



must reach the coordinator on or before 13 November 2017. The maximum number of participants of the program would be limited to 50.

Account Name DIRECTOR NIT CALICUT, GIAN ON 5G W N
Account No. 37113189687
Bank State Bank of India
Branch CREC, Chathamangalam, Kozhikode
Branch Code 002207
IFSC SBIN0002207
MICR Code 673002012
SWIFT Code SBINPN Bb392

Important Dates

- Last date for receiving applications: 13th Nov 2017
- Last date for Intimation to Participants by email : 15th Nov 2017
- Course Dates : 8-13 December 2017

About GIAN Course

MHRD, Govt. of India has launched an innovative program titled "Global Initiative of Academic Networks (GIAN)" in higher Education, in order to garner the best international experience. As part of this, internationally renowned Academicians and Scientists are invited to augment the Country's academic resources, accelerate the pace of quality reforms and elevate India's scientific and technological capacity to global excellence.

About NIT Calicut

National Institute of Technology Calicut (NITC) is one of the 31 institutions of national importance governed by the NIT Act 2007 and is fully funded by the Government of India. Originally established in 1961 as a Regional Engineering College (REC), it was transformed into a National Institute of Technology in the year 2002. The institute offers bachelors, masters and doctoral degree programs in Engineering, Science, Technology and Management. With its proactive collaborations with a multitude of research organizations, academic institutions and industries, the institute has set a



new style for its functioning under the NIT regime. The Institute is presently offering ten UG programs and thirty PG programs along with Ph.D programme in various fields of Engineering, Science and Technology.

About the Department of ECE@ NITC

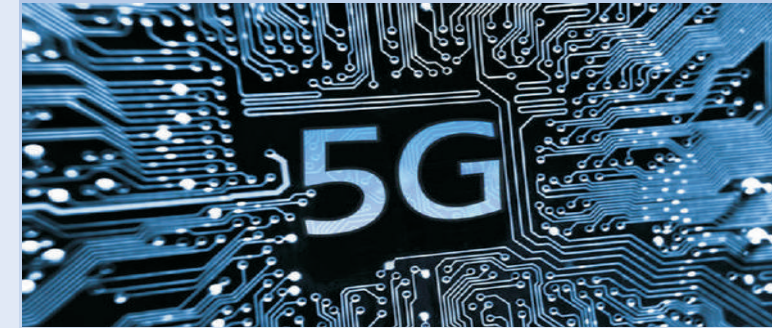
The ECE Department offers undergraduate programme in Electronics and Communication Engineering, graduate programmes in Telecommunication, Signal Processing, Electronic Design & Technology, and Microelectronics & VLSI and research programme leading to Ph.D. Degree. The major research activities are in the areas of Communication and Networking, Signal Processing and Microelectronics and VLSI Design.

Address for Correspondence

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 GIAN Program on Key Enabling Technologies
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GIAN
 GLOBAL INITIATIVE OF ACADEMIC NETWORKS



GIAN Course on Key Enabling Technologies for 5G Wireless Networks

December 8-13, 2017



**Call for
 Registration
 and
 Participation**

INTERNATIONAL FACULTY

Prof. Arumugam Nallanathan, *IEEE Fellow*
 Professor of Wireless Communications
 Department of Informatics, King's College London

HOST FACULTY / COURSE COORDINATORS

Dr. A V Babu and Dr. Lillykutty Jacob
 Department of Electronics and
 Communication Engineering
 National Institute of Technology Calicut

LOCAL COORDINATOR

Dr. Abraham T Mathew
 Dean Research & Consultancy
 National Institute of Technology Calicut,
 Kozhikode, Kerala, India

**Department of Electronics and
 Communication Engineering
 National Institute of Technology Calicut**
 NIT Campus P.O. Calicut, 673601, Kerala, India





Course Objectives

The 5G wireless networks are expected to play a much broader role in our lives by enabling the wireless connectivity of an unprecedented number of devices which will facilitate an unprecedented number of services and applications. The envisioned application requirements (such as data rate, latency, and reliability) and device characteristics (such as cost, processing power, and energy efficiency) differ by orders of magnitude; this creates many challenges for the wireless research community currently getting ready for the 5G standardization process. This course will cover various promising technologies for 5G wireless communication networks such as massive MIMO, millimeter wave communications, cognitive radio networks, device-to-device communication, and Non-Orthogonal Multiple Access (NOMA). The course will also introduce the theoretical and practical aspects of molecular communications and Molecular MIMO. The course is especially intended to provide engineers, faculty members of engineering colleges, and graduate students pursuing Ph.D. in communications and networking, with an in-depth technical exposure to 5G wireless networking technologies and concepts. Further, highly motivated B. Tech./ M. Tech. students with good academic record, who would like to further explore the latest research in current wireless systems and technologies would also be benefited. The course will provide the participants with a comprehensive treatment of a number of emerging research topics, open problems, and potential research directions.

Course Overview

- Overview of 2G and 3G Cellular Networks
- Overview of LTE and LTE-Advanced
- Introduction to 5G Wireless Networks
- Non-Orthogonal Multiple Access towards 5G
- Device-to-Device Communication for 5G
- Millimeter wave Massive MIMO for 5G
- Cognitive Relay Networks
- Full Duplex Relaying for 5G
- Wireless Powered Communication Networks



- Signal Processing and Communication Foundations for Software Defined Radio Development
- Software Defined Radio Development– Architecture and Tools
- Molecular Communication: From Nature to Practice
- Emerging Research Challenges in 5G wireless systems

International Faculty



Dr. Arumugam Nallanathan is a Professor of Wireless Communications in the Department of Informatics at King's College London (University of London). Prof. Nallanathan is Fellow, IEEE; Web of Science Highly Cited Researcher in 2016; Distinguished Lecturer, IEEE; recipient of IEEE Communications Society SPCE Outstanding Service Award (2012) and IEEE Communications Society RCC

Outstanding Service Award (2014); His current research interests include 5G Wireless networks, Internet of Things (IoT) and Molecular Communications. He has published more than 350 Journal and Conference papers with 6000+ citations. He is currently the Editor of IEEE Transactions on Communications and IEEE Transactions on Vehicular Technology. He was an Editor for IEEE Transactions on Wireless Communications (2006-2011), IEEE Wireless Communications Letters and IEEE Signal Processing Letters.

Who can attend?

- Students at all levels (B. Tech./MSc/MTech/PhD), in Electronics/ Electrical/ Computer Science Engineering or Faculty from reputed academic institutions and technical institutions with aptitude for doing continuous research in wireless communications and networking stream
- Executives, engineers and researchers from manufacturing, service and government organizations including R&D laboratories



Registration Fees

The registration fee for the course is as follows:
 Participants from Academic institutions/Industry/
 Research Organization : Rs. 6,000
 Participants from abroad : US \$ 500

The above fee includes the cost of instructional materials, computer use for tutorials, use of internet facility, refreshments and working lunch. In addition to the above fee, one-time online fee of Rs.500/- is to be paid for registration in the GIAN web portal (See the registration process outlined below). Accommodation for outstation participants will be charged separately. No TA/DA will be paid for any participant

Registration Process

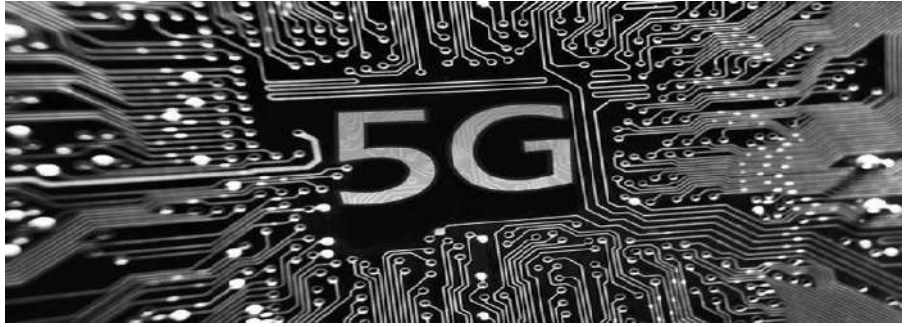
Step #1: Web Portal Registration: Visit GIAN Website at the link: <http://www.gian.iitkgp.ac.in/GREGN/index> and create login, User ID, and Password. Fill up the GIAN registration form and do web registration by paying Rs.500/- online through Net Banking/ Debit/ Credit Card as per instructions given there in. This provides the user with life time registration to enroll in any number of GIAN courses offered (Skip this step, if already registered with GIAN portal).

Step #2: Course Registration: Login to the GIAN portal again with the user ID and password already created in Step #1. Click on course registration option at the top of registration form. Select the course titled "**Key Enabling Technologies for 5G Wireless Networks**" from the list and click on the *Save* option. Confirm your registration by clicking on the *Confirm Course* option. The participant may then proceed for the course registration with the course coordinator by filling out the registration form and paying the course registration fee. The course fee should be paid in the form of Draft/NEFT/RTGS. The account details are given below. The duly filled up registration form and the DD/ NEFT/RTGS receipt must be sent to the course coordinator. For provisional registration, scanned copies of the above documents can be sent to babu@nitc.ac.in. The DD/Receipt of NEFT/RTGS and the original registration form (hard copy)





Department of Electronics and
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National Institute of Technology Calicut
NIT Campus P.O. Calicut, 673601.Kerala, India



GIAN Course on Key Enabling Technologies for 5G Wireless Networks

December 8-13, 2017

Registration Form

Name: M F

Designation:.....

Highest Qualification & Specialization:

Organization.....

Address:.....

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Mobile No: Email:

Details of Payment of Course Registration Fee

DD No.....DateBank Amount.....

If paid through NEFT,

Transaction Number Date Bank

Accommodation Required: Yes/ No

Date

Signature of the Applicant.....

APPROVAL FROM AFFILIATED INSTITUTE OF THE APPLICANT

Certified that Mr./ Ms/ Dr.....
is an employee of our institute. If selected, he/she will be permitted to attend the
GIAN course on Key Enabling Technologies for 5G Wireless Networks conducted by
NIT Calicut during 8 – 13 December 2017

Date:

Signature
and Seal of Approving Authority

