

Faculty Development Program
on
**“Instrumentation, Signals and
Images for the Evaluation of
Physiological Systems”**
(Online mode)

August 16th-20th, 2021

Coordinators

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Organized by
**Department of Instrumentation and
Control Engineering,**
National Institute of Technology,
Tiruchirappalli

Under the aegis of



**NATIONAL INSTITUTE OF
TECHNOLOGY,
TIRUCHIRAPPALLI (NIT-T)**

The National Institute of Technology (formerly known as Regional Engineering College) Tiruchirappalli, situated in the heart of Tamil Nadu on the banks of river Cauvery, was started as a joint and co-operative venture of the Government of India and the Government of Tamil Nadu in 1964 with a view to catering the needs of man-power in technology for the country. The institute has been conferred with autonomy in financial and administrative matters to achieve rapid development. Because of this rich experience, this institution was granted Deemed University Status with the approval of the UGC/AICTE and Govt. of India in 2003 and renamed as National Institute of Technology.

National Institute of Technology Trichy is one of the 31 National Institutes of Technology established by the Government of India. The institution offers Under Graduate Courses in ten branches and Post Graduate Courses in twenty-one disciplines of Science, Engineering & Technology besides M.S. (by Research) and Ph.D. About 6200 students are enrolled in the institute and around 220 faculty members are employed in regular positions. NIT-T is ranked top among 31 NITs in India and is presently occupying 9th position in NIRF ranking of engineering institutes. The institute aims at benchmarking with global universities, who are in the top 200 in world rankings in terms of teaching, innovation and research, funding and internationalisation.

**AICTE – TEACHING AND LEARNING
ACADEMY**

AICTE - All India Council for Technical Education was established in 1945 by Government of India. The organization was set up as an Apex Advisory Body to conduct survey on facilities on technical education and to promote and develop technical education in the country. National policy of Education (1986) defines AICTE as the statutory authority for planning, formulation and maintenance of norms and standards, quality assurance through accreditation, funding in priority areas, monitoring and evaluation, maintaining parity of certification and awards, and ensuring coordinated and integrated development and management of technical education in the country.

The AICTE – Teaching and Learning (ATAL) Academy aims to plan and help in imparting quality technical education in the country and to support technical institutions in fostering research, innovation and entrepreneurship through training in various emerging areas.

This academy aims at inculcating the drive for research and knowledge enhancement among the faculty members of various institutions, research scholars, PG scholars, and Industry personnel and hence the participants are expected to be from the above categories including participants from Government, Industry / Bureaucrats / Technicians / Participants from Industry etc.) and staff of host institutions.

DEPARTMENT OF INSTRUMENTATION AND CONTROL ENGINEERING

The Department of Instrumentation and Control Engineering is interdisciplinary in nature. The department was established in the year 1993. It has vibrant faculty members with research and teaching interests that cover a broad range of fields. The department offers B.Tech. program in Instrumentation and Control Engineering, M. Tech program in Industrial Automation, M.S. (by research) and Ph.D. It also offers M.Tech. program in the field of Process Control and Instrumentation jointly with the Department of Chemical Engineering. The department with its state-of-the-art faculties has obtained various funded projects from government/private organizations and renowned industries.

COURSE OUTLINES

Medical instrumentation, signal and image analysis play a vital role in the evaluation of physiological and pathological conditions associated with the neurological and neuromuscular systems. Particularly, these evaluations help in understanding the physiological phenomena, the diagnosis of clinical conditions, prediction of life-threatening pathological variations well in advance, and rehabilitation. The faculty development program discusses on various biosignal acquisition and imaging systems and advanced research in the signal and image processing.

COURSE OBJECTIVES

The objectives of this FDP are to

- Understand the fundamentals of biosignal acquisition and imaging systems.
- Learn the characteristics of biosignals and images from muscles and brain.
- Understand the pipeline of process for the development of systems for the diagnosis of clinical conditions with specific practical case studies.
- Provide exposure to the recent research trends in signal and image processing.

COURSE CONTENTS

- Physiological and pathological aspects of tissues and organs
- Data Acquisition systems of brain: EEG, Computer Tomography, and Magnetic Resonance Imaging
- Data Acquisition systems of muscles: EMG, and Ultrasound Imaging
- Applications of signals/images in health and rehabilitation
- Advanced signal and image processing techniques, recent research issues and challenges
- Demonstration on biosignal acquisition and analysis

WHO SHOULD ATTEND?

The faculty members of the AICTE approved institutions, research scholars, PG Scholars, participants from Government, Government

(Aided), Industry and staff of host institutions can attend the FDP. There is no Registration fee to attend this FDP.

RESOURCE PERSONS

Faculty members from IITs, NITs, reputed universities/colleges, medical doctors, and industry experts

SELECTION AND CERTIFICATION CRITERIA

Participants should be from Electronics/ Instrumentation/ Biomedical background. Selection will be based on first-come, first-serve basis. Preference will be given to new participants i.e., those who have not attended ATAL FDP earlier. Maximum 200 participants may be allowed to attend the online FDP. The selected candidates will be notified on or before 10th Aug 2021.

On completion of the programme, participants will be awarded an E-Certificate of participation by respective ATAL Academy. Minimum 80% attendance and 60% marks in the test are compulsory for certification.

HOW TO APPLY?

The participant has to register through ATAL portal

<https://www.aicte-india.org/atal>