

KAMARAJ

COLLEGE OF ENGINEERING & TECHNOLOGY



®

(An Autonomous Institution - AFFILIATED TO ANNA UNIVERSITY, CHENNAI)

S.P.G.Chidambara Nadar - C.Nagammal Campus

S.P.G.C. Nagar, K.Vellakulam – 625 701 (Near VIRUDHUNAGAR).

DEPARTMENT	SLIDE No
BIOTECHNOLOGY	2
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COMPUTER SCIENCE AND ENGINEERING	37
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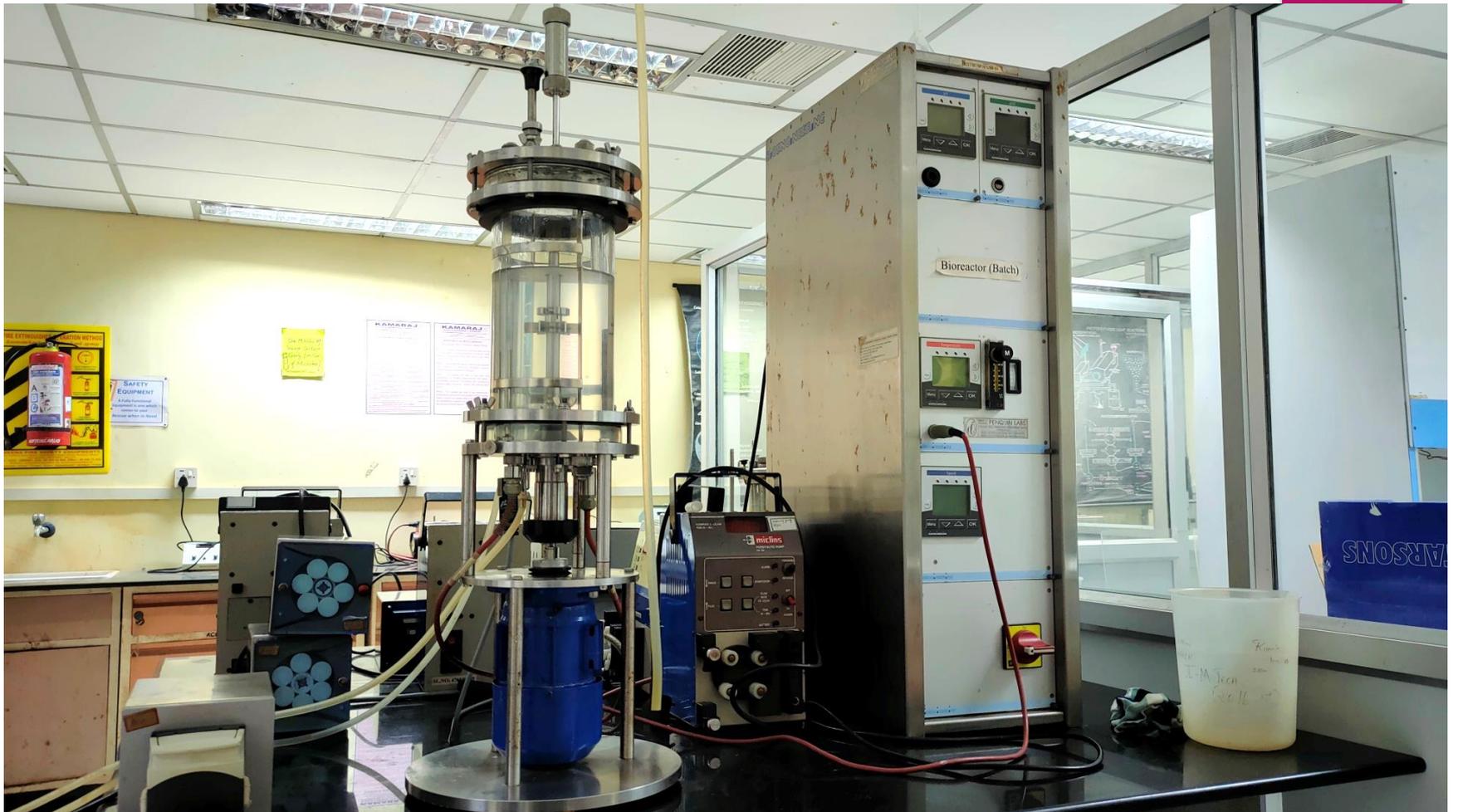
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Department of Biotechnology

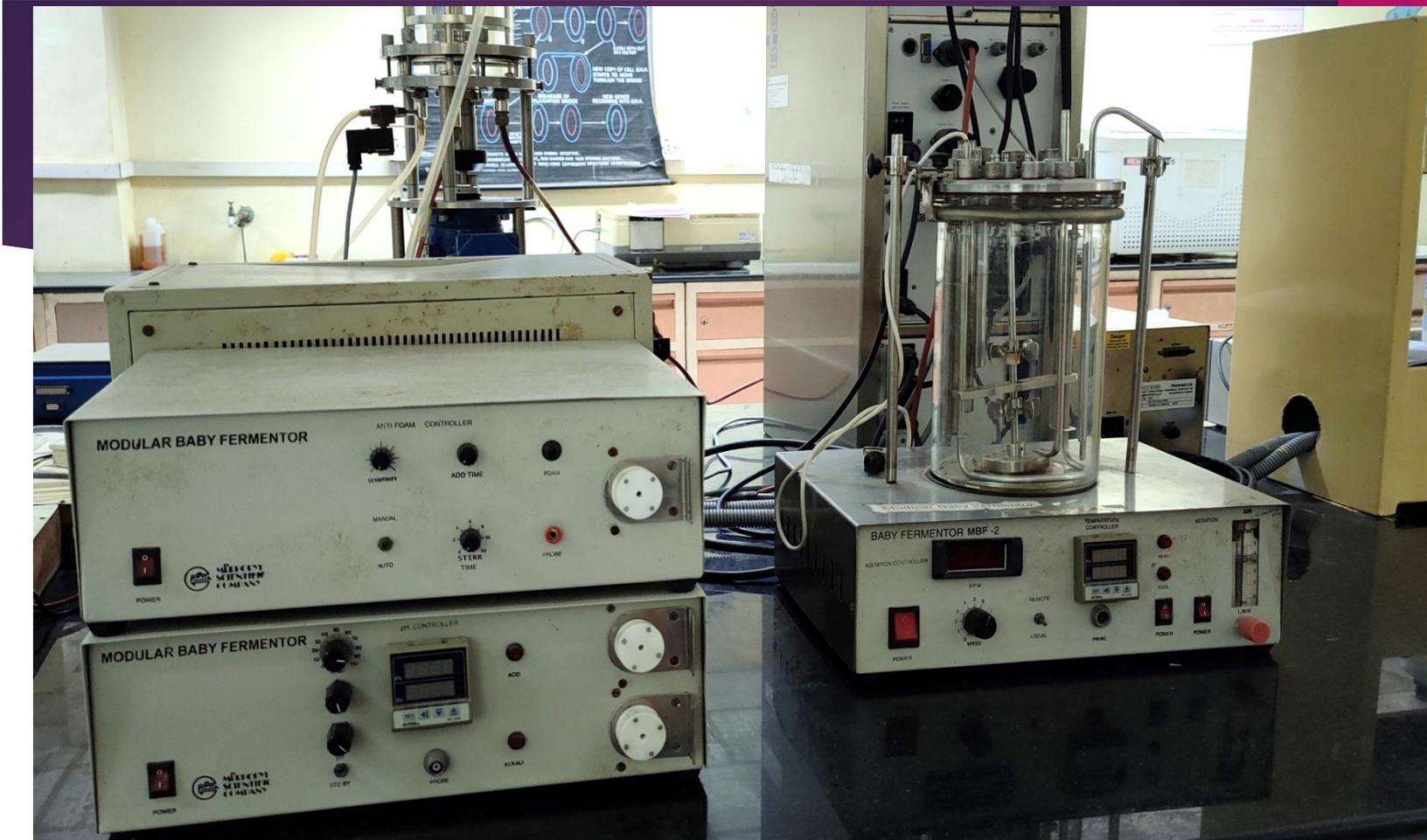
RESEARCH FACILITIES



BIOREACTOR (BATCH)



BIOREACTOR (CHEMOSTAT)



BABY FERMENTOR



PREPARATIVE HPLC



UV-VIS SPECTROPHOTOMETER



MICRO PLATE READER



2D GEL ELECTROPHORESIS



THERMAL CYCLER



MINI THERMAL CYCLER



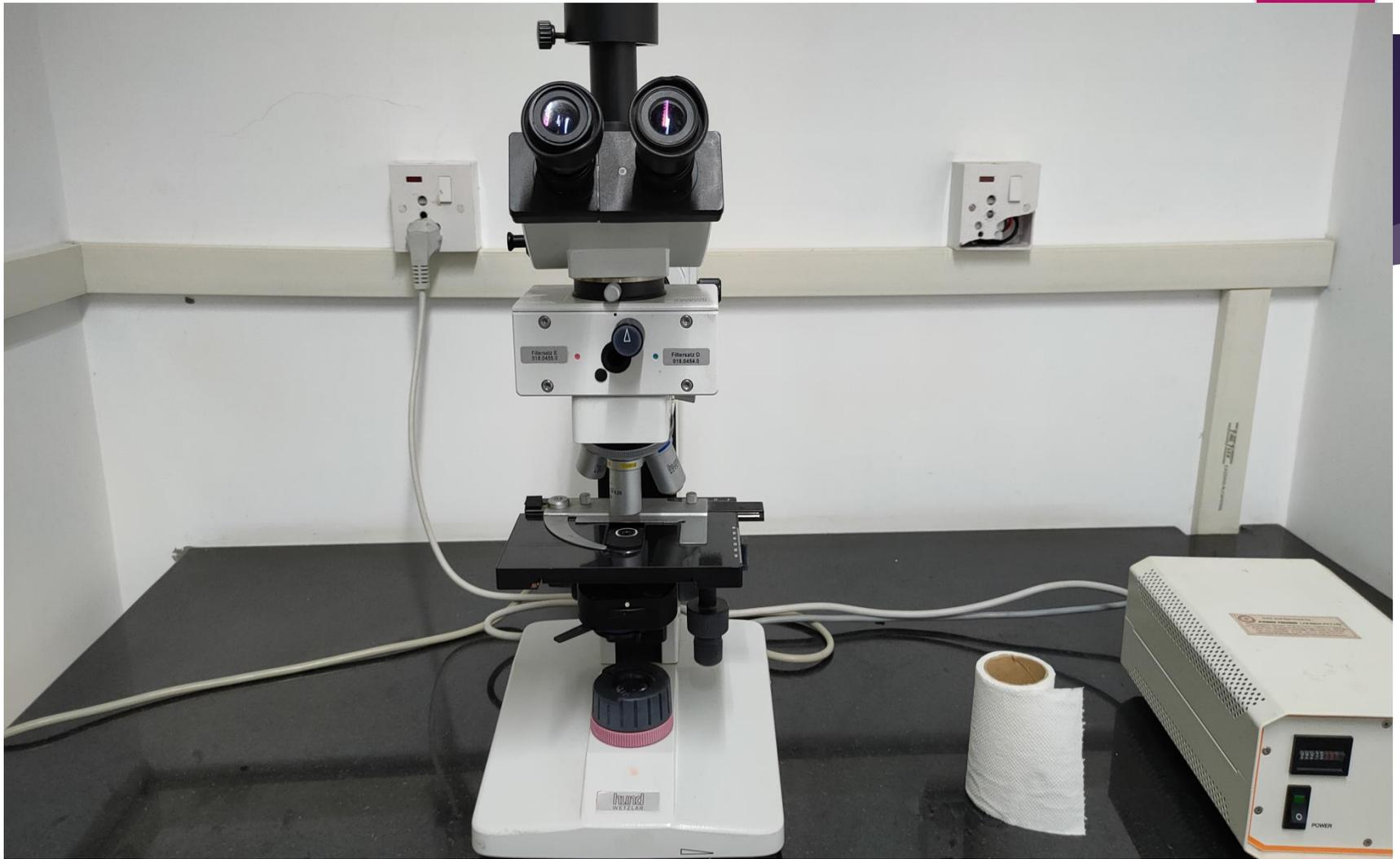
MICROPULSER



GEL DOCUMENTATION SYSTEM



LIGHT MICROSCOPE



FLUORESCENT MICROSCOPE



SONICATOR



HOMOGENIZER

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Chidambaram Nader - C. Naganimal Campus,

S.P.G.C.Nagar, VIRUDHUNAGAR. (Autonomous)

DEPARTMENT OF BIOTECHNOLOGY

METHODS OF ANALYSIS AND BIOPROCESS LABORATORY

EXPERIMENT

TYPICAL METHODS OF ANALYSIS

Qualitative analysis of all organic and inorganic compounds

Determination of pKa value of any compounds

Gravimetric and Flourimetry analysis

Qualitative analysis - Paper, TLC and Column chromatography

BIOPROCESS LABORATORY

Approach in Medium optimization - Plackett Burman Design and
Response Surface Methodology

Determination of Biomass, Specific Growth Rate and Yield Coefficient for any
microbial system in Batch, Fed Batch and continuous cultivation

Medium optimization with exhaust gas analysis

Medium optimization using Photobioreactor

Determination of μ_{max} and K_a

Enzyme kinetics studies - Determination of Michaelis Menten
parameters, Temperature, pH and Deactivation Kinetics, Enzyme

Medium optimization - Gel entrapment/ Cross linking, Pa
rticulate bed Column

SPRAY DRYER

KEEP T



KCET/BI/03-04/DSP-T-13

KCET/BI/03-04/DSP-T-12

SPRAY DRYER



LYOPHILIZER



COOLING CENTRIFUGE



PHOTOFLUOROMETER



DIGITAL TURBIDITY METER



AUTOCLAVE



SHAKING INCUBATOR



INCUBATOR



HOT AIR OVEN



CO₂ INCUBATOR



LAMINAR AIR FLOW

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DEPARTMENT OF CIVIL ENGINEERING

RESEARCH FACILITIES

LIST OF LABORATORIES

- ▶ **Structural Engineering Laboratory**
- ▶ **Strength of Materials Laboratory**
- ▶ **Survey Laboratory**
- ▶ **Computer Aided Building Drawing**
- ▶ **Fluid Mechanics & Hydraulics Laboratory**
- ▶ **Environmental Engineering Laboratory**
- ▶ **Concrete & Highway Laboratory**
- ▶ **Soil Mechanics Laboratory**

Research Facilities in Department of Civil Engineering

Major Equipments

- 100 Ton Loading Frame
- Hydraulic Remote type Jack - 100 Ton
- Data Acquisition System
- Load Cell - Compression type Capacity 50 Ton &100 Ton
- Electrical Strain Gauge with indicator
- Ultrasonic Pulse Velocity Tester

Research & Consultancy

- Structural Competency & Report



Structural Engineering Laboratory

Research Facilities in Department of Civil Engineering

Major Equipments

- Universal Testing Machine
- Torsion Testing Machine
- Hardness Testing Machine
- Izod Impact Testing Machine

Research & Consultancy

Concrete strength testing

- Steel, Aluminium, Copper & Bronze strength testing

- Hardness & Elastic Modulus



Strength of Materials Laboratory

Research Facilities in Department of Civil Engineering

Major Equipments

- Total Station
- Theodolite
- Dumpy level
- Hand held GPS

Research & Consultancy

- Transverse Survey (Determination of Area & Volume)
- Profile Survey (Determination of Longitudinal section & Cross section)
- Digital Mapping using Total Station



Survey Laboratory

Research Facilities in Department of Civil Engineering

Major Equipments

- BOD Analyser
- COD Analyser
- Ion – selective electrode
- Atomic absorption spectroscopy (Ni, Zn, Pb)
- Jar Test Apparatus

Research & Consultancy

- Water Analysis
- Waste Water Analysis
- Heavy Metals Determination



Environmental Engineering Laboratory

Research Facilities in Department of Civil Engineering

Major Equipments

Flow table motorized
Vee bee consist meter
Marshall Stability apparatus
motorized
Ductility Apparatus for
Bitumen

Research & Consultancy

- Compression Strength Test
(Concrete Cube, Paver block,
Block, Timber)



**Concrete & Highway
Laboratory**

Research Facilities in Department of Civil Engineering

Major Equipments

- Consolidation Apparatus three gang
- Unconfined Compression Tester
- Relative Density Apparatus
- Direct Shear Apparatus 12 Speed

Research & Consultancy

- Soil Classification
- Strength Characteristics
- Shear Characteristics
- Standard Penetration Test (SBC determination)



**Soil Mechanics
Laboratory**

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

RESEARCH FACILITY

Artificial Intelligence & IoT Laboratory



System Configurations

DELL OPTIOLEX i5-4570

4GB DDR3 RAM/500GB HDD/18.6" LCD Monitor - 15

DELL OPTIOLEX i5-4570

8GB DDR3 RAM/500GB HDD/18.6" LCD Monitor – 4

DELL OPTIOLEX i3-4130

4GB DDR3 RAM/500GB HDD/18.6" LCD Monitor – 2

HCL – INFINTIL A350

Intel H55 / Core i3 / 4GB DDR3 RAM/500GB HDD/ 15.6" LCD Wide Monitor – 2



NVIDIA JETSON NANO DEVELOPER KIT



- 4GB RAM / 64GB Micro SD Card - 15 Nos.
- OS : UBUNTU 20.0.4

RASPBERRY PI 4

- 2GB RAM / 32GB Micro SD Card– 10 Nos.
- OS : UBUNTU 20.0.4
- Software : Arduino Uno



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DEPARTMENT OF ELECTRONICS AND COMMUNICAION ENGINEERING

RESEARCH FACILITIES

Research Facilities in Department of Electronics and Communication Engineering

Major Equipment

1. Digital Storage Oscilloscope/
Cathode Ray Oscilloscope
2. Function Generator
3. Regulated Power Supply
4. ORCAD Capture with PSPICE
5 users 16.2



Electronics Devices and Circuit Laboratory

Research Facilities in Department of Electronics and Communication Engineering

Major Equipment

1. Digital Storage Oscilloscope/
Cathode Ray Oscilloscope
2. Function Generator
3. Regulated Power Supply
4. ORCAD Capture with
PSPICE A/D 2 users 10.5



Linear and Digital IC Circuit Laboratory

Research Facilities in Department of Electronics and Communication Engineering

Major Equipment

1. Multi signal Digital / Cathode Ray Oscilloscope



Engineering Practices Laboratory

Research Facilities in Department of Electronics and Communication Engineering

Major Equipment

1. Digital IC trainer Kit
2. Universal IC Tester



**Digital Electronics
Laboratory**

Research Facilities in Department of Electronics and Communication Engineering

Major Equipment

1. Digital Storage Oscilloscope
2. Function Generator
3. Analog & RF Communication kits
4. Line coding kits
5. Spectrum Analyzer
6. FM, PCM, PAM, PPM, PWM Kits
7. ASK, PSK, ADC & DAC Kits

Communication System Laboratory



Research Facilities in Department of Electronics and Communication Engineering

Major Equipment

1. Reflex Klystron
2. Gunn Diode
3. VNA
4. Fiber optic system set
5. Compact Microwave Lab Kit
Model No. VX-2002,2005
6. Microwave Power meter Model
No. Attest
7. Agilent DSOx2002A 70MHz 2
channel DSO

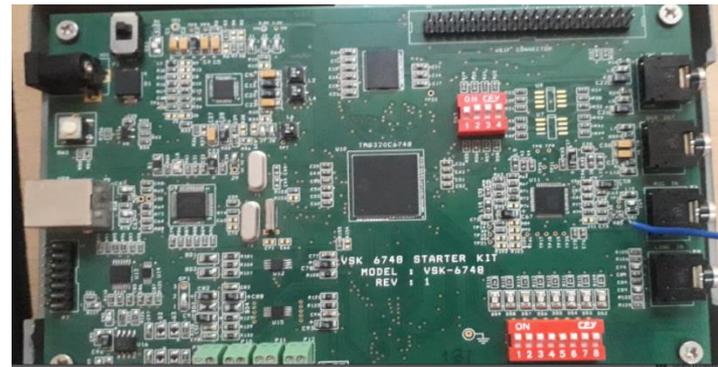


Communication Microwave Laboratory

Research Facilities in Department of Electronics and Communication Engineering

Major Equipment

1. 8086 Microprocessor kit
2. 8051 Microcontroller Kit, Interfacing Kits
3. 8051 Primer board
4. MSP 430 F5529 Experimenter board with USB debugger etc.,
5. Anvyl Spartan 6 FPGA board with pmod pack

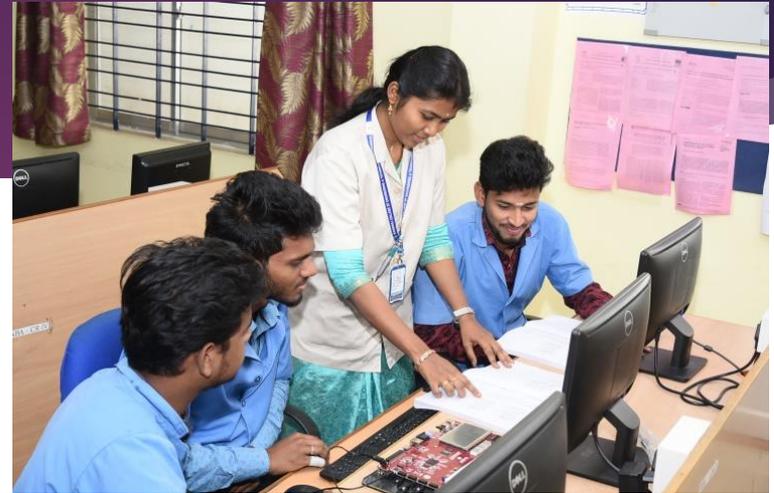


**Microprocessor &
Microcontroller
Laboratory**

Research Facilities in Department of Electronics and Communication Engineering

Major Equipment

1. Intel core i5
2. AnvylSparton 6
3. Zynq kit
4. Genesys Virtex-5
5. Tanner software
6. Vivado kits
7. Xilinx software
8. spartan 3E FPGA kit
9. Matlab R2009a

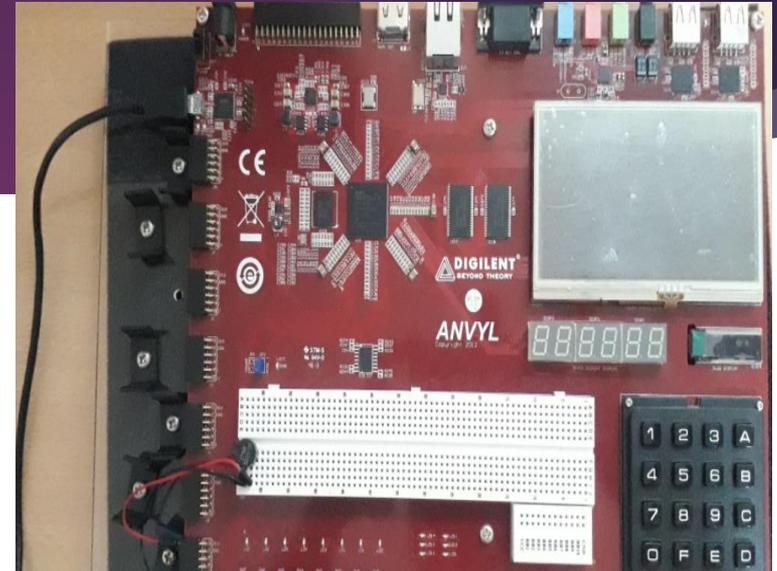


VLSI & DSP Laboratory

Research Facilities in Department of Electronics and Communication Engineering

Major Equipment

1. ARM Cortex M4- Kits, Arduino Kits,
2. Node MCUs,
3. Raspberry Pi B+
4. Model kits and various sensor
5. NS2 Software



**Embedded systems
laboratory &
Research Laboratory
PG Laboratory
(Comm.& Networking)**

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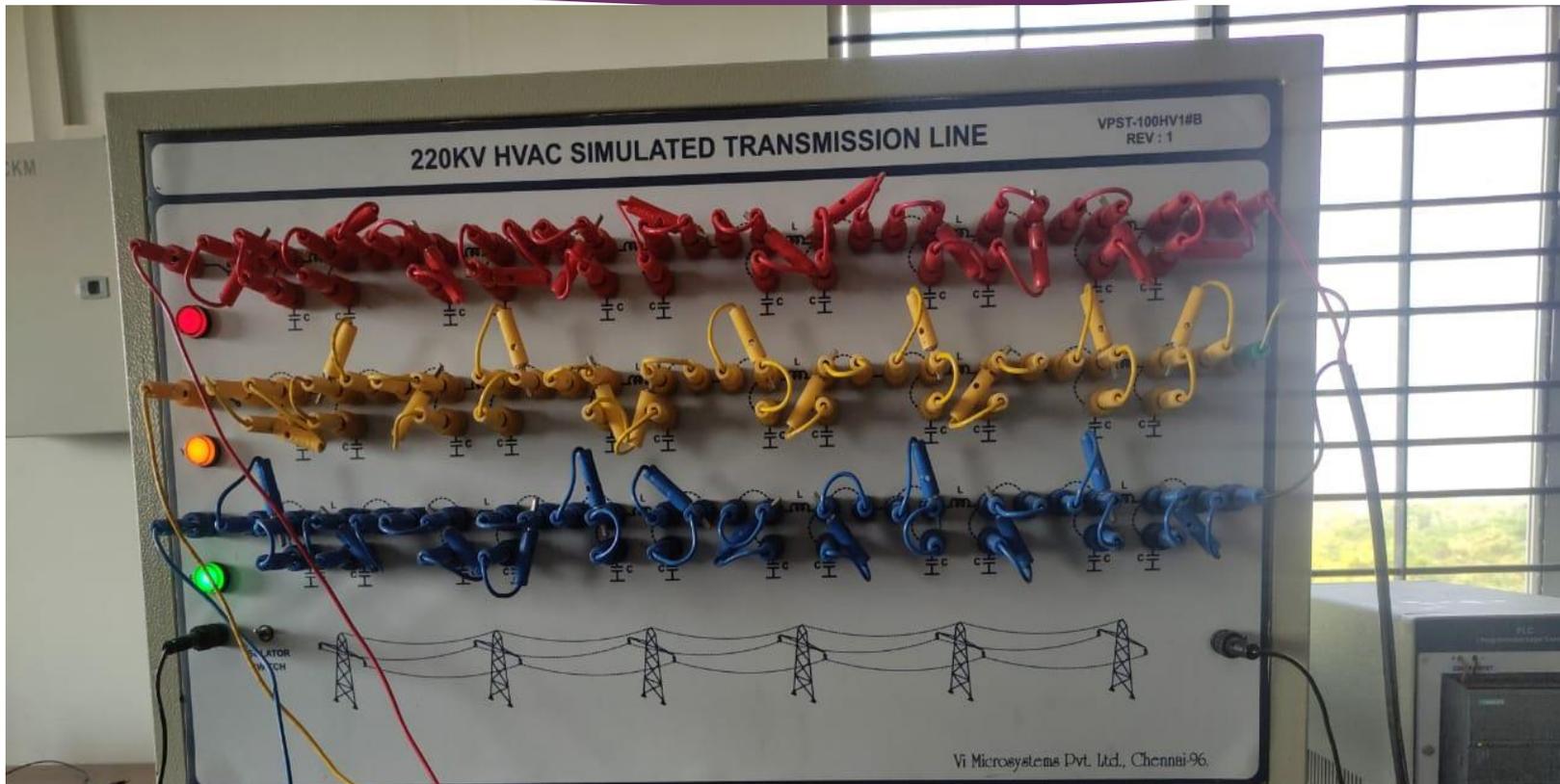
DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

RESEARCH FACILITIES

FUEL CELL TRAINER



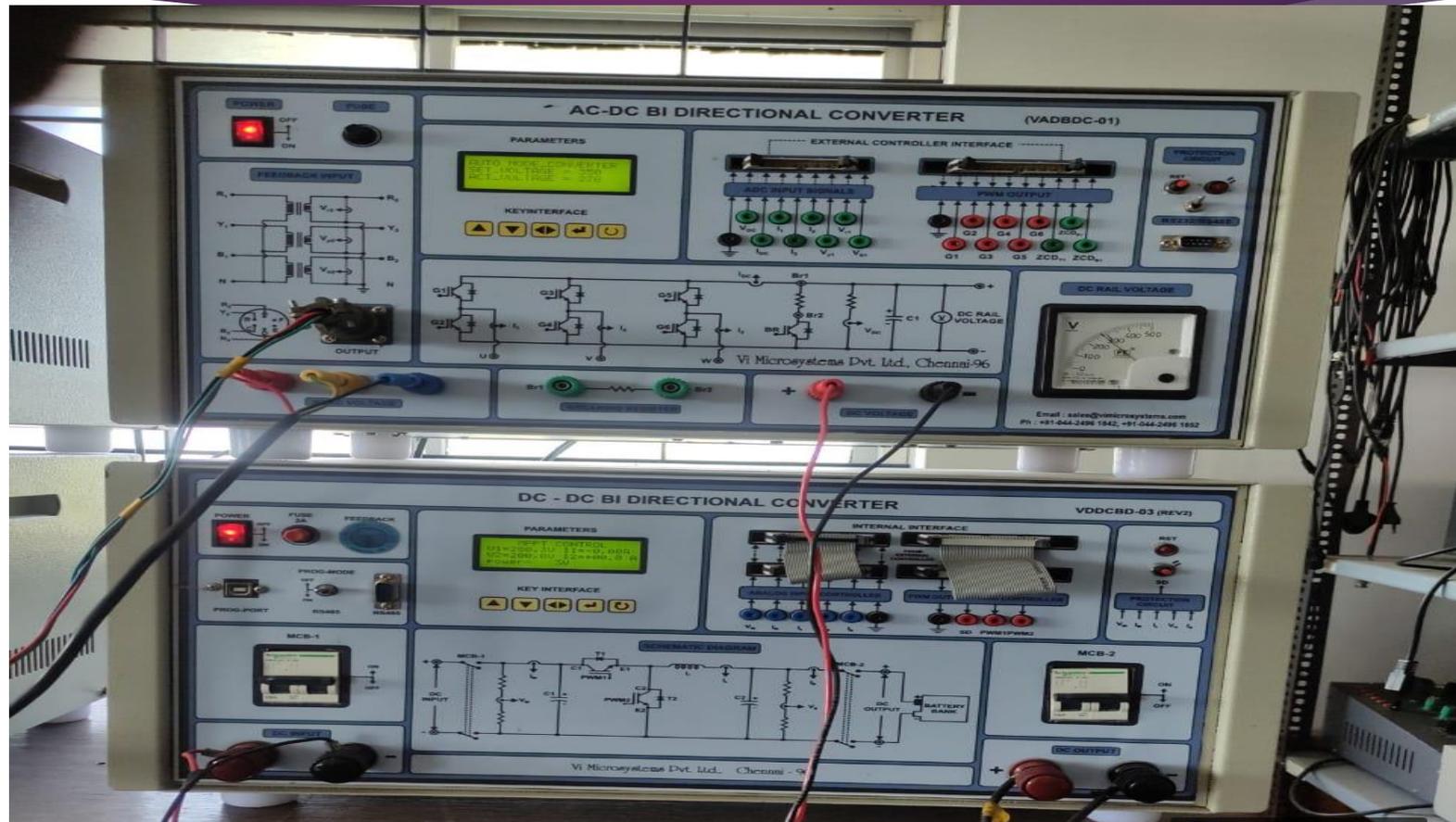
SIMULATED TRANSMISSION LINE



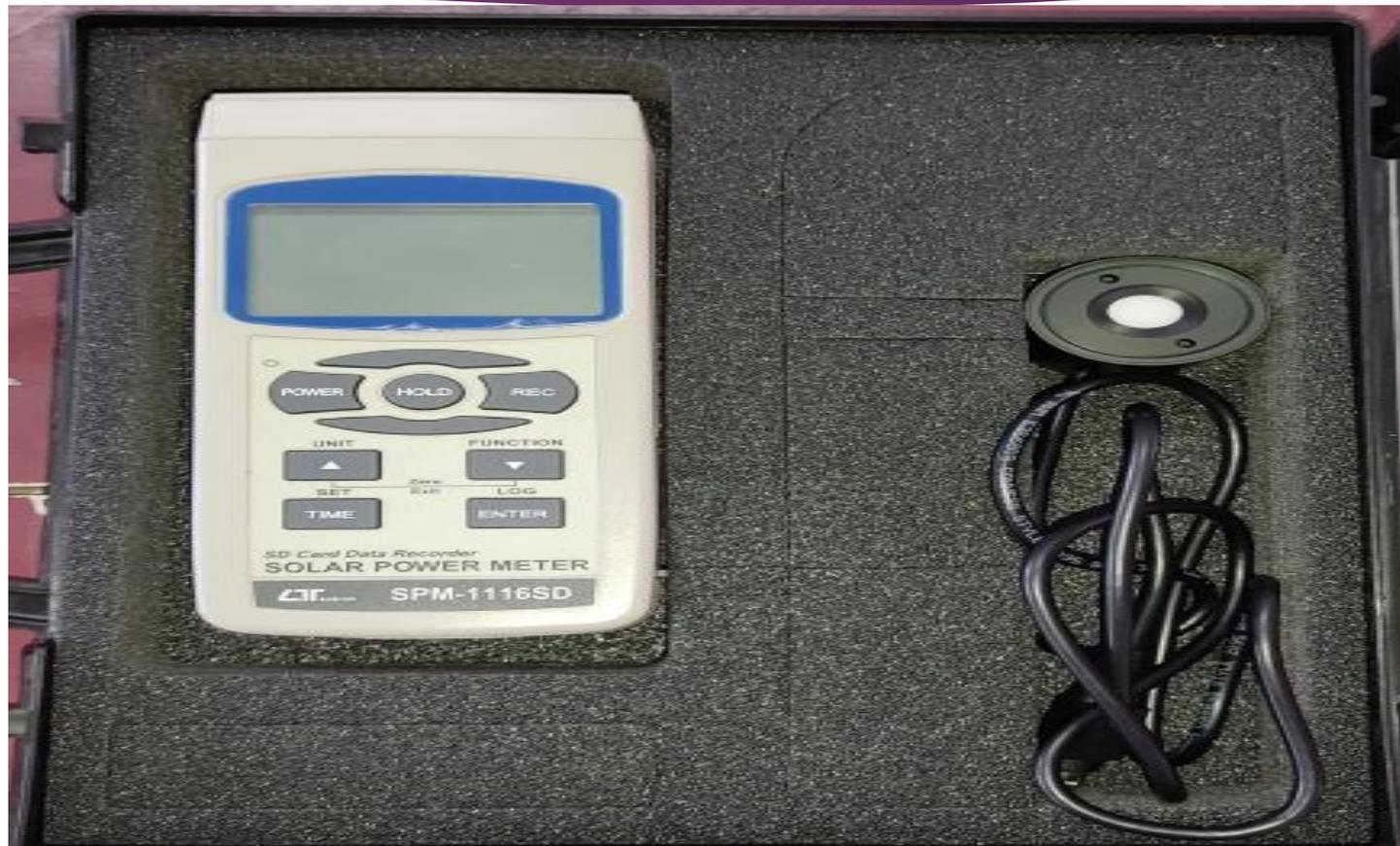
PROGRAMMABLE LOGIC CONTROLLER



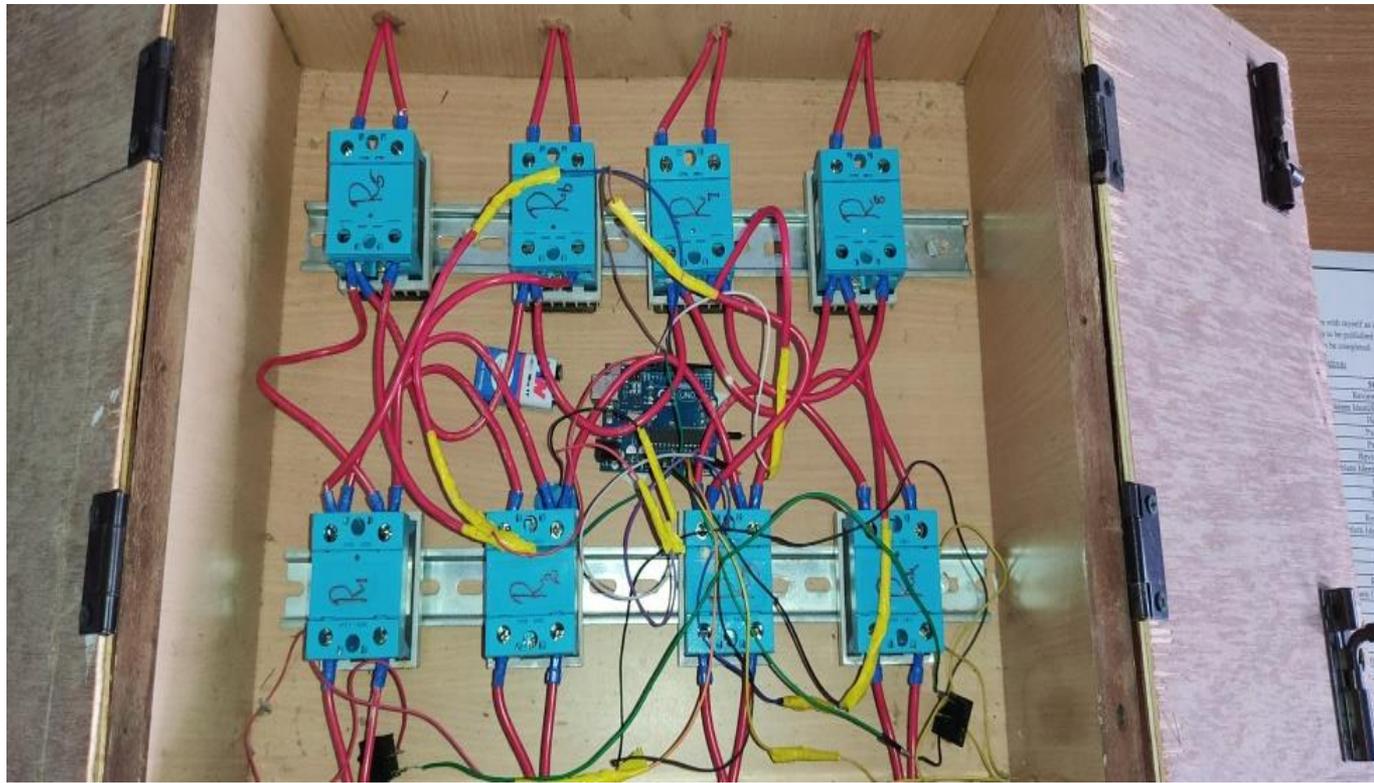
CONVERTERS



PYRANOMETER WITH DATA LOGGER



SWITCHING MATRIX CIRCUIT



MICROWIND GENERATOR 500 W



THERMAL IMAGING CAMERA



AC METERS AND DC METERS



SOLAR PV PANELS



SOLAR INVERTER AND BATTERY



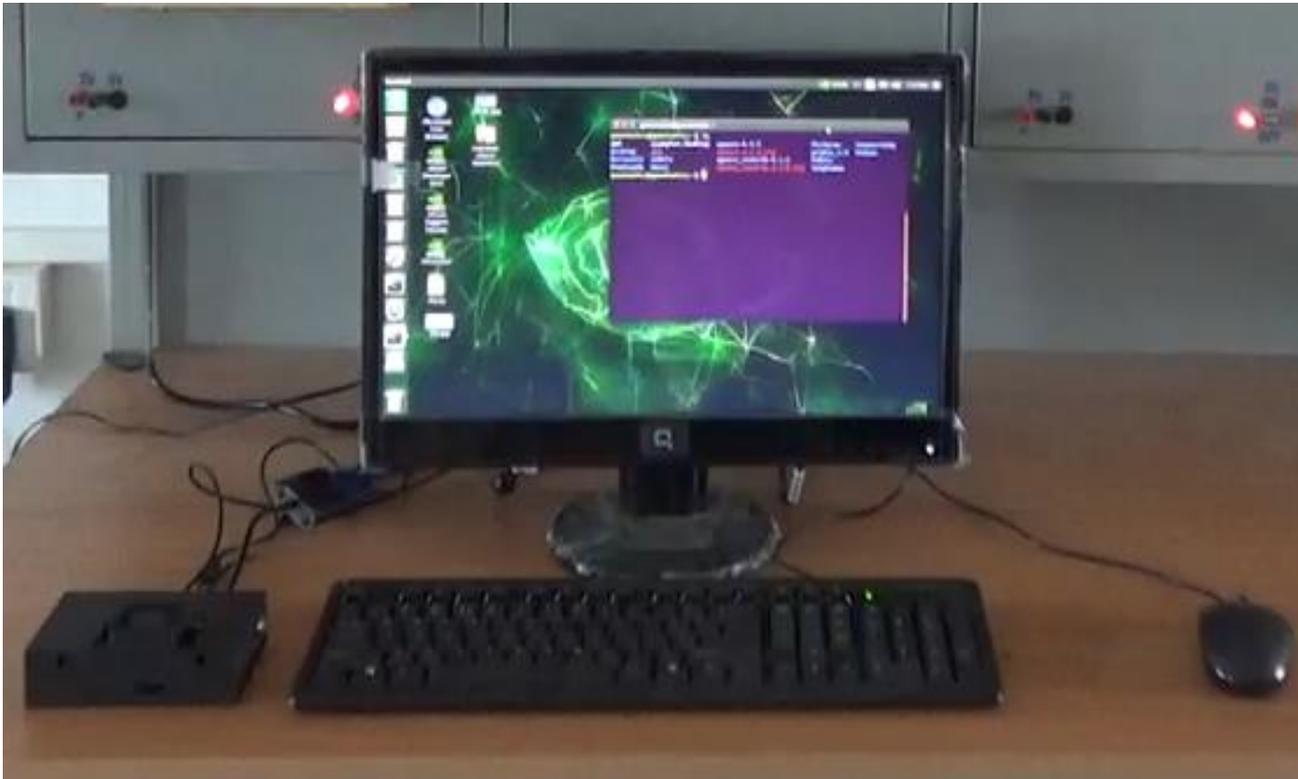
DC TEST BENCH



SERVER SYSTEM



JETSON NANO SYSTEM



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DEPARTMENT OF ELECTRONICS AND INSTRUMENTATION ENGINEERING

RESEARCH FACILITIES

LIST OF LABORATORIES

- ▶ **Process Control Laboratory**
- ▶ **Virtual Instrumentation Laboratory**
- ▶ **Industrial Instrumentation Laboratory**
- ▶ **Sensors and Measurements Laboratory**

PROCESS CONTROL LABORATORY

Major Equipments

- Coupled tank System
- Level Process station
- Flow Process station
- Temperature Process station
- Pressure Process station

Research

- System Identification
- Tuning of controllers



VIRTUAL INSTRUMENTATION LABORATORY

Major Equipments

- LabVIEW 2019 Software-50 users
- myDAQ: Measurement and Data logging
- myRIO: Embedded Monitoring and Control
- IoT enabled Robotic System Design
- IoT enabled System Design hardware

Research

- Control and Automation of system
- IoT based data analysis of system



INDUSTRIAL INSTRUMENTATION LABORATORY

Major Equipments

- Dual Channel Spectrophotometer
- Electromagnetic Flow meter
- Fiber optic Level measurement
- Multifunction Calibrator
- Brookfield Viscometer

Research

- Study of characteristics of flow meters, level sensors
- Measurement of composition of samples
- Calibration of Instruments



SENSORS AND MEASUREMENTS LABORATORY

Major Equipments

- 100 MHz Dual channel DSO
- Gauss meter
- Thermocouple and RTD calibrator
- ECG Measurement Kit

Research

- Calibration of Instruments
- ECG analysis



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DEPARTMENT OF INFORMATION TECHNOLOGY

RESEARCH FACILITIES

APPLE LAB

- Number of Computers : 31
- Number of Printer : 01
- Configuration
 - Intel Core i5 3.5Ghz
 - 8GB RAM
 - 1TB HDD
- Software - Android Studio, Xcode
- Operating System - Mac OS Mojave
- Lab Course
 - Mobile Application
Development Lab



SECURITY LAB



- Number of Computers : 33
- Configuration
 - Intel Core i5 3.2Ghz
 - 6GB DDR3 RAM
 - 500GB SATA HDD
- Software - Microsoft SQL Server 2008, NetBeans IDE 8, Java8, Scilab, Eclipse
- Operating System - Windows 10
- Lab Courses
 - Security Lab
 - Web Technology Lab

Data Analytics Lab

- Configuration
 - Intel Core i3 3.2Ghz
 - 4GB DDR3 RAM
 - 500GB SATA HDD
- Number of Computers : 33
- Number of Printers : 01
- Software - Microsoft SQL Server 2005, NetBeans IDE 8, Java 8, Microsoft Visual Studio 2010 Oracle 11g, StarUML 5.0.2, Rstudio
- Operating System - Windows 10
- Lab Courses
 - Database Management Lab
- Value Added Program
 - Full Stack Developer



SOFTWARE ENGINEERING LAB AND NETWORKS LAB



➤ Configuration

- Intel Core i3 3.2Ghz
- 4GB DDR3 RAM
- 500GB SATA HDD

➤ Number of Computers : 66

➤ Number of Printers : 01

➤ Number of Scanners : 01

➤ Software - NS-2, NetBeans IDE 8.0, Java, Python, C, C++

➤ Operating System - CentOS 7

➤ Lab Courses

- Object Oriented Programming Lab
- Data Structures Lab
- Networks Lab
- Object Oriented Analysis and Design Lab

MULTIMEDIA LAB

- Number of Computers : 33
- Number of Printers : 02
- Configuration
 - Intel Core i3 3.2Ghz
 - 8GB DDR3 RAM
 - 500GB SATA HDD
- Software - Eucalyptus
- Operating System – CentOS
- Lab Course
 - Grid and Cloud Computing Lab



FOSS LAB



- Number of Computers : 66
- Configuration
 - Intel Core 2 Quad 2.5Ghz
 - 4GB RAM
 - 350 SATA HDD
- Software - Java, C, C++
- Operating System - CentOS 7
- Lab Course
 - Compiler Lab

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DEPARTMENT OF MECHANICAL ENGINEERING

Research Lab Facilitates

LIST OF RESEARCH EQUIPMENTS

- ▶ Ball milling Work station
- ▶ Rapid prototyping Machine
- ▶ Work stations
- ▶ Weighing Machine
- ▶ Magnetic stirrer

BALL MILLING



Research:

To Convert the materials into Micron or Nano size.

RAPID PROTOTYPING MACHINE



Research:

To print the materials into required shape using filaments

WORK STATIONS

Research:

High end software's installed to
conduct experimentations



ELECTRONIC WEIGHING MACHINE

Research:

To Measure the weight of the samples



MAGNETIC STIRRER

Research:

To Blend the Liquid (polymer) and solid materials (Fillers).



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DEPARTMENT OF MECHATRONICS ENGINEERING

Research Lab Facilitates

HIGHLIGHTS OF THE DEPARTMENT

INDUSTRY SUPPORTED LABORATORY

87



Total Cost – Rs. 48,93,376/-

HIGHLIGHTS OF THE DEPARTMENT

PRODUCT DEVELOPMENT

88

Automatic Pouch Folding Machine



Oil Recovery System from Under Weight Pouches



Name of the Industry : V.V.V. & Sons Edible Oils Limited, Virudhunagar – 626 001

Total Amount : Rs. 2,43 ,670/-

HIGHLIGHTS OF THE DEPARTMENT

89

FACULTY CONTRIBUTION

- One of our faculty members got international certification by **SMC Pneumatics India Private Limited** in Pneumatics and Electro Pneumatics.
- Two of our faculty members were trained by **FESTO Controls Pvt. Ltd.**, in Pneumatics and Electro Pneumatics Automation with PLC
- Two of our faculty members were trained by **MSC Software Solutions** in Multi Body Dynamics using **ADAMS**
- Four of our faculty members were trained by **BOSCH Rexroth India Ltd.**, in Industrial Hydraulics

CAD & CAM Lab



Software

- SOLIDWORKS
- CATIA V6
- Autodesk Products
- Master CAM
- ANSYS

Major Equipments

- 8085 Trainer Kit
- 8051 Trainer Kit
- Stepper Motor Controller
- Traffic Light Controller
- ADC & DAC
- Temperature Controller



Microprocessor & Microcontroller Lab

FACILITIES & TECHNICAL SUPPORT



Applied Hydraulics and Pneumatics Lab

Major Equipments & Software

- 20HP Screw Compressor
- SMC Pneumatic Training Kit
- SMC Electro-Pneumatic Training Kit
- BOSCH Hydraulic Training Kit
- Automation Studio
- AutoSIM



Robotics Lab

Major Equipments & Software

- ADAMS
- 1 DOF ROBOT
- 2 DOF ROBOT
- 4 DOF ROBOT



3D Printer

E-Yantra Lab

- Sponsored by MoE under the National Mission on Education through ICT program.
- Better exposure to Embedded systems and Robotics Education

Major Equipments

- PLC – AB1 Training Kit
- PLC – SIE3 Training Kit
- AC Motor Speed Control using PLC & VFD
- Process Control Station



Industrial Automation Lab



Firebird V Hexapod Robot

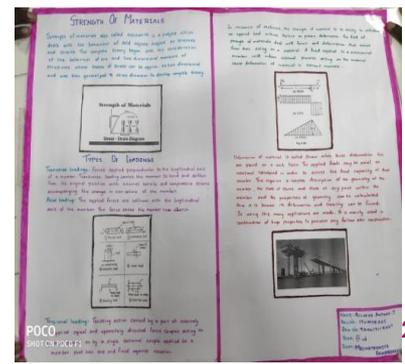
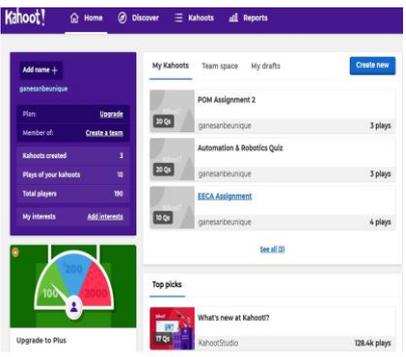
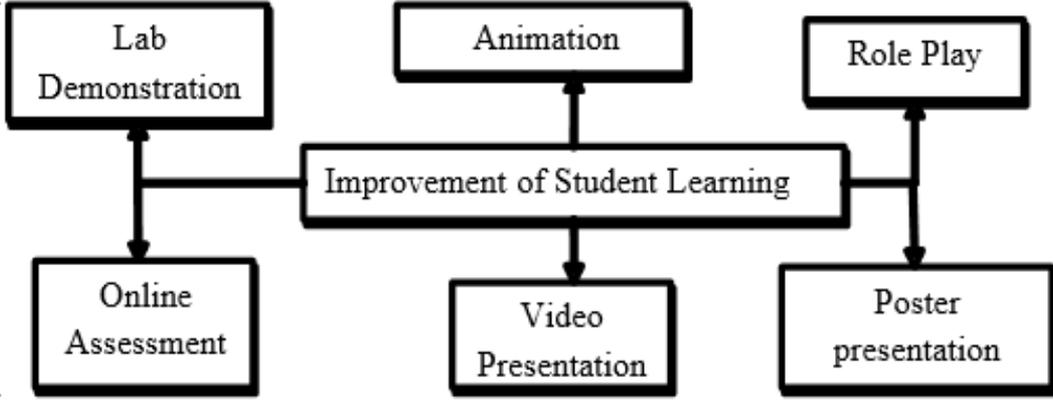


Firebird V Robot



Dexter ER2 Robotics Arm

CHANGES MADE FOR IMPLEMENTATION OF OBE – T - L PROCESS



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DEPARTMENT OF PHYSICS

Research Lab Facilitates

BALL MILLING

**(Make:EUROPAISCHE GEMEINSCHAFT
Model: Retsch-PM100)**



MUFFLE FURNACE (Make:Maxotherm Furnace Model: 9599)



ULTRASONICATOR BATH

(Make: Thermospectrum
Model: Trans sonic)



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DEPARTMENT OF POLYMER TECHNOLOGY

Research Lab Facilitates

LIST OF LABORATORIES

- ▶ Polymer Chemistry Lab
- ▶ Polymer Processing Lab
- ▶ Polymer Testing Lab

POLYMER CHEMISTRY LAB

MAJOR EQUIPMENTS

- ▶ FTIR
- ▶ Flame Photometer
- ▶ UV Spectrophotometer

Research:

To Synthesis the polymeric materials, nano materials, nano composites



POLYMER PROCESSING LAB

MAJOR EQUIPMENTS

- Fully Automatic Injection Moulding Machine
- Blow Moulding Machine
- Compression Moulding Machine
- Extruder
- Two roll mill

Research:

The Synthesized polymeric materials, nano materials are converted into sheet form



POLYMER TESTING LAB

MAJOR EQUIPMENTS

- Thermo gravimetric Analyser
- Differential Scanning Calorimeter
- Universal Testing machine
- Melt Flow index
- Hardness Tester

Research:

To test the polymeric materials, composites as per ASTM standard

