Electronics & Communication Engineering Department

UG Programme:

- **Course Name:** Electronics & Communication Engineering
- **Degree:** B-Tech
- **Intake Strength:** 120

PG Programme:

- **Course Name:** Communication Engineering (ECE)
- **Degree:** M.Tech
- **Intake Strength:** 18

- **Course Name:** VLSI & Microelectronics Technology (ECE)
- **Degree:** M.Tech
- **Intake Strength:** 18

Programme Objective

To develop responsible citizens who would 'think global and act local' and become the change agents of society to meet the challenges of future.

Our Objectives:

- ➢ Extensive learning of the basics in addition to intensive focusing on the most trivial areas of Electronics & Communication Engineering to sharpen in design and fabrication of electronic systems as per the requirement of industrial world.
- ➢ Applying the engineering solutions for technical problems and inspiring towards perceiving post graduate programs and encourage towards R&D of the advanced areas of Telecommunication Networks and Embedded System, Signal & Image Processing, VLSI Design etc.
- ➢ Demonstrating the art of excellence in developing the effective communication skills in English and evolving the personality of the students suitable to the dynamic industrial needs.
- ➢ Adopting the characteristics of technical excellence through the systematically organized pedagogical practices in equipping the students with knowledge and practice for competing in the global competitive environment.

- Motivating students to develop professional, ethical attitude, team building skills and multi-disciplinary approach to demonstrate the ideal behavioural qualities while leading the team for deriving maximum productivity.
- Developing consciousness in the issue of social concerns and enabling students to upgrade their personality and experience through community services to have a meaningful linkage between the Institution and Society.

Mission

The primary focus of ECE department of Narula Institute of Technology is two-fold: to expose the students to the world of technology and produce graduates fully equipped to achieve the highest personal and professional standards for Industry application and in higher studies.

HOD's Message:

Prof.(Dr.) Maitreyi Ray (Kanjilal) - Being the Head of the Department of Electronics and Communication Engineering (ECE), I am delighted to express my thoughts about the departmental growth. The average passing result is excellent in the department. Almost 10-15% students scored above 9 DGPA. Apart from this we are running P.G. Program (M. Tech.) in ECE (Comm. Engg.) since 2009. The department of ECE offers premier professional technical training that keeps in pace with the latest developments in the field of Electronics and Communication Engineering. It offers four year full time B.Tech program in ECE. The course is accredited by NBA. We have excellent infrastructure, highly experienced faculties and professionals associated with research work which collectively ensure dynamic and vibrant environment in the campus. Recently one of the Faculty of this department is going to attend one International Conference at Taiwan. The department organized one day IEEE Educational Program on "The Recent Advances on Mobile Computing and Bluetooth Communication" and also organized one day educational tour to The Satellite Earth Station at Kulpi in 2011.Many of our Ex-students are settled in abroad and also many students are engaged in Research work in premiere institutions. Furthermore two MODROB Projects are going on in the department. There is also separate departmental Library apart from the central Library in the ECE department.

Approval / Accreditation:

- UG in Electronics & communication Engineering is accredited by NBA in March 2008.
- All UG and PG courses are approved by AICTE.
- You can find current approval status from here http://www.nit.ac.in/approvals-and-accreditations.php

Faculty Details:

	Name of the Faculty	Designation	Specialization / Teaching Field
Distinguished Faculty Member	Prof. (Dr.) A.K.Mallik	Professor	Microwave
	Prof. (Dr.) P.K.Banerjee	Professor	Communication
	Prof. (Dr.) Jyotirmay Das	Professor	Image Processing, Soft Computing
	Prof. (Dr.) Amitava Das	Professor	Embedded System
	Prof. (Dr.) M.R.Kanjilal	**Professor and Head**	VLSI Design & Circuits, Analog Electronics, Solid State Devices, EM Theory, Antenna
Departmental Faculty Member	Saradindu Panda	Assistant Professor	VLSI Design, EDA, Solid State Device, Analog Electronics, Digital Electronics
	Surajit Bari	Assistant Professor	VLSI Design & Circuit, EDA, Solid State Devices, Analog Electronics, Tele-Communication, Audio & Video

			Engineering
Departmental Faculty Member	Anilesh Dey	Assistant Professor	DSP, Microprocessor, Digital Electronics, Image Processing
	Kaushik Sarkar	Assistant Professor	DSP, Signal & Systems, Analog & Digital Communication
	Sangeeta Roy	Assistant Professor	Communication, Digital Electronics, Opto-Electronics,
	Pranab Hazra	Assistant Professor	Communication, DSP, Microprocessor, Pattern Recognition
	Sandhya Pattanayak	Assistant Professor	Advanced Communication, Opto-Electronics
	Arpita.B. Santra	Assistant Professor	Microwave, Antenna, EM Theory, Digital Electronics
	Soumen Pal	Assistant Professor	VLSI Devices, Solid State Devices, EM Theory, Analog Electronics, Embedded System
	Damayanti Ghosh	Assistant Professor	VLSI Design & Circuits, Analog Electronics, Solid State Devices
	Swati Banerjee	Assistant Professor	Microprocessor, Digital Electronics, Photonics & Optical Communication
	Dola.B.Gupta	Assistant Professor	Communication
	Arnima Das	Assistant Professor	Communication, Analog Electronics,

	Piyu Sarkar	Assistant Professor	Analog & Digital Communication, Analog Electronics, Digital Electronics
	Abhijit Ghosh	Assistant Professor	Microwave, Antenna, EM Theory, Basic Electronics
	Sohan Ghorai	Assistant Professor	Embedded System, Microprocessor, DSP, Image Processing, Soft Computing
	Payel Biswas	Assistant Professor	Communication, Image Processing
	Puspak Pain	Assistant Professor	Analog Electronics, EM Theory, Microwave, Solid State Devices, Opto-Electronics
	Rimpi Dutta	Assistant Professor	Digital Communication, Analog & Digital Electronics, Basic Electronics
	Moupali Roy	Assistant Professor	Basic Electronics, Digital Electronics, Analog & Digital Communication

Eminent Member in Department / Board of Studies (BOS):

Name	*Designation*
Mr. Monish Mukerjee	Ex. Advisor, WBEIDC Ltd. IT Expert, CMU Municipal Affairs Dept. Saltlake, Kolkata
Prof . Monojit Mitra	Department of Electronics & Telecommunication Engineering Bengal Engineering & Science University
Prof. P.K.Banerjee	Retd. Professor Jadavpur University
Prof. A.K. Mallik	Retd. Professor IIT-Kharagpur

Syllabus:

Currently we follow WBUT defined syllabus, which can be located from the following link

http://www.wbut.ac.in/page.php?id=195

http://www.wbut.ac.in/syllabus/ECE_Final_Upto_4th_Year%20Syllabus_11.04.13.pdf

Now we are getting ready for autonomous college and syllabus has been redesigned by our department.

Curriculum beyond Syllabus:

➢ Technical Student Paper Contest
➢ Technical Quiz Contest
➢ Technical Debate
➢ Poster & PPT presentation (in technical association with ISF)

Course Module beyond Syllabus

Course Module	Type of Update	Implementation	Educational Objective
Digital Signal Processors	Course Module Update	Between 6th and 7th semester	Achieve Curriculum coverage, project quality and employability improvement
Audio Video Engineering	Bridge Curriculum Gaps	Between 6th and 7th semester	Achieve Curriculum coverage, pre-requirements for image processing
Microcontroller	Course Module Update	Between 7th and 8th semester	Achieve Curriculum coverage, project quality and employability improvement
Antenna	Course Module Update	Between 5th and 6th semester	Achieve Curriculum coverage, project quality and employability improvement
Analog & Digital VLSI	Course Module Update	Between 7th and 8th semester	Achieve Curriculum coverage, project quality and employability improvement

Student's Project:

B-Tech Student Project (ECE)				
Name of The Student(s)	Project Title	Areas of Specialization	Project Supervisor(s)	Contribution/ Achievements / Research Output
Academic Year 2012 - 2013				
Ajitava Kundu, Anirban Jyoti Hati, Alekhya Choudhury, Sayan Giri	Optimization of parasitic capacitance and power consumption of MOS device using Genetic algorithm to design VLSI circuits in nano scale and an introduction to spintronics	VLSI	Surajit Bari	Optimization of Device Parameter, Application of Search Algorithms in device modeling

Satarupa Dutta, Poulomi Das, Somdyuti Paul, Karabi Bajaj	digital Image Recognition Systems	Image processing	Soumen Pal	Algorithm Development
Chandrani Chatterjee, Harit Maity, Debopom Sengupta, Pradipta Roy	DTMF Control Robocar	Robotics	Sangita Roy	Contribution in automotive electronics
Shouvik Saha, Atanu Das, Partha Saha, Arnab Sarkar	Effect of music and meditation in heart rate variability	Signal & System	Anilesh Dey	Contribution in Medical Instrumentation
Saikat Chakraborty, Kalyan Zamindar, Apoorba Lal Shaw, Ayan Dey	Automatic level crossing railway gate controller with signal and alarm system	Circuit design with Microcontrller	Payel Biswas	Commercial application of microcontroller circuit
Academic Year 2011 - 2012				
Soumyajit Nath, Saheli Nag, Saikat Bhattacharya, Bapi Sadhukhan	Solar Panel Based Battery Charger	Circuit Design	Prof. (Dr.) M. R. Kanjilal	Application of green engineering
Rukhmini Roy, Ayan Roy Choudhury, Shibaprasad Bandyopadhyay, Subarna Shekhar Gaine	Optimization of power delay and noise of a differential amplifier for RF	VLSI	Saradindu Panda	National Conference paper presented at SIT
Priyanka Mukherjee, Bijeta Sen, Manali Bhattacharya, Jinaga Madhavi	Wireless Voice Transmitting and Receiving using IR sensor	Analog Circuit	Dola Bhatterjee Gupta	Circuit design for use in communication
Saikat Das, Dipta Pandit, Haritri Goswami, Srijani Panda	Wireless Electrical Power Transfer by Induction	Circuit Design	Pranab Hazra	Circuit design focusing to power transfer
Anshu Kumar, Niraj Kumar, Joyprakash Gupta, Amrita Mahapatra	Integration of Wimax & UMTS	Communication	Sandhya Pattanayak	Improvement of communication protocol
Academic Year 2010 - 2011				
Jayeita Chakraborty, Arundhati Ghosh, Saurav Das, Subhadip Bose	Hardware Interpretation of Door Minder	Circuit Design	Surajit Bari	Circuit Design for Industrial Application
Pratima Kundu	Biomedical Signal Processing	Signal Processing	C.R.Datta	Application for Medical Electronics
Shantanu Banerjee, Rangit Banerjee, Arnab Banerjee, Sudip Banerjee	Electronic Sound Generator Using Micro-Controller	Microcontroller	Anilesh Dey	Circuit Design for Home Automation
Raja Bera, Pratik Chakraborty, Shoaib Mohd Ali, Supratim	Intelligent Path Planning of A Mobile Swarm Optimization	Mobile Communication	Damayanti Ghosh	Optimization technique used in mobile

				communication
Saha				
Piali Saha, Tanushree Mukhopadhyay	Energy Conservation Using Infrared Intrusion Detector	Circuit Design	Saradindu Panda	Smart Home Application

Laboratory Details:

A very good Laboratory facility available in ECE department. All laboratories equipped with modern instruments. Departmental Laboratory details have been listed below:

Lab Names	Space & No. Students can perform experiment	Quality of instruments
Basic Electronics Lab	1250 sqm, 40	All the basic equipment including CRO, Function Generator, Multi Utility Power Supply unit, Trainer Kit, Modern Digital Multimiter,
Digital Electronics Lab	1250 sqm, 40	All the basic equipment including CRO, Function Generator, DSO, IC Tester
Analog Electronics Lab	1250 sqm, 40	All the basic equipment including CRO, FG, LCR Meter, Distortion Meter, DSO, Output Power Meter
Communication Lab	1250 sqm, 40	All the basic equipment including CRO, Function Generator, DSO, Distortion Meter,

		Spectrum Analyser
Advanced Communication Lab	1250 sqm, 40	All the basic equipment including ISDN trainer Kit, GSM Kit, GPS and Satellite Communication Kit
Microprocessor & Microcontroller Lab	1250 sqm, 40	All the basic equipment including CRO, 8085 trainer kit, 8051 trainer Kit, PIC trainer Kit, Interface Modules, Chip Burner etc.
Signal & Systems Lab	1250 sqm, 40	Basic equipment like CRO, Function Generator, and Softwares like Matlab, Scilab, CCS
Antenna & Wave Propagation Lab	1250 sqm, 40	RF Trainer kit, Signal Analyser, CRO, Function Generator, Power Meter, Power Sensor, Transmission Line Analyser, EMI EMC trainer , Microstrip Printed Antenna, Patch Antenna, Microstrip Yagi Antenna, Signet Antenna Software Interface
Solid State Devices Lab	1000 sqm, 40	All the basic equipment including CRO, Function Generator, Power Supply and T-Spice software
VLSI & DSP Lab	1000 sqm, 40	All the basic equipment including CRO,

		Function Generator and software like Tanner EDA, Altera, Xilinx, Active HDL, CCS, Matlab
Microwave Engineering Lab	1250 sqm, 40	All the basic equipment including CRO, Spectrum Analyser, EMI-EMC Trainer , Microstrip Printed Antenna, Patch Antenna, Microstrip Yagi Antenna, Signet Antenna Software Interface
EDA Lab	1000 sqm, 40	All the basic equipment including CRO, Function Generator and software like Tanner EDA, Altera, Xilinx, Active HDL, CCS, Matlab
Embedded System Lab	1000 sqm, 30	Advanced Microcontroller (MCS51, PIC, AVR) Development Kit, Altera CPLD Kit, Xilinx FPGA Kit, Multi unction Chip Burner, DSO, Function Generator and Software Like Xilinx ISE, Altera, keil uVision, Matlab, Proteus e.t.c
Equipment Servicing Lab	Special Unit, not for student access but a special class is conducted by that unit to familiarize students about the insights of hardware.	In house servicing of all equipment in the above mentioned laboratory.

Details of Laboratory and Instruments can also be found from links given below

Research Publications & Books:

Faculty Name	International Journal	National Journal	International conference	National Conference	Books
Prof. (Dr.) A.K.Mallik	1	0	0	0	1
Prof. (Dr.) P.K.Banerjee	14	0	4	0	0
Prof. (Dr.) Jyotirmay Das	2	0	0	0	0
Prof. (Dr.) M.R.Kanjilal	2	1	3	4	4
Prof. Saradindu Panda	8	0	6	7	3
Prof. Surajit Bari	0	0	2	0	0
Prof. Anilesh Dey	4	0	5	1	0
Prof. Kaushik Sarkar	1	0	2	0	0
Prof. Sangeeta Roy	3	0	0	2	0
Prof. Pranab Hazra	0	0	0	1	0
Prof. Sandhya Pattanayak	1	0	3	0	0
Prof. Arpita.B.Santra	0	0	0	1	0
Prof. Damayanti Ghosh	1	0	2	3	0
Prof. Swati Banerjee	0	0	1	0	0
Prof. Dola.B.Gupta	0	0	4	1	0
Prof. Arnima Das	0	0	1	0	0
Prof. Piyu Sarcar	0	0	1	0	0

Prof. Abhijit Ghosh	0	0	1	0	0
Prof. Sohan Ghorai	0	0	1	0	0
Prof. Puspak Pain	0	0	0	2	0
Total	**37**	**1**	**36**	**22**	**8**

(All publication count updated after joining of his/her at the Institute)

Success Rate of Students:

Item	2013 Pass Out	2012 Pass Out	2011 Pass Out
Number of students admitted in the corresponding First Year + laterally admitted in 2nd year	129	66	66
Number of students who have graduated in 4 years	127	64	66
Success Index (SI)	0.98	0.97	1

(Success index indicates the throughput at that year)

Student's Achievement:

	Contest	Date	Name of the Participants	Achievements
Academic Year (12-13)	**Technical Debate Contest "Word Wars-2013"** organized by ECE department, Narula Institute of Technology	17th April 2013	Ravi Kumar, Dipanjan Datta Roy, Mainak Chakraborty, Sidharth Majumder, Pratik Kumar Chakraborty, Chiranjit Mishra, Ayush Kumar Pathak, Dheeraj Kumar	Champion
	Technica Quiz Contest "Qtronics-2013" organized by ECE department, Narula Institute of Technology	3rd April 2013	Pratik Kumar Chakraborti, Snehalika Lal, Ayush Kumar Pathak, Deepu Kumar	Champion
	Technical Student Paper Contest-2012 organized by ECE department, Narula Institute of Technology	18th October 2012	Soumyadeep Ghosh, Sneha Jain	1st Prize for Best paper
	"Wizard of Math" arranged by MBA department, Narula Institute of Technology	October 2012	Snehalika Lal, Rituraj Kumar	Champion
	Akshiti 2012 Technical Fest organized by Adamas Institute of Technology	27th – 29th September 2012	Pallavi Agarwal, Sanjay Kumar Yadav	2nd Prize owner
	Techstorm 2.12 organized by B.P.Poddar Institute of Technology and Management	July 2012	Sanjay Kumar Yadav, Pallavi Agarwal, Arshi Tahangir, Nitesh Verma, Archana Sinha	Champion
Academic Year (11-12)	**ICCIA 2011** International Conference	26-28th December 2012	Anirban Nandi, Poulami Samaddar, Partha pratim Sarkar, Suryadeepta Dash	Research Paper Contribution
	Robomania-2012 organized by Netaji Subhas Institute of Technology	May-2012	Pratik Kumar Chakraborty, Dhiraj Kumar, Ayush Mishra, Supriyo Srimani, Sumit Jaiswal	1st Prize For Project
	"ANADIGIX" organized by IIT-Kharagpur	July 2011	Srimanta Mondal, Subhadip Roy, Anirban Acharya	Champion

	Participation in **Robotics** Event at BESU and Klyani Govt. Engg. College	October 2011	Srimanta Mondal, Anirban Acharya	Champion
Academic Year (10-11)	**"Wizard of Math"** arranged by MBA department, Narula Institute of Technology	May 2011	Swarnali Bhattachrya, Snehalika Lal, Ayush Kumar Phatak, Anand Kishore Jha, Deepanjan Saha	Champion
	Poster Presentation IEEE-CALCOM by ECE department, Narula Institute of Technology	26th March 2011	Monami Garai, Karabi Bajaj, Sonali Bhowmik, Somalya Das, Aveek Chatterjee	1st Prize For Presenting "Touch Screen technology"
	"ROBOWAR" organized at Narula Institute of Technology	2010	Anirban Jyoti Hati, Sayan Giri, Ajitava Kundu, Alekhya Chowdhury	Champion
	"EXPLORE" organized by IIT-Kharagpur	2010	Subhadip Roy, Anirban Acharya	Champion

Placements & Higher Studies:

We have a very good quality placement and higher studies record till now. A statistics of 3 years given below
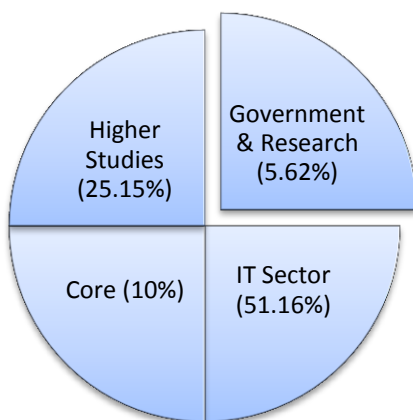

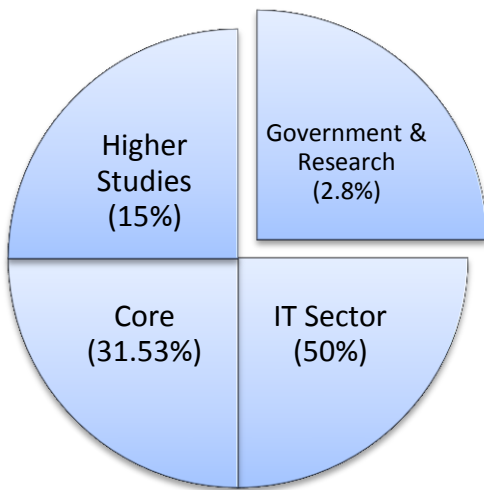**Figure 1 - Placement Record of 2013 Passout Batch**

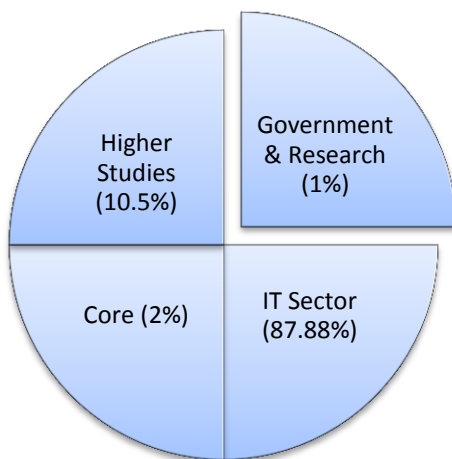**Figure 2 - Placement Record of 2012 Passout Batch**

Higher Studies (15%)
Government & Research (2.8%)
Core (31.53%)
IT Sector (50%)

Figure 3 - Placement Record of 2011 Passout Batch

Higher Studies (10.5%)
Government & Research (1%)
Core (2%)
IT Sector (87.88%)

Details of Company visited in our institute and training record can be found from the link given below

http://www.nit.ac.in/training-placement.php

Professional Activities:

Student's Chapter:

IETE Student Forum (ISF) has been inaugurated at ECE Department, Narula Institute of Technology under the patronage of JIS group on 14th February 2013.

The Institution of Electronics and Telecommunication Engineers (IETE) is India's leading recognized professional society devoted to the advancement of Science and Technology of Electronics, Telecommunication & IT, founded in 1953. It is our gratification to inaugurate the ISF at the diamond jubilee year of IETE. The IETE Students' Forum of NIT has been set up with 52 student members from ECE dept through the involvement of faculty members of the department. The IETE Centre, Kolkata region provided support and coordination in the establishment of the forum.

The Executive Committee of the IEEE Calcutta Chapters ComSoc and Narula Institute of Technology had decided to organize an One-Day Educational Program in 2011 in keeping with the goals and missions of the IEEE as well as JIS group.. The program was then finalized as IEEE CALCOM 2011 on 26th March 2011.

Event Organized:

- ➢ "ROBOWAR" contest organized by ECE department in the year 2010.
- ➢ IEEE-CALCOM poster presentation organized by ECE department on 26th March 2011.
- ➢ One day educational programme on "Advances on Mobile computing and Bluetooth Communication" supported by IEEE Calcutta Chapter.
- ➢ Industrial tour to "Satellite Earth Station of BSNL" at Kulpi.

- One day seminar on "Wireless & Cellular Communication-New Technological Developments" organized by ECE department on 23rd July 2012.
- National workshop on "Antenna Modeling using HFSS and its Applications" organized ECE department on 22nd-23rd June 2012.
- "Technical Student Paper Contest" organized by ECE department on 18th October 2012
- Inauguration of IETE Student Forum (ISF) organized by ECE department on 14th February 2013.
- One day Industrial Tour in "SIMOCO Telecommunication" on 5th March 2013.
- "Conceptronics"-Technical Writing Competition sponsored by IETE on 18th March 2013.
- Technical Quiz Contest "Qtronics-2013" organized by ECE department on 2nd and 3rd April 2013.
- "TechTornedo"-PPT Competition sponsored by IETE on 16th April 2013.
- National Seminar on "Advanced Microprocessor & VLSI Devices" organized by ECE department on 11th April 2013.
- Technical Debate Contest "Word Wars-2013" organized by ECE department on 17th April 2013.

Many Event initiatives taken by our department throughout the year and can be found in our event calendar list.

http://www.nit.ac.in/pdf/event-calendar/Calendar_for_events_ECE.pdf

Recent updates about various events list can be found from the link given below

http://www.nit.ac.in/events.php

Details of Professional Society Activity can be found from the link given below

http://www.nit.ac.in/pdf/professional_soceity_activities.pdf

Faculty Interaction with Professional Society:

Faculty Name	Interaction with Professional Society
Prof. (Dr.) M.R.Kanjilal	IEEE Electron Device & MTT Society Member IETE Member ISTE Member
Prof. Saradindu Panda	IEEE Member
Prof. Anilesh Dey	IEEE Member
Prof. Kaushik Sarkar	IEEE Computational Intelligence Society Member
Prof. Sangeeta Roy	IEEE Member IETE Member IEE Member
Prof. Pranab Hazra	IEEE Member ISTE Member
Prof. Sandhya Pattanayak	IEEE Member
Prof. Soumen Pal	ISTE Member
Prof. Damayanti Ghosh	IEEE Member
Prof. Dola.B.Gupta	IEEE Member
Prof. Sohan Ghorai	IEEE Robotics & Automation Society Member

Distinguished Alumni:

- Sanjay Bhadra (ISI Research Fellow)
- Subhadip Roy (Scientist , BARC)
- Pallab Kumar Nath (PhD, IIT-Kgp)
- Ayon Roy Chowdhury (CSIR Delhi)
- Rukmini Roy (CSIR Bangalore)

and many more names….. which cannot be listed due to space problem.

Industry Interaction:

Industrial Visit:

ECE Department of Narula Institute of Technology, an initiative by JIS Group organized an one day educational tour on 17th of May, 2011

One day Industrial Tour in "SIMOCO Telecommunication" on 5th March 2013.

Expert Lectures:

Mr. Sunirban Ghosh from IBM Kolkata, Mr. Pinaki Sengupta from Wipro, Dr. Swarup Mondal from Wipro Ltd given lectures on "Advances on Mobile Computing and Bluetooth Communication" on 26th March 2011.

Mr. Shrinivas Bhat & Mr. Sarat C, experts from ENTUPLE Technologies lead the participants to design different model on HFSS in the workshop "Antenna Modeling using HFSS and its Applications" organized ECE department on 22nd-23rd June 2012.

Dr. M.H.Kori, Technology Advisor, Validus Technologies USA, given lectures on "Wireless & Cellular Communication-New Technological Developments" organized by ECE department on 23rd July 2012.

Mr. Chanchal Chakraborty from Uninor Communication had given lectures on "Mobility – Basic to Broadband" on 21st February 2013.

Prof. D.Roy Chowdhury and Prof. Sanatan Chattopadyay from Calcutta University given lectures on "Advanced Microprocessor & VLSI Devices" organized by ECE department on 11th April 2013.