

## Target participants

The faculty members of the AICTE approved institutions, Research scholars, PG Scholars, participants from Government, Industry (Bureaucrats/Technicians/Participants from Industry etc.)/School Teachers and staff of host institutions.

## Registration Fee

Nil

## Registration link

<https://atalacademy.aicte-india.org/signup>

## Number of seats

Limited to maximum 200 participants are selected by organizers on first come first serve basis. All the participants should have Gmail account.

## Event Details

All the sessions will be conducted through online platform. The meeting links will be sent to the selected participants through WhatsApp/email. There will be an Inaugural Ceremony, 13 Technical sessions and one Fitness session, online test/quiz and a valedictory.

An online test will be conducted by the coordinator at the end of the program.

## Resource Persons

Academic experts from premier Institutions/Universities, like IITs/NITs/IIITs/IISERs/ISIs/Central Universities and industry personnel will be taken as resource persons.

## Certification

E-Certificates will be issued by AICTE Training and Learning (ATAL) academy to participants who have attended the program with minimum 80% attendance and scored minimum 60% marks in the test.

## Patron

**Prof. Santanu Chattopadhyay**  
Director, IIIT Kalyani, West Bengal

## Coordinator

**Dr. Debasish Bera**  
Email : [debasish@iiitkalyani.ac.in](mailto:debasish@iiitkalyani.ac.in)  
Mobile : +919433543414

## Organizers

Dr. Dalia Nandi, Dr. Sanjay Chatterji, Dr. Sk Hafizul Islam, Dr. Sanjoy Pratihar, Dr. Oishila Bandyopadhyay, Dr. Anirban Lakshman, Dr. Imon Mukherjee, Dr. Uma Das, Dr. Rinky Shaw.

Mr. Biswajit Halder, Md. Samim Rahman, Ms. Sreejoyee Das, Mr. Amit Sadhukhan, Mr. Sanju Biswas, Mrs. Moupriya Das.

Last date for online Registration	28 <sup>th</sup> August, 2021
Date of intimation to the selected candidates (by Email or phone)	29 <sup>th</sup> August, 2021
Confirmation from participants (by Email/Phone)	31 <sup>st</sup> August, 2021

## Resource Persons

**Prof. A. Chockalingam**, ECE, IISc Bangalore,  
**Dr. Radhakrishna Ganti**, EE, IIT Madras,  
**Dr. Devendra Kumar Yadav**, SAG, DRDO, Delhi  
**Prof. Suvra Sekhar Das**, GSSST, IIT Kharagpur,  
**Prof. Goutam Das**, GSSST, IIT Kharagpur,  
**Dr. Prabhu Chandhar**, Chandhar Research Lab Pvt. Ltd., Chennai  
**Dr. Bhaskar Biswas**, CSE, IIIT Kalyani,  
**Dr. Pratik Chakraborty**, ECE, IIIT Kalyani,  
**Dr. Debasish Bera**, CSE, IIIT Kalyani

## One Week (5 days) Faculty Development Programme (FDP)

On

## “Signal Processing for 5G and IoT”

6<sup>th</sup> Sept. - 10<sup>th</sup> Sept., 2021

## SPONSORS



## Announcement Brochure

### Program Coordinator

**Dr. Debasish Bera**

**Assistant Professor**

**Department of Computer Science and Engineering**

Organized by



**Department of Computer Science and Engineering**

**Indian Institute of Information**

**Technology Kalyani**

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## ATAL Academy

AICTE Training and Learning (ATAL) Academy is established with the vision “To empower faculty to achieve goals of Higher Education such as access, equity and quality”. AICTE is committed for development of quality technical education in the country by initiating various schemes launched by Govt. of India, Ministry of Human Resource Development. Council understands that there is a need of the day to train the young generation in skill sector and having faculty & technicians to be trained in their respective disciplines. Training is required for increasing the knowledge and skills of students to make them more employable to acquire global competencies.

## About IIT Kalyani

The Indian Institute of Information Technology Kalyani has been setup with an objective to produce best-in-class human resources in IT and to harness the multidimensional facets of IT in various domains. IIT Kalyani strives to evolve into a world-class academic institution with the highest quality of education and research facilities and produce industry ready IT graduates to meet the industry demands. The institute will act as a catalyst in fostering an innovative entrepreneur-focused ecosystem to ensure that new products, solutions and IP are created in the State taking advantage of the intellectual capital of the State.

IIT Kalyani has been set up at Kalyani, West Bengal by Government of India (MHRD), Government of West Bengal and industry partners. The institute is run by the Board of Governors of IIT Kalyani whose members include the representatives of Government of India (MHRD), Government of West Bengal, industry partners and eminent people from academia, industry and civil society. IIT Kalyani has been attributed the status of Institute of National Importance (INI) by the parliament of India in August, 2017.

The Institute offers a four-year B.Tech. degree program in Computer Science and Engineering and Electronics and Communication Engineering with an annual intake of 180 students. The Institute also runs the part-time Ph.D. programme in Computer Science and Engineering, Electronics, Mathematics and Physics from 2018 with an annual intake of 20 students (approx.).

## About West Bengal

West Bengal (Paschim Banga) is a state in the eastern region of India along the Bay of Bengal. With over 91 million inhabitants, it is the fourth-most populous state and the fourteenth-largest state by area in India. It covers an area of 88,752 km<sup>2</sup>. It also borders the states of Odisha, Jharkhand, Bihar, Sikkim, and Assam. The state capital is Kolkata, the third-largest metropolis and seventh-largest city by population in India. West Bengal includes the Darjeeling Himalayan hill region, the Ganges delta, the Rarh region, and the coastal Sundarbans.

## About AICTE

AICTE is committed for development of quality technical education in the country by initiating various schemes launched by Govt. of India, Ministry of Human Resource Development e.g. SWAYAM, MOOCs, Start-up Initiatives, Prime Minister Kaushal Vikas Yojana (PMKVY), Sansad Adarsh Gram Yojana (SAGY), Swachh Bharat(Unnat Bharat Abhiyan, Yoga Activities etc. There is an urgent need to train the young generation in skill sector and having faculty & technicians to be trained in their respective disciplines. It was felt that Training with latest tools and technologies is vital to keeping an institute competitive and more productive. Training is required for increasing the knowledge and skills of students to make them more employable to acquire global competencies. We also need to transform them to harmonize with society and make them good citizens of the country.

## Course Objectives

The 5G wireless communications will enable countless automated wireless applications for the rapidly growing Internet of Things (IoT), Wireless Sensor Networks (WSN) market, Cyber Physical System (CPS). In future, billion devices will be connected to the Internet of Things. In this context, a very large bandwidth, advanced signal processing algorithms, optimization techniques are needed for this large scale deployment. This one-week online FDP is aimed at providing the participants with a glimpse of the contemporary and advanced developments in the fields of signal processing for wireless communications. The target audiences are Faculty members, Industry professionals, corporate, research scholars, UG and PG students working in the areas of Wireless Communication, Machine Learning, IoT, and CPS. This program also focuses on exploring various opportunities and challenges of the said context.

## Tentative topics to be covered

- Overview of 5G std. and India's Journey
- Overview of IoT
- Optimization techniques
- Estimation theory and its uses in 5G/IoT
- Decision theory and its uses in 5G/IoT
- Security in 5G/IoT Networks
- Coding techniques for 5G
- MIMO-OFDM
- NOMA and Full-duplex techniques
- Deep learning for Wireless Communications
- Realizing end-to-end 4G/5G Networks (lab)

Day	9.15 AM to 9.30 AM	09.30 AM to 11.30 AM	11:30 AM To 1:30 PM	1.30 to 2.30 PM Lunch Break	02.30 PM to 4.30 PM
Monday	Inauguration	Overview of 5G (RKG)	Overview of IoT:		Optimization Techniques – Part1 (GD)
Tuesday		MIMO-OFDM (SSD)	Optimization Techniques-Part2 (GD)		Estimation Theory and its uses 5G/IoT (DB)
Wed		NOMA and Full duplex system (PC)	Security in 5G/IoT Networks (DKY)		Decision Theory and its uses in 5G/IoT (DB)
Thurs		Coding Techniques for 5G (BB)	Deep Learning for Wireless Communications (AC)		Realizing end-to-end 4G/5G Networks (Lec/Lab) (PCH)
Friday		Realizing end-to-end 4G/5G Networks (LAB) (PCH)	Realizing end-to-end 4G/5G Networks (LAB) (PCH)		Online Test/Feedback