



भारतीय प्रौद्योगिकी संस्थान कानपुर

INDIAN INSTITUTE OF TECHNOLOGY KANPUR

वार्षिक प्रतिवेदन
ANNUAL REPORT

2016-17

Board of Governors

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Shri R C Bhargava

Director



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Shri K Venkataramanan



Prof. J K Bhattacharjee



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Nominees of UP State Govt.



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Prof. V K Yadav

Secretary to BOG



Prof. Sudhir Misra (Till 13 March 2017)



Shri K K Tiwari (W.e.f. 14 March 2017)

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Director's Report



Honorable Chief Guest Shri Natarajan Chandrasekaran, Chairman, Tata Sons, Prof. P. Balaram, Honourable Chairman and member Board of Governors of Indian Institute of Technology Kanpur, other members of the Board of Governors, Members of the Academic Senate, all graduating students and their family members, members of faculty, alumni, staff and student community, invited dignitaries, guests, and members of the media: I heartily welcome you all to the fiftieth convocation of the Indian Institute of Technology, Kanpur.

Established in 1959, IIT Kanpur is the fourth oldest among the IITs which were created to set a benchmark in modern engineering education in the country. Since inception, IIT Kanpur distinguished itself as the pioneer of science-based engineering education in India, aided by a decade-long fruitful collaboration with a consortium of US Universities under the Kanpur Indo-American Program (KIAP). In the last 57 years, IIT Kanpur has developed the 'gold standard' of education and research in engineering and technology. Heralding Computer Science and Materials Science as new disciplines of interdisciplinary education as early as the 1970s, IIT Kanpur envisaged making pioneering contributions to engineering education in India. Happily for us, the tradition continues. Only recently, a new Department of Economic Sciences has been created at IIT, Kanpur, which will be the first of its kind in the entire IIT system, offering BS and MS degrees to the students entering through the JEE, in addition to the Ph.D programme in Economics. I am also happy to announce that the Academic Senate has also approved a new and unique Inter-Disciplinary Program (IDP) in Cognitive Science.

Academic Activities

The academic session ending in May 2017 has been both productive and eventful. Thus, it is my privilege to review our activities pertaining to this period. I am delighted to let you know that the total number of Ph.D degrees approved by the Senate for this convocation is 160, which thus far remains an all time high record in the history of the Institute. In addition, 785 other PG degrees (339 M.Tech; 33 MBA; 24 M.DES; 40 VLFM; 127 M.Sc. (2 Year); 2 M.Sc. (Integrated);

142 B.Tech-M.Tech (dual degree), 62 BS-MS (dual degree), 5 BT-MS (dual degree), 1 BS-MBA (dual

degree) and 10 MS-PD (M.Sc. part of dual degree)) and 599 UG degrees (515 B.Tech, 72 Bachelor of Science (4 Year) and 12 Double Major) will be awarded in this convocation. It may be worth mentioning here that, out of the total of 809 graduating UG and dual degree students, 174 students have received distinction (CPI of 8.5 or more), i.e. about 12.5% of UG and dual degree students are graduating with distinction. To keep pace with the evolving knowledge in science and technology domain, 06 new Undergraduate and 59 new Postgraduate courses have been approved by the Academic Senate during 2016-17.

Academic Initiatives

The Senate has approved formation of its new standing committee "Curriculum Monitoring and Development Committee (CDMC)" to review, monitor and evaluate teaching and learning methods adopted and practiced so that pedagogy at IITK maintains pace with changing times and incorporates the state of the art methodology in its courses. CDMC will guide the evolution and formulation of new structure and directions, as and when required.

The Institute has initiated steps to join the National Academic Depository designed to maintain a repository of all degrees awarded by IIT Kanpur in a digital format accessible 24x7 to the students and employers from anywhere in the world.

With increased student strength in class rooms it had become very difficult for the instructors to monitor attendance of students on a regular basis. We have recently implemented a biometric based attendance system for large classes where the lecture halls complex staff helps the instructor and circulates biometric devices to enable attendance monitoring.

The undergraduate and dual degree programmes offered at IIT Kanpur are one of the most flexible in the country. Flexibility of our academic program has led to a large number of students graduating with minors (some with multiple minors) as highlighted below:

No. of students completing one Minor: 152
 No. of students completing two Minors: 17
 No. of students completing three Minors: 1.

In addition, by spending one year extra, 12 UG students are graduating with a second major and 211 UG students are graduating with a master's degree along with a bachelor's degree.

National Programme on Technology Enhanced Learning (NPTEL)

IIT Kanpur is one of the major partners in the NPTEL initiative that offers online courses in various topics and awards certification to lakhs of students across the country. As part of the NPTEL Phase IV program, IITK offers massive open online courses (MOOCs) in the disciplines of Engineering, Sciences, Management, and Humanities and Social Sciences.

Since 2014, IIT Kanpur has offered over 100 MOOCs. As part of the Phase IV initiative, we have developed close to 700 local chapters with identified expert faculty members from these institutions serving as local mentors for the students enrolled in NPTEL courses. IIT Kanpur team has conducted workshops for the local chapters in Uttar Pradesh, Uttaranchal, Assam, Manipur, Tripura, Meghalaya and Arunachal Pradesh. These workshops aim at generating awareness about the NPTEL platforms, explaining difficult concepts from the course content by the subject experts and inviting more and more institutions with a dearth of good teaching staff to become local chapters for meaningfully utilizing this platform initiated jointly by the IITs and supported by the MHRD.

Along with these Online Certification Courses, MHRD along with IITs and several other educational institutions ventured into a concept of taking education Directly to Home (DTH) through its Swayam Prabha initiative. Out of 32 Swayam Prabha DTH channels (launched early this year), 8 channels are being managed by the NPTEL Core Team. The two channels (16 & 17) are currently being managed by IIT Kanpur. These channels broadcast the NPTEL course content in Mechanical Engineering, Humanities and Social Sciences, Management and Core Sciences.

Besides NPTEL Phase IV and Swayam Prabha DTH project, we have been creating content for school education (Class XI and XII) in Physics and Biosciences to be aired through DTH PAL channel which runs courses in Physics, Chemistry, Biology for the higher secondary level.

The experiment on Flipping Classes was continued and seven courses were offered in the flipped mode- that is the lecture videos were released before hand and the face-to-face meetings were used for discussions and problem solving. The major observation from the students was that this format allows them to review the lectures multiple times at their own pace and convenience, greatly helping all sections of students. Our experience shows that many students have difficulty in following the lectures in English, especially in the first year. To help such students, for all topics

covered in the course, we recorded the lectures in Hindi and made them available on an online platform. We observed that about fifty students (out of a registered four hundred) watched these

Hindi lectures regularly. These are now available on our outreach portal for access from outside IIT, Kanpur as well.

Dr. H.C. Verma conducted a MOOC on "Learning Physics through Simple Experiments". Fifty-three thousand (53,000+) students registered for the course. On an average, there were more than a hundred questions asked and answered every day in the Forums.

A set of three online courses on agriculture were conducted using the mooKIT platform in collaboration with Commonwealth of Learning, Vancouver, bringing the total courses under AgMOOCs to eight so far. The AgMOOC platform is probably the only place which has multiple MOOCs in agriculture.

Research & Development

The Institute has registered steady growth in its Research and Development activities this year. The number of externally funded ongoing projects has reached 563 with a total sanctioned amount of Rs. 645 crore. During 2016 - 2017, the Institute received sanctions for 159 sponsored projects worth Rs. 223 crore and 131 consultancy projects of value Rs. 46 crore. Some of the major grants sanctioned by various agencies during the year include Ministry of Human Resource and Development (MHRD, Rs. 110 crore), Science and Engineering Research Board (SERB, Rs. 26 crore), Department of Science and Technology (DST, Rs. 20 crore), DFID Executor Vilgro Innovation Foundation (DFIDE, Rs. 12 crore), Ministry Of Water Resources, River Development & Ganga Rejuvenation (MOWRG, Rs. 10 crore), and Ministry of Environment Forest and Climate Change (MOEFCC, Rs. 9 crore). Some of the major industries who have funded projects to IITK this year include National Thermal Power Corporation, Aeronautical Development Establishment, Aeron Systems Pvt. Ltd, Vikram Sarabhai Space Centre, Oil and Natural Gas Corporation Ltd., Unilever Industries Pvt. Ltd., Sterlite Technologies Ltd., Tata Consultancy Services Ltd., Tata Steel Ltd., Bharat Heavy Electricals Ltd, UP State Industrial Dev. Corporation, and Mitsubishi Heavy Industries Ltd.

A list of major projects granted this year is appended at the end of the report.

IMPRINT India Initiative

In conceptualizing, launching, and implementing the unique national initiative called IMPacting Research, INnovation and Technology (IMPRINT), IIT Kanpur has played a key role as the National Coordinating Institute. IMPRINT is unique because it covers the entire engineering domain in harnessing the combined

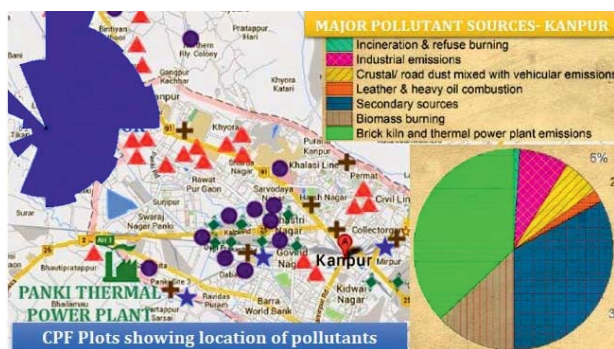
strength of all CFTIs including IITs, NITs, IISERs, IISc and also seeks to focus on translation and not just creation of knowledge into technology products and processes. IMPRINT was launched by the highest political leadership of the country from the Rashtrapati Bhawan. MHRD has released the grant for 91 projects for the financial year 2016-17 with total funding of Rs. 49.3 crore. As of now, a total of 259 projects have been sanctioned in the IMPRINT scheme, with a total funding of Rs. 595.88 crore from MHRD and partnering ministry in a 50-50 sharing mode. IIT Kanpur is implementing 27 of these projects totaling Rs.67.78 crore. Ministry of Steel, Power, Urban Development, SERB, Department of Scientific and Industrial Research, Heavy Industries, ISRO and ICMR have participated in this scheme.

Major projects sanctioned

Some of the major projects sanctioned in 2016-17 are briefly described below:

Department of Atomic Energy has sanctioned a project titled Bi-functional Approach to Small Molecule Activation: Towards Sustainable Processes and Products. The central objective of this project is to design and develop a catalytic system for the conversion of cheap and earth-abundant molecules to value-added compounds. The concept of metal-ligand cooperativity would be exploited to engineer new generation catalysts. Alternative pathways to elementary organometallic reactions will be developed. Some of the reactions that will be examined include 'green' synthesis of industrial chemicals, valorization of biomass, hydrogen production and more.

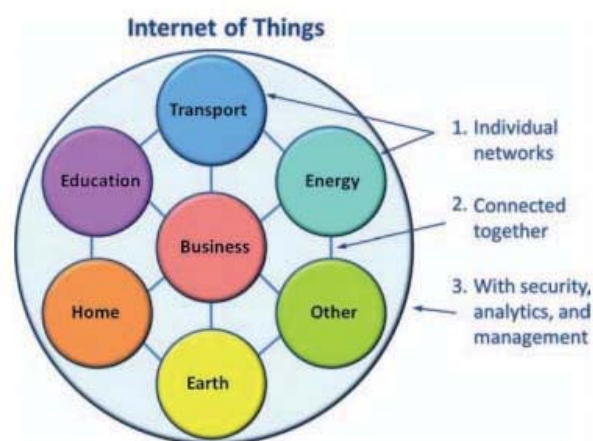
The objective of the project titled PPP Mode Industry Projects (Prototype Development Fund) is to develop an array of flexible temperature sensors which could be used as wearables for healthcare applications. Low-cost materials and processes utilizing flexible and printable platforms are being utilized to make the system cost effective. The work is being undertaken at the National Centre for Flexible Electronics, IIT Kanpur with joint support from The Ministry of Information and Communication Technology, Govt. of India, and Murata Mfg. Co. (Japan).



The Ministry of Environment, Forest and Climate Change funded the Project titled National Carbonaceous Aerosols Programme (NCAP) Working Group III. Carbonaceous aerosol emissions arise

from energy use and the burning of forest, grasslands and agricultural residues. The emissions lead to air-quality degradation and related health-risks on local to regional scales and to climate impacts on regional to global scales. In South Asia, there is dominance of small combustion sources, less-developed industry, and vehicular emission. The broad objectives of this major national initiative involving more than a dozen institutes are extensive understanding of carbonaceous aerosol emissions from regional sources including emission inventory, source apportionment, and their seasonal and long-term atmospheric abundance. Specifically, IIT Kanpur will be estimating emission magnitude and uncertainty of carbonaceous aerosols and co-emitted species from major vehicular tail pipes. In addition, an inverse modeling method will be employed with the aid of molecular markers and isotope finger printing for deducing regional atmospheric abundance of carbonaceous aerosols, measured over a two-year long period, from two North-East Himalayan sites.

The Wellcome Trust funded the project titled Coding of Innate Olfactory Preferences in the Mosquito Brain. Mosquitoes detect humans using a variety of cues, including the exhaled carbon dioxide and skin odors. Presently, the understanding about how the information relayed by the sensory neurons is processed in the mosquito brain and how it results in specific behavioral preferences is lacking. In this project, an electrophysiology lab will be established and technique of in-vivo intracellular recordings for mosquitoes will be optimized. By measuring the responses of projection neurons to attractive, repulsive and neutral odorants and examining their morphologies, it will be tested whether different attractive and repulsive odors are encoded by dedicated neural pathways.

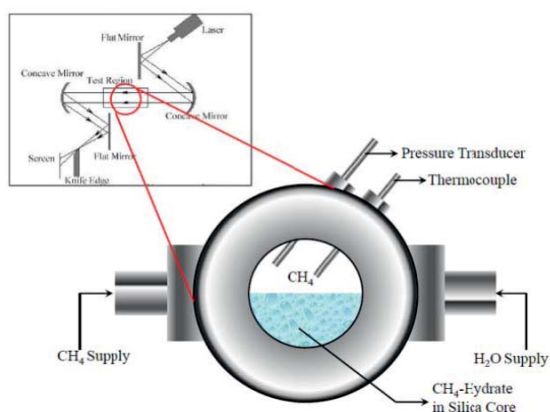


MHRD has set up a Teaching Learning Centre for Internet-of-Things at IIT Patna under Pandit Madan Mohan Malviya National Mission on Teachers and Teaching (PMMMNMTT). IIT, Kanpur, IIT Kharagpur and IIT Indore are other partners. Smart Grid, Smart City, Smart home and assisted living, Smart Cars, Autonomous vehicles, networked systems of robots, UAVs, and unmanned cars are some of the

examples of Cyber Physical Systems (CPS) that will be covered under this scheme.

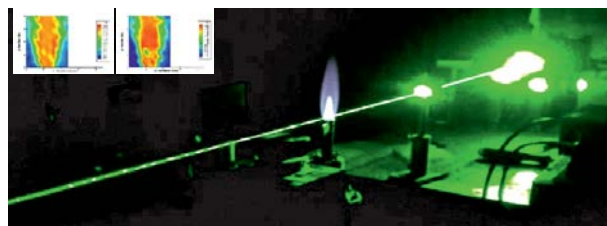
The Department of Science and Technology funded the project titled Agar Based Wound Dressing. India is a developing nation where the quality of life people is also improving. This necessitates the improvement in healthcare products. Indian wound care market is expected to reach US\$ 5.5 billion by 2020. However, the wound care market is still ruled by multinational players raising cost of the final product. In the current project, it is proposed to fabricate cost-effective agarose based materials that can be used for wound dressing as well as drug delivery patches. Different cross-linkers, reinforcements and functionalization strategies would be employed to manipulate the strength of the material, swelling percentage, water vapor transmission rate and gas permeability to suit various wound types.

A project titled Optical Diagnostics of Transport Phenomena during Gas Hydrate Formation and Dissociation funded by the Oil and Natural Gas Corporation proposes to deal with the laboratory-scale experiments of CH₄ extraction from the marine hydrate sediments. The idea is to visualize the physical phenomena as well as to measure the methane fluxes during formation and dissociation of CH₄ – hydrate. The proposed experimental techniques focus on concentration-field reconstruction of laser schlieren imaging and X-ray tomography. The primary objectives of the proposed research include: Laboratory-scale Evaluation of Methane recovery strategies; providing a test-bed for new technologies; Supplying benchmark results for the (computational) reservoir simulators.



The project titled Studies of Fire Propagation, Suppression and Scavenging with Associated Thermal Hydraulic Aspects in Multiple Compartments funded by BARC is in its second phase. In this phase, detailed studies of fire dynamics in multiple compartments is to be conducted along with the development of technologies for fire suppression and containment. Apart from these, technologies are being developed for scavenging the compartments after a fire incidence. Furthermore, a new technology

named Rayleigh scattering based Thermal PIV (RSTPIV) is being developed for non-intrusive measurement of velocity field in and around a fire.



The project titled Integration and Enablement Of 0.18 Micron RF-SOI Technology for Analog Mixed-Signal Applications funded by the Department of Science and Technology envisages “Make in India” for an RF-SOI technology that will enable manufacturing of superior integrated circuits (IC) in India, especially for analog & mixed signal RF applications such as cell-phones, radars, and set-top boxes. Split lot experiments, test structure characterization, process/device simulations, and compact modeling will be carried out to achieve project objectives. It will create production level RF-SOI Analog Mixed Signal (AMS) technology for the first time in the country through collaboration between academic institute (IIT Delhi) and Govt. laboratory (SCL) and will create PDK and offer country's first multi-project wafer (MPW) service.

An Indo-Israel joint project titled Deciphering the Structural Role of Glycogen in Neuronal Autophagy, and Neurodegeneration is being funded by the UGC to understand the roles of glycogen in neuronal survival. Neurons do not store glycogen, although they do have the mechanism to synthesize it. Since glycogen inclusions are seen in the degenerating neurons in the diseased condition, this project looks at the role of glycogen in proteolytic processes and their impact on the neuronal survival.



The Project titled National Interdisciplinary Center for Cyber Security and Cyber Defense of Critical Infrastructures has been sanctioned by the Science and Engineering Research Board. Cyber Security is one of the greatest challenges we face today as we are increasingly dependent on computing, networking, and data driven decision and control. Our critical infrastructures such as power grid, water and sewage system, railway signaling and transportation, manufacturing and process control etc are increasingly vulnerable to cyber attacks. In the recent years, cyber attack induced power grid failure in Ukraine and Israel and halted the banking system in Turkey. The DNS poisoning based attack on the domain name system in India caused loss of 3.2 million debit card data through

ATM malware. Attacks on German steel plants, the New York dam and many other cases point to the possibility that wars in the future will be fought in the cyber space. The interdisciplinary center for cyber security

and cyber defense of critical infrastructure at IIT Kanpur received a funding of 14.43 crore from SERB/DST recently to build India's first industry scale cyber security test bed for cyber physical infrastructure, and to carry out research on protection, detection, and cyber attack resilient design of critical infrastructures.

The project sanctioned by the Department of Science and Technology titled Commissioning of a Pilot Plant of 10 KLD Capacity Comprising ZnO based Sensitive Photo Catalytic Filters for Visible Light Catalysis and Carbon Nano-Mat Fiber Filter based Treatment of the Effluent of CETP, Jodhpur is about providing a solution for industrial effluents consisting of organic dyes which are harmful to environment and are not dischargeable. The solution is provided by using the soil mediated photocatalytic remediation of industrial dye present in the effluents by using ZnO nanostructures in presence of sunlight. The collaborator for this activity is CETP Jodhpur and the goal is to establish a plant of 10 KLD capacities which would be based on solar energy.

Research Infrastructure

Department of Mechanical Engineering received a FIST grant of DST to augment the post-graduate teaching and research facilities amounting to Rs 3.8 crore for establishing the following two major facilities.

Metal Additive Manufacturing Facility:

The facility based on selective Laser melting of a powder bed will be capable of creating metal parts of both reactive and non-reactive materials. The facility will be used to address thermal-material interactions in metal additive manufacturing in detail with an aim to obtain scientific understanding of the physical mechanisms involved. The facility at large can help in indigenous product and technology development and will also provide a boost to the newly evolving area of metal additive manufacturing in India.

3D Tomographic PIV Facility:

This whole-flow-field technique, based on recent developments in camera and laser technology, can provide instantaneous velocity vector measurements in the entire flow thus enabling simultaneous observation of spatial and temporal variation of the flow. The instrument will be used in understanding locomotion of underwater creatures, flow control, bio-medical fluid mechanics etc.

The Department of Science & Technology and the Ministry of Electronics and Information Technology are jointly coordinating the National Super Computing Mission. As part of this initiative, the DST has approved the installation of 1 Petaflop

supercomputing system with appropriate data centres and storage facilities for high-end computing at IIT Kanpur.

National Centre for Flexible Electronics (NCFlexE)

The National Centre for Flexible Electronics (NCFlexE) was established with the objective of carrying out application oriented research that leads to development of domestic industry in the emerging field of Flexible Electronics. A sustained effort was made in the past year to sensitize private enterprises of the opportunities offered by flexible electronics. This included round tables, workshops and short courses that were conducted with a sector-wise focus including health, packaging and anti-counterfeiting. This outreach resulted in several companies entering in a partnership with NCFlexE to jointly develop prototypes.

To move towards the vision of the centre and harness the opportunities in several application sectors, it was essential for the centre to establish a strong interdisciplinary team so that different important aspects of flexible electronics technology could be addressed in a comprehensive manner. As a result of concerted efforts, 20 engineers and scientists with relevant expertise and experience were hired in the last year, taking up the strength of the NCFlexE team to 55.

The centre is engaged in development of several prototypes and products. A team working on Organic Light Emitting Diode (OLED) lighting has demonstrated white light panels of size 80mm x 80 mm and efficiency of 30 lm/W at brightness of 1000 cd/m². Low cost printed 7-segmented OLED displays are being developed for another company. Thin film transistors (TFTs), a key element of many array based systems including active matrix displays, imagers and artificial skin, have been built with Indium Gallium Zinc Oxide (IGZO). These TFT demonstrated on glass and flexible polyimide substrates had excellent mobility and on-off current ratio. These were supplied to Defence Research and Development Organization (DRDO) for further characterization and system integration. Various contact based brand protection labels were developed using screen printing. One of them is being transferred to a company for potential use in products. In addition, a novel, printed low cost, Physically Unclonable Feature (PUF) and App based anti-counterfeiting technology has been developed and is ready for incubation. Sensor array based on conducting-polymer based temperature sensing element is being developed for wearable medical devices. Gas-sensing elements are also being developed in collaboration with an industry partner for food-packaging applications. Conductive inks for ink-jet and screen printing processes have been developed at the centre and a spin-off from this technological development is underway. Other functional inks are also being developed at the centre.

A list of some of the other sophisticated facilities established in the Institute during this year is listed at the end of this report.

Industrial Collaboration

IIT Kanpur is a premier technological institute in the country which engages in the state-of-the-art research in almost all fields of engineering and sciences. The focus is to generate new ideas, to create innovative solutions, and to reveal basic principles of matter with an emphasis on using this knowledge in developing practical engineering and technological applications. In this process, the Institute works closely with industry partners with the objective of adding value to their products and services; the larger goal being to bring in novel solutions to the society at large.

Projects under UAY

S. No.	Title of the Project	Name of the Company	Summary of objective
1	Engineering of security hardened cryptographic protocols for critical national infrastructure	Nivetti Systems	To enhance capability in the area of cyber security
2	Develop a Novel Synthesis route for a key intermediate – Noroxymorphone	Navin Saxena Research & Technology Pvt. Ltd. (NSRT)	To develop a method for producing a key intermediate in synthesis of active pharmaceutical ingredients.
3	Design and Development of Adaptive Intelligent Pipe Health Monitoring Robots for Fuel Transportation Systems	Gas Authority of India Limited (GAIL, India)	To develop sophisticated structural health monitoring mechanism of network of pipelines
4	Development and Scale-up of Ultrasmall Nanocatalysts for Hydrodesulfurization	Hindustan Petroleum Corporation Ltd	To develop novel hydrodesulfurization catalyst using nano- technology

ICME National Hub at IIT Kanpur – A joint IITK-TCS initiative

The focus of Integrated Computational Materials Engineering (ICME) is an emerging and transformative discipline with large potential. The focus is on Integration of models of various processes at different length scales, design and manufacturing processes, models with experiments, software tools addressing multi-physics problems with the end objective of raising ICME to industrial scale. The vision of this joint initiative is to create a World Class Multidisciplinary Educational and Research Ecosystem for ICME at IIT, Kanpur.



IEX-IITK Energy Analytics Lab (EAL), a CSR

initiative by Indian Energy Exchange Ltd, was inaugurated on the 26 April 2017. This is an industry-supported academic initiative, primarily to build a power market database and for developing learning and visualizing tools for it. The expected outcome of the initiative is to help decision making for sale/ procurement of power, optimal utilization of existing/proposed power generation assets, the design of new products for power markets and issuing renewable energy certificates.

Several projects have been initiated with UPCST in a variety of domains, e.g., education, water treatment, surveying of forest area and so on.

Rural Technology Action Group (RuTAG) at IIT, Kanpur developed several technologies and transferred them to end users. Among them, the most prominent ones are Amla pricking machine and long-lasting horse shoes.

Several faculty members and students from IIT, Kanpur actively participated in the third Festival of Innovation organized at Rastrapati Bhavan in various capacities.

Emerson Network Power India Ltd. and the Institute entered into a MoU at Rashtrapati Bhawan with the broad objective of designing, developing products in the field of AC and DC Power and Precision Cooling solutions for Network Power India requirements.

L&T Technology Services Ltd. and the Institute have entered into an MoU to collaborate on promotion of education, research and innovation in areas such as Granular Flow Analysis; Multibody dynamics; Smart grid system; Vibration and noise control and flexible electronics. In the first phase of the engagement, a joint project has been finalized towards indigenous UAY development.

Several collaborative projects were initiated between NTPC Energy Technology Research Alliance (NETRA) and our Electrical and Aerospace Engineering departments in the areas of efficient power distribution and grid integration.

Foundation Day 2016

The 57th Institute's Foundation Day was celebrated on 2nd November 2016. Mr. Vinay Sheel Oberoi, Secretary, DHE, MHRD was the Chief Guest and Dr. Ajit Prasad, Director, IIM Lucknow was the Guest of Honour for the function. On this occasion, Mr. Arvind Pradhan (1974 batch), Mr. Sanjiva K Lele (1980 batch), Mr. Prabhat Singh (1980 batch), Dr. Anurag Kumar (1977 batch), Mr. Vishnu Agarwal (1966 batch), Mr. Ram S Sharma (1977 batch), Dr. Uday B Desai (1974 batch) were conferred the Distinguished Alumnus Award. Dr. Dorairajan Balasubramanian, Dr. Ranendra Narayan Biswas, Dr. Asok Kumar Mallik was conferred with the award of Institute Fellow for the year 2015 in recognition of their contributions to the growth of IIT, Kanpur. Mr. K.M. Abraham, an alumnus of the Institute, was conferred the prestigious Satyendra K Dubey Memorial Award.



Science Day 2017

National Science Day is celebrated in India every year to mark the discovery of the Raman Effect by the Indian physicist Sir C. V. Raman. As part of the National Science Day celebration, the Institute organised a thematic workshop on Nanoscience and Nanotechnology on March 1. The workshop was followed by an invited Lecture on Next Generation Nanotechnology: Balance and Sustainability delivered by Dr. Sharmila Mukhopadhyay, Professor of Materials Science and Engineering and Director of Center for Nanoscale Multifunctional Materials at Wright State University, USA.

Technology Day 2017

National Technology Day is celebrated every year on May 11 to commemorate the history of India's

technological innovations and excellence. As part of this activity, the institute organized an event on May 11, 2017 and the theme of this event was



"From Tinkering to Technology." Dr. Shailesh Nayak Distinguished Scientist from the Earth System Science Organization, Ministry of Earth Sciences, was the chief guest. The event included talks on technology and its application, talks by young entrepreneurs on their journey, and display/ demonstration of technologies developed at IIT, Kanpur. Besides the institute community, the event was attended by a large number of school children.

Research Park

IIT Kanpur has received a major grant of Rs. 70 crores for setting up the Science and Technology Research Park. The Research Park seeks to enhance the Industrial and Transitional research eco-system of the Institute, in partnership with the industry and start up entrepreneurs. The aim of the initiative is to provide necessary environment, infrastructure and policy framework for collaborative research between Academia and Industry, create mechanisms for co-sharing technology and business skills of academia and industry partners, enhance industry sponsored projects to give the IITK students more opportunity to work directly on real-time problems and to create a self-sustained revenue generation model with transitional/industrial research.

The park will have an energy-efficient and environment friendly state of the art multi-storied building complex with a total constructed area of approximately 40000 m². Once fully operational, the entire eco-system will be equipped to host about 50 industrial research units/companies and 100 incubates and Research Park startups. A formal announcement on launching of the Research Park was made during the Foundation Day programme.

Innovation

During the year, 52 Indian patents including 10 design patents, 3 international patents were filed and 10 earlier filed patents were granted.

Till date, 392 Patents have been filed, out of which 58 patents have been granted so far. Altogether 56 technologies have been licensed for commercialization to date.

Incubation

A total of 27 companies are currently incubated at SIDBI Innovation and Incubation Centre (SIIC), IIT Kanpur and 46 have graduated till date.

NIDHI-EIR (Entrepreneur in Residence)

Program

SIIC, IIT Kanpur was sanctioned NIDHI EIR (Entrepreneur-in-residence) in the first round of selection. SIIC, IIT Kanpur is one of the 10 incubators selected as Program Execution Partner. NIDHI EIR is a subsistence grant for potential entrepreneurs for a period of 12 months restricted to a maximum of Rs. 30000 per month. The funding agency is NSTEDB. Venture Centre, Pune is the Program Implementation Partner. The objective of EIR program under NIDHI is to encourage graduating students to take up entrepreneurship as a career option by providing fellowship support. Thus it will help to create, nurture and strengthen a pipeline of entrepreneurs for incubation. The evaluation of applications for funding is in process.

NIDHI-Prayas Program

SIIC, IIT Kanpur was sanctioned NIDHI PRomoting and Accelerating Young and ASpiring technology entrepreneurs (PRAYAS) funding from NSTEDB for setting up a PRAYAS Centre in the first round of selection. SIIC, IIT Kanpur is one of the 10 incubators selected as a Program Execution Partner. The funding has been provided for supporting potential entrepreneurs and for setting up fab lab for providing prototyping facilities to such entrepreneurs. SINE, IIT Mumbai is the Program Implementation partner. It is specifically created to support young innovators to turn their ideas into proof-of-concepts. The support will allow the innovators to translate their innovative idea into a prototype and to reach a stage where they have a ready product and are willing to approach incubators for commercialization. SIIC, IIT Kanpur will facilitate prototype funding to an innovator for a maximum amount of Rs. 10 lakh with a cap of supporting 10 such innovators per year and will provide a dedicated fabrication lab facility on campus. The evaluation of applications for funding is in process.

NIDHI-SSS (Seed Support System) programme

SIIC, IIT Kanpur has been sanctioned Rs. 10.00 crore as seed support and management fee @ 5%. The funds for Seed support is for support of the eligible Incubate Companies to meet their seed funding needs. The funding has been sanctioned by NSTEDB under their NIDHI Seed support program. SIIC is among the four top incubators in the country, which has been chosen for a grant.

With the above grants, SIIC is set to create the S&T Research Park Eco-System so as to bring in corporate R&D bodies too into our midst.

UPL has signed an agreement with Weather Risk Management Services Pvt Ltd (WRMS), a company recently graduated from SIIC of IIT Kanpur. UPL will subscribe to 37,681 equity shares of all Rs. 10 crore to WRMS and INGEN Technologies (subsidiary of

WRMS). WRMS turnover is also expected to touch Rs 15-17.5 crore this fiscal year as compared to Rs 10 crore last year.

Prosoc Innovator Pvt Ltd has been recognized as one of the top 25 emerging social enterprises in India. It participated in the Science and Technology based Social Entrepreneurship Capacity building workshop conducted by Harvard South Asia Institute, IIT Delhi and Tata Trusts.

E-Spin Nanotech Pvt. Ltd. has also been selected as the top Nanotechnology company in India by Silicon India.

IIT Kanpur has sanctioned a funding of Rs 50 lakh for Decentrik Technologies, a startup working on mobile



units called Waah which dispenses clean drinking water. These units will also help in reducing plastic waste as the glasses they dispense are made from recycled food-grade paper. Waah has so far been set

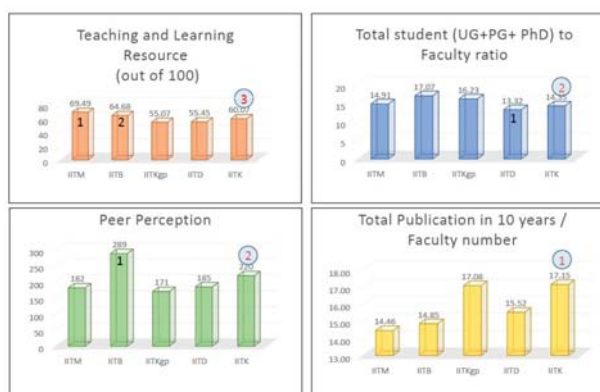
up in Lucknow and Varanasi.

Apegen Technologies Private Limited, an Incubate Company has been awarded the ISBA award for this year under the category of Life Sciences/Pharma/Biotechnology/Healthcare and conferred the Rising Star of the Year Award.

Ranking

Although IIT Kanpur was ranked fifth in the NIRF ranking released this year, it appears that the outcome does not reflect our much better performance on some fundamental parameters in teaching and research. IIT Kanpur is the smallest institute among the older IITs. Most NIRF ranking parameters are on an absolute rather than a relative scale, and thus IITK's relative standing gets affected when absolute values are considered for ranking. Some of the core parameters in which we have fared well include: (i) Our third ranking in teaching, learning and resource (TLR) parameter. The value in this TLR parameter suggests IIT Kanpur is doing well in its efforts at imparting quality education and nurturing young minds and talents. What however brings us down in this TLR parameter is the 'total' number of students, 'total' faculty strength and 'total' number of women student and faculty and a few other socially relevant parameters. (ii) On the Peer perception score, we are ranked second. This parameters indicates our academic Peers rate us well. Despite our overall small size, our research and teaching makes an impact both nationally and internationally as compared with other overall higher ranked Institutions. (iii) Our institution also has the second lowest total student to faculty ratio, compared with other IITs. This parameter indicates, our continued emphasis on individual student - faculty interaction. (iv) Finally, the ratio of the

total number of publications from IITK over a 10 year interval (2006–2015) to the total number of faculty turns out to be the highest among the older IITs. This indicates strong importance laid by our faculty on research and innovation. The same is also true for the citation per faculty which is also high for IIT Kanpur. While some of these parameters do not get significant weightage in determining the overall NIRF ranking score, our performance on some of the above fundamental parameters indicates our continued commitment towards excellence in teaching and research.



Viswajeet

For the Viswajeet initiative, the Institute has submitted a proposal for funding drafted by stakeholders at the Institute with a commitment to finding a place in the top 100 ranked institutes in the world within the next five years. The themes identified for promoting research are Advances Materials Design and Manufacturing, Energy, Therapeutic and Translational Research, Autonomous and Intelligent Systems, Digital Governance, Sustainable Habitat and Unconventional Ideas. In order to strengthen research, systematic steps will be taken to increase faculty and graduate student strength; to boost infrastructure to cater to its researchers; to raise funds from donors, to arrange funding for research grants to high performing faculty; travel support to faculty and students; to create right ambience to attract international faculty and students; to strengthen and equip dissemination system; to organize international conferences and workshops. MHRD has approved the funding for the first year, and the institute has initiated the process to set up the virtual thematic research centres.

International Academic Collaborations recognizing



the value of international cooperation, the Institute has signed MoUs with many foreign Institutions for collaboration in academic and research activities.

The list includes the Curtin University, Australia; University of Cyprus, Republic of Cyprus; Technische Universität München, Germany; University of Applied Science, Darmstadt,

Germany; University of Luxembourg, Luxembourg; École Polytechnique Fédérale de Lausanne, Switzerland; Ohio State University, USA. A memorandum for academic cooperation and exchange between Indian Institute of Technology, Kanpur (IITK) and Kyoto University was concluded on October 28, 2016.

Faculty Recruitment

In the past one year, institute has offered 55 faculty positions selecting rigorously from 1344 applicants. Out of this 18 new faculty members have joined the institute. These appointments are in Aerospace Engineering (03), Chemical Engineering (01), Civil Engineering (01), Computer Sciences & Engineering (03) Earth Sciences (01) Electrical Engineering (03), Mathematics and Statistics (04), and Physics (02). A few more appointees will be joining soon.

The incoming faculty is highly qualified with strong international exposure. The institute has high expectations from them and we offer them a hearty welcome to our campus.

During this period, we have also made 15 offers of postdoctoral fellowships, 12 visiting faculty, 11 adjunct faculty and one as a Distinguished Visiting Professor. 20 Inspire scholars have joined us for pursuing their research.

The following faculty members have been offered chair positions by the institute in 2017.

Dr. S. Ganesh, Biological Sciences and Bioengineering
 Dr. Jayant K. Singh, Chemical Engineering
 Dr. S. P. Rath, Chemistry
 Dr. Javed N. Malik, Earth Sciences
 Dr. Satyajit Banerjee, Physics
 Dr. Shalabh, Mathematics & Statistics
 Dr. J. Ramkumar, Mechanical Engineering
 Dr. Sameer Khandekar, Mechanical Engineering
 Dr. Subrata Sarkar, Mechanical Engineering
 Dr. Sudeep Bhattacharjee, Physics

In addition, the following faculty members are offered young faculty research fellowship 2017.

Class of 1979 Research Fellowship:

Dr. Abhishek, Aerospace Engineering
 Dr. Debayan Pakrashi, Humanities & Social Sciences
 Prof. Arakare Vasudev Faculty Research Fellowship
 Dr. Naveen Tiwari, Chemical Engineering
 Dr. Shukla Faculty Research Fellowship
 Dr. Kumar Vaibhav Srivastava, Electrical Engineering
 Sir M. Visvesaraya Research Fellowship
 Dr. Prishati Raychowdhury, Civil Engineering
 P. K. Kelkar Research Fellowship
 Dr. Bushra Ateeq, Biological Sciences and Bioengineering
 Dr. Arun K. Shukla, Biological Sciences and Bioengineering
 Dr. Basker Sundararaju, Chemistry

Dr. Sameer Chavan, Mathematics & Statistics
 Dr. Anurag Gupta, Mechanical Engineering
 Dr. Amit Agrawal, Physics

Awards and Honors:

Our faculty has played a significant role in pushing the frontiers of knowledge. This has been duly recognized in the form of various awards and honors, including fellowships of professional societies and editorships of international journals.

It gives me immense pride to share with you that Dr. Avinash Kumar Agarwal (ME) and Dr. S. Anantha Ramakrishna (PHY) have been conferred the Shanti Swarup Bhatnagar Prize.

Dr. Indranil Manna, Director, received D.Sc. (honoris causa) from Kazi Nazrul University, Asansol, West Bengal. He has been also awarded MRSI Distinguished Lecture prize 2017 at the MRSI-AGM at IIT Bombay. Dr. Jayandharan G Rao (BSBE) received Senior Fellowship, Wellcome Trust-DBT by the Wellcome Trust-DBT India Alliance. Dr. Raghunath Tewari (CSE), Dr. Piyush Rai (CSE), Dr. Thiruvancheril G. Gopakumar (CHM) and Dr. Manabendra Chandra (CHM) have been elected Visvesvaraya Young Faculty Research Fellowships by the Ministry of Electronics and Information Technology. Dr. Yogesh Joshi (CHE) has been elected Fellow of the Indian National Academy of Engineering. Dr. Vinod K Singh (CHM) has been elected a Fellow of The World Academy of Sciences (TWAS). Dr. Sri Niwas Singh (EE) has been elected a Fellow of The Institution of Electrical and Electronics Engineers- (FIEEE), USA. Dr. Santanu Misra (ES) has been awarded the Swarna Jayanti Fellowship of DST for the year 2015-16. Dr. Rajiv Sinha (ES) has been elected Fellow of the National Academy of Sciences, India, for the year 2016. Dr. Anindya Chatterjee (ME) has been elected Fellow of the National Academy of Sciences, India, for the year 2016. Dr. Anish Upadhyaya (MSE) has been elected Fellow of the Indian Institute of Metals. Dr. Sagar Chakraborty (PHY) has been conferred the Associateship of the Indian Academy of Sciences, Bangalore.

Dr. Sanjay Mittal (AE) has been honored with G.D. Birla Award by K K Birla Foundation. Dr. M. Saravanan (BSBE) has been selected for the Innovative Young Biotechnologist Award (IYBA) for the year 2016 by Department of Biotechnology, Govt of India. Dr. Jayandharan G. Rao (BSBE) has been selected for the 2017 CDRI Award for Excellence in Drug Research in the Life Sciences category. Dr. Arun Shukla (BSBE) has been awarded the NASI-Young Scientist Platinum Jubilee Award in Biological Sciences for the year 2016. Dr. Raju Gupta (CHE) has been awarded the International Association of Advanced Materials Scientist Medal for the year 2017. Dr. Sandeep Verma (CHM) has been selected for the Chemical Research

Society of India (CRSI) Silver Medal.

Dr. Manindra Agrawal (CSE) has been selected for the Goyal Prize of Kurukshetra University in the senior category this year. Dr. Sandeep Shukla (CSE) has been selected an IEEE Computer Society Distinguished Visitor for a period of 3 years. Dr. Sri Niwas Singh (EE) received the Outstanding Teacher Award 2016 by INAE, New Delhi. Dr. Javed H. N. Malik (ES) has been conferred the 2016 National Geosciences Award given by the Ministry of Mines. Dr. G. Santhanam (M&S), has been selected for the INSA Teachers Award, 2016. Dr. Kamal Kar (ME) has been awarded the Tenth Foundation Polymer Award, given by Dr. Sukumar Maiti Polymer Award Foundation, for his outstanding contributions in Polymer Science and Technology for the year 2015. Dr. Kantesh Balani (MSE) has been selected for the Metallurgist of the Year Award (2016) in the Metal Science category by the Ministry of Steel and Mines. Dr. Sandeep Sangal (MSE) has been awarded the Distinguished Educator Award by the Indian Institute of Metals (IIM). Dr. Mahendra Verma (PHY) has been selected for the INSA Teachers Award, 2016. Dr. Sagar Chakraborty (PHY) has been selected for the NASI-Young Scientist Platinum Jubilee Award (2016).

The many prestigious scholarships and awards received by our students have been a matter of pride and pleasure for us. Gargi Singh, Arihant Jain, Shruti Agrawal and Saksham Sharma received the Aditya Birla Scholarship. Manraj Singh Bevi, Md. Wasim Alam and Aditya Srivastava received the O P JEMS Scholarship. Abhineet Singh Rajput and Karttikeya Mangalam received Honda Yes scholarship. Deval Purohit, Kuntalika Das and Vishakha Bargotra received Pratibha Eaton Awards.

The full lists of awards received by the faculty and students are given at the end of the report.

Green Cell

Green Cell of IIT Kanpur is responsible for maintaining an environmentally sustainable campus. The Cell has over the last few years realized the following:

1. Started transplantation instead of removal of the trees affected by construction activities.
2. Marked a "Pristine Zone," covering 25% area of the campus through physical pillars. All attempts will be made to keep the Pristine Zone free of any activity and undisturbed.
3. Prepared baseline data regarding IIT Kanpur environments.
4. Involved Women's Association of IIT Kanpur in community awareness and education program.

Safety

Safety cell carries out periodic safety audits of laboratory, construction sites, utilities and other areas to identify the safety hazards and unsafe conditions related to electrical, fire, mechanical, civil, construction, chemical safety; conducts the accident/incident investigation of all major and minor incidences and suggests corrective measures for non-recurrence. This year approximately 105 such audits were carried out. The Safety Training on laboratory safety practices, fire safety, electrical safety were conducted. Approximately 180 persons participated in these programmes. All modifications and new facilities are taken up after the clearance from Safety cell.

The Office of Dean of Infrastructure and Planning (DOIP)

The Office of DOIP is responsible for all infrastructure planning, creation and maintenance of the campus. It coordinates activities of various units/sections related to physical and digital infrastructure such as Computer Centre, Institute Works Department (IWD), Office Automation, Visitors Hostel and Allied Facilities. The DOIP office has introduced a structured program to handle all requests related to renovation of office space, labs/new space request/request new construction, etc. and has developed mechanisms for the overall monitoring of all construction (Planned/Ongoing/Maintenance of existing structures) activities and other infrastructure units. Other important activities include archiving of infrastructure and planning documents, creation of a geo-referenced plan for all buildings and structures, handling and dumping of construction and demolition waste, and establishing a geospatial database, maintenance of better distribution and allocation of work space among various departments based on space audits by IWD, which are compiled and analyzed at DOIP office. A few noteworthy projects, which are under progress and will be completed by July 2017, include Construction of hall of residences XII and XIII for boys, Construction of 48 nos. multi-storied residential apartment, Construction of 56 Nos. Type-II multistoried apartments, Construction of hall of residence for girls, GH Tower (Phase-II), Construction of International students housing facilities, Construction of Animal house, National AEROSOL facility building, Construction of building for National Centre for large area Flexible Electronics (NCFlexE). A few upcoming projects are Retrofitting of Aerospace Building, Engineering Core Lab, Research Complex Phase-I, and Extension of Old Core Lab.

Rajbhasha Prakoshtha

Rajbhasha Prakoshtha (Hindi Cell) was established as per Article 343 (1) of the Constitution of India to promote and disseminate Hindi Language in the Institute. It is making various efforts for promoting use of Hindi for administrative purposes and creating awareness of Hindi Language among the Institute

employees/students. The major activities of the Prakoshtha include disseminating Hindi Language in the Institute, Organizing Hindi fortnight followed by Hindi Divas celebrations, Hindi workshops/seminars for officers and other employees, and publication of a Hindi Quarterly Newsletter, and a six-monthly Hindi Magazine, named Antas.

NMD-ATM 2016

The National Metallurgists' Day (NMD) celebration on November 14 each year and the associated Annual Technical Meeting (ATM) mark the most important and prominent event in the annual calendar of the Indian Institute of Metals (IIM). The 70th ATM along with the 54th NMD was held at the Institute during November 2016. The theme for NMD-ATM 2016 was Metal, Materials and Manufacturing for a Self-Reliant India. 403 Technical Oral Presentations; 375

Technical Posters; 96 Participants in Metallography Contest; 40 exhibition stalls were held. Around 1000 number of delegates attended the Conference.

International conference on Materials Engineering (ICME-2017)

Metal Science Division of the Indian Institute of Metals (IIM) is launching a new platform to deliberate and promote the subject domain of Materials Engineering through an International Conference in Materials Engineering (ICME) and held the first such event at the Institute as a joint effort of the IIM Kanpur Chapter and IIT Kanpur during June 2-4, 2017. The conference was designed to address specific themes and topics to be presented by chosen experts and only invited participants. The program comprised 2 plenary talks, 40 invited talks and about 100 posters by Ph.D. scholars from various institutions across the country.

Health Center

To make better healthcare accessible to the campus community, Institute's Health Centre has recently undertaken several initiatives. A number of specialty clinics by reputed doctors from the city, including dental and ophthalmology, have been introduced along with cashless pharmacy and cashless pathology. A Forty- Plus Health Assessment Programme along with Comprehensive Women's Healthcare Programme has also been launched besides regular awareness campaigns.

A new digital X-Ray machine has also been procured and a new emergency room has been constructed. Complete automation of OPD services is currently underway, while dedicated OPD services for students are available every evening. Referral services have also been strengthened through empanelment of more hospitals, specialty OPD consultants, and diagnostic centres.

The Health Center will soon have a separate

homeopathy clinic and also expand the physiotherapy services available.

Information Cell

The Information Cell at IIT Kanpur is responsible for the maintenance and hygiene of the institute website and regularly updates it to apprise website visitors of what is happening in the Institute. The Cell mediates between the Institute and the media, handles all media queries, organizes press conferences and regularly puts out press releases for important events at IIT Kanpur. News from the Institute has been covered in prestigious national dailies like Hindustan Times, The Times of India, The Indian Express and local dailies like Hindustan, Dainik Jagran and Amar Ujala. It also releases the bi-monthly institute newsletter called IITK Chronicle.

Gender Parity

The Institute endeavors to create a sustainable, equal-opportunity environment conducive to an all-round development of women members of the campus community, both professionally and personally. It constantly strives to ensure that women from all walks of life, residing in or visiting the campus, are treated with respect and dignity. It is committed to making the campus-environment safe for women – free from exploitation, harassment, and violence of any kind.

The "Women Cell" of the Institutes is mandated to achieve above objectives. Cell's mandate includes sensitizing the community towards gender-related issues, organizing orientation programs for students and employees, and conducting workshops and open houses.

Epilogue

Dear Students, in this august assembly of the fiftieth convocation, I congratulate and commend each one of you on your praiseworthy achievements and extend my best wishes to the entire class of 2017 graduating today. I also admire your parents for their patience and for being a source of inspiration to you to scale supreme heights. Today, you have distinguished yourself from the millions of students aspiring for a coveted degree from this citadel of learning by your intelligence, perseverance and a vision of a purpose to your life. Now as you are about to embark on your journey towards the real world, I would like to share some of my thoughts with you.

During your stay at IIT Kanpur, in pursuing science and truth, you were able to contribute your bit to the larger domain of knowledge and thereby aid the march of civilization. In the words of S. Chandrashekar:

“Beauty is experienced in the context of great ideas and by great minds. They are, indeed, accessible to each one of us provided we are attuned to the perception of strangeness in the proportion and the conformity of the parts to one another and to the whole. And there is

satisfaction also to be gained from harmoniously organizing a domain of science with order, pattern and coherence”. The greatest thinkers of our country have always maintained that the final goal of education consists not in a certificate or a recognized standardization, but in the power of freedom from ignorance, prejudice and vanity it brings about. I would like to recollect these few lines from “The Master as I saw him” as narrated by Sister Nivedita on a small discourse after a class in London in 1896 taken by Swami Vivekananda. He uttered with great force:

“What the world wants today, is twenty men and women who can dare to stand in the street yonder and say that they possess nothing but God. Who will go? What the world wants today is character. The world is in need of those whose life is one burning love-selfless. The love will make every word tell like a thunderbolt.”

Let the flame of knowledge culminating in self-realization kindle your spirit to the higher and higher domains of Purity and let the world enjoy the fragrance of this vibrant soul.

Your sheltered days at IIT Kanpur will soon give way to the challenges and pressures of the professional world. The love of your parents and the training you received at your alma mater will stand you in good stead in the years to come. I am sure the education you received at IIT Kanpur and the memories of your stay here will remain a source of strength for the life that lies outside the portals of this lovely campus.

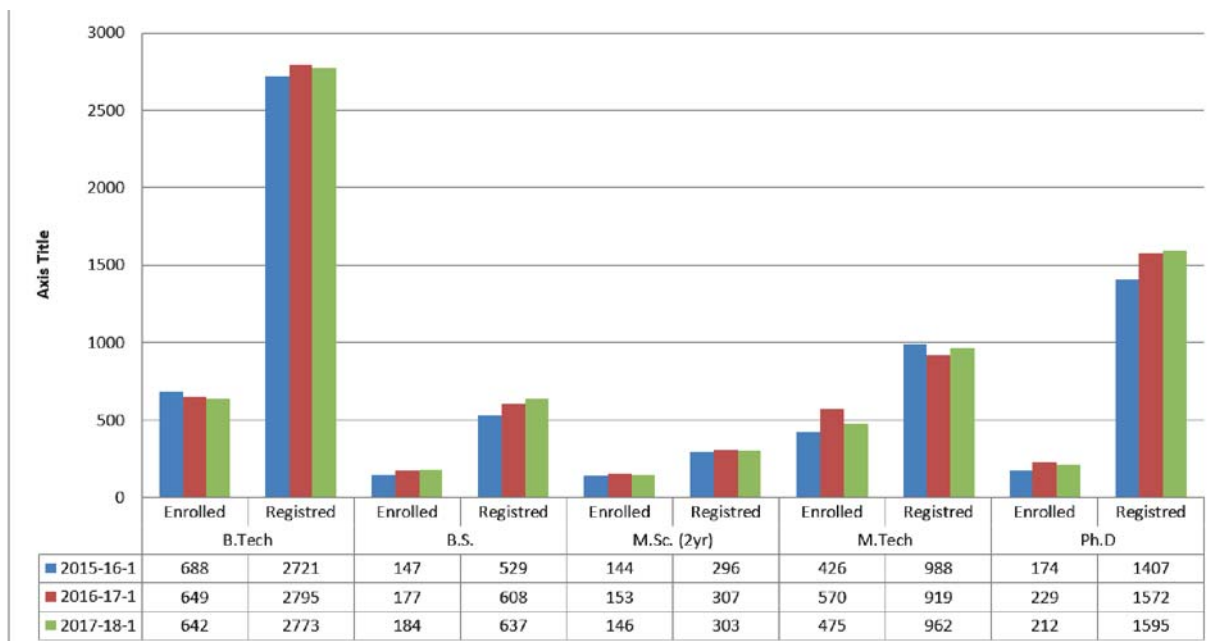
Jai Hind!

For full details

Visit URL :

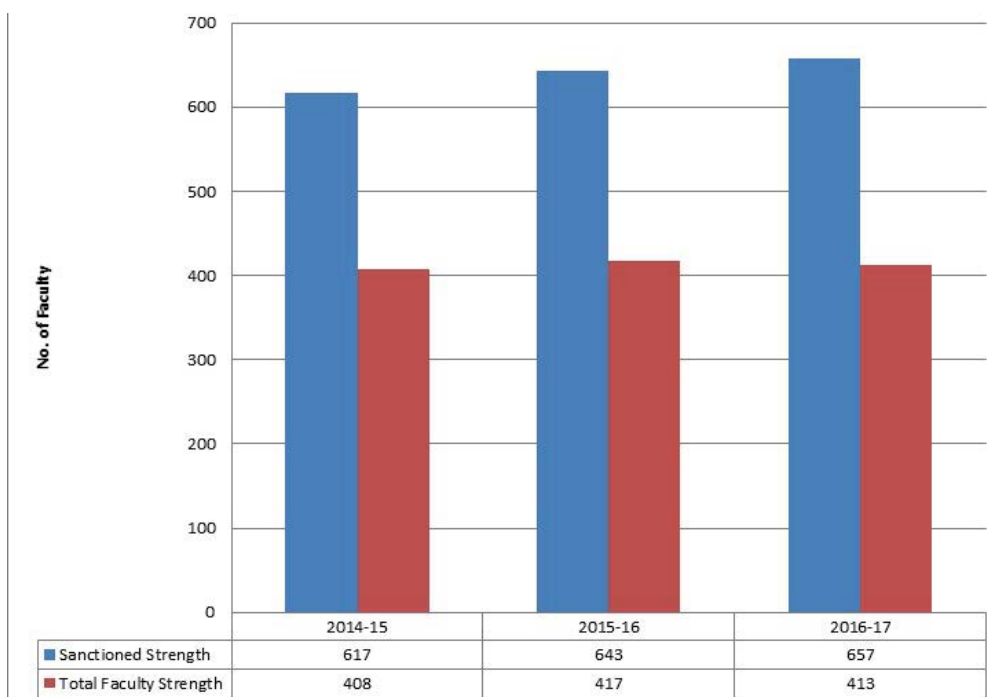
https://www.iitk.ac.in/dord/data/Annual_Report_2016-17/Directors_Report.pdf

Student Strength



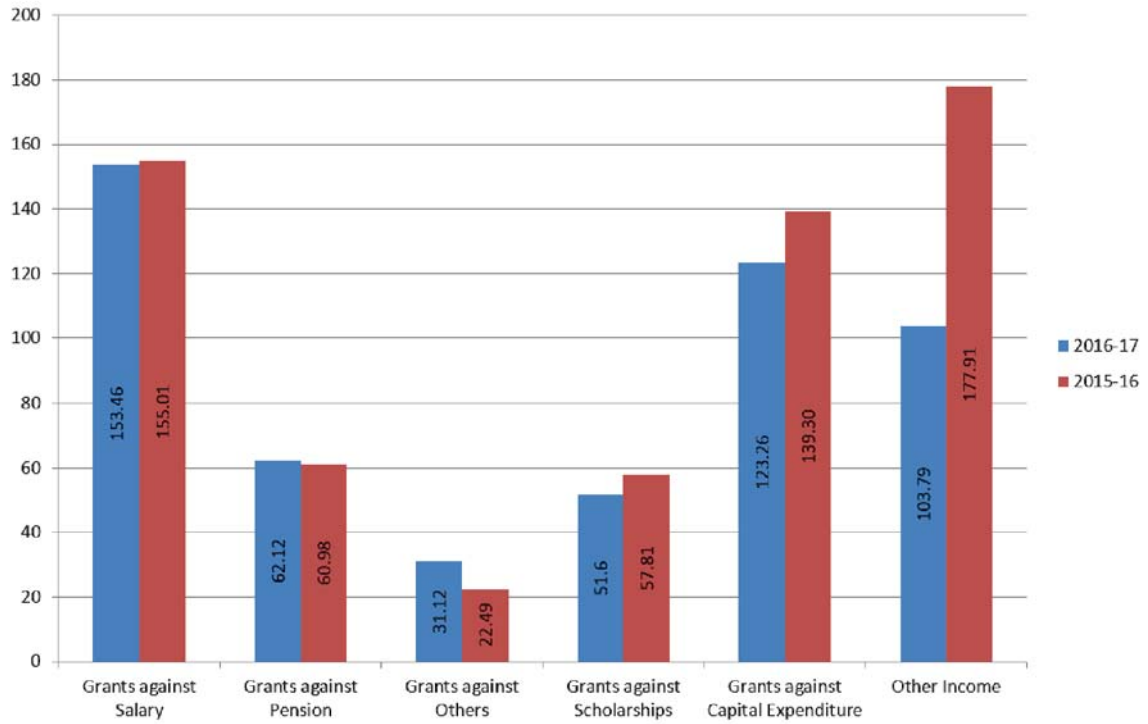
* Data for M.Tech. includes M.Des., MBA and MS (By Research) also.

Faculty Strength

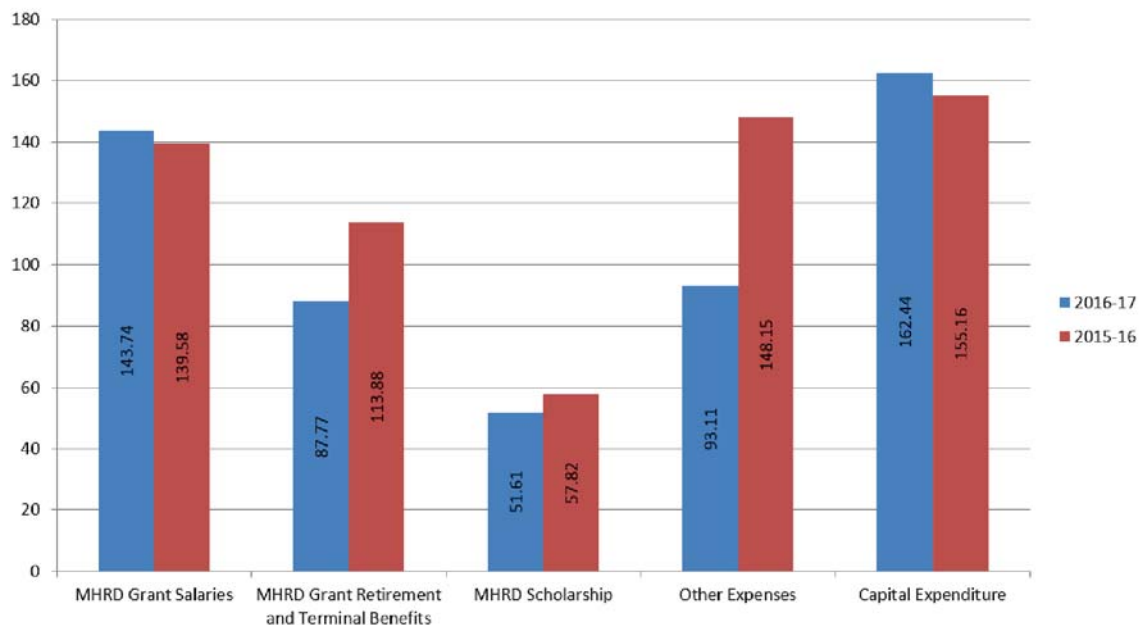


COMPARATIVE FINANCIALS FY 2015-16 & 2016-17

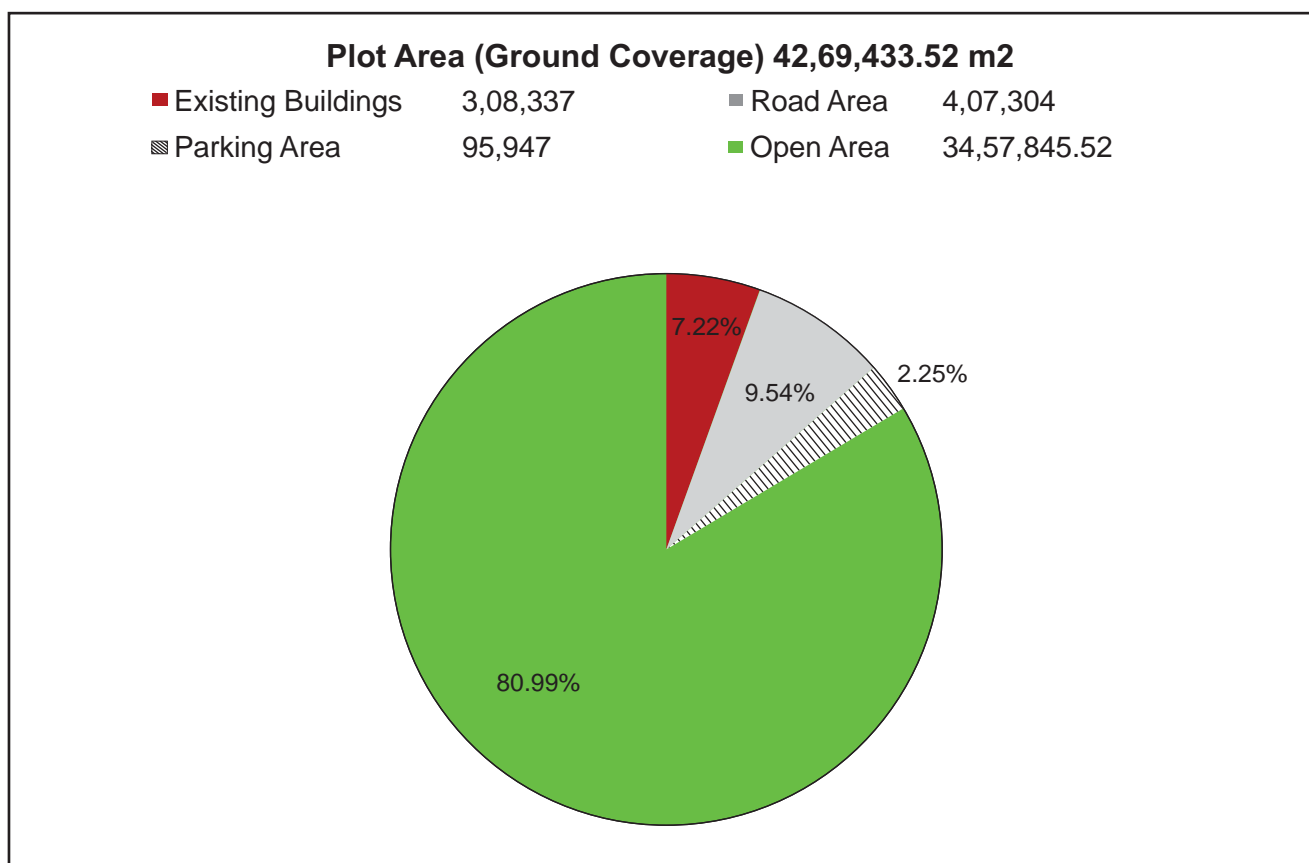
Details of Income (Rs. in Crore)



Details of Expenditure (Rs. in Crore)



Institute Works Department



	Particulars	Ground Coverage Area (m ²)	% of Ground Coverage to Plot Area
Plot Area		4269433,52	
Existing Buildings			
	Academic Area	86,188	
	Hostel Area	95,266	
	Students Activity Area	21,706	
	Residential Area	82,147	
	Services	23,660	
	Total	3,08,337	7.22%
Road Area		4,07,304	9.54%
Parking Area		95,947	2.25%
Open Area		34,57,845,52	80.99%

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(as on 31 March 2017)

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Shri Prakash Javadekar

Chairperson, Council IITs

Government of India

Hon'ble Minister of Human Resource Development

Shastri Bhawan, New Delhi - 110 001

Shri Mahendra Nath Pandey

Minister of State for Higher Education

Shri K.K. Sharma

Secretary (Higher Education) MHRD & the

Chairperson, BOG six new IITs at Tripuri, Jammu,

Goa,

Dharwad, Bhilai-Durg and Palakkad

Shri Ninong Ering

Member of Parliament, Lok Sabha

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& Chairperson, Standing Committee of the IIT

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Shri Kumar Manglam Birla

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Indian Institute of Technology, Guwahati

Guwahati – 781 039

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Chairperson, Board of Governors, IIT Ropar
Former CMD Alfa Laval-Tetra Pak India
Chairperson Lila Poonawalla Foundation
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Vice-Chancellor, Banaras Hindu University
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Prof. Rajat Moona

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Governing Council of Indian Institute of Science
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Former Vice Chancellor
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Department of Expenditure
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**Secretary, Department of Information
Technology**

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Dr. (Mrs.) Tessy Thomas

Outstanding Scientist &
Director, Advanced Systems Laboratory (ASL)
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National Physical Laboratory
Dr. K S Krishnan Marg, South Patel Nagar
Pusa, New Delhi – 110 012

Prof. R.C. Budhani

Director, Director's Secretariat
National Physical Laboratory
Dr. K S Krishnan Marg, South Patel Nagar
Pusa, New Delhi – 110 012

Shri Kewal Kumar Sharma

Secretary (Higher Education)
Ministry of Human Resource Development
New Delhi – 110 001

Shri R. Subrahmanyam

Additional Secretary (Technical Education)
Government of India
Ministry of Human Resource Development
Department of Higher Education
TS.1, Shastri Bhawan, New Delhi – 110 001

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Joint Secretary & Financial Adviser
Government of India
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TS.1, Shastri Bhawan, New Delhi – 110 001

Ms. Tripti Gurha

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TS.1, Shastri Bhawan, New Delhi – 110 001

Dr. M. Ariz Ahammed

Director (Secondary Education)
GOI, Ministry of Human Resource Development
Department of Higher Education
TS.1, Shastri Bhawan, New Delhi – 110 001

Shri Kundan Nath

Under Secretary
Government of India
Ministry of Human Resource Development
Department of Higher Education
TS.1, Shastri Bhawan, New Delhi – 110 001

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IIT Mandi

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From 01 April 2016 to 31 March 2017**

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Chairman, Maruti Suzuki India Ltd.
220, Sector 15A
Noida- 201 301 (UP)

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Director
Indian Institute of Technology Kanpur
Kanpur - 208 016

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Vice-Chancellor
Banaras Hindu University (BHU)
Varanasi – 221 005
Uttar Pradesh

Prof. Jayanta K. Bhattacharjee
36 C, Lake Road
Kolkata – 700 029 (WB)

Prof. P. Balaram

Molecular Biophysics Unit
Indian Institute of Science
Bangalore - 560 012 (India)

Shri Krishnamurthi Venkataramanan

CEO & MD
Larsen & Toubro Limited
'C' Building, Gate No.1
Saki Vihar Road, Powai
Mumbai – 400 001 (Maharashtra)

State Government Nominee:**Uttar Pradesh Government:****Prof. Onkar Singh**

Vice Chancellor
Madan Mohan Malaviya University of Technology
Deoria Road, Gorakhpur – 273 010
Uttar Pradesh

Senate Nominees:**Prof. V. K. Yadav**

Department of Chemistry
Indian Institute of Technology Kanpur
Kanpur – 208 016

Prof. C. S. Upadhyay

Department of Aerospace Engineering
Indian Institute of Technology Kanpur
Kanpur – 208 016

Secretary:

Prof. Sudhir Misra [upto 13 Mar. 2017]
Professor-in-Charge (Admin.) & Secretary, BOG
Indian Institute of Technology Kanpur
Kanpur – 208 016

Shri K.K. Tiwari [w.e.f. 14 Mar. 2017]

Registrar & Secretary, BOG
Indian Institute of Technology Kanpur
Kanpur – 208 016

Special Invitees:

Prof. Ajit K. Chaturvedi [upto 11 Jan. 2017]
Deputy Director
Indian Institute of Technology Kanpur
Kanpur – 208 016

Prof. Manindra Agrawal [w.e.f. 12 Jan. 2017]
Deputy Director
Indian Institute of Technology Kanpur
Kanpur – 208 016

Prof. K Muralidhar
Dean of Faculty Affairs
Indian Institute of Technology Kanpur
Kanpur – 208 016

Prof. Neeraj Misra
Dean of Academic Affairs
Indian Institute of Technology Kanpur
Kanpur – 208 016

Prof. A R Harish
Dean of Student Affairs
Indian Institute of Technology Kanpur
Kanpur – 208 016

Prof. Onkar Dikshit
Dean of Infrastructure & Planning
Indian Institute of Technology Kanpur
Kanpur – 208 016

Prof. Amalendu Chandra [upto 31 Jan. 2017]
Dean of Research & Development
Indian Institute of Technology Kanpur
Kanpur – 208 016

Prof. S. Ganesh [w.e.f. 01 Feb. 2017]
Dean of Research & Development
Indian Institute of Technology Kanpur
Kanpur – 208 016

Prof. B. V. Phani
Dean of Resources & Alumni
Indian Institute of Technology Kanpur
Kanpur – 208 016

Shri Munish Malik
Finance Officer
Indian Institute of Technology Kanpur
Kanpur – 208 016

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Chairman, Finance Committee, IITK
Chairman, Maruti Suzuki India Ltd.
220, Sector 15A
Noida- 201 301 (UP)

Members:

Prof. Indranil Manna
Director
Indian Institute of Technology Kanpur
Kanpur – 208 016

Prof. Girish Chandra Tripathi
Vice-Chancellor
Banaras Hindu University (BHU)
Varanasi – 221 005
Uttar Pradesh

Additional Secretary (Technical Education)
Government of India
Department of Secondary & Higher Education
Ministry of Human Resource Development
Shastri Bhawan, New Delhi – 110 001

Joint Secretary & Financial Adviser

Government of India
Department of Secondary & Higher Education
Ministry of Human Resource Development
Shastri Bhawan, New Delhi – 110 001

Prof. V. K. Yadav

Department of Chemistry
Indian Institute of Technology Kanpur
Kanpur – 208 016

Secretary:

Prof. Sudhir Misra [upto 13 Mar. 2017]
Professor-in-Charge (Admin.) & Secretary, FC
Indian Institute of Technology Kanpur
Kanpur – 208 016

Shri K.K. Tiwari [w.e.f. 14 Mar. 2017]
Registrar & Secretary, FC
Indian Institute of Technology Kanpur
Kanpur – 208 016

List of Members of the Building & Works Committee
From 01 April 2016 to 31 March 2017

Chairman:

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Director & Chairman, B&WC
Indian Institute of Technology Kanpur
Kanpur – 208 016

Members:

Prof. Ajit K. Chaturvedi [upto 11 Jan. 2017]
Deputy Director
Indian Institute of Technology, Kanpur
Kanpur – 208 016

Prof. Manindra Agrawal [w.e.f. 12 Jan. 2017]
Deputy Director
Indian Institute of Technology Kanpur
Kanpur – 208 016

Prof. C. S. Upadhyay
Department of Aerospace Engineering
Indian Institute of Technology Kanpur
Kanpur – 208 016

Prof. S.Y. Kulkarni [upto 31 Dec. 2016]
Deptt. of Planning & Architecture
Indian Institute of Technology Roorkee
Roorkee – 247 667

Shri Mohan Swaroop [upto 31 Dec. 2016]
Addl. Director General (Retd.), CPWD
H-Block, 54-A, Sector-22
Noida- 201 301

Shri B M Agarwal [upto 31 Dec. 2016]
Retd. Engineer-in-Chief, UP Irrigation
102, Ravinder Garden
Sector-E, Aliganj
Lucknow – 226 024

Prof. Manoj Mathur [w.e.f. 01 Jan. 2017]
Department of Architecture
School of Planning & Architecture
New Delhi – 110 002

Shri A.K. Jain [w.e.f. 01 Jan. 2017]
Retd. Special DG, CPWD (Electrical)
Flat 9-B, Tower-X,
Meghdutam Apartments
Plot F-21-C, Sector-50
Noida (UP) – 201 301

Shri B M Agarwal [w.e.f. 01 Jan. 2017]
Retd. Engineer-in-Chief, UP Irrigation
102, Ravinder Garden
Sector-E, Aliganj
Lucknow – 226 024

Prof. Onkar Dikshit
Dean of Infrastructure & Planning
Indian Institute of Technology Kanpur
Kanpur – 208 016

Secretary:
Prof. Sudhir Misra [upto 13 Mar. 2017]
Professor-in-Charge (Admin.) & Secretary, BWC
Indian Institute of Technology Kanpur
Kanpur – 208 016

Shri K.K. Tiwari [w.e.f. 14 Mar. 2017]
Registrar & Secretary, BWC
Indian Institute of Technology Kanpur
Kanpur – 208 016

SENATE

From 01 April 2016 to 31 March 2017

Director & Chairman Senate

Prof. Indranil Manna
Director
Indian Institute of Technology Kanpur
Kanpur - 208 016

Dy. Director

Prof. A.K.Chaturvedi [upto 11 Jan. 2017]
Prof. Manindra Agrawal [w.e.f. 12 Jan. 2017]

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Prof. Sanjay Mittal
Prof. C Venkatesan
[upto 30 June 2016]
Prof. T K Sengupta
Prof. Sudhir Kamle
Prof. Kamal Poddar
Prof. Ashish Tewari
Prof. A K Ghosh
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Prof. D P Mishra
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 Prof. N R Patra [w.e.f. 18 July 2016]
 Dr. Samit ray Chaudhuri [upto 30 Nov. 2016]
 Dr. Vinod Vasudevan [w.e.f. 01 Dec. 2016]

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 Prof. S Sundar Kumar Iyer
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 Dr. R M Hegde [w.e.f. .18 July 2016]
 Dr. Santanu Kumar Mishra [w.e.f. 18 July 2016]
 Dr. Yogesh Singh Chauhan [upto 30 Nov. 2016]

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 Prof. A K Sinha [upto 30 June 2016]
 Prof. K K Saxena [upto 30 Sep. 2016]
 Prof. B K Pattnaik
 Prof. G Neelakantan
 Prof. Surajit Sinha
 Prof. (Ms) Achla M Raina
 Prof. (Ms) Shikha Dixit
 Prof. Munmun Jha
 Prof. Joydeep Dutta
 Prof. (Ms) Suchitra Mathur
 Prof. Thangamani Ravichandran
 Prof. Mini Chandran
 Prof. Braj Bhusan
 Prof. Praveen Kulshrestha
 Prof. Somesh K Mathur [w.e.f. 18 July 2016]
 Dr. Sarani Saha [upto 30 Nov. 2016]

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 Prof. Jayanta Chatterjee [upto 30 June 2016]
 Prof. Rahul Varman
 Prof. Uday Shankar Racherla
 Prof. Raghu Nandan Sengupta
 Prof. B V Phani

MATERIALS SCIENCE AND ENGINEERING (MSE)

Prof. Dipak Mazumdar
 Prof. Rajiv Shekhar
 Prof. Sandeep Sangal
 Prof. Deepak Gupta

Prof. (Ms) Monica Katiyar
 Prof. Anish Upadhyaya
 Prof. Ashish Garg
 Prof. Gouthama
 Prof. Amarendra Kumar Singh
 Prof. Kallol Mondal [w.e.f. 18 July 2016]
 Prof. Krishnau Biswas [w.e.f. 18 July 2016]
 Dr. Nilesh P Gurao [w.e.f. 01 Dec. 2016]

MATERIALS SCIENCE PROGRAMME (MSP)

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 Prof. Kamal Krishna Kar (ME)
 Dr. Rajeev Gupta (PHY)

MATHEMATICS & STATISTICS DEPARTMENT (MTH & STATS)

Prof. (Ms) Manjul Gupta
 Prof. Prawal Sinha
 Prof. (Ms) Shobha Madan [upto 30 June 2016]
 Prof. Debasis Kundu
 Prof. Pravir Kumar Dutt
 Prof. Neeraj Misra
 Prof. B V Rathish Kumar
 Prof. D Bahuguna
 Prof. P Shunmugaraj
 Prof. Arbind Kumar Lal
 Prof. Alok Kumar Maloo
 Prof. (Ms) Mohua Banerjee
 Prof. (Mrs) Rama Rawat
 Prof. S Ghorai
 Prof. Joydeep Dutta
 Prof. Amit Mitra
 Prof. Shalabh
 Prof. Parasar Mohanty
 Prof. G Santhanam

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 Prof. P M Dixit [upto 30 June 2016]
 Prof. K Muralidhar
 Prof. Gautam Biswas
 Prof. S K Choudhury
 Prof. Subrata Sarkar
 Prof. N S Vyas
 Prof. P S Ghoshdastidar
 Prof. Bhaskar Dasgupta
 Prof. P K Panigrahi
 Prof. Bishakh Bhattacharya
 Prof. Kamal K Kar

Prof. Avinash Kumar Agarwal
 Prof. Sumit Basu
 Prof. Ashish Datta
 Prof. P Venkitanarayanan
 Prof. Annidya Chatterjee
 Prof. Sameer Khandekar
 Prof. Arun Kumar Saha
 Prof. Janakarajan Ramkumar
 Prof. Ishan Sharma [w.e.f. 18 July 2016]
 Prof. Anupam Saxena [w.e.f. 18 July 2016]
 Prof. Shantanu Bhattacharya [w.e.f. 18 July 2016]
 Dr. Shakti Singh Gupta [w.e.f. 01 Dec. 2016]

PHYSICS (PHY)

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 Prof. Debashish Chowdhury
 Prof. R C Budhani [upto 30 Nov. 2016]
 Prof. Y N Mohapatra
 Prof. Avinash Singh
 Prof. Pankaj Jain
 Prof. H C Verma
 Prof. M K Harbola
 Prof. K P Rajeev
 Prof. Mahendra K Verma
 Prof. (Ms) Asima Pradhan
 Prof. (Ms) R Vijaya
 Prof. S Anantha Ramakrishna
 Prof. Amit Dutta
 Prof. Satyajit Banerjee
 Prof. Harshwardhan Wanare
 Prof. Zakir Hossain
 Prof. Sudeep Bhattacharjee
 Prof. Gautam Sengupta
 Prof. Tapobrata Sarkar

LIBRARIAN

Prof. R Gurunath
 Prof.-in-Charge (Lib) [w.e.f. 01 June 2015]

SECRETARY SENATE

Prof. Sudhir Misra [upto 13 Mar. 2017]
 Prof.-in-Charge (Admin)
 Indian Institute of Technology Kanpur
 Kanpur – 208 016

Shri K K Tiwari [w.e.f. 14 Mar. 2017]
 Registrar
 Indian Institute of Technology Kanpur
 Kanpur – 208 016

THREE NOMINEES OF THE CHAIRMAN, BOARD OF GOVERNORS (FROM 01 November 2015 TO 31 October 2016)

1. Dr. Namburi Eswara Prasad
 Director
 Defence Materials and Stores Research
 and Development Establishment
 (DMSRDE)
 Kanpur (U.P)
2. Shri Narendra Mohan
 Director
3. Shri D R Sarin
 Chairman & Managing Director
 Artificial Limbs Manufacturing Corporation
 of India (ALIMCO)
 Kanpur (U.P)

**THREE NOMINEES OF THE CHAIRMAN, BOARD OF GOVERNORS
(FROM 01 November 2016 TO 31 October 2017)**

- | | |
|---|--|
| <p>1. Dr. Namburi Eswara Prasad
Director
Defence Materials and Stores Research
and Development Establishment
(DMSRDE)
Kanpur (U.P)</p> <p>2. Shri Narendra Mohan
Director</p> | <p>National Sugar Institute, Kanpur
Kanpur (U.P)</p> <p>3. Shri D R Sarin
Chairman & Managing Director
Artificial Limbs Manufacturing Corporation
of India (ALIMCO)
Kanpur (U.P)</p> |
|---|--|

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(FROM 01 October 2015 TO 30 September 2016)**

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(a) MEMBERS (EX-OFFICIO)

- (I) Chairman, Senate : **Chairman**
(ii) Chairman, SPGC
(iii) Chairman, SUGC

(b) SENATE NOMINEES

- (i) Prof. Harish Karnick CSE
(ii) Prof. Sudhir Kamle AE
(iii) Prof. Dharendra Bahuguna MATH & STAT.

(c) STUDENTS' SENATE NOMINEES

- (i) Mr. Gautam Pratap Singh (12271) gpsingh@iitk.ac.in
(ii) Mr. Srinivasan V (11103167) vsrini@iitk.ac.in

(B) SENATE ELECTIONS COMMITTEE-

SENATE NOMINEES

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(ii) Prof. Parthasarathi Sensarma EE
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(C) SENATE LIBRARY COMMITTEE

(a) LIBRARY :

Prof.-in-Charge Library: Prof. R Gurunath, CHM

(b) SENATE NOMINEES

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(iii) Dr. Tarun Gupta CE
(iv) Prof. Gautam Sengupta PHY
(v) Dr. Ashwini Kumar Thakur BSBE

(c) NOMINEES OF DEPARTMENTS / PROGRAMMES

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(ii) Prof. R Sankararamakrishnan BSBE
(iii) Dr. Naveen Tewari CHE
(iv) Dr. R Gurunath CHM
(v) Dr. Saumyen Guha CE
(vi) Prof. S N Tripathi EEM
(vii) Prof. Satyadev Nandkumar CSE

- (viii) Dr. Adrish Banerjee EE
(ix) Dr. Koumudi P Patil HSS
(x) Prof. R R K Sharma IME
(xi) Dr. G Rajshekhar (EE) CELP
(xii) Dr. B L Sharma ME
(xiii) Prof. Rajiv Shekhar MSE
(xiv) Prof. Manas K Ghorai (CHM) MSP
(xv) Prof. Debasis Kundu MATH & STAT.
(xvi) Prof. P Munshi (ME) NET
(xvii) Dr. Sayantani Bhattacharyya PHY
(xviii) Dr. Shantanu Bhattacharya (ME) M DES
(xix) Dr. Animesh Mandal ES

(d) STUDENTS' SENATE NOMINEES

- (i) Mr. Jitendra K Katiyar (12105168) jkatiyar@iitk.ac.in
(ii) Ms. Richa Agarwal (13566) richaagr@iitk.ac.in

(D) SENATE POST-GRADUATE COMMITTEE

(a) SENATE NOMINEE

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(ii) Prof. S Anantha Ramakrishna PHY

(b) NOMINEES OF DEPARTMENTS / PROGRAMMES

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(ii) Dr. Arun K Shukla BSBE
(iii) Dr. Sri Sivakumar CHE
(iv) Prof. K Srihari CHM
(v) Dr. Vinod Vasudevan CE
(vi) Dr. Mukesh Sharma EEM
(vii) Prof. Shashank Mehta CSE
(viii) Dr. Jaleel Akhtar EE
(ix) Prof. Achla M Raina HSS
(x) Dr. Deepu Philip IME
(xi) Prof. R Vijaya (PHY) CELP
(xii) Dr. M K Das ME
(xiii) Dr. Tanmoy Maiti MSE
(xiv) Prof. Rajeev Gupta (PHY) MSP
(xv) Prof. G Santhanam MATHS & STATS
(xvi) Dr. Shikha Prasad (ME) NET
(xvii) Prof. Tapobrata Sarkar PHY
(xviii) Dr. Deepu Philip (IME) M DES
(xix) Dr. D Paul ES

(c) STUDENTS' SENATE NOMINEE

- (i) Mr. Rajesh Agarwal (10204071) ragarwal@iitk.ac.in
- (ii) Mr. Aditya Desai (14101264) adityad@iitk.ac.in
- (iii) Mr. Dinesh (14101024) dinesh@iitk.ac.in
- (iv) Mr. Gaurav Kumar (14111011) gaukumar@iitk.ac.in

(E) SENATE RULES COMMITTEE**(a) MEMBER (EX-OFFICIO)**

Parliamentarian of the Senate

(b) SENATE NOMINEES

- (i) Prof. Rajiv Shekhar MSE
- (ii) Prof. Nishith Verma CHE
- (iii) Prof. J N Moorthy CHM

(F) SENATE SCHOLARSHIP AND PRIZES COMMITTEE**(a) MEMBERS (EX-OFFICIO)**

Head Institute Counseling Service
Chairman, APEC
Dean of Students' Affairs

(b) SENATE NOMINEES

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- (ii) Prof. Debapom Das AE
- (iii) Dr. Mini Chandran HSS
- (iv) Dr. Arnab Bhattacharya CSE

(c) STUDENTS' SENATE NOMINEES

- (i) Mr. Mohammad Ashraf (14389) ashraf@iitk.ac.in
- (ii) Mr. Samyak Jain (13610) samyakj@iitk.ac.in
- (iii) Mr. Anand Prakash Dwivedi (12105163) anandpd@iitk.ac.in

(G) SENATE STUDENTS' AFFAIRS COMMITTEE**(a) MEMBERS (EX-OFFICIO)**

1. Head Institute Counseling Service
2. One member of the APEC nominated by Chairman, APEC
3. One Warden of students' Hall of Residence nominated by Chairman, COW
4. Dean of Students' Affairs : **Chairman, Ex-Officio**

(b) SENATE NOMINEES

- (i) Prof. Manoj Harbola PHY
- (ii) Prof. Monika Katiyar MSE
- (iii) Prof. K S Venkatesh EE

(c) STUDENTS' SENATE NOMINEES

- (i) Mr. Shashank Bhandari (12660) shashab@iitk.ac.in upto 04 Apr. 2016
- (ii) Mr. Ashutosh Ranka (13164) w.e.f-05 Apr. 2016
- (iii) Mr. Shubham Atreja (12689) satreja@iitk.ac.in
- (iv) Mr. Srinivasan V (11103167) vsrini@iitk.ac.in
- (v) Mr. Anand Prakash Dwivedi (12105163) anandpd@iitk.ac.in

(H) SENATE UNDERGRADUATE COMMITTEE**(a) SENATE NOMINEE**

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- (xxi) Prof. Joydeep Dutta (HSS) Convener, PUGC (Economics)

(c) STUDENTS' SENATE NOMINEES

- (i) Mr. Abhimanyu Arora (11013) manyu@iitk.ac.in
- (ii) Mr. Praveen Honhar (12508) honhar@iitk.ac.in
- (iii) Ms. Palak Agarwal (13453) palakag@iitk.ac.in
- (iv) Mr. Kunal Kapila (14343) kunalkap@iitk.ac.in

SENATE STANDING COMMITTEES
(FROM 01 October 2016 TO 30 September 2017)

(A) SENATE EDUCATIONAL POLICY COMMITTEE**(a) MEMBERS (EX-OFFICIO)**

- (i) Chairman, Senate : **Chairman**
- (ii) Chairman, SPGC

- (iii) Chairman, SUGC

(b) SENATE NOMINEES

- (i) Dr. S. Ganesh BSBE
- (ii) Dr. M.L.N. Rao CHM
- (iii) Dr. Rajesh Srivastava CE

(c) STUDENTS' SENATE NOMINEES

- (i) Mr. Aditya Desai (14101264) adityad@iitk.ac.in
(ii) Mr. Harshit Bist (14266) harshitb@iitk.ac.in

(B) SENATE ELECTIONS COMMITTEE**SENATE NOMINEES**

- (i) Dr. Nihar Ranjan Patra CE
(ii) Dr. Raghu Nandan Sengupta IME
(iii) Dr. Anindita Chakrabarti HSS

(C) SENATE LIBRARY COMMITTEE**(a) LIBRARY**

Prof.-in-Charge Library : Prof. R Gurunath, CHM

(b) SENATE NOMINEES

- (i) Dr. Rajiv Shekhar, MSE-**Outgoing Chairman**
(ii) Dr. Naveen Tiwari CHE
(iii) Dr. Debjyoti Paul ES
(iv) Dr. Santanu Kumar Mishra EE
(v) Dr. Anurag Gupta ME

(c) NOMINEES OF DEPARTMENTS / PROGRAMMES

- (i) Dr. P M Mohite AE
(ii) Dr. Amitabha Bandyopadhyay BSBE
(iii) Dr. Raj Ganesh Pala CHE
(iv) Dr. Manbendra Chandra CHM
(v) Dr. Saumyen Guha CE
(vi) Dr. Gaurav Sharma CSE
(vii) Dr. Adrish Banerjee EE
(viii) Dr. Deep Mukherjee HSS
(ix) Dr. Deepu Philip IME
(x) Dr. H. Wanare (PHY) CELP
(xi) Dr. B L Sharma ME
(xii) Prof. Rajiv Shekhar MSE
(xiii) Dr. Sri Sivakumar (CHE) MSP
(xiv) Dr. Debasi Kundu MATH & STAT.
(xv) Dr. Aditya H. Kelkar (PHY) NET
(xvi) Dr. Sayantani Bhattacharyya PHY
(xvii) Dr. Mainak Das (BSBE) M DES
(xviii) Dr. Animesh Mandal ES

(d) STUDENTS' SENATE NOMINEES

- (i) Mr. Balbir Kumar Pandey (15103265) balbir@iitk.ac.in
(ii) Mr. Aditya Sharma (150055) adityash@iitk.ac.in

(D) SENATE POST-GRADUATE COMMITTEE**(a) SENATE NOMINEE**

- (i) Prof. Ajai Jain, CSE - Outgoing Chairman
(ii) Dr. Achla Raina HSS

(b) NOMINEES OF DEPARTMENTS / PROGRAMMES :

- (i) Dr. Rajesh Kitey AE
(ii) Dr. R. Sankararamakrishnan BSBE
(iii) Dr. Nitin Kaistha CHE
(iv) Dr. Ramesh Ramapanicker CHM

- (v) Dr. Samit Ray Chaudhuri CE
(vi) Dr. S K Mehta CSE
(vii) Dr. Shantanu K Mishra EE
(viii) Dr. Shatrupa T Roy HSS
(ix) Dr. Shashi Shekhar Mishra IME
(x) Dr. N. Naik (EE) CELP
(xi) Dr. P Venkitanarayanan ME
(xii) Dr. Kallol Mondal MSE
(xiii) Dr. Rajeev Gupta (PHY) MSP
(xiv) Dr. G Santhanam MATHS & STATS
(xv) Dr. Shikha Prasad (ME) NET
(xvi) Dr. Sudeep Bhattacharjee PHY
(xvii) Dr. Satarupa Thakurta Roy (HSS) M DES
(xviii) Dr. Santanu Misra ES

(c) STUDENTS' SENATE NOMINEE

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(iii) Mr. Kumar Shashwat (15125021) kmrshash@iitk.ac.in
(iv) Mr. Abhijeet Bhagat (16105001) bhagat@iitk.ac.in

(E) SENATE RULES COMMITTEE**(a) MEMBER (EX-OFFICIO)**

Parliamentarian of the Senate

(b) SENATE NOMINEES

- (i) Dr. Nitin Kaistha CHE
(ii) Dr. Anandh Subramniam MSE
(iii) Dr. P. Shunmugaraj MATHS & STAT.

(F) SENATE SCHOLARSHIP AND PRIZES COMMITTEE -**(a) MEMBERS (EX-OFFICIO)**

Head Institute Counseling Service
Chairman, APEC
Dean of Students' Affairs

(b) SENATE NOMINEES

- (i) Dr. N N Nair CHM
(ii) Dr. Ashish Garg MSE
(iii) Dr. Amit Dutta PHY
(iv) Dr. Adrish Banerjee EE

(c) STUDENTS' SENATE NOMINEES

- (i) Ms. Shivangi Tiwari (15223263) stiwari@iitk.ac.in
(ii) Mr. Praharsh Mohanlal Patel (151060) pmpatel@iitk.ac.in
(iii) Mr. Mohammad Ashraf (14389) ashraf@iitk.ac.in

(G) SENATE STUDENTS' AFFAIRS COMMITTEE**(a) MEMBERS (EX-OFFICIO)**

- Head Institute Counseling Service
- One member of the APEC nominated by Chairman, APEC
- One Warden of students' Hall of Residence nominated by Chairman, COW
- Dean of Students' Affairs : **Chairman, Ex-Officio**

(b) SENATE NOMINEES

- (i) Dr. Debopam Das AE
- (ii) Dr. Amitabh Bandyopadhyay BSBE
- (iii) Dr. Mohua Banerjee MATHS & STAT.

(c) STUDENTS' SENATE NOMINEES

- (i) Mr. Aditya Desai (14101264) adityad@iitk.ac.in
- (ii) Mr. Vipul Garg (12807815) vipulagl@iitk.ac.in
- (iii) Mr. Ashutosh Ranka (13164) ashur@iitk.ac.in
- (iv) Mr. Rutuj Jugade (14572) rutuj@iitk.ac.in

(H) SENATE UNDERGRADUATE COMMITTEE**(a) SENATE NOMINEE**

- (i) Dr. T. Ravichandran, HSS - Outgoing Chairman
- (ii) Dr. Mainak Chaudhuri CSE

(b) NOMINEES OF DEPARTMENTS / PROGRAMMES

- (i) Dr. Sanjay Kumar AE
- (ii) Dr. Jayandharan G. Rao BSBE
- (iii) Dr. Anurag Tripathi CHE
- (iv) Dr. D. Goswami CHM
- (v) Dr. Rajesh Sathiyamoorthy CE
- (vi) Dr. Nitin Saxena CSE
- (vii) Dr. K V Srivastava EE
- (viii) Dr. Ritwij Bhowmik HSS
- (ix) Dr. Anoop Singh IME
- (x) Dr. B Lohani (CE) CELP
- (xi) Dr. Shakti S Gupta ME
- (xii) Dr. Deepak Gupta MSE
- (xiii) Dr. R G S Pala (CHE) MSP
- (xiv) Dr. S Ghorai MATHS & STAT.
- (xv) Dr. Aditya H. Kelkar (PHY) NET
- (xvi) Dr. Manoj K Harbola PHY
- (xvii) Dr. Deepu Philip M DES
- (xviii) Dr. Javed Malik, ES Convener, PUGC
Engineering Sciences
- (xix) Dr. Somesh K Mathur Convener, PUGC
(Economics)

(c) STUDENTS' SENATE NOMINEES

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- (iv) Mr. Siddant Naik (150714) naiksid@iitk.ac.in

THE FACULTY

There are fourteen departments and five interdisciplinary programs offering degrees at various levels in the Institute.

The Institute had 394 faculty as on March 31, 2017 faculty strength of the Institute as on March 31, 2017. Of these 18 were shared by two departments on half-time basis. There were also 25 other academic offices and staff comprising Research Engineers/Scientific Officers and Library staff, as on 31 March 2017. 13 Faculty Members, 07 Visiting Faculty and 01 Academic staff joined during the 1 April 2016 to 31st March 2017. 19 faculty members/academic staff retired//resigned during the period. 09 visiting faculty have resigned/left/ or their term was over. The Visiting/Distinguished/ Adjunct Faculty contribute significantly and they also get an opportunity to know the Institute.

For full details

Visit URL : https://www.iitk.ac.in/dord/data/Annual_Report_2016-17/Faculty.pdf

ACADEMIC PROGRAMMES

EDUCATIONAL GOALS

Education in the engineering stream should produce trained manpower for maintaining and advancing technological growth. The scope of engineering education should evolve based on the evaluation of technological growth for their usefulness and relevance to the prosperity of the country. The educational strategy in this context should help to develop a knowledge industry and the systems involved in this endeavor should strive for furtherance of knowledge.

The academic goals of the Indian Institute of Technology Kanpur from the viewpoint of its teaching programmes are the following:

- To prepare students for the highest level of excellence in science and technology and produce competent, creative and imaginative scientists and engineers.
- To promote a spirit of free and objective inquiry in different fields amongst the students and motivate them for higher studies and research.
- To foster inter-disciplinary approach. To promote the concept of virtual research departments by bringing together faculty and students into activities of mutual interest.

TEACHING PROGRAMMES

The Institute offers instruction in various disciplines of science and engineering, both at undergraduate (UG) and postgraduate (PG) levels. These programmes are planned and implemented by the Academic Senate of the Institute. Micro-management of these programmes is carried out by the Senate Undergraduate Committee (SUGC) and the Senate Post-Graduate Committee (SPGC) respectively.

Undergraduate Programmes

The Institute offers the following undergraduate programmes:

- Four-Year B.Tech in Aerospace, Biological Sciences & Bio Engg., Chemical, Civil, Computer Science, Electrical, Material Science and Engineering and Mechanical Engg.
- Four-Year BS in Physics, Chemistry, Earth Science, Mathematics & Scientific Computing and Economics.

The four-year undergraduate programme consists of two parts of about four semesters each. The first part is primary, the core programme common to all students, and is carefully planned to give the students a strong base in Mathematics, Physics, Chemistry, Engineering Sciences, Technical Arts, Humanities and Social Sciences. The second part consists of professional courses and a project in the chosen branch of specialization.

Two-Year M.Sc. Programme

The Institute also offers M.Sc. (2 years) in Physics, Chemistry, Mathematics and Statistics, where the students with B.Sc. (Hons.) background are chosen through an all-India entrance examination known as JAM. These programmes have been largely responsible for providing scientific manpower to Indian research institutes and universities.

Postgraduate Programmes

The postgraduate programme is intended to prepare students to enter their professions with a perspective and breadth of knowledge, related to the principal divisions of their respective fields of specialization, through courses and specialized research experience. A postgraduate student is typically enrolled for three or four courses each semester until the student advances to a point where the principal requirements of the programme left to be fulfilled are research and thesis.

M. Tech. Programme

We offer M.Tech in all the core engineering branches - AE, BSBE, CHE, CE, CSE, EE, ME and MSE. In

addition, there are M.Tech. programs in some interdisciplinary areas such as IME, PSE, MS and NET. M.Tech. students are selected through an all-India examination known as GATE and written test/interview in some cases.

MBA Programme

The Department of Industrial Management and Engineering (IME) offers MBA programme. The students admitted to this program are selected through an all-India examination known as CAT followed by interview and group discussion.

MDES Programme

An interdisciplinary program, Master of Design is also offered. The Students are admitted to this program through an all-India examination known as CEED/GATE. In some cases, further written test/interview may also be taken.

Doctor of Philosophy (Ph.D)

The academic programmes leading to the degree of Doctor of Philosophy (Ph.D) exists in all the engineering departments and four interdisciplinary programmes: Materials Science, Nuclear Engineering & Technology, Photonics Science & Engineering (earlier known as Laser Technology Programme) and Design Programme. Ph.D programme also exists in Chemistry, Earth Sciences, Mathematics & Statistics, Physics, English, Philosophy, Psychology and Sociology. Ph.D programme in Economics has been separated from the Dept. of Humanities & Social Sciences and has been placed under newly created Department of Economic Sciences.

MS by Research

The Institute Senate recently approved a new post graduate-programme called 'MS by Research in the following disciplines: Aerospace Engineering, Civil Engineering; Computer Science & Engineering; Chemical Engineering; Electrical Engineering; Mechanical Engineering and Photonics Science & Engineering. The objective of this program is to promote project based and industry-sponsored research.

Ph.D (Dual Degree)

The Department of Physics offers an M.Sc.-Ph. D dual degree program. Admission to the programme is through JAM (Joint Admission Test to Master of Science). The programme allows students to continue for a Ph.D degree.

The Ph.D programme culminates in research on a selected topic leading to a thesis submitted in partial fulfillment of the requirements for the degree.

Both M.Tech and Ph.D students receive financial assistance through research/ teaching assistantships.

Research Environment at IIT Kanpur

The Institute has demonstrated its excellence in research in many areas. To cite a few areas, Finite Element Methods Using Domain Decomposition,

Flow Induced Vibrations, Wind Tunnel Testing of Large Scale Prototypes, Computational Chemistry, Nano-materials and Nano-technology, Geometric Optimization of Large Organic Systems, Genomics and Bio-Informatics, Electronic Structure Calculations, Aggregation and Etching, Molecular Dynamics, Material modelling and simulation, Thin Film Dynamics, Optical / EM Field Calculations, Computational Fluid Dynamics and Heat Transfer, Computer Aided Design and Rapid Prototyping, Tomography, Robotics, Multi-Body Dynamics, Geoseismic Prospecting, Stress Analysis and Composite Materials, Vibration and Control, Semiconductor Physics, Photonics, Neural Networks and Genetic Algorithms, Earthquake Engineering, Spin Fluctuations in Quantum Magnets, Quantum Computation. Early detection of cancer, High Temperature Superconductors, Magneto Optical Imaging and Organic Semiconductors.

The most recent initiative of the Institute has been the formation of a strong research group in the areas of Nanoscience and Nanotechnology, Aerosol Direct Efforts, and Flexible Electronics.

National Programme on Earthquake Engineering Education

IIT Kanpur earnestly believes that every Institute of National Importance has an obligation to render necessary service to the country in a crisis. Our country is prone to strong earthquakes, and we need to contain the risks this involves. A trained manpower development programme for earthquake risk mitigation, known as NPEEE (National Programme on Earthquake Engineering Education), has been instituted by the Government of India. IIT Kanpur is the nodal agency for the entire gamut of NPEEE activities. The enthusiastic faculty members of the Institute have made enormous contribution in the Earthquake Engineering Education in the country. Their work in the Andaman Islands during the Tsunami calamity deserves deep appreciation.

New Initiatives in Academic Courses

NPTEL Phase IV has proposed several new activities which is in tune with the recently initiated scheme of MHRD called the Central Sector Scheme (CSS) and complaint with Massive Open Online Courses (MOOC) initiative. It is anticipated that the CSS of MOOC complaint e-contents under NPTEL IV will play an important role towards affordable, high-quality, online and open access education drive of MHRD.

The Institute experimented with blended mode teaching for a course with 400+ students under the Pandit Madan Mohan Malviya National Mission on Teachers and Teaching (PMMNMTT). Lectures were recorded and released at the beginning of a week. The classroom was used for discussions, clarifications and problem solving. It was found that the method worked quite well. A tool has been designed and implemented successfully to correct programming

assignments in the first course on programming. A new MOOC management system, 'mooKIT' with special features for developing countries has been developed and utilized to teach about 12 MOOCs including one on Climate Change by the University of South Pacific Fiji and another on agriculture (under NPTEL with the help of agriculture experts).

Activities Related to PG students

An annual event called Research Scholar day was held in each department and interdisciplinary program. The doctoral students showcased their research output through oral or poster presentations and engaged in extensive discussions with their peer and the faculty. This exercise was readily welcomed by the scholar community and added new vigor and enthusiasm in the academic community.

The Department of Biotechnology supported M.Tech program of Department of Biological Sciences and

Bioengineering was rated the best amongst 71 such programs in the country. This independent evaluation was done by an expert team in collaboration with the Biotech Consortium India Limited.

New UG and PG programs

The Institute has recently established the following new academic programs/departments:

1. MS by Research in Aerospace Engineering (2-year post-graduate program)
2. Ph.D programme in Cognitive Science
3. Dept. of Economic Sciences.

For full details

Visit URL :

https://www.iitk.ac.in/dord/data/Annual_Report_2016-17/Academic_Programme.pdf

RESEARCH AND DEVELOPMENT

The Institute has registered steady growth in its Research and Development activities in this year. The number of externally funded ongoing projects has reached 564 with a total sanctioned value of Rs. 715 crore. During 2016 - 2017, the Institute received sanction for 159 sponsored projects worth Rs. 223 crore and 131 consultancy projects of value Rs. 46 crore. Some of the major grants sanctioned by various agencies during the year include Ministry of Human Resource and Development (MHRD, Rs. 110 crore), Science and Engineering Research Board (SERB, Rs. 26 crore), Department of Science and Technology (DST, Rs. 20 crores), DFID Executor Vilgro Innovation Foundation (DFIDE, Rs. 12 crore), Ministry Of Water Resources, River Development & Ganga Rejuvenation (MOWRG, Rs. 10 crore), and Ministry of Environment, Forests and Climate Change (MOEFCC, Rs. 9 crore). Some of the major industries who have funded projects to IITK this year include National Thermal Power Corporation, Aeronautical Development Establishment, Aeron Systems Pvt. Ltd, Vikram Sarabhai Space Centre, Oil and Natural Gas Corporation Ltd., Unilever Industries Pvt. Ltd., Sterlite Technologies Ltd., Tata Consultancy Services Ltd., Tata Steel Ltd., Bharat Heavy Electricals Ltd, UP State Industrial Dev. Corporation and Mitsubishi Heavy Industries Ltd.

During the year, 52 Indian patents including 10 design and 3 international patents were filed and 10 patents were filled earlier granted.

Till date, 392 Patents have been filed, of which 58 patents have been granted so far. Altogether 56 technologies have been licensed for commercialization till date.

A total of 27 companies are currently incubated at SIDBI Innovation and Incubation Centre (SIIC), IIT Kanpur and 41 have graduated till date.

IMPRINT India Initiative

Since conceptualization to launching and now for implementation, IIT Kanpur has played a key role as the National Coordinating Institute in the unique national initiative called IMPacting Research, INnovation and Technology (IMPRINT). IMPRINT is unique because it covers the entire engineering domain, harnesses the combined strength of all centrally funded (CFTIs) including the IITs, NITs, IISERs and IISc and focuses on translation, not just creation, of knowledge into technology products and processes. IMPRINT was launched by the highest political leadership of the country from the Rashtrapati Bhawan. As of now, a total of 126 projects have been sanctioned in the first cycle of IMPRINT scheme, with total funding of Rs 278 crore from MHRD and partnering ministry in 50-50 sharing mode. IIT Kanpur is implementing 15 of these projects worth Rs. 34.4 crore.

Projects under UAY

IIT Kanpur has got approval of four major projects under the new scheme of Uchcharitar Avishkar Yojana (UAY), Ministry of Human Resource and Development. Under this scheme, half of the total project cost will be supported by MHRD and the remaining half will be shared equally between the partner Industry and the concerned ministry.

S. No.	Title of the Project	Name of the Company	Summary of objective
1.	Engineering of security hardened cryptographic protocols for critical national infrastructure	Nivetti Systems	To enhance capability in the area of cyber security
2	Develop a Novel Synthesis route for a key intermediate – Noroxymorphone	Navin Saxena Research & Technology Pvt. Ltd. (NSRT)	To develop a method for producing a key intermediate in synthesis of active pharmaceutical ingredients
3	Design and Development of Adaptive Intelligent Pipe Health Monitoring Robots for Fuel Transportation Systems	Gas Authority of India Limited (GAIL, India)	To develop sophisticated structural health monitoring mechanism of network of pipelines
4	Development and Scale-up of Ultrasmall Nanocatalysts for Hydrodesulfurization	Hindustan Petroleum Corporation Ltd	To develop novel hydrodesulfurization catalyst using nano-technology

ICME National Hub at IIT Kanpur – A joint IITK - TCS initiative

The focus of Integrated Computational Materials Engineering (ICME) is an emerging and transformative discipline with large potential. The focus is on Integration of models of various processes at different length scales, design and manufacturing processes, models with experiments, software tools addressing multi-physics problems etc. with the end objective of taking ICME to industrial scale. The vision of this joint initiative is to create a World Class Multidisciplinary Educational and Research Ecosystem for ICME at IIT Kanpur.

Major projects sanctioned

Some of the major projects sanctioned in 2016-17 are briefly described below.

Department of Atomic Energy has sanctioned a project titled *Bi-functional Approach to Small Molecule Activation: Towards Sustainable Processes and Products*. The central objective of this project is to design and develop a catalytic systems for the conversion of cheap and earth-abundant molecules to value-added compounds. The concept of metal-ligand cooperativity would be exploited to engineer new generation catalysts. Alternative pathways to elementary organometallic reactions will be developed. Some of the reactions that will be examined include 'green' synthesis of industrial chemicals, valorization of biomass, hydrogen production and more.

The Wellcome Trust funded the project titled *Coding of Innate Olfactory Preferences in the Mosquito Brain*. Mosquitoes detect humans using a variety of cues, including the exhaled carbon dioxide and skin odors. Presently, the understanding about how the information relayed by the sensory neurons is processed in the mosquito brain and how it results in specific behavioral preferences is lacking. In this project, an electrophysiology lab will be established and technique of in-vivo intracellular recordings for mosquitoes will be optimized. By measuring the responses of projection neurons to attractive, repulsive and neutral odorants and examining their

morphologies, it will be tested whether different attractive and repulsive odors are encoded by dedicated neural pathways.

The Ministry of Environment, Forest and Climate Change funded the Project titled *National Carbonaceous Aerosols Programme (NCAP) Working Group-III*. Carbonaceous aerosol emissions arise from energy use and the burning of forest, grasslands and agricultural residues. The emissions lead to air-quality degradation and related health-risks on local to regional scales and to climate impacts on regional to global scales. In south Asia, there is dominance of small combustion sources (e.g. residential cooking and heating), less-developed industry (e.g. brick kilns), and vehicular emission. The broad objectives of this major national initiative involving more than a dozen institutes are extensive understanding of carbonaceous aerosol emissions from regional sources including emission inventory, source apportionment, and their seasonal and long-term atmospheric abundance. Specifically, IIT Kanpur will be estimating emission magnitude and uncertainty of carbonaceous aerosols and co-emitted species from major vehicular tail pipes. In addition, an inverse modelling methods will be employed with the aid of molecular markers and isotope finger printing for deducing regional atmospheric abundance of carbonaceous aerosols, measured over a two year long period, from two North-East Himalayan sites.

The objective of the project titled *PPP Mode Industry Projects (Prototype Development Fund)* is to develop an array of flexible temperature sensors which could used as wearables for healthcare applications. Low-cost materials and processes, utilizing flexible and printable platforms, are being utilized to make the system cost effective. The work is being undertaken at the National Centre of Flexible Electronics, IIT Kanpur with joint support from The Ministry of Information and Communication Technology, Govt. of India, and Murata Mfg. Co. (Japan).

The Department of Science and Technology funded the project titled *Agarose Based Wound Dressing*. India is a developing nation where the quality of life of

people is also improving. This necessitates the improvement in healthcare products. Indian wound care market is expected to reach US\$5.5 billion by 2020. However the wound care market is still ruled by multinational players raising cost of the final product. In the current project, it is proposed that fabrication of cost-effective agarose based materials that can be used for wound dressing as well as drug delivery patches. Different cross-linkers, reinforcements and functionalization strategies would be employed to manipulate the strength of the material, swelling percentage, water vapor transmission rate and gas permeability to suite various wound types.

A project titled Optical Diagnostics of Transport Phenomena during Gas Hydrate Formation and Dissociation funded by the Oil and Natural Gas Corporation proposes to deal with the laboratory-scale experiments of CH₄ extraction from the marine hydrate sediments. The idea is to visualize the physical phenomena as well as to measure the methane fluxes during formation and dissociation of CH₄-hydrate. The proposed experimental techniques focus on



concentration-field reconstruction of laser schlieren imaging and X-ray tomography. The primary objectives of the proposed research include: Laboratory-scale evaluation of Methane recovery strategies; Providing a test-bed for new technologies; Supplying benchmark results for the (computational) reservoir simulators.

The project titled *Integration And Enablement Of 0.18 Micron RF-SOI Technology for Analog Mixed-Signal Applications* funded by the Department of Science and Technology endeavors towards “Make in India” for an RF-SOI technology that will enable manufacturing of superior integrated circuits (IC) in India, especially for analog & mixed signal RF applications, such as cell-phones, radars, and set-top boxes. Split lot experiments, test structure characterization, process/device simulations, and compact modeling will be carried out to achieve project objectives. It will create production level RF-SOI Analog Mixed Signal (AMS) technology for the first time in the country through collaboration between academic institute (IIT Delhi) and Govt. laboratory (SCL) and will create PDK and offer country's first multi-project wafer (MPW) service.

The project sanctioned by the Department of Science and Technology titled *Commissioning of a Pilot Plant of 10*

KLD Capacity Comprising of ZnO based Sensitive Photo Catalytic Filters for Visible Light Catalysis and Carbon Nano-Mat Fiber Filter based Treatment of the Effluent of CETP, Jodhpur is about providing a solution for industrial effluents consisting of organic dyes which are harmful to environment and are not dischargeable. The solution is provided by using the soil mediated photocatalytic remediation of industrial dye present in the effluents by using ZnO nanostructures in presence of sunlight. The collaborator for this activity is CETP Jodhpur and the goal is to setup a plant of 10 KLD capacity which would be based on solar energy.

An Indo-Israle joint project titled *Deciphering the Structural Role of Glycogen in Neuronal Autophagy, and Neurodegeneration* is being funded by the UGC to understand the roles of glycogen in neuronal survival. Neurons do not store glycogen although they do have the mechanism to synthesize same. Since glycogen inclusions are seen in the degenerating neurons in the disease condition, this projects looks at the role of glycogen in proteolytic processes and their impact on the neuroanl survuival.

The Project titled *National Interdisciplinary Center For Cyber Security And Cyber Defense Of Critical Infrastructures* has been sanctioned by the Science and Engineering Research Board. Cyber Security is one the greatest challenge we face today as we are increasingly dependent on computing, networking, and data driven decision and control. Our critical infrastructures such as power grid, water and sewage system, railway signaling and transportation, manufacturing and process control etc are increasingly vulnerable to cyber attacks. In the recent years, cyber attack induced blackout in Ukraine and Israel, halting on banking system by denial of service attack in Turkey, the DNS poisoning based attack on the domain name system in India, loss of 3.2 million debit card data through ATM malware in India, attacks on German steel plants, and New York dam --and many other cases point to the fact that possibly next wars will be fought in the cyber space. The interdisciplinary center for cyber security and cyber defense of critical infrastructure at IIT Kanpur received a funding of 14.43 crores from SERB/DST recently to build India's first industry scale cyber security test bed for cyber physical infrastructure, and to carry out research on protection, detection, and cyber attack resilient design of critical infrastructures.

Research Infrastructure

Department of Mechanical Engineering received a FIST grant of DST to augment the post-graduate teaching and research facilities in the department amounting to Rs 3.8 crores for establishing the following two major facilitates.

Metal Additive Manufacturing facility: The facility, based on selective Laser melting of a powder bed, will be capable of creating metal parts of both reactive and non-reactive materials. The facility will be used to address thermal-material interactions in metal additive

manufacturing in detail with an aim to obtain scientific understanding of the physical mechanisms involved. The facility at large can help in indigenous product and technology development and will also provide a boost to the newly evolving area of metal additive manufacturing in India.

3D Tomographic PIV facility: This whole-flow-field technique, based on recent developments in camera and laser technology, can provide instantaneous velocity vector measurements in the entire flow thus enabling simultaneous observation of spatial and temporal variation of the flow. The instrument will be used in understanding locomotion of underwater creatures, flow control, bio-medical fluid mechanics

etc.

The Department of Science & Technology and the Ministry of Electronics and Information Technology are jointly coordinating the National Super Computing Mission. As part of this initiative, the DST has approved the installation of 1 Petaflop supercomputing system with appropriate data centres and storage facilities for high-end computing at IIT Kanpur.

For full details

Visit URL :

https://www.iitk.ac.in/dord/data/Annual_Report_2016-17/Research_and_Development.pdf

OUTPUT STATUS OF MHRD PROJECTS

Project Number: MHRD/EE/2016150

Project Title: Teaching Learning Center on Internet of Things (IoT)

Project Investigator: Laxmidhar Behera

Co-Investigator(s)/Collaborators (if any): IIT Patna, IIT Kharagpur, IIT Indore

Project Initiated on: 01 Aug 2016

Approval letter and date: 1-36/2016-PN.II Dated 16 June 2016

Project objectives

MHRD has set up a Teaching Learning Centre for Internet-of-Things at IIT Patna under Pandit Madan Mohan Malviya National Mission on Teachers and Teaching (PMMMNTT). IIT Kanpur, IIT Kharagpur and IIT Indore are other partners. Smart Grid, Smart City, Smart home and assisted living, Smart Car, Autonomous vehicles, networked systems of robots, UAVs, and unmanned cars are some of the examples of Cyber Physical Systems (CPS) that will be covered for preparing course modules to teach engineering teachers under this scheme.

Progress report

Two courses for teachers training on Deep Learning (12-16 Jan 2017) and Cyber Physical Systems (20-24 March 2017) have been successfully conducted. One international workshop of Cyber physical systems (25-26 March 2017) was also conducted. During this seminar, a panel discussion was held on starting the MTech Program on IoT at IIT Patna. One day workshop on IoT in social network was held in 14 March 2017. The lab facilities have been created to augment networked robotics experiments by adding a 6 DOF UR 10 manipulator, Gold electrodes based EEG cap for brain computer interface and GPU based advanced computational facilities. The participants were given live demos during both the courses.

Highlights

- Five day course on Deep Learning and Application 12-16, Jan 2017 was held at IITK where 100 participants attended.
- Five day course on Control of Cyber Physical Systems 20-24, March 2017 was held at IITK

where sixty participants attended.

- A two day International Workshop on Cyber Physical Systems 25-26, March 2017 was held at IITK where sixty participants attended.
- Lab facilities on networked robotics have been augmented with six DOF UR 10 robot arm and GPU based computational facilities.

Project Number: 16-49/2009-DL-; control number PG23220099863

Project Title: Benchmarking of information and communication Technology modules in Physics and Chemistry

Project Investigator: Prof. R K Thareja & Prof. Gurunath Ramanathan

Co-Investigator(s)/Collaborators (if any): N/A

Project Initiated on: March 31, 2009

Approval letter and date: F.16-49/2009-DL (March 31, 2009)

Project objectives

The initial deliverable was 5 courses each in Physics and Chemistry. 25 content providers in physics & 10 content providers in chemistry have provided finally 17 course contents in physics and 13 course contents in chemistry. Submissions that could not be completed were dropped in the final list.

Progress report

The website address of the project was changed from <http://ictwiki.iitk.ernet.in/wiki/index.php> to <http://ictwiki.iitk.ac.in/wiki/index.php> after ernet was taken down in April 2017. Migration to a new server was also accomplished during this period. Some of the courses are still under review. A letter extending this project till September 30 has been received from MHRD. All project objectives have been fulfilled well beyond the initial objectives and the remaining time will be used to consolidate the work prior to uploading on the national portal.

Highlights

- Courses at PG level in physics and Chemistry in the wiki text format

- All project objectives have been fulfilled.
- Project will be consolidated and completed in another 3 months.

Project Number: MHRD/CS/2015251

Project Title: PMMMMNMTT Teaching and Learning Centre IIT Kanpur

Project Investigator: Dr. T.V.Prabhakar, Dr. A.Chaturvedi, Dr. C.S.Upadhyay

Co-Investigator(s)/Collaborators (if any):

Project Initiated on: November 2015

Approval letter and date: F.No.3-13/2015-PN. II, Dated September 30,2015

Project objectives

The **Teaching and Learning Centre** will work at multiple levels to enable stakeholders to improve, adopt, and evolve with expectations, needs and challenges of contemporary education.

- At the **Individual** faculty member level we create, demonstrate and facilitate mechanisms for Teacher enablement and quality improvement
- At the **Institutional** level we work on Curriculum audit, Curriculum design, Curriculum adoption strategy, Faculty Up-gradation to enable the overall capabilities of the Institute.
- At **Technology** level we will design and develop powerful electronic platforms to enable the above the two modes of interaction.
- Envisaged budget is Rs.4.3 crores for setting up the Centre and a recurring expense of 1.004 crores per year

Essentially we cover the two aspects of an Institute that are tightly linked to teaching and learning: the **Curriculum**, the **Faculty** who deliver the Curriculum.

Progress report

Activity Report: April 2016 to March 2017

Summary:

This year has been majorly spent in creating the soft and hard infrastructure needed to fulfill the TLC goals.

- An interaction platform has been developed and made operational. A MOOC with fifty thousand students was used to test the platform
- Courseware for six courses has been developed and validated
- Linkages established with UPTU and TEQIP for teacher training and BHU-IIT for platform sharing
- Academic Senate of IIT Kanpur initiated evaluation of the utility of blended learning by conducting some courses under careful monitoring

The Teaching Learning Center (TLC) at IIT Kanpur has been set up under the aegis of the Pandit Madan Mohan Malviya National Mission on Teachers and Training (PMMMMNMTT) in November 2015.

The activities under the center were mainly around creating enablers to fulfill its mission and goals and broadly classified as under:

- Technology Development
- Collaborations
- Infrastructure Development
- Courseware Development

Technology Development

MooKIT (<http://mookit.co>) is a MOOC management system. This is important to the TLC goals as it will be used not only for some training sessions but also to provide continued access to the resources for the teachers. We have been able to test mooKIT comprehensively with a course of more than 50 thousand registered students. MooKIT has some very unique features like

- Adaptability to varying bandwidths
- Powerful analytics
- Connectivity with Social Networking platforms like Facebook and Twitter

FlipKIT is a fork of moost which can be used for blended teaching, also known as flipped classes. This would be very useful for teachers from smaller institutes to conduct their courses if the lecture resources are available. The platform has been tested for five courses at IIT Kanpur, which is investigating the scope and role of this mode of teaching in IITK Undergraduate education.

TLC Portal (<http://tlc.iitk.ac.in/>) is a website for all the activities of the Teaching Learning Centre at IITK. It will host all the courses, workshops, resource materials.

Collaborations

Interaction with IIT-BHU: A two day workshop on online courses and their development was conducted together with IITBHU for BHU faculty. The training was on the architecture and functioning of a MOOC with a stress on guidelines for content preparation and interaction management. More than twenty teachers participated. Courses development has started and it is expected this will result in some courses coming out very soon.

Interaction with UPTU: With the help of Prof Vinay Phatak, VC UPTU a meeting was organized with some constituent colleges to identify the teacher training needs in the UP region.

Interaction with TEQIP: IIT Kanpur has a very active TEQIP centre which has strong linkages with many engineering institutes in the states of Uttar Pradesh and Uttarakhand. TLC activities will be advertised through TEQIP channels and their good offices will be used for identifying the needs and participants.

Infrastructure

Electronic and Civil infrastructure has been created to facilitate the objectives of the TLC.

A private cloud has been set up with the following configuration.

- 3 machine cluster each of 128 GB RAM, Dual Haswell E5-2630v3(8 Core, 2.6 GHz), 800GB SSD, 4TB HDD, 10Gbps internal connectivity.
- This should be able to host upto 80 virtual machines, which will be used for hosting all the online interaction platforms like mooKIT, FlipKIT etc.
- A courseware preparation facility has been setup with some recording equipment and content editing facilities.
- IIT Kanpur Noida extension center is being developed for conducting contact programs. Should become operational by summer 2017.

Courseware Development

Courseware for the following Undergraduate courses has been developed and tested with our students

- Thermodynamics
- Internal Combustion Engines
- Probability and Statistics
- Introduction to Complex Variables
- Partial Differential Equations

Experiments with blended teaching: The IITK Senate has resolved to explore the efficacy and utility of blended mode learning in our curriculum. Five course have been done so far and three more coming up next semester. This is an important experiment for PMMMNMTT, since this mode of teaching, where the Instructor uses pre-recorded lecture in some proportion, is likely to be adopted by smaller engineering institutes.

Flipped classroom mode: 9 Courses were developed under Flipped Classroom mode namely:

Course	Faculty
Thermodynamics	Dr. Jayant K. Singh
Computer Systems Security	Dr.Sandeep K Shukla
Fundamental of Computing	Dr.Rajat Mittal
Probability and Statistics	Prof. Neeraj Misra
Computational Physics	Prof. Mahendra K Verma
Internal Combustion Engines	Prof. Sameer Khandekar
Introduction to Complex Variables	Dr. Sameer Chavan
Partial Differential Equations	Dr. Kaushik Bal
Topics in Internet Technologies	Prof. T V Prabhakar

“Learning Physics through simple experiments”: A Massive Open Online Course (MOOC) on **Learning Physics through Simple Experiments** was offered by Prof. H C Verma, Department of Physics, IIT Kanpur. It had more than 50,000 registered participants. This course was run on the infrastructure set up under PMMMNMTT-TLC. The system performed flawlessly and the course was very well received.

“C Programming & Data Structures”: We are going on to start two simultaneously Workshop for C Programming & Data Structure by Prof. R.K. Ghosh and Prof. Amey Karkare, Department of Computer Science & Engineering, IIT Kanpur which will be held on 19 June to 25 June 2017 at QIP Class Room.IIT Kanpur.

“Computer Systems Security”: Open Online Course (MOOC) on Computer Systems Security is offered by Prof Sandeep Shukla, Head, Department of Computer Science & Engineering, IIT Kanpur which will start on 1st June 2017.

Project Number: MHRD/MET/2014258

Project Title: Virtual Lab – Phase II

Project Investigator: Prof. Kantesh Balani
Co-Investigator(s)/Collaborators (if any): N/A

Project Initiated on: 07/11/2014

Approval letter and date: 19 Aug. 2014

Project objectives

In the Phase-II of Virtual Lab, idea is to make all the developed labs into an open source repository that is available to community/academic institutes, whether in India or abroad, for use and development. The idea is now to convert all the licensed content into a platform that is independent of any licensed software. Further, a target of creating nodal centers and achieve a target participation of 54,000 users in the current year.

Progress report

A user count of 1,75,500 is obtained till Apr. 2017 (see Annexure 1). This is almost double of the targeted user count. The release of the funds for the second year is awaited. A total of workshops have been conducted. A total of 26 nodal centers (Annexure 2) have been created with affiliation to IIT Kanpur.

Target of achieving required users is achieved, but we are lagging in front of creating nodal centers. Overall summary:

- Phase II of Virtual Lab has started (since Oct. 2014).
- The target of taking 3 labs to level six was decided. The list of current stats of virtual labs is provided in Annexure 3 (targets achieved).
- One regular project engineer, one project associate and one ad-hoc personnel are hired for the project development.
- The undertaking for integration of all labs (worked upon by IIIT Hyderabad) at common platform is being supported by IIT Kanpur.
- Next step is to change Lab-View content to open source using Sandhi (developed by IIT Bombay)

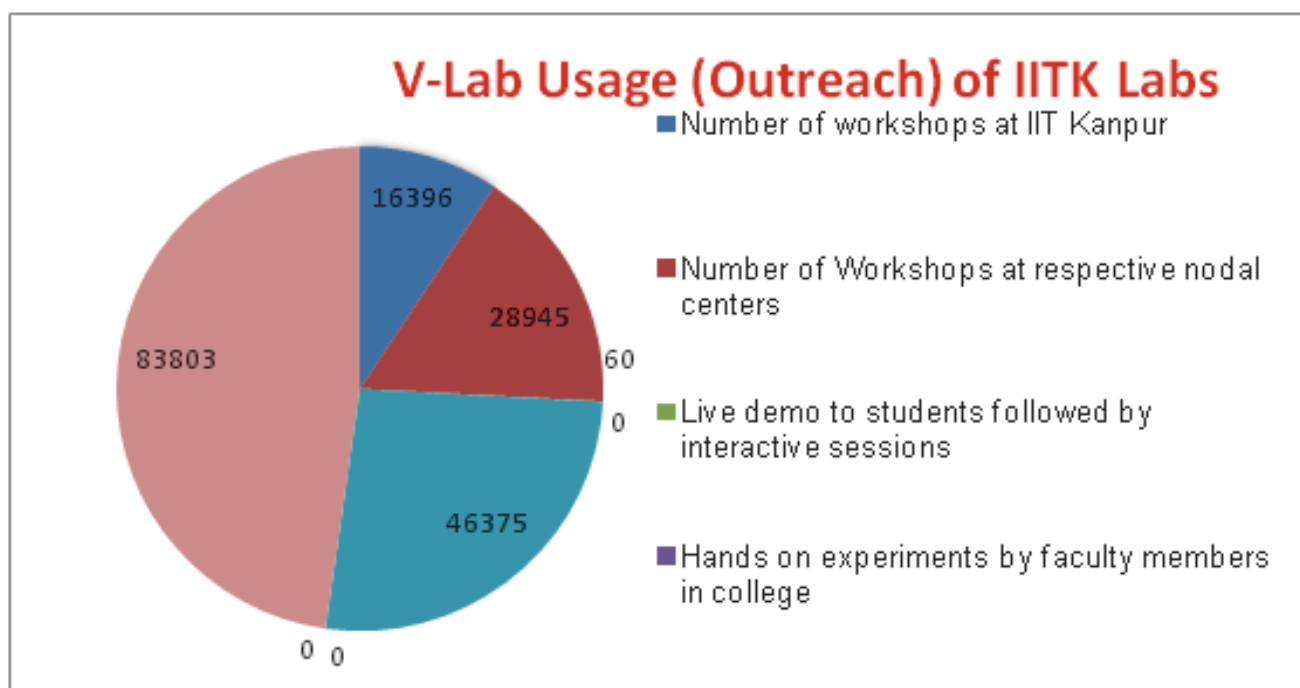
Highlights

1. Five labs have been hosted, and six labs have achieved FOSS level 6. The undertaking for integration of all labs (worked upon by IIIT Hyderabad) at common platform is being supported by IIT Kanpur.
2. One regular project technician and one ad-hoc personnel are available for the project development.
3. Currently, the number of nodal centers is 26, which exceeds the committee number of 24 nodal centers. The user count (of 1,75,500) has substantially exceeded the targeted count (of 54,000).

Annexure 1: Usage Statistics (Outreach) at IIT Kanpur

Outreach Activities for Collecting Usage Data by IIT Kanpur on Actual Basis (for workshops at IIT Kanpur, and approximate basis for outside IITK) till 10th, April 2017.

S.No.	Activities	Quantity	Number of Users	Counts
1.	Number of workshops at IIT Kanpur	6	290	16396
2.	Number of Workshops at respective nodal centers	23	1589	28945
3.	Live demo to students followed by interactive sessions	1	60 (10 expts)	60
4.	Hands on experiments by faculty members in college	4	64	(included above in point 2)
5.	Number of experiments performed using pen drive/DVD x number of students of particular semester/ branch x number of lab experiments performed per lab)	(29 colleges)	(~1926 expected)	# ~46375 expected
6.	FDP (Faculty Development Program) and SDP (Student Development Program)	(2 colleges)	92	(included above in point 2)
7.	Hands on experiment performed by students in lab session in respective colleges.	546	1926	Planned as per items 2 and 5.
8.	IP random hits (from counter on only 3 V-lab websites)		(>83,803hits)	83,803
TOTAL Reach				1,75,579



Annexure 2: Virtual Lab Nodal Centers affiliated to IIT Kanpur

S. No.	College	Date	Contact Person
1	Swami Vivekanand College of Engineering, Indore	Feb. 16, 2015	pranaychauhan@svceindore.ac.in
2	Global Group of Institutions, Lucknow	Feb. 19, 2015	dean@ggi.org.in
3	Dr. Ambedkar Institute of Technology for Handicapped, Kanpur	Apr. 16, 2014	cpverma.2007@rediffmail.com
4	Hindustan Institute of Technology and Management, Agra	Apr. 17, 2015	manishgupta.hitm@sgei.org, directorhitm@sgei.org
5	Pranveer Singh Institute of Technology, Kanpur	Apr. 21, 2015	ashutoshtiwar@psit.in, director@psit.ac.in

6	Saraswati Gyan Mandir Inter College, Indira Nagar, Kanpur	Apr. 21, 2015	sopanbajpai@gmail.com
7	Kendriya Vidyalaya, IIT Kanpur	Apr. 27, 2015	kviiit@iitk.ac.in
8	Babu Banarasi Das University, Lucknow	May 06, 2015	seethalk07@gmail.com
9	Krishna Engineering College, Ghaziabad	July 16, 2015	director@krishnacollege.ac.in
10	Bharat Institute of Technology, Meerut	July 17, 2015	dg@bitmeerut.edu.in
11	JSSATE, Noida	July 24, 2015	hodcs e@jssaten.ac.in
12	Seth Anandram Jaipuria, Kanpur	Aug. 24, 2015	sajsknp@rediffmail.com, sundark.g_sajskanpur@jaipuria.edu.in
13	KV Cant, Kanpur	Aug. 17, 2015	kvkcantt@gmail.com
14	Vidya College of Engineering	Oct. 13, 2015	vce@vidya.edu.in
15	Puran Chandra Vidya Niketan	Oct. 31, 2015	principalpcvn@gmail.com
16	Kanpur Institute of Technology	Oct. 31, 2015	director.kit@kit.ac.in
17	Disha School, Raipur	Dec. 24, 2015	info@chssindia.in, ramanand.goswami@dishamail.com
18	Maharana Pratap Group of Institutions, Kanpur	Feb. 16, 2016	Prof. P. Singh (0512-2770092-96)
19	Government Industrial Training Institute Girls College	Feb. 20, 2016	Itiwb.kanpur@rediffmail.com
20	CSJMU (UIET), Kanpur	Aug. 01, 2016	jainrenu@gmail.com
21	Saraswati Vidya Mandir Inter College , Fatehpur	Aug. 08, 2016	Mr. Ram Singh (8381882722)
22	Rama University, Kanpur	Aug. 16,2016	Dr. Anil Mishra
23	College Of Engg. Science & Tech., Lucknow	Aug. 20,2016	Jprasad3859@yahoo.in
24	Creative Convent Inter College, Lucknow	Aug. 24, 2016	sachanyogendra@gmail.com
25	Lucknow Convent Public Inter College, Lucknow	Sep. 06, 2016	Kumaravinas h10july@gmail.com
26	Amal Jyothi College of Engineering, Kerala	Oct. 10, 2016	principal@amaljyothi.ac.in

Annexure 3: List of Labs at IIT Kanpur

Sr.No.	Lab Name	(Lab-ID)	PI Name	Level
1	Virtual Astrophysics Lab	PHY01	Dr. P.K.Jain	6
2	Ultrafast Laser Spectroscopy	CHS13	Dr. D.Goswami	6
3	Material Response to Micro-structural, Mechanical, Thermal & Biological Stimuli	MECH08	Prof. Kantesh Balani	6
4	Aerospace Virtual Lab	–	Prof. S.Kamle	6
5	Virtual Combustion and Automization Lab	–	Prof. D.P.Mishra	6
6	RF and Microwave Characterization Lab	ECE18	V. Srivastava, J. Akhtar	0
7	Transducers and Instrumentation Virtual Lab	ECE03	Dr . N.K.Verma	1
8	General Purpose Production Simulation Lab	–	Prof. D. Philip	6

Project Number: MHRD/MDES/2016261

Project Title: DTH Project

Project Investigator: Prof. Satyaki Roy

Collaborators (if any): 1) Prof. Munmun Jha.

2) Prof. Raghunandan Sengupta.

3) Prof. Shantanu Bhattacharya

Project Initiated on: 20th October, 2016

Approval letter and date: Approval letter dated 4th August, 2016

Project objectives

The Ministry of Human Resource and Development

launched 32 Direct-to-Home channels which would do a live telecast of classroom lectures from top institutions, including six IITs through its Swayam Prabha initiative.

The government is focusing to expand the reach of high quality education. Through the 32 DTH channels the aim is to ensure that live classrooms can be transmitted from ten 'Teaching Ends' out of which six will be from IITs located in Chennai, Mumbai, Delhi, Kharagpur, Kanpur and Guwahati.”

Progress report

Out of 32 Swayam Prabha DTH channels (launched early this year), 8 channels are being managed by the NPTEL Core Team. The two channels (16 & 17) are currently being managed by IIT Kanpur. These channels broadcast the NPTEL course content in Mechanical Engineering, Humanities and Social Sciences, Economic Sciences, Management and Core Sciences. The channels are available for free on Doordarshan's Free Dish DTH platform and the students will only need a Set Top Box to receive them.

Highlights

- The two channels are stream wise i.e channel 16 broadcasts courses from HSS, Economic Sciences and Management and channel 17 broadcasts courses from Mechanical Engineering.
- Besides the existing NPTEL Courses, 20 more courses are being developed this year in the field of Humanities and Social Sciences, Economic Sciences, and Management.
- Lectures recorded at other institutes are also being sourced from here (Channel 16 and 17)

Project Number: MHRD/DESP/2015437

Project Title: Central Sector Scheme for MOOCs-Complaint e-content creation (NPTEL Phase IV)

Project Investigator: Prof. Satyaki Roy

Collaborators (if any): N/A

Project Initiated on: 31st August, 2016

Approval letter and date: In continuation of approval letter dated 31st March 2009, NPTEL Phase IV (IIT Madras) letter dated 8th March 2016

Project objectives

The broad aim of the project CSS-MOOCs is to facilitate the competitiveness of Indian Industry in the global markets by improving the quality and reach of education. The operational objective of CSS-MOOCs is to make high quality learning material available to students of different institutions across the country. The target group for this project consists of students and faculty members of institutions offering Undergraduate/Postgraduate education in India.

Progress report

Since 2014 IIT Kanpur has offered 109 MOOCs out of which 80 are new courses, 16 are Re-purposed from the NPTEL phase II-III courses and 13 courses have been Re-run based on the needs of the engineering colleges. As part of the NPTEL Phase IV initiative we have developed the concept of NPTEL Local Chapters across the country in the different universities and engineering colleges. There are close to 700 local chapters today with identified expert faculty members of these institutions serving as local mentors for the students enrolled in NPTEL courses. In the last 3 months we have conducted 11 workshops in the institutes in Uttar Pradesh, Uttaranchal, Assam, Manipur, Tripura, Meghalaya and Arunachal Pradesh.

These workshops aim at generating awareness about the NPTEL platforms, explaining difficult concepts from the course content by the subject matter experts and inviting more and more institutions with a dearth of good teaching staff to become local chapters and meaningfully utilize this platform initiated jointly by the IITs and supported by MHRD.

Highlights

- In the upcoming July run IIT Kanpur is developing 38 courses of which 27 are new, 10 are reruns and 1 is repurposed from NPTEL Phase II & III course.
- The courses “Developing Soft Skills and Personality” Enrolled – 14644, Certified - 2303 and “Enhancing Soft Skills” Enrolled – 17981, Certified – 2538 had the maximum number of enrollments.
- Course materials are used for GATE exam preparation. Apart from this the students taking the courses are getting an opportunity work as an intern with the faculty members.
- Courses are used for credit transfers at various institutes (IIT-Madras, Kalasalingam University(TN) Madenapalli Institute of Technology (AP), Centurion University (Odisha))

Project Number: MHRD/CC/20130176

Project Title: Advanced Computation Research and Education

Project Investigator: Head, CC

Co-Investigator(s)/Collaborators (if any): Dr. Amalendu Chandra, Dr. Sanjay Mittal, Dr. Ramasubbu S Ramakrishnan, Dr. Jayant K Singh, Dr. Madhav V Ranganathan, Dr. Raj Ganesh S Pala

Project Initiated on: 21.09.2013

Approval letter and date: F.NO.5-6/2013 TS-VII Dated.08.05.2013

Project objectives

The project objective was to augment and strengthen the Advance computing research and education. This has to be done by augmenting the existing computational facility and encouraging and training students to use it in their research.

Progress report

The facility is in use by large number of students for their research work. As a consequence about 25 research papers were published. About 27 doctoral students have used this facility and some of them have submitted their theses.

Highlights

- More than 25 research publications.
- More than 27 doctoral students from various departments using the facility for their research.

Project Number: MHRD/CC/2015003
Project Title: MHRD IIT Council Portal
Project Investigator: ADDI
Co-Investigator(s)/Collaborators (if any): N/A
Project Initiated on: 01.04.2015
Approval letter and date: 19-9/2009-TS.1 dated 25.02.2015

Project objectives

To maintain and update IIT Council Webportal on continuous basis.

Progress report

In last financial year, the migration to new framework Drupal was started for adding new features and easier maintenance. Now migration has been completed. Further security related changes were made.

Highlights

- Migration to Drupal framework.
- More features added for upload of IIT Related data.
- Security related update in the code of web portal.

Project Number: MHRD/EE/2016408M
Project Title: Development of P2p Learning Management System Brihdsati 4, And Deploying For Indian Academia
Project Investigator: Dr. Yatindra Nath Singh
Co-Investigator(s)/Collaborators (if any): N/A
Project Initiated on: 02.03.2017
Approval letter and date: 41-2/2015-T.S.-I(PT.) with reference to IMPRINT meeting dated 04.01.2017.

Project objectives

To develop P2P technology based learning management system called Brihaspati4.

Progress report

The project has just started in March 2017. The work has just started for designing of system.

Highlights

1. P2P learning management system.
2. Massively scalable LMS.
3. Functionality of peer groups for course management.

Project Number: MHRD/DIRO/2015208
Project Title: IMPRINT INDIA - INITIATIVE
Project Investigator: Dr. A K Singh
Co-Investigator(s)/Collaborators (if any): N/A
Project Initiated on: 01-10-2015
Approval letter and date: MHRD vide letter dated 21-09-2015 F.No.3-18/2015-T.S.-I (Pt.)

Project objectives

Engineering and technology are pivotal to address the issues of sustainability and growth, particularly in those concerning energy, natural resources, food,

housing, transportation and human well-being. Nevertheless, a technologically self-reliant India calls for evolving a pragmatic approach towards providing quality technical education and an enabling ecosystem to spur innovation. Mandate of the IMPRINT Initiative is two pronged. The first is to develop a new education policy and roadmap to research, so as to alter the trajectory of innovations from our academic and R&D institutions to demand driven ones, rather than the supply driven models that currently exist. The second is to actually develop technological solutions for translation into society.

Progress report

Through IMPRINT India Initiative 2612 proposals were received, the reviewers and Domain Expert Committee (DEC) has rigorously reviewed all the proposals and the screening of the same happened in 3 phases and finally 259 proposals with suggested comments were revised and tailored which was accepted by the Apex committee on 28.9.2016. Among this 259*, 143* proposals have already been financially closed with 50% matching grant from the partner Ministry/Department/Industries.

Domain Wise Breakup:

Domain	No. of proposals reached financial closure (FC)	Remaining proposals yet to attain FC	Total
Advanced Materials (AM)	20	22	42
Energy (EN)	19	13	32
Environmental Science & Climate Change (EC)	03	07	10
Healthcare (HC)	34*	10	44*
Information & Communication Technology (ICT)	18	21	39
Manufacturing (MF)	11	06	17
Nano-Technology & Hardware (NH)	10	11	21
Security & Defence (SD)	16	18	34
Sustainable Habitat (SH)	06	05	11
Water Resources & River Systems (WR)	06	03	09
Total	143	116	259

Institute Wise Breakup:

Domain	No. of proposals reached financial closure (FC)	Remaining proposals yet to attain FC	Total
IIIT Allahabad	01	00	01
IIITDM Jabalpur	01	00	01
IISc Bangalore	20*	18	38*
IISER Mohali	01	00	01
IISER Pune	00	01	01
IISER Trivandrum	01	00	01
IIT (BHU) Varanasi	01	02	03
IIT Bhubaneswar	01	00	01
IIT Bombay	19	19	38
IIT Delhi	10	06	16
IIT Gandhinagar	03	00	03
IIT Guwahati	09	01	10
IIT Hyderabad	06	08	14
IIT Jodhpur	00	01	01
IIT Kanpur	18	09	27
IIT Kharagpur	27	25	52
IIT Madras	16	11	27
IIT Mandi	02	00	02
IIT Patna	00	01	01
IIT Roorkee	01	06	07
IIT Ropar	01	00	01
NIT Arunachal Pradesh	00	02	02
NIT Durgapur	01	00	01
NIT Rourkela	02	02	04
NIT Surathkal	01	00	01
NIT Warangal	01	02	03
Jadavpur University	00	01	01
RRI	00	01	01
Total	143*	116	259*

*One project was withdrawn by the PI

Highlights

- MHRD has released the grant for 91* projects for the financial year 2016-17. The same has been disbursed to all the PIs to initiate their projects.
- Ministry of Steel, Power, Urban Development, SERB, Department of Scientific and Industrial Research, Heavy Industries, ISRO and ICMR has released their 50% matching grant for the financial year 2016-17. The same has been disbursed and/or in process to the PI Institutions.
- The National Coordinator and MHRD have taken collective measures to hold sessions with the partner Ministries in order to accelerate the process of fund release for the projects which attained financial closure; as well as to speed up the evaluation process of those projects mapped to the relevant ministry for the consideration of funding in order to accomplish the closure financially.

Project Number: MHRD/DOFA/2015298

Project Title: Global Initiative of Academic Networks (GIAN)

Project Investigator: Professor K. Muralidhar
Co-Investigator(s)/Collaborators (if any): N/A
Project Initiated on: 23.11.2015

Approval letter and date: 19-7/2014-TS.I (Secc. dated 31.12.2014)

Project objectives

The Union Cabinet has approved a new program titled Global Initiative of Academic Networks (GIAN) in Higher Education aimed at tapping the talent pool of scientists and entrepreneurs, internationally to encourage their engagement with the institutes of Higher Education in India so as to augment the country's existing academic resources, accelerate the pace of quality reform, and elevate India's scientific and technological capacity to global excellence.
Main Objective: To arrange Guest Lectures by international renowned experts

Progress report:

- Sheet attached

Highlights:

- We had 19 courses approved in 2015-16 out of 23 proposals.
- This year 39 proposals have been submitted (List enclosed).

Status of GIAN courses approved in Phase-I

International Faculty	Host Faculty	Course Title	Duration
Prof. Harutoshi Ogai , Waseda University, Japan	Prof. Bishakh Bhattacharya Department of Mechanical Engineering	Pipe Inspection Robots For Structural Health Monitoring	27 th February 2016 to 6 th March 2016
Prof. Ramon Codina , Universitat Politècnica de Catalunya (UPC), Spain	Prof. B. V. Rathish Kumar Department of Mathematics & Statistics	Variational Multiscale Finite Element Methods In computational Fluid Dynamics	4 th May 2016 to 14 th May 2016
Prof. Thierry Poinsot , CNRS France	Dr. Santanu De , Department of Mechanical Engineering	Combustion: Science, Technology, And Processes	9 th May 2016 to 18 th May 2016
Dr. Xile Hu , Ecole Polytechnique Fédérale de Lausanne, Switzerland	Dr. Raja Angamuthu and Prof. J. K. Bera Department of Chemistry	Catalysis For Energy Storage	6 th June 2016 to 15 th June 2016
Prof. Bulbul Chakraborty Physics Department Brandeis University United States	Prof. Debashish Chowdhury Department of Physics,	The Statistical Mechanics Of Athermal Materials	8 th August, 2016 to 19 th August, 2016
Prof. Dr. Hans -Bern d Schäfer Bucerius Law School Hochschule für Rechtswissenschaft Hamburg Germany	Prof. P M Prasad and Prof. Uday Racherla (IME) Department of Humanities and Social Sciences	Law And Economics For Solving Social, Economic And Technical Challenges	<i>18th August, 2016 to 30th August, 2016</i>
Prof. Pramod K. Varshney , Professor of Electrical Engineering and Computer Science and the Director of CASE, USA	Prof. Aditya K. Jagannatham , Department of Electrical Engineering	Cognitive Radio And Wireless Communications - Theory, Practice And Security	1 st September, 2016 to 10 th September, 2016
Prof. Amitabh Narain Professor in the Department of Mechanical Engineering at Michigan Technological University, USA	Prof. P. S. Ghoshdastidar Department of Mechanical Engineering	Boiling And Condensation: Theory And Applications	6 th September 2016 to 14 th September 2016

International Faculty	Host Faculty	Course Title	Duration
Prof. Daniel J. Costello, Jr. , Professor, Electrical Engineering, USA	Prof. Adrish Banerjee Department of Electrical Engineering	Advanced Topics In Coding Theory	13 th October , 2016 to 22 nd October, 2016
Prof. Ashish Sinha , Chair at the Department of earth Sciences at California State University,	Prof. Rajiv Sinha , Department of Earth Sciences	Reconstruction Of The Asian Monsoon System: New Approaches And Techniques	17 th October, 2016 to 30 th October, 2016
Dr. Suresh Aggarwal Professor and Director of Flow and Combustion Simulation Laboratory. University of Illinois at Chicago	Dr. Ashoke De and Prof. Abhijit Kushari Department of Aerospace Engineering	Combustion: Fundamentals And Applications	14 th November, 2016 to 25 th November, 2016
Prof. K B Chandran , Department of Biomedical Engineering, College of Engineering, University of Iowa, USA	Prof. B. V. Rathish Kumar , Department of Mathematis & Statistics	Computational Cardio-Vascular Fluid Flow Dynamics (Ccvfd)	6 th February 2017 to 11 th February 2017
Dr. Rho ShinMyong Gyeongsang National University (GNU), South Korea	Dr. Rakesh Kumar Mathpal Department of Aerospace Engineering	Rarefied & Microscale Gases And Viscoelastic Fluids: A Unified Framework	23 rd February 2017 to 3 rd March 2017
Dr. David P. Woodruff Research Staff Member Almaden Research Center, San Jose, CA, USA	Prof. Sumit Ganguly Department of Computer Science and Engineering	Sub-Linear Algorithms For Numerical Linear Algebra	24 th February, 2017 to 4 th March, 2017
Professor Thomas Zimmer IMS laboratory, University Bordeaux 1,	Dr. Yogesh Singh Chauhan Department of Biological Sciences and Bio-Engineering	High Frequency Device Characterization And Modeling For Thz Applications	27 th February 2017 to 3 rd March 2017

International Faculty	Host Faculty	Course Title	Duration
Prof. Dr. Martin Albrecht Departement für Chemie & Biochemie Universität Bern Freiestrasse 3 3012 Bern Switzerland	Dr. Sabuj K. Kundu and Prof. Jitendra K. Bera Department of Chemistry	Sustainable Chemistry Through Catalysis	21 st March 2017 to 24 th March 2017
Dr. Alberto Bianco, First Class Director of Research at CNRS (DR1), Institute of Molecular and Cellular Biology, UPR3572 ICT, CNRS, Strasbourg, France	Prof. Sandeep Verma, Department of Chemistry	Introduction To Bionanotechnology	4 th May 2017 to 8 th May 2017
Dr. Udaya Parampalli Associate Professor and reader in the Department of Computing and Information Systems, The University of Melbourne, Australia	Dr. Adrish Banerjee Department of Electrical Engineering	Codes For Distributed Storage	1 st July 2017 to 10 th July 2017
Prof. Shiv G. Kapoor, University of Illinois, United States of America	Prof. J. Ramkumar Department of Mechanical Engineering	Fundamentals Of Micromachining	14 th August 2017 to 21 st August 2017

GIAN proposals for 2017

Sr. No	Host Faculty	Foreign Faculty	Title	Dates
1	Dr. Santanu De	Prof. Olivier Desjardins	Numerical Modeling of Multiphase Flows	12 th to 24 th June 2017
2	Prof. J Ramkumar	Prof. Narendra B. Dahotre	Laser Materials Processing: Fundamentals and Applications	23 rd to 27 th June 2017
3	Dr. M Jaleel Akhtar	Prof Abbas S Omar	Microwave and THz Imaging: Theory and Applications	20 th to 24 th July 2017
4	Prof. Abhishek	Prof. Jayant Sirohi	Helicopter Rotor Dynamics and Design	29 th July 2017 to 5 th August 2017
5	Prof. Laxmidhar Behera	Prof. Sajal K. Das	Selected Topics in Internet of Things: Theory and Applications	1 st to 10 th August 2017
6	Prof. Bishakh Bhattacharya	Dr. Hiroaki Wagatsuma	Fundamentals of Bio and Brain inspired Robotics	10 th to 24 th August 2017
7	Prof. Shantanu Bhattacharya	Prof. Karen Kornblum Bemtsen	Designing Elegant Interactive Experiences	17 th to 22 nd August 2017
8	Prof. B. V. Phani	Prof. Shantanu Dutta	Seminar in Corporate Finance	28 th Aug to 9 th Sept, 2017
9	Dr. Ashis K. Patra	Prof. Eric J. Schelter	Modern Chemistry and Reactivity of the f-Block Elements	4 th to 16 th September 2016
10	Prof. B.V. Rathish Kumar	Professor. Luca Franco Pavarin	Mathematical Foundations of Cardiac Electro Physiology: Mathematics and Statistics	24 th to 30 th September 2017
11	Prof. Priyanka Ghosh	Prof. Subhamoy Bhattacharya	Recent Advancements in Dynamically loaded foundations	18 th to 22 nd September 2017
12	Dr. Basker Sundararaju	Prof. Rinaldo Poli	Investigation of Catalytic reactions and applications to biomass conversion	25 rd September 2017 to 7 th Oct 2017

13	Prof. Ashok Kumar	Prof. Andreas K Nussler	Hepatic tissue development for drug metabolism	25 th Sept to 7 th Oct 2017
14	Prof. S P Rath	Prof. Marilyn M. Olmstead	Crystal Structure Determination: Principle and Application	22 nd to 31 st October 2017
15	Dr. Ashish Mandal	Prof. Abdenacer Makhoulouf	Deformation Theory of algebraic structures and Twisted algebraic structures	23 rd October 2017 to 3 rd November, 2017
16	Prof. J. Ramkumar	Prof. K. F. Ehmann	Multi-scale and Hybrid Manufacturing Processes and Machines - Modeling and Control -	30 th Oct to 8 th Nov 2017
17	Prof. Pratik Sen	Professor Tahei Tahara	Principle and Application of Ultrafast and Nonlinear Spectroscopy	31 st October, 2017 to 10 th November, 2017
18	Prof. Subhra Sankar Dhar	Prof. T. Maiti	Advanced Techniques and Methodologies of Big Data in Science and Engineering	6 th to 10 th November, 2017
19	Prof. Kamal K. Kar	Prof. S. Bandyopadhyay	Re-inventing fly ash into near-whitened material for generating white polymer composites and technological advancement	20 th to 25 th November, 2017
20	Prof. R N Sengupta	Prof. Garud N. Iyengar	Data Analytics for Operations Research	20 th to 24 th November 2017
21	Prof. Nandani Gupta	Dr Vicente Rodolfo Hernandez Garcia Colon	Ultra-Wide Band Partial Discharge Detection in In-Service High Voltage Equipment	20 th Nov, 2017 to 1 st Dec, 2017
22	Prof. Indra Shekhar Sen	Dr. Bernhard Peucker-Ehrenbrink	Geochemical Monitoring of Rivers – Theory, Practice, and Data Interpretation	24 th to 29 th November 2016
23	Prof. R N Sengupta	Prof. Carlos A. Coello Coello	Multiobjective Optimization Using Metaheuristics	1 st to 5 th December 2017
24	Prof. Santanu Misra	Prof. David Mainprice	Quantitative Texture Analysis And EBSD Applications	1 st to 8 th December 2017
25	Prof. Sumit Ganguly	Dr. David P. Woodruff	Sketching and Sampling for Big Data Analysis	1 st to 8 th December 2017
26	Dr. Vaibhav Arghode	Prof. Jane Davidson	Latest Trends in Solar Thermal and Thermochemical Energy Storage Systems	4 th to 8 th , December 2017
27	Dr. Ashish Mandal	Prof. L. Vitagliano	Differential Geometry and PDEs	4 th to 8 th December 2017
28	Dr. Rakesh Kumar Mathpal	Prof. Bengt Sunden	Heat Transfer in Aerospace Systems	4 th to 10 th December 2017
29	Dr. Santanu De	Prof Sankar Bhattacharya	Advanced Coal Utilization: Current Status and Future Prospects	4 th to 15 th December 2017
30	Dr. Ritwij Bhowmik	Prof. Wen-Shu Lai	Making of Artist s Books and Bookbinding Machine	4 th to 15 th December 2017
31	Prof. B.V. Rathish Kumar	Prof. Jean- Pierre Raymond	Control of Fluids: Theory & Computation	11 th to 17 th December 2016

32	Prof. Nishchal Verma	Prof. Jagannathan Sarangapani	Cyber -Physical Systems: Modeling, Control, Security & Big Data	11 th to 20 th December 2016
33	Dr. Mangal Kothari	Prof. Kamesh Subbarao	Autonomous Systems	15 th to 22 nd December, 2017
34	Prof. Ashu Jain	Prof. Rao S. Govindaraju	Moment Analysis For Contaminant Fate And Transport	18 th to 22 nd December 2017
35	Professor Sumit Basu	Prof Daniel Rittel	FAILURE OF MATERIALS	18 th to 28 th Dec, 2017
36	Dr. Rakesh Kumar Mathpal	Prof. Deborah A. Levin	Fundamentals of Spacecraft Environments: Aerospace Engineering	26 th to 30 th December 2017
37	Prof. Joydeep Dutta	Professor John R. Birge	STOCHASTIC PROGRAMMING AND APPLICATIONS	11 th to 19 th December 2017
38	Prof. Adrish Banerjee	Prof. Gerhard Kramer	Network Information Theor	25 th October to 3 rd November 2017
39	Dr. Ark Verma	Dr. Emmanuel Keuleers,	Natural Language Processing and Big Data for Psycholinguistics.	16 th to 22 nd October 2017

Projects under Uchchar Avishkar Yojana 2016-2017

Subject: Sanction of Projects under Uchchar Avishkar Yojana (UAY)

The apex committee of Uchchar Avishkar Yojana approved the projects for implementation under the scheme. This is in accordance with scheme guidelines, the project would be met by industries (25%), by participating Ministry (25%), and remaining by MHRD (50%).

S. No.	Title of the Project	Project Investigator	MOU signed with	Summary of objective
1.	Engineering of security hardened cryptographic protocols for critical national infrastructure	Dr. Sandeep Kumar Shukla	Nivetti Systems	To enhance capability in the area of cyber security
2	Develop a Novel Synthesis route for a key intermediate – Noroxymorphone	Dr. Dattatraya H Dethé	NavinSaxena Research & Technology Pvt. Ltd. (NSRT)	To develop a method for producing a key intermediate in synthesis of active pharmaceutical ingredients
3	Design and Development of Adaptive Intelligent Pipe Health Monitoring Robots for Fuel Transportation Systems	Dr. B. Bhattacharya	Gas Authority of India Limited (GAIL, India)	To develop sophisticated structural health monitoring mechanism of network of pipelines
4	Development and Scale-up of Ultrasmall Nanocatalysts for Hydrodesulfurization	Dr. Sri Sivakumar	Hindustan Petroleum Corporation Ltd	To develop novel hydrodesulfurization catalyst using nano-technology

Progress Report

Project Number: MHRD /MDES/2015264

Project Title: DESIGN INNOVATION CENTRE

Project Investigator: Prof. Satyaki Roy

Collaborators (if any): Prof. Shantanu Bhattacharya

Project Initiated on: 02-11-2015

Approval letter and date: 30-09-2015

Project objectives

The broad aim of the project is to encourage and engage the faculty and students of IIT Kanpur and three SPOKE institutions (SGPGI, HBTI and IARI) to design products and inculcate a spirit of innovation through studio practices, courses, seminars, workshops, exhibitions, fellowships etc.

Progress report

A Project Approval and Advisory Board was constituted in 2016 to oversee the activities of the DIC Project. 22 faculty projects and 6 student projects have been awarded since then. MoUs have been signed with all three SPOKE institutions. Design projects submitted by their faculty and students have been reviewed by PAAB and 26 product development projects have been shortlisted. Both Product Design and Communication Design Labs are being setup for

training and prototyping. The space has been allocated for both these labs in the Design Programme. PD Lab is fully furnished as a functional workshop for prototyping design concepts. The CD Lab is presently being refurbished. The relevant machines have been ordered. We have installed some of our existing equipments i.e. Computer hardware + software, tablets etc for the work to commence. D2B lab will be set up this year. The academic cell activities of DIC at IIT Kanpur involve Courses + Workshops + Seminars + Innovators in residence + Innovation programme for industry. Three courses (Methods of Design Research, Design, Culture and Society and Management of Design Innovation) have been developed and offered to the students. This year we also conducted a few seminars by design innovators and a crafts workshop.

Highlights

- 22 IIT faculty projects and 26 SPOKE faculty projects have been started.
- 6 Student Projects and 1 DIC fellow project are presently under progress
- 3 patents have already been filed.
- The product design for diagnosis of Dengue using paper based device received the Gandhian Innovation Award for 2017.

ALUMNI ASSOCIATION

1. Major Activities

(a) Reunions

During 2016-17, the following 7 reunions took place:

1. 50th Year Reunion of the Class of 1966, 2-5 November 2016
2. 50th Year Reunion of the Batch of 1966, 24-26 November 2016
3. Silver Jubilee Reunion of the Class-of-1992, 24-27 December 2016
4. 35th Year Reunion of the Class-of-1982, 30-31 December 2016 and 1 January 2017
5. 50th year reunion of 1967 Batch, 2-4 February 2017
6. 40th Year Reunion of the Class-of-1977, 18-20 February 2017
7. 50th Year Reunion of the Class-of-1967, 24-26 February 2017

(b) Distinguished Alumnus Awards

Presentation ceremony

The presentation ceremony to honor the awardees of the year 2016 was held on November 2, 2016 in the Main Auditorium. The DAAs were:

Mr. Vishnu Agarwal (BT/EE/1966) is conferred with the Distinguished Alumnus Award – 2016 of Indian Institute of Technology Kanpur for his Outstanding Entrepreneurship.

Mr. Arvind Pradhan (BT/ME/1974) is conferred upon the Distinguished Alumnus Award – 2016 of Indian Institute of Technology Kanpur for his

outstanding enterprising skills and social service.

Mr. Uday B Desai (BT/EE/1974) is conferred upon the Distinguished Alumnus Award – 2016 of Indian Institute of Technology Kanpur for his outstanding Academic and Professional Excellence.

Mr. Anurag Kumar (BT/EE/1977) is conferred upon the Distinguished Alumnus Award of Indian Institute of Technology Kanpur for his Outstanding Academic and Professional Excellence.

Mr. Ram S. Sharma (MSC2/MTH/77) is receiving the Distinguished Alumnus Award of Indian Institute of Technology Kanpur for his management excellence in application of information technology in governance.

Mr. Prabhat Singh (BT/CE/1980) is receiving the Distinguished Alumnus Award of Indian Institute of Technology Kanpur for his professional excellence in running an important PSU sector efficiently and effectively.

Mr. Sanjiva K Lele (BT/ME/1980) is conferred upon the Distinguished Alumnus Award of Indian Institute of Technology Kanpur for his Academic Excellence in Outstanding Contributions to Fluid Mechanics Research.

Satyendra K. Dubey Memorial Award is given to **K. M. Abraham (MT/IME/1989/IITK)** for his For his honesty, probity and exemplary dedication in maintaining the highest professional integrity, Indian Institute of Technology Kanpur confers on Dr K M Abraham the Satyendra K Dubey Memorial Award - 2016.

2. Life Membership Drive for the Classes-of-2016

Alumni Association, IIT Kanpur has expanded by adding more than 1629 new members into its database during this year. The AA office had kept in touch with the graduating batch through emails and posters, informing them about the procedure and benefits of becoming a Life Member. Memorabilia such as Departmental Group photographs of students and faculty members along with a photo frame were gifted to all new members who joined the Association.

3. Election

Welcome to the new Board members 2016-2018

President : Mr Pradeep Bhargava (BT/ME/89)

Vice President : Mr. Sanjay Kumar Ayyangar
(BT/CE/84)

Vice President 1: Mr. Vipul Vivek (BT/MME/95)

Secretary : Dr Manindra Agarwal (BT/CSE/86)

Treasurer : Dr D P Mishra (FAC007)

Member 1 : Mr. Prakash Chandra Rastogi
(MT(DUAL)/ME/06)

Member 2 : Mr. Bimal Sangari (BT/AE/91)

Member 3 : Mr. Sanjeeb Kumar Patjoshi
(MT/EE/88)

Member 4 : Mr. Sanjeev Sinha (MSc/PHY/95)

Member 5 : Ms. Kritika Bhargava (BT/BSBE/09)

Member 6 : Mr. Ajay Kumar Shukla
(BT/PhD/MME/95/12)

Nominee of the Patron : Dr. B. V. Phani

Ex-Officio Member-1 : Dr. Ashok Kumar Gupta
(BT/ME/72)

Ex-Officio Member-2: Dr. Sudhir Misra (BT/CE/81)

PAN IIT

Mr. Anurag Goel and Mr. Damnish Kumar for representing AA IIT Kanpur in PAN IIT

4. Facilities for Alumni visiting their alma mater

Alumni Association has worked with the Institute and has obtained permission to provide vehicle passes to alumni regularly visiting the Institute. The AA office coordinates with the Visitors' Hostel, the official Guest House of the Institute in booking accommodations during the alumni's visits to their alma mater.

5. News

Mr. Pradeep Bhargava, President, made the following announcements after taking over as the Chair on May 18, 2016

- (a) The Alumni Association will proudly record its appreciation for their outstanding achievements of the following alumni who recently have been recognized for their accomplishments:
 - Prof. Arup Chakraborty (BT/ChE/1983), at MIT, has been elected to the National Academy of Sciences, USA.
 - Prof. Jitendra Malik (BT/EE/1980), at Berkeley, was also inducted as a Fellow in National Academy of Sciences.

- Rakesh Jain (BT/CHE/1972), at Harvard, has been declared to be the winner for the Highest Science Honour by the President, USA.

Accreditation to Chapter – Pune Chapter, East-West Coast Chapter and Outer Delhi Chapter is given for 3 year.

5. IITK Alumni Association Chapter Activities

Chapter activities give alumni an opportunity to reconnect, network, and get inspired from the accomplishments of fellow alumni. It is heartening to know that alumni engagement with the society for various activities like Social causes, Entrepreneurship, Mentorship, etc. will not only bond alumni but also brings immense satisfaction. At the same time, participants get to enjoy great food, games and music. The following chapters had their meeting.

1. IIT Kanpur, Alumni Association, Outer Delhi Chapter

The Outer Delhi Chapter organized Holi Chaat Party on 13th March 2016 at Noida Management Association, Institutional Area, Sector 62, NOIDA. There was Networking, Self Introduction of Alumni and their Family members, Party Games and Chaat Party. IIT Kanpur alumni, the Event Contribution is Rs. 300 per person and for non-IIT Kanpur alumni guests charges are Rs. 300 per person. There are no charges for children below 12 years. Around 150 persons attended.

2. Startup Masterclass by IIT Kanpur, Alumni Association, Bangalore Chapter

The event organized by Alumni association, IIT Kanpur, Bangalore chapter. It has been organized Startup Master Class Event since last year. This is the 3rd event in the series, which was held on 27th of Feb, 2016 @Marriott Whitefields, Bangalore. 300 alumni IIT Kanpur and total 800 participants.

Startup Master Class (SMC) being organized by the IITKAA Pune Chapter on September 3, 2016. The event is scheduled to have some high level policy makers from governments, some very illustrious IITK alumni and several prominent industrialists to be part of the event. A good number of startups, investors, mentors, and sponsors are expected to be part of the event in addition to a large number of regular visitors.

Startup Master Class (SMC) being planned in the NCR in the 3rd week of July 2016. Social Entrepreneurship Event (SEE) being planned on June 11, 2016 at Bangalore.

Women's Event being planned on July 9, 2016 at Bangalore where in cross chapter

participation is envisaged.

In July, a get-together in Silicon Valley was held with participation of 200+ alumni. The Silicon Valley chapter is very active and holds 5-6 social meetings every year.

Support for Stage III Cancer Treatment (T3M1N0) – Nitesh Prajapat (IITK-Y8324)

Mr Nitesh Prajapat (Roll No. Y8324), an IIT Kanpur alumnus (BT/ME/2012) of the 2008 batch has informed Alumni Association IIT Kanpur through an email that he has been diagnosed with Stage III Rectum Cancer (T3M1N0) on July 5th, 2016. He has been advised by Dr. P. Jagannath (Chairman, Dept of Surgical Oncology at Lilavati Hospital) to undergo the following treatment:

- 6 weeks of radiation therapy along with chemotherapy under the guidance of Dr V. Kannan (Head, Department of Radiation Oncology at Hinduja Hospital) and Dr Asha Kapadia (Head, Oncology at Hinduja Hospital)
- 6 weeks of rest for the after effects of radiation therapy and preparing the body for surgery
- post 12 weeks, a major surgery will be conducted in the last week of Sept'16 by Dr P. Jagannath for removing the tumour.
- major chemotherapy to prevent it to occur again in future

The expected cost was around Rs. 20 Lacs.

Alumni Association committed to help him to raise fund for the medical expenses through web portal.

ENDOWMENT FUND REPORT

RESOURCE MOBILIZATION

(In Rs. Lakh)

S.No	Comparative Heads	Comparative Statement of Donations	
		01 April 2015 to 31 March 2016	01 April 2016 to 31 March 2017
A	Donations	412.70	762.51
	<i>On the Basis of Origin</i>		
1	Domestic	161.31	249.39
2	Foreign	251.39	513.12
	<i>No. of Donors</i>		
1	Domestic	461	266
2	Foreign	181	185
	<i>No. of Donations</i>	750	547
	<i>Notable Contributions under different initiatives</i>		
1	Infrastructure and Social Initiatives		439.12
2	Academic and Student Initiatives		89.45
3	Batch Contributions	Nil	88.45
B	<i>Corporate Social Responsibility</i>		
1	<i>MoU Signed with No. of Companies</i>	N.A.	7
2	<i>Total Value of MoU Signed</i>	N.A.	985.00
3	<i>Funds Received during in the year</i>	Nil	145.65

SURGE

SURGE an outreach program for students from other institutions across India supported by alumnus contributions. The selection of student participants was very competitive as applications from various institutions across India are being received, which clearly gives an indication of its increasing popularity.

#	Particulars	Surge 2015	Surge 2016
01.	No. of Applications Received	2200	1600
02.	No. of Participations	64	92
03.	No. of Faculty members from IIT Kanpur mentoring	55	64

ALUMNI IMPACT

A. NOTABLE ACHIEVEMENTS IN THE FIELD OF SCIENCE AND TECHNOLOGY BY OUR ALUMNI

Some of our distinguished and respectable alumni members have been proud recipients of various honors and awards during F.Y. 2016-17. To name few of them are:-

Name of the Alumni	Award	Award relates to
Dr. N.R. Narayana Murthy (MT/EE/1969)	The Thomas Jefferson Foundation Medal 2017 in Global Innovations	This honor for his exemplary contributions and leadership in creating a global software and services industry in India.
Dr. B.V.R. Mohan Reddy (MT/ME/1974)	conferred with the 4th highest civilian honor of the country 'Padma Shri' by the Government of India.	He receives this prestigious award for his outstanding contributions to the IT-enabled engineering services industry which have earned him the reputation of one of the founding fathers of ITES industry in India. He is a founder and executive chairman of Cyient Limited.
Prof. Veena Sahajwalla (BT/MME/1986)	Awarded with Jubilee Professorship by the Indian Academy of Sciences.	-
Prof. Manindra Agrawal (BT/PhD/CSE/1986/1991)	Honored with the Goyal Prize 2017 by Kurukshetra University	Contributions in the field of applied sciences by researching on connections between polynomial identity testing.
Prof. Rakesh Agrawal (BT/CHE/1975)	Honored with the ACS Award 2017 in Separations Science & Technology	He receives this prestigious award for providing novel and fundamental insights into the synthesis of energy efficient distillation and membranes based separation processes and their application in numerous industrial plants.
Prof. Shiraz Naval Minwalla (MSC5/PHY/1995)	Chosen for 'The World Academy of Sciences (TWAS) Prize 2016 at the Academy's 27th General Meeting	He receives this prestigious award for the advancement of science in developing countries in the field of Physics.
Dr. Ambuj Tewari (BT/CSE/2002)	Selected for the Sloan Research Fellowship 2017 in Computer Science category by the Alfred P. Sloan Foundation.	He is an Assistant Professor at the University of Michigan.
Prof. Amitabha Chattopadhyay (MSC2/CHM/1980)	Chosen for 'The World Academy of Sciences (TWAS) Prize 2016 at the Academy's 27th General Meeting	He will receive this prestigious award for the advancement of science in developing countries in the field of Biology.
Prof. Subramanian Anantha Ramakrishna (MSC5/PHY/1995)	Chosen for the prestigious Shanti Swarup Bhatnagar Award 2016	Awarded for Physical Sciences category by the Ministry of Science and Technology, Govt. of India.
Prof. Sanjay Mittal (BT/AE/1988)	Awarded the twenty-fifth GD Birla Award for Scientific Research	He has been bestowed with this award for his significant contributions have been in the area of Mechanics.
Dr. Dinesh Bharadia (BT/EE/2010)	Chosen for the Paul Baran Young Scholar Award 2016 by the Marconi Society	Awarded for his contribution to send and receive radio (wireless) signals, including mobile telephony and data on the same channel.

B. NOTABLE ENTREPRENEURIAL ENDEAVOURS BY OUR ALUMNI

Some Entrepreneurial endeavors by our alumni members are:

Name of the Alumni	Entrepreneur in the field of
Mr. Alope Bajpai (BT/EE/2001) and Mr. Rajnish Kumar (BT/CSE/2001)	Co-founders of IXIGO, an online travel search marketplace. The company has raised \$15 million Series B round funding from venture capital firm Sequoia Capital India. It has evolved from being a travel search engine to a travel marketplace where a customer can avail hotel deals, real-time fares, book cabs and gain access to travel content across travel sites.
Mr. Farid Ahsan (BT/MME/2014), Mr. Ankush Sachdeva (BT/CSE/2015) and Mr. Bhanu Singh (BT/EE/2014)	Co-founders of ShareChat, a social media platform in local languages. They make it to Forbes 30 Under 30 List 2017.
Mr. Varun Khaitan (BT/EE/2009)	Co-Founder of Urban Clap, an online marketplace that connects customers to service professionals. He makes it to Forbes 30 Under 30 List 2017.
Mr. Suhail Abidi (BT/CHE/2006)	Co-Founder of Tynystep, a Bengaluru-based parenting social network site. The company has received \$2 million funding from Flipkart.
Mr. Amit Kumar Agarwal (BT/CE/2000)	Co-Founder of Bengaluru based 'No Broker', a peer-to-peer, broker-free listing portal for home rentals. The company has raised \$7.4 million (Rs. 50 crore) as an extension of its Series B round. It currently operates across Bengaluru, Mumbai, Chennai and Pune.
Mr. Dheeraj Pandey (BT/CSE/1997)	Co-founders of Cloud Platform Company 'Nutanix'. The company has been named a leader by Gartner Inc. for Integrated Systems for the second straight year.
Mr. Vipin Agarwal (BT/CHE/2003) and Mr. Bholu Ram Meena (BT/CSE/2004)	Co-founders of OnlineTyari, a test preparation platform. The company has raised Rs. 20 crores from Michael & Susan Dell Foundation. It offers a mobile application that allows highly customized, curated and vernacular test preparation content for public sector units, government jobs and higher education institutes delivered through very low internet bandwidths.
Dr. Sandip Patil (PhD/CHE/2012)	Co-founders of E-Spin Nanotech Pvt. Ltd. (Incubatee company at IITK). He has been named the Young Entrepreneur Award by TiE-UP and as one of the top ten outstanding young people in the city of Kanpur. He becomes the first person from IIT Kanpur to be recognized and awarded by JCI. The award is a recognition of his technology innovation and his contribution to the economic growth of the city.
Mr. Deepak Garg (BT/ME/2003)	Founder of Rivigo, a Logistics company. The company has raised funding worth USD 75 million (about Rs. 500 crore) from Warburg Pincus for a minority stake. It currently owns and operates over 2,000 trucks and has a Pan-India network across 150 locations.

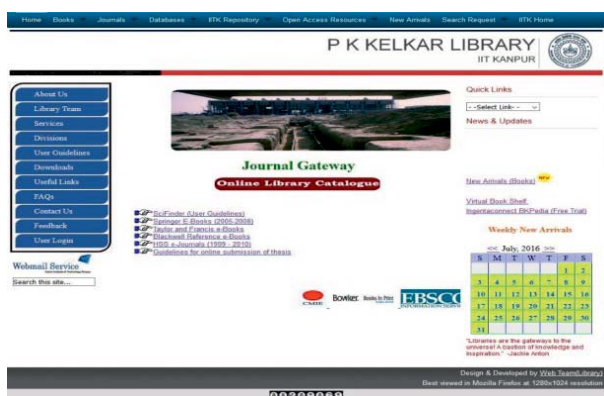
This year has seen lots of changes at the P. K. Kelkar library. We have successfully migrated from Libsys to Koha, an open source integrated library management software. The library users those got introduced to an upgraded version of the library catalogue that includes a link to google cover images, contents, enables print options and also exports search results in various different formats. The long pending maintenance of the roof of the library building was also initiated. As always, the P. K. Kelkar Library subscribed to only online digital subscriptions of all periodicals for the year 2017. The library vision document approved by the academic senate in 2012-13, is also in its final stages of implementation to make the P.K. Kelkar library an efficient and modern knowledge center.

The library spent 19.63 crores for the purchase of various print and online resources. The necessary work for weeding out of abstract and index journals was completed in April 2017.

During this period one post each of deputy librarian and an assistant librarian have also been filled.

Library website (<http://pkklib.iitk.ac.in>)

The library has its own website hosted and maintained by library. The website provides navigation to the resources subscribed by the library. Improved search



options, easier navigation and up to date contents for the users are some of the main features. During this period 936 theses were archived in our Electronic Theses and Dissertation repository. The work done by various units are summarized below.

Circulation and Maintenance Unit

The process of comprehensive annual stock verification was started in March 2017 for the second consecutive time to trace out missing books during the last verification. The efforts to correct the records are also underway. The work will be completed within one month and a report will be submitted to the competent authority in due course.

Data pertaining to the unit is as under

Checkouts and renewal of Books: 52964; Check in of

books 47914. Total 100,878 transactions were carried out (Approximately 300 transactions per day). 60 books were reported as lost and a sum of Rs. 1, 77, 311.00 was recovered as cost with handling charges. Library has also bound 2375 damaged/ mutilated books during the financial year. More than 400 outside visitors/ students used the library resources during this period.

Inter library loan

The library is facilitating its users for delivering the documents through the resource sharing with other sister institutions. ILL unit provides reference and Inter Library Loan facility. During the period 43 documents requests were fulfilled to IITK users whereas 61 documents were sent to other libraries.

Acquisition Unit

A: books

Our library procured 570 books and the total amount spent was Rs 34, 65, 319/-. This number is less than the number for the last year and we appreciate members for recommending books that are likely to be used extensively as this was an appeal last year.

A total 80 books were received as donations including 2 annual reports. A letter of thanks and appreciation was sent to all donors and authors who sent us a complimentary copy.

The table below lists the department wise purchase of the books

Department / Centers	No. of books processed
Aerospace Engineering	39
Biological Science & Biological Engineering	14
Civil Engineering	57
Center for Lasers and Photonics	12
Chemical Engineering	46
Chemistry	65
Computer Science Engineering	2
Library/Discretionary	1
Design Programme	7
Electrical Engineering	42
Environmental Engineering & Management	0
Earth Sciences	25
Generalia	4
Humanities and Social Sciences	14
Industrial & Management Engineering	14
Mathematics and Statistics	33
Mechanical Engineering	43
Materials Science and Engineering	9
Materials Science	7
Nuclear Engineering and Technology	0
Physics	103

News about the accessioned books is sent out every week as an e-mail link to all users.

B: Online Resources

The library has subscribed 1550 periodicals and 18 databases for the year 2017. The expenditure for subscribing various resources including binding was Rs. 19,63,35,175.00/-. (The price based on accrual accounting). The library continued its focus on the acquisition of e-resources.

Access to e-resources through e-Shodh Sindhu (eSS) consortium

Being a core member of e-Shodh Sindhu, we are getting online access to more than 9,000 peer-reviewed journals, bibliographic, citation and factual databases in different disciplines from various publishers/aggregators.

The following e-databases/ e-resources are accessible to us:

1. ACM Digital Library
2. American Institute of Physics
3. American Physical Society
4. Annual Reviews

5. ASCE Journals Online
6. ASME Journals Online
7. ASTM Standards + Digital Library
8. Capitaline
9. CRIS INFAC Industrial Information (CRISIL)
10. Economic & Political Weekly
11. Emerald CFTI Collection
12. Euromonitor – Passport
13. IEEE/IET Electronic Library (IEL) Online
14. Institute for Studies in Industrial Development (ISID) Database
15. JGate Plus (JCCC)
16. JSTOR
17. MathSciNet
18. Nature
19. Optical Society of America (Optics InfoBase)
20. Oxford University Press
21. Project Muse
22. Proquest-ABI/Inform Complete
23. ScienceDirect (content fees only for CFTIs)
24. SciFinder Scholar
25. SIAM
26. Springer Link (content fees only for CFTIs)
27. Web of Science

COMPUTER CENTRE

The centre functions round the clock on a state of art data centre divided into various zones that host compute and other servers, parallel clusters for different projects, office automation services and soft switch based telephony services. The Institute Computer Centre has two High Performance Computing setup, which have ranked 369 and 130 in top 500 lists (www.top500.org), in the November 2010 and June 2013 lists respectively. The second cluster became ranked 118 in the top 500 lists in June 2014 with the addition of extra nodes. Together, these setups have 1373 nodes.

The Institute has a fully managed Local Area Network of more than 20000 nodes, connecting all the hostel rooms, offices and residences over wired as well as wireless network. It has 13 Gbps connectivity to the Internet via different internet service providers. There are labs with over 400 computers. The labs and the computational infrastructure hosts a wide variety of general as well as specialized application software in areas like simulation, modeling, data management & processing, CAD/CAM, computer graphics, word processing. Several software is also hosted on central servers for use by students and faculty on their own computers.

CENTRE FOR DEVELOPMENT OF TECHNICAL EDUCATION

The Centre for Development of Technical Education was established for the purposes of coordinating the various activities connected with development of curricula, preparation of resources, administering the continuing education programme and providing in-service training to the teachers of engineering colleges. This Office is located in the Academic Affairs Building Room No. 303.

The activities are organized under three different cells, namely

1. Quality Improvement Programme (QIP)
2. Curriculum Development Cell (CDC)
3. Continuing Education Cell (CEC)

This write-up describes the various activities of the above three cells:

1. QUALITY IMPROVEMENT PROGRAMME

Since its inception, in 1971, the Quality Improvement Programme of the Ministry of Human Resource Development, Department of Education, Government of India, has strived for development of technical education in the country, primarily by upgrading the teaching curricula and enhancing qualifications of teachers of engineering colleges/institutions recognized by All India Council for Technical Education (AICTE). The main facets of QIP include.

(A) Degree awarding programme

Master's Degree Programme (M.Tech.)

Under M.Tech. programme (4 semester) the teachers are sponsored by the engineering colleges/institutions recognized by the AICTE. After the selection of the teachers by the Central Committee of the QIP Coordinator, the admission letters to the selected candidates are issued by the respective Head of the Department of the Institute. The State Governments/Institutions sponsoring the teacher are required to treat them as on deputation and bear their normal salaries and other allowances during the period of their sponsorship. In addition to the above the Government of India provides each candidate a scholarship and a contingency grant. The present rates of scholarship and contingency grant are as follows:

Scholarship	:	Rs.4,000 per month (24 months)
Contingency grant	:	Rs.3,000 per annum

Doctoral Programme (Ph.D.)

Under this programme the serving teachers who already possess Master's degree and are sponsored by the State Government/Engineering Institutions recognized by AICTE are eligible for selection. The Doctoral Programme under QIP is for three years duration.

The present rates of fellowship and contingency grants are as follows:

Fellowship: Rs.15,000/-	per month for three years
Contingency Grant	:Rs.15,000/- per annum

(B) Short Term in-Service Training Courses (QIP Sponsored)

The short-term in-service training courses sanctioned under Quality Improvement Programme are specifically designed for improving the competence of serving teachers of engineering colleges in specific areas according to their requirements. The different short term courses which will be conducted during the year are announced once in a year. Short term courses for various durations are as follows:

- One-week Course
- Two-week Course
- Three-week Course
- Four-week Course

The faculty members of various disciplines are requested to submit proposals for the conduct of short term courses under QIP in the month of December every year. These proposals are put up to QIP Coordinator for approval. About 20 course proposals are approved under this scheme every year.

2. CURRICULUM DEVELOPMENT CELL (CDC)

The process of improvement of engineering education, both teaching and training is mainly dependent on continuous revision and updating of the curriculum, and production of text books and other instructional material. CDC funds these activities through its QIP schemes.

3. CONTINUING EDUCATION CELL (CEC)

(A) Self-Financed Short-Term Courses

Faculty members are also encouraged to run short-term continuing education courses for industry on a self-financing basis. An overhead of 15% of the gross receipts of the course is chargeable by CDTE on all such courses whether run at IIT Kanpur or elsewhere, and also on industry-sponsored courses whether run at IIT Kanpur campus or elsewhere. Proposals for all such course must be submitted to CDTE for approval by the Director.

Besides these programmes CDTE will also approved the activities of Courses/ Workshop / Seminar/ Conferences/Symposium/Training programme throughout the year. Recently CDTE had started new activity online courses through Mookit for students, teachers of Inter college/Engineering Colleges.

Summary of various activities during the year 2015-2016

1. QIP Students
 - (a) M. Tech. Candidates admitted - 01
 - (b) Ph.D. Candidates admitted - 01
2. Short term courses conducted under QIP – 12
3. Short term self-financed courses conducted - 28
4. Workshops/Conferences/ Seminars conducted – 22

Summary of various activities during the year 2016-2017

1. QIP Students
 - (a) M. Tech. Candidates admitted - Nil
 - (b) Ph.D. Candidates admitted - 01
2. Short term courses conducted under QIP – 13
3. Short term self-financed courses conducted - 29
4. Workshops/Conferences/ Seminars conducted – 24

CENTRE FOR CREATIVE WRITING AND PUBLICATION

The Centre for Creative Writing and Publication (CCWP), which is a part of the Department of Humanities and Social Sciences, organized two events in the year 2016-17. Dr Prashant Bagad was the coordinator of the CCWP for this year.

(1) The first event consisted of the two lectures of Dr. Costica Bradatan.

Dr. Costica Bradatan is Associate Professor of Humanities in the Honors College at Texas Tech University and an Honorary Research Associate

Professor of Philosophy at the University of Queensland, Australia. He has also held faculty appointments at Cornell University, University of Notre Dame, and University of Wisconsin-Madison, as well as at several universities in Europe and Asia. He is the author/editor/co-editor of ten books, most recently, *Dying for Ideas. The dangerous Lives of the Philosophers* (Bloomsbury, 2015). He is currently writing a new book, *In Praise of Failure*, expected to come out with Harvard University Press in 2019. Bradatan has also written for *The New York Times*, *Washington Post*, *The Globe & Mail*, *The New Statesman*, *Dissent*, and *Times Literary Supplement*, among other places. His work has been translated into a number of languages, including German, Dutch, Chinese, Vietnamese, and Farsi.

In the first lecture given on 8 Sept. 2016 titled “Writing, Exile and Self-Fashioning”, Dr Bradatan sketched a phenomenology of uprooting and exile. Uprooting is a devastating event because you have to separate yourself overnight from something that, for as long as you can remember, has been an important part of your identity. Yet, philosophically there is something “redeeming” about it: when your “old world” has vanished you are suddenly given the chance to experience another. Indeed, what you eventually get is not just a “new world,” but the insight that the world is something you can dismantle and piece together again. In the second part of the lecture, Dr Bradatan looked at the process of re-making of the self that accompanies exile through the lens of a specific experience: the change of language. When she starts writing in the new language the world is born anew to the writer. Yet the most spectacular rebirth is her own. In the final part of the lecture, DR Bradatan explored the link between exile and marginality: the exiled artist, writer or philosopher is in privileged position to subvert the mainstream, challenge the canon, and thus produce novelty.

The second lecture titled “The Philosopher of Failure” was delivered on 9 Sept. 2016. In this lecture, Dr Bradatan looked at Romanian-French thinker Emil Cioran (1911-1995) from the standpoint of his complex relationship to failure from two angles: 1. Cioran's philosophizing on failure. He was obsessed with the topic throughout his work: from his first book,

which he wrote in Romanian when he was 22, to his latest French texts, failure (be it cosmic, collective or personal) always played a central role in his thinking. 2. Cioran's record of personal failures: his involvement with a fascist movement in interwar Romania, his failure to keep a full-time job (and his bragging about it), his dream to live a parasite's life in Paris (and the fulfilment of it). This interdisciplinary approach mixes philosophy and intellectual history, biography and literary studies.

(2) The second event was the screening of the docu-fiction film, *Udaharnartha Nemade* (2016, Marathi with English subtitles, 90 minutes), on 19 January 2017 in the Main Auditorium. The film's director, Akshay Indikar, and the film's executive producer, Tejashree Kambale, were present for the screening. The film is a cinematic portrait of the eminent Marathi poet, novelist and critic, Bhalchandra Nemade.

Bhalchandra Nemade (born in 1938) wrote his first, groundbreaking novel, *Kosala* (Cocoon), when he was barely twenty-five. Written in a colloquial, irreverent idiom, it expresses an existential angst of the youth. It has always remained among the top bestsellers since its publication in 1963. In his later novels Nemade magically combines his protagonists' personal quest and social realism. In Hindu he presents a fictional archaeology of Indian civilisation. Nemade is perhaps best known for his critical position, *deshivaad* or nativism. Nemade has won several awards including the Sahitya Akademi Award, Padmashri and Jnanapeeth Award.

Akshay Indikar studied at the Film and Television Institute of India, Pune. His short film *Doh* won critical acclaim at several national and international film festivals. Akshay's film-making is informed by his deep interest in literature and folk arts. He is currently working on a full-length feature film, *Yatra*.

Before the screening, Mr Indikar briefly spoke about his interest in folk culture and how that interest shaped his cinematic exploration of Nemade's writerly personality, life and works.

MEDIA TECHNOLOGY CENTRE

The Media Technology Centre, IIT Kanpur is committed to ensure a smooth transition to Digital India encompassing all walks of life. Hence it provides a learning platform for faculty and students alike, exposing them to a whole world of extensive knowledge.

National Program for Technology Enhanced Learning (NPTEL)

NPTEL is a joint initiative of the MHRD and the seven

IITs and IISc Bangalore. This aimed to bring knowledge to almost everyone's doorstep and also fill the gap that exists between the current expertise level of faculty members in institutions of higher learning such as the IITs/IISc and those in private and other government aided engineering institutions and universities in India. There are 117 video and 126 web based courses from phase I and about 600 courses were proposed to be developed by the end of phase II&III. Of these 600 courses, 121 courses have been

developed by the faculty members at IIT Kanpur and have been posted live on the NPTEL Portal, though the commitment was to develop 80 courses.

Central Sector Scheme for MOOCs-Complaint e-content creation (NPTEL Phase IV)

The broad aim of the project CSS-MOOCs is to facilitate the competitiveness of Indian Industry in the global markets by improving the quality and reach of education. The operational objective of CSS-MOOCs is to make high quality learning material available to students of different institutions across the country. The target groups for this project are the students and faculty members of different educational institutions offering Undergraduate/Postgraduate courses.

Since 2014 IIT Kanpur has offered 109 MOOCs out of which 80 are New Courses, 16 are Re- Purposed from the NPTEL phase II-III courses and 13 courses have been Re-Run based on the needs and demands of the engineering colleges. As part of the NPTEL Phase IV initiative we have developed the concept of NPTEL Local Chapters across the country in different universities and several engineering and non engineering colleges. There are close to 700 local chapters today, with identified expert faculty members of these institutions serving as local mentors for the students enrolled in MOOCs courses. In the last 4 months we have conducted 11 workshops in certain institutes of Uttar Pradesh, Uttaranchal, Assam, Manipur, Tripura, Meghalaya and Arunachal Pradesh. Two more workshops have been planned in the months of August & September, 2017 at Bhopal and Jammu. These workshops aim at generating awareness about the

NPTEL platforms, explaining difficult concepts from the course content by the subject matter experts and inviting more and more institutions with a dearth of good teaching staff to become local chapters and meaningfully utilize this platform jointly initiated by the IITs and ably supported by the MHRD, Government of India.

In the July 2017, run IIT Kanpur is developing 38 courses out of which 27 are new, 10 are reruns and 1 is repurposed from NPTEL Phase II & III course.

The course developed by Prof. Satyadev Nandkumar “Introduction to Programming in C” has an enrollment of 43262.

The MOOCs course materials are also used for GATE examination preparation. Apart from this the students taking the courses are getting an opportunity work as an intern with the faculty members. These courses are also used for credit transfers at various institutes (IIT-Madras, Kalasalingam University (TN) Madenapalli Institute of Technology (AP), Centurion University (Odisha)).

DTH Project

The Ministry of Human Resource and Development

launched 32 Direct-to-Home channels which would do a live telecast of classroom lectures from top institutions, including six IITs, as part of Swayam Prabha initiative.

The government is focusing to expand the reach of high quality education and helping it to percolate across the social strata. Through the 32 DTH channels, the aim is to ensure that live classrooms can be transmitted from ten 'Teaching Ends' out of which six will be from IITs located in Chennai, Mumbai, Delhi, Kharagpur, Kanpur and Guwahati,”

Out of the 32 Swayam Prabha DTH channels (launched early this year), 8 channels are being managed by the NPTEL Core Team. The two channels (16 & 17) are currently being managed by IIT Kanpur. These channels broadcast the NPTEL course content in Mechanical Engineering, Humanities and Social Sciences, Economic Sciences and Management. The channels are available for free on Doordarshan's Free Dish DTH platform and the students will only need a Set Top Box to access them.

The two channels air stream wise i.e. channel 16 broadcasts courses from HSS, Economic Sciences and Management and channel 17 broadcasts courses from Mechanical Engineering. Besides the existing NPTEL Courses, 20 more courses are being developed this year in the field of Humanities and Social Sciences, Economic Sciences, and Management. Lectures recorded at other institutes are also being sourced from here (Channel 16 and 17)

FM 90.4 Community Radio Station

IITK Community Radio caters to the needs of the community members in and outside the campus covering a radius of about 5 to 7 km. As we serve the local community in and around the campus, our main objective is to broadcast content which is popular and relevant to the local as well as specific audience. For example programs which encourage local culture, and revive local art forms or handicrafts which are fast disappearing, programs on health awareness and hygiene, on education - specially for the junior and middle schools, on agriculture and farming methods used to help farmers to improve their yield, to just name a few.

In the year 2016-2017 we were able to achieve the above to a great extent with the help of school children in the campus, IIT students, community members and our radio team.

In the year 2016-2017 IITK community radio station aired programmes on health care. On demand of the community we also air musical programmes which air requested songs from our listeners.

Interviews and coverage of events in and around the campus (students, community members and locals) are aired to provide inspiration to the student body; this in

turn has increased community participation and listenership. English and Hindi stories are aired for the children of our community. Just like every year a Radio Jockey Workshop will be organized in December 2017 in order to help the community understand the importance of radio. Our aim is to create interest in the mind and hearts of our listeners and raise awareness about the real aim of a community radio.

Design Program and HSS

Students of the Communication Design in the Design Program have an academic relevance to the resources of the centre. Students continue to exhibit their ample creative talents by producing social ad campaigns, documentary films, radio jingles and various web applications exploiting the varied domains of media arts. Besides, there are undergraduate students of HSS Level 1 and 2 courses who utilize the resources to work on video assignments.

Revamping of the Production Studios and Editing facilities

We have adopted a multiple-camera mode of production for shooting our programs. It is typically a three camera set up employed on the set that simultaneously record a scene. Generally, the two outer cameras shoot close shots on the set at any given point of time, while the central camera shoots a wider master shot to capture the overall action. In this way, multiple

shots are obtained in a single take without having to start and stop the action. The live audio and video feed from the cameras on the production floor are sent to the production control room that ensures mixing and switching of the multiple footage at the original and at the highest-quality through the Video Switchers and Audio Mixers and recorded on HD Recorders. The digitized video and audio data are then imported to hard disks from the digital tapes, through these recorders. Once on the disk they are edited on a computer, using a wide range of software. Compared to the linear method of tape-to-tape editing, the non-linear editing offers a flexibility of film editing with random access on the source material and easy project organization. The non-linear editing platforms provide numerous options and effect for assembling video clips, audio tracks, graphics and other source material into a presentable package. Once this process is over, the edit footage is recorded back to tape or disk and delivered to the clients. The recordings of video lectures created under NPTEL are now being converted into a streaming format for the benefit of students of the institute.

The co-operation and synchronized team work by the members of our team is helping us put a steady foot forward in achieving our targets and giving education a new dimension.

SIDBI

Innovation

During the year 2016-17, 52 Indian patents including 10 design patents, 3 international patents were filed and 10 earlier filed patents were granted.

Till date, 392 Patents have been filed, out of which 58 patents have been granted so far. Altogether 56 technologies have been licensed for commercialization to date.

Incubation

A total of 27 companies are currently incubated at SIDBI Innovation and Incubation Centre (SIIC), IIT Kanpur and 46 have graduated till date.

NIDHI-EIR (Entrepreneur in Residence) Program

SIIC, IIT Kanpur was sanctioned NIDHI EIR (Entrepreneur-in-residence) in the first round of selection. SIIC, IIT Kanpur is one of the 10 incubators selected as Program Execution Partner. NIDHI EIR is a subsistence grant for potential entrepreneurs for a period of 12 months restricted to a maximum of Rs. 30000 per month. The funding agency is NSTEDB. Venture Centre, Pune is the Program Implementation Partner. The objective of EIR program under NIDHI is to encourage graduating students to take up entrepreneurship as a career option by providing fellowship support. Thus it will help to create, nurture and strengthen a pipeline of entrepreneurs for

incubation. The evaluation of applications for funding is in process.

NIDHI-Prayas Program

SIIC, IIT Kanpur was sanctioned NIDHI PRomoting and Accelerating Young and ASpiring technology entrepreneurs (PRAYAS) funding from NSTEDB for setting up a PRAYAS Centre in the first round of selection. SIIC, IIT Kanpur is one of the 10 incubators selected as a Program Execution Partner. The funding has been provided for supporting potential entrepreneurs and for setting up fab lab for providing prototyping facilities to such entrepreneurs. SINE, IIT Mumbai is the Program Implementation partner. It is specifically created to support young innovators to turn their ideas into proof-of-concepts. The support will allow the innovators to translate their innovative idea into a prototype and to reach a stage where they have a ready product and are willing to approach incubators for commercialization. SIIC, IIT Kanpur will facilitate prototype funding to an innovator for a maximum amount of Rs. 10 lakh with a cap of supporting 10 such innovators per year and will provide a dedicated fabrication lab facility on campus. The evaluation of applications for funding is in process.

NIDHI-SSS (Seed Support System) programme

SIIC, IIT Kanpur has been sanctioned Rs. 10.00 crore

as seed support and management fee @ 5%. The funds for Seed support is for support of the eligible Incubate Companies to meet their seed funding needs. The funding has been sanctioned by NSTEDB under their NIDHI Seed support program. SIIC is among the four top incubators in the country, which has been chosen for a grant.

With the above grants, SIIC is set to create the S&T Research Park Eco-System so as to bring in corporate R&D bodies too into our midst.

UPL has signed an agreement with Weather Risk Management Services Pvt Ltd (WRMS), a company recently graduated from SIIC of IIT Kanpur. UPL will subscribe to 37,681 equity shares of all Rs. 10 crore to WRMS and INGEN Technologies (subsidiary of WRMS). WRMS turnover is also expected to touch Rs 15-17.5 crore this fiscal year as compared to Rs 10 crore last year.

Prosoc Innovator Pvt Ltd has been recognized as one of the top 25 emerging social enterprises in India. It participated in the Science and Technology based Social Entrepreneurship Capacity building workshop conducted by Harvard South Asia Institute, IIT Delhi and Tata Trusts.

E-Spin Nanotech Pvt. Ltd. has also been selected as the top Nanotechnology company in India by Silicon India.

IIT Kanpur has sanctioned a funding of Rs 50 lakh for Decentrik Technologies, a startup working on mobile units called Waah which dispenses clean drinking water. These units will also help in reducing plastic waste as the glasses they dispense are made from recycled food-grade paper. Waah has so far been set up in Lucknow and Varanasi.

Apcegen Technologies Private Limited, an Incubate Company has been awarded the ISBA award for this year under the category of Life Sciences/Pharma/Biotechnology/Healthcare and conferred the Rising Star of the Year Award.

SIDBI Innovation and Incubation Centre (SIIC) IIT Kanpur

SIIC, IIT Kanpur offers a thriving ecosystem for innovators and creators who have the courage to chase their dreams and turn them into a reality. SIIC aims to promote technology based entrepreneurship and thereby facilitate the creation of ideas and inventions that benefit society. SIIC is a one point contact for all matters related to innovation, incubation, entrepreneurship, technology transfer and commercialization at IIT Kanpur.

Performance Highlights for the last 12 months

Incubation Status at SIIC, IIT Kanpur

Current Companies: 31

Graduated Companies: 46

A snapshot of the companies is available at http://www.iitk.ac.in/siic/d/current-companies_and <http://www.iitk.ac.in/siic/d/graduated-companies>

Launch of new programs at SIIC, IIT Kanpur

INVENT Social Incubator: a program run in joint collaboration with DFID, TDB and Villgro Innovation Foundation. This is a social enterprise incubator which is designed for incubating for profit-startups having innovative offerings with intention to deliver significant positive impact at the bottom of the pyramid. INVENT Social Entrepreneurship program sanctioned the seed fund amount Rs. 2.5 Crores to 11 companies. The snapshots of these companies are available at

<http://www.iitk.ac.in/invent/portfolio.html>

NIDHI PRAYAS: A Prototype funding program in joint collaboration with NSTEDB where the selected innovator can avail a maximum of Rs. 10 lacs using the dedicated fabrication lab facility created for this purpose in IIT Kanpur campus. Eleven inventors have been sanctioned support under this program till date.

NIDHI Entrepreneurship-in-residence: a fellowship grant provided to budding entrepreneurs for pursuing a promising technology business idea. The grant is for maximum Rs. 30000 for a period of 12 months. Four fellowships grants have been sanctioned support under this program.

Science and Technology Research park: An upcoming research park in 220000 sq feet space within IIT Kanpur campus for supporting Industrial and Translational Research . This program has been supported by MHRD and DST. Under this support SIIC, IIT Kanpur aims to incubate 80-100 startups at any given point of time within a period of next 5 years.

IPR facilitation Centre has been set up at SIIC, IIT Kanpur for promotion and creating awareness in the field of Intellectual property, technology transfer and commercialization with generous support from National Research Development Centre (NRDC)

Highlights of the Incubate Companies

Weather Risk Pvt Ltd. : UPL buys 26% stake in Weather Risk Management

UPL has signed an agreement with Weather Risk Management Services Pvt Ltd (WRMS), the promoters of WRMS and the subsidiary of WRMS, namely, INGEN Technologies, whereby UPL will subscribe to 37,681 equity shares constituting 26 per cent share capital (on fully diluted basis) of WRMS, UPL is acquiring 26 per cent shareholding in WRMS for cash consideration of about Rs 10 crore. WRMS turnover is also expected to rise at Rs 15-17.5 crore this fiscal 2016-17 from Rs 10 crore last year

Prosoc Innovator Pvt Ltd : Recognized as one of the

top 25 emerging social enterprises in India and participated in the Science and Technology based Social Entrepreneurship Capacity building workshop conducted by Harvard South Asia Institute, IIT Delhi and Tata Trusts.

- Received Funding from prime 83 & Alumni Social Enterprise Fund
- Funding sanctioned under INVENT, IIT Kanpur

Kritsnam Technologies Pvt Ltd.

- One of the finalists in Millennium Alliance 2016
- Awarded a project with 1.15 Cr budget by IMPRINT India Initiative
- One of the finalists in Ericsson ' EGI spirit of Innovation'

E-Spin Nanotech Pvt. Ltd. has also been selected as top Nanotechnology company in India by Silicon India: <http://www.siliconindia.com/nano-technology/e-spin-nanotech-catid-63-cid-715.html>

Dr. Sandip Patil awarded as top ten outstanding young persons in the city of Kanpur by JCI Kanpur, for his technology innovation and his contribution to the economic growth of the city **Apcegen Technologies Private Limited**, an Incubate Company at SIIC, has been awarded the ISBA Rising Star of the Year Award for 2016 under the category of Life Sciences, Pharmaceutical, Biotechnology and Healthcare.

Aarav Unmanned Systems (AUS - www.aus.co.in), [an unmanned aerial vehicles \(UAVs\) startup, has raised next level funding from StartupXseed Ventures, 3ONE4 Capital \(a family fund of Mr Mohandas Pai\), The Phoenix Fund and HNIs including, Ashok Atluri and Sanjay Jesrani.](#)

GT Silicon Pvt. Ltd. an Incubate Company at SIIC, IIT Kanpur has been adjudged the "Top 10 Promising Start-Ups" in the CII Industrial Innovation Awards 2015.

More Success Stories

SIIC, IIT Kanpur is pleased to inform you that the Institute has successfully licensed a technology developed by Dr. Vinay Namboodiri, Assistant Professor at the Department of Computer Science Engineering on exclusive basis to VisageMap Inc., an US based Startup Company.

A report titled 'Good Incubation in India' has been recently published. This report was commissioned by the UK Government's Department for International Development and written by Nesta as part of a strategic partnership between Nesta and DFID India. The report can be accessed at <http://www.nesta.org.uk/publications/good-incubation-india> The report includes five case studies for highlighting successful incubators in India and includes our SIIC - SIDBI Innovation an Incubation Center, as one of the successful units in the country

Support under PRISM program

Following proposals have been sanctioned under the PRISM scheme of DSIR (Department of Science & Industrial research) to promote Innovations in Individuals, Start-ups and SMEs

S. No.	Innovator Name	Proposal Title	Amount (Rs. in lakhs)
1	Mr. Siddharth Paralikar	Heat Pipe based Window Mounted Solar Water Heater for Domestic Apartment	7
2	Mr. Eshan Sadasivan	Design & Development of Compact, Low cost Paper Carry Bag Making Machine	10
3	Mr. Jitendra Bhardwaj	Automated Perfect spherical Shape (Laddu) Making machine for eatable	17.50

SC/ ST/ OBC/ PWD CELL

The cell consists of Prof. Kamal Poddar (Deptt. of Aerospace Engineering), Liaison Officer (w.e.f. July 01, 2015) and Shri RR Dohare, Assistant Registrar, Recruitment Section, in addition to their normal duties. Prof. Kamal Poddar is available on Phone No. 259-7843/7293 and Shri Dohare is available in Room No. 224, 2nd Floor, Faculty Building at the Institute on Phone No. 2597391.

Implementation of reservation orders

The effective date of implementation of reservation for SCs and STs in the direct recruitment is 5th September

1974 in this Institute and the implementation of reservation for OBCs and PwDs are w.e.f. the year 1995 and 1996, respectively.

Maintenance of rosters/ Percentage of reservation

The Board of Governors had approved, in its meeting held on July 27, 1995, maintenance of 120 points vacancy-based roster for Group A [other than exempted posts (Points reserved in favour of SCs-20, STs-9, OBCs-31)] & B posts; and 100 points roster for Group C & D posts (Points reserved in favour of SCs-21, STs-1, OBCs-27) for direct recruitment at the Institute.

On the basis of Judgment passed by the Constitution bench of Supreme Court, the Government of India, Deptt. Of Per. & Trg., issued O.M. 36012/2/96-Estt.(Res.) dated July 02,1997 vide which the above vacancy-based rosters have been revised into post-based rosters for the different category of employees in direct recruitment. The Board after due consideration accorded its approval, in its 1997/5th meeting held on December 05, 1997 for maintenance of post-based rosters.

Further, the Board of Governors of the Institute (in its meeting held in May 2004, vide item no. 2004.2.13) has considered and approved the proposal for grouping of staff for the purpose of reservation and separate grouping of technical and non-technical posts. The proposal was as follows – the posts under Group-A, B, C & D would be grouped separately for technical and non-technical posts. However, there would be a single group under Group-D. Under this dispensation, there would be seven groups in all and as far as possible efforts would be made to provide adequate representation of SCs/STs/OBCs/PwDs to each post under the group. The proposal was approved in the context that grouping of posts would provide greater leverage for purpose of securing adequate representation for SCs/STs/ OBCs/PwDs in the Institute

The Modified Assured Career Progression Scheme (MACPS) is in operation at present.

Concessions/ Relaxations

- (a) For Regular employees of IITs who are educationally qualified and otherwise eligible, can be considered for direct recruitment across the whole IIT system up to a maximum of 50 years of age. The due relaxation in upper age is made available for SC/ST/OBC/ PwD and Ex-servicemen candidates as per Central Govt. Rules;
- (b) SC/ST and PwD candidates are fully exempted from payment of application and registration fees;
- (c) To and fro TA is being paid to the candidates of all categories out of Kanpur to attend the interview [for Group-A –AC-II rail fare (Rajdhani Exp. also) / Chair car in Shatabdi Exp. and for Group-B (Grade Pay of Rs.4600/-) – AC-III rail fare (Rajdhani Exp. also) / Chair car in Shatabdi Exp. rail fare];
- (d) Experience requirement is relax able at the discretion of competent authority.

For full details

Visit URL :

https://www.iitk.ac.in/dord/data/Annual_Report_2016-17/SC_ST_OBC_PWD_Cell.pdf

FACILITIES TO STUDENT'S

IIT Kanpur continues its efforts to encourage an equitable balance between academics and extracurricular activities among its students. Our vision is to create future leaders in their field of interest and not just technically accomplished individuals. The Institute strongly believes that an abiding social and humane engagement is the hallmark of the empowered youth. To realize this lofty goal, the Institute nurtures social, cultural and sporting activities pursued by the Students' Gymkhana, which itself is a self-governed body of the students.

The Inter-Hall cultural (Galaxy), science and technology (Takneek), films and media (Spectrum) and sports (Inferno) competitions this year were keenly contested and thoroughly enjoyed events as usual. Fresher Inferno tournament allowed spotting new talents from the fresher's batch. The General Championship of 2016-17 witnessed a new competition called Mélange to inculcate the spirit of leadership and community welfare among the students. Further, there were two new Intra-Campus festivals: CultX, which showcased performances from the various clubs of the Cultural Council and Montage, which witnessed screening of movies of International acclaim.

The Female students are a quintessential part of the Students' Community. In order to give them equal opportunity to build their own leadership prowess and general competence, a new pool called Veeras was introduced in the General Championship 2016-17, making the total number of pools to 5. Students' Gymkhana underwent a major restructuring with introduction of new entities called Cells, who would conduct specific tasks and report to the Students' Senate.

Science and Technology Council

The Science and Technology council participated and won in many national and international competitions like:

- ✧ The 5th Inter-IIT Tech Meet was organized by SnT Council. IIT Kanpur emerged as the Overall Champions of this edition winning 3 gold, 3 silver and 1 bronze.
- ✧ NIOT SAVE - IIT Kanpur AUV Team, for their robot named Varun, won the second position in their debut at the 5 National Student Autonomous Vehicle (SAVE) organized by the National Institute of Technology (NIOT), under the Ministry of



The S&T Council also organized various lectures and workshops in programming, robotics, and aeromodelling. CAD modeling workshop was organized during

the Summer Camp by Autodesk.

Cultural Council

Some of the new initiatives of this year were organization of Hindi and Urdu learning classes and literary discussion sessions. Major Achievements of our council members are:

- ✧ One member of IITK was invited to adjudicate the 6th NALSAR British Parliamentary Debate, the biggest British Parliamentary Debate in Asia.
- ✧ A three member team including two fresher students secured first position in the Antargani Parliamentary Debate 2016.
- ✧ A member of the DebSoc won the first position in Mood Indigo, annual cultural festival of IIT Bombay in the event Socratic Circle.
- ✧ Our team won the Dance trophy securing 1st position in Duo and 2nd position in the Group dance competition in the first ever Inter IIT Cult Meet.
- ✧ A 3 member team participated in the 4th Ram Manohar Lohiya Parliamentary Debate in February. This team secured a record 4 wins out of 5, the best performance of any IITK contingent.

Films and Media Council

The Council aspires to convey information to the people through various means of communication. It intends to create a platform where people can voice their needs and express their views with freedom. The Films and Media council organized a large number of workshops in photography, designing, animation etc. throughout the year. This year, the Animation Club organized a workshop on Stop Motion with the aim of making the first year students publish a stop-motion video for the Freshers' Night.

New Initiatives of the council are:

- The Online Polling system has been started on the FB group
- The FB group also serves the purpose of an online forum where active discussions on

movies have started

- Distribution of DVD's among Campus Junta to enrich their experience

Major achievements of the council members are

- Nishant Shukla participated in intercollegiate photography competition of Lady Sri Ram College, Delhi and won the first prize.
- Montage'17 was organised from 26th to 29th January 2017 where a whole plethora of movies spread across various countries, genres and languages was screened to cater to the tastes of everyone on campus.
- This year montage saw its special edition, thanks to Films Division, Lucknow Ministry of Information and Broadcasting for providing us an opportunity to look at some of the best movies submitted to the "Mumbai International Film Festival" under the head "Best of MIFF."

Games and Sports Council

Diverse activities aimed at broadening the outreach of 'sporting activities' among various segments of campus community were organized during the year. Some of the new initiatives are aquabuddies, fencing workshop, Tour de force, basic mountaineering workshop, and self defence workshop.

IIT Kanpur sports contingent participated in Spardha, 2016, the sport festival of IIT BHU and was awarded the second best outstation team after NIT Trichy. Our team won gold in Hockey, Squash, Volleyball (Girls) and silver in Athletics and Basketball.

IIT Kanpur hosted the 32 Inter-IIT Aquatics Meet. Team won 4 Silver and 2 Bronze medals in swimming events and secured 2nd place in Men's water polo.

IIT Kanpur hosted the 51 Inter IIT Sports Meet during December 11-19, 2016 and emerged and emerged General Champion third time in a row, making a history.

IITK was the overall champion by a huge margin of 33 points from the runner up in the final points tally. IIT



Kanpur also won men's general championship trophy with a lead of 42 points.



The win was adorned by the Overall Championship in Weightlifting, Badminton (Men), Cricket, Football, Lawn Tennis (Men), Squash and Volleyball (Men); Silver in Badminton (Women), Hockey and Water Polo; and Bronze in Basketball women, Lawn Tennis (women) and Volleyball (women). The Weightlifting team of IIT Kanpur got the Overall Championship, breaking 5 Inter IIT Meet Records. The athletics team was runner up in the men category, with a new Inter IIT Record in the Pole Vault event.

IIT Kanpur also emerged General Champion in Inter IIT Staff Sports meet.

Festivals

The overriding objective of large-scale events of the Institute such as Antaragni (the cultural festival), Techkriti (the technical and entrepreneurship festival) and Udghosh (the sports festival) is to infuse a sense of richness and purpose in the lives of students. The revenues generated for conducting these festivals saw an impressive growth last year which reflects the managerial and logistic skills of our students.

Antaragni

Antaragni successfully completed its 51 edition from 20th to 23rd October 2016 with befitting grandeur, witnessing the highest and most diverse participation till date. And "Hues of Bliss" was the theme of the event.

Roadtrips, the nationwide cultural expedition by Antaragni was organised in 12 cities (including Kathmandu), where competitions like Synchronicity, Nukkad Natak-Dramatics, Street Dance, Quiz events, Antaragni Idol, Jitterbug, Fine Arts, etc took place. Prodigy, the cultural talent hunt for school students, which started last year was continued and successfully conducted in three cities. First time in the history of Antaragni, a DJ War was organised this year, to bring out the DJs in the public. This ended with a color run, something in line with the theme. MUN was organised during 7-9 October 2016, which witnessed a participation of over 100 contestants. Mr. Amitabh Thakur was invited as the guest of honor for the event.

Kavi Sammelan witnessed the performance of Mr. Rupesh Saxena, Mr. Sunil Jogi, Ms. Padmini Sharma and Mr. Ansar Kambri, taking the event to great heights. Keeping the cultural heritage of India alive, the Bhutte Khan Group and the Thang ta Group graced the stage with their performance.

Mr. Madhup Mudgal, Mrs. Jyoti Hegde, Ms. Sanjana Tewari, and Mrs. Anupriya Deotale mesmerized the crowd with their classical performances. Apart from these, Antaragni'16 also organised an Independence Day March, a blood camp and a flash mob as a part of their social initiative.

Techkriti

Techkriti, the annual inter-collegiate technology and entrepreneurship festival, was organized in March 2017 with its theme – FACTUALISING FICTIONS. Dr. A S Kiran Kumar, Chairman ISRO, inaugurated the festival with his talk held in a grand ceremony in the main Auditorium. Apart from this, other speakers were Dr. K.C. Nicolaou - Cypriot-American chemist known for his research in the area of natural products total synthesis, Dr. Richard A. Muller - American physicist and professor of physics at the University of California, Berkeley, Dr. Meinolf Sellmann, computer scientist, best known for algorithmic research with a special focus on self-improving algorithms, Henry "Fritz" Schaefer, computational and theoretical chemist, Dr. Devika Sirohi, an Indian scientist and the youngest member of the team, who successfully decoded the Zika virus, and Dr. Vijay Prasad Dimri, Creative Indian geophysical scientist, known for his contributions in opening up a new research area in Earth sciences by establishing a parallelism between deconvolution and inversion, the two vital geophysical signal processing tools deployed in minerals and oil and gas exploration. Some of the major exhibitions for this edition of Techkriti were Automated Chess, Smart Technologies, Smart Vehicle Expo, Gesture Controlled Gaming, Golf Simulator, and Urban Flow.

Techkriti also witnessed fierce competitions in events like International Autonomous Robotics Challenge (IARC), International Robots Got Talent (IRGT), Techkriti Grand Prix (TGP), Techkriti Innovation Challenge (TIC), Multirotor, Sky Sparks, Embedded, IOT, Business and Entrepreneurial Events to name a few. Adding to it, the third edition of Techkriti Open School Championship was held in 22 cities in 3 rounds.

This time Technocruise, the zonal round of Techkriti, was conducted in 8 cities.

Counselling Service

The Counselling Service (CS) is an organisation that strives to ensure the welfare of the students by providing them emotional, academic and financial assistance and sensitizing the campus community towards key campus issues. By looking after their well-being, the body tries to ensure that IITK is not just an institute, but a home away from home. The CS consists of a team of professional counsellors, psychiatrists and a group of student volunteers dedicated to the welfare of the student community.

There were about 1450 counselling sessions held in academic year 2016-17. Psychiatrists visit the campus every week and whenever there is an emergency, the student is directly sent to the psychiatrist's clinic.

Financial Assistance

The CS grants scholarship to students requiring financial assistance through Students Benevolence Fund (SBF). This is for students who demonstrate financial need, but could not acquire finance from the institute or any other means. About 100 students are provided SBF scholarship of Rs. 1,500 per month for a period of 9 months. Apart from this, SBF Loans are also given to those who are in need.

Academic Assistance

Academic assistance is provided to students facing difficulty in coping with the academic load. Remedial Classes, Study Hours, Technical Terminology Classes are organised at individual as well as for groups and is free of cost.

Support to Students under Academic Probation

One of the most important responsibilities of the Counselling Service is to provide emotional as well as academic support to the students during academic probation/warning. This year, the students in AP/WR were allotted a guide from the operations or guidance team, whose responsibility was to look after his/her allotted counsellee and also to act as a link between the student and the counsellor. A session for the first year students in probation/warning was conducted by the counsellors.

Orientation Programme

Each year, an Orientation Programme is organized for the freshmen before the start of the session to acquaint them with the facilities, services, personnel, rules and regulations of the institute to facilitate a smooth transition into life at the Institute.

Gymkhana Presentations, Session by counsellors, group activities and wing competitions were organised as part of the Orientation Programme. A talk delivered by IIT Kanpur alumnus, Dr. Anil Rajvanshi gave the freshers a holistic feel of what their life would be like during their stay at IITK.

An Open House Session was conducted to discuss the problems faced by students from Hindi medium background. The effectiveness of current measures and other feasible steps that could be taken up were

discussed.

Other Activities

English Conversation Classes are organized free of cost during the semesters for the students who face difficulty in understanding and communicating in English.

A three day fun-event series, named 'Hakuna Matata' was organised to engage the students in positive gainful activities, to help reduce their worries and stress levels. The activities included Capture the Flag, Session by Professors (Kyunki Professors Bhi Kabhi Bachche The) and Zumba night.

Sessions on other broad issues like Explore Your Department, Session on Study Techniques, Intern Gyan, ESO/SO Awareness Session, What can one Do in Summers? were also organized.

Boeing organized a two day workshop at IIT Kanpur aimed at providing an opportunity to students to develop new ideas, manage a full scale engineering project, and implement it as per their design. The teams fabricated an acrobatics plane and an RC trainer which was tested at the campus airstrip.

Students Placement at PG Level

About 275 companies actively participated in the Campus Placement Program. Some of the major companies that took part in recruitment drive were Goldman Sachs, Intel, American Express, PWC-Diamond, Tower Research, EXL Services, Bank of America, ITC etc.

Among 504 PG students registered for placements this year, and 340 students were placed through SPO till date. Amongst the various programs, the MBA Degree had the highest percentage of placement at 91%, followed by DUAL degree at 78%, M.Des at 69%, M.Tech at 65%, and M.Sc. (2yr) at 36%. Apart from regular placement offers, other 9 Pre-Placement Offers (PPOs) were also made to our PG students.

Students Placement at UG Level

Among 448 UG students registered for placements this year, 290 students were placed through SPO till date. 65% of the B.Tech and B.S. students were placed through SPO during the Placement Recruitment drive. Apart from regular placement offers, another 96 Pre-Placement Offers (PPOs) were also made to our UG students.

STUDENTS' PLACEMENT

The Indian Institute of Technology Kanpur is known for its academic excellence and is often the 'first stop' for under graduate and post graduate student placements for many industries and research organizations. Placement opportunities secured by our students at academic institutions of national and international repute, corporate and/or government research facilities, reputed public and private sector companies in itself is an evidence of the motivation,

capability and responsible character of our students.

Students' Placement Office (SPO) continues its role as a facilitator and counsellor for placements and placement preparation activities for all students registered with this office. SPO has an advisory body "Student Placement Committee (SPC)" headed by the chairman that monitors all placement activities throughout the year. SPC is constituted with a group of

faculty members, each one representing their respective departments, who is assisted by the office staff and student volunteers (Overall Placement Coordinators and the student team) in ensuring the smooth functioning of this office. In addition to taking care of UG and PG placements, SPO also assists PhD scholars in securing jobs by disseminating information to students on jobs in academic institutions/research centres/companies which are of interest to PhD scholars. Further to supporting students in their job pursuits, SPO/IIT Kanpur also encourages innovations and entrepreneurship.

During the initial months of a placement season, student volunteers take up the task of contacting companies and organizing Pre-placement Talks (PPTs). As the placement season progresses, the team along with other volunteers takes care of logistic, hospitality and the conduct of placement processes. Right from contacting companies to managing logistics, the SPO team support the companies in conducting pre-placement talks and final interviews, and in that way provides the best possible assistance to the recruiters and students all through the placement process. Our hiring partners range from consulting firms to FMCGs to core industries, software giants, E-commerce and engineering companies, with the leading recruiters being Goldman Sachs, Morgan Stanley, ITC, HUL, Google, GE, MHI, Barclays, Adobe, Microsoft, IBM, Accenture, TCS, Flipkart, Snap deal, Larsen & Turbo (L&T) and several start-ups.

As with previous years, campus placements for the academic year 2016 was held in two phases. Though preparations and background activities for campus placements have started in July 2016, phase 1 of placement process officially got started on the 1st of December, 2016. Approximately 38 top tier firms came down to the campus for interviews on day 1 of placements. An unprecedented 143 job offers were made on the day reconfirming the commitment of top recruiters to IIT Kanpur graduates. Placement season 2016 also showed an increase in the number of “core” sector engineering companies on the first few days of campus placements. The first phase saw participation of near to 200 companies who made 563 job offers to students of IIT Kanpur. Till March, 2017, a total of 260 organizations have taken part in campus placements and made approximately 744 job offers to IITK students. Students from different sectors and degree levels, which includes Bachelor of Technology (B.Tech.), Master of Science (M.Sc.), Dual Degree (D.D.), Master of Technology (M.Tech.), Master of Design (M.Des.) etc., got placed during phase 1 of placement season. Approximately 78% students got placed in during the placement season. A good part of the remaining ones have their interest in public sector companies or in services examinations or in entrepreneurship.

Engineering and Technology

Engineering and technology students of IITK continued to demonstrate a strong commitment to their core educational background in their choice of employment. Majority of students opted for science, engineering and technology oriented jobs, with recruiting companies operating in various sectors of the economy.

Data Analytics

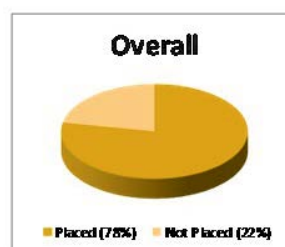
The well-deserved reputation of superior analytical and reasoning skills of IITK graduates continued to draw recruiters from the rapidly growing field of data analytics. There were 320 job offers from 100 organisations making it one of the biggest recruiters after engineering and information technology. This trend seen in the last few years seems to have taken strong roots at IITK.

Consulting

More than 10 leading consulting firms, including several global leaders, visited IITK for campus placements this year. These organizations work with large corporations across the world and help them resolve complex business problems. Management consulting companies especially carry a reputation of being very selective in their choice of campuses and of having extremely high standards in their recruitment process. 54 offers were made in the consulting sector including management consulting.

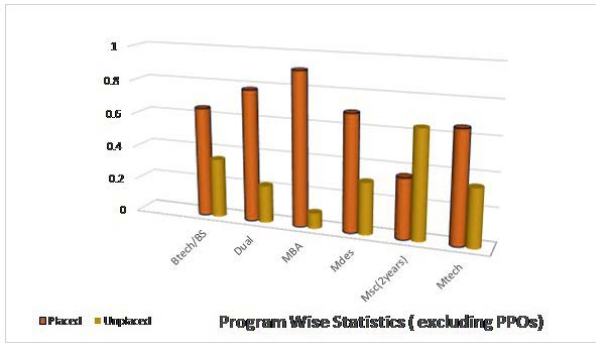
Financial Services

With many of the top global companies of this sector visiting IITK for campus placements, the sector saw a rush of top and mid-level companies to recruit the brightest and the best from the campus. A variety of profiles were opened up in the sector as these companies do appreciate the analytical and quantitative analysis capability of IITK students. Over 80 offers were made by financial services sector to our students this year. Ongoing digitization of financial services sector in India also resulted in a strong presence of Indian financial firms in a sector traditionally dominated by multinationals at IITK.

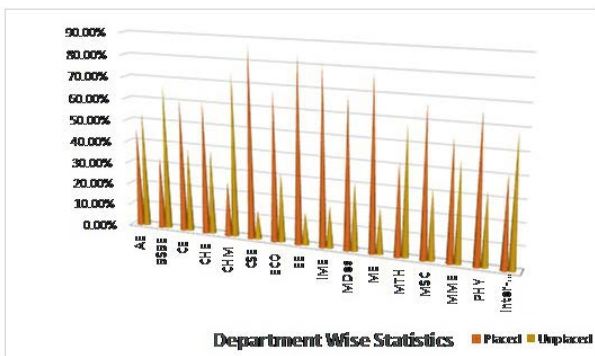


1st phase of placement session for the batch of 2016-2017 extended from 1st to 18th of December, 2016 and the 2nd phase from 10th January 2017 till April, 2017. All together around 270 companies visited campus during the recruitment drive. A total of 952 students registered for placements and participated in the placement drive. Out of this 952, 744 students were successfully placed through SPO. In an effort to provide equal opportunity to all students registered with SPO, the policy of “one job per student” was continued. Through this process, the Student Placement Office ensures a single offer acceptance policy. A brief over view of student performance

(program wise) during 2016-17 placement season is given in figure below.



In summary, 78% of the registered students got placement through SPO till date. Amongst the various programs, MBA program stood out in terms of percent student placed with 91% of their students securing jobs through campus placement. Students in dual degree program also recorded a high percentage (78%) in terms of jobs secured during campus placements. Among other departments CSE recorded 87% placements, EE 85%, ME 79%, IME 81% M.Des. 69%, during campus recruitment process.



Highlights of the visiting companies

Sprinkler Solution Pvt. Ltd., CapitalOne, Microsoft, Schlumberger, EXL, IBM, American Express, ITC Limited, Deutsche Bank, Goldman Sachs, Credit Suisse, Oracle, Tower Research and Samsung, Works Application, Eaton, Dr. Reddys Laboratories, and PW-Diac were some of the major recruiters that visited IIT Kanpur for campus recruitment this year.

The highest domestic package secured by the student during 2016-17 placement season was 34.21 Lac per annum (LPA) while the average for the batch is approximately 11 LPA. The highest overseas package offered to IITK student for year 2016-17 was 90.43 LPA.

Internship/Pre-placement offer

IIT Kanpur also boasts of a well-structured internship programme that strongly encourages pre-final year students to appear for semester internships. Internship program carries the reputation of earning pre-placement offers (PPO's) for a large percentage of the interns. The program attracts a lot of recruiters as it gives them the opportunity of harnessing potential and tapping into the talent pool at an early stage. This year SPO facilitated internship for 276 pre-final year students in the year 2016-17. When compared to previous years, 2016-17 saw an increase in the number

of Pre-Placement Offers (PPOs) that were extended to our students by the companies. A total of 105 students accepted the PPOs extended to them as part of their internship program.

Placement Preparation

IIT Kanpur has revamped its Training and Placement (T&P) section which provides 360 degree career solution for IIT Kanpur students. It is continuously engaged in building relationship with corporate sectors and building careers of IITK students. Several Corporate sectors have also showed their interest in joining this career orientation program of IIT Kanpur. Through this orientation program, we aim to develop professional ethics among the students. It also assists/guide the students in making carrier decision and help them pursue their careers in sectors of interest. These vary from core engineering sector to IT, Financial, Banking, Analytics, Consulting jobs, Research and Development, Academia etc. Training and placement cell also provides guidance to students in improving their personality and interpersonal skills. Placement preparation part of the program was focused on improving resume writing skills of student and also in training them for Aptitude tests, Mock GD and Interviews. The following preparation activities were conducted for placement season (2016-17).

Career Development Programme

- Improve soft skills, professional communication and personality through career counselling by professional agencies/experts.
- Help prepare professional resumes by conducting resume writing workshops.
- Management development programs.
- Collecting corporate feedback on what they are looking for in students for different types of jobs.
- Feedbacks of companies and interview experience of various students also aided in preparation for students.
- Resume are verified by the graduating student batch.
- Graduating students conducted many sessions on various sectors of industries.
- Seniors on call conducted the session on GD's and Interviews, the relevant study materials (like video, links, PPT) were uploaded on preparation portal for future reference.
- Alumni working in various firms conducted career awareness workshop, and shared their corporate working experience.
- Professional organization like Pariksha was hired to conduct many aptitude tests for students throughout the year.
- Development of further interaction pattern.

PUBLICATIONS AND OUTREACH ACTIVITIES

In addition to undergraduate and postgraduate teaching, the faculty members of the Institute are also actively involved in research and the dissemination of the knowledge gained through it. This is manifested in the large number of publications in refereed journals, several books and participation in various national and international conferences. The following table lists the number of publications and the details are available at the link given below:

https://www.iitk.ac.in/dord/data/Annual_Report_2016-17/Publication_and_Outreach.pdf

SERVICES AND AMENITIES

For full details

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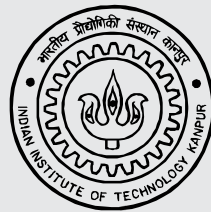
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