GLOBAL INITIATIVE FOR ACADEMIC NETWORKS

Ministry of Human Resource Development
Government of India

सत्यमेव जयते

GLOBAL INITIATIVE FOR ACADEMIC NETWORKS

National Coordinating Institute
INDIAN INSTITUTE OF TECHNOLOGY KHARAGPUR

www.gian.iitkgp.ac.in

PRINCIPLES AND TECHNOLOGIES FOR 5G SYSTEMS

Overview

Mobile networks have been traditionally composed of three segments: the Radio Access Network (RAN), the Core Network, and the Transport Network interconnecting the RAN with the Core. 5G RAN is expected to be highly heterogeneous, including OFDM-,WiFi-, and microwave-based communications. Furthermore, developing 5G network architectures nowadays challenge the traditional split of RAN, Transport and Core by considering adding computing capabilities at the mobile network edge (RAN/Transport) and thus, blurring their boundaries. Such bolstering of the edge capabilities is motivated by the need in 5G to support the wide range of vertical industries, with very diverse and stringent requirements. See for instance the emerging ETSI Mobile Edge Computing (MEC) paradigm where it is considered to shift the required mobile network functionality closer to the mobile edge. Furthermore, deploying these edge capabilities is quite compelling for mobile operators as they can now handle a massive amount of local and raw traffic directly at the edge, thus keeping it away from their Transport and Core; hence saving capacity. These edge capabilities also bring an opportunity to leverage on a rich set of context information available at the edge. In this way context-awareness can be used at large to optimise end-to-end network performance as well as to offer new customised services to other providers including vertical industries.

This course is composed of one 14-hour module, composed of four lectures. The covered topics include: (i) an overview of Wi-Fi, LTE and LTE-A networks, (ii) an introduction to the key 5G technologies, with particular emphasis on the SDN and NFV technologies, (iii) a discussion of the major issues and possible solutions to the support of services for connected cars, and (iv) the presentation of cellular technologies for the support of broadcast and multicast services.

Course participants will learn these topics through lectures and presentation of case studies.

Modules	**Principles and technologies for 5G Systems : Dec. 27 – Dec. 31, 2017** Number of participants for the course will be limited to fifty.
Who Should Attend	• you are a telecommunication or computer science engineer, or research scientist interested in understanding and exploiting new wireless technologies; • you are an app or software developer interested to learn how to exploit 5G in your profession; • you are a student or faculty from an academic institution interested in learning how to do research on 5G and connected cars.

Fees

The participation fees for taking the course is as follows:

Participants from abroad :	**US $500**
Industry/ Research Organizations:	**₹ 30000**
Academic Institutions:	**₹ 10000**

The above fee includes all instructional materials, computer use for tutorials, 24 hrs. free internet facility. The participants will be provided with accommodation on payment basis.

The Faculty

Prof. Claudio Casetti is an Associate Professor with Politecnico di Torino, Italy. His research interests include protocol and algorithm design for mobile and fixed networks, experimental network design and measurements, and MEC systems.

Prof. Carla Fabiana Chiasserini is an Associate Professor with Politecnico di Torino, Italy. Her research interests are in the design, modeling and performance evaluation of wireless networks and mobile services, with focus on connected cars and 5G systems.

Dr. Chetna Singhal is an Assistant Professor at Indian Institute of Technology, Kharagpur. Her research interests include resource allocation for mobile heterogeneous users in next generation wireless networks, multimedia systems, and multimedia communication.

Course Co-ordinator

Dr. Chetna Singhal

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Registration Process

Registration for GIAN courses is not automatic because of the constraints on maximum number of participants allowed to register for a course. In order to register for one or multiple non-overlapping courses, you have to apply online using the following steps:

1. **Create login and password at www.gian.iitkgp.ac.in/GREGN/index**
2. **Login and complete the registration form.**
3. **Select courses**
4. **Confirm your application and payment information.**
5. **Pay ₹ 500 (non-refundable) through online payment gateway.**

The course coordinators of the selected courses will go through your application and confirm your selection as a participant one month before the starting date of the courses. Once you are selected you will be informed and requested to pay the full fees through online payment gateway service.