

## DIRECTOR'S REPORT

Hon'ble President of India and the Chief Guest of the function, Shri Pranab Mukherjee, Chairman, Board of Governors, Dr. Vijay Bhatkar, Members of the Board and the Senate, Degree recipients, Distinguished Guests, Colleagues, Ladies and Gentlemen,

It is a great pleasure for me to welcome you all to this 44th Annual Convocation of Indian Institute of Technology Delhi, and to present to you a brief report highlighting our activities, achievements and future plans.

We are highly honored and pleased to have with us Shri Pranab Mukherjee, Hon'ble President of India and Visitor to the Institute, who has kindly agreed to be the Chief Guest on this solemn occasion.

Shri Pranab Mukherjee assumed office as the 13th President of India on July 25, 2012, crowning a political career of over five decades of exemplary service to the nation in Government as well as Parliament. Shri Mukherjee is a man of unparalleled experience in governance with the rare distinction of having served at different times as Foreign, Defence, Commerce and Finance Minister. A powerful orator and scholar, Shri Mukherjee's intellectual and political prowess as well as remarkable knowledge of international relations, financial affairs and parliamentary process are widely admired. He has been acclaimed for his role as a consensus builder on difficult national issues through his ability to forge unity amongst the diverse political parties that form part of India's vibrant multi-party democracy.

Shri Mukherjee has authored several books on the Indian Economy and on Nation Building. The awards and honours conferred on him include India's second highest civilian award, Padma Vibhushan in 2008,

the Best Parliamentarian Award in 1997 and Best Administrator in India Award in 2011. He was rated one of the best five Finance Ministers of the world in 1984 according to a survey conducted by "Euro Money" Journal published from New York and was declared 'Finance Minister of the year' for Asia in 2010 by "Emerging Markets", the journal of record for the World Bank and the IMF.

Shri Pranab Mukherjee's presence today is a source of inspiration to our students and all of us, and we look forward to his words of wisdom and advice to our graduating students.

At the outset, it is a great pleasure and privilege for me to share with everyone present here that in the latest survey conducted by various agencies such as QS, India Today and Outlook, IIT Delhi has been ranked in the first position amongst all the engineering colleges in India. In the QS World University rankings, IIT Delhi has been ranked at the thirty eighth position amongst the engineering institutions in the world with Electrical and Mechanical Engineering departments being on the top. The Institute has taken a focused approach to improve its rankings further by various agencies.

Over the years, quietly but surely, we have built a strong research tradition, which can be seen by the impressive statistics in terms of various research indicators. Specially, we have continuously improved on our credentials in research as evidenced by way of publications and citations and Ph.Ds per faculty. Amongst the degree recipients this year, we have 188 scholars receiving the Ph.D. degree. Our target of continuously searching for and significantly increasing the intake of quality candidates into our Ph.D programmes is on the right course and we have

grown to a significant level in this direction over the past few years.

IIT Delhi takes pride in its teaching traditions, and we take our teaching function at all levels very seriously. We take special pride in the traditions that we have built over the years for providing best all round education to our students which not only helps them become great scholars and specialists in their subjects of study, but also transforms them into creative and socially responsive human beings. Our aim is not only to teach students, but also make them wise, by helping them to develop an understanding of the complexities of human nature and the difficulties of living an examined life. We believe that a good education challenges its students to ask questions that may be disturbing, but are very relevant. That is the only way to come to grips with the basic questions of life at a personal level.

Our alumni have shown excellent achievements in every sphere of life and every part of the world. The recent examples are Dr. Raghuram Rajan, the newly appointed Governor of Reserve Bank of India, and Dr. Avinash Chander, the Scientific Advisor to the Raksha Mantri.

IIT Delhi is committed to provide excellent human resource to meet national needs and global expectations. It is a unique institution and a dream destination for those who wish to be leaders in science, technology and management. IIT Delhi is internationally recognized for delivering excellent education at the undergraduate and postgraduate levels, while endeavoring to become a great research institution. On this solemn occasion, it is my great pleasure and privilege to share with you all our initiatives, achievements and progress made in various areas of our activities since the last convocation of the Institute.

While excellence has many parameters, setting up of state-of-the-art teaching and research infrastructure does require resources. With the support from the Government of India, industry and the alumni, IIT Delhi has been able to create an excellent infrastructure. While the Government has supported us with generous funding for which we are grateful, our alumni have extended significant support to the institute. Our alumni have given donations to help us take some of our important projects forward, in addition to instituting Chairs and the Young Faculty Incentive Fellowships, both of which help us to reward our bright faculty for their outstanding performance. The Industry and the alumni of the Institute have extended significant support to the Institute in its academic and research programmes by way of instituting chairs in various fields. 41 such Chairs are currently functional at the Institute. Out of this, two Chairs have recently been instituted, viz., Astra Microwave Dr. R.P. Shenoy Professorial Chair and Industry Chair in Bharti School.

50 acres of land in Sonapat has been transferred by the Haryana Government to IIT Delhi for establishment of the extension campus. Faculty Development Centre, Engineering related Science and Technology Park and High Performance Computing Facility are proposed to be established at this extension center. Institute has also received an allotment letter for additional 50 acres of land from the Haryana Government for establishment of extension campus at Jhajjar. It is proposed to establish a Science Park related to Biological Research activities at this campus. Task Forces have already been constituted for initiating activities at both the extension campuses.

A Mini Science Park at the Institute Campus is also being planned to be setup. The Park is proposed to house inter alia, Technology Business Incubator and Accelerator Facilities, Design Innovation Centre,

Fab Lab, Technology Transfer Office, Biotechnology Business Incubator, Specialist Development Program Centres etc. The co-ordination of the science park program right from the conceptual stage on-wards has been entrusted to Foundation for Innovation and Technology Transfer (FITT).

MOU for starting IIT Delhi Research Academy in Mauritius (IITDRA) has been forwarded to the Govt. of Mauritius. It is expected to start the academy from the next academic year.

The proposal for setting up of high performance computing research facility at IIT Delhi has been approved with estimated budget of Rs. 1500 lakhs.

Work has been initiated for preparing a comprehensive Vision Document of the Institute.

The Institute participated in CNN-IBN upcoming series on Engineering Colleges, entitled "Engineering India on CNN-IBN" to project IIT Delhi Vision. The series was telecasted on 26th May 2013 and 1st June 2013.

To enhance the research the Institute has decided to offer initially about 50 Post-Doctoral Fellowships (PDF) at IIT Delhi. These are temporary research positions that may be offered to those who seek to choose research as a profession. These positions are open to researchers within India and abroad. It is believed that the presence of the post-doctoral fellows at the Institute will further strengthen the research culture and output of the Institute and help promote inter-disciplinary research.

The Standing Committee of the IIT Council has decided to have periodical peer review of the Institute. The review would include parameters related to International comparability, Outreach to community, Commitment to National Goals, Sustainability,

Linkages with industry and Economy development. The Institute has already initiated an internal review process to evaluate its readiness as per the guidelines of the MHRD.

Advisory committee for initiating Policy Program under Humanities and Social Sciences Department at IIT Delhi has been constituted. In addition, under an agreement with University of Nebraska, activities on Cyber security and information assurance have been initiated. Formation of a new Center for Excellence in Cyber Security and Information Assurance is underway.

To procure, run and maintain transparency, the Central Research Facilities of the Institute will henceforth be operated under one umbrella headed by an independent Head assisted by an Associate Head.

The Institute has commissioned a new unit called Environment Health and Lab Safety Unit. This is first of its kind in the country that will address to the safety needs and environmental health issues of the Institute.

A bimonthly eNewsletter of IIT Delhi "Between the Lines" has been started to collate and disseminate the information on various activities and progress of the Institute.

The Institute believes in the maxim that no deserving student, however weak in financial backing, should be denied the opportunity of education at IIT Delhi. To encourage and to provide financial incentives to meritorious students and assistance to the needy students of the institute, individuals, trusts and organisations have been instituting scholarships, awards, etc. at the Institute. At present, there are 168 awards/scholarships/medals being given at the Undergraduate and Postgraduate level. In addition,

the Institute has a “Loan Scholarship Scheme” which makes it more affordable for the students who take loan from banks. Additional Medals, Awards, Fellowships and Scholarships instituted during the previous year include Shri C.V. Indulkar Cash Award, Shri A.N. Dutta Memorial Award and Shrimati Jwala Devi-Sita Ram Kaushik Award.

The Growing visibility of the Institute has been steadily leading to a larger role in partnerships. The Institute has been actively involved in collaborative programmes with national and international organizations/universities to remain at the forefront in scientific and technological development and to share the knowledge for mutual benefits. IIT Delhi has currently 78 operational MoUs/Agreements with Foreign Institutions/ Organizations and 61 MoUs / Agreements with Indian Institutions/Organizations. The main objectives of collaboration include exchange of students and faculty, joint research, and fellowships for training and research at doctoral and post-doctoral levels. Recently executed MoUs include those with University of Alberta, Canada; Universitat Rovira Virgili, Tarragona; Beijing Institute of Technology; Trinity College, University of Dublin; Manchester Metropolitan University, UK; Toyo University, Japan; UN-CECAR University Network for Climate and Ecosystem Change Adoption Research; University of Southern Australia; Institute of Engineering, Tribhuvan university, Nepal; Toyohashi University, Japan; Anil Kriplani, Vera Kriplani, USA ; Centre for Excellence in Science for Sustainability in Africa (CESSAF); IIT Bombay; IIT Roorkee; Paris Tech-Paris Institute of Science and Technology- France; Tajik Technical University- Tajikistan; University of Dar es Salaam- Tanzania; George Simon Ohm University of Applied Sciences- Nuremberg; India 4EUII Exchange Programme under EMECW Italy; eWater an Australia’s government owned water modeling organization

at Canberra; Australia and National Institute of Technology- Calicut, India; Tallinn University of Technology, Estonia; Telecom Ecol de Management Evry, France; ETS, Montreal; National University of Columbia and with Ministry of Earth Sciences, TWAS under TWAS-UNESCO.

Over the years, the Institute has expanded its teaching and research interests in a wide range of areas of national importance and current relevance, including among others, Atmospheric Sciences, Embedded Systems, Environmental Science & Engineering, Rural Industrialization, Bioinformatics, Nanotechnology, Fibre Optics and Optical Communications, Biotechnology, Bio-catalysis, Smart and Industrial Textiles, Transportation, Photo-thermal energy conversion, Material Science, Photo-acoustic Microscopy, Power Technology, Signal processing, Opto-electronics, Computer Science, Computer Aided Design & Manufacturing, Smart Buildings and Infrastructure, Artificial Intelligence and Robotics and others. Most recently, the Institute has set up the School of Biological Sciences, with a thrust on research in communicable and non-communicable diseases.

An Institute, we believe, is as good as its people. Besides the excellent body of 7968 students, our greatest asset is the 483 highly qualified faculty, emeritus professors, emeritus fellows, visiting professors, scientific and design staff including programming and library staff, 815 non-academic staff and an excellent infrastructure. These form the backbone of all our activities and excellence. One of the important factors for our success, image and branding is the cordial relationship between the management and the staff. Every employee in IIT Delhi considers himself/herself as part of Team-IIT Delhi and this feeling of belongingness expresses itself in our enhanced output. To enhance the efficiency

of our employees, many training programmes on computer skills, communication skills, use of Hindi in official work and refresher training programmes are regularly conducted. Executive Development Programmes, particularly for the Officers, were also conducted this year. Officers and employees were deputed for training to help them update and upgrade their knowledge on administrative rules and provisions of Government of India. To encourage the employees to work in Hindi and also in compliance with the direction of the Government, special training programmes were conducted. IIT Delhi was amongst the first educational institutes in the country to make extensive use of automation in its administrative functions a few decades ago. Our Administrative Computerization Unit (ACSS) is responsible for development and maintenance of software requirement of various administrative units of IIT Delhi. ACSS and Computer Services Centre of the Institute are contributing towards the new initiatives/changeover of functionalities of the institute from the existing Ingres character based system to modern ERP systems. The new ERP for Academic Systems related to all students has already been launched and the initiatives have also started for rest of the administrative functions.

The Institute has a computerized hospital centrally situated in the campus, headed by the Chief Medical Officer with a team of 9 full-time Medical Officers. The Hospital is also visited by part-time specialists from reputed hospitals, including All India Institute of Medical Sciences and Safdarjung Hospital in the fields of Orthopaedics, ENT, Ophthalmology, Skin disease, Radio Diagnosis, Psychiatry and Ayurvedic treatment. It provides facilities for OPD and limited In-Patient treatment. The Hospital is well equipped to take care of primary emergencies. It has a Dental Unit, a Pathology Lab, and an X-ray Department which undertakes routine radiography and ultrasonography.

There is also a Physiotherapy Unit with modern equipments. The Electrocardiogram (ECG) facility is available in the OPD and Emergency. The emergency medical facilities are available round the clock. Our hospital is a recognized Centre for Pulse Polio Immunization, Measles, Matri Suraksha Abhiyan and other programs of the Government. The Hospital also organizes Guest lectures by eminent doctors in various fields of medicine and preventive health check up camps. Some of the new initiatives taken in this year to improve the efficiency of the hospital are as under:

- The hospital is providing OPD services for longer hours 8 am to 8 pm.
- A chemist shop has been established, for easy availability of medicines at discounted rates.
- The Contractual doctors and paramedical staff number has been increased.
- Newer modalities like Dental X-ray Machine and MWD for physiotherapy room were procured and a new digital X-ray machine is being installed.
- Overall structural and functional upgradation of hospital has been initiated with new OPD complex coming up besides the old hospital building.
- A new well-equipped ambulance has been purchased.
- IIT hospital has a website now, which updates community on issues related to health and disease and doctor availability and information about other free health camps.

## **FACULTY**

It is a cliché to say that the quality of an academic institution largely depends on its faculty. Our faculty

is one of the finest in the country and is recognized internationally for their quality of research, teaching and curriculum development. They also contribute greatly for the development of the nation by being associated with a large number of decision making bodies, providing crucial guidance and advice on policy matters and technical issues. Many of our faculty members serve on the editorial Boards of reputed journals, peer-review papers for publications, serve on committees for recruitment of professionals, and are on the Boards of many institutions and organizations. 30 new faculty members have joined the Institute this year, which has enhanced our competence in several emerging areas, while bringing new energy into our academic endeavors. The people joining us as faculty members, are amongst the finest available globally, and sought after, by all the reputed graduate schools of the developed world. Offers of appointment have been issued to 20 selected candidates who are expected to join soon.

Searching and recruitment of bright faculty is one of our most important missions, since therein lies the future of the Institute. Our Board of Governors is seized of this issue, and has played a very positive and constructive role in approving policies, which empower the faculty to deliver their best in both teaching and research. On our part, we are trying to reach out to the potential faculty members through a variety of means, including round-the-year search and recruitment and on-line submission and processing of applications.

During the period under report, international bibliographic databases have indexed 2484 research articles published by faculty members and researchers of the institute in international journals including 1696 articles indexed in Scopus, an international indexing service in Science & Technology and Social Sciences. The faculty members have also presented a

similar number of papers in national and international conferences. Besides, they have also published many books and conducted several continuing education programmes. The Institute supported participation of 185 faculty members to international conferences and 106 faculty members for national conferences this year. Many more participated with financial support from sponsored projects, and other funding agencies. The Institute provides seed research funding to the new faculty upon joining the Institute to the tune of Rs. 10.00 lakhs (or more when necessary). During the year, 29 Young Faculty Fellowships have been awarded. To encourage the new faculty for developing research facilities in the area of their expertise, the Institute sanctioned the New Faculty Research Grant of a total of Rs. 268 lakhs to 23 faculty members during the financial year 2012-2013. During the financial year 2013-14, a sum of Rs.500 lakhs has been earmarked for New Faculty Research Grant, out of which, Rs. 242 lakhs has been released to 27 faculty members, upto October, 2013.

On the initiative of the Director, a meeting with all the faculty members of the Institute is held on a regular basis once in every semester to share the vision and initiatives taken and also to have an opportunity to receive feedback and expectation from faculty members. With the approval of Board, the various faculty designations, status, eligibility, limit, duration etc. in respect of faculty other than regular cadre has been implemented. Revised Guidelines for operations of Professional Development Allowance for the block of three years from 2013 to 2016 have been approved by the Board and implemented. A calendar in connection with faculty affairs for the academic year 2013-2014 has been devised and circulated to all faculty members. The Institute has undertaken recruitment under special drive for SC/ST/OBC/PH.

## FACULTY AWARDS AND RECOGNITIONS

Our distinguished faculty colleagues continue to make a difference to the world of Science, Engineering, Humanities and Management, and continue to earn recognition and awards, which bring glory to the Institute. Many of them have been bestowed with honours/ awards and elected as Fellows of several professional national/international bodies during the year 2012-2013. Some of these recognitions are highlighted below:

- Dr. A. Basu, Prof. S.K. Koul and Dr. M.P. Abegaonkar, Centre for Applied Research in Electronics received IETE M.N. Saha Award for best application oriented paper.
- Prof. S. K. Koul, Centre for Applied Research in Electronics has received Award for contributions to the growth of smart material technology, by Institute of Smart Structures and Systems.
- Dr. M.P. Abegaonkar and Dr. Karun Rawat, Centre for Applied Research in Electronics were elevated to 'Senior Member IEEE'
- Prof. B. Pitchumani, Chemical Engineering Department received life time achievement award for contribution to Powder and Bulk Solids Handling. The award was given by German powder forum at International congress on powder and bulk solids handling at Ahmadabad.
- Prof. S. Basu, Chemical Engineering Department received Indian Society for Electro Analytical Chemistry (ISEAC) Journal publication award 2012 – 1st prize publication in peer reviewed international journal.
- Dr. Jayati Sarkar, Chemical Engineering Department received Amar Dye-Chem award for "Excellence in research and development given to scientists under the age of 35 years" from IChE for the year 2012.
- Dr. Sreedevi Upadhyayula, Chemical Engineering Department received SRISTI (Society for Research and Initiatives for Sustainable Technologies and Institution) Gandhian Young Technological Innovation Award (GyTI), 2013 under the category MLM (More from less for Many) for Reactor & Catalyst development for oxygen evolving step in Sulfur Iodine cycle for Hydrogen production, Best Poster award on Science day Reactor & Catalyst development for oxygen evolving step in Sulfur Iodine cycle for Hydrogen production and Er. B. N. Chatterjee Mineral Engineering Science (MESA) Award for 2013.
- Prof. A. Rathore, Chemical Engineering Department has joined BIRAC Technical Expert Committee for Translational Facilities, Biotechnology Industry Research Assistance Council, Department of Biotechnology. He has also been appointed Member, Scientific Advisory Committee, Bio Processing Unit, Department of Biotechnology and Associate Editor, Journal of Chemical Technology and Biotechnology.
- Dr. Munawar A. Shaik, Chemical Engineering Department has been selected for Erasmus Mundus India4EU II scholarship 2013 for academic staff exchange with Aalto University, Finland.
- Prof. S. Roy, Chemical Engineering Department has been invited to serve on advisory committee of Government of India (MoPNG) for drafting the National Auto-Fuel Policy: 2025 (mandated to develop norms and road-map for Country-wide BS-IV, BS-V and BS-VI automotive fuels in the

country). He is also serving on Scientific Advisory Committee (SAC), apex body of the Ministry of Petroleum and Natural Gas, Govt. of India for approving and review of technology development projects of major energy companies in India and as expert for Technology Development Board (TDB), Department of Science and Technology (DST), Govt. of India, for assessing business feasibility, progress and commercialization of incubated and start-up companies.

- Prof. Ravi Shankar, Chemistry Department has been selected as a Member of International Advisory Board for “International conference on coordination and organometallic chemistry of Ge, Sn and Pb (ICCOG- GTL)”.
- Prof. M.N. Gupta, Chemistry Department has been elected Fellow of the Indian Academy of Science.
- Prof. S. K. Khare, Chemistry Department has been elected Fellow of Biotech Research Society of India (BRSI) in the year 2012.
- Prof. A. K. Gosain, Civil Engineering Department has been elected as Member Steering Committee, Groundwater resources in the Indo-Gangetic Basin: Resilience to climate change and pumping, a collaborative project spearheaded by the British Geological Survey, UK in December, 2012.
- Dr. Bappaditya Manna, Civil Engineering Department has been conferred with SGSIT National Award for Best Research Work Done by Young Teachers of Engineering College Sponsored by Indian Society for technical Education (ISTE).
- Dr. C.T. Dhanya, Civil Engineering Department has received Outstanding Reviewer Award, Journal of Hydrologic Engineering, American Society of Civil Engineers (ASCE), 2012.
- Dr. D. R. Sahoo, Civil Engineering Department has received INAE Young Engineers Award, Indian National Academy of Engineering (INAE), 2012.
- Prof. G. Tewari, Civil Engineering Department has been conferred with Honorary doctorate by Chalmers University of Technology, Gothenborg, Sweden, 2012.
- Dr. Kalaga Ramachandra Rao, Civil Engineering Department has been elected as Fellow of Institution of Engineers (India) in Dec 2012.
- Prof. K.S. Rao, Dr. Amit Shrivastava and Mr. Jattinder Singh, Civil Engineering Department have received “IGS-H.C. Verma Diamond Jubilee Award for Innovative Instrument Design-2012 for their work titled “Design and Developing a Large Scale Direct Shear Testing Machine for Rockmass under CNL and CNS Condition”.
- Prof. K.S. Rao, Mr. A. Varughese and Dr. G.W. Rathod, Civil Engineering Department have received IGS-AFCONS biennial case histories prize for their paper “3D Stability Analysis of Chenab Bridge Abutments”.
- Dr. Vasant Matsagar, Civil Engineering Department has been selected for Erasmus Mundus India 4EU II scholarship 2013 for academic staff exchange.
- Dr. V. M. Chariar, Centre for Rural Development and Technology was awarded the Fulbright-Nehru Fellowship (2012-13) as part of which he affiliated with the College of Technology and Innovation, Arizona State University, Mesa, Arizona, USA between August and December 2012.



- Prof. Satyawati Sharma, Centre for Rural Development and Technology was awarded Iraz-Zandi Award on “Solid Waste Management” at the 28th International Conference on Solid Waste Technology and Management, Philadelphia, USA, held between 10 – 13 March 2013. She officiated as Session Chair on “Agricultural and Food Wastes”, at 28th International Conference on Solid Waste Technology and Management, Philadelphia, USA, held from 10 – 13 March 2013. She was also awarded 2nd Prize for Rapid Composting of Kitchen Waste using Microbial Formulations at National Conference on “NexGen Biotechnology : Amalgamating Science and Technology” held between 23rd - 24th November 2012 at University Institute of Engineering and Technology, Kurukshetra University, Kurukshetra, Haryana.
- Prof. V. K. Vijay, Centre for Rural Development and Technology has led Biogas Development and Training Centre at IIT Delhi which has been recognized as a lead National Centre in Biogas Technologies.
- Dr. Amitabha Bagchi and Dr. Maya Ramanath, Computer Science & Engineering Department received an Unrestricted Gift from the Faculty Research and Engagement Program of Yahoo!.
- Dr. Sorav Bansal, Computer Science & Engineering Department received a Faculty Award of USD 10,000/- from IBM.
- Dr. M.N. Gupta, Emeritus Professor, Department of Biochemical Engineering and Biotechnology has been elected as Fellow of Indian National Science Academy - INSA (effective from 1.1.2014) and Affiliate member of Royal Society of Chemistry, U.K. (since 2013). He has also been a Member of the Editorial Boards of many International Journals.
- Dr. D. Sundar, Department of Biochemical Engineering and Biotechnology has been selected for the DuPont Young Professor Award (2013). This is a global DuPont program, which began in 1968, that is designed to identify promising researchers and promising science early in a new Professor’s career and is administered by the DuPont Center for Collaborative Research and Education (USA). He is one of the 14 successful professors from seven countries around the world to earn this recognition. He has been selected for the National Bioscience Award (2012) of the Department of Biotechnology (DBT), Govt. of India. This award has been instituted by DBT for recognizing scientists below the age of 45 years, who have made outstanding contributions in frontier areas of biological sciences. He has also been selected for the Prof. Umakant Sinha Memorial Award of the Indian Science Congress Association (ISCA) for the year 2012-2013. This annual award is instituted by the ISCA to recognize and reward one young Indian scientist (below 40 years of age), who has carried out significant original research as evidenced by independent published work in New Biology (including Biochemistry, Biophysics, Molecular Biology and Biotechnology). The recipient delivered the Award Lecture during the 100th session of the Indian Science Congress [Centenary year 2012-2013] held in Kolkata during January 3-7, 2013.
- Prof. Saroj Mishra, Department of Biochemical Engineering and Biotechnology has been

- inducted as a Task Force Member on the committees of the Department of Biotechnology (DBT), Govt. of India namely Environmental Biotechnology & Biodiversity Conservation and Public Health including Food and Nutritional Interventions.
- Prof. P. K. Jain, Department of Management Studies has been conferred 'Best Academician Research Paper Award' by Amity International Business School in March, 2013. He has been conferred 3rd Asia's Best B-School Awards entitled 'Best Professor in Financial Management' (in Singapore) by World Education Congress and CMO Asia as well as 'Best Teacher in Financial Management' (at Mumbai) by Amar Ujala in November, 2012. He has also received "Literati Award" by Emerald for Outstanding Excellence in Research for 2012 for the paper "Capital Budgeting Decisions: Evidence from India", published in Journal of Advances in Management Research.
  - Prof. Bhim Singh, Electrical Engineering Department has been elected Fellow of TWAS (The World Academy of Sciences) for the advancement of science in developing countries). He has also been elected Fellow of INSA (Indian National Science Academy).
  - Prof. Ranjan K. Mallik, Electrical Engineering Department has been elected Fellow of TWAS (The World Academy of Sciences) for the advancement of science in developing countries.
  - Dr. Sumeet Agarwal, Electrical Engineering Department has received INSPIRE Faculty Award, Dept. of Science and Technology, Govt. of India.
  - Dr. Swades De, Electrical Engineering Department has been Editor of Springer Photonic Network Communications Journal, Feb. 2013 and Editor of IEEE Communications Letters, Apr. 2012. He has been Networks Symposium Chair, Nat. Conf. Commun., IIT Delhi, Feb. 2013
  - Dr. Mukul Sarkar, Electrical Engineering Department has received DST International travel award for attending a conference in Salt Lake City, Utah, USA. He has been Reviewer for optical express and optical letters.
  - Dr. Amit Kumar Jain, Electrical Engineering Department has received INAE Innovative Student Projects Award for the Ph.D. Thesis, October 2012. He has been conferred with Prof. D. J. Badkas Gold Medal for the best Ph.D thesis in the Department of Electrical Engineering for the year 2011-2012 by I.I.Sc., Bangalore in March 2013. He has also received POSOCO PPSA-2013 Award, an Award from Power System Operation Corporation (POSOCO), a subsidiary of Power Grid Corporation of India Ltd (POWERGRID) in March 2013.
  - Prof. Rukmini Bhaya Nair, Humanities and Social Sciences Department has been Elected as Member, Society of Fellows of the Indian Institute of Advanced Study nominated by the Central Government for Expertise in Education, Culture and the Sciences (2012-2015). She has been elected Board Member, Open Society Foundation, Sub-board for International Network.
  - Dr. Vibha Arora, Humanities and Social Sciences Department has been elected as a Member of core organizing team for designing courses in Humanities & Social Sciences under the National Program for Technology

- Enhanced Learning (NPTEL) of Govt. of India.
- Dr. Pritha Chandra, Humanities and Social Sciences Department has been elected as Executive Council Member, Linguistics Summer School in the Indian Himalayas (LISSIM).
  - Dr. Sarbeswar Sahoo, Humanities and Social Sciences Department has received Alexander von Humboldt Fellowship for May-July 2013.
  - Prof. C. S. Dey, Kusuma School of Biological Sciences has been elected as Editorial Board Member, Scientific Reports, Nature Publishing Group, UK.
  - Prof. S. E. Hasnain, Kusuma School of Biological Sciences has been Chairman of the Peer Review Committee by Government of India, Defence Research and Development Organization, Delhi
  - Prof. James Gomes, Kusuma School of Biological Sciences has been elected as Editorial Board Member, Journal of Chemical Technology and Biotechnology.
  - Prof. S. Dharmaraja, Mathematics Department has been Chair Professor for Jaswinder & Tarvinder Chadha Chair, May 2010 onwards.
  - Dr. Nomesh Bolia, Mechanical Engineering Department was awarded the "IUSSTF Public Health Fellowship".
  - Prof. Chandra Shakher, Instrument Design Development Centre has been inducted as Member of Journal Editorial Board of Optics and Lasers in Engineering, Elsevier Press.
  - Prof. Mangala Joshi, Textile Technology Department has won the National Award for the year 2012-2013 for "Technology Innovation" under the category of Research in the field of Polymer Science and Technology" Academics and R & D Institution, awarded by Ministry of Chemicals and Fertilizers, Department of Petrochemicals instituted under "National Policy" in Petrochemicals, Govt. of India.
  - Prof. R. K. Shevgaonkar, Director received "Education Leadership Award" of Headlines Today on 14th December 2012.
  - Prof. R. K. Shevgaonkar, Director has been selected for IETE – Ram Lal Wadhwa Award (2013) in recognition of his outstanding contributions in front line research and development in radio astronomy, photonics and image processing and for inspiring electrical engineering students on electromagnetic waves and optical communication.
  - Prof. R. K. Shevgaonkar, Director, IIT Delhi has been selected for the prestigious VASVIK Award for the year 2009 in the category of "Information & Communications Technology". The Award will be presented to him at a public function in December 2013 in Mumbai.
  - Prof. R. K. Shevgaonkar, Director, IIT Delhi has been elected as Fellow of Institution of Engineers (India).
  - Dr. Vijay P. Bhatkar, Chairman, BoG, IIT Delhi has received S.R. Jindal Prize 2012 on 3rd December 2012.
- To recognize excellence in teaching, the Institute honours its faculty with the Excellence in Teaching Award. The recipients of this award for the II<sup>nd</sup> Semester, 2011-12 and I<sup>st</sup> Semester 2012-13 are: Dr. Balaji Srinivasan, Applied Mechanics, Prof. S. K. Gupta, Dr. Pares Chokshi and Dr. Vivek Buwa,

Chemical Engineering, Prof. S. Arun Kumar, Dr. Sorav Bansal & Dr. Amitabha Bagchi, Computer Science & Engineering, Dr. Mahim Sagar, Management Studies, Prof. P. M. V. Subbarao and Prof. Anjan Ray, Mechanical Engineering, Prof. G. Bhuvaneshwari, Electrical Engineering, Dr. Aparna Mehra, Mathematics, Prof. H. C. Gupta, Prof. D. S. Mehta and Dr. Kedar B. Khare, Physics, Prof. Siddharth Pandey, Chemistry, Prof. S. C. Mullick and Prof. T. C. Kandpal, Centre for Energy Studies.

### **ACADEMIC ACTIVITIES**

Our academic programmes cover a wide range of science and engineering disciplines. In the Bachelors' programs, which are the most sought after even on global scales, and for which the entry is through the Joint Entrance Examination, our intake has steadily increased over the last few years and during the year 2012-2013, 3590 UG students were on roll. The number of postgraduate students on roll during the year 2012-2013 was 4258. These figures include 1436 women students. There were 78 foreign students from 9 countries pursuing postgraduate education at the Institute during the year. In order to make IIT Delhi more international in character and to make better use of international intellectual resources, we are constantly working towards increasing the strength of international students and faculty in the campus.

### **Post-Graduate Programs**

The Institute is proud of its graduate school, offering Master of Technology programs in many specializations, besides MBA, M.Des, M.Sc. and Ph.D programs. These programs provide an excellent platform to the students admitted into them, to acquire advanced knowledge in their respective fields. The graduate students are also offered the opportunity

to serve as teaching assistants, which enriches their academic experience and enhances their communication skills. The institute has a scheme for grant of partial financial assistance to Ph.D./M. Tech./M.Des./M.S.(R)/MBA students and post doctoral persons (working in various projects) for attending conferences outside the country.

The Institute also provides full travel assistance to every Ph.D. student of the Institute, for attending at least one international Conference (to present his/her research paper) during their education at IIT Delhi. We believe that such an international exposure will play an important role in improving the quality of our doctoral education and research. The Ministry of Human Resource Development, Government of India, has emphasized the need to increase the admission of Foreign Nationals under the self-financing scheme. The Institute has taken necessary steps in this regard and we hope to increase the strength of the Foreign Nationals in the coming years. 15 M.Tech. students of the Institute, who had gone to Germany under the DAAD Scholarship Scheme, have returned after completing their project. This year batch of 15 students has gone under this scheme. A number of steps are underway to review and strengthen the PG programmes.

### **Undergraduate Programs**

The Senate of the Institute is constantly engaged in reviewing and approving new courses to improve the curriculum. Several new minor area programs have been designed with a view to offer a second area of specialization of their choice. A revised curriculum structure has been approved by the Senate and implemented in the current year. In order to recognize, nurture and encourage academic achievers among

undergraduates, the Institute has established the following pre-graduation awards: (i) Institute Medal for Academic Excellence for obtaining the highest CGPA amongst non-graduating students of each entry year, and (ii) Institute Medal for Consistent Academic Achiever in a program for obtaining consistently high SGPA amongst all students registered for the program in the pre-graduation academic session. Under a new Academic Welfare Scheme introduced by the Institute for weak students, a special student advisor is identified in each department for students who need special help, at the beginning of each semester. Student advisors closely monitor the attendance and performance of these students and also provides support to help improve their performance.

A Special Orientation Programme for Entry Level students was also conducted with the objective of enhancing their learning skills, English language and communication skills, inter-personal relationships and motivation. This programme was conducted with the help of Centre for Research and Education for Social Transformation (CREST), Calicut, Kerala. All those who participated in it appreciated the program.

From the year 2013 onwards, admission to the undergraduate programmes at IITs and ISM, Dhanbad are based on the rank of a candidate in the JEE (Advanced). The candidates have to take the JEE (Main) exam, conducted by the CBSE, and the top 1,50,000 candidates, from all categories, based on their JEE (Main) scores, are eligible for appearing in JEE (Advanced). The responsibility for organizing the undergraduate admission test in its new structure was entrusted to IIT Delhi. In spite of major time constraints, the JEE team managed to complete all the necessary tasks within the stipulated time.

### **New Initiatives in Academic Programmes**

During the year, many new initiatives have been taken to make the academic programmes at the Institute more effective.

Curriculum Implementation Committee for Undergraduate Curriculum was constituted in September 2012. A comprehensive review of the postgraduate programs is underway and a workshop has been held to brainstorm on the issue. The new UG curriculum has been implemented from the session 2013-14. The salient features of the new curriculum include a common institute core; reduced number of credits from 180 credits in the existing curriculum to a range between 145 and 155 credits plus 15 nongraded credit points; provision for capability linked opportunities such as minor area, departmental specialization and interdisciplinary specialization for students with higher academic performance; flexible provision for design experience of various kinds under non-graded category; a co-curricular component on Professional Ethics and Social Responsibility where every student is expected to put in 100 hours on this activity over the period of their stay at IIT Delhi; and a common activity - based module on Introduction to Engineering for all first year students. In the new curriculum, tutorials have generally been done away with in courses of 300 level or higher, while the tutorials for lower level courses could be held in one of the following formats: a) parallelly in different rooms at the same time, b) all in one class room with multiple teachers / TAs or c) in the existing format, i.e., different groups on different days.

The implementation of the Web Based Academic Management System (WBAMS) on the Campus platform of the PeopleSoft ERP system has been in progress since 2010. This task is presently nearing

completion and the first level implementation and go live operation of all the modules is expected to be completed soon, and the take over process is simultaneously in progress. Most of the salient modules such as registration, grading, weak student handling, teaching evaluation and feedback, learning management system (Sakai) integration, etc. have been put through wide user testing while other modules are in different stages of development, testing or take over. The system when completely implemented and tested, is expected to make the student academic lifecycle management robust and largely paperless.

Construction of the new academic complex is nearing completion. The complex would have two lecture theatres of capacity 500 each, three of 300, twelve of 150, 14 of 60 and eight of capacity 30 students each, besides laboratory space for institute core courses on physics, chemistry, biology, computer science, electrical engineering, engineering graphics, material science and experimental techniques. It is expected that this complex would be functional from the next academic session.

The Kusuma School of Biological Sciences has proposed an MS(R) programme.

The Mechanical Engineering Department made available Course MEL705 through NKN to students at IIT Ropar and IIT Mandi.

Prof. A. K. Gosain, Civil Engineering Department developed a Web-based course “GIS and its application in Civil Engineering” under NPTEL

Structural Engineering section is currently reviewing the curriculum of DMRC program: PG Diploma in Metro Rail Transport, Technology and Management

The Virtual Lab ([www.vlab.co.in](http://www.vlab.co.in)) for “Bioreactor

Modeling and Simulation” has been developed to educate the theory and practice of Bioprocess Engineering for UG/PG students of Biochemical Engineering and Biotechnology. Presently it has seventeen experiments which encompasses the Microbial Batch, Fed-batch and Continuous cultivation, Aeration efficiency measurement, Plant / Animal cell cultivation, Complex and intriguing culture metabolism of Biopolymer production, Acetone-Butanol-Ethanol fermentation and Propionic acid fermentation.

A new state of art UG Materials Science laboratory has been proposed. The lab will be equipped with the modern facilities of probing the properties of materials at macro and micro scales. In addition, the world class teaching models will be used to teach the fundamental concepts of materials science.

EEL100 lab experiments have been revamped to make the students enjoy the laboratory experience.

The Department of Humanities and Social Sciences has made 5-10 minutes teaching videos by IIT students on Language of the UG Course HUL-234. The Department has also completely restructured its course offerings to the UG students.

First year UG courses in Mechanical Engineering have been revised with new approach and pedagogy. Every student now learns CAD design packages and use of CNC machines for manufacturing, besides the basic subject knowledge.

The new UG curriculum implemented at IITD in July 2013 has a core but non-graded component on “Professional Ethics and Social Responsibility”, under which each UG student is required to complete 100 hours of relevant activity in 3-4 years. The administrative responsibility of this course has been given to NRCVEE.

The erstwhile Academic Interaction Council (AIC) has been redesignated as Cocurricular and Academic Interaction Council, with several academically oriented cocurricular activities coming under its umbrella, such as the Robotics club, Astronomy club, Society for Automotive Engineers and Technocracy club amongst others. From the current academic year, CAIC has also got budgetary provision to fund the activities of these clubs and other academically oriented cocurricular activities of students

### **CONFERENCES/WORKSHOPS/SEMINARS/COURSES ORGANIZED**

The Departments, Centres and Schools of the Institute organized many Conferences, Seminars, Workshops and Courses. Some of these are highlighted hereunder:

- An Indo-Danish Workshop on Future Composite Technologies for Wind Turbine Blades was conducted by Applied Mechanics Department in October 2012.
- IEEE MTT-S Colloquium on Microwave & Millimeter-Wave Integrated Circuits was conducted in New Delhi by Centre for Applied Research in Electronics in October 2012.
- One day short course on “Application of Simulia-Abaqus in Geotechnical Analysis of Hydrel Structures”, coordinated by Dr. Tanusree Chakraborty, was conducted by Civil Engineering Department on 31 October, 2012.
- A discussion session was organized by NRCVEE to address the issue of unethical practices being followed in various student activities at the Institute on 2 October, 2012, as part of the Institute’s programme on the occasion of Gandhi Jayanti, the birth anniversary of the father of the nation. The session was entitled “Fraud and Jugaad in IIT Life : What is it worth?”
- A Short Term Training Program on Modern Formwork and Scaffolding coordinated by Dr. K.N. Jha under the aegis of FITT- IIT Delhi in the Department of Civil Engineering was conducted from 4 to 6 October, 2012
- 3rd Terzaghi-Ferrococo Oration, delivered by Prof. Kerry Rowe, Queens University, Canada, was organized by Geotechnical Engineering Section in association with Indian Geotechnical Society Delhi Chapter on 5 October, 2012 at IIT Delhi.
- A week-long QIP-CEP course on “Advanced Steel Design”, coordinated by Dr. Dipti Ranjan Sahoo and Dr. Vasant Matsagar, Civil Engineering Department was held from 8 to 12 October, 2012.
- A Workshop on “Development of Botanical Pesticides for Pest (Termite and Housefly) Control” coordinated by Prof. Satyawati Sharma was held at NRCVEE, IIT Delhi from 17 to 18 October, 2012.
- A short term course on Bioinformatics, supported by DBT, was conducted by the Biochemical Engineering and Biotechnology Department from 22 to 23 October, 2012. Dr. D. Sundar was the Coordinator for this course.
- One day Seminar on “Transonic Ultrasound Transit Time based Flow Meters” by Mr. Lakhvinder Singh, COMSOL was organized by Centre for Biomedical Engineering.
- Curriculum Development Workshop on “Identification of Issues for Sustainable

- Urban Built-Environment” coordinated by Dr. Arun Kumar and Dr. Vasant Matsagar, Civil Engineering Department under the aegis of Quality Improvement Programme (QIP) was conducted from 29 to 31 October, 2012.
- A symposium on Identification of Issues for Sustainable Urban Built-Environment through Symposium of Indo-German Experts (Sustain UBE) was conducted by the Civil Engineering Department from 29 to 31 October, 2012 at IIT Delhi.
  - 4th International Conference on Excellence in School Education was organized by Dr. Harish Chaudhry, Department of Management Studies from 3 to 4 November, 2012. The conference was attended by over 450 delegates including 380 School Principals.
  - A short course for industry on “Coal and ash handling at the thermal power plants” was organized and presented by Prof. V.K. Agarwal, ITTMEC from 19 to 21 November 2012.
  - A Workshop on “Innovations in Microbial Interventions Targeting Remediation of Toxic Contaminants” coordinated by Prof. Satyawati Sharma was held at NRCVVE on 30 November, 2012.
  - Third Asian Conference on Mechanics of Functional Materials and Structures (ACMFMS 2012) in New Delhi was conducted by Applied Mechanics Department in December, 2012.
  - A Conference on “Future Directions for Weather and Climate Research in the Tropics”, coordinated by Prof. S.K. Dash, was organized by Centre for Atmospheric Sciences from 3 to 5 December, 2012.
  - New Directions in Chemical Sciences (NDCS-2012) was organized by the Department of Chemistry from 7 to 9 December, 2012.
  - An International Conferences entitled BIOWORLD 2012, “Proteins in Disease and Disorder” was organized by Kusuma School of Biological Sciences from 10 to 12 December, 2012.
  - Indian Geotechnical Conference-12 on “Advances in Geotechnical Engineering” organized by Geotechnical Engineering Section in association with Indian Geotechnical Society Delhi Chapter was held from 13 to 15 December, 2012 at IIT Delhi. More than 600 delegates attended from India and abroad.
  - A short course on Autonomous Underwater Acoustic Surveillance was conducted by the Department of Civil Engineering at INS Valsura, Jamnagar from 17 to 19 January 2013. It was coordinated by Dr. R. Bahl and Dr. A. Kumar. Participants were Trainee Officers of Indian Navy.
  - A National Workshop “Brainstorming Workshop on Utilization of Biogas in Automotive Industries” coordinated by Prof. V. K. Vijay, CRDT was held at BDTC, CRDT on 28 January 2013.
  - One day Indo-US Workshop on Frontiers of Electrochemical Science and Technology: Powering our Future with Clean Energy Storage and Conversion was conducted by Prof. S. Basu, Chemical Engineering Department.
  - Second High Noon Spring School was organized by the project team of the European Union Project “High Noon – Adaptation to changing Water Resources Availability in Northern India with respect to Himalayan Glacier Retreat and Changing Monsoon Pattern”. The Spring School,



- sponsored by the UKaid, UK and coordinated by Prof. A. K. Gosain, Civil Engineering Department was held in New Delhi from 4 to 7 February, 2013.
- A workshop on “Biocatalysis-state of the Art and Challenges”, supported by DBT, was organized by Biochemical Engineering and Biotechnology Department from 8 to 9 February, 2013. Prof. Saroj Mishra, Prof. Subhash Chand, Dr. E. Ravikrishnan and Dr. Praveen Kaul were the Coordinators for this workshop.
  - A Workshop on “Valorization of Biogas Slurry and Dehydration” was held at IIT Delhi from 12 to 13 February, 2013.
  - A Panel Discussion on “Hunger and Nutrition: Time to Act” with Nobel Laureate Amartya Sen, Deputy Chairperson Planning Commission Montek Singh Ahluwalia, Chairperson National Commission for Protection of Child Rights Shantha Sinha and Jharkhand activist Shyama Singh was organized by the Humanities and Social Sciences Department on 15 February, 2013.
  - 19th National Conference on Communications (NCC 2013) was organized by the Electrical Engineering Department from 15 to 17 February, 2013.
  - UKIERI Concrete Congress was co-organized by IIT Delhi with NIT Jalandhar at Jalandhar from 5 to 8 March, 2013.
  - A Workshop on Nanoparticles in Water: Chemistry and Health was conducted by Dr. Arun Kumar, Prof. A.K. Mittal and Prof. Ashok K. Ganguli on 16 March 2013.
  - An Exhibition of Assistive Devices for the Visually Impaired developed in the Computer Science & Engineering Department was organized on 18 March, 2013.
  - A Workshop on “Envelope Materials for High Altitude Airships”, coordinated by Prof. Mangala Joshi, was organized by the Textile Technology Department in association with “ High Altitude Airship Research Initiative” sponsored by Aeronautics Research and Development Board, DRDO, Govt. of India on 19 March, 2013.
  - Indo-French Workshop in ICST: Challenges in Overcoming Complexity, From Big Data to Cyber-Physical Systems was jointly organized by Amar Nath and Shashi Khosla School of Information Technology with CEFIPRA and INRIA from 4 to 5 April, 2013. Over 50 participants attended from France and India, to enlarge collaborative research in a variety of IT areas.
  - Climate change and carbon management planning and review seminar under UK-India capacity development collaborative project between Queens University Belfast, IIT Delhi and School of Planning & Architecture Bhopal, sponsored by the British Council, and coordinated by Prof. A. K. Gosain, Civil Engineering Department was held in New Delhi on 10 April, 2013.
  - A training programme on “Rock Engineering and Its Practice” for KRCL Engineers who are deputed at Chenab Bridge Construction Site was coordinated by Prof K.S. Rao and Dr. R. Ayothiraman, Civil Engineering Department during 27 May to 1 June, 2013 at IIT Delhi.
  - SERB School on “Weather and Climate in the Tropics” was organized by Dr. Sagnil Dey, Centre for Atmospheric Sciences from 3 to 26 June, 2013
  - A Short Term Training Program on Modern

- Formwork and Scaffolding coordinated by Dr. K.N. Jha under the aegis of FITT-IIT Delhi in the Department of Civil Engineering was conducted from 17 to 21 June, 2013.
- A Short Term Training Program on Construction Planning coordinated by Dr. K.N. Jha under the aegis of FITT-IIT Delhi in the Department of Civil Engineering was conducted from 17 to 21 June, 2013.
  - Resonance Summer School in Neuroscience was jointly organized by Amar Nath and Shashi Khosla School of Information Technology with MIT, Harvard and others from 23 June to 6 July, 2013. 8 faculty from MIT, Harvard and 21 students of different disciplines and backgrounds, chosen from across the country participated.
  - A Short Term Training Program on Construction Project Management coordinated by Dr. K.N. Jha under the aegis of FITT-IIT Delhi in the Department of Civil Engineering was conducted from 8 to 12 July, 2013.
  - IIT Delhi celebrated the Institute Day on 16 August, 2013. Dr. M.M. Pallam Raju, Hon'ble Minister of Human Resource Development was the Chief Guest. The Chairman, BOG, Dr. Vijay Bhatkar also graced the occasion. On this occasion, Dr. Pallam Raju inaugurated the Amar Nath and Shashi Khosla School of Information Technology, released the Golden Jubilee Volume & the 'Honour the Mentor' book and gave Institute Day Address.
  - An International Dissemination Workshop "Promotion of Biogas Upgradation and Bottling in India & European Union" coordinated by Prof. V. K. Vijay, CRDT was organized by European Union & FITT, IIT Delhi from 22 to 24 August, 2013.
  - Amar Nath and Shashi Khosla School of IT building was dedicated on 2 September, 2013 by Distinguished Alumnus and Donor Mr. Vinod Khosla.
  - The 13th International Pragmatics Conference was hosted by Humanities and Social Sciences Department at the India Habitat Centre from 8 to 13 September, 2013. Prof. Rukimini Bhaya Nair was the Conference Chair. Over 600 papers presented from 60 countries.
  - A Workshop for ONGC engineers on lubrication technologies was conducted by Dr. H. Hirani, Mechanical Engineering Department.
  - A Youth Festival "Vijigisha" was organized by NRCVEE on the initiative of student volunteers of NSS and a voluntary group AINA (An Initiative for National Advancement). This three-day festival was on the occasion of 150th birth anniversary of Swami Vivekananda. Several lectures, workshops and other events representative of Swamiji's message to the youth and Indian culture were organized.
  - A workshop on human values was organized jointly by MHRD, IIT BHU and IIT Delhi at the Institute on 18 September, 2013 on the initiative of MHRD. From IIT Delhi, NRCVEE carried out the organizational work. The workshop was inaugurated by the Honourable Minister, HRD. More than 30 participants from various IITs, NIITs and a few private institutes, many of them Heads of institutions, participated in the one-day deliberations.

## RESEARCH AND DEVELOPMENT

The Industrial R&D Unit has been specifically set up to provide specialized administrative and managerial

support for the operation of sponsored research, consultancy and other related R&D activities of the Institute. The main functions of IRD Unit include administrative support for:

- Promotion of Institute-Industry Interaction.
- Sponsored Research Projects.
- Consultancy Jobs.
- Collaboration with Institutions in India and Abroad.
- MHRD funded Projects.
- Sponsored Fellowships/Assistantships.
- Patents, Know-how and Transfer of Technology. (Through FITT)
- Summer Undergraduate Research Awards (SURA).
- Research Assistance Grant to New Faculty Members of the Institute.
- Selective Scholarships to Institute Research Scholars.
- Chair Professorship.
- High Impact Research and Technology Development Leadership Projects.
- Partial Assistance under Research Scholar Travel Award.

During the last 52 years of its existence, the Institute has not only given due emphasis to investigation of problems of direct relevance to the needs of the country through time-bound sponsored and consultancy projects aimed at solving live industrial problems, but has also given special attention to emerging areas like atmospheric sciences, laser applications, industrial textiles, biotechnology, energy,

transportation, microprocessor applications, computer science, optical communication, signal processing, computer aided design & manufacturing, and artificial intelligence and robotics.

Along with teaching and academic research leading to doctoral degree, IIT Delhi gives high priority to research and development projects sponsored by outside national and international agencies and user organizations. Industrial consultancy is another significant area of activity of the Institute. The nature and extent of the industrial consultancy projects undertaken by the Institute is an index of its credibility with the industry and is symbolic of the relevance of a centre of excellence in the context of nation's socio-economic development. The Institute has, as one of its cardinal guiding principles, meaningful and continuing interaction with the world of science, technology and industry.

During the year under report, the Institute has undertaken 142 Sponsored Research Projects with a total funding of Rs.88.63 crores and 348 consultancy Jobs with a total value of Rs.18.29 crores. 29 collaborative Projects/Consultancies, with international funding were also undertaken during the period.

Under the Summer Undergraduate Research Award (SURA) scheme, 36 undergraduate projects were awarded during the year.

A research grant of upto Rs.1 lakh each was awarded to 22 faculty members, who joined the Institute during the year under the Research Grant for New Faculty (RGNF) scheme of IRD.

Assistantships for scholarships amounting to Rs.68.68 lacs (approx.) were awarded to the Ph.D. scholars in

exceptional cases after the completion of 4 years till the end of 5th year. It has now been decided to extend such support in the form of Gap period assistantship for both M.Tech./M.S.(R) and Ph.D. students who are drawing their fellowship/assistantship from the projects. These assistantships will be provided to the students once the projects get over and there is no other project to pay them assistantship. M.Tech./M.S.(R) students can be supported for a maximum gap period of six months and Ph.D. students would be supported for a maximum gap period of one year.

All Research scholars can be awarded a travel grant under "Research Scholar Travel Award" (RSTA) upto a maximum of Rs. 80,000/- from Research Promotion Fund. The assured grant would be available to the research scholars to attend and present a paper in an international conference of repute once during their stay at IIT Delhi; based on the proof that they have already applied to at least two other funding agencies for supporting their travel. The assured grant implies that in case they do not get grant from other agencies, they would still be able to claim reimbursement for travel and other conference related expenses subject to a maximum of Rs. 80,000/- per awardee. The Institute would support 100 such conference travels in one financial year through this scheme. This would also imply support to 100 students under the RSTA scheme.

IRD Unit has implemented IRIS (IRD Online System) with an aim to strengthen the efficiency of IRD Unit and in order to make the IRD system more transparent. All proposals with regard to Projects/Consultancies and other related requests/activities in the IRD Unit are now being accepted through IRIS only. It is being constantly updated to move towards total automation.

Major research projects undertaken during the period

are highlighted below:

- Creation of Common Computing Infrastructure Development - Ministry of Human Resource Development – Rs. 4000.00 lakhs.
- To Strengthen the Research Facilities in the Area of Ultra Fast Optics in the Department of Physics, IIT Delhi -Department of Science & Technology (DST) – Rs. 650.00 lakhs.
- Programme Support for Microbial Production of Designer Bio-Polymers from Renewable Resources (Main Project) - Department of Biotechnology – Rs. 274.52 lakhs.
- Development of an Indian Human Body Finite Element Human Body Model for use in Impact, Textile and Medical Applications - Ministry of Communications & Information Technology – Rs. 149.98 lakhs.
- Advanced Information System Security Laboratory (Phase - II) - National Technical Research Organization (NTRO) – Rs. 122.41 lakhs.
- Design & Development of CNC Magnetorheological Finishing (MRF) System - Department of Science & Technology (DST) – Rs. 122.39 lakhs.
- Collaborative Research and Education under IIT Delhi- BNERC, Toyo University Joint Bio-Nano Mission Program - Bio-Nano Electronics Research Centre, Toyo University, Japan – Rs. 120.60 lakhs.
- Safeguarding Water Resources in India with Green and Sustainable Technologies (SWINGS) - DST (AIMEN Technological Centre, Spain) – Rs. 115.24 lakhs.
- Foundations for Trusted and Scalable 'Last Mile' Healthcare - Department of Information Technology – Rs. 110.40 lakhs.

- Resource Building for Ecosystem and Human Health Risk Assessment with Special Reference to Microbial Contamination in the Community Development Theme under Indo-US21st Century Knowledge Initiative pro - University Grants Commission – Rs. 105.40 lakhs.
  - Development of Single Polymer Composite Materials as Light-Weight Modular Systems for Temporary Structures - GAIL (India) Limited – Rs. 100.00 lakhs.
  - Design and Fabrication of Photovoltaic/Fuel Cell (PV/FC) Hybrid System - GAIL (India) Limited – Rs. 98.52 lakhs.
  - 2D Photonic Crystals Template Fabrication by UV Interference Lithography - Instruments Research & Development Establishment – Rs. 98.00 lakhs.
  - Mind the Gap - Jumping the Hurdles Limiting Polymer Fuel Cell Performance and Commercialisation - DST-RCUK (Indo-UK Collaborative Research Initiative in Fuel Cells) – Rs. 92.90 lakhs.
  - Designer Biodegradable Copolymers from Renewable Resources : Evaluation of Properties and Applications - Department of Biotechnology – Rs. 88.02 lakhs.
  - Sonic Characterization of Marine Species - Centre for Marine Living Resources and Ecology – Rs. 85.75 lakhs.
  - Bioremediation of Agrochemicals and Heavy Metals Present in Drainage Water Used for Irrigation in Urban and Peri-Urban Agricultural Areas - NFBSRA, Indian Council of Agricultural Research – Rs. 84.57 lakhs.
  - Analysis, Design and Control of Power Electronic Converters for Grid Interfaced Solar Power Generation - Department of Science & Technology (DST) – Rs. 83.18 lakhs.
  - Development and Demonstration of Hydrogen Fuelled Multi-Cylinder Spark Ignition Engine-Generator Set for Stationary Power Generation - Ministry of New and Renewable Energy – Rs. 81.79 lakhs.
- Apart from the above, significant research activities were undertaken by the Departments, Centres and Schools of the Institute in their areas of specialization.
- Naval Construction Wing (NCW) at Applied Mechanics Department of IIT Delhi has emerged to be a strategic national asset due to its unique post graduate programme on warship and submarine design – the only such course in the country. Applied Mechanics Department through this programme has generated the specialist human resources for the Indian Navy, who are performing key functions in indigenous design of naval platforms and are manning the various billets of Indian Navy, discharging their role in design, acquisition, construction, repair and modernisation of warships and submarines. The dividends of the premium training of IIT Delhi can be seen through the successful indigenous Warship and Submarine design & construction programs of the Indian Navy. The notable examples of design of frontline warships and submarines are the recent launch of the indigenous aircraft carrier 'Vikrant' and nuclear submarine 'Arihant'. It is the major contribution made by Naval Construction Wing (NCW) and Applied Mechanics Department – IIT-Delhi. All these projects have been led by the proud alumni of NCW/ Applied Mechanics Department, IIT Delhi.
- The Centre for Applied Research in Electronics has carried out three field trials of the designed Underwater Acoustic Communication Modems using Orthogonal

Frequency Division Multiplexing (OFDM) and Time Reversal Mirror (TRM) at Acoustic Test Facility, Idduki Dam, Kerala, in February 2013, Ganges river, Narora, UP, in April 2013, and, Sea trials in Bay of Bengal off-Chennai in September 2013. The Centre also carried out Field experiments in snow for (i) acoustic stratigraphy studies of layered snow media, and (ii) snow avalanche detection and localization using infrasonic sensor array, were conducted at Dhundi, Manali field station of Snow and Avalanche Study Establishment, DRDO in February 2013.

Apart from the conventional areas of Chemistry – physical, organic, inorganic, analytical, biochemistry – the Chemistry Department has initiated research work in several multidisciplinary areas such as materials chemistry, nanochemistry, bioinformatics, green chemistry among others.

A research group is working on developing and understanding alternate media to replace environmentally-damaging volatile organic compounds (VOCs) from all aspects of Chemistry. Group is currently conducting research based on novel room temperature ionic liquids and deep eutectic solvents.

A new high temperature (about 1300°C) fire furnace and test facility for structures has been commissioned and behavior of structures under fire hazard is being investigated.

A new area of research “Energy Harvesting” has been started recently in the Smart Structures and Dynamics Lab. In addition, prototype bamboo fibre composite frames have been successfully tested in collaboration with Trinity College, University of Dublin, Ireland.

A new IMPECS (Indo-German Max Planck Center for Computer Science) group at IIT Delhi on “Effective Querying of Large Knowledge-Bases” has started in

collaboration with IIT Delhi, IIT Bombay and the Max-Planck Institute for Informatics in Germany. Dr. Maya Ramanath will lead the group at IIT Delhi.

Department of Biochemical Engg. & Biotechnology was involved in a Biofertilizer networked project sponsored by Indo-Swiss Cooperation in Biotechnology (ISCB) whose aim was to develop a biofertilizer consortium product for their application in sustainable and low input agriculture. The consortium product comprises a mix of two plant growth promoting rhizobacteria (PGPR) and four strains of natural arbuscularmycorrhiza fungi. The project involved IIT Delhi, GBPUAT, Pantnagar, TERI, New Delhi of India and University of Neuchatel, Institute of Organic Agriculture, Frick and University of Basel of Switzerland. The use of the biofertilizer product effectively enhanced the productivity of food crops such as wheat, and increased the nutritional value of both wheat and rice in extended field trials at different regions of six states. The work assumes significance in view of the fact and increased realization amongst Government agencies, environmentalists and end users that biofertilizers are to be used increasingly to reduce application of chemical fertilizers (which have caused considerable deterioration of our environment, water bodies and soil) for sustainable development.

IIT Delhi, as one of the research partners, developed an efficient mass scale production technology for the PGPR in a fed-batch reactor, which has been licensed to two large Indian industries. The process of technology transfer is in progress.

IIT Delhi has joined the MHRD National Mission Project on Education through ICT. Twelve teams of IIT Delhi have taken up development of course material.

An image sensor research group has been formed within IIT Delhi. The group is over 20 members strong

with 8 registered for PhDs. The group is actively looking for collaboration with industry. To this effect Anan linear Technologies Hyderabad is sponsoring a project and AKAB Healthcare has also agreed to fund projects within the group. The group together with industrial partners are in stage of writing bigger and impactful project proposal for funding from major governmental funding agencies.

The Amar Nath and Shashi Khosla School of Information Technology research activities have received funding from a variety of agencies for engaging in research in the areas such as Appropriate Computing Technologies for Development (Approximately 18.5 million INR from DeITy, DST, Ford Foundation), Assistive Technologies. (Approximately 60 million INR from Wellcome Trust, DST, IUSTF, CIS), Scalable Healthcare (Approx. 15 million from DeITy), Neurosurgery Skills (Approx. 30 million INR from ICMR and DST), Advanced Robotic Technologies (Approx. 73 million INR from DAE).

A new generation of EVM has been designed and a VVPAT (Voter Verifiable Printed Audit Trail ) machine has been successfully used in by-election in Nagaland. Supreme Court has praised this development as an important milestone in EVMs. All political parties have welcomed the development. Prof. D. T. Shahani and Prof. A. K. Agarwala, IDDC have been part of Technical Expert Committee (alongwith Prof. Rajat Moona DG-CDAC and Prof. Dinesh Sharma IITB) for this Electronic Voting Machine.

Instrument Design Development Centre has successfully developed a critical communication module for SMERCH Rocket systems under a project sponsored by Army Technology Board (PI - D T Shahani). Upon successful demonstration to Army the module has been approved by Army to undergo User Trials.

## REACHING OUT

The Institute is sensitive towards the need to strengthen Engineering Education in the country, and continues to evolve suitable programs for this, from time to time. Under the Summer Faculty Research Fellowship Program of the Institute organized under the CEP, 70 faculty fellows joined this year. They have been associated with a total of 37 faculty mentors. They spent about six weeks during the summer and worked with IIT faculty mentors. The main objectives of this program are - to help inculcate research culture among the faculty members of educational institutions outside the IIT system, to provide orientation towards research through interaction with the mentors, other research students and exposure to the facilities and labs, with a view to eventually motivate them to undertake higher studies and research activities within or outside IIT Delhi. As a result of this programme, over the last five years, 124 faculty members joined IIT Delhi and other IITs for Ph.D.

## INFRASTRUCTURE DEVELOPMENT

### Academic

IIT Delhi has provided adequate funds from its Corpus to the Departments, Centres and Schools for upgradation of laboratories and creation of new facilities. This has significantly helped in the improvement of quality of teaching and research. Some of the important facilities created/developed by some of the departments/ centres/ schools are highlighted below:

- The Applied Mechanics Department has started building new research capabilities and initiated the major upgrade of the existing facilities in the Impact Mechanics Lab. Recently an impact facility capable of generating crash velocities up

to 1000 km/hr was successfully tested. Work on similar test facility with the potential of achieving crash velocities up to 5000 km/hr has already started. In addition of these work on experimental setups for dynamic material characterization under dynamic tension, compression and torsion is underway. Once upgraded, this laboratory will be unique in the country.

- The Applied Mechanics Department is setting up a 96-node High performance computing cluster facility to cater to growing needs of computation of departmental faculties. The facility is already in use and is likely to become fully operational by year end.
  - The materials characterization lab in the Applied Mechanics Department is under proposed expansion. The lab will allow materials scientists to probe structure of materials at different length scales. The facility could easily be a national facility as it will be first of its kind in India.
  - The Applied Mechanics Department has decided to strengthen its ability in the field of Biomechanics. It has started the process of establishing a comprehensive facility for soft material characterization and cell/tissue biomechanics research.
  - The Applied Mechanics Department is currently revamping it's undergraduate EMA (AML 130) laboratory with the assistance from the institute.
  - The Applied Mechanics Department is upgrading the environment wind tunnel (test section 2mx2mx15m long). It is designed to simulate the atmospheric boundary layer for use in both fundamental work and applied problems. When it is fully refurbished, it will be capable of simulating both neutral and stratified flows.
- Research relevant to the Departments of Applied Mechanics, Atmospheric Sciences, Civil Engineering and Mechanical Engineering can be undertaken in this facility.
- The Centre for Applied Research in Electronics has developed a new MEMS-SAW Process Laboratory to provide the capability of integrating Metal-Oxide-Semiconductor structures with the Micro-Electro-Mechanical System. This new infrastructure will provide an impetus for realizing system-on-chip which will break the barriers of realizing an ASIC device obtained by integrating MEMS based sensors with peripheral electronics. The heart of this laboratory is a mask aligner having the resolution capability of 0.25  $\mu\text{m}$  and the best operation is achieved by creating a class 100 environment using clean benches, air-conditioning, compressed dry air system for pneumatic operation, photoresist spin coating system for depositing thin films  $\mu\text{m}$  range, high resolution microscope for inspecting the sub-micron devices and high quality 18 MW resistivity water for cleaning and etching process which are the support features of this laboratory.
  - The Centre for Applied Research in Electronics has also developed/ created the facilities like Microscope for circuit inspection, On-wafer antenna testing facility, Automated far-field antenna test setup.
  - The Centre for Energy Studies has set up Quantum Efficiency Measurement in Plasmonic Solar cells Laboratory with a cost of 40 Lacs. This is equipment for measuring the wavelength dependent photocurrent from the solar cell after incidenting the sunlight.
  - The Chemical Engineering Department has



- commissioned various facilities/ equipments. The major ones include Akta Avant Chromatograph, Waters UPLC, Agilent CE-MS system, MCR302 Oscillatory and Rotational rheometer with microscopy attachment, Core flood facility, Establishment of Photo-Electrochemical Lab, Electrical Capacitance Tomography, Zeta meter.
- The Chemistry Department has commissioned various facilities/equipments which include 500 MHz NMR Spectrometer, Confocal Fluorescence Microscope, Confocal Raman Microscope, GC-MS, FTIR Spectrophotometer, Optical Microscope, Lifetime Spectrofluorimeter, Steady-state Spectrofluorimeter, Particle Size Analyzer
  - The Civil Engineering Department has commissioned facilities like Fire furnace (1300°C), Laboratory for impact testing of soil and rock, Servo controlled Large Scale Direct Shear Equipment for Testing Jointed Rock under CNL and CNS Loading.
  - The Centre for Rural Development and Technology has commissioned Growth Chamber, Real Time PCR at Biomass Laboratory, Biogas upgradation, enrichment and bottling facility at Biogas Lab, Algal Multi-Cultivation Facility at Applied Microbiology Lab, Bamboo Technology laboratory, Ecological Sanitation Laboratory.
  - The Computer Science & Engineering Department has installed two units Lyrtec SFF Software Defined Radio in the Networks Lab.
  - The Biochemical Engineering and Biotechnology Department has commissioned facilities like Motorized Fluorescence upright microscope with optical sectioning facility, 2-D electrophoresis set up, 70 liter & 15 liter bioreactor with necessary measurement & control systems, HPLC, Water Purification System (HPLC grade), Multitier Incubator shaker, GC, Horizontal autoclave
  - The Electrical Engineering Department has initiated setup of new lab for investigations into the control and dynamics of bimolecular systems.
  - The Electrical Engineering Department has set up a new Laboratory - Nano Photonics and Plasmonics Laboratory (NPPL), in which experimental and theoretical work is carried out to study the optical and electronic properties of semiconducting and metallic nanostructures. Moreover, nanophotonic and plasmonic devices are modeled, developed, and experimentally evaluated.
  - The Humanities and Social Sciences Department has set up Language and Emotion Laboratory.
  - Kusuma School of Biological Sciences has set up next generation sequencing facility. Cryo-TEM facility installation is on-going.
  - The Mechanical Engineering Department has commissioned new CNC trainer lathe and milling machine and are being used for teaching. Facilities have been created for the Student Innovation Centre and it is now functional.
  - The Physics Department has commissioned Ultrafast Optics facility, Thermal Chemical Vapour Deposition System, RF Sputtering System, Pulse DC sputtering System, Tube Furnace, Four Probe for I-V measurement.
  - The Instrument Design Development Centre has established User Experience Lab to study cognitive and physiologically responses of human during purchase and use of digital products in collaboration of Dr. Jyoti Kumar.

- The Instrument Design Development Centre has also established Optical Metrology Lab to carry out the research work in Measurements Aspheric and freeform optical elements. It is also supporting the optical workshop in IDDC for testing of optical during fabrication process.
- Centre for Polymer Science and Engineering has commissioned facilities/ equipments namely Micro-Compounder – Haake, Micro Injection molding machine – Haake, Microwave reactor, Servo-hydraulic Universal Testing Machine for fatigue testing – MITS – Bionix.
- Centre for Atmospheric Sciences has commissioned Abedometer, for measuring incoming solar and reflected radiation, and renewal of ERDAS Imagine 2013 (with in-built GIS) remote sensing software.
- The Computer Services Centre has procured 16 Node GPU cluster which will be released shortly for the IITD community. The Centre has upgraded the routers and switches for internet access. The backbone is now ready for dual redundant connectivity and 10 Gbps. Fiber connectivity has been provided to about 1200 residential houses and in hostels. For the campus residents GPON technology has been adapted. The Centre has procured CADENCE SOFTWARE on VLSI design for the Institute community. Newly developed Website for IITD Hospital, SLA for Infrastructure, Academic Time table, Online Agenda & Minutes of IITD Senate have been implemented.

### **CENTRAL LIBRARY**

During the year 2012-2013, the Central Library successfully provided increased access to digital

collections to its users to support the teaching, research and extension programmes of the Institute. Some of the important activities undertaken during the period are as follows:

#### **Access to Electronic Journals**

The faculty, students and researchers at IIT Delhi have access to more than 12,000 electronic journals and 6 bibliographic databases through INDEST-AICTE Consortium. 120 journals subscribed in print and 615 journals are accessible online from the publisher's web site. Links to these electronic journals are available through the Library web site as well as through the LibSys WebOPAC interface.

Besides access to current e-journals, the Library has also purchased back files of electronic journals from a number of publishers / aggregators from their volume one onwards on "one-time payment and perpetual access basis". The back files of 6340 Electronic Journals purchased by the library includes : Elsevier's Science Direct, Wiley InterScience, Springer, JSTOR, Taylor & Francis, Sage, Cambridge University Press, IOP, World Science and Oxford publishers.

#### **Access to Electronic Text Books**

The initiative taken last year to add electronic books to the Library collection was further strengthened. 35 titles of E-books have been added under Text Book and Book Bank scheme to support undergraduate studies which are highly used by the students/faculty.

#### **INDEST-AICTE Consortium**

The Library houses the headquarters of INDEST-AICTE Consortium which is one of the biggest and most successful consortium initiatives so far taken in Asia. It provides access to electronic resources

to its member institutions comprising of more than 257 members including 65 core member institutions, 60 AICTE supported institutions and more than 132 institutions that have joined the consortium under its self-supported category as on March 2013. IIT Delhi Central Library continues to be the headquarters of INDEST activities on behalf of Ministry of Human Resources Development, Govt. of India. During 2012-2013, Prof. B. D. Gupta was the National Coordinator and Prof. R.K. Shevgaonkar, Director IIT Delhi was the Chairman of National Steering Committee of INDEST-AICTE Consortium.

#### **Joint INDEST-AICTE Consortium & INFLIBNET Project under NMICT Initiative of MHRD**

IIT Delhi is the coordinating institute for the Joint INDEST-AICTE Consortium & INFLIBET Project (N-LIST) under centrally sponsored scheme of National Mission on Education through Information and Communication Technology of MHRD.

The project provides for cross-subscription to e-resources subscribed by the two Consortia, i.e. subscription to INDEST-AICTE resources for universities and UGC-INFONET resources for technical institutions. Under this programme, IITs, IISERs, few NITs are getting access to Project Muse, Annual Review and Nature (27 titles) and 100 Universities are getting access to Web of Science.

The N-LIST is a joint project executed by UGC-INFONET Digital Library Consortium, INFLIBNET Centre, Ahmedabad and INDEST-AICTE Consortium, Indian Institute of Technology (IIT) Delhi. Prof. R.K. Shevgaonkar, Director IIT Delhi and Dr. Jagdish Arora, Director, INFLIBNET Centre are Principal Coordinators of the Project. The N-LIST project provides access to more than 2,100 electronic

journals and 51,000 electronic books to students, researchers and faculty from colleges and other beneficiary institutions through servers installed at the INFLIBNET Centre.

#### **Miscellaneous Activities/Services**

The Central Library has implemented the Radio Frequency Identification (RFID) system. It is the best automated library automation system used worldwide and is an effective way of managing collections of the library and providing enhanced services to the users. RFID plays a vital role in redefining the library processes to make everyone's job easier right from the users to library staff.

The Central Library has extended the opening hours upto 12 O'clock Mid-night on Institute working days and round the clock (24 Hrs.) during Minor-Major Exams.

The Central Library has also extended issue-return facility to the users till library opening hours using RFID Self Check-in, Check-out kiosk and Book Drop-box.

Apart from the above, the following initiatives have also been taken in the Central Library:

- i) Initiation of Digitization of Ph.D. Theses project and submission of soft copy of Theses in the Library.
- ii) Access to abstract/contents of Ph.D. Theses through the Central Library web interface.
- iii) Creation of New Website for the Central Library.

#### **EDUCATIONAL TECHNOLOGY SERVICES CENTRE**

The Educational Technology Services Centre (ETSC) is actively engaged in promoting the use of Educational Technology within the Institute and also at the national level. Some of its activities are: design, development and dissemination of video and

web-based instructional resources; provision and maintenance of A/V equipment for classroom teaching; organization of training programmes for faculty, staff and professionals across the country and undertaking sponsored research and consultancy projects; audio/video conferencing for faculty selection interview and meetings; e-learning and distance education using video conferencing facility; transmission of an independent 24x7 EKLAVYA technology channel and telecasting video courses.

The Centre has a modern video studio with recording and editing facilities. A Studio-Classroom is also available for on-line recording of courses. Non-linear editing set up and an Apple streaming server are available for post-production and video streaming, respectively.

The National Programme on Technology Enhanced Learning (NPTEL) funded by MHRD was undertaken at ETSC. Under this program, IIT Delhi, together with other IITs and IISc contributed towards development of web and video based educational material for undergraduate courses initially in five disciplines; viz., Civil Engineering, Computer Science and Engineering, Electrical Engineering, Electronics and Communication Engineering and Mechanical Engineering. Courses so developed are available through the various servers authorized by NPTEL. Phase II of NPTEL is nearly complete. Its scope has been further expanded to include more disciplines and advanced/post graduate courses. ETSC has procured and installed Sony ANYCAST system in the Video Studio and in two lecture theatres for non-linear editing and recording. Video conferencing facilities have been installed in two lecture theatres and in the Conference Room of ETSC. The facility is being used for faculty interviews, meetings and distance education. For connectivity both ISDN and IP based

network connection are used. A dedicated two-way video link is also provided for live delivery of classes to Addis Ababa University (Ethiopia) under a special agreement with IIT Delhi. Two lecture delivery rooms for Remote Delivery have been equipped with remote teaching facility.

Planning has been completed for the audio video and multi-media facility in the new lecture hall complex which is due to become operational next year. Audio video design has been completed for 2 rooms of capacity 500; 3 rooms of capacity 300; 12 rooms of capacity 150; 9 rooms of capacity 60; and 6 rooms of capacity 30. It is expected that the facility will be a state of the art facility not only for class room teaching but also for hosting seminars and conferences.

## PHYSICAL INFRASTRUCTURE

### Infrastructure Development

The Institute has made consistent efforts in upgrading its infrastructure to cater to the needs of its expansion plans and for better amenities. Besides planning and building new hostels and additional academic space, the Institute is also engaged in a massive exercise of renovation of old houses, hostels and sports facilities.

A quick overview of some of the works taken up during the year is as follows:

### Construction of I.T. School Building

I.T. School building having a total built up area of 3,250 sq. mtr. in Basement and Ground + 4 floors was constructed from the funds donated by Distinguished Alumnus Vinod Khosla. The building was formally inaugurated by the Honorable Minister of Human Resource Development - Dr. Pallam Raju on 16 August, 2013. The building was dedicated on September 2, 2013 by the donor Mr. Vinod Khosla.

**Lecture Theater –cum- Lab Complex**

L.T. complex having a total built up area of 35,000 sq. mtr which is under construction shall provide lecture halls of 2No. x 500 Seater, 3No. X 300 Seater and 12 No. x 150 Seater capacities, 14 class rooms of 60 Seater capacities & 8 class rooms of 30 Seater capacities each. The Lab block of the L.T. Complex shall cater for facilities for Physics lab, Language lab, Graphic lab, Chemistry lab, Applied Mech. Lab, Bio Science lab, Electrical Engineering and Computer lab. The lab block is completed and is being handed over to the departments for shifting of the equipments and furniture work. The furniture of above labs has also been finalised by users committee and CPWD has invited tender for the same. The L.T. complex is expected to be operational from the next academic session.

**Construction of Clean room on the ground floor and first floor in block VI for Nano scale research facilities (NRF)**

The renovation work for creating clean room on the ground floor and first floor in block VI for Nano scale research facilities (NRF) is in progress and shall be ready for use by March, 2014.

**Construction of Institute Activity Centre**

The B&WC considered and accepted the conceptual design prepared by architect. The submission drawings are being submitted to MCD / DUAC for necessary approval. The Institute Activity centre having a total built up area of 8,000 sq. mtr in Ground + 4 floors. The construction work was assigned to CPWD and work shall be taken up after obtaining statutory approvals.

**Construction of Boys Hostel ‘E’**

Institute is planning for construction of another Boys

Hostel (Hostel ‘E’) of capacity (1000 approx.) students. The conceptual design of Hostel ‘E’ was approved by B&WC Committee. The submission drawings were submitted to MCD / DUAC for approval. The Construction work has been assigned to CPWD and the work shall be taken up for construction after obtaining statutory approvals.

**Construction of 414 single seated New Girls Hostel**

The Institute is planning to construct a new Girls Hostel having a capacity of 414 students. The proposed hostel will be constructed along North Avenue adjacent to the Himadri Hostel, by demolishing two residential Blocks in North Avenue. The concept design of the Hostel prepared by the architect was approved by B&WC. The submission drawings were submitted to MCD / DUAC for necessary approval. The Construction work of this hostel has been assigned to CPWD and the work shall be taken up after obtaining statutory approvals.

**Construction of Golden Jubilee G.H. Keshwani Research Centre**

Distinguished Alumnus Sh. Patanjali Keswani has agreed to donate fund for construction of Golden Jubilee G.H. Keshwani Research Centre at IIT Delhi. Approx. 12,000 sq. mtr. space shall be constructed for research facilities in Ground + 6 floors. The Architect has prepared the submission drawings and submitted to MCD/DUAC for necessary approval. The work shall be taken up after obtaining statutory approvals.

**Lifts for physically challenged persons in Academic Area**

The Institute has proposed to install 8 Nos. Lifts for physically challenged persons in the academic area. The work has started and likely to be completed by March 2014

### **Construction of Main swimming pool and a small swimming pool for children**

The Institute is planning to construct an Olympic size swimming pool and a small pool for the children in the RCA. The BOG has accorded approval to the proposal. The work has been assigned to CPWD and the work has commenced at site. The work is likely to be completed by March 2014.

### **Construction of STP/ETP and network connecting Sewer Lines to STP/ETP**

The Institute is planning to construct STP/ETP in compliance to the requirements of Environment Clearance accorded by the MoEF. It is proposed to construct a STP of 2.5 MLD capacity in the campus. M/s. SPAN Envirotech Pvt., Ltd., has been appointed as consultant for this project by the Institute. The Consultant has submitted a conceptual design which has been approved by B&WC. EOI has been invited to shortlist the contractors/firms for Execution of STP of 2.5 MLD capacity in the campus. After completion of this project 2.0 MLD treated water shall be available for horticulture and allied use in the campus.

### **Renovation works of the Taxila Apartments**

In order to renovate and upgrade the Taxila Apartments, renovation work was taken up at an estimated cost of Rs. 4.00 Cr. As many as 20 houses have been renovated. The remaining work is likely to be completed by Jan 2014.

### **Construction of Engineering Block 99B and 99C**

The conceptual design for the proposed Engineering Block 99B and 99C has been accepted and approved by B&WC. The two Engineering blocks shall be constructed on both sides of L.T. cum Lab Complex

under construction. The two Engineering blocks shall provide additional area for Labs, Workshops, Faculty rooms etc., after completion. The available floor area for Engineering Block 99B shall be 32,500 Sq.mt. and for Engineering Block 99C shall be 19,300 Sq. mt.

### **Construction of additional Faculty Flats in West Campus near Vikramshila apartments**

The Institute has recently constructed 96 Faculty flats which were allotted to eligible Faculty members. In order to meet with the increased demand for houses for Faculty, the Institute is considering construction of more faculty flats. Hence a concept design of proposed faculty flats was presented before B&WC. B&WC has accepted and approved the design. The submission drawings are being prepared and submitted to local bodies for obtaining necessary approvals.

### **Renovation of 48 nos. houses of New Campus**

The renovation of 48 nos. houses in new campus was taken up and 20 nos. houses have been renovated. The work is likely to be completed by April 2014.

### **Beautification of road from Hostel Gate to Nalanda Apartments**

Lighting work has been completed. Civil work is in progress and likely to be completed by Nov 2013.

## **INSTITUTE-INDUSTRY INTERACTION**

### **Foundation for Innovation and Technology Transfer**

Established by the Institute in the year 1992, Foundation for Innovation and Technology Transfer (FITT) is a formal technology transfer organization of IIT Delhi. It is an autonomous body, and has been in a mission mode ever since, for building and maintaining an enhanced interface with industry, and

engaging itself to create partnerships with business and community to enable innovations and knowledge transfer for common good. FITT is primarily working towards protecting IIT Delhi's intellectual assets and in converting relevant research resultants into commercializable products and processes. The technology transfer at the Institute also involves incubating business development around such innovations.

During the year 2012-13, 61 technology development/ transfer projects worth Rs.898 lakhs have been contracted. In the same period, 49 Professional Development Programs were organized, primarily for industry participants, for a gross value of Rs.204 lakhs. Out of 63 applications processed for IP protection, an Institute committee approved 20 such invention disclosures. Twenty one inventions were filed for protection during the period.

FITT organized several visits by IITD faculty to industries in order to assess their R&D needs so as to initiate industry relevant R&D programs at the Institute. FITT has also instrumented several visits of overseas companies/ delegations, which helped in fruitful exchanges between the visiting delegates and the academic community of the Institute. FITT has on its roll over 100 corporate members representing various industrial and R&D units. An interesting capacity building program called the "Professional Candidate Registration" program has been successfully implemented at the Institute by FITT, wherein eligible/qualified candidates from industry and research organizations undertake relevant professional course modules here and thus enhance their knowledge and skill-set. The program has been evoking good interest amongst potential beneficiaries. Ninety professionals registered under this program during the two semesters of the 2012-13.

FITT has been responsible for some notable developments in the Institute concerning S&T commercialization and innovation led entrepreneurship. Under the Technology Business Incubation Unit (TBIU) scheme of IIT Delhi, FITT facilitates nurturing of nascent technological concepts/ideas into commercially viable opportunities. Nine companies (out of forty admitted so far in the past decade) are currently resident and eighteen start-ups are in scale-up phase or in commercial operation. After its recognition as a TePP Outreach Centre by DSIR, FITT has been actively fostering technology entrepreneurship amongst individual innovators and start-ups. Several faculty scientists of the Institute have been supporting this program as Technology Angels. The Ministry of Micro, Small and Medium Enterprises (MSME), has also involved FITT for promoting innovation and entrepreneurship amongst micro and small enterprises leveraging the knowledge / resources at IIT Delhi. Significantly, FITT operates as one of the three national BIG partners of BIRAC (a Government of India enterprise) for implementing its Biotechnology Ignition Grant (BIG) scheme. Amongst its repertoire of activities FITT is partnering with reputed organizations eg ICICI, POSOCO etc. towards conducting innovation, entrepreneurship and research-award programs, and acts as the nodal agency of Govt. bodies like MCIT, TDB etc. in their various support programs.

### **Quality Improvement Programme**

Under the Quality Improvement Programme, 8 faculty members from different engineering colleges in the country were admitted to the various M.Tech Programmes and 18 to the Ph.D. Programme in various disciplines. Presently 15 M.Tech. and 51 Ph.D. students are on roll. 10 short term courses were also organized under this programme for the benefit of teachers of other engineering colleges.

### **Continuing Education Programme**

The Institute pays particular attention to the organization of short-term courses under its Continuing Education Programme to meet the growing need of both private and public sector organizations. The courses offered by the Institute include those sponsored by the industry/government organizations for the benefit of their own engineers/personnel as also the ones floated by the Institute which are financed through the fee levied on the individual participants. During the year under report, 40 short-term courses were organized by various departments/centers of the Institute. In addition, there were 10 web based courses run in CEP mode for practitioners as online executive development programmes by the Department of Management Studies.

CEP has been successfully conducting a Summer Research Faculty Fellow Programme since 2008. The main objective of this programme is to help in inducing and inculcating research culture among the faculty of engineering and science institutes outside IIT system. The visiting faculty fellows stay in IIT Delhi during the summer and work with a faculty mentor, who is a regular faculty member of IIT Delhi. This year 70 faculty fellows have joined the programme and have been associated with 37 faculty mentors in IIT Delhi. As a result of this programme, over the last five years, 124 faculty members joined IIT Delhi and other IITs for Ph.D.

### **Curriculum Development Activities**

The Overall Curriculum Development scheme under QIP of the Institute aims at developing curricula, authoring manuals, monographs, books, slide series and also encourages interaction between faculty members at different levels through workshops,

seminars, etc. During the year under review, 2 book writing proposals were finalized, 5 workshops were organized, 6 software based course development packages and slide series were made. This scheme is open to all departments and is financially supported by the All India Council for Technical Education.

### **Training and Placement**

Training and Placement is an important activity of the Institute. The T & P Unit is mainly responsible for arranging practical training of the undergraduate students to meet their degree requirement and to provide world class job opportunities to undergraduate and postgraduate students after graduation for suitable jobs in the industry and various private and public sector organizations.

During the year under report, the T & P Unit was not only able to arrange effective summer training for the students but was also successful in obtaining stipends and other facilities for several students. T&P Unit was able to arrange 855 training seats against a requirement of 836 seats with the active cooperation of the Nucleus Committees of the Departments.

Regarding placement, the T&P Unit invited Senior Executives of major industries/ organisations to give pre-placement talks, hold workshops and participate in panel discussions for the students at the campus which helped them acquire better knowledge about various organisations prior to the commencement of the campus interviews. During this period, 336 companies were registered on campus for 402 profiles. Total 224 profiles had selections as a result of which 733 students were placed making total jobs of 803 (some students got multiple jobs). The sector-wise distribution of profiles opened for placement are as under:



<b>Sector</b>	<b>Profiles Opened</b>	<b>Students Placed</b>
Analytics	16	58
Consulting	48	84
Core(Technical)	126	258
Finance	16	30
Information Technology	75	126
Management	01	-
Others	95	135
Teaching & Research	25	42
<b>Total</b>	<b>402</b>	<b>733</b>

### STUDENTS' ACTIVITIES

Apart from concentrating on academic activities, the Institute also places an emphasis on an all round development of its students. The Institute has, therefore, created excellent infrastructure for a variety of co-curricular and extra-curricular activities such as sports, student publications, Robotics as well as cultural and welfare programmes. The Student Affairs Council (SAC) and its five constituent boards plan, organize and manage the various student activities throughout the year.

Efforts are undertaken by the Institute to provide hostel accommodation to all the students, and also to ensure proper maintenance of the hostels including renovation work, providing security, cleanliness, dining facility etc. During the year, hostel accommodation has been provided to 809 fresh UG students, 961 fresh full time PG students. Institute provides accommodation to 6230 full time students. A boys hostel Udaigiri with 500 seats has started functioning since last year. Further, a comprehensive renovation of older hostels has also been taken up.

Through the Board of Hostel Management (BHM), recruitment of adequate manpower for hostels has

been done and new equipment installed in the hostels to meet the needs of students. BHM also organized celebrations of Independence Day, Republic Day and Gandhi Jayanti functions at the Institute level.

The Board for Student Welfare (BSW) helps the student community to facilitate their relaxed stay and activities in the Institute. Financial assistance was provided to needy students through summer/winter jobs. The students from economically weaker background were provided book and financial aid in the forms of grants/loans. One of the major services extended by the BSW is the Students Counseling Service (SCS). The SCS counsels students undergoing stress related ailments and helps them recover their balance. The Relaxation Room located in SCS equipped with Bio-Feedback machines in the Students Counseling Centre is of great help to the needy students suffering from tension, stress, stammering and depression.

### BSW organized the following activities:

- Hindi learning lessons for foreign students visiting the Institute under the student exchange programme with various countries.
- Organized self enrichment program (conducted by CREST, Centre for Research and Education for Social Transformation) for helping the fresher to improve their speaking skills, remove inhibitions and develop overall confident personality.
- Unique programme of student mentorship (SMP) is working actively. Every fresher is assigned a student mentor from 3rd year. The mentors help freshers for their overall adjustment in campus environment and to help them to analyze various options at different stages of IIT life.

- Speranza, annual socio-welfare youth fest of Indian Institute of Technology Delhi was organized. It included various workshops, talk shows, interactive sessions, rendezvous with alumni, panel discussion, MUN (Model United Nations) and a mélange of cultural activities.
- STIC (Student-Teacher Interaction Committee) tried different initiatives to improve student teacher interaction. Dinners were organized for all freshers with their teachers. All hostels hosted STIC dinners for their students.
- Student Counseling Service (SCS) organized various useful workshops for freshers. It provides a confidential environment where a student can explore and express aspects of himself / herself that may be painful or uncomfortable.
- Numerous other workshops (NRCVEE, selfdefence, sexuality and RTI, ethical hacking etc) were organized by the BSW time to time.
- The BSW organized various camps and trips to Akshardham, Auto Expo, Book Fair, Rashtrapati Bhawan etc. for freshers.
- BSW also runs a student cooperative society (SCOOP) that arranges for stationery items, notebooks, greetings cards, T-shirts and souvenir of IITD.

The National Service Scheme aims at arousing social consciousness and developing the personality of the educated youth by involving them in the community development during their leisure hours. The motto of NSS is Not Me, But You. Development of confidence, patience, leadership qualities, and sense of involvement in task of nation building are few amongst some of the most tangible outcomes of NSS.

NSS, IIT Delhi has a volunteer base of around 1500 students belonging to various disciplines and degrees of IIT Delhi. It works on a diverse range of social issues which can be broadly classified into six main domains: (i) Education, (ii) Health, (iii) Environment and Sustainability, (iv) Social Innovation, (v) Women Empowerment, and (vi) Internships. It has collaborations with several NGO's like National Association for Blind, Pravah, Hazard center, GOONJ, Khoj, Arushi, DNip-Care, Vidya, National Association for Blind, Rana Senior Citizen's home, ApnaParivar Children's home, and Friends Organization. It also runs independent project to teach women at Bhatti Mines, Mess Workers and slum kids in Munirka.

NSS organizes a wide variety of activities throughout the academic calendar to enable students to gain valuable exposure to challenging societal issues. Some of the activities organized by NSS in the year 2012-2013 include five Blood Donation Camps, three Cloth Collection Drives, two Campus Cleanliness Drives, a sports event for blind students, several creative workshops for unprivileged kids, and Green Rendezvous PET bottles collection.

NSS also successfully organized a 3-day long festival, Vijigisha to commemorate the 150th birth anniversary of Swami Vivekanand in which a host of activities pertaining to the spirit of social service were organized. The installation of Solar Lighting bulbs in Munirka Slums marked another dimension in the Socio-technological interventions of NSS IIT Delhi.

The all India student seminar on Science & Technology "TRYST-2012" was organized in which many students from different engineering institutions from both inside and outside Delhi, participated. A good number of papers by IIT Delhi students were presented in different branches of engineering.

The Board for Recreational and Creative Activities (BRCA) was set up with the aim to provide students with an opportunity to develop their skills and discover their talent in the field of music, dramatics, debating, quizzing and other such activities. During the period under report, BRCA organized a number of events including RENDEZVOUS and Students Week. Recently UNESCO has extended its patronage to Rendezvous'13, IIT Delhi's annual cultural festival, which incidentally is the first for any college level festival in India. The Institute Dance Team alone grabbed 1st position 11 times in the previous year followed by the Quizzing team which also brought 10 trophies in Inter College competitions held in various Delhi University colleges and other IITs.

The Board for Sports Activities (BSA) is a constituent body of the SAC, it is responsible for the coordination of the various sports activities in the Institute. It ensures that adequate facilities are given to sportspersons and provides a forum for the students and staff to discuss the formulate policy towards the betterment of sports activities in the campus. IIT Delhi students participated in Inter IIT Sports Meet at IIT Roorkee. During this meet, student Bharti Singla broke the Inter IIT Sports Meet record in 800 meters. BSA also organized the Inter college sports Meet "Sportech 2012". IIT Delhi (Staff) has also won the General Championship during Inter IIT Staff Sports Meet-2012 at IIT Roorkee.

The basic goals and objectives of the Board for Student Publications (BSP), as recognized by the SAC, are to identify and support literary talent through literary activities into the campus and to create community awareness about issues which concern students. Publication of BSP, both English and Hindi, provide excellent forum for expression of student opinion about a wide spectrum of issues reflections on the campus life and literary creations. BSP also

organized inter college festival "Literati – 2012". The following publications were released:

Cornucopia – to highlight research work done by IIT Delhi students and faculty.

Instinct - IIT Delhi Newsletter covering surveys about administrative functioning of IIT and ongoing campus activities and issues.

Upkatha – Two volumes were released in Hindi & English with the theme: Borders or Lakeren.

The NCC unit at IIT Delhi is affiliated to 7 Delhi Battalion NCC. The NCC unit IIT Delhi organized regular training, prade to NCC Award for the Best Cadets, Winter camps were organized on the IIT Delhi and outside Delhi premises.

#### **Other Awards received by the students:**

1. Samsung Innovation Award, 2012 won by IIT Delhi Startup, Zumbl.com represented by CSE Students – Mr. Devashish Tyagi, Mr. Madhur Gupta & Mr. Utkarsh Ohm.
2. CIMA Global Business Challenge's India round, 2013 won by IIT Delhi students Mr. Deepanshu, Mr. Sahebjeet Singh, Ms. Surabhi Yadav and Mr. Vaibhav Yadav. The team also finished among top 5 in the World Finals in South Africa.
3. 3 startups from IIT Delhi – Zumbl.com, Ask Me Price and Ticket Zone were awarded 6 months incubation from Digital Media Zone at Ryerson University, Toronto, 2012.
4. The WIPRO Awarded an Earthian 2012 Award to Mr. Anukur Garg of IIT Delhi for his contribution to the paper titled "Fate of Energy – Limited Supply, Unlimited Demand".

5. Startup Weekend Hyderabad, 2012 won by team led by Utkarsh Ohm
6. Mr. Kanav Gupta, secured 1st position in the Debate Competition on Intellectual Property on “Can India Become an Innovation Promotion” organized by FICCI.

### **INTERNATIONAL COLLABORATION**

IIT Delhi has established strong bilateral links with several leading centres of teaching and research all over the world to remain at the forefront of scientific and technological developments. At present, a large number of collaborative research projects are in operation with the institutions in the United Kingdom, France, USA, Japan, Germany, Switzerland, Hungary, Canada, Sweden, Portugal, Denmark, Korea, Ireland and Ethiopia. Major research project activities have also been undertaken in the areas of national importance. These collaborations include students and faculty exchange, joint research and fellowships for training at the doctoral and post-doctoral levels.

IIT Delhi has also entered into a collaboration with Mauritius Government to establish an IIT like Institution for Higher Education and Research in Mauritius.

### **RESOURCES**

Faculty members are encouraged to submit proposals for sponsored research and undertake research based consultancies. Continuing education programmes and custom designed programmes for industry are conducted to upgrade knowledge and also generate resources.

For the year 2012-13, the actual recurring expenditure Non-Plan & Plan were to the extent of Rs.24191.61 lakhs and Rs.3085.44 lakhs respectively and Plan

Non-Recurring expenditure was Rs.12681.00 lakhs. The Institute generated about 25.95% of the actual recurring expenditure through internal revenue generation including fees, sponsored research, consultancies and continuing education programmes.

During the year 2012-13, the Institute received Rs. 18995.00 lakhs as Non Plan Grant, Rs. 14260.00 lakhs as Plan Grant (Normal Non-Recurring Expenditure) and Rs. 3340.00 lakhs as Plan Grant (Normal Recurring Expenditure). The income from internal accrual from the fees, interest and sponsored projects was to the extent of Rs.6277.02 lakhs. Within the financial resources available to the Institute, a number of construction and development activities have been taken up to augment the Institute infrastructure.

### **INTERACTION WITH ALUMNI**

#### **Distinguished Alumni Award**

IIT Delhi lays great emphasis on interaction between the alumni and the alma mater and supports the activities of the IIT Delhi Alumni Association. We are proud of our alumni and their achievements. The success of the alumni is one of the most important yardsticks by which we measure our achievements.

The Institute recognizes the outstanding contributions made by the alumni in various areas by conferring the Distinguished Alumni Award each year. This award is the highest honour conferred by the Institute on its alumni to recognize their achievements and outstanding contributions to academics, business, profession and / or public service. Fifty seven alumni have received the award since its inception in 1992. This year, we are proud of conferring the prestigious award on

- Prof. Rajpal S. Sirohi  
(Post-M.Sc. Diploma in applied Optics, 1965 and Ph.D. Physics, 1970)  
Lokapriya Gopinath Bordoloi Chair Professor,  
Central University, Tezpur, Assam
- Prof. Sugata Mitra  
(M.Sc. Physics, 1975 and Ph.D. Physics, 1978)  
Professor of Educational Technology, Newcastle  
University, UK
- Dr. T.S. Ramakrishnan  
(B.Tech., Chemical Engg., 1980)  
Scientific Advisor/Research Director,  
Schlumberger-Doll Research, USA
- Prof. Sanjay Puri  
(MS, Physics, 1982)  
School of Physical Sciences, JNU, New Delhi
- Prof. Varun Grover  
(B.Tech., Elect. Engg., 1982)  
William S Lee (Duke Energy) Distinguished  
Professor of Information Systems, Clemson  
University, SC

### Alumni Events

Silver Reunion of 1988 Batch was celebrated from December 21 to 23, 2012. About 90 alumni participated along with their families.

Pearl Reunion of 1976 & 1977 Batches was celebrated on March 10, 2013. About 50 alumni participated along with their spouses.

In addition, there also were a number of the events including alumni:

- Family Picnic 2013 was organized on 26th January 2013 at Football Ground of the Institute. Alumni ranging from 1968 batch to 2013 gathered to celebrate the occasion.
- Alumni Musical Event “Nagme 2013 – Izhare-E-Mohabbat” was held at IIT Delhi on 9th March, 2013.
- IITD Alumni Association sponsored 3 UG and 3 PG awards for innovations the I<sup>2</sup> Tech 2013- IIT Delhi’s ‘Technology Open House’, where newly developed products and technologies are put on display for outsiders, was held at IIT Delhi on 20th April, 2013.
- Leadership Conclave was held on 20 April, 2013 at Welcom Hotel Sheraton, Saket. This event was dedicated to the memory of Prof. Indresan. Hon’ble Ex- President of India - Dr. APJ Abdul Kalam was invited for the event as he was close to Prof. Indresan and his dreams.
- Distinguished Alumnus Dr. Raghuram Rajan (B.Tech., Elect. Engg., 1985), gave Prof. P.V. Indiresan Oration “INDIA EMERGES’ on 25 April, 2013.
- AGM 2013 & Annual Get-together was held on 27 April, 2013 at IIT Delhi. There were more than 800 people present at the event. At this event, IITDAA presented awards for Outstanding Contribution to National Development 2012-2013 to Mr. Ajay Kumar (B.Tech., Electrical, 1975) & Mr. Shashank Mani Tripathi (B.Tech., Mechanical, 1986).

### Support from Alumni

The Alumni are a very valuable resource for the Institute, and increasingly, they have started to make a difference to the way things are done at IIT Delhi. The Alumni have directly contributed for instituting Student Awards, Student Scholarships and even for infrastructure development. Some of the contributions

from the Alumni in the previous year are listed below and are gratefully acknowledged:

- Alumna Vera Kripalani & Alumnus Anil Kripalani (B.Tech., Elect. Engg., 1974) have contributed Rs. 80,00,000/- (Rs. Eighty lacs) for instituting “Tolaram and Sunita Kripalani Applied Technology Laboratory” & “Sirish Chandra & Vidya Mathur Seminar Hall” in Amar Nath & Shashi Khosla School of IT at IIT Delhi.
- Amitji Memorial Trust has contributed Rs. 50,000/- (Rs. Fifty thousand) for renewal of “Amit Garg Memorial Award” set up in the memory of alumnus late Mr. Amit Garg (B.Tech., CSE, 1999).
- Alumnus Mr. V.C. Bedi (B.Tech., Mech. Engg., 1968) has contributed Rs. 25,000/- (Rs. Twenty five thousand only) as the annual contribution towards “Pearl Award (Batches 1965 to 1969)”.

## INTERNATIONAL ENGAGEMENTS

### Agreements/discussion on key collaborations

An MoU between IIT Delhi and Georg Simon Ohm University of Applied Sciences Nuremberg, Germany, has been signed on 20th May, 2013.

A Letter of Intent between IIT Delhi and University of Nebraska Lincoln, USA to promote collaboration in the area of cyber systems and information assurance has been signed on June 25, 2013.

An MoU between IIT Delhi, the Massachusetts Institute of Technology, Harvard University and the Indo-US S&T Forum to hold annual summer school(s) in India was signed in May 2013. The first of these summer schools was held from June 24-July 6, which brought in 21 students from all over India (selected on a competitive basis) and was taught by faculty members

from MIT and Harvard along with researchers from the two institutions.

The Director and Dean, Alumni Affairs and International Programs also undertook a visit to TU Delft, Netherlands, following a visit by the TU Delft President and colleagues earlier their year, to discuss in more detail the possibility of a strategic partnership. The discussions were very fruitful and we have a preliminary agreement with TU Delft to develop a major strategic partnership.

Talks by several distinguished international speakers were organized which included:

- Institute lecture on “S&T and Diplomacy in the 21st Century” by Dr. William E. Colglazier, Science and Technology Adviser to the U.S. Secretary of State on 21 January, 2013.
- Institute lecture on “The search of a deeper understanding of our universe at the Large Hadron Collider: the World’s Largest Particle Accelerator” by Professor Rolf-Dieter Heuer on 14 February, 2013.
- Institute lecture on “Energy and Innovation” by Dr. Steven Chu, Secretary United States Department of Energy, on 16 April, 2013.

### Distinguished International Visitors

Many delegations from the Industry, Academia and the Government from several countries visited the Institute to explore the possibilities of mutual interaction. Some of these are highlighted below:

- A 2 member delegation led by Dr. Ronan McGrath, Head of School of Physical Sciences, University of Liverpool, UK, visited the Institute on 01 October, 2012.

- A 5 member delegation led by Dr. Hannes Androsch, Chairman, Austrian Council for Research and Tech. Development, Austrian Council for Research and Tech. Development, Austria, visited the Institute on 03 October, 2012.
- A 11 member delegation led by H.E. Federal Councilor Dr. Alain Berset, Head Federal Department of Home Affairs, Switzerland, visited the Institute on 03 October, 2012.
- A 5 member delegation led by H.E. Mr. Alejandro Cruz, Minister of Science and Technology, Costa Rica, visited the Institute on 15 October, 2012.
- A 3 member delegation led by Mr. Nigel Relph, Pro Vice Chancellor, and Vice President, University of South Australia, Australia, visited the Institute on 20 November, 2012.
- A 3 member delegation led by Prof. Albert Wu, Professor, Chemical and Materials Engg., National Central University, Taiwan, visited the Institute on 24 January, 2013.
- A 13 member delegation led by Dr. Mats Johnsson, Senior Advisor, Ministry of Education and Research, under Indo-Sweden Research Collaboration, Sweden, visited the Institute on 29 January, 2013.
- A 7 member delegation led by Prof. Peter Gregson, Vice Chancellor, Queens University, UK, visited the Institute on 25 February, 2013.
- A 12 member delegation led by Dr. Mary Eileen McMahon, Regional Director, University of California Education Abroad Program, California, USIEF, USA, visited the Institute on 11 March, 2013.
- A 3 member delegation led by Prof. Donal Dingwell, Secretary General of the European Research Council, Belgium, visited the Institute on 15 March, 2013.
- A 3 member delegation led by Prof. Tan Chorh Chuan, President of National University of Singapore, Singapore, visited the Institute on 25 March, 2013.
- A 11 member delegation led by YBhg. Datuk Haji Omar Bin Abd. Rahman, Deputy Secretary General (Management), Min. of Higher Education, Malaysia, visited the Institute on 4 April, 2013.
- A 3 member delegation led by Dr. Hesham Ali, Dean of the College of IS&T and Professor of Comp.Sc./Bioinformatics, University of Nebraska at Omaha, visited the Institute on 16 May, 2013.
- A 11 member women delegation led by Ms. Alyssa Ayres, Deputy Assistant Secretary, U.S. Department of State, USA, visited the Institute on 21 May 2013.
- A 4 member delegation led by Dr. Hassan Said Kashoob, Vice Chancellor, Dhofar University, Oman, visited the Institute on 26 August 2013.
- A 4 member delegation led by Mr. Hiroyuki Abe, Counselor to the President, Director General, Centre for Intellectual Property Strategies, Japan Science and Technology, visited the Institute on 19 September 2013.

#### VISION OF IIT DELHI

The Senate of the institute has defined its vision in the following terms: "To contribute to India and the world through excellence in scientific and technical education and research, to serve as a valuable resource for industry and society; and to remain a source of pride for all Indians."

We are trying to achieve this vision by becoming a place where exploration of truth and knowledge is pursued earnestly, where young people can be freed from the presumptions and prejudices with which they were raised, freed by the power of ideas to pursue their own path in life – a place where our students feel inspired to develop an approach towards life and profession that brings dignity and honour to human affairs. So, while we share the universal dreams of all great research universities of the world and wish to be known as a place where science and technology are pursued at their frontiers to bring benefit to the society and mankind, we equally wish to try to be a place where the mind becomes free in the true sense of freedom spoken of by the Nobel Laureate poet Ravindra Nath Tagore. We have tried in the last few years to move closer to these goals and hope to continue these endeavours in the future.

As a responsible educational institution, we try not to lose sight of the essential purpose of education. Education is not about teaching of facts and principles and laws and formulas. Education is also not about just class room teaching, which, of course is very important to teach basic principles. It is often the case that research universities like the IIT's do have excellent teaching pedagogies, even though sometimes these may be imperfect. But irrespective of the quality of teaching they might have encountered in the class room, our alumni at their silver reunions realize that few of the facts and figures they learnt in the class room remained struck in their minds. At best they might remember and recall some of their best instructors, but rarely what they learnt from them.

Nevertheless, they feel that they had their greatest learning experiences during the few years that they spent at IIT. Clearly, we do something right, and have been successful in creating and continuing traditions which have positive values for our students in the longrun. It is interesting to recall James Bryant Conant,

“Education is what is left when all that has been learnt is forgotten.” Our Alumni have repeatedly shown us that the IIT education does give them something, which has value even as it remains intangible.

## ACKNOWLEDGEMENTS

We would like to acknowledge the support received in abundant measure from the Ministry of Human Resource Development, the various sponsoring agencies, the collaborating industries, institutions and alumni.

I personally acknowledge the support and encouragement I have received from the Chairman and Members of the Board of Governors, and from all my colleagues, and extend my appreciation to the students for their exemplary behavior and their contributions towards enriching the campus life.

Finally, I conclude by conveying my heartiest congratulations and best wishes to each one of the 1813 graduates receiving their degrees and diplomas, and 87 graduates receiving the awards/medals/cash prizes for their special achievements at the 44th Convocation of the Institute. We are confident that your stay with the Institute has enabled you to continue the process of lifelong learning and to take up challenging careers. We are also confident that you will give the leadership that the country and the world expect from you. We wish you success in whatever you choose to be. Keep in touch with your alma mater, support it in whatever way you can, and keep the IIT Delhi flag flying high. I am sure that you would work for a better world where science and technology are used in socially responsible ways, and in harmony with nature.

I once again thank our Chief Guest, Shri Pranab Mukherjee, our Chairman, Board of Governors, Dr. Vijay Bhatkar, and all the distinguished guests for being with us on this occasion.

Thank you. Jai Hind.