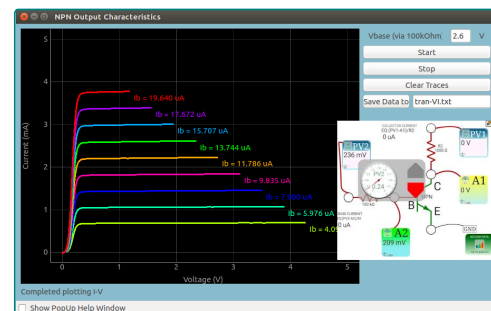
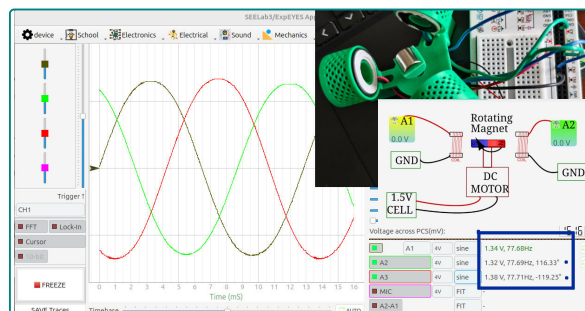
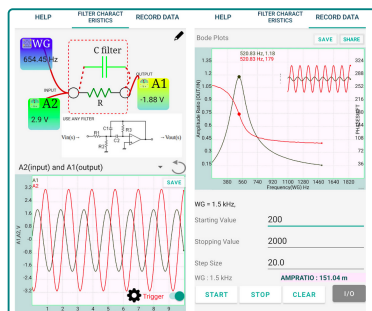




Department of Physics, University of Jammu  
PRESENTS  
**Computer-Interfaced Physics Experiments (CIPEX)**  
A One-Week Faculty Development Programme  
**16<sup>TH</sup> - 20<sup>TH</sup> FEBRUARY 2026**  
IN COLLABORATION WITH  
Malaviya Mission Teacher Training Centre, University of Jammu



The aim of this one-week Faculty Development Programme (FDP) is to bring about a paradigm shift in the way physics and electronics laboratory work is designed, conducted, and assessed, in alignment with the vision of the National Education Policy (NEP) 2020. The programme seeks to promote experiential and technology-enabled laboratory education at undergraduate and postgraduate level.

CIPEX is Designed to equip Physics and Electronics faculty members with the pedagogical and technical skills required to foster discovery, inquiry, and experimental thinking in undergraduate and postgraduate laboratories. The focus will be on key learning outcomes such as data acquisition, analysis, and experimental design, with graphical interpretation of physical phenomena, moving beyond traditional experiments.

Leveraging the computational power of modern mobile devices along with affordable, multi-functional instruments for signal generation & measurement, the programme demonstrates how low-cost, computer-interfaced tools can transform laboratory practices. Through intensive hands-on sessions, participants will redesign and perform UG/PG-level physics and electronics experiments, enabling the adoption of NEP 2020-compliant, innovation-oriented labs.

## TARGET PARTICIPANTS (25)

College or University teachers teaching undergraduate and postgraduate Physics/ Electronics courses, particularly those involved in laboratory and experimental teaching.

**REGISTER BY: 10/02/2026**

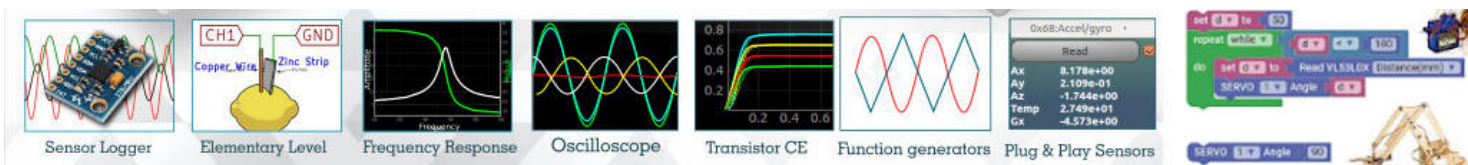
<https://forms.gle/cZ7PAaRVt17Dmoxa8>

**For any Queries, contact:**

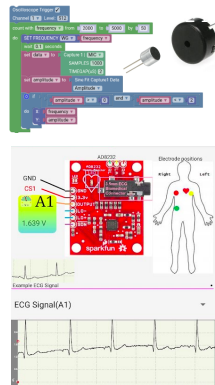
Prof. Ramni Gupta **+91 94191 91509**

## VENUE

**Dept of Physics, University of Jammu**  
Baba Saheb Ambedkar Rd, Jammu Tawi, J&K



# Familiarisation with test and measurement tools and software



## ELECTRONICS

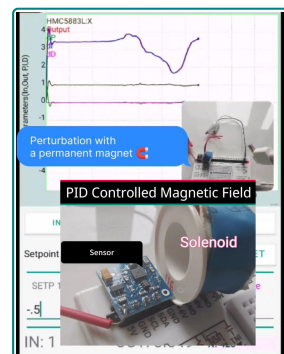
Basic Circuits  
Data acquisition  
Analysis / Fits  
Phase shifts  
I-V Tracing  
Analog Sensors  
Data logging

- Introduction to test and measurement, signal processing.
- Using phone's sensors for science experiments
- Curve fitting data for parameter extraction
- Hands-on with computer interfaced meters, data loggers, oscilloscope, and real-time data analysis with Python
- Measurement of basic electronic properties
- Advanced electronic characterisation and plotting
- R-R, R-C, L-C, R-L-C circuit Steady State Response and verification of Reactance equations.
- I-V, C-E curves for diodes, zeners, transistors, FETs.

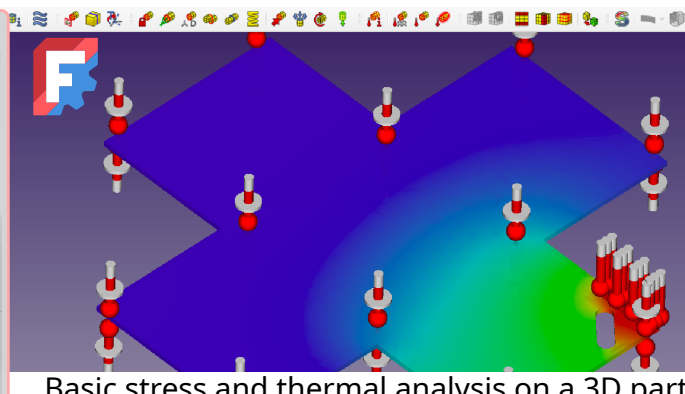
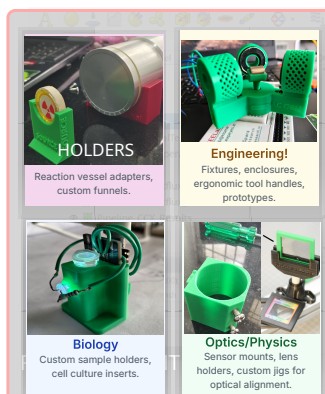
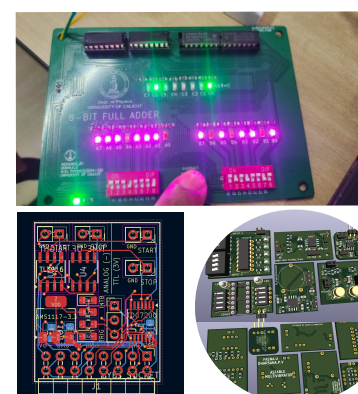
- **Measure Gravity** from time of flight (precision timing)
- **Flywheel experiment** modification : Plot S,V,A !
- **Programming** : Introduction to Python & Visual coding
- **Opamps**: Amplifiers , Filter circuits
- **Acoustics** : velocity & interference of sound. FFT
- **EMF**: Studying Electromagnetic Induction, Faraday's Law
- **Low Cost sensors** : MPU6050, BMP280, HMC5883L etc

## Physics & Advanced Electronics

Acoustics & Fouriers  
Mechanics & Resonance  
Data logging sensors  
Thermal Physics



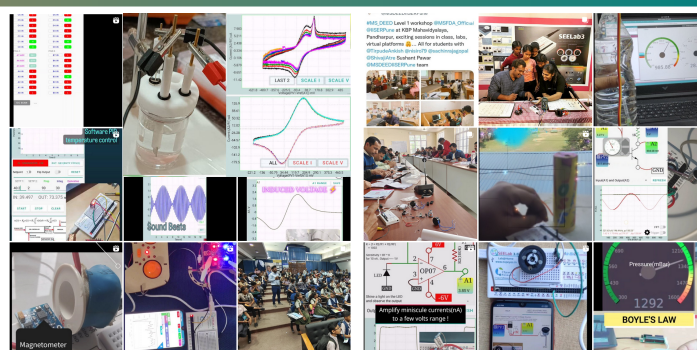
## CAD, FEM, & Circuit Design with FreeCAD & KiCAD




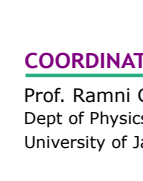

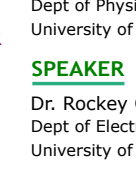


Basic stress and thermal analysis on a 3D part.

**Mini-Project:** Participants work in groups to design "New Experiments" by combining low cost data acquisition tools

Certificates will be issued on the last day after completing all sessions



 <p><b>PATRON</b> Prof. Umesh Rai Hon'ble Vice Chancellor University of Jammu</p>	 <p><b>DIRECTOR</b> Prof. Sandeep K Pandita Director, MMTTC University of Jammu</p>	 <p><b>CONVENOR</b> Prof. K.K. Bamzai Head, Dept of Physics University of Jammu</p>	 <p><b>SPEAKER</b> Prof. Vivek K Gupta Dept of Physics University of Jammu</p>	
 <p><b>SPEAKER</b> Prof. O.S.K.S. Sastri Dept of Physics Central University of Himachal Pradesh</p>	 <p><b>INDUSTRY EXPERT</b> Dr. Jithin Bhagavathi PDF, University of Calicut Director, CSpark Research</p>	 <p><b>COORDINATOR</b> Prof. Ramni Gupta Dept of Physics University of Jammu</p>	 <p><b>SPEAKER</b> Prof. Susheel Sharma Dept of Electronics University of Jammu</p>	
<p><b>CIPEX 2026</b> Dept of Physics University of Jammu</p>	 <p><b>SPEAKER</b> Er. V V V Satyanarayana Senior Engineer IUC , New Delhi</p>	 <p><b>CO-COORDINATOR</b> Dr. Narinder Kumar Senior Scientist (Tech.) Dept of Physics</p>	 <p><b>SPEAKER</b> Dr. Rockey Gupta Dept of Electronics University of Jammu</p>	