



DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING

University College of Engineering Kakinada

Jawaharlal Nehru Technological University Kakinada

LABORATORY FACILITIES



Laboratories at a Glance

S.No	Name of the Laboratory	Faculty In-charge	Technician In-charge
1	AC Machines Lab	Prof. Ch. Sai Babu Dr. B. Ajay Babu	Sri H. H. Kumar
2	DC Machines Lab	Prof. T. Murali Mohan Dr. B. Ajay Babu	Sri P. Govinda Raju
3	Power Systems Lab	Prof. S. Sivanaga Raju Sri L. V. Narayana	Sri H. H. Kumar
4	Power Electronics, Power Converters & Drives Lab	Prof. K. Ravindra Sri B. Naresh Sri N. Sagar Teja Yadav	Sri U. Srinu
5	Renewable Energy Lab	Prof. M. Ramalinga Raju Dr. V. S. Naga Raju	Sri G. V. Suryanarayana
6	Computer Lab	Prof. R. Srinivasa Rao Smt. J. Jyothsna	Sri S. Seshagiri Rao
7	System Studies Lab	Prof. R. Srinivasa Rao Smt. J. Jyothsna	Sri S. Seshagiri Rao
8	Design Thinking and Ideation Lab	Prof. K. Venkata Reddy Dr. V. S. Naga Raju	Sri P. Raju
9	Control Systems & Measurements Lab	Prof. M. Nageswara Rao Smt. K. Vijaya Bhanu	Sri K. Gangadhar
10	Analog & Digital Electronics Lab	Sri B. Naresh Dr. C. N. Kota Reddy	Sri N. Phani Kumar
11	Microprocessors & Microcontrollers Lab and IoT Lab	Prof. K. Venkata Reddy Ms. K. Joshi Rani	Sri P. Raju
12	High Voltage Lab	Prof. N. Sumathi Sri V. S. N. K. Chaitanya	Sri N. Phani Kumar
13	Centre for Excellence for e-Mobility	Prof. K. Venkata Reddy	Sri G. Veeraraju

AC Machines Laboratory

(Ohm's Lab)

FACULTY IN-CHARGES

Prof. Ch. Sai Babu

Dr. B. Ajay Babu

TECHNICIAN IN-CHARGE

Sri H. H. Kumar

Major Equipment

- Alternator Set: DC Shunt Motor coupled with Three-phase Alternator
- Three-phase Slip Ring Induction Motor
- Three-phase Squirrel Cage Induction Motor
- Single-phase Induction Motor

Courses Conducted

- Electrical Circuits Lab
- Induction and Synchronous Machines Lab
- DC Machines and Transformers Lab
- Basic Electrical Engineering Workshop



STUDENT CAPACITY

40 (5 students per batch)

This laboratory provides comprehensive exposure to AC machines, including alternators, induction motors and synchronous machines.

DC Machines Laboratory

(Joule's Lab)

FACULTY IN-CHARGE

Prof. T. Murali Mohan
Dr. B. Ajay Babu

TECHNICIAN IN-CHARGE

Sri P. Govinda Raju



Major Equipment

- DC Shunt Motor
- DC Compound Motor
- DC Shunt Motor – Shunt Generator Set
- DC Shunt Motor – Series Generator

Courses Conducted

- DC Machines and Transformers Lab (DCMT)
- Basic Electrical Engineering Workshop

STUDENT CAPACITY

40 (5 students per batch)

This laboratory focuses on DC machines, including motor-generator sets of various configurations.



Power Systems Laboratory

(Dr. Tata Rao Lab)

FACULTY IN-CHARGE

Prof. S. Sivanaga Raju
Sri L. V. Narayana

TECHNICIAN IN-CHARGE

Sri H. H. Kumar



Major Equipment

- Transmission Line Simulator (TLS-200)
- Relays

Source & Load Panels

- **Source Panel:** 3-phase, 400 V/110 V step-down transformer, auto-transformer, MCB, ELCB
- **Load Panel:** Resistive & inductive load control, capacitor bank

UTILIZATION

UG & PG students

STUDENT CAPACITY

40 (5 students per batch)

Equipped with a Transmission Line Simulator (Model TLS-200 by PRDC Pvt. Ltd.) and relays for UG and PG students.

Transmission Line Simulator (TLS-200)

- **Make:** PRDC Pvt. Ltd.
- **Base Values:** 110 V, 190.525 VA, 63.5 Ω base impedance **Configuration:** 10 Pi-sections
- **Components:** Air-core inductors, non-electrolytic capacitors, variable resistors



Power Electronics, Power Converters & Electric Drives Laboratory

(B.K. Bose lab)

FACULTY IN-CHARGE

Prof. K. Ravindra
Sri B. Naresh
Sri N. Sagar Teja Yadav

TECHNICIAN IN-CHARGE

Sri U. Srinu

Power Electronics Lab



Major Equipment

- Single-Phase AC-DC Converter
- Three-Phase AC-DC Converter
- Cycloconverter Trainer
- Digital Storage Oscilloscopes
- SCR Triggering R, RC and UJT Kits

Courses Conducted

- Power Electronics Lab
- Power Converters Lab
- Digital Controllers & Electric Drives Lab

STUDENT CAPACITY

30 (4 students per batch)

An advanced laboratory featuring power electronic devices, converter circuits, FPGA-based control, real-time simulation, and motor drives.

Power Converters & Electric Drives Laboratory



Major Equipment

- FPGA Boards and operating software
- Three-Level NPC Inverter
- Three-Phase Two-Level Inverter
- Three-Phase Five-Level CHB Inverter
- Real Time Simulator (OPALRT)
- Programmable DC Supply
- FPGA-Controlled Squirrel Cage Induction Motor Drive
- FPGA-Controlled Squirrel Cage BLDC Motor Drive
- FPGA-Controlled PMSM Motor Drive
- High-configuration computers
- Power Analyzer(Yokogowa)
- Chroma Solar Emulator (Model: 62100H-600S)

Key Features

- **ARTIX7_100T FPGA Board:** XC7A100T, 215k logic cells, 740 DSP slices
- **Signal Conditioning Board:** LV20-P voltage sensors (± 900 V), LA25-P current sensors (25 A)

Renewable Energy Technologies Laboratory

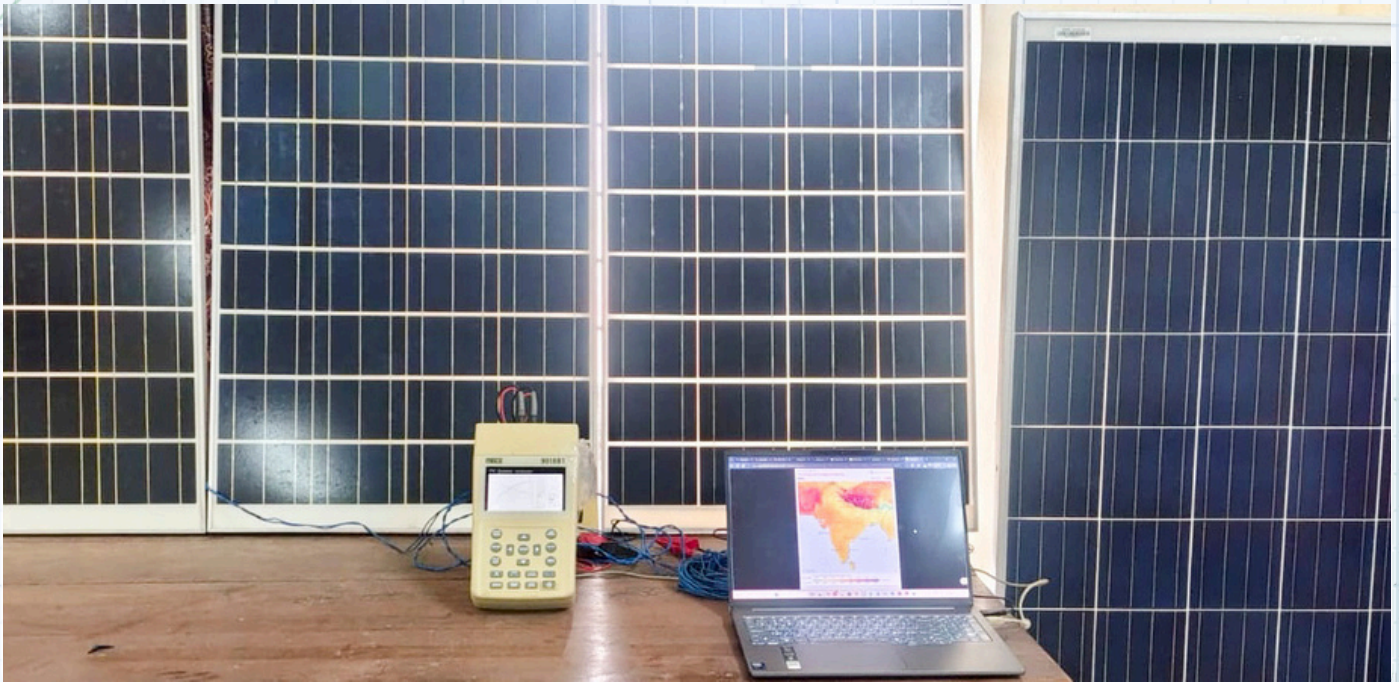
(Edmond Becquerel Laboratory)

FACULTY IN-CHARGES

- Prof. M. Ramalinga Raju
- Dr. V. S. Naga Raju

TECHNICIAN IN-CHARGE

- Sri G. V. Suryanarayana



Major Equipment

- Grid-Tied Solar PV Setup (procurement stage)
- Solar Panels (20 W, 150 W, 250 W)
- MECO PV Analyzer
- FPGA-Based PWM Controller & Sensor Board

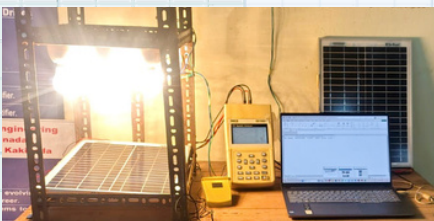
Key Specifications

- **Grid-Tied PV Setup:** 1 kW, 3-Phase with 1.5 kW DC-DC Boost Converter
- **Solar Panels:** Monocrystalline / Polycrystalline (20 W to 250 W)
- **PV Analyzer:** I-V Curve Tracer, Power Quality Analyzer

UTILIZATION

UG students for mini and major projects • PG / Ph.D. scholars for research work

The laboratory supports solar PV characterisation and emulation, with a 1 kW grid-tied PV setup in the procurement stage.



Computer Lab (Cleve Moler Lab)

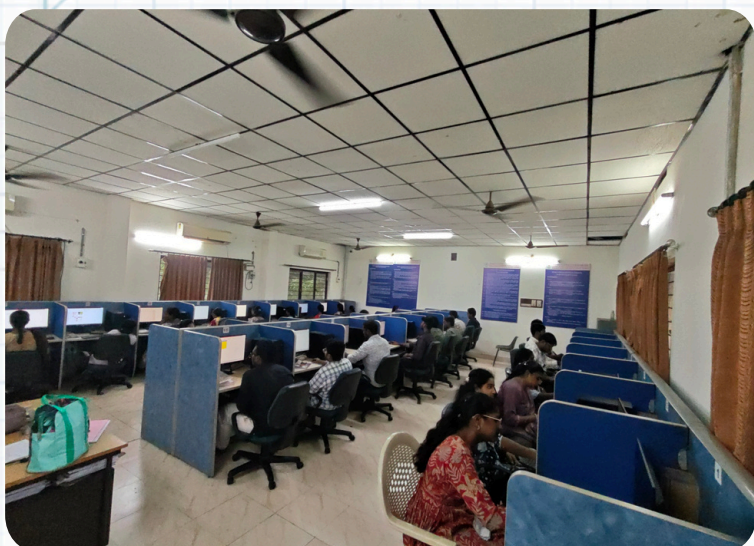
FACULTY IN-CHARGE

Prof. R. Srinivasa Rao

Smt. J. Jyothsna

TECHNICIAN IN-CHARGE

Sri S. Seshagiri Rao

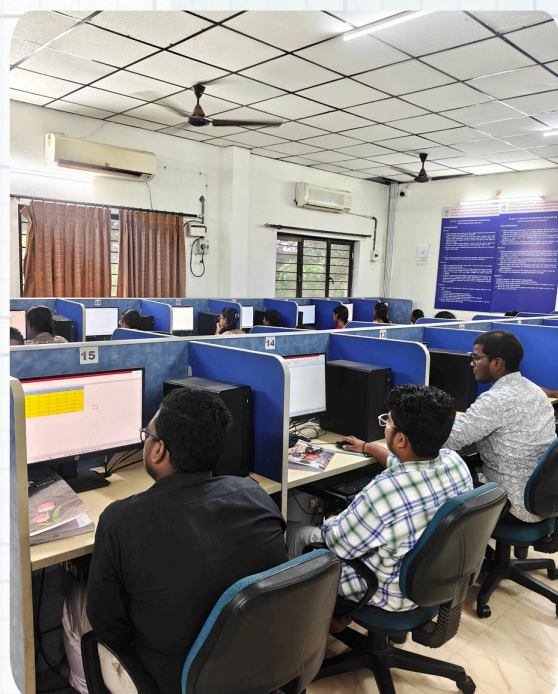


Major Equipment

- Computers: Intel Core i5 (13th Gen), 16 GB RAM, 1 TB SSD, Windows 11
- Software: Turbo C, Python IDE, Data Structures, EDraw

Courses Conducted

- C Programming Laboratory
- IT Workshop
- Data Structures Lab
- Python Programming Lab
- Design of Electrical Circuits using Engineering Software Tools



STUDENT CAPACITY

27 (1 student per PC)

The foundational computing facility for programming and software-based design courses, introducing the core languages and tools essential for electrical engineering.

FACULTY IN-CHARGE

Prof. R. Srinivasa Rao

Smt. J. Jyothsna

TECHNICIAN IN-CHARGE

Sri S. Seshagiri Rao

**Major Equipment**

- Computers: Intel Core i5 (13th Gen), 16 GB RAM, 1 TB SSD, Windows 11

Courses Conducted

- Simulation Lab I & II
- Power Systems Simulation Lab I & II
- Power Converters Simulation Lab
- Electric Drives Simulation Lab
- Renewable Energy Lab

**STUDENT CAPACITY****30 (1 student per PC)**

Dedicated to advanced simulation work, enabling students to model and analyse complex electrical systems.

Design Thinking and Ideation Laboratory (Dr. A. P. J. Abdul Kalam Idea Lab)

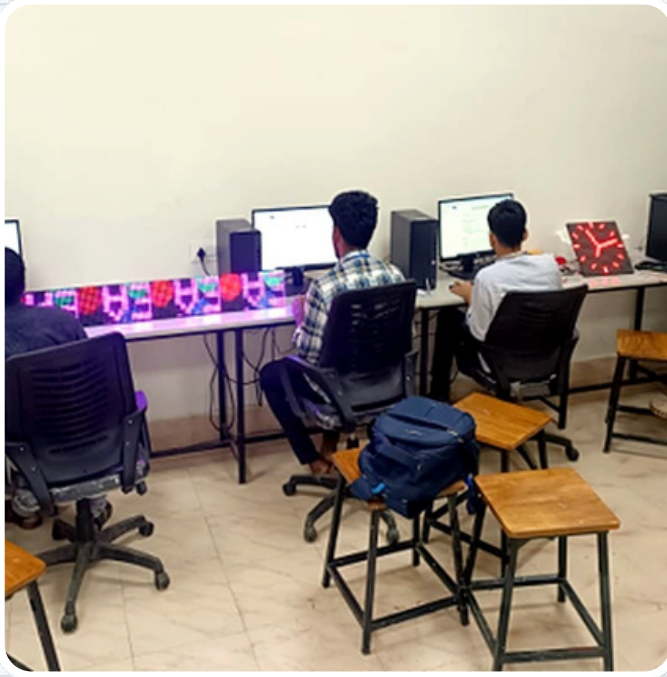
FACULTY IN-CHARGE

Prof. K. Venkata Reddy

Dr. V. S. Naga Raju

TECHNICIAN IN-CHARGE

Sri P. Raju



Major Equipment

- IoT Boards (Raspberry Pi, BeagleBone, ESP32, etc.)
- Hardware Components
- Various Sensors

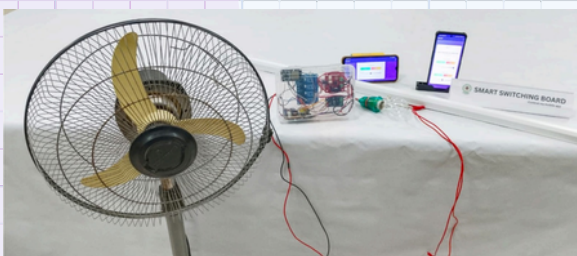
Prototyping Kits

- Drone Kits
- Robotic Car Kits

UTILIZATION

UG, PG & Ph.D. student project work

This innovative laboratory fosters creativity and hands-on prototyping, allowing students to work on interdisciplinary projects involving IoT, robotics and embedded systems.



Control Systems & Measurements Laboratory (Kelvin's Lab)

FACULTY IN-CHARGE

Prof. M. Nageswara Rao
Smt. K. Vijaya Bhanu

TECHNICIAN IN-CHARGE

Sri K.Gangadhar

Control Systems Lab



Major Equipment

- Temperature Controller System
- Programmable Logic Controller
- AC Servo Motor
- DC Servo Motor
- Lag and Lead Compensation
- PID Controller
- Synchro Pair
- Magnetic Amplifier

Courses Conducted

- Control Systems Lab

STUDENT CAPACITY

40 (5 students per batch)

Covers classical and modern control systems, including PID controllers, servo systems and programmable logic controllers.

Measurements Lab



Major Equipment

- Linear Variable Differential Transformer (LVDT)
- Kelvin's Double Bridge
- Schering Bridge
- Anderson Bridge
- Single Phase Energy Meter
- Oil Testing Kit
- Strain Gauge

Courses Conducted

- Electrical Measurements and Instrumentation Laboratory

STUDENT CAPACITY

40 (5 students per batch)

Equipped with precision measurement instruments and bridges for accurate electrical measurements.

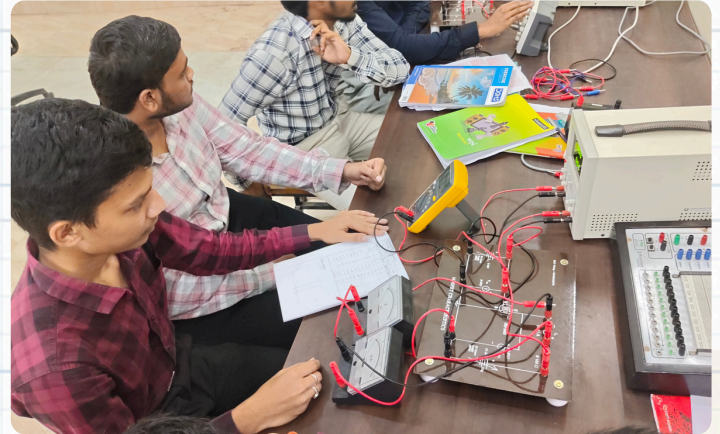
Analog & Digital Electronics Laboratory (Rajeshwari Chatterjee Lab)

FACULTY IN-CHARGE

Sri B. Naresh
Dr. C. N. Kota Reddy

TECHNICIAN IN-CHARGE

Sri N. Phani Kumar



Major Equipment

- Oscillators, Filters – AEC
- Diodes, Rectifiers – EDC
- DE Lab Kits

Courses Conducted

- Analog Electronics Lab
- EDC Lab
- Digital Electronics Lab



STUDENT CAPACITY

40 (5 students per batch)

This foundational laboratory provides hands-on experience with analog and digital electronic circuits, forming the bedrock of electronics education.

MPMC, Internet of Things (IoT) & Digital Controllers Laboratory (Faggin - Hoff Lab)

FACULTY IN-CHARGE

Prof. K. Venkata Reddy
Ms. K. Joshi Rani

TECHNICIAN IN-CHARGE

Sri P. Raju

Microprocessor & Microcontroller Equipment

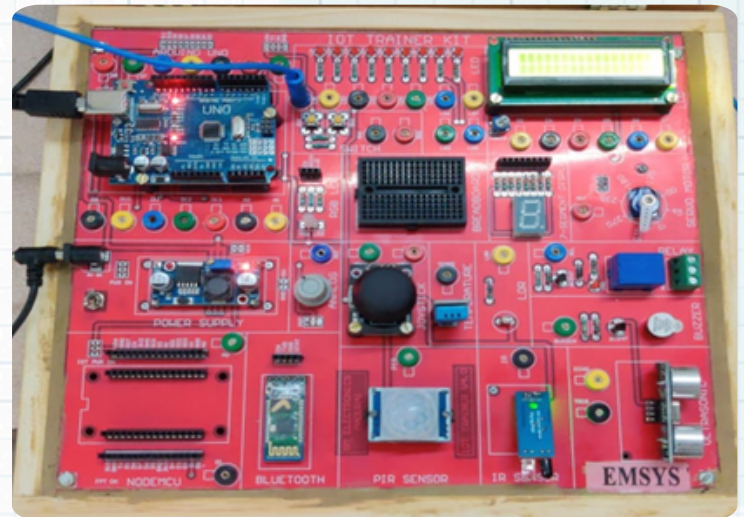
- 8086 Microprocessor Trainer Kits
- 8051 Microcontroller Trainer Kits
- MASM
- Computers with Intel Core i5 (13th Gen)

IoT Lab Equipment

- IoT Trainer Kits – Arduino
- IoT Trainer Kits – Raspberry Pi
- Computers with Intel Core i5 (13th Gen)

Courses Conducted

- MPMC Lab
- IoT Lab



STUDENT CAPACITY

40 (5 students per batch)

A dual-purpose laboratory covering classical microprocessor / microcontroller programming and modern IoT applications, giving students comprehensive exposure to embedded systems.

FACULTY IN-CHARGE

- Prof. N. Sumathi
- Sri V. S. N. K. Chaitanya

TECHNICIAN IN-CHARGE

- Sri N. Phani Kumar

Major Equipment

- Impulse Generator: 3 stages, max. charging voltage 420 kV, max. stored energy 2.94 kJ
- Cascade Transformer Unit: 2-stage, 100 kVA, 500 kV; Unit Transformer 400 V/250 kV
- AC Test Set: primary 0–230 V, secondary 0–100 kV; primary 34.09 A, secondary 75 mA
- DC Test Set: primary 0–230 V, secondary 0–140 kV DC, rated current 20 mA
- Oil Testing Kit: motorised oil BDV test set, electrode gap 2.5 mm / 4 mm
- Digital Storage Oscilloscope: 100 MHz, dual channel
- Millivolt Drop Testing Kit (high-current testing transformer: 3 kVA, 3000 A)
- Sphere gap arrangements (sphere diameter 6.5 cm, 12 cm)

Other Equipment

- Goniometer (contact angle measurement)
- Rod-to-Plane gap and Rod-to-Rod gap
- Clamp Meter (Tong Tester) & Multimeter
- Insulators: Polymer insulator, Porcelain disc insulators
- Computer systems with FAMAS software (Intel Core i5 13th Gen, 16 GB RAM, 1 TB SSD, Windows 11)
- Altimeter – 1 No.

STUDENT CAPACITY

40 (5 students per batch)

UTILIZATION

UG projects • PG / Ph.D. research • Consultancy for AP TRANCO, GENCO, etc.



Centre for Excellence for Electric Mobility (Thomas Parker Centre)

FACULTY IN-CHARGE

● Prof. K. Venkata Reddy

TECHNICIAN IN-CHARGE

● Sri G. Veerraju

**Major Equipment**

- Li-ion Battery Pack Making Setup
- Li-ion Battery Grading Machine
- Cell Testing Machine
- Battery Pack Testing Machine
- Semi-automated spot welding Machine
- Battery Charging and Discharging

Other Equipment

- Soldering Station
- Battery Pack Raw Materials
- Electrical Tools
- Mechanical Tools
- Safety Tools

STUDENT CAPACITY

20 (5 students per batch)

UTILIZATION

UG projects ● PG / Ph.D. research