Report on
Faculty Development Programme On
ADVANCED COMMUNICATION AND SIGNAL
PROCESSING
(Under TEQIP, Phase-II, subcomponent 1.1)
7th January to 17th January, 2015

A two week faculty development programme on “ADVANCED
COMMUNICATION AND SIGNAL PROCESSING” under TEQIP, Phase-II
subcomponent 1.1 was held at the Department of Electronics &
Communication Engineering of Narula Institute of Technology, under the
patronage of JIS group from 7th January to 17th January, 2015. The major
focus of the FDP is on upgrading the teaching, training, and research skills for
the development of faculty members. It intends to provide opportunities for
faculty members to renew their intellectual vitality and further their
professional growth. The Programme also aims at equipping teachers with
skills and knowledge in the field of communication, signal processing and
image processing that are essential for inculcating learning values in students
and guiding and monitoring their progress towards their career.

The FDP was attended by 45 participants from faculty members of ECE, IT, CA,
Physics, Mathematics department and PG students.

INAUGURAL SESSION:

The esteemed personalities present on the inauguration of the programme:

- Prof.(Dr.) B.L. Espuniyani, Dean R&D, NIT
- Mrs. Nidhi Singh, Registrar, NIT

Dr. S. Panda, HOD of ECE of NIT welcomed all the respected dignitaries and
participants and emphasized the benefits of such kind of resourceful activity.
Prof.(Dr.) B.L. Espuniyani, Dean R&D of NIT appreciated the program organized
by ECE dept. Mrs. Nidhi Singh, Registrar of NIT encouraged for such activities.
07/01/15:

Session I:

Prof. Asoke Dutta, ISI, Kolkata has delivered keynote address on “Speech Recognition”. In this session participants were learned different speech signals and different techniques to recognize speech.
**Session II:**

Prof. D.K.Bhattacharya, RBU, Kolkata has delivered a lecture on “A Journey Fourier to Wavelet Transform”. In this session participants realized the concept of fourier transform, transforming it to short time fourier transform and discrete wavelet transform.

**08/01/15 & 09/01/15:**

**Hands on session:**

A demonstration on “MATLAB” was given by Dr. Arijit Saha, BPPIMT, Kolkata and Mr. Soumitra Singha BPPIMT, Kolkata. At first participants were trained with MATLAB commands and then MATLAB code with typical examples of mathematics, communication and signal processing. They had done some assignments regarding the above areas given by the experts.
12/01/15:

Session I:

Prof. D.K.Bhattacharya, RBU, Kolkata has focused on time series and significance of it in wavelet transform which is used in ECG signal analysis. In this session participants were familiar with the philosophy behind this mathematical illustration.
Session II:

A discussion on “Nonlinear Dynamics-Aspect of Nonlinear Signal Analysis” was delivered by Dr. Sayan Mukherjee, Sibnath Sastri College, Kolkata. In this session participants got the knowledge about the different types of signals and different methods of nonlinear analysis with some practical applications.
13/01/15:

Session I:

Prof. Aniruddha Ghosal, Institute of Radio Physics & Electronics, CU has delivered a lecture on “Microwave Solid State Device”. In this session participants were acquainted with RF diode, PIN switch, microwave FET.

Session II:

Mr. Debasis Mazumdar, CDAC, Kolkata has illuminated on “Introduction to Perception Engineering in Image Processing and Computer Vision”. In this session participants were gained with the knowledge of perception of image and different techniques of image restoration.
Session I:

Mr. Anilesh Dey, Narula Institute of Technology has discussed on “Signal Analysis”. In this session participants realized the significance of different signals, feature extraction by plotting Quantile Quantile plot of ECG signal before and after listening Rabindra Sangeet.

Session II:

Mr. Kaushik Sarkar, Narula Institute of Technology has demonstrated on “Introduction to MATLAB and its Applications in Signals and Systems”. In this session participants gathered knowledge on basic commands of MATLAB like creation of scalar and vector, manipulation of matrix, plotting graphs, file handling etc and also designing of low pass filter was described along with the concept of convolution.
Session I:
Prof. P.K.Banerjee, JU, Kolkata has delivered a interactive lecture on “Cognitive Radio”. In this session participants were learned the architecture of cognitive radio, its working principle, some real time applications.

Session II:
An informative lecture on “Microwave Active Devices” was discussed by Prof. S.Basu, KGEC, Kalyani. In this session participants were learned different devices like TED, transit time device, tunneling device, microwave transistor, MODFET, resonant tunneling transistor, real space transfer transistor.
**FDP/NIT/ECE/2015**

**16/01/15:**

**Session I:**

Prof. Sheli Sinha Chaudhuri, JU, Kolkata has explained “Image Processing”. In this session participants were learned the need of digital image, image acquisition, different techniques of image enhancement, image restoration, image compression, wavelet transform, image segmentation.

![Image of lecture](image1.jpg)

![Image of lecture](image2.jpg)

**Session II:**

Prof. D.N.Tibrewala, JU, Kolkata has delivered a useful lecture on “Human Computer Interfaces”. In this session participants were grown with the knowledge of EEG based BCI control, artificial sensory system, EOG based HCI, tremor compensation by EMG analysis, force plate for stance stability analysis, isolated bio-potential amplifier, EEG signal acquisition etc.
17/01/15:

Session I:

An enlightening lecture on “Mitigation of Inter Symbol Interference with Transmission of Digital Data through a Band Limited Channel” was discussed by Prof. Salil K. Sanyal, JU, Kolkata. In this session participants gathered knowledge on reason behind ISI, mathematical derivation related to ISI, its significance, minimization techniques.

Session II:

An informative discussion on “Mobile Cloud Computing” was delivered by Prof. Debasish De, WBUT, Kolkata. In this session participants realized the concept of cloud computing along with its architecture and applications, femtocell and different research areas related to it.
The program was ended with vote of thanks by Mrs. Arpita Santra, Asst. Prof., ECE Dept., NIT & Jt. Coordinator of the FDP on 17/01/15. Then the certificates were distributed to participants.
OUTCOME:

The discussed topics are very useful for the participants. All the sessions were very much interactive. Participants got the knowledge of most widely used advance technologies in this domain that is helpful for research activity and placement prospect.