



Five-Day Online Workshop
on
**ELECTRICAL MEASUREMENTS
AND
SIGNAL CONDITIONING**
(EMSC Workshop)
14th to 18th December 2020

Co-ordinators:

Dr. Mithun M. S.

Dr. M. Sanjay

Department of Electrical Engineering
National Institute of Technology Calicut
NIT Campus P.O, Kozhikode, Kerala
India, 673601

Technically Co-sponsored by

Strategic Initiative for Academic Engagement

IEEE Kerala Section

ABOUT NIT CALICUT

National Institute of Technology Calicut (NITC) is an Institute of National Importance, fully centrally funded under the Ministry of Education, Govt. Of India, governed by the NIT Act 2007. It is located at Chathamangalam which is 22 km towards east from the main city of Kozhikode or Calicut in north Kerala. The institute has 10 departments, 3 schools & 9 research centers. It offers 11 UG & 30 PG programmes along with Ph.D. programme in various fields of Architecture, Planning, Science, Technology, Engineering and Management. Members of the faculty have active collaborations with universities and elite institutions within and outside India for research and active consultancy for industries. More details are available in the website: www.nitc.ac.in

ABOUT THE DEPARTMENT

Electrical Engineering Department (EED) of NIT Calicut was established in 1961. EED offers an undergraduate program in Electrical and Electronics Engineering (EEE), post graduate programmes in Instrumentation & Control Systems, Power Systems, Power Electronics, Industrial Power and Automation and High Voltage Engineering as well as research programmes leading to Ph.D. Degree

ABOUT THE WORKSHOP

The objective of this IEEE supported **online** workshop is to spread the basic and latest ideas in the field of Electrical Measurements and Signal Conditioning to the technical community. This will be useful for faculty members from engineering colleges, industry professionals, research scholars and PG students who would like to work in this area. The morning sessions of this workshop will have talks by experts from various reputed educational institutions and the industry who will cover the various basic, as well as, in-depth aspects of electrical measurements and signal conditioning. The afternoons are dedicated for demo of various software where-in, the experts will demonstrate different examples of real-time signal conditioning using virtual instrumentation technology, finite element modelling & analysis of different electrical sensors & actuators, and feature-extraction from measured signals. There will be also hands-on training to the participants during some of these demo sessions. The broad list of topics covered in this workshop are as follows:

- Basics of Electrical Measurements, Sensors & Signal Conditioning
- Resistive, Capacitive & Magnetic Sensors & their Signal Conditioning
- Electrical Measurements in the Laboratory
- Biomedical Signal Acquisition

- Sensors for Smart Vehicles & Data Acquisition Systems for Radar Applications.
- Application Specific Measurements & Signal Conditioning
- Finite Element Modelling of Electrical Sensors
- Feature Extraction from Measured Biomedical Signals
- Applications using LabVIEW, MATLAB and Finite Element Analysis (FEA) software

RESOURCE PERSONS:

All the sessions will be handled by faculties from premium academic institutes like IITs, BITS, NITs, & IIST, and experts from the R&D departments of leading industries.

WHO CAN APPLY?

Faculty members & researchers from various engineering colleges / institutions as well as, working professionals and practicing engineers from various research organizations & industries can register for this workshop.

HOW TO APPLY

Registration can be done by duly filling up the google form <https://tinyurl.com/y3txjhb9>. The registration fee as shown below has to be paid through online transfer and is non-refundable. A registration form in the format given in this brochure has to be uploaded as a pdf document as part of the google form.

Category of Participants	Fee (inclusive of all applicable taxes)
Faculty / Industry / R&D personnel / QIP Scholars	Rs. 590/-
Regular Ph.D. scholars	Rs. 450/-
PG students	Rs. 330/-

There will be a 10 % discount for participants who are IEEE members. All the registered participants on attending the workshop will be provided e-certificates.

The bank details for online transfer are given below.

Account Name: Director NIT Calicut, Continuing Education Programme

Account No: 37618269594

Bank Details: SBI NIT Calicut, IFSC code: SBIN0002207

The last date for registration is **10th December 2020**.

Mention "EMSC" as remark during online transaction.

Address for Correspondence:

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FORMAT OF REGISTRATION FORM

Online Workshop on Electrical Measurements and Signal Conditioning, 14th -18th December 2020, EED, NIT Calicut

1. Name:
2. Date of birth & Gender:
3. Designation:
4. Department:
5. Institution:
6. Mobile & E-mail:
7. Highest Qualification:
8. Specialization:
9. Category: Faculty / Industry / QIP Scholar /
Regular Ph.D. Scholar / PG Student
10. Registration Fee paid:
11. IEEE membership ID:
12. Online transaction reference no.& date:

Self-Endorsement

I, hereby certify that I am an employee / student of and hereby register for the online workshop on "Electrical Measurements and Signal Conditioning" organized by the Dept. of EE, National Institute of Technology Calicut, from 14th to 18th December 2020.

Place:

**Name and signature of
the participant:**

Date:



Dept. of Electrical Engineering, NIT Calicut
Schedule of the Online Workshop on
“Electrical Measurements & Signal Conditioning”
14th to 18th December 2020

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Day 1 – Monday, 14.12.2020.			
Theme: Basics of Electrical Measurements, Sensors & Signal Conditioning			
9.30 - 10 AM	10 – 11.15 AM	11.30 AM – 12.45 PM	2 – 4 PM
Inaugural session	Relevance of electrical measurements in day-to-day life. Dr. V. Jagadeesh Kumar, Dean – Academics, IIT Madras	Quality Assurance in Measurement Instrumentation System and the Role of Measurement Error, Uncertainty and Calibration. Dr. Sivaji Chakravorti, Professor of Electrical Engg, Jadavpur University & Former Director, NIT Calicut	Workshop on Virtual Instrumentation. Organization: National Instruments
Day 2 – Tuesday, 15.12.2020.			
Theme: Resistive, Capacitive & Magnetic Sensors and their Signal Conditioning			
10 – 11.15 AM	11.30 AM – 12.45 PM	2 – 4 PM	
Efficient interfacing circuits for capacitive and resistive sensors. Dr. Sreenath V. Asst. Professor, Dept. of EE, IIT-Palakkad	Magnetic transduction and electronic processing strategies for various industrial scenarios. Dr. Anoop C. S. Asso. Professor, Dept. of Avionics, IIST, Thiruvananthapuram	Workshop on Finite Element Modelling of Electrical Sensors. Organization: Entuple	
Day 3 – Wednesday, 16.12.2020.			
Theme: Issues while Making Electrical Measurements in the Lab / on Human Body			
10 – 11.15 AM	11.30 AM – 12.45 PM	2 – 4 PM	
Some common transducers, measurements and DSO tips in power electronics hardware prototyping. Mr. Kedarnath Singam Director – Bhumitra Tech, Tirupati.	Basics of Bio-signal Acquisition – ECG, EEG and EMG. Dr. Sanjay M. Asst. Professor, Dept. of EE, NIT Calicut.	Workshop on Finite Element Modelling of Electrical Sensors. Organization: Entuple	
Day 4 – Thursday, 17.12.2020.			
Theme: Sensors for Smart Vehicles & Data Acquisition Systems for Radar Applications			
10 – 11.15 AM	11.30 AM – 12.45 PM	2 – 4 PM	
Vehicular sensors – How does a self-driving vehicle see? Dr. Suganthi S. S. Lead Designer – TATA ELXSI, Chennai.	SoC based data acquisition and processing system for FMCW Radar Applications. Dr. Amalin Prince Associate Professor, Dept. of EEE, BITS Pilani, Goa Campus.	Workshop on Finite Element Modelling of Electrical Sensors. Organization: Entuple	
Day 5 – Friday, 18.12.2020.			
Theme: Application Specific Measurements & Signal Conditioning			
10 – 11.15 AM	11.30 AM – 12.45 PM	2 – 4 PM	4 – 4.30 PM
Image free ultrasound sensing for assessment of vascular ageing. Dr. Jayaraj Joseph Asst. Professor, Dept. of EE, IIT Madras	Sensors and protocols for monitoring power system assets. Dr. Balakrishna P. Senior Lead R&D Engineer, GE, Hyderabad.	Workshop on Bio-signal Processing. Organization: MATLAB	Closing ceremony

Coordinators: Dr. Mithun M. S. & Dr. Sanjay M., Assistant Professors, Dept. of Electrical Engineering, NIT Calicut.