

Overview of GIAN Course: Govt. of India approved a new program titled Global Initiative of Academic Networks (GIAN) in Higher Education aimed at tapping the talent pool of scientists and entrepreneurs, internationally to encourage their engagement with the institutes of Higher Education in India so as to augment the country's existing academic resources, accelerate the pace of quality reform, and elevate India's scientific and technological capacity to global excellence.

Foreign Expert:



Prof. David W. Matolak received the B.S. degree from The Pennsylvania State University, the M.S. degree from The University of Massachusetts, and the Ph.D. degree from The University of Virginia, all in Electrical Engineering. He has

been a visiting professor at the National Institute of Standards & Technology, Boulder, CO, the University of Malaga, Spain, and NASA Glenn Research Center. He is an associate editor for the IEEE Transactions on Vehicular Technology, an area editor for the International Journal of Intelligent Transportation Systems Research, and an editor for the International Journal of Antennas and Propagation. His research interests are radio channel modeling and communication techniques for nonstationary fading channels, spread spectrum, multicarrier transmission, and mobile ad hoc networks.

Course Coordinator:



Dr. Susmita Das is an Associate Professor in the Department of Electrical Engineering at National Institute of Technology Rourkela. She is a Senior Member of IEEE, IETE, ISTE and a Fellow of Institution of Engineers (IE) India. Her research area includes wireless Communication, 4G & 5G wireless

technologies: Co-operative Communication, UWB Body Area Network, Cognitive radio etc.

About NIT Rourkela

NIT Rourkela is one of the premier national level institutions for technical education in the country and is funded by MHRD, Government of India. The institute established 1961 as Regional Engineering College Rourkela and was elevated to a deemed university under the name of National Institute of Technology, Rourkela in the year 2002. According to the Times Higher Education (THE) ranking of the World's best Universities 2017, it is ranked in top 800 institutes of world, and it is only NIT to feature in the list.

The main objective of the Institute is to produce quality Engineers and Scientists in Graduate and Post-Graduate levels in various branches of engineering and science. The institute with a lush green campus area of 650 acres has twenty departments, three academic centers and six service centers. The Institute has a very vibrant campus life with ten hall of residence for students, residential quarters for employees and two guest houses for visitors. The Institute has been consistently ranked among the best technical institutes in India. The Institute has been modernized by several foreign collaborative research projects. A very good number of sponsored research and consultancy projects are running at present.

For More Information

Visit: <http://www.gian.iitkgp.ac.in/>

Contact

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Characterizing and Modeling Wireless Channels

June 6 – 10, 2017



**National Institute of Technology
Rourkela, Odisha, India**

Under the aegis



Government of India

Ministry of Human Resources and Development

Course Overview

The wireless propagation channel is the most challenging element (or subsystem) impeding reliable communication in many communication systems today. Wireless channels in multiple environments and in various frequency bands have been studied for decades, this is still an active area of research because of the growth and breadth of wireless applications. A larger user population, higher data rates, and connectivity over larger areas and longer durations all require accurate models for the channel for system analysis, design, and development.

In this course, a detail discussion on statistical modeling of wireless channel and statistical channel parameters: delay spread, coherence bandwidth, Doppler spread, and coherence time for wide-sense stationary uncorrelated scattering (WSSUS) channel will be covered. Following this overview of channel characterization, practical consideration will be described. This includes some description of measurements and modeling techniques (analytical and simulation), including examples and issues regarding model complexity. Some specific (non-cellular) channel models: the airport surface channel, satellite channels, ultra-wideband, and free-space optical channels, MIMO channels and the vehicle-to-vehicle (V2V) channel will also be addressed. Modeling of wireless channels for computer simulation and current active research areas in wireless channel modelling will also be addressed. Advanced topics like description of atypical or unusual wireless channel effects including atmospheric effects due to hydrometeors, ducting, and tropospheric scatter and currently-active areas in wireless channel modeling, the V2V channel, the air-ground channel for unmanned aircraft, and a short treatment of millimeter wave channels will be described.

Course Objectives

Primary objectives of the course are as follows:

- To provide an in-depth understanding of the principles and concepts of characterizing and modeling wireless channel.
- The Course participants will learn these topics through lectures, assignments and hands-on experiments.
- Case studies and assignments will be shared to stimulate research motivation of participants.

You Should Attend If...

- You are a Signal Processing/Communication engineer or research scientist interested in the development and application of MIMO communication, Vehicle-to-Vehicle communication technology.
- You are a researcher in the field of advanced Wireless Communication.
- You are a student or faculty from academic institution interested in learning/ to take up research in the field of advanced Wireless Communication technologies.

Registration/Course Fee (Non-refundable)

The participation fee for taking the course is as follows:

- Participants from abroad : US \$300
- Industry/ Research Organizations: Rs. 3000/-
- Academic Institutions: Rs.1000/-
- Students (India): Rs.500/-

The above fee includes all instructional materials, computer use for tutorials and assignments. The registration/course fee is to be paid through a Demand Draft which should be drawn in favor of 'Continuing Education, NIT Rourkela' payable at **SBI, NIT Rourkela Branch (Code:2109)** or by NEFT/RTGS to A/C No.: **10138951784, State Bank of India, NIT Rourkela Branch IFSC Code: SBIN0002109.**

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 registration process)

Accommodation

Out station participants can be provided accommodation and boarding in the Institute Guest Houses inside the campus on direct payment as the Registration fee does not include lodging and boarding. Limited accommodation is available at the Institute Guest Houses which may be provided on first-cum-first serve basis. The lodging (twin sharing) and boarding charges may range from Rs.2000/- to Rs.3000/- for the entire duration of the course. Participants may also arrange their own accommodation.

Important Dates

- **Last date for receiving applications & DD: 10th May 2017**
- **Last date for Intimation to Participants: 12th May 2017**
- **Course Dates: June 6 – 10, 2017**

Registration Process

Registration for any GIAN course is a two-step process.

Step 1:

One Time Registration with the GIAN web portal of IIT Kharagpur using the following steps:

- Create login and password at: <http://www.gian.iitkgp.ac.in/GREGN/index>
- Complete the personal details and pay Rs. 500/- (non-refundable) through the online payment gateway.
- Select the Course(s) you are interested in.
- Confirm your application.

(Individuals who have already registered to GIAN earlier do not need to repeat)

Step 2:

Course registration with the course coordinator.

- Institute registration process is an offline process. The participants are required to take print out of Registration Form. **The registration form is available at:** <http://nitrrkl.ac.in/Academic/6ShortTermCourse/Default.aspx>
- He/she then may proceed for the course registration by filling out the registration form and paying the registration course fee.*

Documents to be sent online

- Scanned copy of filled in "Registration Form".
- Scanned copy of "Demand Draft/ receipt of NEFT".

Above documents must be sent to course coordinator via email: sdasgian17@gmail.com

Documents to be sent by post

- Original registration form.
- Demand Draft/ receipt of NEFT.

The above documents must be sent by post to:

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Email id: sdasgian17@gmail.com
Phone &: +91-661-2462402(O), +91-9438539606(M)

*The DD/Receipt of NEFT and the original registration form must reach to the coordinator on or before **10th May, 2017.**

Note: Maximum number of students: 50. (Participants will be selected on first-cum-first serve basis)