample Morphology:

A. Stereozoom Microscope

1. Name of the Institution: Vinayaka Mission's Sankarachariyar Dental College, Salem

2. Name, Make & Model Number of the Equipment: OptoMag Stereozoom Microscope, Model: KOM 23E

3. Thrust Area of Research/Domain for Which Equipment Will Be Useful: Material and Sample Morphology and Dimensions

4. Major Uses of the Equipment: Examination of surface and measurements of soft and hard tissue samples; analysis of morphology and characteristics of specimens and research samples.

5. Important Specifications of the Equipment: Provides detailed 3D views of sample structures.

6. High resolution color picture of the equipment:

24. Cellular Analysis:

A. Research Microscope with Image Analysis Software

1. Name of the Institution: Vinayaka Mission's Sankarachariyar Dental College, Salem

2. Name, Make & Model Number of the Equipment:

- Microscope: Lawrence and Mayo, S.No: 008641

- Image Analyzer: ScopeImage 9.0

3. Thrust Area of Research/Domain for Which Equipment Will Be Useful: Cellular Analysis

4. Major Uses of the Equipment: Dark ground microscopy for visualizing live, unstained microorganisms; phase contrast microscopy for observing transparent cells without staining; polarized microscopy for examining birefringent materials like crystals, cementum, and cellular matrix.

5. Important Specifications of the Equipment: Enables high-resolution visualization for diverse microscopy techniques.

6. High resolution color picture of the equipment:

25. Sample Preparation and Chemical Analysis:

A. Digital Fluoride and pH Meter

1. Name of the Institution: Vinayaka Mission's Sankarachariyar Dental College, Salem

2. Name, Make & Model Number of the Equipment: ORION STAR A SERIES Digital Fluoride Meter and pH Meter, Thermo Scientific, Indonesia, Model No: SN7X0137

3. Thrust Area of Research/Domain for Which Equipment Will Be Useful: Chemical Analysis

4. Major Uses of the Equipment: Measures fluoride concentration and pH levels in water and solutions to analyze the effects of acidity or alkalinity on biological processes in scientific disciplines.

5. Important Specifications of the Equipment: Ensures accurate analysis of chemical properties in solutions.

6. High resolution color picture of the equipment:

B.Centrifuge:

1. Name of the Institution: Vinayaka Mission's Sankarachariyar Dental College, Salem

2. Name, Make & Model Number of the Equipment: REMI R-4C Centrifugal Machine

3. Thrust Area of Research/Domain for Which Equipment Will Be Useful: Sample Preparation

4. Major Uses of the Equipment: Separates substances of different densities in a sample, including preparation of Platelet-rich Plasma (PRP) for research purposes.

5. Important Specifications of the Equipment: Provides efficient sample separation with consistent results.

6. High resolution color picture of the equipment:

CENTRIFUGAL MACHINE

C.Deep Freezer

1. Name of the Institution: Vinayaka Mission's Sankarachariyar Dental College, Salem

2. Name, Make & Model Number of the Equipment: Blue Star Deep Freezer

3. Thrust Area of Research/Domain for Which Equipment Will Be Useful: Sample Storage

4. Major Uses of the Equipment: Provides long-term storage of samples at -20°C.

5. Important Specifications of the Equipment: Ensures stable preservation of biological samples.

6. High resolution color picture of the equipment:

DEEP FREEZER

26. Pharmaceutical Drug Structural Investigation and Quality Control

A) Fourier Transform Infrared (FTIR) Spectrophotometer

1.Name of the Institution: Vinayaka Mission's Homoeopathic Medical College and Hospital, Salem

2.Name, make & model number of the equipment:

Name : Fourier Transform Infrared (FTIR) Spectrophotometer
Make : Shimadzu
Model : IRSPIRIT with Lab Solution IR (LiTaO3 Detector)

3.Thrust area of Research/Domain for which equipment will be useful:

Pharmaceutical Drug Structural Investigation and Quality Control

4.Major uses of the equipment:

- Verification of drugs identity
- Drug testing for purity
- Drug structural investigations
- Drug Crystalline structures
- Investigations of interactions between active medicaments and excipients

5.Important specifications of the equipment:

- IR Pilot Program offers a total of 23 application programs as standard, making it easy for operators with minimal FTIR experience to analyze samples by simply selecting the analysis purpose and accessory. There is no need to set parameters. It enables the measurement of multiple samples with only one click.
- Identification Test Program makes pass/fail judgments for test samples based on verification methods described in Pharmacopoeia and standards specified in each country, such as "Infrared Spectrophotometry" in the Japanese Pharmacopoeia and Japan's Specifications and Standards for Food Additives. The program calculates the difference between peak wave numbers from standard and test samples and the difference between the peak intensity ratios and then prints a report of pass/fail judgment results.
- The contaminant analysis program identifies measured contaminants using Shimadzu's proprietary identification algorithm (Japanese Patent No. 5205918) in combination with a spectral library containing more than 550 spectra for substances commonly detected as contaminants. After data analysis, it automatically makes a pass/fail judgment and creates a

report. Even if the contaminant is a mixture, it searches for major and minor components and displays their ranks.

Fourier Transform Infrared (FTIR) Spectrophotometer

B): I Chroma II Immunoassay Reader

1. Name of the Institution: Vinayaka Mission's Homoeopathic Medical College and Hospital, Salem

2. Name, make & model number of the equipment:
   Name : Immunoassay Reader
   Make : Boditech Med
   Model : I Chroma II

3. Thrust area of Research/Domain for which equipment will be useful:
   Clinical Samples Biochemical Investigations

4. Major uses of the equipment:
   - Cardiac Tests - TN-1, TN-1 Plus, D-Dimer, NT-Pro BNP, Myoglobin, HS CRP, Cardiac Triple
   - Carcinoma Tests - PSA, AFP, CEA, IFOB
   - Diabetes Tests - HbA1C, Microalbumin, Cystatin C
   - Hormone Tests - TSH, TSH Plus, T3, T4, FSH, LH, PRL, HCG, Beta HCG, Testosterone, Progesterone, Cortisol
   - Infection Tests - PCT, ASO, CRP, Dengue NS1 Ag, Dengue IgG/IgM, Influenza A+B, Total IgE
   - Other Tests - RF IgM, ACCP, Ferritin, Vitamin D,

5. Important specifications of the equipment:
   - ichroma™ II is a compact, easy-to-use diagnostic immuno-analyzer to measure the presence of various biomarkers for cardiac, cancer, hormones, infectious diseases, autoimmune diseases, and metabolic diseases.
   - Diagnosis method - Fluorescence-based Lateral Flow Immunoassay

6. High resolution color picture of the equipment:

C): DYNACOUNT 3D Fully Automatic Hematology Analyzer

1. Name of the Institution: Vinayaka Mission's Homoeopathic Medical College and Hospital, Salem
2. Name, make & model number of the equipment:
   Name : Fully Automatic Hematology Analyzer
   Make : CPC Diagnostics
   Model : DYNACOUNT 3D
3. Thrust area of Research/Domain for which equipment will be useful:
   Blood Cell Count and Analysis
4. Major uses of the equipment:
   - WBC (Gran%, Lym%, Mid%, Gran#, Mid#)
   - RBC (HGB, HCT, MCV, MCH, MCHC, RDW-CV, RDW-SD)
   - PLT (MPV, PDW-SD, PDW-CV, PCT, P-LCR, P-LCC)
   - NLR, PLR
5. Important specifications of the equipment:
   - 60 samples per hour.
   - Measures and derives 24 Parameters
   - 500000 Sample storage with 2 Histograms
   - Smart counting mode for Low Platelet and WBCs
   - Real time Reagent monitoring and smart maintenance

D): Biochemistry Semi-auto analyzer

1. Name of the Institution: Vinayaka Mission's Homoeopathic Medical College and Hospital, Salem
2. Name, make & model number of the equipment:
   Name : Biochemistry Semi-auto analyzer
   Make : CPC Diagnostics
   Model : STAT FAX 3300
3. Thrust area of Research/Domain for which equipment will be useful:
   Clinical Samples Biochemical Investigations
4. Major uses of the equipment:
   - Substrates – Albumin, Bilirubun Direct, Bilirubin, Total Cholesterol, Creatinine, Direct HDL Cholesterol, Direct LDL Cholesterol, Glucose, Triglycerides, Total Protein, Urea Kinetic, Uric acid,
   - Enzymes - ALT/SGPT, AST/SGOT, Alkaline Phosphatase, Amylase, CK-NAC, CK-MB, Gamma GT, LDH-P
   - Minerals – Calcium, Magnesium, Phosphorous
5. Important specifications of the equipment:
   - The flexible Stat Fax 3300 is equipped with multiple, self-prompting operating modes to meet the varying demands and requirements of any facility. The modes include Absorbance Mode, Standard Mode, Rate Mode, Factor Mode, Multi-point Mode, and Index Mode. Moreover, the instrument accepts standard 12 mm round tubes as well as 1 cm square cuvettes.
   - The Stat Fax 3300 reader's user-programmable memory allows the operator to store and name tests in a numbered test menu. Thereafter, these tests may be readily recalled for later use with minimal set up, and remain stored until either changed or deleted by the user. Basic calculations are also permanently stored in the Stat Fax memory, including several single and multi-point equations.

E): UV Vis Single Beam Spectrophotometer

1. Name of the Institution: Vinayaka Mission's Homoeopathic Medical College and Hospital, Salem

2. Name, make & model number of the equipment:
   Name : UV Vis Single Beam Spectrophotometer
   Make : King Lab
   Model : KLUV 1110

3. Thrust area of Research/Domain for which equipment will be useful:
   Pharmaceutical Drug Structural Investigation

4. Major uses of the equipment:
   - UV/Vis spectroscopy can be used in analytical chemistry for the quantitative determination of diverse analytes or sample, such as transition metal ions, highly conjugated organic compounds, and biological macromolecules.

5. Important specifications of the equipment:
   - Optical System - Single Beam – Grating 1200 Lines/mm
   - Wavelength Range - 190 – 1100 nm
   - Spectral Band width - 2 nm
   - Wavelength Accuracy - ± 1 nm

6. High resolution color picture of the equipment:

F) Important Application software available:

Name of the Institution: Vinayaka Mission's Homoeopathic Medical College and Hospital, Salem

1. Name of the software : BioStat for Windows – Statistical Software
2. Version number : Academic Institution Version
3. Major uses of the software : AnalystSoft Inc

27. Drug Formulation development, Analytical development, Synthesis & Characterization:

A) Dissolution apparatus

6. Name of the Institution: Vinayaka Mission' College of Pharmacy, Department of Pharmaceutics
7. Name, make & model number of the equipment:
   Name of the equipment: Dissolution apparatus
   Company : LAB-INDIA
8. Thrust area of Research/Domain for which equipment will be useful: Formulation development, Analytical development
9. Major uses of the equipment:
   - This apparatus evaluates adequate bio-availability and provides necessary information to formulate in the development of therapeutically optimum dosage forms.
   - It serves as a vital tool in quality control, routinely utilized to monitor the batch-to-batch consistency of dosage forms, thereby maintaining drug safety and efficacy.
10. Important specifications of the equipment:

Specification	
Control system	Manual
Water bath	Circulating water bath
Temperature accuracy	± 0.5 ºC
Type	Basket and paddle

11. High resolution color picture of the equipment:

B) FTIR spectrophotometer

1. Name of the Institution: Vinayaka Mission' College of Pharmacy
2. Name, make & model number of the equipment:
   Name of the equipment: FTIR spectrophotometer
   Company : Perkin Elmer spectrum 100
3. Thrust area of Research/Domain for which equipment will be useful: Formulation development, Analytical development
4. Major uses of the equipment:
   - Determine the identification of iron, Atom and molecules
   - Quantification of molecules
   - FTIR can ensure that processes are stable and in control.
   - To determine the chemical vibration of atoms, molecules and irons
5. Important specifications of the equipment:

Specification	
Control system	Manual
Wavelength range	400cm^{-1} to 4000 cm^{-1}
depth resolution	**~0.1-1 micron**

C) Double beam spectrophotometer

1. Name of the Institution: Vinayaka Mission' College of Pharmacy
2. Name, make & model number of the equipment:
   Name of the equipment: Double beam spectrophotometer
   Company : Systronics
3. Thrust area of Research/Domain for which equipment will be useful: Formulation development, Analytical development
4. Major uses of the equipment:
   - Determine the percentage purity of the molecule
   - To Identify the Structure of the molecule
   - Quantification of the molecules
   - Determine the drug release of known and unknown compounds
5. Important specifications of the equipment:

Specification	
Control system	Automatic source optimisation, Base line calibration & Cell optimisation
Wavelength	200 – 1100 nm
Scan	Single Wavelength, Multi Wavelength,

6. High resolution color picture of the equipment:

D) Tablet Punching Machine

1. Name of the Institution: Vinayaka Mission' College of Pharmacy
2. Name, make & model number of the equipment:
   Name of the equipment: Tablet Punching Machine (Large)
   Company : Cadmach
3. Thrust area of Research/Domain for which equipment will be useful: Formulation development, Analytical development
4. Major uses of the equipment::
   - To produce a variety of tablets, such as prescription drugs, over-the-counter medications, and generic formulations
   - To create tablets containing vitamins, minerals, herbal extracts, and other nutritional supplements.
   - Uniform weight, thickness and hardness
5. Important specifications of the equipment:

Specification	
Control system	Automatic
RPM	50
Station	17

6. High resolution color picture of the equipment:

E) Multipurpose machine

1. Name of the Institution: Vinayaka Mission' College of Pharmacy
2. Name, make & model number of the equipment:
   Name of the equipment: Multipurpose machine
   Company : kelvin technologic
3. Thrust area of Research/Domain for which equipment will be useful: Formulation development, Analytical development
   - Major uses of the equipment :
   - Used to efficiently mix materials and wet granulate them for the production of capsules and tablets.
   - Blenders mix ingredients, powders, and granules to create a uniform consistency and desired physical characteristics
4. Important specifications of the equipment:

Specification	
Control system	Automatic
RPM	50
Purpose	Granulation, Blending

5. High resolution color picture of the equipment:

F) Digital pH meter

1. Name of the Institution: Vinayaka Mission' College of Pharmacy
2. Name, make & model number of the equipment:
   Name of the equipment: Digital pH meter
   Company : Systronics
3. Thrust area of Research/Domain for which equipment will be useful: Formulation development, Analytical development
4. Major uses of the equipment:
   - Used to test the stability of pharmaceutical products.
   - Accurate pH control ensures the safety and efficacy of pharmaceutical products
5. Important specifications of the equipment:

Specification	
Control system	Automatic
Range	0-14
Resolution	0.01
Temp	0-99.9^{o}c
Slope	85% to 115%

6. High resolution color picture of the equipment:

Department of Pharmacy Practice

A) Important Application software available:

1. **Name of the software: Lexicomp**
2. **Version number: Nil**
3. **Major uses of the software: Drug Information**

Department of Pharmaceutical Chemistry & Pharmaceutical Analysis

A): FTIR spectrophotometer

1. Name of the Institution: Vinayaka Mission' College of Pharmacy

2. Name, make & model number of the equipment:

Name of the equipment: FTIR spectrophotometer
Company : BRUKER

3. Thrust area of Research/Domain for which equipment will be useful: Formulation development, Analytical development

4. Major uses of the equipment:

- Determine the identification of iron, Atom and molecules
- Quantification of molecules
- FTIR can ensure that processes are stable and in control.
- To determine the chemical vibration of atoms, molecules and irons

5. Important specifications of the equipment:

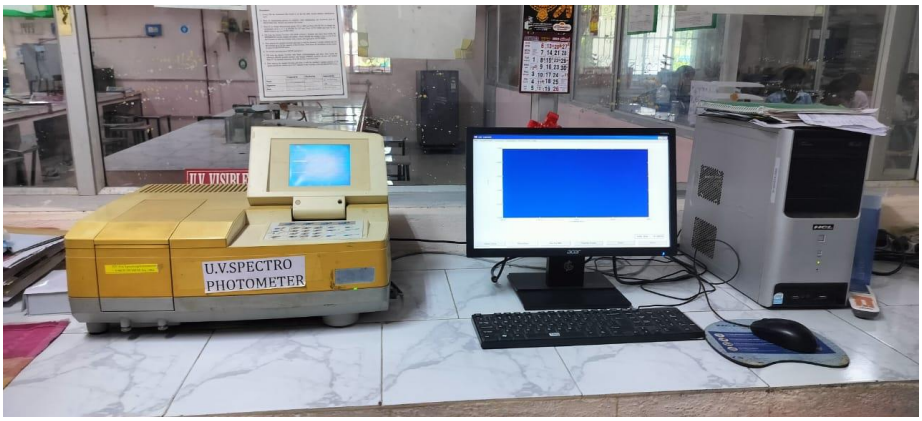
Specification	
Control system	Manual
Wavelength range	400cm^{-1} to 4000 cm^{-1}
depth resolution	**~0.1-1 micron**

B) UV-Spectroscopy

1. Name of the Institution: Vinayaka Mission' College of Pharmacy
2. Name, make & model number of the equipment:
   Name of the equipment: **UV-Spectroscopy**
   Company : SHIMADZU
   Model : 1601
3. Thrust area of Research/Domain for which equipment will be useful: Synthetic chemical formulation, Method development & Validation , Bio-Analytical,
4. Major uses of the equipment:
   - Identifying and characterizing molecules: UV-Vis spectroscopy measures how much light a sample absorbs or transmits at specific wavelengths to identify and characterize molecules.
   - Determining purity: UV-Vis spectroscopy can determine the purity and impurity of a sample
   - Analyzing DNA and RNA: UV-Vis spectroscopy can verify the concentration and purity of DNA and RNA
5. Important specifications of the equipment:

Specification	
Control system	Manual
Range	200-1100nm
Ambient Temperature	15-35 ºC
Power supply	100,120,220,240V; 50/60Hz;160Va
Dimension	550x470x380 (WxDxH)mm
Weight	18kg
Lamp	50w halogen lamp, deuterium lamp
Detector	Photodiode
Sample compartment	1x10mm(WxH)

6. High resolution color picture of the equipment:



C) Important Application software available:

12. Name of the software: UPVC Window Quotation Software
13. Version number:1060P

d. Freeze dryer

1. Name of the Institution: Vinayaka Mission' College of Pharmacy
2. Name, make & model number of the equipment:
3. Name of the equipment: **Freeze dryer**
   Company : Esquire Biotech
   Model : EBT10N
4. Thrust area of Research/Domain for which equipment will be useful: Formulation development, Analytical development
5. Major uses of the equipment:
   - Freeze drying is used to create stable, long-lasting drugs.
   - Freeze drying is a key technique in biological and environmental research, preserving the structure and activity of microorganisms.
   - Freeze drying helps preserve protein in pet food, which is important for healthy growth.
6. Important specifications of the equipment:

Specification	
Control system	Manual
Temperature range	120-160^{o}C
depth resolution	**~0.1-1 micron**

7. High resolution color picture of the equipment:

E): Flame photometry

1. Name of the Institution: Vinayaka Mission' College of Pharmacy

2.Name, make & model number of the equipment:

Name of the equipment: **Flame photometry**

3.Thrust area of Research/Domain for which equipment will be useful: Formulation development, Analytical development

4.Major uses of the equipment:

- to determine the concentration of certain metal ions, among them sodium, potassium, and calcium, magnesium
- Flame photometry is crude but inexpensive compared to flame emission spectroscopy
- Quantification of the molecules

5.Important specifications of the equipment:

Specification	
Power supply	220v ±10%
Dimensions:	365 x 245 x 220 mm (L x B x H)
Speed,	1450 – 1700

F): Digital pH meter

A) Name of the Institution: Vinayaka Mission' College of Pharmacy

B) Name, make & model number of the equipment:

Name of the equipment: Digital pH meter

Company : Systronics

C) Thrust area of Research/Domain for which equipment will be useful: Formulation development, Analytical development

D) Major uses of the equipment: Used to test the stability of pharmaceutical products. Accurate pH control ensures the safety and efficacy of pharmaceutical products

E) Important specifications of the equipment:

Specification	
Control system	Automatic
Range	0-14
Resolution	0.01
Temp	0-99.9°c
Slope	85% to 115%

G): Photo fluorometer

1. Name of the Institution: Vinayaka Mission' College of Pharmacy

2. Name, make & model number of the equipment:

Name of the equipment: **Photo fluorometer**
Company : Systronics 152

3.Thrust area of Research/Domain for which equipment will be useful: Formulation development, Analytical development

4. Major uses of the equipment:

1.Measure parameters of visible spectrum fluorescence: its intensity and wavelength distribution of emission spectrum after excitation by a certain spectrum of light.

2. Fluorescence analysis can be orders of magnitude more sensitive than other techniques.

5. Important specifications of the equipment:

Specification	
Light source:	The type of light source, such as a xenon lamp, laser diodes, or LEDs
Dimensions	520(W) × 545(D) × 270(H) mm
Wavelength	400-700nm

6. High resolution color picture of the equipment:

H): Samsung Smart Oven

1. **Name of the Institution:** Vinayaka Mission's College Of Pharmac**y,** Department of Pharmacology

2.Name, make & model number of the equipment:

Samsung Smart Oven, Samsung &MC28H5025QB/TL

3.Thrust area of Research/Domain for which equipment will be useful: Nano Technology

4.Major uses of the equipment:

2. Microwaves oven assist in Synthesis of different types of Nano particles
3. To improve the yield and purity of nanoparticles
4. Improve the surface properties in drug delivery ,sensors and catalyst

5.Important specifications of the equipment:

- Energy efficiency
- Speed
- Safety
- Control
- Convenience

I) Semi-auto Chemistry Analyzer

1. **Name of the Institution:** Vinayaka Mission's College Of Pharmac**y**
2. **Name, make & model number of the equipment:** Semi-auto Chemistry Analyzer, Mindray &BA-88A
3. **Thrust area of Research/Domain for which equipment will be useful:** liver disorder, CVS disorder ,diabetic mellitus, neurological disorder
4. **Major uses of the equipment:**
   - Biochemical analysis: Used to analyze the clinical chemical components of samples like plasma and serum. This includes detecting kidney function, liver function, blood lipids, myocardial enzymes, inorganic ions, and other biochemical item

5. **Important specifications of the equipment:**
   - Measuring range
   - Photometric accuracy
   - Drift
   - Filters

c) Important Application software available:

7. **Name of the software:** EX-PHARM(heb-nic.in)
8. **Version number:**
9. **Major uses of the software:**
   - To demonstrate effect of drugs on different animals systems
   - Simulates animal experiment in pharmacology
   - It's used to demonstrate the in vivo and in vitro screening of drugs for D.Pharmacy,B.pharmacy and Pharm.D students.

J) Hot Air Oven

1. **Name of the Institute: Vinayaka Mission's College of Pharmacy, Department of Pharmacognosy**
2. **Equipment Name: Hot Air Oven**
3. **Name, make & model number of the equipment:** Kemi
4. **Thrust area of Research / Domain for which equipment will be useful:**

   Temperature stability during the shelf life, plant drying, extraction drying

5. **Major uses of the equipment:**

   Ensure that the Instrument is clean and free from dust. Switch 'ON' the mains. The green indication Light will be 'ON'. There is a three-way switch for the selection of temperature range. The required temperature (Eg. 105^0C) can be set by a thermostatically controlled knob, by rotating it in clockwise or anti-clockwise direction. Note-When temperature is increased, a red – indication light will be 'ON' and then will be 'OFF' automatically. Inside the oven, there are two trays, put any object that requires drying, on this tray and close the door of the oven. A small hole is provided on the top right corner of the instrument to place thermometer or any other temperature measuring device. A vapor or fumes releasing value is also provided on the top middle part of the instrument. Check the working accuracy of the oven thermometer with that of a calibration standard thermometer.

l) UV Cabinet

1. **Name of the Institute: Vinayaka Mission's College of Pharmacy, Department of Pharmacognosy**
2. **Equipment Name: UV Cabinet**
3. **Name, make & model number of the equipment:** Adarsh
4. **Thrust area of Research / Domain for which equipment will be useful:**
    i. UV Disinfection cabinets are simple to use and ensure sterile equipment. They are manufactured to the highest standards to ensure reliable, sterile results. Our UV cabinets are used to kill bacteria without a requirement for heat or chemicals.
5. **Major uses of the equipment:**
    i. UV cabinets are often made of durable metal and have switches fitted on the top for easy care. They also have a dark shade for dimness and bright lighting.
6. **High resolution color picture of the equipment:**

J. BOD Incubator

1. **Name of the Institute: Vinayaka Mission's College of Pharmacy, Department of Pharmacognosy**
2. **Equipment Name: BOD Incubator**
3. **Name, make & model number of the equipment:** Adarsh
4. **Thrust area of Research / Domain for which equipment will be useful:**
    i. Microorganism culturing: BOD incubators are used to culture bacteria and other microorganisms. They create an isolated chamber with the right temperature, humidity, oxygen, and carbon dioxide levels for microorganisms to survive.
5. **Major uses of the equipment**
    i. BOD incubators are used to determine the levels of organic matter and nitrogen in wastewater samples. They are also used to assess water quality, soil health, and the impact of pollutants on microbial ecosystems.
6. **High resolution color picture of the equipment:**

K.Digital Balance:

1. Name of the Institute: Vinayaka Mission's College of Pharmacy, Department of Pharmacognosy
2. **Equipment Name: Digital Balance**
3. **Name, make & model number of the equipment:** Kerro BL5002
4. **Thrust area of Research / Domain for which equipment will be useful:**
    i. **Balance cleaning:** The body of the balance is cleaned using a soft brush.The pan of the balance is cleaned using sponge with 70% IPA. **Calibration Procedure:** Turn the balance ON and allow it to warm up. Press and hold the ON/TARE switch. Place the calibration weight on the centre of the pan and momentarily press ON/TARE switch.
5. **Major uses of the equipment**
    i. **Weighing:** Place an empty container on the centre of the pan, TARE the balance by pressing the cool ON/TARE switch and ZERO will be displayed again. Place the unknown mass on the center of the pan. The weight will be displayed.
6. **High resolution color picture of the equipment:**

L. Microtome

1. Name of the Institute: Vinayaka Mission's College of Pharmacy, Department of Pharmacognosy
2. **Equipment Name: Microtome**
3. **Name, make & model number of the equipment:** Adarsh
4. **Thrust area of Research / Domain for which equipment will be useful:**
    i. A microtome is a precision instrument that can be used to prepare thin slices of plant tissue for microscopic examination.
5. **Major uses of the equipment**
    i. **Plant microtomes:** Can prepare thin, uniform slices of plant tissue without pretreatment, such as freezing or paraffin embedding.
    ii. **Tissue preparation:** Microtomes are used to prepare tissue for microscopic examination and staining
6. **High resolution color picture of the equipment:**

M. Compound Microscope

1. Name of the Institute: Vinayaka Mission's College of Pharmacy, Department of Pharmacognosy
2. **Equipment Name: Compound Microscope**
3. **Name, make & model number of the equipment:** Adarsh
4. **Thrust area of Research / Domain for which equipment will be useful:**
    i. Identifying plants: Microscopy is a traditional method for identifying plants. Authenticating herbal products: Microscopes can be used to authenticate commercial herbal products. Detecting adulteration: Microscopes can be used to detect adulterants and contaminants in herbal preparations.
5. **Major uses of the equipment:**
    i. Keep it free from dust, avoid touching with wet fingers and not spill any liquids to the lenses or the stage. Place the microscope in an upright position at a convenient height facing the light source. Ensure that the eye piece, objectives, mirror and condenser are clean and remove dust with soft brush / Lens tissue. Ensure that the coarse and fine adjustments and condenser are working properly.
6. **High resolution color picture of the equipment:**

N.Camera Lucida

1. Name of the Institute: Vinayaka Mission's College of Pharmacy, Department of Pharmacognosy
2. **Equipment Name: Camera Lucida**
3. **Thrust area of Research / Domain for which equipment will be useful:**
    i. A camera lucida is an optical device used to help artists and microscopists draw images accurately by superimposing the subject being viewed onto the drawing surface.
4. **Major uses of the equipment:**
    i. A camera lucida is used as a standard tool for drawing images in a microscope. A later form of the camera lucida was developed for use with a microscope, replacing the prism with two diagonal mirrors.
5. **High resolution color picture of the equipment:**

28.Organic & Inorganic Chemistry

A. ULTRA VIOLET (UV – Vis) SPECTROMETER

1. Name of the Institution:

School of Arts and Science, Paiyanoor

2. Name, make & amp; model number of the equipment:

UV-Visible spectrophotometer (LMSP – UV 1200, Labman make)

3. Thrust area of Research/Domain for which equipment will be useful: Organic Chemistry, Inorganic Chemistry, Electrochemistry and Nanotechnology

4. Major uses of the equipment:

It is an analytical tool used to measure the optical properties of the samples in the UV-visible range of electromagnetic radiation. It is the most widely used spectrometer for studying liquid medium, gas, and solids including semiconductors, films, glass, and absorbing materials.

Importantly, the UV-Visible spectrometer determines how much light of a given wavelength or Frequency passes through a sample and how much is absorbed. The optional facility of ISR-2600 plus integrating sphere attached with the main unit enables to measure absorbance or emission spectral features in a wider wavelength range 220 - 1200 nm. As a result, UV-Vis 1200 can accommodate measurements of solar cell anti-reflective films and polycrystalline silicon wafers.

5. Important specifications of the equipment:

Wavelength Range: 185 to 900 nm or 220 to 1400 nm (when the ISR-1200 plus Integrating sphere attachment is used), Optical System: Double beam, Single monochromator, Resolution: 0.1 nm, Wavelength Accuracy: +/-0.1 nm (656.1 nm D2), +/-0.3 nm (all range), Scanning Speed: 4000 to 0.5 nm/min, Light Source: 50 W Halogen lamp, Deuterium lamp.

6. High-resolution colour picture of the equipment:

B. HIGH VOLTAGE REGULATED DC POWER SUPPLY

1. Name of the Institution:

School of Arts and Science, Paiyanoor

2. Name, make & amp; model number of the equipment:

JOMA, India & 230 Voltage with 10 Milliamps; VS1010

3. Thrust area of Research/Domain for which equipment will be useful:

Organic Chemistry, Inorganic Chemistry, Electrochemistry and Nanotechnology

4. Major uses of the equipment:

With the development of nanotechnology, the preparation of nanomaterials has become one of the important issues in scientific research and high-tech applications. High-voltage power supply is one of the key components for preparing nanomaterials, and its high output voltage, good stability and fast response make it increasingly widely used in the field of nanotechnology.

Nanomaterial preparation achieves control of material properties by controlling their shape, size, and structure. Common methods for preparing nanomaterials include sol-gel method, gas phase deposition method, chemical vapor deposition method, and electrochemical deposition method for the nano composite materials in implants such as Titanium, Titanium alloy and 316L SS etc., In addition to its application in the preparation of nanomaterials, high-voltage power supply is also widely used in electrospinning, plasma generation, and air purification.

5. Important specifications of the equipment:

i. Input Supply – 230VAC ± 10%, 50Hz

Meter Details – 3 Digit Voltmeter, 3-Digit Ammeter

ii. Protection – Constant current or short circuit protection

iii. I R – At 500 VDC between O/P and ground ≥ 10MΩ

iv. High pot test (H.V. breakdown) – At 1.5KVAC between input and ground

Note – VS – Single O/P power supply / VSD – double O/P power supply

29.Physiotherapy:

Institute Name: Vinayaka Mission's College of Physiotherapy, Salem

A. MATRIX RHYTHM THERAPY

Make: MaRhyThe

Model Number: 3922

Thrust Area of Research: Cellular Function & Mobility

Major Use: Matrix Rhythm Therapy (MRT) is primarily used to improve cellular function and promote tissue healing by applying mechanical vibrations that mimic natural cellular rhythms. It is widely utilized for pain management, musculoskeletal disorders, and enhancing recovery in sports injuries and rehabilitation therapies.

Important Specification: Matrix Rhythm Therapy specifically targets the extracellular matrix, using mechanical vibrations to restore cellular rhythms, improve circulation, and promote tissue regeneration.

Picture:

B. WIRELESS CHATTANOOGA

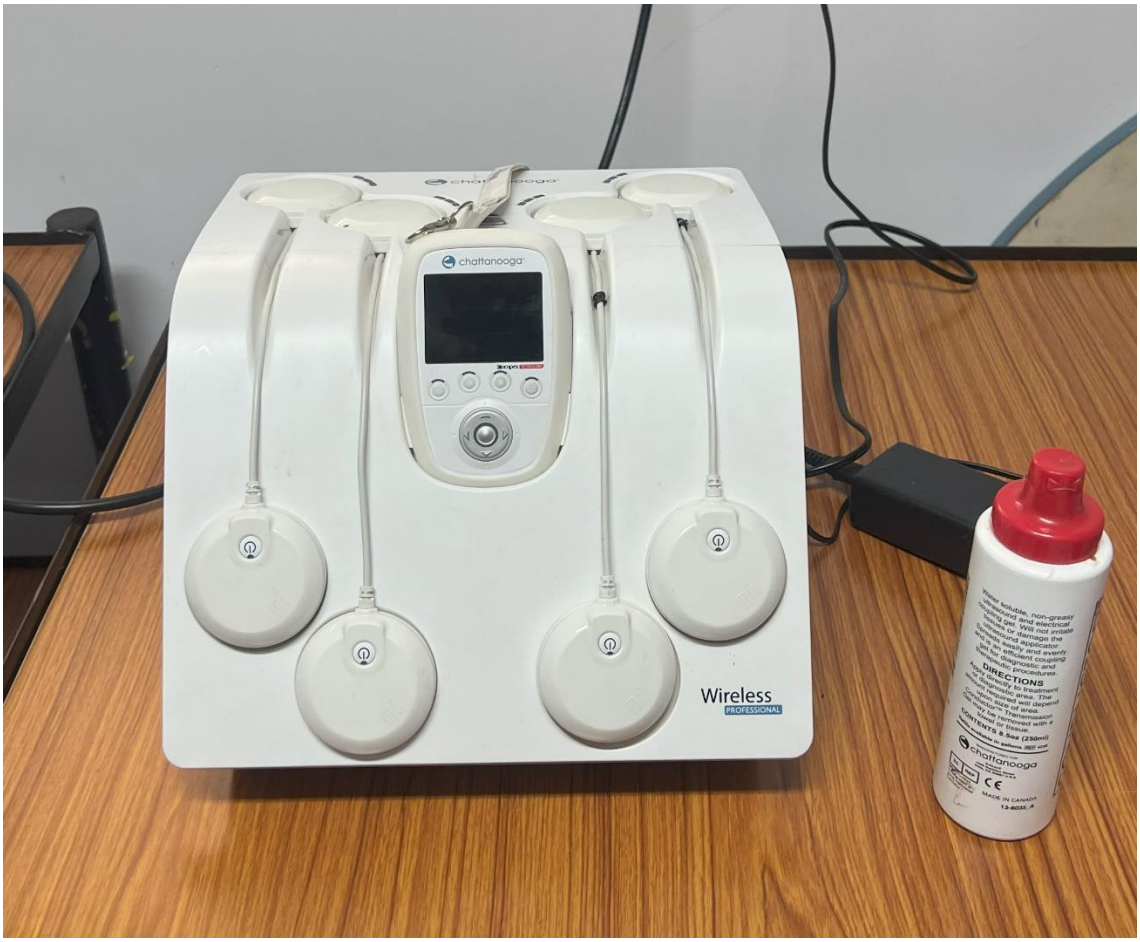
Make: CHATTANOOGA

Model Number: 0473

Thrust Area of Research: Neuromuscular

Major Use: This very useful tool in combination with the dedicated programme helps to ensure the optimal electrode placement. The device is delivered with 4 modules, 2 remotes and a smart docking station allowing the user to synchronize modules and remotes to manage independently several sessions at the same time. Additional remotes/modules are optional. Select one programme and add TENS on other channels. This allows treatment of two different body parts, two patients simultaneously or combines TENS and NMES when this kind of stimulation is required. SKIP Manage the session time and move directly to the next phase (recovery) when needed.

Important Specification: It is a 4 channels stimulator developed to manage the main indications of Electrotherapy: Standard (TENS/NMES) and Full (Neurology, ACL) with Wireless freedom benefits.



C. INTELLECT MOBILE COMBO

Make: CHATTANOOGA

Model Number: T84547

Thrust Area of Research: Neuromuscular & Musculoskeletal

Major Use: Used for Symptomatic relief of chronic pain Management of post-operative pain Muscle re-education Increasing local blood supply Relaxation of muscle spasms Maintaining/Increasing range of motion

Important Specification: The Intelect Mobile 2 COMBO is a two-channel electrotherapy, ultrasound therapy and Combo system used with or without an optional Cart, allowing for the inclusion of a Vacuum module.

D. COMMERCIAL TREADMILL -X5

Make: AARKAY HEALTH EQUIPMENTS

Model Number: SH15A40414

Thrust Area of Research: Cardiovascular & Musculoskeletal

Major Use: A treadmill is primarily used for cardiovascular exercise, allowing users to walk, jog, or run in a controlled indoor environment. It is widely employed in fitness training to improve endurance, burn calories, and strengthen the heart and lungs. Additionally, treadmills are commonly used in rehabilitation programs to aid in the recovery of patients with mobility issues or for gait retraining.

Important Specification: A treadmill's key specifications include adjustable speed and incline settings, a cushioned running surface, and built-in metrics for tracking distance, time, calories burned, and heart rate.

E. MANUAL THERAPY TABLE

Make: ACCORD MEDICAL PRODUCTS

Model Number: 150926

Thrust Area of Research: Musculoskeletal

Major Use: A manual therapy table is primarily used to provide a stable and adjustable surface for therapists to perform hands-on treatments such as joint mobilization, soft tissue manipulation, and stretching. It supports various body positions to facilitate effective treatment of musculoskeletal conditions and enhance patient comfort during therapy sessions. The table is essential in physical therapy, chiropractic care, and massage therapy, allowing for precise alignment and access to specific body areas.

Important Specification: A manual therapy table's key specifications include adjustable height, sturdy construction for stability, and padded surfaces to ensure patient comfort during hands-on therapeutic treatments.

F. CONTINUOUS PASSIVE MOTION MACHINE

Make: TECHNOCARE SYSTEMS352

Model Number: 1-1167 / OCT-15

Thrust Area of Research: Neuromuscular & Musculoskeletal

Major Use: A Continuous Passive Motion (CPM) machine is primarily used in rehabilitation to facilitate passive movement of joints after surgery or injury, helping to reduce stiffness and improve range of motion. By providing controlled, gentle movement, the CPM machine promotes blood circulation and accelerates the healing process without putting strain on the affected area. It is commonly utilized in post-operative care for patients recovering from knee, hip, or shoulder surgeries to ensure optimal recovery outcomes.

Important Specification: A Continuous Passive Motion (CPM) machine is characterized by its adjustable speed, range of motion settings, and user-friendly interface, allowing for personalized therapy to accommodate the specific needs of each patient during rehabilitation.

G. ELLIPTICAL CROSS TRAINER

Make: AARKAY HEALTH EQUIPMENTS

Model Number: BM-81446

Thrust Area of Research: Cardiovascular & Musculoskeletal

Major Use: The elliptical cross trainer is primarily used for cardiovascular workouts, providing a low-impact exercise option that simulates running, walking, or stair climbing while reducing stress on the joints. It engages multiple muscle groups, including the legs, arms, and core, making it an efficient full-body workout tool for improving endurance and burning calories. Additionally, the elliptical trainer often features adjustable resistance and incline settings, allowing users to customize their workouts according to fitness levels and goals.

Important Specification: The elliptical cross trainer is distinguished by its adjustable resistance levels, ergonomic design for a natural motion path, and built-in metrics for tracking heart rate, distance, time, and calories burned.

H. SEMI COMMERCIAL RECUMBENT BIKE

Make: AEROFIT AARKAY HEALTH EQUIPMENTS

Model Number: 1980

Thrust Area of Research: Cardiovascular & Musculoskeletal

Major Use: The semi-commercial recumbent bike is primarily used for low-impact cardiovascular workouts, making it an ideal choice for users of all fitness levels, including those recovering from injuries or managing chronic conditions. Its ergonomic design allows for a comfortable seated position, reducing strain on the back and joints while providing an effective way to strengthen the lower body and improve endurance. Commonly found in gyms, rehabilitation centers, and home fitness settings, the semi-commercial recumbent bike offers adjustable resistance levels and user-friendly features to accommodate a variety of exercise goals.

Important Specification: The semi-commercial recumbent bike is characterized by its adjustable seat and backrest for personalized comfort, magnetic resistance for smooth operation, and integrated display for tracking metrics such as speed, distance, time, and calories burned.

I. HAND HELD DYNAMOMETER

Make: GENERIC

Model Number: 001331

Thrust Area of Research: Musculoskeletal

Major Use: The hand-held dynamometer is primarily used to measure muscle strength in various rehabilitation and clinical settings, providing objective data on an individual's muscular performance. It enables healthcare professionals to assess and monitor progress in patients recovering from injuries, surgeries, or conditions that affect muscle function. Additionally, the device can be utilized in research to evaluate the effectiveness of different therapeutic interventions and training programs by providing reliable strength measurements.

Important Specification: The hand-held dynamometer is distinguished by its portable design, user-friendly interface for easy strength assessments, and the ability to measure isometric muscle strength across multiple muscle groups with accurate readings displayed in units such as pounds or kilograms.

J. VACCUM THERAPY AREOTAT DIGITAL

Make: OM PHYSIQUE DEVICES

Model Number: VAC-100

Thrust Area of Research: Musculoskeletal

Major Use: Vacuum therapy is primarily used for enhancing blood circulation and promoting tissue healing by creating a negative pressure environment that facilitates increased blood flow to targeted areas. It is commonly employed in aesthetic treatments, such as cellulite reduction and body contouring, as well as in rehabilitation settings to alleviate muscle tension and improve recovery from injuries. Additionally, vacuum therapy can aid in the management of chronic pain and improve lymphatic drainage, making it a versatile treatment option across various therapeutic applications.

Important Specification: Vacuum therapy is characterized by its use of adjustable suction levels, specialized applicators for targeted treatment areas, and the ability to provide both static and dynamic suction modes to enhance therapeutic outcomes.

Picture:

K. SKIN FOLD CALIPER

Make: GENERIC

Model Number: -

Thrust Area of Research: Musculoskeletal

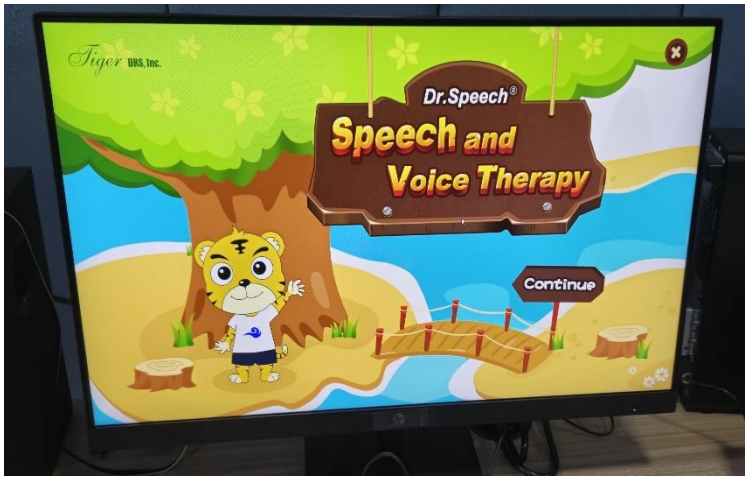
Major Use: The skin fold caliper is primarily used to measure the thickness of subcutaneous fat in various areas of the body, providing valuable data for assessing body composition. It is commonly employed in fitness and health assessments to estimate body fat percentage, which can help in designing personalized nutrition and exercise programs. Additionally, skin fold calipers are utilized in research and clinical settings to monitor changes in body fat over time, contributing to the evaluation of obesity, weight management, and overall health.

Important Specification: The skin fold caliper is distinguished by its precision measurement capabilities, typically featuring dual arms for easy use, a calibrated scale for accurate readings, and lightweight, portable construction for convenient field assessments.

30. Speech Therapy & Communication disorders:

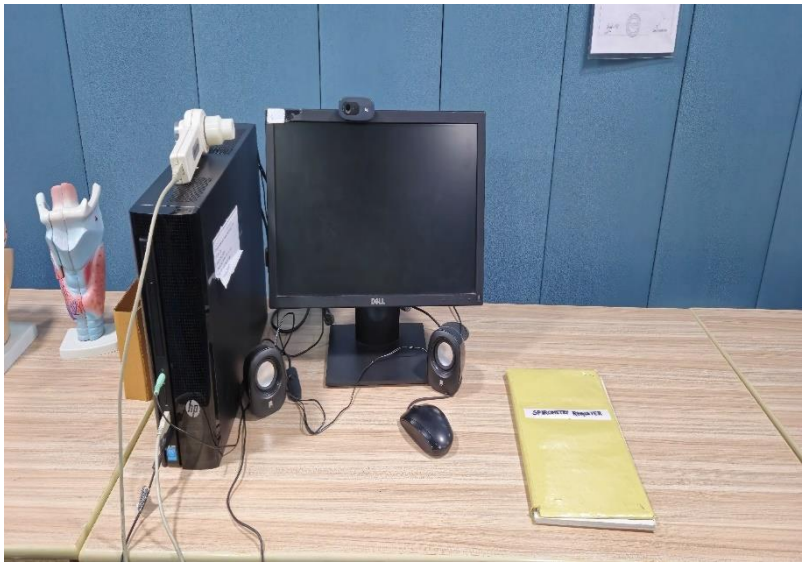
A): Dr. Speech

1. Name of the Institution: Department of Speech-Language Pathology, School of Rehabilitation and Behavioral Sciences
2. Name, make & model number of the equipment: Tiger DRS Inc., Real Speech Software, Speech and Voice Therapy Software
3. Thrust area of Research/Domain for which equipment will be useful: Speech and Voice Therapy, Communication Disorders
4. Major uses of the equipment: Used for speech training and voice therapy for individuals with speech or voice disorders.
5. Important specifications of the equipment: Software-based trainer for speech and voice, customizable therapy sessions.
6. High-resolution color picture of the equipment:



B): Spirometer

1. Name of the Institution: Department of Speech-Language Pathology, School of Rehabilitation and Behavioral Sciences
2. Name, make & model number of the equipment: Helios RMS Spirometer
3. Thrust area of Research/Domain for which equipment will be useful: Pulmonary Function Testing in Speech and Voice Disorders
4. Major uses of the equipment: Measures lung function, especially the volume and flow of air for respiratory and voice disorders.
5. Important specifications of the equipment: Portable device with real-time display, suitable for clinical and research use in voice therapy.
6. High-resolution color picture of the equipment:

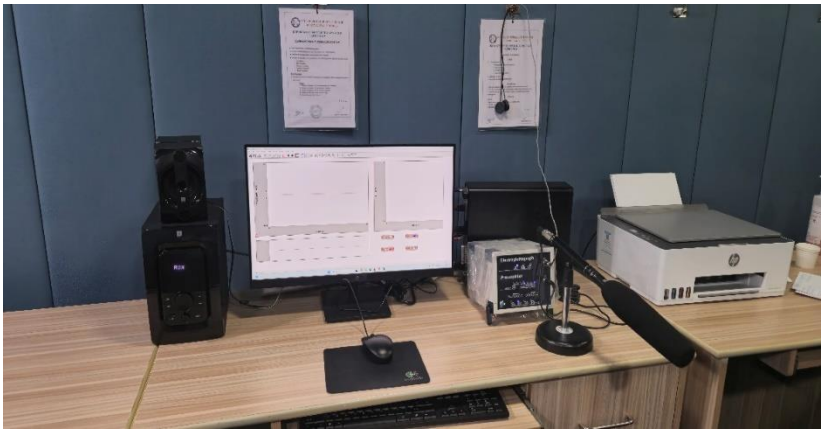


C): Stroboscope

1. Name of the Institution: Department of Speech-Language Pathology, School of Rehabilitation and Behavioral Sciences
2. Name, make & model number of the equipment: Eclairs Stroboscope, VLS Scope
3. Thrust area of Research/Domain for which equipment will be useful: Vocal Fold Examination, Voice Disorders
4. Major uses of the equipment: Assists in examining the vocal folds for abnormalities during phonation, used in diagnosing voice disorders.
5. Important specifications of the equipment: High-speed imaging of vocal folds, and precise visualization of vocal fold movement.
6. High-resolution color picture of the equipment:

D): Electroglottograph

1. Name of the Institution: Department of Speech-Language Pathology, School of Rehabilitation and Behavioral Sciences
2. Name, make & model number of the equipment: Dr. Speech Vocal Assessment
3. Thrust area of Research/Domain for which equipment will be useful: Acoustic analysis of voice
4. Major uses of the equipment: Measures vocal fold movements and gives the different aspects of voice parameters
5. Important specifications of the equipment: Non-invasive, provides real-time feedback of vocal fold contact during speech production.
6. High-resolution color picture of the equipment:



E): Speech Analyzer

1. Name of the Institution: Department of Speech-Language Pathology, School of Rehabilitation and Behavioral Sciences
2. Name, make & model number of the equipment: Xion Speech Analyzer
3. Thrust area of Research/Domain for which equipment will be useful: Speech Analysis and Acoustic Phonetics
4. Major uses of the equipment: Analyzes speech signals based on acoustic features
5. Important specifications of the equipment: High-precision acoustic analysis, real-time speech signal visualization.
6. High-resolution color picture of the equipment:

A. Important Application software available: Cognition Software

a. Name of the software: Voice tech

b. Version number: -

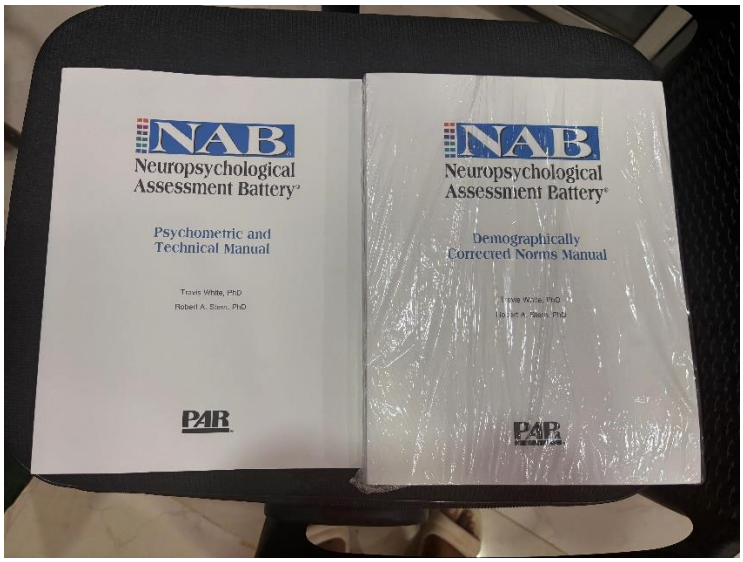
c. Major uses of the software: Used to assess and improve cognitive-linguistic functioning in individuals with language disorders.

B. Important Application software available: PRAAT software

1. Name of the software: PRAAT Software
2. Version number: 6.2.23
3. Major uses of the software: Used to conduct acoustic analysis of voice

G) Neuropsychological Assessment Battery (NAB)

1. **Name of the Institution:** Dept of Clinical Psychology, School of Rehabilitation and Behavioral Sciences, Vinayaka Missions Research Foundation-Deemed University Aarupadai Veedu Medical College and Hospital.
2. **Name, make & model number of the equipment:** Neuropsychological Assessment Battery (NAB) by – TRAVIS WHITE & ROBERT A. STERN.
3. **Thrust area of Research/Domain for which equipment will be useful:** Neuropsychology aspects of various mental domains.
4. **Major uses of the equipment:** It is used to assess a wide array of cognitive skills and functions in adults aged 18 years to 97 years with suspected disorders of the Central Nervous System.
5. **Important specifications of the equipment:** It contains six NAB modules (Screening, Attention, Language, Memory, Spatial, and Executive Functions).

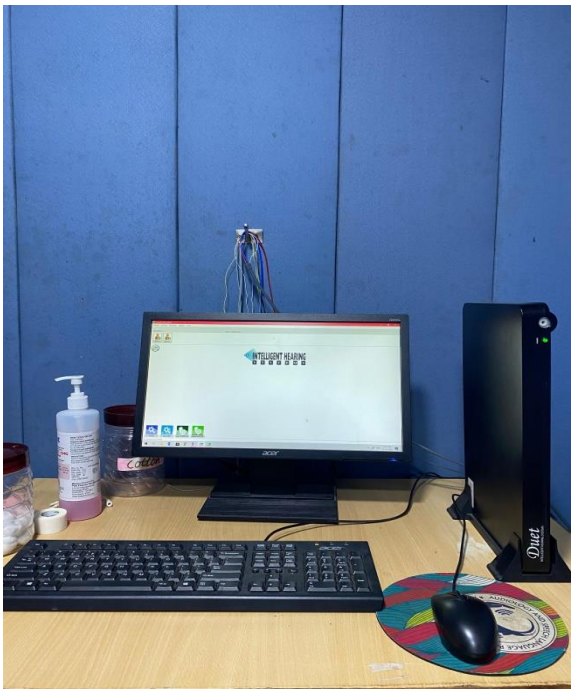


H) E.M.G Biofeedback

1. **Name of the Institution:** School of Rehabilitation and Behavioral Sciences, Vinayaka Missions Research Foundation-Deemed University Aarupadai Veedu Medical College and Hospital.
2. **Name, make & model number of the equipment:** E.M.G Biofeedback, Model: 20221.
3. **Thrust area of Research/Domain for which equipment will be useful:** Neuromuscular reduction, Psychology, Psychosomatic, and Stress-related disorders.
4. **Major uses of the equipment:** It plays a major role in improving patient's awareness of Physiological indications of inappropriate stress and its mechanisms.
5. **Important specifications of the equipment:** By learning to voluntarily control affected muscles, patients can see improvement in those who have acute or chronic muscle tension that contributes to distress.

F) Intelligent Hearing Systems

1. Name of the Institution: Department of Audiology, School of Rehabilitation and Behavioral Sciences
2. Name, make & model number of the equipment: Intelligent Hearing Systems
    a. Manufacturer – IHS 6653, Model – DUET
3. Thrust area of Research/Domain for which equipment will be useful: Electrophysiological tests and Experiments
4. Major uses of the equipment: Objective method of Auditory pathway assessment including analyzing outer hair cell function, objective Hearing threshold estimation, detecting retro-cochlear pathology, Auditory Brainstem response analysis, extensive analysis of central auditory pathway, conducting auditory processing studies, Vestibular pathway analysis.
5. Important specifications of the equipment: Available tests in this model are Oto Acoustic Emissions, Auditory Brainstem Response, Electro Cochleography, Auditory Steady State Response, Middle Latency Response, Late Latency Response, S10, P300, N400, Vestibular Evoked Myogenic Potentials (cVEMP & oVEMP)



J) Diagnostic Audiometer

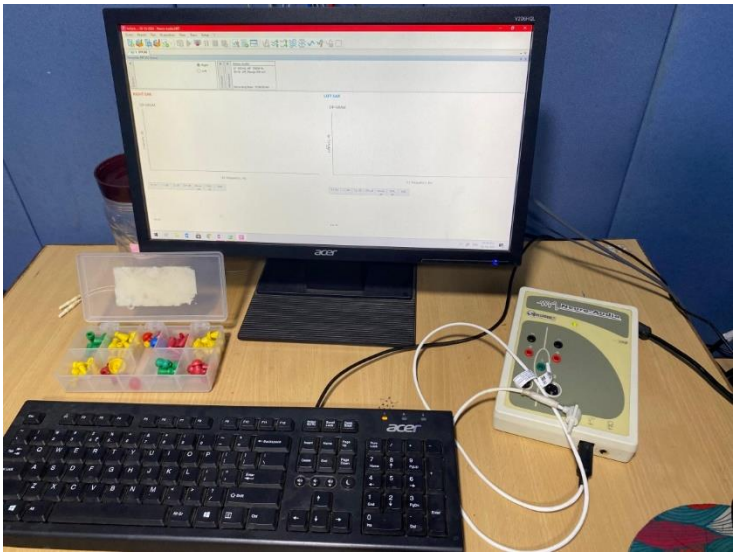
1. Name of the Institution: Department of Audiology, School of Rehabilitation and Behavioral Sciences
2. Name, make & model number of the equipment: Diagnostic Audiometer, Manufacturer- Interacoustics; Model – AC 40
3. Thrust area of Research/Domain for which equipment will be useful: Diagnostic Audiology – Behavioral tests
4. Major uses of the equipment: Threshold estimation, Extended High frequency audiometry, Special tests
5. Important specifications of the equipment: Available tests in this model are Pure tone Audiometry, Extended High Frequency Audiometry, Strenger test, Short Increment Sensitivity Index, Tone decay test, Alternate Binaural Loudness Balance, Speech Audiometry, Tone in Noise, Bekesy audiometry, Master Hearing Aids, Hearing loss simulator
6. High resolution color picture of the equipment:

H) Middle ear analyzer

1. Name of the Institution: Department of Audiology, School of Rehabilitation and Behavioral Sciences
2. Name, make & model number of the equipment: Diagnostic Middle ear analyzer; Manufacturer – Interacoustics; Model- Titan
3. Thrust area of Research/Domain for which equipment will be useful: Middle ear function assessment
4. Major uses of the equipment: Used for detailed Middle ear function studies, Providing high-resolution results that aid in diagnosing and understanding middle ear pathologies.
5. Important specifications of the equipment: Tympanometry, acoustic reflexometry, Eustachian tube function tests, Reflex decay test, Wide band tympanometry, Multi-frequency tympanometry
6. High resolution color picture of the equipment: --

I) Neurosoft Ltd

1. Name of the Institution: Department of Audiology, School of Rehabilitation and Behavioral Sciences
2. Name, make & model number of the equipment: Physiological tests; Manufacturer – Neurosoft Ltd. Russian Federation; Model- Neuro audio
3. Thrust area of Research/Domain for which equipment will be useful: Physiological and Electrophysiological measures of hearing
4. Major uses of the equipment: Objective method of Auditory pathway assessment including analyzing outer hair cell function, objective Hearing threshold estimation, detecting retro-cochlear pathology, Auditory Brainstem response analysis.
5. Important specifications of the equipment: Available tests in this model are Oto Acoustic Emissions, Auditory Brainstem Response, Electro Cochleography, Auditory Steady State Response, Middle Latency Response, Late Latency Response
6. High resolution color picture of the equipment:



J) Diagnostic Audiometer

1. Name of the Institution: Department of Audiology, School of Rehabilitation and Behavioral Sciences
2. Name, make & model number of the equipment: Diagnostic Audiometer, Manufacturer- Otometrics; Model – Madsen Astera
3. Thrust area of Research/Domain for which equipment will be useful: Diagnostic Audiology – Behavioral tests
4. Major uses of the equipment: Threshold estimation, Extended High frequency audiometry, Special tests
5. Important specifications of the equipment: Available tests in this model are Pure tone Audiometry, Extended High Frequency Audiometry, Strenger test, Short Increment Sensitivity Index, Tone decay test, Alternate Binaural Loudness Balance, Speech Audiometry, Masking Level Difference, Bekesy audiometry, Tinnitus evaluation
6. High resolution color picture of the equipment:

K) Psychoacoustics

- Name of the software: Psychoacoustics
- Version number: 1.0.41.0
- Major uses of the software: Used to conduct psychoacoustic experiments to study auditory perception.

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RESEARCH FOUNDATION
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