

## Selection and Mode of Payment

Selected candidates will be intimated through e-mail. They have to remit the necessary course fee to the Bank as per the details given below.

**Outstation participants requiring Lodging and Boarding facilities have to pay Rs. 4,000/- in addition to the course fee.**

Account Name GIAN NITW  
Account No. 62447453600  
Bank State Bank of India  
Branch REC Warangal (NIT Campus)  
Branch Code 20149  
IFSC SBIN0020149  
MICR Code 506002030  
SWIFT Code SBININBBH14

Candidates registering early will be given preference in short listing process.

For any queries regarding registration of the course and accommodation, please contact the

**Course Coordinator:**

**Dr. B. Lakshmi**  
Coordinator,  
Department of Electronics and Communication Engineering  
National Institute of Technology, Warangal  
WARANGAL – 506 004. T.S  
E-mail: lakshmi@nitw.ac.in  
Mobile No: 9493436845

## 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 The Institute and Warangal

National Institute of Technology (formerly known as Regional Engineering College), Warangal is the first among RECs setup as joint venture of the Government of India and State Government. Over the years the institute has established itself as a premier Institution imparting technical education of a very high standard leading to the B.Tech, M.Tech and Ph.D. Degrees in various specializations. With a view to give further impetus to the technological education, the Central Govt. upgraded the RECs into NITs.

Warangal is known for its rich historical and cultural heritage. It is situated at a distance of 140 Km. from Hyderabad. NIT campus is 3 km. away from Kazipet railway station and 15 km. away from the Warangal railway station. The local weather during Dec is pleasant. The average temperature is about 25-30°C during day and about 20°C during night.

## About The Department

The Department of ECE offers an undergraduate program in Electronics and Communication Engineering, and three Postgraduate programs in Electronic Instrumentation, VLSI system design and Advanced Communication Systems. The department of ECE has been offering two courses: (i) IoT and Usecases (ii) Communications for Smart cities (iii) Machine learning



**A Five Day**

**GIAN Course on**

**Technology-driven approaches for  
Neurodevelopmental and Neurodegenerative  
Disorders**

**Dec 14 – 18, 2020**

**Call for Registration and Participation**

**International Faculty**  
**Prof. Kaushik Maharatna**  
University of Southampton, UK

**Course Coordinator**  
**Dr. B. Lakshmi**

**Department of Electronics & Communication  
Engineering,  
National Institute of Technology,  
Warangal 506004,  
Telangana, INDIA**

## Overview of Course

According to the World Health Organisation (WHO) Neurodegenerative and Neurodevelopmental disorders are the two biggest challenges to the world public health. This is because none of them is curable and therefore is the root cause for life-long mental and cognitive problems as well as leading to a number of physiological complications. Recent researches showed that to tackle these conditions the most effective way is to shift to a “proactive” healthcare approach where these conditions are identified at a very early stage – even before their physical/behavioural manifestation – and start intensive intervention from that stage which could lead to mitigation of 80% of the adverse symptoms. Unfortunately, there is no biological evidence-based screening tool exists for such a very early diagnosis at this moment.

Recent advances in sensor technology, signal processing and Artificial Intelligence (AI) combined with new biological knowledge has shown serious promise to develop such screening tool and intervention systems that is mass deployable both in- and out-of-clinic environment and thereby radically changing the treatment process of these “untreatable” conditions. Since this is currently a field of intense research, the relevant cutting-edge knowledge is yet to be widely disseminated amongst the general research and medical community. This course will bridge that gap by holistically addressing the biological and technological amalgamation that may be pivotal for such system development. We expect that this will initiate new research in India which will be highly beneficial for Indian population health.

## Course Contents

- Neurodegenerative and Neurodevelopmental disorders: a closed-loop possible architecture for predictive diagnosis and management
- Fundamentals of Brain monitoring modalities: advantages and disadvantages
- Modelling information propagation in brain: from biology to circuit theory
- Introduction to Brain connectivity: graph-theoretic representation of information propagation mechanism in brain.

- Brain connectivity analysis using HERMES and Brain Connectivity Toolbox (BCT)
- Signal processing and AI frameworks for brain connectivity driven early diagnosis and prognosis
- Application of signal processing for EEG signal analysis
- Real-time hardware architectures for brain signal analysis
- Computer gaming based intervention and a case study



Prof Koushik Maharatna is a Chair in Signal Processing Systems Design in the Department of Electronics and Computer Science (ECS), University of Southampton, UK. He leads the next generation. remote healthcare system design research in the ECS.

Prof. Koushik has developed several remote **healthcare systems in the area of monitoring Cardiovascular diseases, Stroke rehabilitation and cognitive impairment in young children.** These systems were successfully trialed in **four major European hospitals.** Prof Koushik research interests include **biomedical signal processing algorithm design, machine learning and VLSI circuit design.** Prof Koushik Maharatna has made pioneering contributions in the fields of VLSI circuits and systems design, biomedical signal processing and machine learning and healthcare technology and mathematical modelling of biological systems. Prof. Koushik Maharatna received € 2.5 M European Commission funded research grants in the area of remote healthcare systems development to develop 7 successfully trialed automated tools for diagnostics and analysis of clinical data in the fields of cardiovascular disease monitoring, stroke rehabilitation and neurodegenerative diseases. These tools are currently being used in 5 European hospitals. He has published over 130 scientific articles in high-impact journals and conferences.

## Who can participate?

This program is open to the Faculty, PG and Research students of ECE, EEE and Biomedical engineering .

## How to Register?

### Stage-1: Web Portal Registration:

Visit <http://www.gian.iitkgp.ac.in/GREGN/index> and create login User ID and Password. Fill up the blank registration form and do web registration by paying Rs. 500/- online through Net /Debit/Credit card. This provides the user with life time registration to enroll in any number of GIAN courses offered.

### Stage-2: Course Registration:

Login to the GIAN portal with the user ID and Password already created in Stage 1. Click on Course Registration option at the top of Registration form. Select the Course titled “Technology-driven approaches for Neurodevelopmental and Neurodegenerative Disorders” from the list and click on Save option. Complete your registration by clicking on ‘Confirm Course’.

## REGISTRATION FEE:

Faculty (Internal & External) and Scientists from R&D Labs	Rs. 2000
Persons working in Industry/ Consultancy firms	Rs. 4,000/-
Students & Research Scholars • Without award of Grade • With award of Grade	Rs. 1,000/- Rs. 2,000/-
Students from abroad	\$ 50
Faculty/Scientists/Industry Persons from abroad	\$ 100

The Registration fee includes instructional materials, tutorials, laboratory and computer use and free internet facility. The participants will be provided with boarding and lodging in Visitors Block on twin sharing basis on additional payment of Rs. 4,000/-.