भारतीय प्रौद्योगिकी संस्थान कानपुर
INDIAN INSTITUTE OF TECHNOLOGY KANPUR

वार्षिक प्रतिवेदन
ANNUAL REPORT
2021-22

www.iitk.ac.in

संचालक मण्डल

अध्यक्ष

डॉ0 के. राधाकृष्णन

सदस्य

प्रो0 अभय करंदीकर (पदेन)

परिषद द्वारा नामित सदस्य

श्री राकेश रंजन
डॉ0 सौरभ श्रीवास्तव
श्री प्रदीप गोयल
डॉ0 मनोज गोनूगुन्टला

राज्य सरकार द्वारा नामित सदस्य

डॉ0 महेश गुप्ता

सीनेट द्वारा नामित सदस्य

प्रो0 बिशाख भट्टाचार्या
प्रो0 मानस के. घोरई

सचिव

श्री कृष्ण कुमार तिवारी
कुलसचिव

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Director's Report

Honorable Dr. Devi Prasad Shetty, Chairman & Founder of Narayana Health, Dr. K Radhakrishnan, Honorable Chairman, Board of Governors of the Indian Institute of Technology Kanpur, 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: I heartily welcome you all to the fifty-fifth convocation of IIT Kanpur. I would also like to congratulate the graduating students and their families on this joyous occasion.

ACADEMIC ACTIVITIES

The academic session 2021-22 ended in June 2022. Despite the shadow of the third wave of the COVID-19 pandemic, and the related challenges, the session has successfully brought back the normalcy in academics. It is my privilege to share some of our activities for this year.

I am happy to inform you that the total number of PhD degrees awarded at this Convocation is 116. In our efforts to encourage outstanding scholars, the Senate has approved the provision for an additional Master's degree to be awarded along with a PhD, subject to the fulfilment of a defined set of academic requirements. I am delighted to inform you that 10 students are graduating in the fourth batch of MTech and PhD Joint Degree at this Convocation. In all, 1360 degrees are being awarded at this Convocation with the following details:

GRADUATION DATA

Degree	Number of Recipients
PhD	116
MTech-PhD (Joint Degree)	10
MTech	144
MBA	53
MDes	14
MS (by Research)	25
PGPEX-VLFM	40
MSc (2-yr)	144
Double Major	24
Dual Degree	108
MS-PD (MS part of the Dual	21
BTech	556
BS	105
Total	**1360**

In keeping with the flexibility that the IIT Kanpur academic Programme is known for, 22 students are graduating with two Minors whereas 120 students are graduating with one Minor. You will be delighted to know that 2 of the graduating students are graduating with three Minors, and one of the graduating students is, in a first of its kind, graduating with five Minors. In all, 145 Minors are being awarded. In addition, by spending one additional year at the Institute, 108 undergraduate students are graduating with a Master's degree along with their Bachelor's while 24 of our undergraduate students are graduating with a second Major. Of the 793 students of the Bachelor's and Bachelor's-Master's dual degree programmes who are being awarded the degree today, 250 students are graduating with Distinction (CPI of 8.5 and above). To keep pace with the evolving knowledge in science, technology, and other areas, 20 new undergraduate courses and 50 new postgraduate courses were approved by the Senate from October 1, 2021 to May 30, 2022.

It is a great pleasure to share that the graduating students are being issued the degrees conferred at the 55th Convocation today in the physical as well as digital modes. The digital degrees are being delivered through an in-house block chain- driven technology developed at our Institute under the National Block chain Project. This technology was inaugurated by the Hon'ble Prime Minister at the 54th Convocation of the Institute held in December 2021. The digital degrees are also being uploaded in the National Academic Depository.

ACADEMIC INITIATIVES

In the wake of the COVID 19 pandemic, the academics at IIT Kanpur have been continuing in the online mode since March 2020. As soon as the number of cases of COVID 19 started declining, the academics at IIT Kanpur switched to the hybrid mode. Nine classrooms were prepared as hybrid classrooms by installing the necessary equipment so that the teaching could be done in-person in the classroom and simultaneously transmitted for remote access as well as recorded for asynchronous delivery. This ensured that the students who had returned to campus attended their classes in-person, whereas students who had not yet returned attended their classes remotely. At the same time, recordings of the lectures could also be shared with the class. Remarkably, all the necessary arrangements for the conduct of classes in the hybrid mode were put in place within less than two weeks.

As soon as the COVID 19 conditions improved and the number of cases declined, all the students (except Y21 BT/BS students) were called to the campus, and the teaching in fully offline mode was resumed on April 01, 2022. The end- semester examinations were conducted in the fully offline mode. The Y21 BT/BS students were called to the campus in the first week of April 2022 in

batches, and all their different classes, labs, and examinations, including mid-semester and end-semester examinations, are being conducted in the offline mode. The ongoing Summer Term 2022 is also being con- ducted in offline mode, and the next semester, 2022-23-I Semester, is planned to be entirely offline. The academics on the campus has been brought back to normalcy after a gap of two years.

UNDERGRADUATE ACADEMIC REVIEW COMMITTEE (UGARC)

As part of its decadal review of academic programs and associated curricula, IIT Kanpur has announced a comprehensive revamp of its curriculum, laying down a new template with path-breaking features. The transformative steps were part of the Undergraduate Academic Review Committee Report 2020-21 (UGARC 2020-21) that was approved by the IIT Kanpur Senate in its meeting held during October 6-7, 2021. The UGARC 2020-21 is going to be implemented from the session 2022-23-I.

The salient features of UGARC 2020-21 are:

- Flexible academic programmes with options of Double Major, Minor, and Dual Degree.
- Introduction of new degree options including the Honours degree and options of new interdepartmental degree programmes including the Management track.
- Augmentation of the scope of learning to include Social Sciences, Communication, Humanities, Economics, Management, and Environment (SCHEME).
- Greater flexibility to the Core Courses in the core curriculum.
- Designated online courses for the students on MOOC platforms, etc.

POSTGRADUATE ACADEMIC REVIEW COMMITTEE (PGARC)

The review of postgraduate academic programs and associated curricula, IIT Kanpur is under way. The PGARC Report is in the final discussion stage in the Academic Senate of IIT Kanpur.

STUDENT ENTREPRENEURSHIP POLICY

The Academic Senate of IIT Kanpur approved a student entrepreneurship policy in August 2021 in line with the National Education Policy (NEP) and National Innovation and Start-up Policy (NISP). The policy enables the undergraduate students in the 3rd year and postgraduate students following the completion of the minimum course work to gain academic credit for pursuing their entrepreneurial aspirations. This policy is expected to be implemented from the 2022-23-I Semester.

NEW PROGRAMMES & DEPARTMENTS

Several academic initiatives have been undertaken to strengthen our academic programmes. Two academic departments have been opened.

Department of Space Science and Astronomy

The Senate of IIT Kanpur approved the proposal for the Department of Space Science and Astronomy in its 544th E- Meeting held on October 25-26, 2021. The newly created department emphasizes instrumentation, space exploration, and astronomical observations and complements, augments, and amalgamates the expertise available in other departments in the Institute. The department will be offering MTech and PhD programmes from the 2022-23-I Semester.

Department of Design

The Senate of IIT Kanpur approved the proposal for a separate Design department in its 544th E-Meeting. The department will offer a multi-disciplinary space for design education, design research and innovation involving faculty expertise from diverse backgrounds including biological sciences, civil engineering, computer science, design, economics, electrical engineering, graphics and media, management, mechanical engineering, and humanities and social sciences. The department will continue to offer MDes and PhD programmes offered earlier by the Inter-Disciplinary Programme in Design. It also caters to the current UG students interested in getting their minor, major, and dual degrees through the Design department. The department also plans to offer a UG programme in design shortly.

eMasters Programme

IIT Kanpur started the eMasters programme in 2021 to contribute to the nascent ecosystem of online Programmes in the country. The eMasters Programme at the Institute has been designed to fulfill the requirements of employed personnel from industry and various other backgrounds to enhance their skill sets and improve employability. A total of 04 programmes are being offered in the ongoing quarter. A few other programmes are in the pipeline and are expected to be launched in the academic year 2022-23.

BT-MT Dual Degree, MTech and MS In Cyber Security

Department of CSE, IIT Kanpur, now offers three new master's programs specializing in Cyber Security. The MTech program in Cyber Security will cater to the students who are likely to take up jobs as cyber security tool developers. The MS by research program trains cyber security researchers, technology developers, cyber security strategists, and top- level cyber security policy designers. An option has been initiated for BT-MT dual degree students to specialize in Cyber Security from 2022-23-I Semester.

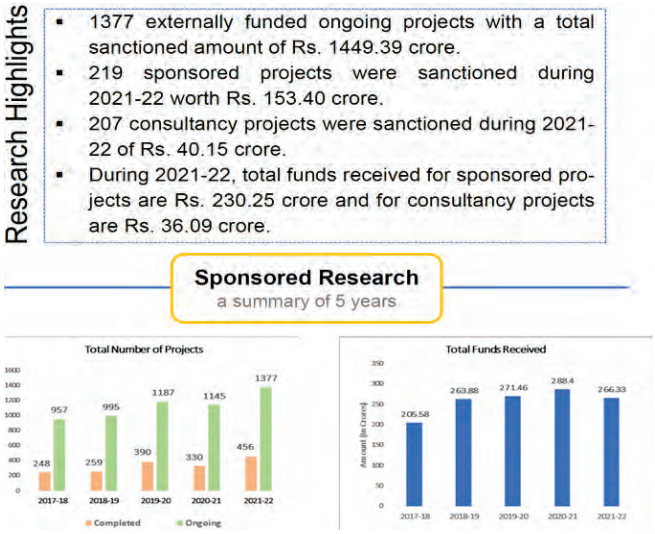
Indian Air Force Research Scholar Programme (IAF RSP)

The Indian Air Force entered into an MoU with IIT Kanpur in September 2021 to collaborate on 'Aircraft Structural Integrity and other allied subjects in Aeronautics and Aviation; providing an educational platform for qualified officers of IAF to undertake courses in the PhD, MTech and eMasters Programmes for enhancement of knowledge and capacity building, thereby

enriching the technical knowledge to achieve the GoI's goal of self-reliant or Aatmanirbhar Bharat.

RESEARCH & DEVELOPMENT

IIT Kanpur has registered steady growth in its research and development activities this year.



LEADING FUNDING AGENCIES

Table capturing five major funding agencies with sanctioned amount

Department of Science and Technology	Rs. 109.9 crores
Science and Engineering Research Board	Rs. 42.1 crores
Department of Biotechnology	Rs. 8.56 crores
Portescap India Private Limited	Rs. 7.58 crores
Stichting SED Fund Netherland	Rs. 5.18 crores

LEADING FUNDING INDUSTRY PARTNERS

Haswell Technik Private Limited Chandigarh, Larsen Toubro Limited, Micro Small and Medium Enterprises, PNC Infratech Limited, Techno electric and engineering company, Northern eastern Railways, and Keysight Technologies

MAJOR PROJECTS SANCTIONED

Some of the major projects sanctioned for the year 2021-2022 are mentioned below:

School of International Biodesign-Synergizing Healthcare, Innovation and Entrepreneurship (SIB-SHINE)

King George's Medical University (KGMU) and IIT Kanpur will soon be getting together to set up a special institute for biomedical innovation, design and entrepreneurship. The Union government's biotechnology Department has approved the collaborative project of the two premiere institutes, making it one of its kind in U.P. Called the School of International Biodesign-Synergizing Healthcare, Innovation and Entrepreneurship (SIB-SHINE), the institute will train 50 doctors and engineers in the next five years, and offer a one- year fellowship.

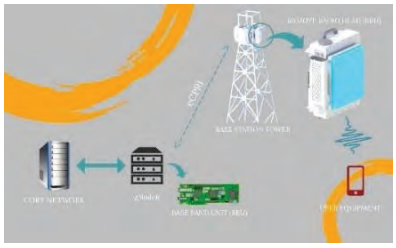
ICMR- DHR-COE Medical Research and Innovation

The Indian Council of Medical Research (ICMR) has joined hands with Indian Institutes of Technology (IITs) to establish "ICMR at IITs" by setting-up Centres of Excellence (CoE) for Make-in-India product development and their commercialization in medical devices and diagnostics space. In this regard, a project has been sanctioned for Rs. 15.07 Crores for three years by ICMR to Centre for Excellence, IIT Kanpur. The devices to be developed under ICMR-DHR-CoE at IITK, are screening device for cervical cancer, early diagnostic kit for pre-eclampsia, portable IV blood Infusion and fluid warmer, jaw opening device for doctors & oral cancer patients, and non-invasive point of care diagnostics for neurological conditions like epilepsy. The development of devices will help to achieve National Health Mission goals faster for non-communicable diseases, injury & trauma, CVD and stroke; National Programme for Health Care of the Elderly (NPHCE), maternal and child health care, and the first level care for emergencies and trauma including essential drugs and diagnostic services.

Just Transition Centre funded by Stitching SED Fund Netherland

Coal, as the backbone of our economy, has weaved an intricate and complex web of socio-economic relations that stand threatened as India transitions towards a more sustainable energy system. This project is a step forward towards taking a stock of these threats and vulnerabilities in the form of lost livelihoods and imperiled social security. It aims to bring the trade unions and the coal communities to the forefront by tapping into their perceptions on how to make this transition just for them. Simultaneously, as the foundational research activity of the Just Transition Research Centre (JTRC), the project plans to bring diverse actors together to promote a just and democratic discussion to arrive at a policy- relevant and community-centric just transition framework for India at the national, state and regional level.

Next Generation Wireless Research and Standardization On 5g and beyond funded by Ministry of Electronics and Information Technology



The objective is to encourage Indian academia and industry to contribute to the 5G+/6G standards. The project aims to generate IPR and then take those IPRs as contributions to the 5G+/6G standards, which can give a head start in developing 5G+/6G telecom products. This project will take the next step of contributing IPR to the 5G+/6G standards by performing realistic system level simulations and by validating them in this network.

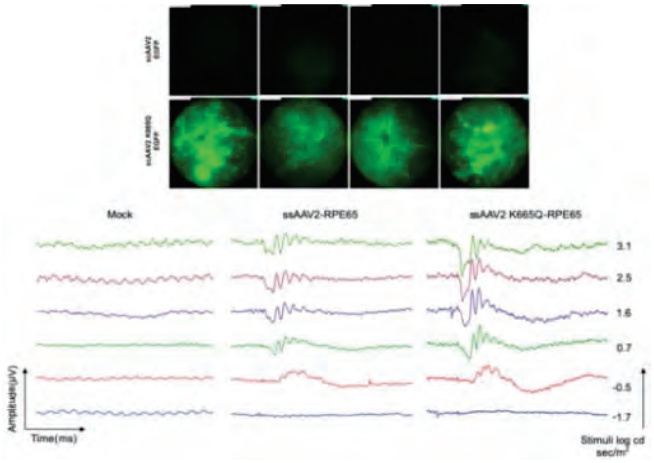
Establishment of "Tinkering Labs in Government Secondary Schools of Uttarakhand" sponsored by Government of Uttarakhand

Under this project, IIT Kanpur established Tinkering Labs in twenty six Government Schools of Uttarakhand in collaboration with Samagra Shiksha, Government of Uttarakhand. A two-day school level training was conducted for teachers as well as students in all 26 schools. Some other Higher Educational Institutions like NITs and Polytechnics also participated in the school level training, mentoring and monitoring. A two-day residential teachers-training cum capacity-building programme was organized in IIT Roorkee.

Along with mentoring for tinkering labs, teachers had an opportunity to interact with professors from Electronics and Artificial Intelligence department. They also got exposure through visiting three different labs. Proper mentoring and monitoring of selected twenty six Government Schools by IIT Kanpur is still going on.

Mutation Independent Gene Therapy (MInT) for Photoreceptor Rescue in Retinal Dystrophies funded by Team Science Grant under DBT-Wellcome Trust India Alliance grant

Retinal dystrophy manifests due to genetic alterations and results in childhood blindness. Replacement of the altered gene with a normal copy (gene therapy) has been efficient only for a short-term in humans. This is because, while each retinal disease has its own genetic mutation, the common disease pathology, i.e., the continuous loss of cells that are responsible for visual perception is not addressed at all by the current approaches. This project proposes a strategy that will enhance photoreceptor



survival, and this will be tested in a mice model of blindness. If successful, this project will help identify a novel approach to treat a wide variety of retinal diseases.

Pilot-Scale Demonstration of Liquid Phase Sulfonation of Aliphatic, Alkyl Aryl, & Aromatic Alkylates funded by Technithon International PTE Ltd.

Technithon International PTE Ltd., a Singapore-based company is a part of the Trivedi Groupe of companies that has a wide range of experiences with emerging technologies (and processes in Sulfonation, Alkoxylation, Quaternization, Amidation and Esterification), fabrication, sire construction, and project management activities in surfactants, specialties, and oleo-chemicals. Liquid phase sulfonation process is less energy-intensive, compared to the gas/liquid phase sulfonation process, and is able to synthesize heat – sensitive materials. Liquid phase sulfonation involves reacting the aliphatic, alkyl- aryl and aromatic alkylates (e.g. alcohols, alkyl benzenes, etc) with a liquid mixture consisting of SO_2 and SO_3 at sub-zero temperature (-10°C) and under controlled pressure. In this liquid mixture, SO_3 is the main reacting species, which gets consumed, whereas SO_2 is recycled. The sulfonation reaction is highly exothermic and therefore controlling the temperature of the reaction mixture is critical to the quality of the products formed.

Engineering Fibers for Fog Harvesting and Interfacial Solar Water Purification funded by Ministry of textiles

Industrial wastewater treatment is critical for any sustainable development model. The development of effective and low- cost techniques to purify textile wastewater has received quite some attention in the contemporary times. With the availability of solar thermal energy utilization strategies, solar energy driven interfacial water evaporation is a highly promising method for achieving purification of wastewater with non-conventional, yet effective technique. Suitable fiber surfaces / fabrics need to be developed which have robust optical absorption, light-to-thermal conversion, and water transport properties. These fabrics can then be effectively coupled with wastewater sinks so as to achieve very high rates of interfacial evaporation, caused by the solar energy influx, on the large surface area created due to the wicking meniscus.

This research explores two novel applications of functionally engineered fibers. The final aim is to develop two distinct products, through fundamental studies on fiber level, and translational research to achieve system level integration of (i) Potable water production from natural fog on engineered fabrics, and (ii) Solar water purification system.

Integrating UAV Technology with Thermal Infrared and Hyperspectral Imaging for Assessment of Water Quality of Large Water Bodies funded by SERB

Large aquatic water bodies such as rivers, lakes and wetlands offer a unique challenge in terms of monitoring water quality due to spatial variability and several feeder channels. Rapid water quality monitoring of such aquatic systems is important for the protection and preservation of water and related terrestrial resources. However, ground-based monitoring stations are cumbersome and expensive to maintain and the data quality remains uncertain due to problems of sample collection and variance in laboratory results.

This project aims to use modern technology such as UAV based sensors to monitor water quality at a large scale. The novelty of this project is the integrated use of high-end technology such as UAVs and hyperspectral/thermal sensors. Airborne methods would not only provide a quick and instant assessment of water quality of large stretches of the rivers, lakes and wetlands but would also help in ascertaining the source of pollution and its downstream dispersal. This approach would help to monitor critical stretches by strategically designing the sampling sites and therefore maximizing the efforts.

Upgrading DARPG Information Systems with AI Capabilities funded by Department of Administrative Reforms and Public Grievances, Government of India

The DARPG receives a large number of grievances from the citizens of India through an online portal. The manual analysis of those grievances is time taking and delays the help being reached to the person. The grievances are submitted in various text formats and have varying urgency to resolve. This project aims to develop a search engine using artificial intelligence and data science for frequency and semantic- based search which can help in identifying and classifying the grievance into a suitable category based on its nature and urgency. It has been deployed in the Ministry of Defence and other offices and has reduced the grievance redressal time considerably.

Three Major Projects funded by Prasar Bharati

An MoU has been signed with Prasar Bharati to establish Centre of Excellence for Media and Broadcasting Technologies at IIT Kanpur. Four major projects have been funded by Prasar Bharati:

- Next Generation Broadcast Technology Trial
- Sustainable Organic Farming (Jaivik Yatra)
- Archival Content Retrieval Through Audio and Text Query
- Automatic Speech Recognition for Speech Subtitling

Integrated Clean Energy Materials Acceleration Platform (IC-MAP) on materials funded by DST

The DST-IIT Kanpur centre was launched at the MI Annual Gathering session on 4th April 2022 in the presence of the honorable Minister of Science and Technology Dr Jitendra Singh. This material acceleration platform would leverage emerging capabilities in state-of-the-art computing, artificial intelligence (AI), machine learning (ML), and robotics to speed up the materials discovery up to 10 times faster. One of the objectives of this centre is to scale up the synthesis of materials and devices to TRL 5-7 and commercialize numerous clean energy technologies such as Perovskite solar cells, smart windows and thermo-regulating tiles. A kickstart meeting of the project was recently organized by Dr. Kanwar S. Nalwa (centrehead, DST-IIT Kanpur centre) on 27th and 28th of May 2022 at IIT Kanpur.

Changing the Fate of the Hindon River by Evaluating the Impact of Agriculture on the Water Balance Developing a Template for a Cleaner Ganga River funded by DST

The aim of this project is to study the impact of water usage by agriculture, household and industry on water availability and quality in the Hindon river basin. Effect of more sustainable agricultural cropping methods on agricultural yield, food diversity, economic revenue, environment and climate resilience will also be examined. As part of this project, a spatially distributed measurement network of surface and subsurface water observations will be set up to study the physical structure of the river Hindon, spatial and temporal variation in pollution load, agricultural impact and ecological status. An integrated agro-hydrological model platform will be created by connecting various individual models for impact assessment, comparison with observations and visualization of results.

UAV and Soil Health Monitoring for Agriculture Applications sponsored by UP Government and Suraj Logistix Pvt. Ltd.

The application and consumption of fertilizers in India is highly unorganized with wide variations. Studies and investigations have shown that the insufficient soil testing facilities have enforced the farmers to depend on untrustworthy sources for recommendations on the fertilizer necessity, which is one of the reasons for the

imbalanced use of fertilizers. Soil-testing based nutrient management can be used to estimate the needed fertilizer more accurately, increase the efficiency of soil fertility management, improve crop productivity and minimize wastage of these nutrients. Conventionally, the soil testing practice happens in sophisticated Labs, which takes a considerable workforce and time, and thus is not accessible to the farmers. To overcome the challenges, the current project has developed handheld spectroscopy & IoT-based eco- friendly smart soil health monitoring tool.

The most significant feature of the device is the simultaneous and instant determination of soil macronutrients using optical sensors and AI/ML technology. It can determine six important Parameters, viz., Nitrogen, Phosphorus, Potassium, Organic Carbon, Clay contents, and Cation Exchange Capacity. It provides soil health reports on the smartphone within a few minutes. It also stores soil health reports and GPS location of farmland on the server, which can help the government to make better policies for our farmers.

UAV for precision agriculture funded by UP Government

Drones provide immense actionable insights required in Precision Agriculture. SNAP-M PPK Multispectral drone is designed and developed by a startup at IIT Kanpur. This drone is capable of providing multispectral imagery data in five bands. The data can further be processed and used for disease identification, crop health monitoring, weed detection, species classification, fertilizer management, soil monitoring, irrigation planning, advanced crop scouting and many more such applications. The drone can perform autonomous operations and can be operated by a single pilot with minimal training. The wide scale use of such drones can increase the yield and also provide job opportunities to the youth.

RESEARCH INFRASTRUCTURE

Centres of Excellence (COE)-Gangwal School of Medical Sciences and Technology

Under the umbrella of Gangwal School of Medical Sciences and Technology four new centres have been initiated:

Cardiovascular and Pulmonary Disease Research: The CoE for Cardiovascular and Pulmonary Disease Research will focus on creating a comprehensive computational and experimental framework unifying appropriate MRI methods, image analysis, model building and visualization algorithms, and simulation techniques based on computational mechanics. It aims to provide a highly efficient tool for the clinicians in disease diagnosis and in assessing its progression thereby to arrive at a personalized therapeutical measure. The CoE also aims to come with low-cost medical support devices like LVAD, IV- LITHOTRIPSY, Heart Valves, Pacemakers etc., to meet the need of economically poor countries.

- **AI in Healthcare:** The proposed CoE seeks to develop state-of-the-art machine learning (ML) algorithms capable of providing clinical decision support to doctors, enabling them to reach a larger population of patients on a day-to- day basis. To this end, we plan to create a medical data warehouse augmented with state-of-the-art computing facilities.

- **Non-invasive Imaging and Diagnostics:** The Centre of Excellence for Non-invasive Imaging and Diagnostics is a vibrant engineering-medical ecosystem where faculty and students collaborate with the medical fraternity to undertake interdisciplinary research in MedTech. The centre focuses on development of improved imaging technologies, novel measurement configurations, data interpretation algorithms for improved diagnostics, and specialized instrumentation.

- **Telemedicine and Robotics:** The centre aims at designing and developing products targeting at access to health services to population living in resource constrained environment. The potential of cloud computing and Internet of Things will be integrated in developing low-cost telemedicine systems and solutions for large scale deployment with minimal cost. In the area of medical robotics, we will develop an array of surgical, diagnostic, tele-presence, exoskeleton robots and simulating platforms to make the healthcare safe, accessible, affordable, high-performance and inclusive to the patients.

As a part of this initiative, a Health ATM was established at IIT Kanpur Health Centre. A telemedicine platform - Health ATM is an integrated Computer, Biomedical diagnostics, Point of Care laboratory tests and videoconferencing system connected to Internet based network connecting clinic with doctors at a distance.

These COEs are oriented towards cutting-edge medical research and innovation in confluence with the core clinical departments of the hospital and biomedical expertise of various engineering departments of IIT Kanpur.

IIT Kanpur-CII Risk Surveillance Centre

The Confederation of Indian Industry (CII) and the IIT Kanpur have collaborated to launch IIT Kanpur – CII Risk Surveillance Centre to monitor and control the spread of COVID 19 and other such infections in the future. This centre is one of its kind supported by industries. The IIT-CII Centre would work on mathematical forecast models based on health data that would help minimize the impact of infectious diseases. It would assist in understanding the transmission of infections and identify risk factors involved.

Chandrakanta Kesavan Centre for Energy Policy and Climate Solutions

In light of the growing importance of sustainable energy and climate change, the centre will promote and develop appropriate technology and policy solutions to help India and the world combat & address challenges in energy and climate change. The centre's broad aim is to develop low carbon solutions, provide the knowledge to build an appropriate policy framework, and engage with various stakeholders to help mitigate the challenges caused by climate change towards attaining sustainable living. The centre will be anchored in the Department of Sustainable Energy Engineering, IIT Kanpur. It will work towards making IIT Kanpur carbon neutral over the next few years. IIT Kanpur alumnus, Mr. Sudhakar Kesavan (BT/CHE/76) and his wife, Ms Alka Kesavan, have contributed USD 2.5 million for supporting the "Chandrakanta Kesavan Centre for Energy Policy and Climate Solutions" at IIT Kanpur.

National Centre for Geodesy

The centre was established with the funding from Department of Science and Technology. It is now operational with state-of-the-art equipment and platforms. The centre aims to act as a hub of excellence in teaching and research in Geodesy at the national and

international levels by preparing well-trained human resources at the post-graduate level and has recently launched a new specialized course for working professionals. The centre's research activities include geodetic techniques for polar motion studies and determination of earth rotation parameters, determination of precise gravity field using satellite gravity missions and to support development of new technologies in the areas of mapping, navigation and remote sensing.

Shivani Centre for the Nurture and Re-Integration of Hindi and Other Indian Languages at IIT Kanpur

In a path-breaking initiative, IIT Kanpur has set up of a centre aimed at a seamless integration of students from Hindi and Other Indian Languages (OILs) background in the socio academic milieu of the prestigious institute. This centre has been set up for students from across the country with a non- English medium of instruction at school. The centre will ensure availability of the course content in regional languages to overcome the challenge of restricted job opportunities at the end of the academic program. The centre is established with a grant of USD 1 million from Micky and Vinita Charitable Foundation. Our alumnus Mr. Muktesh (Micky) Pant (BT/CHE/1976) is setting up this centre in the memory of his late mother Smt. Gaura Pant better known as Shivani. She is an institution in Hindi literature and is considered as one of the most popular Hindi writers of the 20th century. She was awarded Padma Shri by the Government of India for her contribution to Hindi literature in the year 1982.

Centre for Rechargeable Energy Storage Systems for Augmenting Transportation and Electrification (Create) sponsored by SERB

CREATE aims to develop high energy density, low-cost and high-cycle life batteries using earth-abundant materials along with scale up to pouch cells to accelerate the revolution in electric mobility and renewable energy generation in India. Other activities of the centre will include development of testing infrastructure and supporting electronics focusing on electric vehicle (EV) and stationary-storage applications to provide end-to-end solutions. The broader aim of the centre is to become a hub for the development of novel battery chemistries and low-cost materials, cell fabrication at various scales, comprehensive testing of batteries and their assessment in real life applications, prototype development and technology transfer to industries for commercialization.

Innovation for Defence Excellence (iDEX)

iDEX, a program launched by the Defence Innovation Organization (DIO) (Ministry of Defence initiative) to make India self-reliant in the field of defence and defence production. IIT Kanpur will work with iDEX to nurture and mentor entrepreneurs and MSMEs to create, deploy and commercialize technologies and products for the Indian military and defence PSUs. Programs such as accelerators, long-duration incubation, piloting, prototype investments, etc., will be run jointly with iDEX.

NEW INITIATIVES

The Ranjit Singh Rozi Shiksha Kendra (RSK)

The RSK centre is built from the generous donation of USD 1.9 million (Rs 14 crore) from our beloved alumnus, late Dr Ranjit Singh (BT/MME/1965), and his wife, Ms. Martha Carreno. This centre is his dream of "Prosperity for All" through a socio-economic transformation in India, where education and employment are ensured for all. RSK's main aim is-

1. To upskill youth to facilitate employment and develop an ecosystem of social enterprises.
2. Quality education for rural school children ensuring learning opportunities and all-round development.

Toastmasters (TM) Club

IIT Kanpur alumnus, Mr. Suresh Bazaj (MSc/PHY/1971) has contributed USD 185K to establish the Toastmasters (TM) Club. The club will work with the Students Placement Office to enhance the students' communication & leadership skills & foster self-confidence & personal growth.

R&D EVENTS

COVID Week

IIT Kanpur organized a week-long series of talks on various aspects of COVID 19 modelling, biological research, healthcare, and management issues of the problem by inviting the field specialists and eminent academicians working in the field. Starting from 17th May 2021 and ending on 21st May 2021, five webinars had been arranged which focused on the problem at length. The talks in the virtual platform were well attended by the researchers and people working in these domains.

COLLABORATIONS THROUGH MOU

IIT Kanpur distinguished alumnus Mr. Rakesh Gangwal (BT/ME/1975), Co-Founder IndiGo airlines, donated Rs. 100 crores towards the establishment of the Medical School on IIT Kanpur campus. It is one of the largest personal donations in the history of the Institute. An agreement was signed between Professor Abhay Karandikar, Director, IIT Kanpur, and Mr. Rakesh Gangwal. The proposed School will be named as **"Gangwal School of Medical Sciences and Technology".** Phase I of this project will include setting up a 450-bed Yadupati Singhania Memorial Super-Specialty Hospital along with an academic block, residential/hostel and service block. It will also involve setting up of Centres of Excellence (CoE) for pursuing R&D activities in futuristic medicine.

An MoU has been signed between IIT Kanpur and Shri Anil Bansal (BT/ME/1977) of **"Anil and Kumud Bansal Foundation".** The vision has been to set up a dedicated school to bridge the gap between medical sciences and technology disciplines in order to bring a paradigm shift in medical research and innovation in India. The school is now being named as Gangwal School of Medical Sciences and Technology.

The MoU for Centre of Excellence (CoE) at IIT Kanpur as a knowledge partner for the development of the UP Defense Corridor. This center is aimed at the development of defence technologies. IIT Kanpur signed an extension of the MoU with **Uttar Pradesh Expressways Industrial Development Authority (UPEIDA)** for a period of three years.

An MoU has been signed with **Prasar Bharati** to establish Centre of Excellence for Media and Broadcasting Technologies at IIT Kanpur. Following projects are funded by Prasar Bharati.

- Next Generation Broadcast Technology
- Automatic Speech Recognition for Speech Subtitling
- Archival Content Retrieval through Audio and Text Query

IIT Kanpur signed a MoU with the **Indian Air Force (IAF)** to establish the Air Vice Marshal Harjinder Singh Chair of Excellence and Research Scholars' Program at IITK. The Chair of Excellence will promote teaching, research and technology development in Aerospace, Aircraft Health Monitoring, and other allied subjects in Aeronautics & Aviation.

A MoU has been signed to share the strategic partnership that embraces the importance of technology in healthcare innovation between IIT Kanpur and SGPGI Lucknow. This collaboration will result in developing solutions for affordable healthcare using telemedicine.

A MoU was signed with **Albot Technologies Pvt. Ltd.** for the commercialisation of an advanced low-cost oxygen concentrator based on the Pressure Swing Adsorption (PSA) technology.

IIT Kanpur signed a Memorandum of Agreement (MoA) with the **REC Foundation** to support the upcoming Gangwal School of Medical Sciences and Technology. REC Foundation has committed financial assistance of Rs. 14.4 crores under its CSR program for the construction of residential block for the upcoming Gangwal School of Medical Sciences and Technology.

An agreement was signed between IIT Kanpur and **JK Cement Limited (JKCL),** to establish a super specialty

hospital on the campus as part of the Institution's initiative to setup Gangwal School of Medical Sciences and Technology. JKCL extended the support with funding of Rs. 60 crores as part of its CSR. The agreement was signed between Professor Abhay Karandikar, Director IIT Kanpur and Dr. Raghavpat Singhania, Managing Director JKCL Cement Ltd. The hospital is being named as Yadupati Singhania Memorial Super Specialty hospital. The agreement is part of the IIT Kanpur's endeavor to bring about a paradigm shift in approach towards medical research and innovation in the country.

MOUs have been signed with our alumni **Dr. Dev Joneja** (BT/ME/1984), Chief Risk Officer at Exodus Point Capital Management, US. and **Mr. Hemant Jalan** (BT/CHE/1977) Founder, Managing Director, Indigo Paints, to support the establishment of Gangwal School of Medical Sciences and Technology. Dr. Dev Joneja and his wife Terri Musson donated an amount of USD 2.5 million, while Mr. Hemant Jalan donated Rs. 18 crores to support the infrastructure development of upcoming Gangwal Medical School. **IBM** as a part of their CSR activity pledged Rs. 37 crores and signed an MOU for the development of Gangwal Medical School.

INNOVATION & INCUBATION

During the Financial Year 2021-22, 104 IPR's were filed by the Institute including 60 Indian Patents, 4 US Patents, 18 Design Registration, 18 Trademarks, 3 Copyright & 1 IC Layout, 65 previously filed IPRs were granted and 8 technologies were li- censed to industry partners.

Till date, 830 IPRs have been filed, out of which 344 have been granted so far along with 124 technologies licensed for commercialization, a revenue of Rs. 1,83,54,420/- was generated from licensing of technologies for the year 2021- 2022.

TECHNOLOGIES LICENSED (2021-22)

Nano-hydroxyapatite Based Porous Polymer Composite Scaffolds for Bioactive Molecule Delivery in Musculoskeletal Regeneration

With an objective to overcome the problems related to bone and joint disorders, capable of biocompatible bone regeneration, the invention developed by Professor Ashok Kumar and Mr. Arun Kumar Teotia from Department of Biological Sciences and Bioengineering at IIT Kanpur has an application in acting as carrier for bone active biomolecules, delivering them directly at the implant site. The above invention has been protected by an India Patent Application No. 201811015012 which has been licensed to a healthcare company "Ortho Regenics Pvt. Ltd."

The technology provides a collagen-nano-hydroxyapatite composite macroporous gel, which is a potential approach for reconstruction of irregular bone defects and dental applications as well.

A Portable Spoil testing device - Bhu Parikshak

This novel technology is developed by Professor J K Singh from Department of Chemical Engineering, Mr. Pallav Prince, Mr. Ashar Ahmad, Mr. Yashasvi Khemani and Dr. Mohd. Aamir Khan, has been licensed to an Agri-tech based

company, **AgroNxt Services Pvt. Ltd.** that helps to detect soil health in just 90 seconds through Bluetooth enabled device on mobile app, available on Google Play Store. The above invention has been protected through an India Patent Application No. 201811015012.

The device is one of its own kind that operates with zero use of chemicals and provides low cost instant soil analysis report of 1 lakh soil samples, with recommended dose of fertilizers the report is accessible on cloud service and in local languages.

Oxygen Concentrators

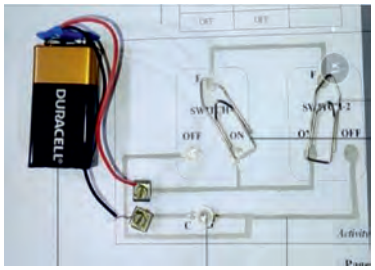
Aiming to encourage Make in India, commercialization of an advanced low-cost oxygen concentrator based on the Pressure Swing Adsorption (PSA) technology has been developed at IIT Kanpur and licensed to a company **Albot Technologies Pvt. Ltd.** A team led by Prof. J. Ramkumar, Dept. of Mechanical Engineering, along with Mr. Siddhanth Srivastava, Mr. Jitendra Kumar, Dr Amandeep Singh Oberoi, Mr. Rupendra Aryal & Mr. Nitin Chaukhat at IIT Kanpur has developed the technology.

The developed technology includes a galvanic type of oxygen sensor for oxygen purity along with temperature & humidity sensors, with an adjustable capacity of upto 10 LPM. It works at a flow rate of 10 LPM with oxygen purity of 92% ¡Ó 3, which can be used for medical & personal use.

Conductive nano aqua ink formulation

The technology provides a silver nanoparticle conductive material capable of forming a conductive layer when formulated into an aqueous ink formulation which is developed by Dr. M. L. Rao, Prof. Y. N. Mohapatra, Dr. Ashish from IIT Kanpur and is protected through an Indian Patent Application No. 201911023898. This technology has been licensed to **Likhotronics Tech Pvt. Ltd.**

A process for creating flexible paper circuitry



The technology has been licensed to **Likhotronics Tech Pvt. Ltd.** The technology is developed by Dr. M. L. Rao, Prof. Y. N. Mohapatra, Dr. Ashish from IIT Kanpur and is protected through an Indian Patent Application No. 202011047915.

A process for creating a flexible paper circuitry includes providing a paper substrate placing the paper substrate on a flexible magnetic sheet placing electronic components on the paper substrate, drawing at least one of a conductive line or a resistive line by an end user on the paper substrate, wherein the conductive line has conductive particles and the resistive line has resistive particles, the conductive line and the resistive line linking the electronic components, thereby electrically connecting the electronic components to complete a circuit line.

Eco friendly ink formulation of resistive ink for roller ball pen

A resistive ink formulation comprises carbon black, an adhesive, glycerol and water. The ink formulation is aqueous and can be used in a 10 conventional pen to create paper based flexible circuits enabling the user to freely make hand drawn resistors with resistances comparable to the conventional resistors in magnitude.

The technology has been licensed to **Likhotronics Tech Pvt. Ltd.** It has been developed by Dr. Ashish Gupta, Prof. Y. N. Mahopatra, Mr. Piyush Kumar, Dr. Manju Lata rao and Mr. Krishna Pal and is protected by an Indian Patent Application No. 202111032841.

Oxygen Concentrators

Successful execution of Mission Bharat O2 project was embarked by tech transfer of two variants of Oxygen Concentrators, developed by separate teams led by Professor Shikhar Jha, Dept. of Material Sciences & Professor J. Ramkumar, Dept. of Mechanical Engineering, IIT Kanpur, leading to commercialization. The technology has been licensed to **StemRev Refineries Pvt. Ltd.**

Air Sampling Device

This low-cost technology for efficient air sampling, bio aerosol & particulate matter has been licensed to Airshed Professionals Pvt. Ltd. for commercialization. Such technologies are developed at the institute to promote micro, small and medium enterprises, for boosting the indigenous ecosystem.

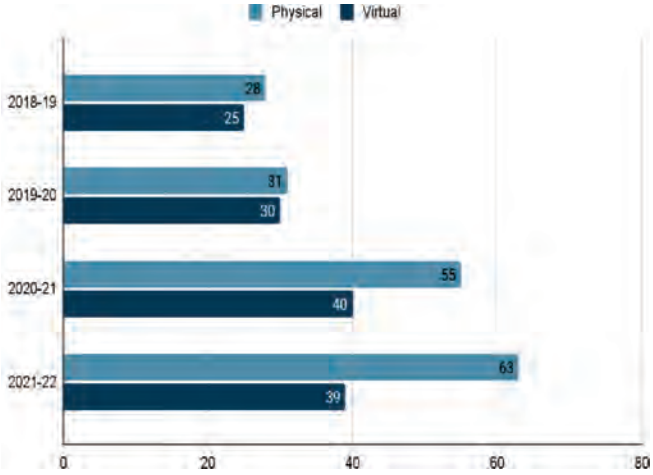
The technology has been developed by Professor Tarun Gupta & his PhD student Dr. Amit Singh Chauhan. It has been protected through an Indian Patent Application No. 1474/DEL/2014.

Name of Alumnus	Entrepreneur in the Field
Mr. Anupam Kumar Yadav, Mr. Owais Ahmad	Green Alloy Private Limited is a startup working on various physiological characteristics, such as skin tone, age, scars and burns, make finding the vein difficult. They will use visible light absorption and reflection to create a map of the vein. The device is used to help healthcare providers see veins better.
Mr. Shiv Bihari	Cyethack Solutions Private Limited is a cyber- risk management startup that helps organizations mitigate cyber risk in real-time. The company aims to offer generic and customized products and services to keep Industrial control systems, web spaces, and networks protected.
Mr. J P Mishra	Intelsec Solutions Private Limited is in the business of dealing in all types of Cyber Security Software, Hardware, as well as consulting and allied services in the field of Cyber Security Software. Building a Next-Generation Indigenous Threat Intelligence Platform to deliver end-to-end Cyber Threat Protection Services to stay ahead of the game in terms of security.
Dr. Vishal Kumar	RF Nanocomposites Private Limited is an R&D based start-up to design, develop, optimize and deliver the best possible microwave absorbers as radar absorber materials for stealth technology in defense and EMI shielding layers/coating for various applications such as defense, space, electrical vehicles, medical, and consumer electronics. They also develop Full/Semi anechoic chamber and EMC chambers for specific requirements.
Mr. Shreyansh Tatiya	Joey Envirotech Private Limited is a startup currently working on a board game named Karma. It is designed using traditional Indian culture to entertain and convey the importance of "karma in one's life". The game is divided into 4 stages of life: Balyavastha; Kishoravastha; Yuvavastha; Vradhavastha and major events associated with those stages are in the path.
Mr. Siddhanth Srivastava	Siddlabs Pvt. Ltd. is a working on design and manufacturing of medical devices. To improve proctology diagnosis devices with ergonomics design, enhanced visual and physical accessibility
Dr. Sudhendra K. Rao	Likhotronics Tech Pvt. Ltd. started with an initial focus on developing educational kits. With a plan to enter the education sector now, the company aims to teach the basic concept to school going kids through specially designed modules by making the latest technologies accessible to the masses.
Mr. Sriram Balaji	Simactricals Private Limited are engaged in the development of charging infrastructure, smart grid integration, intelligent autonomous robot chargers, consumer electronic chargers, biosensors, smart high power transfer wireless chargers for EV's.
Mr. Nandan Mishra	Algo8 AI develops Artificial Intelligence (AI) / Machine Learning (ML) products for optimizing last- mile operations in large industries. The company offers customized solutions for applications in process-oriented industries through Data Science expertise, enabling clients' digital transformation into a data-driven organization.

IIT Kanpur backed Phool.Co, India's biomaterial start-up and fragrance focused wellness brand has raised an investment of 8 Million USD from one of the foremost consumer funds Sixth Ventures. The company has also developed *Fleather,* a breakthrough material that performs and feels exactly like leather".

GROWTH IN NUMBERS

46 Startups were incubated and 16 Startups graduated in FY 2021-22.



IIT Kanpur Research and Technology Park Foundation (Technopark@iitk)

IIT Kanpur Research and Technology Park Foundation, with the brand name Technopark@iitk, officially started its operations on 1st March 2019. Since its inception, it has had numerous interactions with large, medium, and small enterprises, and industry associations. These interactions have helped Technopark@iitk define its goals as: (1) Increase and accelerate R&D collaborations, (2) Strengthen industry- student connect, (3) Build a robust R&D ecosystem by partnering with industry associations and government entities, (4) Build and manage specialized labs and facilities for specific industry needs, (5) Train and upskill through courses and workshops and (6) Bridge TRL gaps for lab-to-market transition.

The milestones achieved so far against each of the listed objectives are described in the following sections.

INCREASE AND ACCELERATE R&D COLLABORATIONS

The primary objective of Technopark@iitk is to facilitate industries to set up Technology Development Centres, R&D Labs, and Centres of Excellence and Innovation within its premises and work closely with the IIT Kanpur ecosystem to create futuristic technologies and indigenous solutions. Considering the needs of large, medium, and small enterprises, Technopark@iitk has designed its industry engagement models:

Innovators (Resident Companies): Allows companies including start-ups graduating from incubators to set up their R&D bases within the research park premises. Currently, eight (8) companies have set up their satellite R&D offices within Technopark@iitk. These companies are closely working with IIT Kanpur faculty, students, and researchers, and using the central research facilities (CRF) of IIT Kanpur for their R&D work. These include, Transchain Technologies, ECOMEN, Geo Climate Risk Solutions, Kanopy Techno Solutions, C3i Hub, Injectoplast, Dataman Computer Systems and TISA Aerospace.

Pioneers (Affiliate Companies): Allows companies to engage closely with the IIT Kanpur ecosystem and avail benefits without taking physical space. Currently, nine (9) companies are affiliated with Technopark@iitk under its Pioneer Membership program including prominent names like JK Cement Ltd, GE Oil and Gas, Technithon International (Singapore based) and BPL Medical Technologies. Many of the companies are in discussions with IIT Kanpur faculty for R&D collaborations. One of the key attractions for the companies is to work with the IIT Kanpur students on industry problems through our Industry-Student Connect program.

Strengthen Industry-Student Connect

Keeping in mind the existing gap between the available skill pool and the industry requirements, Technopark@iitk has designed and structured its Industry-Student Connect program titled ReWoP. ReWoP stands for IIT Kanpur Students tackling Real World Projects. It is designed to harness the potential of the IIT Kanpur student and researcher community to address industry challenges while providing them opportunities to understand real world issues and translate their learning to practice. It augments the existing curriculum imparted by IIT Kanpur through industry-facing projects.

Success with ReWOP

- 600+ students registered, across disciplines and departments.
- Eight companies engaged with ReWoP.
- Forty-two students engaged part-time on industry projects.
- Four students offered full time employment with member companies.

Build Robust R&D Ecosystem by partnering with industry associations and government entities

Technopark@iitk is actively reaching out industry associations and organizations to interact and work with them closely to create a holistic R&D ecosystem encompassing various stakeholders. Towards this, it has signed MoUs with prominent industry organizations and incubators. These include:

- MoU with NASSCOM
- MoU with IIM Lucknow incubator, IIM-EIC to co-create a strong techno-management ecosystem for mid-segment companies and start-ups to push their

technology up in the value chain.

- MoU with Netaji Subhash University of Technology (NSUT) incubator to reach out to graduated companies with the intention of offering them conducive R&D ecosystem for their further growth and help them gain more stability and stronger foothold in the market.

Build and manage specialized labs and facilities for specific industry needs

Technopark@iitk is currently focusing on five major sectors - Defence and Aerospace, Healthcare and Medical Technologies, Deep Tech, Agriculture and Core Engineering. In Defence and Aerospace sector, Technopark@iitk is in discussions with the UP Defence Industrial Corridor (UPDIC) to partner with them in creating a conducive environment in the Kanpur region (one of the six nodes of UPDIC) for aerospace and defence industries and enterprises.

Samtel Centre for Display Technologies and FlexE Centre

Samtel Centre for Display Technologies: The Samtel Centre for Display Technologies, known more popularly as Samtel Centre or SCDT, is a multi-disciplinary research and development centre which caters to prototype building and eventual productisation of technology related to Flexible Electronics. The areas of focus broadly includes large area electronics which are typically printable and are likely to be built on an organic electronics base. The ideas explored at the centre are necessarily linked to a real-world application with some practical value. The prototype building and productisation are carried out primarily at its industry outreach arm - which is the National Centre for Flexible Electronics (FlexE Centre) - typically with active involvement and participation of industry partners right from the early stages of development and product conception.

National Centre for Flexible Electronics: The National Centre for Flexible Electronics (NCFlexE) was set up as a Centre of Excellence at the IIT Kanpur in 2014 with financial support from the Ministry of Electronics and Information Technology (MeitY), Government of India, and IIT Kanpur. The vision of this Centre is to catalyze the development of domestic industry in the field of large area flexible electronics, and this vision is being executed with the Centre serving as a bridge between the academic ecosystem and the industrial ecosystem.

Table summarizing the activity parameters for the Centre for the last financial year

Sl No.	Particulars	No
1.	Patents filed	13
2.	Publications	16
3.	NDA with Industries	17
4	Ongoing Project.	09
5	New Projects with Industry Partnership	01

NEW START UP

Likhotronics Tech Pvt. Ltd. is a startup from NCFlexE, IIT Kanpur, working on commercializing specialized/functional inks and their associated products.

Seekho Cirkit: the Kitt contains a hard box with component connectors, two pens (resistive and conductive), magnetic sheet and an instruction manual cum workbook.

OUTREACH ACTIVITIES

FlexE Innovation Challenge

The National Centre for Flexible Electronics, IIT Kanpur with MeitY Startup Hub, GoI, New Delhi organized a FlexE Innovation Challenge in March 2021. The target was to conceptualize practical and useful products that make use of the advantages of Flexible Electronics.

SCDT-FlexE Centre Webinar Series

SCDT and FlexE Centre have been organizing monthly one- hour webinars on Tuesday evenings of the second complete week of the month. This was launched in January, 2021. This webinar series is an effort to bring together scientists, researchers and entrepreneurs on a common platform. All details can be found at https://www.iitk.ac.in/scdt/webinars.html

Industry Meet on Flexible Electronics

An Industry meet was organized by FlexE Centre, IIT Kanpur on 9th April, 2021 with "Electronic Industries Association of India" (Elcina). The theme of this industrial meet was "Enabling Printable Electronics Manufacturing in India".

Short Course on Flexible Electronics

A short course on "Flexible Electronics" was organized on 18th September, 2021. This course was specifically designed for industry participants. Representatives from twelve industries participated in the course.

C3i Hub

C3ihub (Cyber Security & Cyber Security for Cyber Physical System Innovation Hub was created under the National Mission of Interdisciplinary Cyber-Physical Systems (NM- ICPS) under the Department of Science and Technology, Government of India. C3iHub aims to address the issue of cyber security of cyber physical systems in its entirety - from analyzing security vulnerabilities and developing tools to address them at various levels of system architecture, to translating these tools to deployment-ready software, to nucleating start-ups developing these tools at scale, to partnering with industries in this domain and co-development and transfer of these technologies, to training the next generation of cyber security researchers and professionals. Over the past two years, C3iHub has focused on security of critical infrastructure, development of security operations centre (SoC), security of mobile devices, block chain-based

solutions for integrity & privacy of data, and supporting startups in cybersecurity domain including some that take technology developed in C3iHub to the market.

The first SoC developed at C3iHub, named C3i Vazra, was installed at NHAI headquarters. The SoC provides supervisory monitoring by gathering the feeds from end-points, network & internet, and processes the internal and external feeds and generates the threat intelligence. Major benefits of this solution are increased efficiency, reduced potential security threats, reduced impact of security breaches, better reporting & notification, and log analysis & retention.

A self-sovereign identity (SSI) system based on block chain technology has also been developed by C3iHub. Self-Sovereign Identity (SSI) is a technology that allows the users to have complete control over where and how the data personal to the user is used. SSI uses a combination of technologies to give this control to the user through block chain, zero-knowledge proofs, and digital signatures. It is useful for securely storing a wide variety of personal information, including degrees, certificates, and identity proofs. An SSI-based system for awarding degrees was developed at C3iHub and is being deployed by an IIT Kanpur incubated Startup CRUBN through the hub. The Prime Minister awarded degrees through this system to graduating students of IIT Kanpur at the Institute's 54th Convocation held in December 2021. The system has also been used for awarding PM Bal Puraskar and degrees by IGNOU.

C3iHub, through CRUBN, has also deployed block chain-based land records in six districts of Karnataka, which will be extended to the other districts. The Hub is currently working with the Ministry of Communications to formulate recommendations on how to protect end-users from unwanted leakage of mobile phone data as well as develop tools for analyzing the security of smartphones. It is also working with the Ministry of Home Affairs, Ministry of Power, RBI, and Government of UP to address their cybersecurity requirements.

The Mehta Family Centre for Engineering in Medicine

The Mehta Family Centre for 'Engineering in Medicine (MFCEM)' will leverage the existing engineering strength of IIT Kanpur and the biomedical research emphasis of BSBE faculty to enable a fast growth in the initial phase of the new "Centre for Engineering in Medicine". The centre will allow the department to focus on 'engineering solutions to medical problems' while allowing it to grow in terms of personnel (faculty, post-doctoral fellows, students and project employees); academic programs (integrated Ph.D., MS by research and more minors for UG students) and infrastructure (new building). The centre will initially focus on three main areas: Regenerative Medicine, Molecular Medicine and Engineering, Digital Medicine. The major achievements of the centre in the year 2021-2022 is listed below:

AWARDS AND HONORS

- Professor Arun Shukla was awarded the prestigious **Shanti Swarup Bhatnagar Prize,** 2021, in Biological Sciences, for outstanding contributions towards the current understanding of activation, signaling and regulation of G protein-coupled receptors (GPCRs).
- Professor Sandeep Verma was awarded the prestigious **A.V. Rama Rao Technology Award 2021,** instituted by CSIR-Indian Institute of Chemical Technology in collaboration with AVRA Laboratories Private Limited, Hyderabad.
- Professor Nitin Gupta was awarded the **Swarnajayanti Fellowship,** in Life Science Category, for the year 2021, for his outstanding contributions in the field of olfaction.
- Professor Bushra Ateeq was awarded the **OPPI (Organization of Pharmaceutical Producers of India) Scientist Award** for the year 2021.
- Professor Bushra Ateeq was awarded the **S. Ramachandran-National Bioscience Award** for career Development 2020-21
- Professor Subramaniam Ganesh was awarded the prestigious **JC Bose fellowship,** SERB, DST, 2021.
- Professor Bushra Ateeq has been selected for the Sun Pharma Science Foundation Research Award-2021 in the Medical Sciences- Basic Research category.
- Professor Bushra Ateeq was featured in the **"75 under 50: Scientists Shaping Today's India"** a compendium released by the Department of Science and Technology, Ministry of Science and Technology.

MEMBERSHIPS/NATIONAL ACADEMIES

- Professor R. Sankararamakrishnan's appointment as a member of Senior and Intermediate Fellowship Committee of Wellcome/DBT India Alliance has been renewed for another three years with effect from 1st April 2021.

- Professor R. Sankararamakrishnan has been invited to join as an external expert, Board of Studies for M.Sc. Computational Biology Program at Institute of Advanced Research, Gandhinagar, Gujarat.
- Professor Bushra Ateeq and Professor Arun Kumar Shukla, have been elected to The National Academy of Sciences, India.
- Professor Bushra Ateeq and Professor Kumar Arun Shukla have been elected to The Indian Academy of Sciences, Bangalore.

GRANTS & FELLOWSHIPS

Around 13 grants and fellowships have been sanctioned to various faculty members from funding agencies like SERB, DST, DBT, ICMR, DMSRDE and DBT-Wellcome Trust Alliance.

PATENTS: Around 10 patents were granted, and 13 were filed in the year 2021-2022

EVENTS

Various events were organized by MFCEM including MFCEM Dialogues and BSBE Dept. and MFCEM Joint Colloquium & Seminar Series. In MFCEM dialogues an interactive session with stalwarts was held in the three focus areas of MFCEM, namely, Regenerative Medicine, Molecular Medicine and Engineering and Digital Medicine. The invited speakers discussed their research interests including future thrust areas, and their personal academic journey.

Consolidated summary of MFCEM activities for 2021-22

Awards and Honors	8
Committee Memberships & Elected to Academy	4
Grants and Fellowships	10
Patents Granted	13
Patents Filed	
Invited to deliver talks/Lecture/panel discussions	32
Events: MFCEM Dialogues	3
BSBE Dept and MFCEM Joint Colloquium & Seminar Series	18
Peer reviewed Publications	39

International Academic Collaborations

Recognizing the value of international cooperation, the Institute has signed 12 MoUs with many international universities from Australia, Germany, Indonesia, Japan, South Korea, Taiwan, Thailand, and USA for collaboration in academic and research activities. With these partnerships, IIT Kanpur students will have more opportunities to conduct world-class research under the guidance of faculty from both IIT Kanpur and a reputed partner university.

MOU SIGNED OFFLINE

A delegation from the Institute of Engineering (IOE), Tribhuvan University, Nepal visited IIT Kanpur and signed an agreement in November 2021. The agreement is significant as India and Nepal share common problems and need to address these together.

ORGANIZATION OF EUROPEAN DAY

On 12th October 2021, European day (EU day) was organized online on 'The Role of Research & Innovation in the EU-India Strategic Partnership with Focus on Renewable Energy and Cyber Security.'

Addressed by European experts and Indian academicians, the event brought together various stakeholders including students to deliberate on the EU-India Strategic Partnership, cooperation opportunities under the new R&I framework program 'Horizon Europe' and the possibilities of researchers' mobility under the Marie Sk³odowska-Curie Actions and the possibility of Erasmus scholarships funded by the EU.

Some of the notable speakers included Professor Abhay Karandikar, Director of IIT Kanpur, and Mr. Seppo Nurmi, Deputy Head, EU Delegation to India. Other esteemed speakers were Professor Ashutosh Sharma, Secretary to the Department of Science and Technology (DST), Ms. Tania Friederichs, Minister Counsellor and Head of R&I Section at the EU Delegation to India, researchers and academicians from both counterparts, and the European Union officials.

VISITS BY FOREIGN DELEGATION

Delegations from the University of Melbourne and the Australian National University visited IIT Kanpur to discuss furthering of ongoing collaboration. They also discussed areas of exchange of student-faculty members, joint academic activities and summer research programs, etc.

OVERSEAS STUDENTS AT IITK

A total of 16 Ph.D. and 08 M.Tech. Students from Bhutan, Indonesia, Iran, Jordan, Malaysia, Nepal, Syria, and Sudan were registered in 2021-22 at IIT Kanpur. IIT Kanpur also hosted students from the Czech Republic, Germany and Nepal for semester exchange and summer internships.

Dean of Resources & Alumni Office

Out of the total amount of Rs. 404.00 Crores pledged by donors in the last Financial Year, a total of Rs. 114.06 Crores has been received as compared to Rs. 30.14 crores in FY 2020-21 and the balance are expected to be received based on the milestones achieved as set by the donor in the next one year.

(All Figures are in crore)

S. No	Some Notable Contributions:	Pledged (Rs.)	Received (Rs.)
1.	Gangwal School of Medical Sciences and Technology	285.56	41.92
2.	Centre for Energy Policy and Climate Solutions	18.25	10.91
3.	Mehta Family Centre for Engineering in Medicine	17.50	4.43
4.	Dr. Ranjit Singh Rozi Shiksha Kendra	13.30	13.82
5.	Shivani Centre for the Nurture and Re-Integration of Hindi and Other Indian Languages	7.50	7.50
6.	Brain Stimulation Lab, Library up-gradation & Jay Pullur Endowment	5.00	5.00
7.	Bright Minds Scholarship Programme	5.00	5.00
8.	Air Vice Marshal Harjinder Singh, VSM Class I MBE Chair of Excellence/Research Scholar Program for IAF officers	3.50	3.50
9.	Professor R. N. Biswas Endowment for Teaching Excellence	2.50	2.01
10.	Tapas Mishra Memorial Chair in Computer Science and Engineering	1.25	1.28
11.	Department of Chemical Engineering Modernization of the Unit Operations Laboratory (UOL) and the Workshop Facility	1.79	1.79
12.	Faculty Chair/Student Scholarship (Devendra Shukla)	1.51	1.51
13.	Pavitar Joneja Chair	1.30	1.30
14.	Next Generation Broadcasting Faculty Chair	1.11	1.11
15.	WISE New Faculty Fellowship	0.79	0.79
16.	Professor U B Tewari Memorial Distinguished Lecture Series	0.70	0.70
17.	Batch of 1965 Scholarship	0.56	0.56
18.	IIT Kanpur Development Foundation	0.50	0.50
19.	The Pawan Tewari Goldman Sachs Sustainability Faculty Chair	0.45	0.45
20.	Kedar Singh Rawat Memorial Scholarship	0.38	0.38
21.	Bachi Devi Rawat Memorial Scholarship	0.38	0.38
22.	The Pawan Tewari Goldman Sachs Scholarships	0.30	0.30
23.	Prabha and Ramadhar Singh Distinguished Lecture in Psychology	0.30	0.30
24.	Artificial Heart Project	0.25	0.25
25.	Mallampati Bala Kishore Memorial Scholarship	0.25	0.25
26.	Arish Ali Scholarship	0.14	0.14
27.	May Award in Civil Engineering Department	0.13	0.13
28.	Govind Swarup Memorial Award	0.13	0.13
29.	Envirotech G D Agrawal Award	0.13	0.13
30.	Satish & Kamlesh Agarwal Scholarship	0.13	0.13
31.	Mrs. Nirmal Kumari Gaur Scholarship	0.13	0.13

CAMPAIGNS AND MEMORIAL FUNDS

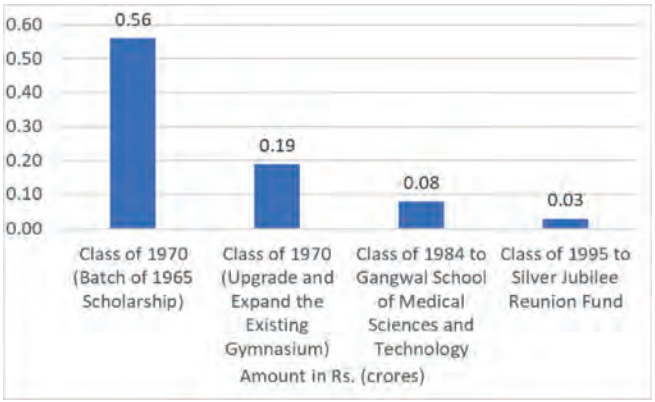
Various campaigns in the year 2021-22 were run by IIT Kanpur, which were held to raise funds for different initiatives from time to time.

S. No	Campaign Name (Student/Faculty& Com- munity welfare)	Amount in Rs. (Crore)
1.	Professor R. N. Biswas Endowment for Teaching Excellence	2.01
2.	Tapas Mishra Memorial Chair in Computer Science and Engineering	1.28
3.	Covid 19 Relief Fund	1.63
4.	Professor U B Tewari Memorial Distinguished Lecture Series	0.70
5.	Sonu Agrawal Memorial Chair	0.40

IIT Kanpur conducts memorial fund campaigns to help raise money for the families of the deceased to provide much needed financial aid. The amount raised by the office is used by the families to give education to their children, for medical expenses, or any other emergency situation that may arise from time to time. The funds also come as a big moral support to families as sometimes the deceased was the only earning member. We are thankful to our batches and individual donors for extending a helping hand to such families in times of crisis.

S.No.	Campaign Name (Memorial Fund)	Amount In Rs. Crore)
1.	Manish Bhatnagar Memorial Fund	0.64
2.	Sanjeev Shukla Memorial Fund	0.37

Alumni across various batches have contributed for academic and non-academic initiatives for the benefit of students and IIT Kanpur community a whole.



MAJOR DONATIONS RECEIVED TOWARDS ENDOWMENT ACTIVITIES FY 2021-22

Faculty Chair

Amount in Rs (crore)

Air Vice Marshal Harjinder Singh, VSM Class I MBE Chair of Excellence/Research Scholar Program IAF officers	3.50
Pavitar Joneja Chair	1.30
Tapas Mishra Memorial Chair in Computer Science and Engineering	1.28
Professor R. N. Biswas Chair in Teaching Excellence	2.01
The Pawan Tewari Goldman Sachs Sustainability Faculty Chair	0.45
Faculty Fellowship	
WISE New Faculty Fellowship	0.79

Scholarships

Amount in Rs (crore)

Bright Minds Scholarship Programme	5.00
Batch of 1965 Scholarship	0.56
Kedar Singh Rawat Memorial Scholarship	0.38
Bachi Devi Rawat Memorial Scholarship	0.38
The Pawan Tewari Goldman Sachs Scholarships	0.30
Mallampati Bala Kishore Memorial Scholarship	0.25
Satish & Kamlesh Agarwal Scholarship	0.13
Arish Ali Scholarship	0.15
Bhawani Shankar Meena Memorial Scholarship	0.13
Mrs. Nirmala Kumari Gaur Scholarship	0.13

Awards

Amount in Rs (crore)

May Award in Civil Engineering Department	0.13
Govind Swarup Memorial Award	0.13
Envirotech G D Agrawal Award	0.13

Major Activities

Amount in Rs (crore)

Gangwal School of Medical Sciences and Technology	41.92
Centre for Energy Policy and Climate Solutions	10.91
Dr. Ranjit Singh Rozi Shiksha Kendra	9.48
Shivani Centre for the Nurture and Re-Integration of Hindi and Other Indian Languages	7.50
Bright Minds Scholarship Programme	5.00
Brain Stimulation Lab, Library upgradation & Jay Pullur Endowment	5.00

Major Donors

Amount in Rs (crore)

S.No	Name of Donors	Class/Degree/Prog	Amount
1	Muktesh Pant	BT/CHE/1976	18.62
2	Sudhakar Kesavan	BT/CHE/1976	10.91
3	Late Ranjit Singh	BT/MME/1965	9.48
4	IBM India Pvt. Ltd.	Organization	9.00
5	Rakesh Gangwal	BT/ME/1975	7.55
6	Dev Joneja	BT/ME/1984	7.34
7	Lokvir Kapoor	BT/ME/1987	5.00
8	Nirmala Govindan	MT/CSE/1987	5.00
9	J K Cement Ltd.	Organization	5.00
10	Indian Air Force	Organization	3.50
11	Hemant Jalan	BT/CHE/1977	3.00
12	The Mehta Family Foundation	Organization	2.92
13	Devendra Shukla	BT/CE/1967	1.51
14	ONE Media 3.0 LLC	Organization	1.11
15	Jagjeet S. Bindra	BT/CHE/1969	1.08
16	Anjali Joshi	BT/EE/1981	0.82
17	Pawan Tewari	BT/EE/1988	0.76
18	Shishpal Singh Rawat	BT/EE/1979	0.75
19	Ranodeb Roy	BT/CSE/1990	0.51
20	Mukesh Bansal	BT/CSE/1997	0.30
21	Virajith Jalaparti	BT/CSE/2009	0.26
22	Sudha N Murty	Non Alumni	0.25
23	Ramadhar Singh	Non Alumni	0.20
24	Pradeep Sindhu	BT/EE/1974	0.19
25	Rajiv Batra	BT/EE/1982	0.19
26	Keshav Sharma	BT/CSE/1983	0.17
27	Vineet Gupta	BT/CSE/1989	0.14
28	Arish Ali	BT/EE/1996	0.14
29	Surya Mohanty	MSC2/STAT/1986	0.14
30	Aditya Soni	Non Alumni	0.13
31	Satyajeet Ghosh	BT/CE/1980	0.13
32	Satish Agarwal	Non Alumni	0.13
33	Rita Pandey	PHD/HSS/1985	0.13
34	Mahesh Swarup Agarwal	Non Alumni	0.13
35	Enviro Tech Instruments Private Limited	Organization	0.13
36	Zopsmart Technology Pvt. Ltd.	Organization	0.13
37	Sudhir Mohan Mittal	BT/CHE/1970	0.12
38	Jastej Singh Dhingra	BT/EE/1986	0.11

Gangwal School of Medical Sciences and Technology Pledged and Received Donation FY 2021-22

Donor Name	Class/ Degree/ Prog.	Amount Pledged USD	Amount Pledged Rs. (Crore)	Received Amount Rs. (Crore)
Muktesh Pant	BT/CHE/1976	2.5	18.62	11.12
Dev Joneja	BT/ME/1984	2.5	18.62	6.04
Anil Bansal	BT/MSE/1977	2.5	18.62	
Rakesh Gangwal	BT/ME/1975	11.35	100.00	7.55
J K Cement Ltd. (Late Mr. Yadupati	BT/CE/1977		60.00	5.00
IBM India	Organization		37.00	9.00
REC Ltd.	Organization		14.40	0.20
Hemant Jalan	BT/CHE/1977		18.30	3.00
			285.56	**41.91**

S No.	Name of Company	Amount in Rs. (crore)
1	IBM India Pvt. Ltd.	9.00
2	J K Cement Ltd.	5.00
3	Citibank N.A.	1.44
4	Ericsson India Private limited	1.35
5	Portescap India Pvt. Ltd.	1.19
6	TCS Fellowship	0.51
7	Suraj Logistix Pvt. Ltd.	0.46
8	LIC Housing Finance Ltd.	0.37
9	Indian Energy Exchange Ltd.	0.33
10	PFC Consulting Limited	0.31
11	Infosys Foundation	0.25
12	Goods And Services Tax Network	0.20
13	REC Foundation	0.20
14	EcoEnergy Insights Limited	0.20
15	Frontier Alloy Steel Ltd	0.10
16	Kewal Engineering Private Limited	0.10
17	PNC Infratech Ltd.	0.09
18	Power System Operation Corporation	0.08
19	Automech India Private Limited	0.05
20	Power Finance Corporation Limited	0.04
21	Bloom Combustion (India) Private Limited	0.04
22	AlphaGrep Securities Pvt Ltd.	0.02
23	Vtol Aviation India Pvt. Ltd	0.01
	Total:	**21.35**

CSR INITIATIVES (2021-22)

ALUMNI IMPACT

Our alumni have been the proud recipients of various honors and awards in various categories during FY 2021-22 as per the following details:

Selected Notable achievements in the fields of science and technology by our alumni:

Category of Award	Number of Awards
Academic Awards	22
Industrial Awards	1
Government Awards	6

Some of the major achievements are as follows:

S No.	Award	Name of Alumni	Award Endowed by
1	Fellow of the Royal Society, UK	Professor Thirumalai Venkatesan (MSC2/PHY/ 1971)	Royal Society of London, UK
2	American Astro- nautical Society Fellow 2020	Professor Kamesh Subbarao (BT/AE/1993)	American Astronautical Society
3	CTO of the Year Award 2021	Mr. Satya Gupta (BT/CHE/1982)	Virsec
4	Fellow of the Canadian Academy of Engineering, 2021	Professor Rajiv K.Varma (BT/PhD/EE/1980/1988)	Canadian Academy of Engineering
5	National Science Foundation Faculty Early Career Development	Dr. Eshan Chattopadhyay (BT/CSE/2011)	National Science Foundation (NSF), USA
6	National Science Foundation Faculty Early Career Development Program Award	Dr. Pravesh K Kothari (BT/EE/2010)	National Science Foundation (NSF), USA
7	Technology Development Board, Government of India National award 2021 for technology start up by India DST. Noccarc won the award for its indigenous ICU ventilator, Noccarc V310 and Noccarc H210.	Mr. Nikhil Kurele (BT/ME/2016), Mr. Harshit Rathore (BS/CHM/2016) (Co-founders Noccarc Robotics)	Dept. of Science & Technology
8	UCSD CSE MS Student Achievement for Excellence in Research, 2021	Mr. Dheeraj Mekala (BT/CSE/2017)	University of California, San Diego
9	The Toycathon 2021 URA Career Cards	Mr. Prithvi Raj (M.Des/2016)	Ministry of Education's In- novation Cell with support from All India Council for Technical Education, Ministry of Women and Child Development, Ministry of Commerce and Industry, Ministry of MSME, Ministry of Textiles and Ministry of Information and Broadcasting.
10	Member of the US National Academy of Sciences	Professor Jainendra K.Jain (MSc2/PHY/1981)	United States nonprofit, non- governmental organization
11	Param Vishisht Seva Medal	Air Marshal Raj Karan Singh Shera (MT/EE/1990)	Government of India
12	Fellow of National Academy of Sciences, India	Professor S. A. Ra- makrishnan (MSC5/PHY/199)	National Academy of Sciences, India
13	Infosys Prize 2021	Dr. Neeraj Kayal (BT/PHD/CSE/2002/2007)	Infosys Science Foundation
14	Fellow of National Academy of Inventors	Professor Thirumalai Venkatesan (MSC2/PHY/1971)	U.S. and international universities, and governmental and non-profit research institutes
15	Young Scientist Platinum Jubilee Award of the National Academy of Sciences, India (NASI), 2021	Dr. Raghvendra Chaudhary (PHD/EE/2014)	National Academy of Sciences, India (NASI)
16	Marie R. Pistilli Women in Engi- neering Achievement Award	Dr. Renu Mehra (BT/EE/1991)	Design Automation Conference (DAC)
17	2022 NSW Australian of the Year	Professor Veena Sahajwalla (BT/MME/1986)	Australian Government
18	NASI Young Scientist Platinum Jubilee Award, 2021	Dr. Punita Kumari (PHD/BSBE/2019)	National Academy of Sciences, India
19	IEEE Electron Devices Society (EDS) Early Career Award 2021	Dr. Avirup Dasgupta (BT-MT/PHD/EE/2014/2018)	The Institute of Electrical and Electronics Engineers, USA
20	INSA Medal for Young Scientists 2021	Dr. Eshan Ghosh (PHD/BSBE/2019)	Indian National Science Academy, India
21	INSA Medal for Young Scientists 2021	Dr. Ritika Tiwari (PHD/BSBE/2019)	Indian National Science Academy, India
22	Padma Shri Award 2022	Dr. Anil Rajvanshi (BT/MT/ME/1972/1974)	Government of India
23	Boltzmann Medal 2022 in Physics	Professor Deepak Dhar (MSC2/PHY/1973)	Commission on Statistical Physics of the International Union of Pure and Applied Physics
24	Fellow of the American Association for the Advancement of Science (AAAS)	Professor Arvind Agarwal (BT/MT/MME/1993/1995)	Moore Foundation; Rockefeller Foundation; Carnegie Corporation of New York; and the Joyce Foundation, Federal government, US, National Science Foundation and other organizations
25	Fellow of the American Association for the Advancement of Science (AAAS), 2021	Professor Abhay Deshpande (MSC2/PHY/1987)	Moore Foundation; Rockefeller Foundation; Carnegie Corporation of New York; and the Joyce Foundation, Federal government, US, National Science Foundation and other organizations
26	US Department of Commerce Gold Medal Award 2021	Dr. K. Sriram (BT/EE/1977)	United States Department of Commerce
27	National Science Foundation Faculty Early Career Development Award	Dr. Snigdha Chaturvedi (BT/CSE/2009)	National Science Foundation (NSF), USA
28	Sloan Research Fellow 2022	Dr. Pravesh K. Kothari (BT/EE/2010)	Alfred P. Sloan Foundation
29	SERB Power Fellowship	Dr. Jayati Sengupta (MSC2/CHM/199)	Department of Science and Technology, GOI

Some Notable Professional Achievements by our Alumni

S. No	Name of Alumni	Position
1.	Shri Ashwini Vaishnaw ji (MT/IME/1994)	Appointed as the Union Minister of Railways and Minister of Electronics, IT and Communication.
2.	Professor Jainendra K. Jain (MSC2/PHY/1981)	Inducted as a member of the US National Academy of Sciences.
3.	Professor Arup Chakraborty	Named as the Institute Professor at Massachusetts Institute of Technology, USA.
4.	Professor Sanjay Ranka (BT/CSE/1985)	Promoted to Distinguished Professor at the University of Florida in the Department of Computer Information Science and Engineering.
5.	Ms. Vartika Shukla (BT/CHE/1988)	Took charge as the Chairman & Managing Director at Engineers India Limited.
6.	Mr. Aan S. Chauhan (BT/EE/1995)	Appointed as the Chief Technology Officer (CTO) of Mindtree.
7.	Mr. Rajinder (Raj) Singh (BT/ME/1983)	Appointed as the Chief Risk Officer at NewRez LLC.
8.	Mr. Asutosh Padhi (BT/ME/1993)	Appointed as the Managing Partner, McKinsey & Company, North America.
9.	Mr. Rajat Dhawan (BT/CHE/1994)	Appointed as the Managing Partner of McKinsey India.
10.	Mr. Mohit Singh (BT/CHE/1997)	Appointed as Executive Vice President & CFO of Chesapeake Energy Corp.
11.	Shri Puneet Kumar Goel (BT/EE/1987)	Appointed as the Chief Secretary of Goa.
12.	Mr. Sanjay Pandey (BT/CSE/1983	Appointed as the new Chief of Mumbai Police.
13.	Shri Sanjay Malhotra (BT/CSE/1989)	Appointed as the Financial Services Secretary.
14.	Professor Tarun Souradeep (BT/ME/1988)	Took charge as the Director of Raman Research Institute, Bengaluru.
15.	Mr Piyush Arora (BT/ME/1989)	Appointed as the Managing Director of the Skoda Auto Volkswagen India.

AWARDS TO THE ALUMNI BY THE INSTITUTE ON FOUNDATION DAY

Institute celebrated its foundation day on 2nd November 2021. Every year on this day, IIT Kanpur recognizes the accomplishments its alumni and confers with the Institute Fellows, Distinguished Alumnus, Distinguished Services, Young Alumnus and Satyendra K. Dubey Memorial awards. BOG Chairman Dr. Radhakrishnan K. Koppillil presided the function and Hon'ble Shiksha Mantri Shri Dharmendra Pradhan Ji delivered the Foundation Day lecture.

List of Awards at the Foundation Day are listed below:

Institute Fellows 2021

S. No.	Name	Association with IIT	Current Position
1	Mr. Jagjeet Singh Bindra	BT/CHE/1969	Member of Board of Directors Lyondell Basell Industries NV & HPCL Mittal Energy Ltd.
2	Professor Gautam Biswas	Faculty since 1990	Emeritus Fellow Department of Mechanical Engineering IIT Kanpur
3	Professor Santosh K. Gupta	BT/CHE/1968	Distinguished Professor Department of Chemical Engineering University of Petroleum and Engineering Studies (UPES) Dehradun
4	Professor Alak Kumar Majumdar	Faculty from 1972 to 2006	Former Professor Department of Physics IIT Kanpur

Distinguished Alumnus Award 2021

S.No.	Name	Association with IIT Kanpur	Current Position
1	Mr. Rakesh Bhargava	BT/CHE/1973	Former Chairman Fresenius Kab Oncology Ltd
2	Ms. Vartika Shukla	BT/CHE/1988	Chairperson & Managing Director Engineers India Ltd
3	Mr. Ashwini Kumar Vaishnaw	MT/IME/1994	Cabinet Minister Ministry of Railways, Govt. of India
4	Mr. Mukesh Bansal	BT/CSE/1997	CEO & Co-founder CureFit
5	Mr. Saurabh Chandra	BT/EE/1976	Director & Chairman Multi Commodity Exchange of India Ltd.
6	Mr. Rahul Garg	BT/EE/2001	Founder & CEO Moglix
7	Professor Rajesh Kumar Gupta	BT/EE/1984	Department of Computer Science & Engineering University of California San Diego, USA
8	Professor Vijay Vittal	MT/EE/1979	Regents Professor Arizona State University, USA
9	Professor Abhay Lalit Deshpande	MSC2/PHY/1987	Department of Physics & Astronomy Stony Brook University, USA
10	Dr. Dev Joneja	BT/ME/1984	Chief Risk Office Exodus Point Capital Management, USA

Distinguished Services Award 2021

S.No.	Name	Association with IIT Kanpur	Current Position
1	Mr. Pradeep Bhargava	BT/ME/1989	COO & Co-founder GladMinds
2	Mr. Kushal Chand Sacheti	MT/CHE/1972	Founder & CEO Galaxy USA Inc.

Young Alumnus Award

S.No.	Name	Association with IIT Kanpur	Current Position
1	Dr. Prateek Jain	BT/CSE/2004	Senior Research Staff Google AI, Bengaluru India
2	Mr. Varun Khaitan	BT/EE/2009	COO & Co-founder Urban Company

Satyendra K. Dubey Memorial Award

S.No.	Name	Association with IIT Kanpur	Current Position
1	Mr. Karnal Singh	MT/CSE/1981	IPS Officer (Retired) Government of India

NOTABLE ENTREPRENEURIAL ENDEAVORS BY SOME OF OUR ALUMNI

Name of Alumnus	Entrepreneur in the Field
Mr. Anupam Kumar Yadav , Mr. Owais Ahmad	Green Alloy Private Limited is a startup working on various physiological characteristics, such as skin tone, age, scars and burns, make finding the vein difficult. They will use visible light absorption and reflection to create a map of the vein. The device is used to help healthcare providers see veins better. This device will be affordable compared to market competition.
Mr. Shiv Bihari	Cyethack Solutions Private Limited is a cyber- risk management start-up that helps organizations mitigate cyber risk in real-time. They offer consultancy, training, and solutions to counteract cyber-attacks. The company aims to offer generic and customized products and services to keep Industrial control systems, web spaces, and networks protected.
Mr. J P Mishra	Intelsec Solutions Private Limited is in the business of dealing in all types of Cyber Security Software, Hardware, as well as consulting and allied services in the field of Cyber Security Software. Building a Next-Generation Indigenous Threat Intelligence Platform to deliver end-to-end Cyber Threat Protection Services to stay ahead of the game in terms of security.
Dr. Vishal Kumar	RF Nanocomposites Private Limited is an R&D based start-up to design, develop, optimize and deliver the best possible microwave absorbers as radar absorber materials for stealth technology in defense and EMI shielding layers/coating for various applications such as defense, space, electrical vehicles, medical, and consumer electronics. They also develop Full/Semi anechoic chamber and EMC chambers for specific requirements.
Mr. Shreyansh Tatiya	Joey Envirotech Private Limited is a startup currently working on a board game named Karma. It is designed using traditional Indian culture to entertain and convey the importance of “karma in one’s life”. The game is divided into 4 stages of life: Balyavastha; Kishoravastha; Yuvavastha; Vradhavastha and major events associated with those stages are in the path.
Mr. Siddhanth Srivastava	Siddlabs Pvt. Ltd. is a working on design and manufacturing of medical devices. To improve proctology diagnosis devices with ergonomics design, enhanced visual and physical accessibility
Dr. Sudhendra K. Rao	Likhotronics Tech Pvt. Ltd. started with an initial focus on developing educational kits. With a plan to enter the education sector now, the company aims to teach the basic concept to school going kids through specially designed modules by making the latest technologies accessible to the masses.
Mr. Sriram Balaji	Simactricals Private Limited are engaged in the development of charging infrastructure, smart grid integration, intelligent autonomous robot chargers, consumer electronic chargers, biosensors, smart high power transfer wireless chargers for EV's. They tend to overcome the drawbacks in the conventional wireless charging bed.
Mr. Nandan Mishra	Algo8 AI develops Artificial Intelligence (AI) / Machine Learning (ML) products for optimizing last- mile operations in large industries. The company offers customized solutions for applications in process-oriented industries through Data Science expertise, enabling clients' digital transformation into a data-driven organization. The range of products is based on a holistic understanding of industrial processes acquired from extensive research and collaboration with industry professionals and subject matter experts.

INSTITUTE FACULTY

RECRUITMENT

In the past one year, the Institute has offered 99 faculty positions against a rigorous selection. Out of these, 46 new faculty members have joined the Institute. The appointments per department are mentioned below:

Department	Number of new faculty
Biological Sciences and Bioengineering	1
Chemical Engineering	1
Civil Engineering	1
Cognitive Sciences	2
Computer Science and Engineering	3
Earth Sciences	2
Economic Sciences	3
Electrical Engineering	6
Humanities and Social Sciences	5
Industrial and Management Engineering	6
Materials Science and Engineering	3
Mathematics and Statistics	4
Mechanical Engineering	2
Physics	4
Sustainable Energy Engineering	3

During this period, we have also made 60 post-doctoral fellowships, 14 visiting faculty and 08 adjunct faculty offers.

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.

I am extremely happy to share with you the wonderful news that Professor Laxmidhar Behera (EE) has been appointed as the Director of IIT Mandi for a period of five years. Dr. Sai Prasad Pydi (BSBE) has been awarded the prestigious Welcome/DBT Intermediate Fellowship. Dr. Bushra Ateeq (BSBE) has been selected for the Sun Pharma Science Foundation Research Award-2021 in the Medical Sciences- Basic Research category. The award carries a Trophy, Citation and a Cash Prize. Also Dr. Ateeq (BSBE) has been elected as a Fellow of the Indian Academy of Sciences, Bangalore.

Dr. Arun Shukla (BSBE) has received the Shanti Swarup Bhatnagar Prize for Science and Technology 2021 in Biological Sciences and the Khosla National Award 2021 by IIT Roorkee in the Science category. Also, he has been elected as a Fellow of the Indian Academy of Sciences, Bangalore and the National Academy of Sciences, India.

Professor Jayant K. Singh (CHE) has received the Herdillia Award 2021 by the Indian Institute of Chemical Engineers for Excellence in Basic Research in Chemical Engineering.

Professor S. N. Singh (EE) has received 2021 MGA Achievement Award of the IEEE Society, for his exemplary leadership and distinguished contributions at Section, Council and Region levels and the IEEE IAS Outstanding Educator/Mentor Award for his outstanding contributions to education and mentorship of students and young engineers within the fields of interest of the IEEE Industry Applications Society.

Professor Parasar Mohanty (MTH&S) has been awarded the INSA Teacher Award-2021. Professor Kumar Vaibhav Srivastava (EE) has received the Motohisa Kanda Award for their paper "Broadband Polarization Insensitive Tunable Frequency Selective Surface for Wideband Shielding," published in IEEE Transactions. Professor Braj Bhusan (HSS) has been elected as a Fellow of the Association for Psychological Science, USA. Professor S. Anantha Ramakrishna (PHY), Professor Dattaraya H Dethe (CHM), Professor Mahendra K. Verma (PHY), Professor Nitin Saxena (CSE) and Dr. Bushra Ateeq (BSBE) have been elected as Fellow of the National Academy of Sciences, India.

Professor Pratik Sen (CHM) has been awarded the Fellowship of the Royal Society of Chemistry (FRSc). Professor Kantesh Balani (MSE) has been elected as a Fellow of the ASM International Society. Professor Abhay Karandikar (Director IITK, EE) has been appointed as member of the Board of Governors of IEEE- Standards Association (IEEE-SA) for a period of two years beginning January 2022.

STUDENT AWARDS

The prestigious scholarships and awards received by our students have been a matter of pride and pleasure for us. Goutam Das, Antriksh Gupta, Harsh Bihany, Siddhant Suresh Jakhotiya, Antreev Singh Brar, Ishanh Misra and Varun Goyal received the Aditya Birla Scholarship. Aryash Pateriya, Hem Kalpak Shah and Mudit Mamodia received the O.P. Jems scholarship. Shapath Bhandari and Bhabani Sankar Dehury received the ACC Fellowship.

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

HEALTH CENTRE

COVID Vaccination Drive

Institute conducted a Covid vaccination drive to combat COVID inside the campus. The details are given below:

Vaccinations

Total	7576	8261	15837
	Year 2022		
Age Group	Ist Dose	2nd Dose	Total
	Year 2021		
Age Group	Is Dose	2nd Dose	Total
18+	4573	5785	10358
45+	3003	2476	5479
18+	124	192	316
45+	23	52	75
Total	147	244	391

Precaution Dose	239
Age group 15-18 (1st Dose) Co-vaxin	100

Total doses given at Health Centre: 16567

COVID POSITIVE CASES

1st Wave	135
2nd Wave	348
3rd Wave	341
Beyond 3rd wave	31
Total Covid positive cases as of now	**855**

COUNSELLING SERVICE

Counselling Service is an institute body that works for the welfare of the students by providing emotional, academic, and financial assistance to them. It also works toward sensitizing the campus community towards issues related to mental health.

CS DURING COVID

Counselling sessions

The counselling sessions were shifted online with efforts to recreate the offline counselling environment in an online platform. To felicitate these the existing computer systems were upgraded with webcams and necessary audio visual devices for a seamless counselling experience. Sessions were also taken over phone calls and audio calls, wherever a video appearance was infeasible. Help was also extended over emails by sharing self-help material.

TEAM STRUCTURE

Counselling Service consists of a professional wing and a student wing. The professional wing consists of the Head Counselling Service, Dean of Students' Affairs, and a team of trained counsellors and visiting psychiatrists. The student wing comprises a huge team of dedicated student volunteers from both UG & PG programs, coming from various batches & departments of IIT Kanpur.. Apart from these, several faculty members also help the Counselling Service.

Professor Anjan Kumar Gupta, Department of Physics, is currently the Head, Counselling Service. He took over after Professor Nandini Nilakantan, Department of Mathematics and Statistics, completed her term in December 2020.

ACTIVITIES IN 2021-22 SESSION

Staying Motivated in Online Semester- interactive Session with The Counsellors (April 15, 2021)

An interactive session with the counsellors, where counsellors discussed some simple and effective methods to tackle the students' decreased efficiency and concentration levels during the nationwide lockdown due to the coronavirus pandemic.

Talking Through it (April 26, 2021)

Counselling Service organized an open house session with the counsellors for students to ask queries and discuss their various issues with the counsellors. The counsellors helped students in multiple ways to get things in perspective and develop a solution to the problems.

Embracing Wellness (June 2021)

In the "Embracing Wellness" series, Counselling Service planned to send out a list of simple activities every week that anyone could do in the comfort of one's home. The reason was to encourage the students to take some time off from their otherwise hectic schedules for themselves.

A Discord server for discussions amongst the students, where they could share their progress and experiences was created.

Week 1: Mindfulness Week (30 May - 5 June)

Our first aim of the "Embracing Wellness" series was Mindfulness. Mindfulness means maintaining a moment-by- moment awareness of our thoughts, feelings, bodily sensations, and surrounding environment, through a gentle, nurturing lens. A list of activities was shared with the students.

Week 2: Self Care Week (6 June - 12 June)

Next, the focus was to the practicing of self-care. A Bingo was shared with the students with 16 activities like "Reconnecting with an Old Friend", "A Day without Social Media" etc and at the end of the week students shared their performance throughout the week by striking out the activities they performed during the week.

Week 3: Gratitude Week (13 June - 19 June)

Seven activities were shared like "Gratitude Jar", "Gratitude to Municipal Workers" etc. and students were asked to perform at least one of these activities daily.

Week 4: Meditation Week (20 May - 26 June)

The series ended with the Meditation Week where Counselling Service shared different types of mediation practices and how to perform them. The myths and benefits of practicing meditation were also discussed.

SAMVAD (June 11, 2021)

Counselling Service organized "Mental Health in Covid Times" by Dr. Alok Bajpai as expert speaker under SAMVAD. SAMVAD, as a mental health initiative, recognizes stories and narratives as powerful ways of connecting people through their struggles and success.

Safarnama (July 2021)

The Counselling Service started a new video series 'Safarnama'. In this series, some of the seniors walked us through their beautiful and enriching campus life.

Comic Series on Intern Season (August 2021)

The intern-season is a great opportunity for the students to secure good internships in companies across the world. However, the path is also brim filled with hard work, difficulties and apprehensions regarding CVs, shortlists, interviews etc.

The comic series introduced by the Counselling Service sought to provide a calmer and more reassuring headspace to the students by portraying familiar fictional characters handling similar challenges in their lives.

Suicide Prevention Day (September 10, 2021)

On the suicide prevention day, Counselling Service tried to express the collective compassion and love of the IIT Kanpur community for the friends who might be going through a rough patch, counselling service made a video compiling the thoughts and messages of the campus community.

Sky Lanterns (Diwali, November 5, 2021)

For the festival of lights, Diwali, Counselling Service organized the lighting of sky lanterns for the student body, UG and PG. It was conducted so that people don't feel alone, away from home, in such a festive time, and can enjoy it with their friends here.

Wabi- Sabi (October 2021)

The Counselling Service came up with ¡§Wabi-Sabi: Finding Beauty in Imperfections¡¨ where some exciting activities and insightful sessions were organized to celebrate the World Mental Health Day.

Breaking the Spell of Procrastination 8th February to 4th March

An online workshop for procrastination was conducted by counsellors for PG students. Workshop was designed to address a prominent problem in PG community of delaying work and management. It was scheduled for four sessions delivered to two batches on a weekly basis.

Blogs/Posters

- **Pride Day (28th June 2021)**
  To celebrate pride day, a poster was shared trying to educate people about pride day and its history.
- **Understanding stress & exploring ways to alleviate it**
  This blog was aimed to address the high levels of stress being developed due to the constant running/working around. The Counselling Service tried to explain the root cause of stress and shared some insights and methods to mitigate it.
- **Mental Health in an Unequal World**
  The poster aimed to bring out the inequality in mental health based on various stigmas, economic status etc. and some ideas to avoid it.
- **Being a Mental Health Ally**
  This poster aimed to educate people on how to support the people around them by educating them on how to create an environment by which one can comfortably share their stories and problems with others.
- **Mental Health Disorders**
  To educate the campus community of various mental health disorders and how they are caused plus what help/treatment one should take to get out of them, 3 blogs focusing on 3 mental health disorders were introduced.

AM Workshop (Online)

AM Workshop was conducted for the Academic Mentors to understand different problems their mentees might face and how to tackle them. They were guided on how to handle doubts experienced by their mentees and how they should move on with teaching in an Academic Class. Sessions conducted for them included academic workshops, interaction with Mentees and Mailing 101.

English Communication Classes

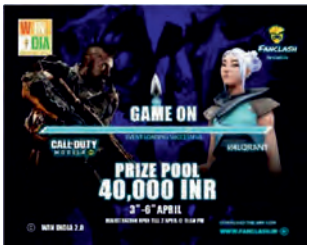
ECC aimed to cover two broad categories of students. Those who have a background in English but cannot converse confidently, and those that have no background in English. For the first category, classes comprising various listening and speaking activities were conducted. For students who had no background in English, grammar classes were organized. Then they were included in the first track for improving their conversation skills.

End Semester motivation cards

During Examinations, students are often under a lot of stress and anxiety, so to lighten up their mood and motivate them to believe in themselves, the Counselling service distributed cards with different quotes to make them feel good about themselves. These cards were left on their cycles outside the library and other places of study.

STUDENT ACTIVITIES

COUNCIL EVENTS



WIN India 2.0

After last year's successful conduct of WIN India 1.0, we launched the second version of the **Pan IIT WIN India movement.** Win India 2.0 was a sporting extravaganza comprising numerous events like Esports, Walkathon, Cyclothon, Chess, Quizzical, various talks, and workshops, to get the IITK junta pumped up. It saw the participation of over **5k participants** across the nation.

The major events conducted at that time are as follows-
Workshops: **Sports Analytics Workshop** in association

with Mad About Sports, **MedIITate** Yoga workshop with Isha Foundation, **Boxing Workshop** in association with Calib's Boxing Club. Apart from non-competitive sessions these events were also held. **Game On:** CODM and Valorant tournament in association with Fanclash; **Quizzical:** Sports Quiz powered by Universal Mednet; **Rook and Roll:** Chess tournament powered by Wow Chess; **Break the Threshold:** Runathon and Cyclothon event.

Fantasy League:
The event put together the fun of IPL, with the fantasy of mixing up our favorite players into the players fantasy teams. It saw the participation of around **300** players. The event lasted for seven days beginning from 19th- 26th April. The Council also organized the **WTC Fantasy League IITK,** in association with the Ballebaazi platform.

Know your Sportstar Season 2
Olympics and Paralympics Analysis, National Sports Awards Analysis, etc. to increase the reach of the council by 50% amongst the community.

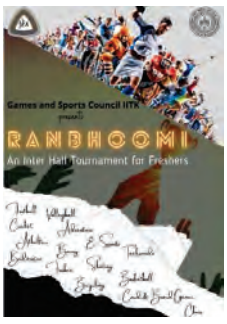
Talk Hour with Mimansa Singh Tanwar
The Games and Sports Council organized a live zoom QnA session with Ms. Mimansa Singh Tanwar, a clinical psychologist with the Department of Mental Health Behavioral Sciences Fortis Healthcare.

Food to Fitness by Biomarked
The Games and Sports Council organized "Food to Fitness", a **nutrition webinar** to help out the junta to get on to healthy eating habits and thus to a better lifestyle.

One Spirit Yoga
On the occasion of International Yoga Day, the Games and Sports Council organized an exciting talk by Akhilesh Parmanu, from the Art of Living Foundation.

The council organized live **Zumba Sessions** with **Sucheta Pal-** Zumba Ambassador & Coach with Team FITASTIC.

Ranbhoomi 2021
The tournament consists of various competitions across different sports among the six pools, namely UG Y20 students- Hall 2, Hall 3, Hall 5, Hall 6, Hall 12, and PG Y20. The cumulative score of the pools across all the events decided the ultimate winner.



Over the span of 7 weeks, a **Fit India initiative** was undertaken by the Games and Sports Council, IIT Kanpur. In this programme, the coaches of IIT Kanpur guided and mentored the participants with targets for each week. Certificates and prizes were given out for the weekly, daily, or event-wise achievers.

Power of Fitness Webinar: One of our IIT Kanpur alumni, Ayush Soni has started an online fitness platform **'RANTHRA'** which provides a holistic approach to fitness. The council in collaboration with Ayush organized this webinar that saw participation in great numbers from the student community.

The Games & Sports Council organized an offline **Gymnasium Workshop** with an aim to help the student community with the basics at Gym regarding general equipment handling and custom fitness strategies and strategies for both "weight gain" and "weight loss" categories.

Career in e-Sports: The Games and Sports Council organized an amazing and imperative talk session on Career in E-Sports, presented by **FRAGNOW,** an eSports start-up by an IIT Guwahati alumnus.

Fitness, Diet and Nutrition Seminar: The Council organized a session on Fitness - Diet and Nutrition by National Fitness Physique Medalist, **Mr. Soumarup Bhattacharyya** who had won Mr. Inter IIT and is also an Inter IIT Gold Medalist.

Sports Cryptic and Scavenger Hunt For the fresh start of the semester for Y21, the Games and Sports Council organized team events including a Scavenger Hunt and a Sports Cryptic Hunt engaging so many students in these fun and competitive events.

The council organized an enlightening session **'Eat More & Lose More' (Webinar)** by an evidence-based fitness influencer, **Mr. Ojasvi Rajput.**

Holi sports camp
The camp was conducted from the 12th to the 17th of March. The camp was overseen by Institute coaches and Institute team captains. In total **150+** students participated in the Holi Sports Camp. Simultaneously, teams and players from outside the institute were also invited in some sports to compete with the players from the institute. Out of all the players in the camp, one student per team was awarded the **Player of the Camp** recognition for their consistency, perseverance, and determination.

Intra-Hall Tournaments and Workshops
Intra-hall football, cricket and volleyball tournaments were organized for the campus junta. Workshops were also held for various sports like Hockey, Football for Girls. It gave the new students on campus the first taste of offline sports event as well as provided them a relief after mid-sem week.
Old Sports Complex Gymnasium Expansion: In collaboration with DoRA, funds worth Rs. 60 lakhs were pledged from alumni for gym expansion and total amount aimed is Rs. 2.6 crores

ACADEMICS AND CAREER COUNCIL
The Academics and Career Council, IIT Kanpur, aims to foster all the needs related to Academics and Research for the campus dwellers.

UG Academics Wing

- Conducted the Academic Orientation 1.0 and 2.0 to cater the unique needs of the Y20 Batch.
- Know your Department Sessions were being organized for the students transitioning from their freshman to sophomore year.
- Comprehensive Course Guidance (CCG) kits are being developed which contain information regarding all the IC courses.
- Course Repository and Departmental Guides for each department are being developed which contain all the information one needs to know about their departments and the Do's and Don'ts to follow.
- Rise from Scratch Programme is initiated for the needy students to start their journey from the scratch. Academic Department Mentors and Career Department Mentors are selected from each Department and comprise of Y19 and Y18 students.

Career Development Wing

- Internship Sessions were conducted for Y19 students. A total of 5 sessions were conducted aiming at every major profile Interns are hired for.
- 'The More You Know' series of blogs was published to help students in their preparation of internship. 8 blogs were published in total.
- Online Courses and Test Series for internships were organized, collaborated with ProxyPrep, PrepLeaf, Alpha Derivatives for the resume making guidance, aptitude tests and coding tests/mock interviews.
- For Remote Internships, NGOs and StartUps were contacted and students were offered Summer Internships on the Application Portal.
- Successfully collaborated and started the membership drive for IAESTE IITK MD September 2021, getting over 140 students registered.
- Placement Fundae: Preparatory Placement Blog Series was being released having detailed account of the preparation of placements by Y17s.
- Collaborated with Interview Buddy and Coding Ninjas for placement preparation and scheduling mock interviews.
- Consulting Prep and Sophomore Summers were being organized for the preparation for the role of consulting and for the second-year students aiming for internships in the upcoming summers.
- Career-Connect: A two-day event organized on 29th-30th January 2022, in which a plethora of events were being conducted ranging from Game Development to Time/Stress Management.

Research Wing:

- Student Interest Groups were being developed in which great enthusiasm of students was seen along with Re- Scholar formation, a database has been prepared to consist of a list of relevant scholarships and programs took place.
- Alumni Connect: Alumni are invited to conduct a panel discussion where they discuss their current life. 3 sessions for the same were conducted.
- Spotlight: Exemplary UG research work is highlighted and given public promotion. This serves the purpose of motivating younger batches about the research work done at IIT Kanpur at the UG level.
- Newsletter: Newsletter initiating some important topics under the domain of AnC such as UG ARC Feedback, Technopark, SRC, words from DORD, new departments, etc.
- Career Flowchart: Basic flowchart describing the life of a UG interested in research. The motive was to highlight major milestones in the career and help provide a trajectory to students.
- Surge Introductory Session: The Research wing conducted an introductory session for the potential participants of SURGE 2022 to clear their doubts and queries as well as to provide them with the required knowledge.
- Students' Research Convention 2022: was held on 4th-6th March 2022 in a hybrid mode. The conference received an enthusiastic response from the campus community as well as participants from around the nation. Various new initiatives were also discussed such as ResQ.

International Relations Wing

- MoUs with Potential Partners: has a compiled database of potential institutes with which the institute can collaborate for the benefit of IIT Kanpur students.
- Invite Organizations for Test Series and Webinars: It involves approaching organizations like Jamboree, Manya, Magoosh, etc., for availing a package on preparation resources, for example, test series, study materials, etc.
- Higher Studies Session: These sessions discussing the aspects of both opportunities, logistics of the application procedure, and educational and future prospects pertaining to MS/Ph.D. abroad were conducted.

IR handbook:

The IR Handbook will be prepared as a global document for insight into both undergraduate and postgraduate opportunities. It will be divided into various sections which will be released as they are prepared under the umbrella of the handbook.

Foreign Intern Session and International programs for Exchange Programs and Internship Opportunities, under which various organizations DAAD, MITACS, Erasmus, ASEAN, etc. were being contacted.

IR Orientation Session: an orientation session will be conducted by the Managers, IR on the international opportunities that are available at IIT Kanpur.

Alumni Connect and Foreign Training Program: Connect the council with distinguished alumni. The first goal would be to invite these alumni to conduct sessions for the campus community, which can be department or domain of work specific.

Web Division

- The Academics and Career Council Website and the Student's Research Convention Website have been updated in accordance with the arrival of new members, and legacy pages have been updated.
- Blogs section gives complete control to all wings and allows them to publish blogs without any possible delay from the web division. All previous blogs have

been transferred here with the help of secretaries of respective wings.

- Admin Access: A central admin access portal has been designed to give all secretaries/managers access to all portals in a single application. This allows the council members to manage all portals effectively, unlike the previous design.
- Centralized Log-In and Content Delivery System, the team has developed a logging system that would allow us to resolve issues in any portal raised by the students quickly
- Portals: The career portal allows the managers to post internships, notifications, collect data, etc. All registered students with an ANC ID can apply using this portal.

  A new resources portal has been developed to allow single sign-on, and the previous login has been removed. The new interface will enable managers to add resources dynamically
- Courses Portal was further updated during the term, and we are currently waiting for relevant permission from the authorities. The courses portal has also been integrated with the single sign-on.

SCIENCE AND TECHNOLOGY COUNCIL

The Media and Cultural Council of the Students' Gymkhana is the epitome and embodiment of the "Culture of IIT Kanpur". It organizes a plethora of activities spanning the entire calendar year. Our activities and responsibilities include but are not limited to:

- Providing students numerous platforms to pursue a diverse set of interests, train themselves, perform on stage, compete with others, and appreciate various art forms.
- Exposing students to various professional workshops and sessions to hone their skills and compete with other prolific colleges in competitions.
- Providing ample opportunity for students to cement themselves into the culture of IIT Kanpur through events like club-level workshops, semester-long projects, etc.

Some key highlights of this term of the Media and Culture Council are:

Cultural Extravaganza: The Media and Cultural Council organized its annual flagship event from 13th-16th April 2022, which included multiple performances by the students in different domains like Dance, Dramatics, Music, Stand-up comedy etc. The event witnessed an audience participation from campus community in large numbers.

Treasure Hunt: The council organized its first offline event of the tenure which witnessed participation from 500+ students from the Y20 batch.

Evergreen Melodies: This was the first ever collaboration of media and cultural council and alumni association of IIT Kanpur for an event. The occasion was a reunion event of Alumni from batches 1973-2010.

Summer workshop: Many clubs organized summer workshops of some kind last summer.

Council also conducted two events namely **Treasure Hunt** and **Ultimate Cult Quest** which were Y21 specific. These Events included genres like Rapping which was not included earlier in any event.

Activities under **EBSB** were also organized. Also, two events were organized under the initiative of the government of India.

Four meetings of the Council Core Committee have been conducted in the tenure. Introductory Sessions, Competitions, and Preliminary workshops of clubs for Y21 were organized successfully.

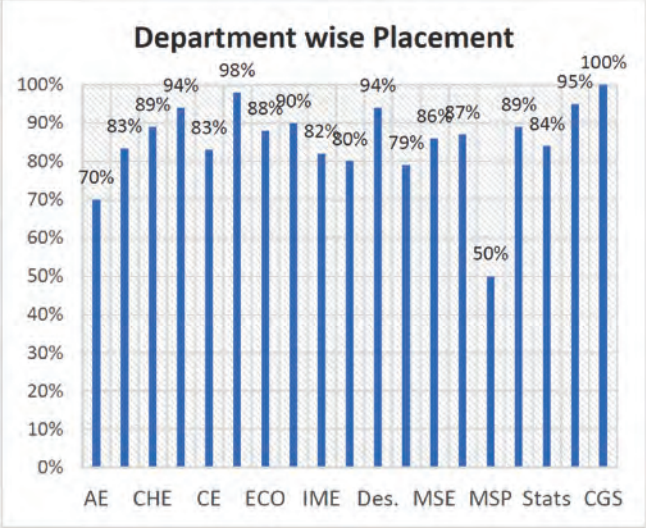
Collaborations: This year, a number of inter-club collaborations were made which proved to be highly beneficial and were a benchmark achievement for the council in the long run.

Rangmanch: An open for all plethora of events. Multiple competitive events were organized in rangmanch by different Clubs.

Fresher's Showcase: A three-hour long video was published on YouTube and an event was organized for the Y21 students which witnessed participation of more than 400 students from all the M&C Clubs and societies. The event proved to be the flagship event of the council. The showcase event proved to be a major success, enabling new students to join the clubs and societies of their interest. To encourage interaction and harmony among new students.

STUDENT PLACEMENT

1445 students had registered with Student Placement Office for Campus Recruitment Drive 2021-22. Due to the pandemic restrictions, the placement drive was conducted in complete online mode and in two phases. Phase-1 of the recruitment officially started on December 1, 2021, and ended on December15, 2021. About 300+ recruiters participated in Phase-1 to hire students for full time employments. About 59 top tier firms with 74 different profiles from various sectors conducted interviews on Day

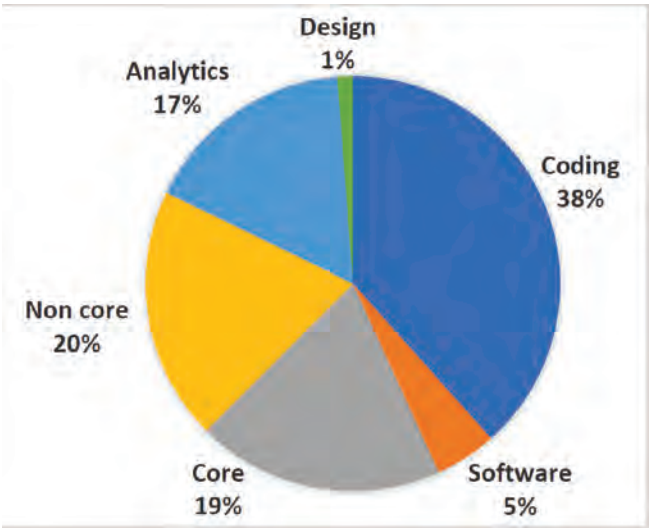


Placements across various departments of IIT Kanpur during placement season 2021-22.

1, when an unprecedented 384 job offers were extended by the companies, and 304 of those were accepted by IIT Kanpur students.

Based on the number of students hired, the top recruiter for this placement season is Rakuten Mobile which hired 29 students. Other top recruiters of the season were Intel Technology Pvt. Ltd, Microsoft India Pvt. Ltd., EXL Services, ICICI bank, SAP Labs etc., to name a few. Phase-2 of the recruitment started in January 2022 and continued till May 2022. Till May 2022, a total of 405 organizations have registered in the campus placements.

A total of 1263 students out of the 1445 registered students were placed through SPO during the academic year 2021-22. The overall placements stood at 87.4%, which speaks highly of the dedicated efforts of the entire SPO team including the student, staff & faculty coordinators. The total placed number includes the students from both the UG and the PG program.
640 out of 686 registered students in B. Tech and B.S. degree programs (approx. 93%) were placed during the season. UG placement count also includes 141 accepted Pre-Placement Offers (PPOs) from the academic internships provided through SPO. Amongst the various PG programs, 96% in Dual degree program, 94% in Master of Design (M. Des.), and 85% in MSR got placed during the current placement season. In all 623 out of 759 registered PG students (approx. 82%) were placed during the season.

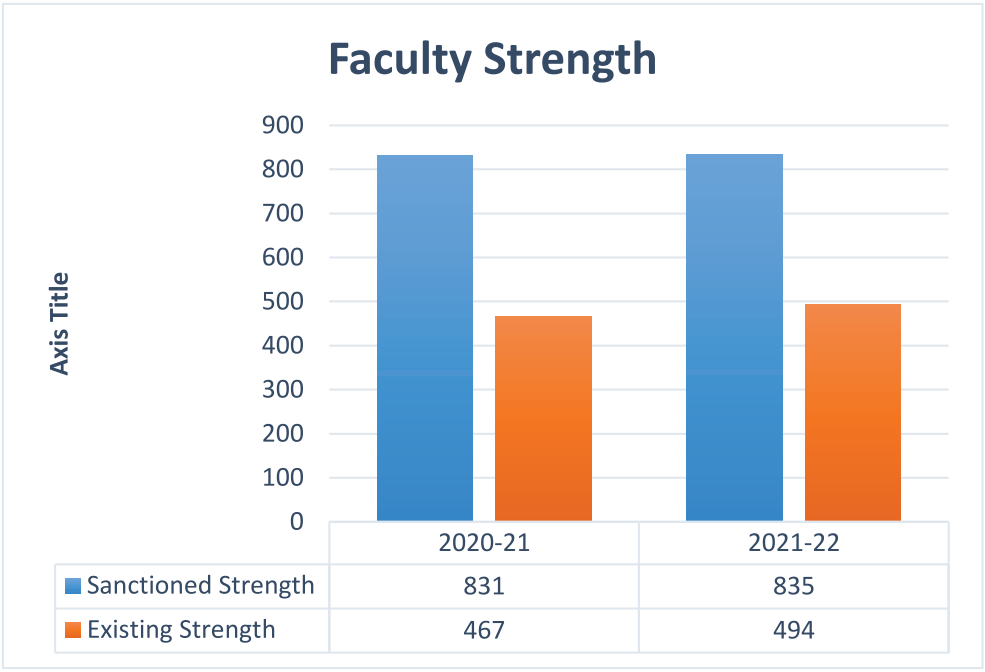


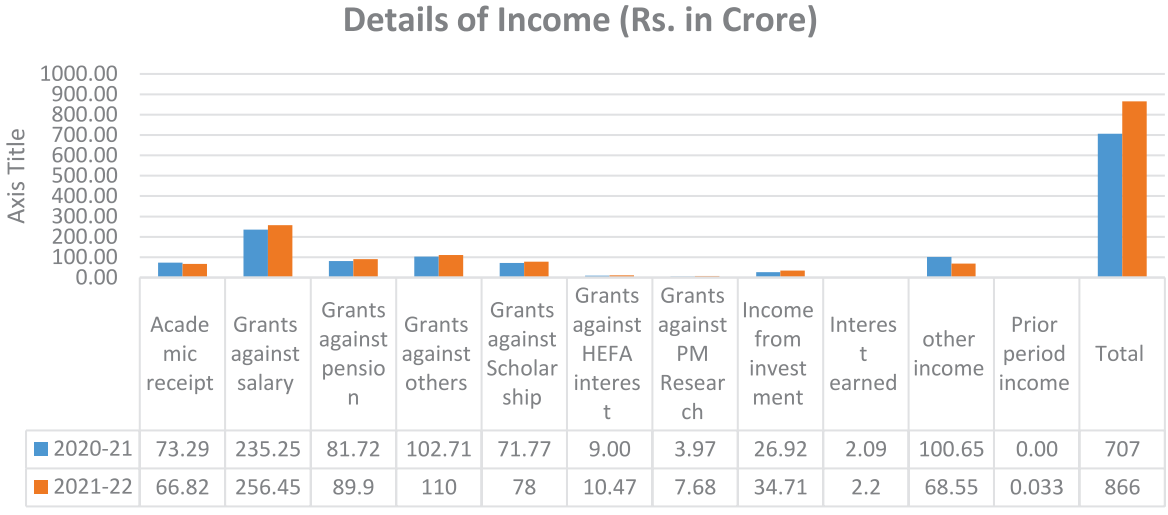
Students of IIT Kanpur continued to demonstrate a strong commitment to their core educational background in their choice of employment. The Placement drive witnessed highest participation from coding and software firms which accounted for 43% of the total placements, whereas 19% was comprised by core firms.

Some of the prominent recruiters who participated in Campus Recruitment Drive 2021-22 include Adobe Systems, Accenture Japan Ltd, Amazon Development Centre India, American Express, Axis Bank Ltd., Bajaj Auto Limited, Eaton, EXL Services, Google, Goldman Sachs, Jaguar Land Rover Limited, HSBC, JP Morgan Chase & Co., MasterCard, Microsoft, Oracle India Private Limited, Quantiphi Analytics Solutions Pvt. Ltd, Samsung, Taiwan Semiconductor Manufacturing Company, Texas Instruments, Uber etc.

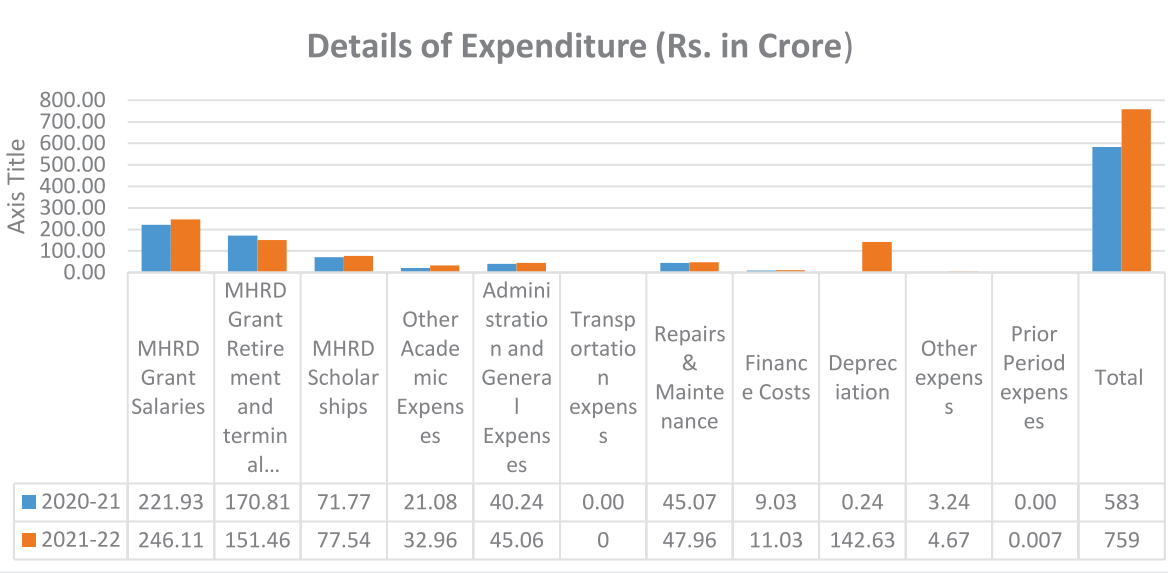
Books published, Fellowships, Awards and Honors, Editorship/Membership, Student's Awards, Major Project sanctioned, Labs/Facilities developed, Technologies developed and Software developed are given in the link below:
https://web.iitk.ac.in/july14dordn/data/Annual-Report-2021-22/Books_Published.pdf

INSTITUTE AT A GLANCE





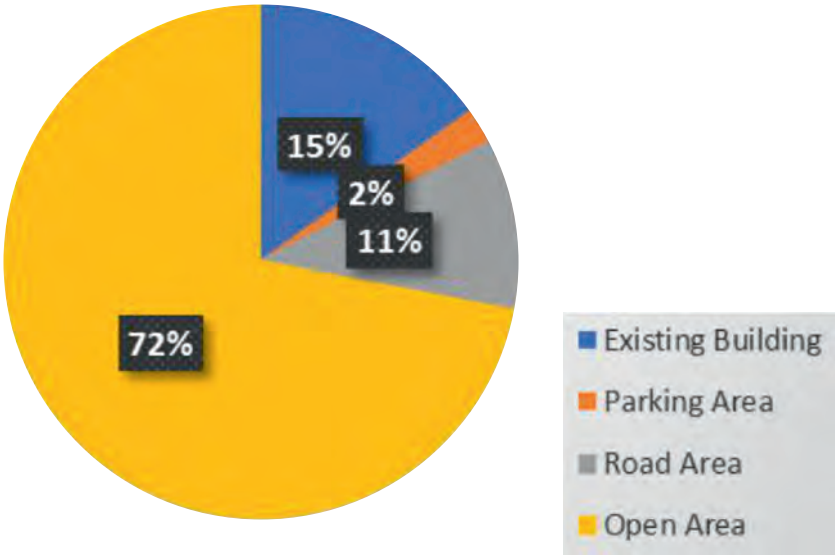
	Academic receipt	Grants against salary	Grants against pension	Grants against others	Grants against Scholarship	Grants against HEFA interest	Grants against PM Research	Income from investment	Interest earned	other income	Prior period income	Total
2020-21	73.29	235.25	81.72	102.71	71.77	9.00	3.97	26.92	2.09	100.65	0.00	707
2021-22	66.82	256.45	89.9	110	78	10.47	7.68	34.71	2.2	68.55	0.033	866



	MHRD Grant Salaries	MHRD Grant Retirement and terminal...	MHRD Scholarships	Other Academic Expenses	Administration and General Expenses	Transportation expens	Repairs & Maintenance	Finance Costs	Depreciation	Other expens	Prior Period expenses	Total
2020-21	221.93	170.81	71.77	21.08	40.24	0.00	45.07	9.03	0.24	3.24	0.00	583
2021-22	246.11	151.46	77.54	32.96	45.06	0	47.96	11.03	142.63	4.67	0.007	759

Plot Area (Ground Coverage)

42, 69, 433.52 m^2



Board of Governors
1st April, 2021 to 31st March, 2022

CHAIRMAN
Dr. K. Radhakrishnan
Chairman, BOG, IIT Kanpur
Antariksh Bhavan
New B.E.L. Road
Bengaluru – 560 231

Members:
Prof. Abhay Karandikar
Director
Indian Institute of Technology, Kanpur
Kanpur – 208016

Council Nominees:
Shri Rakesh Ranjan (Ex-officio)
Additional Secretary (Technical Education)
Ministry of Education
Shastri Bhawan, New Delhi – 110001

Prof. T. N. Singh [upto 16 November, 2021]
Vice-Chancellor
Mahatma Gandhi Kashi Vidyapith (MGKVP)
Varanasi – 221 002
Uttar Pradesh

Prof. Uday Shanker Dixit [upto 16 November, 2021]
Department of Mechanical Engineering
IIT Guwahati
Guwahati – 781039 (Assam)

Shri Deepak Ghaisas [upto 16 November, 2021]
Chairman & Chief Mentor Gencoval
Strategic Services Pvt Ltd.
501 Windfall, Sahar Plaza Complex,
Andheri- Kurla Road, Andheri (East), Mumbai-400059

Dr. Saurabh Srivastava [w.e.f. 17 November, 2021]
Former Chairman, NASSCOM
Founder Chairman, Indian Angel Network
C-482, Defence Colony, New Delhi- 110024

Shri Pradeep Goyal [w.e.f. 17 November, 2021]
Chairman & Managing Director
Pradeep Metals Ltd.
Navi, Mumbai – 400 701

Dr. Manoj Gonuguntla [w.e.f. 17 November, 2021]
Senior Materials & Corrosion Engineer
Shell Technology Centre, Bangalore
26, 19th Cross, Laljinagar
Bangalore – 560 030

State Government Nominee:
Dr. Mahesh Gupta
Chairman & Managing Director
Kent RO Systems Ltd.
E-6, 7 & 8, Sector 59
Noida (UP) – 201 309

Senate Nominees:
Prof. Goutam Deo [upto 31 December 2021]
Department of Chemical Engineering
Indian Institute of Technology, Kanpur
Kanpur - 208016

Prof. Shalabh [upto 31 December 2021]
Department of Mathematics & Statics
Indian Institute of Technology, Kanpur
Kanpur - 208016

Prof. Bishakh Bhattacharya [w.e.f. 1 January, 2022]
Department of Mechanical Engineering
Indian Institute of Technology, Kanpur
Kanpur - 208016

Prof. Manas K. Ghorai [w.e.f. 1 January, 2022]
Department of Chemistry
Indian Institute of Technology, Kanpur
Kanpur - 208016

Secretary:
Shri K.K. Tiwari
Registrar
Indian Institute of Technology Kanpur
Kanpur – 208016

Finance Committee
From 1st April, 2021 to 31st March, 2022

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New B.E.L. Road
Bengaluru – 560 231

Members:
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Director
Indian Institute of Technology, Kanpur
Kanpur – 208016

Shri Rakesh Ranjan (Ex-officio)
Additional Secretary (Technical Education)
Ministry of Education
Shastri Bhawan, New Delhi – 110001

Smt. Darshna M. Dabral
Joint Secretary & Financial Adviser
GOI, Department of Higher Education
Ministry of Education
Shastri Bhawan, New Delhi – 110 001

Shri Deepak Ghaisas [upto 16 November, 2021]
Chairman & Chief Mentor
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Founder Chairman, Indian Angel Network
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Prof. Shalabh [upto 31 December 2021]
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Prof. Manas K. Ghorai [w.e.f. 1 January, 2022]
Department of Chemistry
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Kanpur - 208016

Secretary:
Shri K.K. Tiwari
Registrar
Indian Institute of Technology Kanpur
Kanpur – 208016

Building & Works Committee
From 1st April, 2021 to 31st March, 2022

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Prof. Abhay Karandikar
Director
Indian Institute of Technology, Kanpur
Kanpur – 208016

MEMBERS
Prof. S. Ganesh
Deputy Director
Indian Institute of Technology, Kanpur
Kanpur – 208016

Prof. Goutam Deo [upto 31 December 2021]
Department of Chemical Engineering
Indian Institute of Technology, Kanpur
Kanpur - 208016

Prof. Bishakh Bhattacharya [w.e.f. 1 January, 2022]
Department of Mechanical Engineering
Indian Institute of Technology, Kanpur
Kanpur - 208016

Shri Sarvagya Kumar Srivastava
Retd. Chief Engineer, CPWD
370, Asiad Village Complex
Srifort, New Delhi – 110 049

Dr. Ranjana Mittal
Retd. Professor, SPA New Delhi
A, 14/7, Vasant Vihar
New Delhi – 110 057

Shri Anil Kumar Jain [upto 2 September 2021]
Retd. Special DG, CPWD (Electrical)
Flat 9-B, Tower-X
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Dr. Sudip Paul [w.e.f. 3 September 2021]
General Manager (Structural Department)
Engineers India Limited
5th Floor, Tower-I, EIL Office,
Gurugram Complex (Sector-16)
Gurugram (Haryana) – 122 001

Prof. Samit Ray Chaudhuri
Dean of Infrastructure & Planning
Indian Institute of Technology, Kanpur
Kanpur – 208016

Secretary:
Shri K.K. Tiwari
Registrar
Indian Institute of Technology Kanpur
Kanpur – 208016

THE FACULTY

RECRUITMENT

In the past one year, the Institute has offered 99 faculty positions against a rigorous selection. Out of these, 46 new faculty members have joined the Institute. The appointments per department are mentioned below:

Department	Number of new faculty
Biological Sciences and Bioengineering	1
Chemical Engineering	1
Civil Engineering	1
Cognitive Sciences	2
Computer Science and Engineering	3
Earth Sciences	2
Economic Sciences	3
Electrical Engineering	6
Humanities and Social Sciences	5
Industrial and Management Engineering	6
Materials Science and Engineering	3
Mathematics and Statistics	4
Mechanical Engineering	2
Physics	4
Sustainable Energy Engineering	3

During this period, we have also made 60 post-doctoral fellowships, 14 visiting faculty and 08 adjunct faculty offers.

https://web.iitk.ac.in/july14dordn/data/Annual-Report-2021-22/Faculty_list.pdf
https://web.iitk.ac.in/july14dordn/data/Annual-Report-2021-22/Books_Books_chapters_and_Journals.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 its 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 programme are as follows:

- To prepare the students for the highest level of excellence in science and technology and to 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 an inter-disciplinary approach, and 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. The development of these programmes is monitored by the recently introduced Senate Curriculum Development and Monitoring Committee (SCDMC). Apart from this, the programmes are subject to a comprehensive review once every 10 years by the Academic Review Committee (ARC) constituted for this purpose.

Undergraduate Programme

The Institute offers the following undergraduate programmes:

- Four-Year BTech Programmes in Aerospace Engineering, Biological Sciences & Bio-engineering, Chemical Engineering Civil Engineering, Computer Science and Engineering, Electrical Engineering, Materials Science and Engineering, and Mechanical Engineering.
- Four-Year BS Programmes in Chemistry, Earth Sciences, Economic Sciences, Mathematics &

Scientific Computing, and Physics.

The four-year undergraduate programme consists of two parts having duration of about four semesters each. The first part is primarily the Core Programme common to all students, and is carefully planned to give the students a strong base of basic education in Mathematics, Physics, Chemistry, Technical Arts, and Humanities and Social Sciences. The second part of the undergraduate programme consists of the Professional Courses and a project in the chosen branch of specialization.

Two-Year MSc Programme

The Institute also offers Two-Year MSc Programmes in Physics, Chemistry, Mathematics and Statistics, where students with B.Sc. (Hons.) background are admitted through an all-India entrance examination known as JAM (Joint Admission Test to Master of Science). These programmes have been largely responsible for the scientific manpower in Indian research institutes and universities.

Postgraduate Programme

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

MTech Programme

We have MTech Programmes in all the core Engineering Branches of Aerospace Engineering, Biological Sciences & Bio-engineering, Chemical Engineering Civil Engineering, Computer Science and Engineering, Electrical Engineering, Materials Science and Engineering, and Mechanical Engineering. In addition, there are MTech Programmes in interdisciplinary areas such as Photonics Science and Engineering, Materials Science, Nuclear Engineering and Technology and Environmental Engineering and Management. The MTech students are chosen through an all-India examination known as GATE and further written test/interview in some cases.

MBA Programme

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

MDes Programme

The MDes Programme is offered by the Interdisciplinary Programme in Design. The students are selected through the all-India examinations, CEED and/or GATE, followed by the written test/interview.

Doctor of Philosophy (PhD)

The academic programmes leading to the degree of Doctor of Philosophy (PhD) exists in all the Engineering Departments and the Interdisciplinary Programmes (IDPs) of Cognitive Science, Design, Environmental Engineering and Management, Nuclear Engineering and Technology, and Photonics Science and Engineering, The PhD Programmes are also offered in the Departments of Chemistry, Earth Sciences, Economic Sciences, Mathematics & Statistics, Physics, and Humanities and Social Sciences (English, including Literature, Linguistics, and Language Teaching, Fine Arts, Philosophy, Psychology and Sociology).

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

MS By Research

The Institute also offers a Postgraduate Programme known as MS (By Research) in the following disciplines: Aerospace Engineering, Chemical Engineering, Civil Engineering, Computer Science and Engineering, Electrical Engineering, Environmental Engineering and Management, Mechanical Engineering, and Photonics Science and Engineering. The objective of this programme is to promote research at the Masters level, including industry sponsored research.

MS-PhD Dual Degree

The Department of Physics offers an MSc-PhD Dual Degree Programme. The admission is through JAM (Joint Admission Test to Master of Science), and the MSc students migrate to the PhD Programme after the completion of their MSc Programme.

MTech and PhD Joint Degree

The Institute has initiated the award of additional Masters with PhD, whereby an additional MTech/MDes degree is awarded to students with the PhD degree subject to the fulfillment of certain specified academic requirements. This provision has been introduced for candidates who join the PhD programme directly after BTech/BS and other bachelors programs.

The MTech, MDes, MS ®, and PhD students receive financial support through research/teaching assistantships.

RESEARCH ENVIRONMENT

IIT Kanpur 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, Thin Film Dynamics, Optical / EM Field Calculations, Computational Fluid Dynamics and Heat Transfer, Computer Aided Design and Rapid Prototyping, Tomography, Robotics, Multi-Body Dynamics, Geo-seismic 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 and so on.

Some of the more recent research initiatives include Alternative Energy, 5G Telecom Technology, Real Time Data Transmission, Air Quality Monitoring Systems, Development of Indigenous Block chain Platform, Unmanned Aerial systems, Aerospace Materials, Biodegradable Materials, Aircraft Engine Combustion Design, Wind Turbine Design, Waste Water Treatment, Supramolecular Chemistry, Catalysis, Two Dimensional Materials, High Performance Computing, Corrosion, Himalayan Glaciers, Biomaterials, New Drug Delivery Systems and so on.

CONTINUING EDUCATION AND OUTREACH ACTIVITIES

National Programme on Technology Enhanced Learning (NPTEL), a joint initiative of the MHRD, IITs and IISc Bangalore, has 121 of its 600 courses developed by the faculty members at IIT Kanpur. NPTEL Phase IV has proposed several new activities that are in tune with the Central Sector Scheme (CSS) of MHRD and are compliant with the Massive Open Online Courses (MOOC) initiative. It is expected that the CSS and MOOC compliant e-content under NPTEL IV will play an important role towards an affordable and high-quality online and open access education drive of MHRD. The mooKIT, which has been developed from ground up, is a lightweight MOOC management system with several innovations. It comes in multiple versions including an offline version where the MOOC can be distributed over SD cards. More than 20 MOOCs have been delivered on it and more than 2,00,000 students from around 100 countries have learnt from it. 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.

Under MHRD's Swayam Prabha initiative of taking education Directly to Home (DTH), thirty-two DTH channels have been started out of which IIT Kanpur is currently managing two. These channels broadcast the NPTEL course content in Mechanical Engineering, Humanities and Social Sciences, and Management 24x7.

https://web.iitk.ac.in/july14dordn/data/Annual-Report-2021-22/Admission_and_Convocation_Data.pdf

RESEARCH AND DEVELOPMENT

IIT Kanpur has registered steady growth in its research and development activities this year. The number of externally funded ongoing projects during 2021-22 has reached 1377 with a total sanctioned amount of Rs. 1449.39 crore. During 2021 - 2022, the Institute received sanctions for 219 sponsored projects worth Rs. 153.4 crore and 207 consultancy projects of value Rs. 40.15 crore.

Some of the major sponsoring agencies during the year 2021-22 are Department of Science & Technology with the total sanctioned amount of Rs. 109.9 crore, Science & Engineering Research Board with the total sanctioned amount of Rs. 42.1 crore, DBT with the total sanctioned amount of Rs. 8.56 crore, Portescap India Private Limited with the total sanctioned amount of Rs. 7.58 crore, Stitching SED Fund Netherland with the total sanctioned amount of Rs.5.18 Crore.

Some of the major industries which have funded projects this year include Haswell Technik Private Limited Chandigarh, Larsen and Toubro Limited, Micro Small and Medium Enterprises, PNC Infratech Limited, Techno electric and engineering company, Northern eastern Railways, and Key sight Technologies,

During the year 2021-22, 104 IPR's were filed by the Institute including 65 Patents, 18 Design Registration, 18 Trademarks and 3 Copyright. 62 previously filed IPRs were granted and 8 technologies were licensed to industry partners.

Till date, 821 IPRs have been filed, out of which 337 have been granted so far along with 124 technologies licensed for commercialization.

A total of 113 companies are currently incubated at Startup Innovation and Incubation Centre (SIIC), IIT Kanpur and 130 have graduated so far.

https://web.iitk.ac.in/july14dordn/data/Annual-Report-2021-22/IPR_filed_during_2021-22.pdf

Project Number: MoE/STARS-1/261
Project Title: Short and Long-term Fog Predictions using Data Science
Project Investigator: Prof. Arnab Bhattacharya, IIT Kanpur
Co-Investigator(s): Prof. Shivam Tripathi, Prof. Mahendra K Verma, IIT Kanpur
Industry Collaborators (if any): None
Project Initiated on: 15th June, 2020

Project objectives:

1. To provide two to three hour warning for the onset of fog, and predict its duration and intensity.
2. To forecast onset, duration and intensity of fog with up to 5 days lead time.
3. To identify predictors for fog forecasting using a literature survey, and from the results of feature selection and sensitivity analysis of trained models.
4. To develop a coherent fog dataset by integrating data from ground sensors, satellites, and mass and social media.
5. To operationalize the developed models at an airport and railway station, and disseminate the results using a website and radio.

Progress Report:
The project has three major components:

1. Understanding of variables and factors for fog prediction
2. Training data science models for fog prediction
3. Dissemination of results

An extensive literature survey has been carried out to understand fog characterization, identify the factors for fog formation, and study the application of data science models for fog prediction. The fog events for the north Indian cities were first characterized based on their formation, duration, persistence and intensity. Next, visibility observations (a proxy for fog) and meteorological parameters relevant for predicting fog were collected from historical weather data.

Various data science models (such as ANN, RF, Adaboost, GBDT, LSTM, ARIMA, HMM, etc.) were then trained using these data for short-term fog prediction (from 30 minutes to 6 hours). A free public website (https://fog.iitk.ac.in/) has been developed to show the real-time status of fog and disseminate fog prediction results for various north Indian cities. When a particular location is selected, it displays observed visibility for a chosen time interval (by default, past 24 hours), and the predicted visibility for the next 6 hours. The website gives an option to revisit past predictions as well. It also displays various meteorological parameters such as temperature, humidity, wind, etc., and has facilities to compare visibility across cities.

The website also shows live data captured by various sensors stationed at IIT Kanpur. These include visibility, soil moisture, particulate matter, and meteorological sensors.

Highlights (3 bulleted points):

1. A free public website (https://fog.iitk.ac.in/) has been developed to show the real-time status of fog and disseminate fog prediction results for 11 north Indian cities.
2. Various sensors have been installed at IIT Kanpur, and data are displayed on a real-time basis in the website.
3. Multiple data science models have been developed for the short-term prediction of fog. Models are being developed for long- and medium-term prediction.

Figure 1. Sensors installed at IIT Kanpur- (a) visibility sensor, (b) soil moisture sensor and (c) automatic weather station.

Project Number: MoE/STARS-1/257
Project Title: Photocatalysis Employing Combination of **Plasmonic Nanoparticle and Molecular Catalyst:** Probing Spatiotemporal Interfacial Charge/Energy Transfer Dynamics
Project Investigator: Prof. Vishal Govind Rao
Co-Investigator(s): NA
Industry Collaborators (if any): In the process of developing a collaboration with TATA Steel
Project Initiated on: 09-06-2020

Project Objectives: The objective of this project is to use

plasmonic metal nanoparticles and molecular catalysts to develop plasmonic nanocomposites that can absorb in the visible range via localized surface Plasmon resonance/ antenna effect. The nanocomposites should transfer the Plasmon energy to a molecular catalyst layer which can then carry out CO2 reduction. Plasmonic metal nanoparticle in combination with appropriate catalytic material serves as platforms for manipulating the flow of electromagnetic energy at the nanometer length scale. To this effect, we first designed Au-Pt and Au-Pd core-shell plasmonic photocatalyst where plasmonic energy stored in the core can be directed to the shell and the adsorbate hybrid states upon plasmon decay, thus providing molecular control of the energy flow and excited charge carrier generation in these systems.

Progress Report:

We have engineered Au-Pt core-shell nanostructures with only a few monolayers of epitaxially grown Pt onto Au nanocubes. The finite element method (FEM) simulations for optical properties of Au-Pt system support the design and hypothesis of selective funneling of plasmonic energy/charge carriers from Au core to Pt shell and their potential extraction for activating chemical bonds on Au.Pt nanocubes (Au-Pt NCs) surface. Further, investigating Au-Pt NCs as plasmonic catalysts, we show direct, visual evidence of plasmon-assisted cascade reduction of nonfluorescent resazurin (Rz) dye to nonfluorescent dihydroresorufin (DHRf) via a highly fluorescent resorufin (Rf) intermediate form. In the excitation wavelength-dependent study, the maximum apparent quantum efficiency of 48% (Rz to Rf conversion) and 8.4% (Rf to DHRf conversion) at 561 nm laser excitation demonstrates the plasmon assisted charge carrier driven cascade reduction on Au.Pt NCs surface. We believe our experimental evidence of harvesting hot charge carriers from plasmonic Au¡VPt NCs validates the strategy of designing bimetallic core-shell structures for driving kinetically unfavorable and multi-electron driven reactions, namely CO2 reduction and N2 fixation. The energetics of the bimetallic plasmonic nanocatalysts can be fine-tuned by altering the choice of metal and light attributes, to ensure product selectivity.

We have tested our designed catalyst for CO2 reduction, and we found it to be active in the reduction of CO2 to CO. However, the quantitative analysis for conversion of CO2 to CO and other higher derivatives of carbon is under investigation.

Highlights (3 bulleted points):

- We published 3 papers in peer-reviewed journals
  - "Recent Progress and Challenges in Plasmon-Mediated Reduction of CO2 to Chemicals and Fuels", D. Mittal, M. Ahlawat, and V. G. Rao* **Adv. Mater. Interfaces (2022),** 2102383.
  - Efficient extraction of energetic charge carriers from engineered plasmonic nanocomposite to perform cascade reaction¡¨, M. Ahlawat, A. Roy, and V. G. Rao* **ChemNanoMat (2022),** 8, e202100416.
  - "Plasmon-induced hot-hole generation and extraction at nano-heterointerfaces for photocatalysis", M. Ahlawat, D. Mittal, and V. G. Rao* **Communications Materials - Nature (2021),** 2, 114.
- We have tested our designed catalyst for CO2 reduction, and we found it to be active in the reduction of CO2 to CO.
- We are in the process of collaborating with Tata Steel so that in the future if we get good catalytic efficiency of our catalyst, we can test it for the real-world problem and scale it.

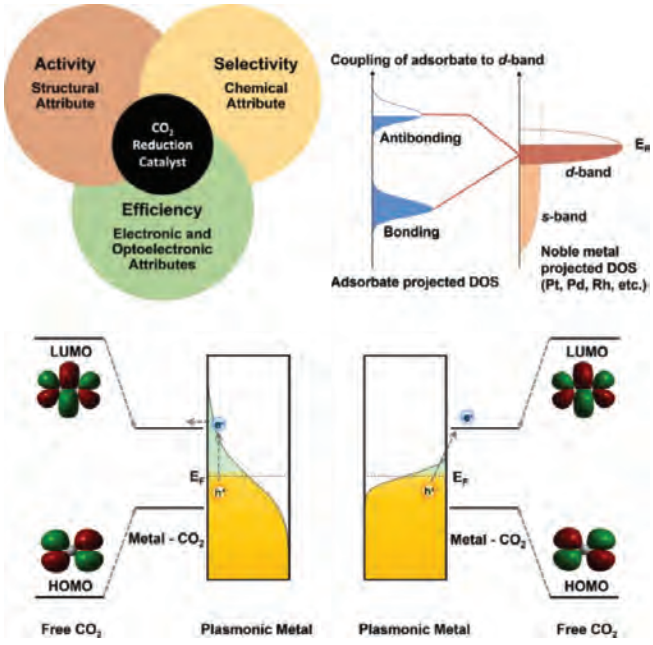


Figure 1: Recent advances in CO2 reduction catalyst and Plasmon-mediated photocatalytic reduction of CO2 into valuable fuels and chemicals. Plasmonic metal photocatalysts catalyze surface reactions with enhanced selectivity, which is difficult to achieve in thermal catalysis.

Project Number: MoE/STARS-1/672

Project Title: "Understanding the mechanism of Mg2+ mediated "SOS" induction in Mycobacterium tuberculosis to decipher its role in antibiotic resistance and survival in macrophages"

Project Investigator: Prof. Saravanan Matheshwaran

Co-Investigator(s): None

Industry Collaborators (if any): None

Project Initiated on: 2020

Project objectives:

- Molecular, biochemical and biophysical characterization of LexA and RecA, the master regulators of "SOS" response
- Elucidation of in-vitro and in-vivo roles of Mg2+ in the induction of "SOS" response and development of antibiotic resistance

Progress Report:

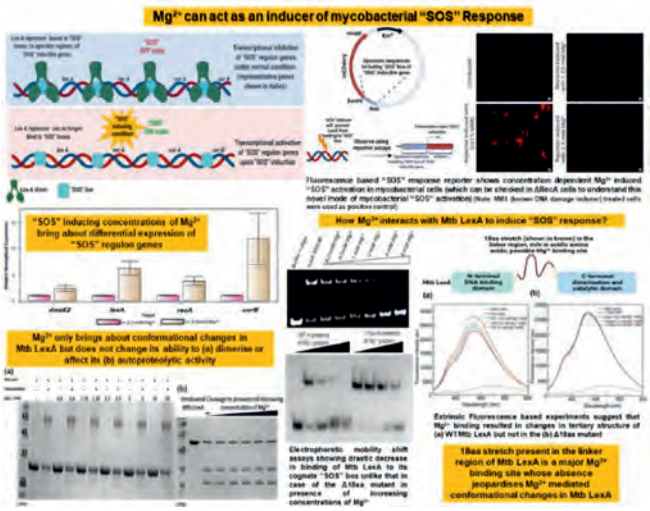
1. The first part of the study as detailed in the Mid-term report provides insights into the real-time kinetics of the interaction between Mtb LexA and its target "SOS" boxes, improving our understanding of mycobacterial "SOS" regulation ***(published in Bioscience Reports, 2021).*** FLAG-tagged WT Mtb

LexA and its mutants have been used to carry out pull-down studies from Mtb H37Ra to elucidate their interacting partners.

2. To validate our preliminary observation of Mg^{2}+ mediated "SOS" response activation in mycobacterial cells, confocal microscopy was performed with a fluorescence-based reporter, whereby cells treated with 2.5mM Mg^{2}+ showed increased fluorescence as compared to the control. Differential expression of "SOS" inducible genes was observed in presence of 2.5mM Mg^{2}+. Since extending these studies to ℒGRecA cells would help us in understanding the possible RecA independent nature of this mode of metal-dependent mycobacterial "SOS" activation, we electroporated ΔRecA cells (Kan^{R}) with engineered dnaE2-SOS+Up-mCherry reporter where the reporter's Kan^{R} resistance cassette was replaced by Hyg^{R} resistance cassette and this remains to be tested for reporter activity under increasing concentrations of Mg^{2}+. To elucidate the mechanism explaining the afore-mentioned observations, the major Mg^{2}+ binding site in Mtb LexA was identified. Mg^{2}+ was found to bring about conformational changes of Mtb LexA in a concentration dependent manner, reducing its affinity to bind DNA, without affecting its dimerization or autoproteolytic cleavage properties. We have attempted to obtain kinetic parameters of metal-protein interaction using isothermal calorimetry. Future studies will further reveal the underpinnings of this novel mode of mycobacterial "SOS" activation.

Highlights (3 bulleted points):

- Kinetic studies have provided insight into real-time dynamics of mycobacterial "SOS" regulation.
- Through our pull-down studies, we're a step closer to identifying interacting partners of Mtb LexA. This will help in strengthening our present understanding of one of the key master regulators of the mycobacterial "SOS" response pathway.
- Mg^{2+}-induced activation of mycobacterial "SOS" response has now been elucidated inside the cells as well and has been supported by our in-vitro studies. If our observations extend to ΔRecA cells, we can gain understanding into a novel RecA independent pathway involving metal-dependent mycobacterial "SOS" activation.



Project Number: 2019079

Project Title: Development and Neurological Application of High Definition Fibre Tracking

Project Investigator: B.V.R. Kumar (IITK), S.K.Pathak (Pittsburgh Univ, US)

Co-Investigator(s): Aditya Nigam (IIT Mandi), Chirag Ahuja (PGI, Chandighar), Walt Schneider (Pittsburgh USA, USA), Ajay Niranjan (Pittsburgh, USA)

Industry Collaborators (if any): -NAProject

Initiated on: Dec, 2019

Project objectives:

- Development of HDFT for Brain Fibre Tracking Patient Specific case studies with the new technology development

Progress Report:

- The HDFT pipeline for brain fibre tracking has been developed and successfully tested.
- Few papers have been published both in peer reviewed international journals and International conferences.
- We have also conducted an International Symposium followed by a One-Day International conference during Feb, 2021.

List of Papers published/communicated:

1) Ranjeet Ranjan Jha, B. V. Rathish Kumar, Sudhir K Pathak, Walter Schneider, Arnav Bhavsar, Aditya Nigam, Undersampled Single Shell to MSMT fODF Reconstruction using CNN-based ODE Solver in Computer Methods and Programs in Biomedicine (Communicated: Under review)
2) Ranjeet Ranjan Jha, Sudhir K Pathak, Vishwesh Nath, Walter Schneider, B. V. Rathish Kumar, Arnav Bhavsar, Aditya Nigam, "VRfRNet: Volumetric ROI fODF Reconstruction Network for estimation of Multi-Tissue Constrained Spherical Deconvolution with only Single Shell dMRI" in Magnetic Resonance Imaging Journal, 2022 (Impact Factor: 2.546)
3) Ranjeet Ranjan Jha, S Pathak, W Schneider, BVR Kumar, A Bhavsar, A Nigam, ''LFANet: Transforming 3T single-shell to 7T multi-shell dMRI using deep learning based Leapfrog and Attention" in 2021 IEEE International Symposium on Biomedical Imaging (ISBI-2022).
4) Ranjeet Ranjan Jha, Hritik Gupta, Sudhir Pathak, Walter Schneider, B. V. Rathish Kumar, Arnav Bhavsar, Aditya Nigam, ''Enhancing HARDI reconstruction from undersampled data via multi-context and feature inter-dependency GAN" in 2021 IEEE International Symposium on Biomedical Imaging (ISBI-2021).
5) Ranjeet Ranjan Jha, G Jaswal, A Nigam, A Bhavsar, SK Pathak, R Kumar "HLGSNet: Hierarchical and Lightweight Graph Siamese Network with Triplet Loss for fMRI-based Classification of ADHD" in International Joint Conference on Neural Networks (IJCNN - 2020).
6) Abdul Halim, B.V. Rathish Kumar, Sudhir K. Pathak, Walt Schneider, Aditya Nigam and Chirag Ahuja, A Colour Image Segmentation Method and Its Application to Bio-medical Images (Communicated to CNSNS, 2022)

Highlights (3 bulleted points):

- Automatically segmented the human brain tractography based neuronal fiber data into meaningful tracts.
- Brain fibre tracts corresponding to Arcuate, Cingulum, Corticospinal, Forceps Major, Fornix, Inferior Occipitofrontal Fasciculus, Superior Longitudinal Fasciculus, Uncinate etc., from human brain MRI data have been successfully traced.
- Clinically the obtained brain fibre tracts added additional value especially in terms on diagnosis.

Project Number: MoE/STARS-1/626
Project Title: Improving pulse (Chickpea and soybean) production and nitrogen content of the soil by nano iron pyrite seed treatment
Project Investigator: Prof. Mainak Das
Co-Investigator(s): NA Industry Collaborators (if any): NA
Project Initiated on: Sanctioned on September 2019 and initiated in February 2020

Project objectives:
Studying the fruit yield, root-shoot growth, soil fertility, and rhizobium population during 2 years of field and greenhouse trial in legumes (chickpea and soybean); while growing them by pre-treating them with nano iron pyrite and comparing the results with water treated controls.

- Root growth, elemental analysis of the root, Root nodule formation, soil fertility testing following harvesting of the crop a. Analyzing the root architecture following seed treatment b. Quantifying the elemental composition of the root c. Quantifying root nodule growth and nitrogenase activity d. Testing the soil nitrogen at the end of the crop cycle
- Shoot growth, chlorophyll content, elemental analysis of the shoot, Fruit yield and nutritional analysis of the fruit a. Analyzing the shoot growth b. Quantifying chlorophyll a and b content in the leaves c. Elemental analysis of the shoot and fruit d. Quantifying the fruit yield e. Nutritional evaluation of the fruits
- Studying the physiological effects on the 2nd generation of the seeds to verify whether first generation seed treatment has any carry-over effect on the 2nd generation fruits a. Evaluating whether the germination and growth potential of the second generation of seeds shows any improvement; in other words 'does the seed treatment effect is carried over to the next generation?'

Progress Report:
N2-fixing bacteria symbiotically dwell inside the root nodules of the legume and convert atmospheric N^2 to NH^3. Unlike high temperature-pressure Haber's process, this conversion in the nodule is orchestrated by nitrogenase: an enzyme with Fe-S, Fe-Mo, Fe-V cofactor; at its heart. Strategies to increase the nodule population could reduce nitrogen fertilizer use. We discovered that pre-treating the chickpea seeds with nano FeS_2 (iron pyrite) resulted in a denser root network with larger root nodules. It improved the shoot system and resulted in a higher yield. We observed a higher Fe, Mo, Mg, P, Ca, Mn, K in the roots: possibly emulating nitrogenase. Further, the nano pyrite-based seed treatment strategy is translatable to wheat grown in nutrient- deficient soil; without using any fertilizer. We found that the grain production for the test samples was higher as compared to the control. We quantified the skillet and root area and found it to be higher in the test samples. Higher root areas indicated better root foraging and helping the plants to draw more nutrients from the soil. Eventually, the accumulation of more nutrients leads to a higher yield and biomass.

Highlights (3 bulleted points):
Peer Reviewed Journal publications, book chapter, doctoral thesis and press coverage (2019-2021) Jangir, H., Bhardwaj, A. & Das, M. Larger root nodules increased Fe, Mo, Mg, P, Ca, Mn, K in the roots and higher yield in chickpea grown from nano FeS2 pre-treated seeds: emulating nitrogenase. Appl Nanosci 10, 445-V454 (2020).

Jangir, H., Bharadwaj, A., Srivastava, G., Das, M. *Fertilizer-free cultivation of wheat in nutrient-deficient soil by treating the seeds with nanopyrite.* Nanotechnol. Environ. Eng. 5, 9 (2020).

Jangir, H., Das, M. A journey of nano iron pyrite from the chemosynthetic world of hydrothermal vents to the photosynthetic world of agricultural fields: A new class of seed and root bio-stimulant 1st Edition, Nanotechnology in Sustainable Agriculture, Edited By: M. Anwar Mallick, Manoj K. Solanki, Baby Kumari, Suresh Kumar Verma; ISBN 9780367369408; July 9, 2021 Forthcoming by CRC Press (Taylor and Francis) Book Chapter: Release date July 9 2021 2020.
Jangir, H. Exploring sulfides to design strategies for sustainable agriculture and green energy PhD (July 2018-July 3 2020), Design Program, IIT Kanpur Doctoral Thesis: Outstanding PhD Thesis Award for the year 2020

Nanotechnology applications can boost agricultural output in emergencies;
https://india.mongabay.com/2020/05/Press coverage of our present work under STARS, MHRD

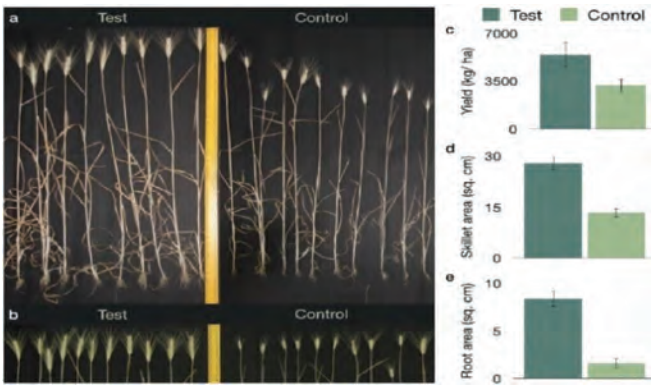


Figure 1. Higher yield in wheat following seed treatment with pyrite

Project Number: MHRD/ME/2020051
Project Title: On Some Challenging Boundary-Value-

Problems Arising in Vibro-Acoustical Study of Indian Musical Instruments
Project Investigator: Prof. Anurag Gupta
Co-Investigator(s): None
Industry Collaborators (if any): None
Project Initiated on: 24/02/2020

Project objectives:
- Development of rigorous mathematical models for studying acoustics of several Indian musical instruments;
- evelopment of numerical procedures to solve the resulting boundary-value-problems; (iii) Designing simple experimental procedures to verify the obtained numerical results.

Progress Report:
We have been investigating the vibro-acoustical behavior of certain percussion and certain string musical instruments from the Indian sub-continent. The former include mizh.vu, which is a big-bellied pitcher-shaped monofacial membranophone, presently used exclusively in the ritualistic Sanskrit theatre forms of Kerala, and bifacial Indian musical drums such as pakhawaj, mrdangam, dholak, dhol, iddakka, etc. The latter include tanpura, which is a drone instrument with immensely rich sound, and a class of string instruments (such as sarod, sarangi, esraj) where the bridge is placed over a stretched membrane. For all these instruments we have constructed mathematical models, have done finite element based numerical calculations, and some elementary experimental studies.

Highlights (3 bulleted points):
- The distinctiveness of mizhāvu, in comparison to other big-bellied drums (such as nagādā and timpani) is in its ability to produce a range of modal frequencies corresponding to the axisymmetric membrane modes. As a result, even with a simple thud on the membrane, an overtone rich sound is produced.
- The bifacial drums are interesting in that they allow for a coupling between the two membranes (via the air cavity and the wooden shell) in order to yield a distinctive acoustical spectrum. This is unlike the monofacial drums such as table and timpani.
- The structure of tānpur. is characterized by a large gourd which is connected to a long hollow tube. We have investigated the role of such structural features in the acoustically rich sound of the instrument.

Mizhāvu

Sarod

Project Number: MHRD/ES/2019522
Project Title: Flood Risk Assessment in Tropical Rivers in The Anthropocene And Under Climate Change Scenario Using Hydro-Geomorphic Modeling
Project Investigator: Rajiv Sinha
Co-Investigator(s):
Industry Collaborators (if any): NA
Project Initiated on: 15th May, 2020

Project objectives:
Our aim is to develop a process-based hydro-geomorphic model for flood risk assessment and developing flood hazard management strategies in the Ghaghra river basin, India. The specific objectives of this study are as follows:
- To understand the hydro-geomorphic processes and their variability using hydrological and morphometric analysis in the Ghaghra basin.
- To assess the spatio-temporal channel planform dynamics to establish form-process linkage and its influence on flooding.
- To assess basin scale sediment connectivity and sediment dynamics to identify the major hotspots of sediment sources, their pathways and examine their role in flood risk assessment.
- To perform flood inundation modeling and flood hazard mapping using hydro-geomorphic approach.
- To integrate all data for a comprehensive assessment of the flood hazard in the Ghaghra river basin.

Progress Report:
We have performed the hydrological analysis at three hydrological stations, namely Elgin Bridge, Birdghat and Turtipar (Figure 1). First, we checked the variability of the discharge and stage data at these stations and then performed the stage-based flood frequency analysis (FFA) for the given hydrological stations from where ~20 years of the daily stage and discharge data are available. The advantage with stage data is that it is measured frequently and is likely to be more accurate than discharge data. For FFA, we used L-moment analysis to check best fit model for our data and then we calculated the stage data for different return period. This data was further used to prepare 1st order flood inundation maps for different return period using accurate digital elevation model (DEM) in Global mapper. The accuracy of the Dem was assessed using the DGPS data as a reference. Further with the availability of 60 years hydrological data we have enhanced the flood frequency analysis and chose the maximum likelihood method to select the best fit model based on aic values.

One of the major components of this project is the land use land cover classification. For this we have tested LULC classification algorithms and performed change detection on Google Earth Engine (GEE) platform. These methods remove the problem of storing large volume of the data and reduces the time incurred in the classification. Algorithm testing was done using reference data based on google earth imagery, 70 % of the data was used in train the algorithm while 30% of the reference data was used for testing the accuracy of the results. Here we have checked the accuracy of the three most widely used supervised algorithm in GEE, namely, Random Forest (RF), Classification and Regression Tree (CART) and support vector machine (SVM).

Preliminary hydrological assessment of the upper part of the basin was done using hydrological station present in

the most upstream part of the basin in India. We observed that the normalized high discharge values for different basins were quite close however the normalized low discharge values of Ghaghra basin were quite low as compared to even smaller basins. The flood potential of Sharda River at Paliakalan is high as compared to other rivers. It also shows that there is a break point near 1985 after which the trend in the high discharge is found to be decreasing.

Data availability: The stage and discharge data for 31 hydrological stations in Ghaghra basin has been received and processed for further analysis.

Highlights:

- Performed stage-based flood frequency analysis to predict the return period of different stage levels.
- Generation of DEM based inundation maps for different stage levels without running data-intensive hydraulic model.
- LULC mapping of the basin using Google Earth Engine and hydrogeomorphic assessment of the upper part of the basin and its flood potential. Hydrological analysis (Trend analysis and flow duration curves) has been completed and geomorphic assessment is in progress.

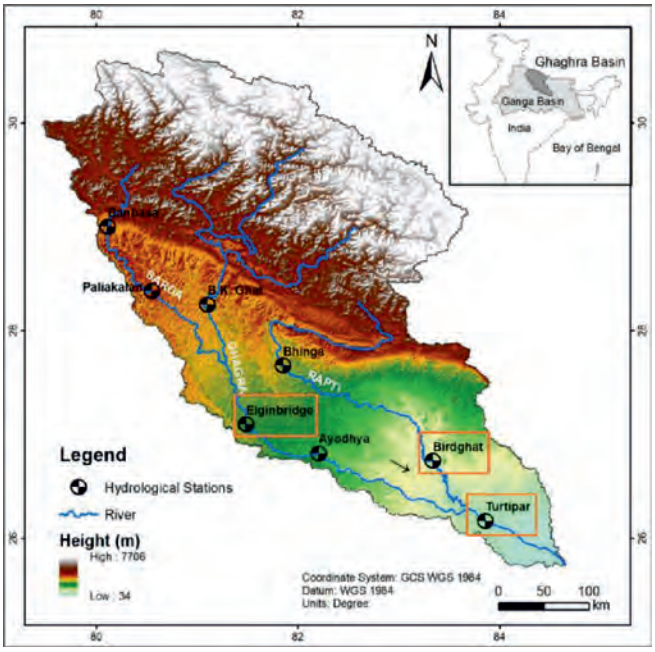


Figure 1: Location of three hydrological station, where stage and discharge data were available, and we have performed stage-based flood frequency analysis.

Project Number: SPARC/2018-2019/P1256/SL
Project Title: Development of a precise gravimetric geoid for mainland India using terrestrial, airborne and satellite gravity data
Project Investigator: Prof. Balaji Devaraju
Co-Investigator(s)/Collaborators (if any): Prof. B. Nagarajan (IITK), Prof. Onkar Dikshit (IITK), Prof. Will Featherstone (Curtin University, Australia), Prof. Sten Claessens (Curtin University, Australia)
Project Initiated on: March 15, 2019

Project objectives:

- Develop a gravimetric geoid model for India.
- Develop an optimal combination strategy for the heterogeneous gravity data.
- Develop the first high resolution (1¡¨) terrain correction map of India.
- Update CartoDEM using the developed geoid from this project to provide orthometric heights.

Progress report:
The main objective of this project was to develop a geoid model of India. The objective has been achieved using three different techniques ¡V the Curtin University of Technology (CUT) method, the University of New Brunswick method (UNB) method and the Royal Institute of Technology Stockholm (KTH) method. The geoid model has also been validated with the limited amount of GNSS/Levelling data available through Survey of India. The data quality of the input gravity anomalies could not be ascertained. One of the project deliverables, the software has been prepared and is being tested. A monograph is being prepared on the subject.

Highlights (3 bulleted points)

- A geoid model of India has been developed using three different techniques.
- The geoid model has been validated using available GNSS/Levelling data.
- The software for geoid modelling is being tested for operational processing

Project Number: IITK/DIR/2019435
Project Title: Leadership for Academicians Program (LEAP-2020)
Project Investigator: Prof. Avinash Agarwal
Co-Investigator(s)/Collaborators (if any): N/A
Project Initiated on: Delhi Phase: February 18-March 4, 2021, Phase-II: June 11-19, 2022 (Proposed)

Project Objectives:

- The leadership programme proposed is intended for training and grooming the second level leadership in major government technical institutes/ universities. The goal of the programme is to sensitize the participants about the need to address the issue of good governance and responsibility in a manner that will generate an enabling environment for the practitioners of the trade ¡V students and faculty, to perform and flourish, and take their respective organizations to greater heights in terms of overall performance.
- This program is intended to impart required leadership skills to the participants for the pursuit of excellence in academics and research, faculty and student management, team building, infrastructure development, new educational pedagogy, institution building, financial planning, innovation and incubation, addressing gender- / diversity-related issues, understanding the governance structure, alumni and international relationships, general administration and handling interpersonal relationship

Progress Report:

- Eminent speakers, educationalist, bureaucrats and academic leaders across the country presented their views about the leadership in academic institutions and guided the future academic leaders of the country.
- After a rigorous selection process from various institutes and universities, a total of thirty participants were chosen to participate in the programme. There were 21 participants from the IIT system, 01 from the IIIT system, 03 from the NIT system and 05 from the university system.
- A total of 67 eminent speakers participated and interacted with the participants on a variety of topics, ranging from Institution Building, Statutory Functions and governance, Academic and Research Excellence, Student Management, Internationalization and Alumni Relations, Gender/ Diversity issues, Global Rankings and Scientometrics, Faculty Recruitment and development, Industry-Academia Collaboration, Financial Management, Interpersonal Relations, National Needs, Resource Generation, administration, taxation etc. to expose the future academic leaders with challenges they are expected to face in academic administration.

Project Number: MHRD/MDES/2016-261
Project Title: DTH Channel 11 & 16, SwayamParabha
Project Investigator: Prof. Satyaki Roy
Co-Investigator(s): Prof. Munmun Jha & Prof. Shantanu Bhattacharya
Industry Collaborators (if any): N.A
Project Initiated on: 31stAugust, 2016

Project objectives:
SwayamPrabha Channels (11 &16) of IIT Kanpur has been stared with an aim to initiate new ways of learning by educating students with better and improved methods of curriculum. It offers education through virtual class room and students can access digital repositories from SwayamPrabha portal. SwayamPrabha-Team at IIT Kanpur is dedicated to carry education direct to home of the learners through the SwayamPrabha DTH channels.

Progress Report:
Both of the SwayamPrabha channels have introduced new educational areas and acquainted students with advanced learning methods. The channels are producing courses for both undergraduate and graduate students. Around 130 hrs.of content developed during last financial quarter in the field of Humanities and Social Sciences, Economic Sciences, and Management and Mechanical Engineering. This online learning portal is not only beneficial for students; it is also useful for the faculties and instructors.

Highlights (3 bulleted points):

- We have introduced more experimental lectures with the test modules to provide a blend of theoretical and applied learning and to achieve more viewers in the upcoming financial year.
- Based on the feedback received, we have also started recording several courses in Hindi.
- We are also planning to introduce live sessions which could generate more interest among the learners.

Since inception of channels, it has aired around 7895 hours of course contents.

Project Number: LDAIITK/MEDC/2021180
Project Title: Central Sector Scheme For MOOCs-Complaint e-content creation (NPTEL Phase IV)
Project Investigator: Prof. Satyaki Roy
Co-Investigator(s): Prof. Vimal Kumar
Project Initiated on: 31st August,2016 (Approval letter dated 31st March 2009 already submitted at R&D)

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 completed 323 courses. In the current ongoing semester (JANUARY-APRIL'22), we offered 70 courses. Now, we are in the final stage of publishing the results and generating the e-certificates. In the next semester, we are offering 77 courses of which first set of courses will start from 25th of July 2022 and the second set of courses will start from 22nd of August 2022.There are close to 4200+ local chapters today with identified expert faculty members of these institutions serving as local mentors for the students enrolled in NPTEL courses. We actively conducted several NPTEL E-Awareness workshop both in English and Hindi through ZOOM due to the pandemic. 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.

Highlights (3 bulleted points):
NPTEL Domain: NPTEL Domain Certification is the best way to gain expertise in an area of interest, gain mastery to pursue higher education and become more employable for jobs in opted area. Courses grouped to help learner's specialize in 51 domains across 12 disciplines. Completing a domain helps to gain expertise in a specific area. This can be helpful for learners who wish to work in a particular area as part of their job or research. Example: VLSI or Power Electronics domain in Electrical Engineering. Apart from this, for students in colleges, getting a domain certificate, which involves completing the specified 5 or 6 courses would indicate to recruiters about how motivated and independent the students are to become a domain scholar.

NPTEL+: NPTEL has launched the new portal NPTEL+ to expand the variety of offerings and courses for learners. At present, 3 types of training programs are proposed:

- NPTEL courses in self paced mode: NPTEL is now offering self-paced courses where learners may progress through the course and complete assignments at their own pace. Once a learner joins these courses, they may watch video lectures, and complete assignments as per their convenience. Learners may also choose to write a remote proctored online exam from the comfort of their homes and earn a certificate.
- Short term training programs from the IITs/IISc: Short term training programs which might involve fully live lectures coupled with hands-on training or a blended mode of learning (recorded videos+live lectures) are planned to be offered. These would primarily be by the faculty of various IITs, IISc, etc and would be on fixed dates with fixed timings for the sessions.
- Other programs: These programs include courses from institutes/organizations that are partnering with NPTEL. The contents are targeted towards specialized courses in an emerging technology or complementing the existing NPTEL courses with dedicated hands on content to equip the learners to be industry ready.

International NPTEL Learners: NPTEL is setting up modalities to conduct in-person exams in as many countries as possible. Currently, we conduct in-person exams in the following cities outside India.

- UAE - Dubai, Sharjah, Abu Dhabi
- Bahrain - Manama
- Sri Lanka - Colombo, Jaffna
- Kuwait - Salmiya

Also, we actively conduct remote proctored examination for students residing in other countries.

Some representative Figures.

- 1.3 Billion+ YouTube views
- 37 lakhs+ YouTube subscribers
- 2300+ unique courses available for self-study
- 1.6 crore+ enrollments
- 15 lakhs+ exam registrations
- 4500+ Local Chapter colleges
- 3500+ MOOC's completed
- 60+ Industry associates

URL's for reference listed below:

NPTEL Portal: https://nptel.ac.in/
NPTEL Local Chapter: https://nptel.ac.in/localchapter
NPTEL GATE Portal: https://gate.nptel.ac.in/
NPTEL Domain Certification: https://nptel.ac.in/domains
NPTEL+: https://elearn.nptel.ac.in/
SWAYAM Central Portal: **Error! Hyperlink reference not valid.**
NPTEL Online Certification (NOC) Presentation: https://drive.google.com/file/d/1NODOHtunh8l-0CjZ709TvW9iNblIaAEZ/view

Project Number: 1442 (MHRD/ES/2019225)
Project Title: The Socio-economic Costs of Road Crashes in India - Evaluation of the Role of Ex-ante and Ex-post Policies
Project Investigator: Prof. Murali Prasad Panta
Co-Investigator(s)/Collaborators (if any): Prof. Praveen Kulshreshtha/ Prof. Aniruddha A Desai
Project Initiated on: 23rd July, 2019 (Funds received on 7th November, 2019)

Project objectives:

To study the socio-economic costs of injured across smart cities in order to evaluate the role of *ex- ante* and *ex-post* policies on road crashes in India; To obtain measurable metrics using visual surveillance to evaluate the intensity of road crashes; and, To analyse Experiences on road crashes in Australia.

Progress report:

We have organised a panel discussion on "CAUSES AND SOLUTION OF ROAD CRASHES IN INDIA: THE ROLE OF INDUSTRY AND INSTITUTIONS" at the 5th International Conference on Law and Economics (ICLE), 2019, IIM Bangalore, during 28th & 29th December, 2019.

We had organized a symposium on "Mahatma Gandhi's Principles: In the Perspective of Alcoholism and the Road Crashes', on the eve of 150th Birth Anniversary of Mahatma Gandhi at IIT Kanpur.

We have conducted a survey and obtained the information from a few of the Sub-inspectors of the study area that is Kanpur, Agra and Lucknow. In addition, we are in the process of reaching the selected respondents (victims) to obtain the necessary information. We also exploring the data collection from various government agencies.

Highlights (3 bulleted points):

- Our study examines the role of *ex-ante* and *ex-post policies to reduce the true costs of accidents and to improve the quality and longevity of life; and,*
- *Visual surveillance aid-oriented* information generation and dissemination on road crashes.

Project Number: MHRD/MET/2018064
Project Title: Virtual Lab -V Phase III
Project Investigator: Prof. Kantesh Balani
Co-Investigator(s)/Collaborators (if any): N/A
Project Initiated on: 24/04/2018

Project objectives:

The main objectives of the Third Phase of the Virtual Labs project are: to develop a methodology for the development of new lab experiments by identifying gap areas with the involvement of all stake holders and to host the newly-developed experiments on a Central Server.

Progress report:

Total of 23 experiments were to be developed by IIT Kanpur for Phase III Virtual Lab, wherein IIT Kanpur had developed 29 experiments (six additional experiments, Annexure 1). The review of all the labs has been done and are hosted on central server (status of lab updated in Annexure 1)

In Addition to this,

- English to Hindi conversion of virtual lab has been done in which "Material Response to Microstructural, Mechanical, Thermal and Biological Stimuli Virtual Lab" was translated to Hindi language.
- Migration of lab from Phase 2 to Phase 3 template in which "Material Response to Microstructural, Mechanical, Thermal and Biological Stimuli" lab. Virtual Lab has been transferred to Phase 3 template done which is in beta-hosting.
- Proposals for the development of new experiments for phase 4 of virtual lab were submitted. A total of 22 proposals (~200 experiments) has been submitted.
- Virtual Aerospace Engineering Lab has been re-hosted after FLASH conversion.

Overall summary:

After affiliation with AKTU, we are doing very good in recruiting the nodal centers. Herein, REC Banda and PSIT Kanpur have been promoted to regional nodal centers which have thrusted forward the pace of popularizing Virtual Labs. The development of 29 experiments has been done and the review of labs is done by the reviewer and central hosting is done to the website. Also for the Phase 4 of virtual lab a total of 22 proposals (~200 experiments) has been submitted for Phase 4 of virtual lab. Migration of lab from Phase 2 to Phase 3 template is done and English to Hindi conversion of one virtual lab has been done.

Highlights (3 bulleted points):

- 23 Virtual Lab experiments were committed, but already 29 experiments are being developed and have been reviewed by the reviewer and central hosting is done to the website.

  Migration of Phase 2 labs to phase 3 template and Hindi conversion of one Virtual lab is done.

  Over 69.5M views nation-wide of virtual labs across the consortium (out of which 9.53 lakh views are from IIT Kanpur) are marked by google analytics (since Jan. 2020) as labs are getting included to provide the demographic distribution of virtual labs.

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Annexure 1: List of Labs and experiments have been developed

S. No.	Lab Name	Expt. ID	Name of Experiment	Status
1.	Python for Basic Arithmetic Operations	1403	Arithmetic Operations	Central-hosted
		1404	Built-in Functions	Central-hosted
		1405	Loops	Central-hosted
		1406	Data Types	Central-hosted
		1407	Strings	Central-hosted
		1408	Classes and Objects	Central-hosted
		1409	Built-in Modules	Central-hosted
		1410	Constructors and Inheritance	Central-hosted
		1411	File Operators	Central-hosted
2.	Electron Microscopy for Beginners	1439	Feature Size measurement: Porosity, Grain, and Reinforcement	Central-hosted
		1440	Effect of Beam voltage on conducting and insulating samples	Central-hosted
		1442	Basic operations of Transmission Electron Microscope (Imaging and Diffraction Pattern)	Central-hosted
		1443	Bright Field Imaging and Dark Field Imaging	Central-hosted
		1444	Electron Diffraction for various materials	Central-hosted
		1445	Indexing of Diffraction Patterns (Ring Pattern & Spot Pattern)	Central-hosted
		1446	Sample Preparation for TEM analysis (Bulk metal, Powder sample, Brittle material)	Central-hosted
		1447	Cross-sectional Sample Preparation	Central-hosted
		1438	Basics of Scanning Electron Microscopy: Secondary Electron and BSE imaging mode	Central-hosted
		1441	Elemental mapping: Spot, Line and Area Analysis	Central-hosted
3.	Basics of Physics	1400	Energy Band Gap of Semiconductor	Central-hosted
		1401	Radiation with Temperature Change Using Stefan's Law	Central-hosted
		1402	Finding Viscosity of Liquid by Rotating Cylinder Method	Central-hosted
		1432	Measurement of the wavelength of monochromatic source of light with the help of Fresnel's Bi prism	Central-hosted
		1433	Measurement of focal length of the combination of the two lenses separated by a distance	Central-hosted
		1434	To measure specific rotation of cane sugar using Polarimeter	Central-hosted
		1435	Measurement of high resistance by the method of leakage of condenser	Central-hosted
		1436	To study polarization of light using He-Ne Laser	Central-hosted
		1399	Carey Foster's Bridge to Measure Specific Resistance of Material	Central-hosted
		1437	Measurement of Numerical aperture and attenuation constant of optical fibre	Central-hosted
4.	**Migration of lab from Phase 2 to Phase 3 template is done and English to Hindi conversion of one virtual lab has been done which is hosted in beta-hosting.**			

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

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 was 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 usage count of 9.65 lakhs is obtained (page-views, workshops and webinars), which is almost six times the targeted user-count of view committed in two years. A total of 200+ workshops have been conducted. Also, flash-based 12 older experiments have been converted to the newer format. A total of 108 nodal centers **(Annexure 2)** have been created with affiliation to IIT Kanpur till Mar. 28, 2022. Also Online showcase of 75 Virtual lab Experiments event was held(30-Nov-2021) where 75 virtual lab experiments was demonstrated by faculty, the experiments were developed in eBOOTATHONs (vlabs development training program). Online Faculty Development program on Uses of Virtual lab held where speakers from engineering colleges took sessions on various dimensions of virtual lab. (3-Dec-2021 to 9-Dec-2021).

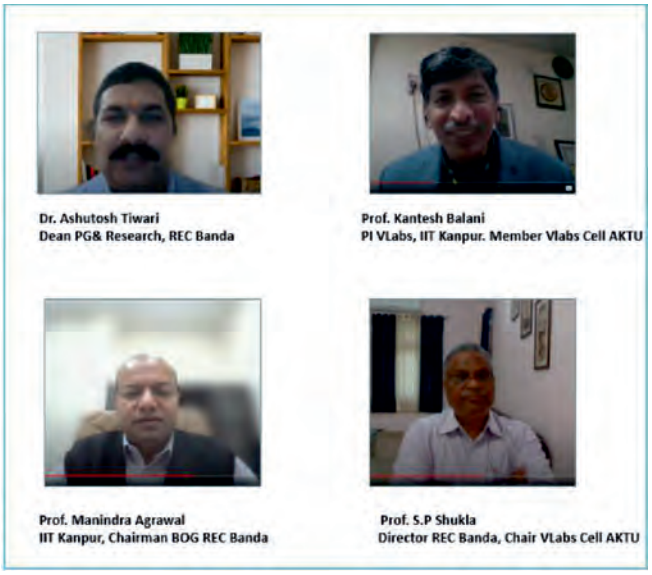
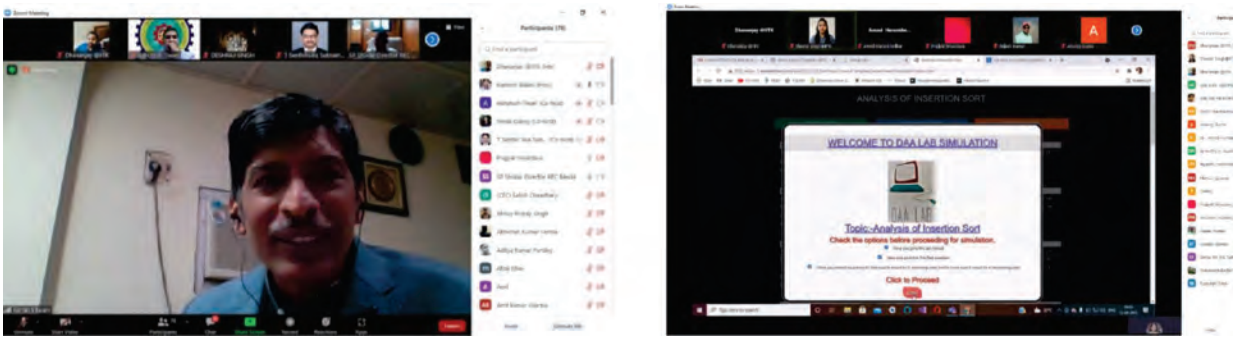


Fig: Online FDP on Uses of Virtual Lab (03-Dec-2021 to 09-Dec-2021)



- *FIg: Online showcase of 75 virtual Lab experiments event commemorating 75 Years of India's Independence (30-Nov-2021)*

Target of achieving required users is achieved, and 100+ nodal centers are linked. Overall summary:

- Phase II of Virtual Lab has started (since Oct. 2014).
- The target of taking 3 labs to level six was decided (which was extended to 3 additional lab, making a total of 6 labs to FOSS level 6). The list of current stats of virtual labs is provided in **Annexure 3** (targets achieved). Two additional were taken to FOSS level 5.
- One regular project engineer, one project associate with few student interns were 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.

Highlights (3 bulleted points):

1. Six labs have been hosted and six labs have achieved FOSS level 6, and also two others have achieved FOSS level of 6 (The commitment was for only three labs to reach 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 project engineer, one project associate and regular project technician are available for the project development.
3. Currently, the number of nodal centers is 108. The usage count (of 9.65 lakhs in two years) has substantially exceeded the annual targeted count of 54,000.

Annexure 2: List of Nodal Centers:

S. N.	College	Regional Center	Date	Contact Person
1	Dr. Ambedkar Institute of Technology for Handicapped, Kanpur	IITK	Apr. 16, 2014	cpverma.2007@rediffmail.com
2	Global Group of Institutions, Lucknow	IITK	Feb. 19, 2015	dean@ggi.org.in
3	Hindustan Institute of Technology and Management, Agra	IITK	Apr. 17, 2015	directorhitm@sgei.org, manishgupta.hitm@sgei.org
4	Pranveer Singh Institute of Technology, Kanpur	IITK	Apr. 21, 2015	aparna.dixit@psit.ac.in
5	Saraswati Gyan Mandir Inter College, Indira Nagar, Kanpur	IITK	Apr. 21, 2015	sopanbajpai@gmail.com
6	Kendriya Vidyalaya, IIT Kanpur	IITK	Apr. 27, 2015	kviit@iitk.ac.in
7	Babu Banarasi Das University, Lucknow	IITK	May 06, 2015	seethalk07@gmail.com
8	Krishna Engineering College, Ghaziabad	IITK	July 16, 2015	director@krishnacollege.ac.in
9	Bharat Institute of Technology, Meerut	IITK	July 17, 2015	dg@bitmeerut.edu.in
10	JSS Mahavidyapeetha, Noida	IITK	July 24, 2015	hodcse@jssaten.ac.in ,principal@jssaten.ac.in
11	KV Cant, Kanpur	IITK	Aug. 17, 2015	kvkcantt@gmail.com
12	Seth Anandram Jaipuria, Kanpur	IITK	Aug. 24, 2015	sajsknp@rediffmail.com,
13	Vidya College of Engineering, Meerut	IITK	Oct. 13, 2015	vce@vidya.edu.in , info@vidya.edu.in
14	Puran Chandra Vidya Niketan, Kanpur	IITK	Oct. 31, 2015	principalpcvn@gmail.com
15	Kanpur Institute of Technology, Kanpur	IITK	Oct. 31, 2015	vd@kit.ac.in
16	Disha School, Raipur	IITK	Dec. 24, 2015	principal.dishaschool@dishamail.com

17	Maharana Pratap Group of Institutions, Kanpur	IITK	Feb. 16, 2016	Mohit1003@yahoo.co.in
18	Government Industrial Training Institute Girls College	IITK	Feb. 20, 2016	ru.gitinlr@gmail.com
19	CSJMU (UIET), Kanpur	IITK	Aug. 01, 2016	jainrenu@gmail.com
20	Saraswati Vidya Mandir Inter College, Fatehpur	IITK	Aug. 08, 2016	ramvidyamandirc@gmail.com
21	Rama University, Kanpur	IITK	Aug. 16, 2016	info@ramauniversity.ac.in
22	College Of Engg. Science & Tech., Lucknow	IITK	Aug. 20, 2016	Jprasad3859@yahoo.in
23	Creative Convent Inter College, Lucknow	IITK	Aug. 24, 2016	sachanyogendra@gmail.com
24	Lucknow Convent Public Inter College, Lucknow	IITK	Sep. 06, 2016	Kumaravinash10july@gmail.com
25	Amal Jyothi College of Engineering, Kerala	IITK	Oct. 10, 2016	principal@amaljyothi.ac.in
26	Rohini College of Engineering and Technology, Tamil Nadu	IITK	May. 13, 2017	principal@rcet.org.in
27	CIPET, Lucknow	IITK	Oct. 30, 2017	Cipetlko2@gmail.com
28	Shambhunath Institute of Engineering and Technology, Allahabad	IITK	Nov. 27, 2017	director@siet.in
29	Ajay Kumar Garg Engg. College, Ghaziabad	IITK	Mar. 03, 2018	akgecor@akgec.org
30	Raj Kumar Goel Institute of Technology, Ghaziabad	IITK	Mar. 03, 2018	akagrfpo@rkgit.edu.in dr.puneet@rkgit.edu.in
31	Integral University, Lucknow	IITK	Mar. 14, 2018	info@iul.ac.in, rhfatima@iul.ac.in, dpr@iul.ac.in
32	Atma Ram Sanatan Dharma College, New Delhi	IITK	Mar. 20, 2018	principal.arsdcollege@gmail.com
33	Allenhouse Institute of Technology, Kanpur	IITK	Mar. 26, 2018	director@allenhouse.ac.in, me.avinash@allenhouse.ac.in
34	Rajkiya Engg College, Kannauj	IITK	Mar. 27, 2018	viveksrivastavakash@gmail.com, rajeev@reck.ac.in
35	Christ Church College, Kanpur	IITK	Jun. 07, 2018	rkdwivedi1963@gmail.com
36	Galgotias Educational Institutions, Greater Noida	IITK	Jul. 05, 2018	director@galgotiacollege.edu
37	Rajkiya Engineering College, Banda	IITK	Oct. 30, 2018	ashutosh.tiwari0885@gmail.com
38	Axis Colleges, Kanpur	IITK	Nov. 23, 2018	abhayshukla@axiscolleges.in aitmvlab@axiscolleges.in
39	Teerthanker Mahaveer University, Moradabad	IITK	Nov, 27, 2018	jayshree2004@gmail.com
40	Swami Vivekanand Subharti University, Meerut	IITK	Nov. 29, 2018	registrar@subharti.org supratim.saha2000@gmail.com
41	Invertis University, Bareilly	IITK	Nov, 29, 2018	info@invertis.org
42	Madan Mohan Malaviya University of Technology, Gorakhpur	IITK	Nov. 30, 2018	dean_ug@mmmut.ac.in, rkvme@mmmut.ac.in,
43	The Millennium School, Lucknow	IITK	Dec. 05, 2018	dubeydhatri@gmail.com, manjula.goswami@themillennium
44	Vishveshwarya Group of Institutions, Greater Noida	IITK	Dec. 05, 2018	deanresearch@vgi.ac.in
45	Aligarh College of Engineering & Technology, Aligarh	IITK	Dec. 06, 2018	thenuamahesh76@gmail.com
46	ITS Ghaziabad	IITK	Dec. 10, 2018	itsmn@its.edu.in
47	Shri Krishna college of Engineering and Technology, Tamilnadu	IITK	Dec. 13, 2018	info@skcet.ac.in

48	CIPET Bhopal	IITK	Dec. 10, 2018	Cipet.bhopal@gmail.com
49	Anand Engineering College Technical Campus, Agra	IITK	Jan. 03, 2019	director.aec@sgei.org
50	Saraswati Dental College, Faizabad Road, Lucknow	IITK	Jan. 07, 2019	smdc@saraswaticolleges.com
51	Green Valley Sr. Sec. School, Bhopal	IITK	Jan. 22, 2019	greenvalley5529@gmail.com
52	Army Public School, Bareilly	IITK	Feb. 23, 2019	apsbareillycantt@gmail.com, armyschool_2007@rediffmail.co
53	Delhi Public School, Agra	IITK	Mar. 05, 2019	office@dps.ac.in,qc@dps.ac.in
54	KL International, Meerut	IITK	Mar. 13, 2019	info@klischool.com, principal@klischool.com
55	Kamla Nehru Institute of Technology, Sultanpur	IITK	April. 24, 2019	arvind@knit.ac.in,Director@knit.ac.in
56	Katihar Engineering College, Katihar	IITK	May. 22, 2019	arbind.geit@gmail.com
57	RustamJi Institute of Technology, Gwalior	IITK	Jun. 01, 2019	ussharma001@gmail.com
58	Buddha Institute of Technology, Gorakhpur	IITK	Jun. 21, 2019	bodhgayabitengg@gmail.com
59	Raja Balwant Singh Engineering Technical Campus, Agra	IITK	Jul. 03, 2019	tu04@rediffmail.com
60	IPS Academy, Indore, Madhya Pradesh	IITK	Jul. 04, 2019	director.ies@ipsacademy.org
61	BD College, Patna	IITK	Jul. 11, 2019	Principalbdcpatna@gmail.com
62	Rajdhani Engineering Collage, Bhubaneshwar, Orissa	IITK	Jul. 18, 2019	rec_bbsr@yahoo.co.in
63	Gandhi Institute for Technology, Orissa	IITK	Jul. 19, 2019	principal@gift.edu.in
64	AKS University, Satna	IITK	Jul. 20, 2019	psiitd@yahoo.com
65	Swami Vivekanand University, Sagar	IITK	Jul. 26, 2019	rajesh.dubey118@gmail.com
66	Shobhit University, Meerut	IITK	Jul. 22, 2019	mail@shobhituniversity.ac.in
67	RD Engineering College, Meerut	IITK	Aug. 02, 2019	info@rdec.in
68	National Institute of Science and Technology, Odisha	IITK	Aug. 24, 2019	
69	Motihari College of Engineering, Bihar	IITK	Aug. 31, 2019	
70	Hindustan Institute of Management & Computer Studies, Mathura	IITK	Sep. 05, 2019	director.himcs@sgei.org
71	SATI Engineering College, Vidisha, Madhya Pradesh	IITK	Sep. 26, 2019	director@satiengg.org, jsccivil@rediffmail.com
72	Vananchal College of Science, Garhwa, Jharkhand	IITK	Oct. 03, 2019	vcs_garhwa@rediffmail.com
73	IET, Dr. Ram Manohar Lohia Avadh University, Faizabad	REC, Banda	Apr. 17, 2020	directorietfzd@gmail.com srivastava_anoop@rediffmail.com
74	Kali Charan Nigam Institute of Technology, Banda	REC, Banda	Apr. 22, 2020	kcnit2002@rediffmail.com
75	Bundelkhand Institute of Engineering & Technology, Jhansi	REC, Banda	Apr. 23, 2020	sayub@bietjhs.ac.in
76	BN College of Engineering and Technology, Lucknow	REC, Banda	Apr. 25, 2020	director@bncet.ac.in
77	RR Institute of Modern Technology, Sitapur Road, Lucknow	REC, Banda	Apr. 28, 2020	ersaurabhdixit1987@gmail.com,
78	Madan Mohan Malaviya University of Technology, Gorakhpur	REC, Banda	Apr. 28, 2020	rkvme@mmmut.ac.in

79	Rajkiya Engineering College, Bijnor	REC, Banda	Apr. 28, 2020	suneelkm17@gmail.com
80	Goel Institute of Technology and Management, Lucknow	REC, Banda	Apr. 28, 2020	dr.devendra@goel.edu.in
81	Rajkiya Engineering College, Mainpuri	REC, Banda	May. 03, 2020	pks.cse13@gmail.com
82	Buddha Institute of Technology, Gorakhpur	REC, Banda	May. 04, 2020	abhinav514@bit.ac.in
83	IIMT College of Engineering, Greater Noida	REC Banda	May. 11, 2020	research.iimtgn@iimtindia.net Hodme_gn@iimtindia.net
84	Pandit Prithi Nath (PG) College, Kanpur	PSIT	May. 18, 2020	satish0402@gmail.com
85	Institute of Technology and Management, Gorakhpur	REC, Banda	May. 27, 2020	hodme@itmgkp.edu.in
86	Meerut Institute of Engineering & Technology, Meerut	REC, Banda	May. 31, 2020	arvind.pandey@miet.ac.in
87	BITT Polytechnic, Ranchi	IITK	Jun. 01, 2020	principalbittp@gmail.com
88	Feroze Gandhi Institute of Engineering and Technology, Raebareli	PSIT	Jun. 04, 2020	sharmarameshfgiet@gmail.com
89	School of Management Sciences, Lucknow	PSIT	Jun. 06, 2020	hemantsingh@smslucknow.com
90	SR Institute of Management and Technology, Lucknow	PSIT	Jun. 06, 2020	dharmesh2809@gmail.com
91	Chaibasa Engineering College, Jharkhand	IITK	Jun. 11, 2020	Arijitdutta351@gmail.com Principal.gecc@gmail.com
92	DAV College, Kanpur	PSIT		chauhanrasmi@gmail.com
93	MJP Rohilkhand University, Bareilly	PSIT	April. 25,2020	drarchana.physics@gmail.com
94	Shree Narayan Inter College, Auraiya	PSIT		Dixit.brajesh58@gmail.com
95	Greater Noida Institute of Technology, Greater Noida	REC, Banda	Jun. 25, 2020	priyesh@gniot.net.in
96	S.V.P College, Bhabua (Kaimur) Bihar	IITK	Jul. 01,2020	rajkg66@gmail.com
97	Dumka Engineering College, Jharkhand		Jul. 14,2020	psarkar.bit@gmail.com
98	Ram Garh Engineering College, Jharkhand	REC Banda	Jul. 15,2020	brajesh.nitrkl@gmail.com
99	Dr. Ambedkar Institue of Technology, Bengaluru	REC Banda	Aug, 08,2020	nandiniks1@dr-ait.org
100	Gramin Mahila (PG) College Sikar Rajasthan	PSIT	Aug. 06, 2020	kcbhanu@gmsssikar.org
101	HBTU, Kanpur	REC Banda	Aug. 20, 2020	gldevnani@hbtu.ac.in
102	PSIT College of Engineering, Kanpur	PSIT	Aug. 25, 2020	ec@psitcoe.ac.in
103	PSIT College of Higher Education, Kanpur	PSIT	Sept.02, 2020	fc18072@psitche.ac.in
104	Lingaya's Vidyapeeth, Haryana	IITK	Aug.09, 2021	vimal@lingayasvidyapeeth.edu.in
105	Shri Ram Polytechnic, Madhubani, Bihar	IITK	Nov.29, 2021	academic.coordinator@shrirampolytechnic.org
106	Rameshwaram Institute of Technology and Management, Lucknow	PSIT	Dec.12, 2021	raisulhasan1973@gmail.com, director@ritm.ac.in
107	Adamas University, Kolkata	RECB	Feb.14, 2022	sujoy.bhattacharya@adamasuniversity.ac.in
108	Chaudhary Charan Singh University, Meerut	IITK	Mar. 28, 2022	anilphy@ccsuniversity.ac.in, anilsaciitb.ac.in

Annexure 3: List of Labs at IIT Kanpur and Analytics (Available only since Jan. 01, 2020)

Sr. No.	Lab Name	PI Name	FOSS Level
1	Virtual Astrophysics Lab	Prof. P. K. Jain	6
2	Ultrafast Laser Spectroscopy	Prof. D. Goswami	6
3	Material Response to Micro-structural, Mechanical, Thermal & Biological Stimuli	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	Prof. V. Srivastava, Prof. J. Akhtar	5
7	Transducers and Instrumentation Virtual Lab	Prof. N.K.Verma	5
8	General Purpose Production Simulation Lab	Prof. D. Philip	6
9	Basics of Physics	Prof. Kantesh Balani	6
10	Electron Microscopy for Beginners	Prof. Kantesh Balani	6
11	Python for Basic Arithmetic Operations	Prof. Kantesh Balani	6

IITK Virtual Labs Analytics since Jan 1st 2020

	Lab URL	Users ▾	Pageviews	Avg. Page Load Time (sec)	Avg. Session Duration (hh:mm:ss)
1.	Basics of Physics	78.2K	478K	2.09	00:05:07
2.	Material Response to Micro Structural & Mechanical & Thermal and Biological Stimuli	41K	167.1K	9.95	00:04:02
3.	Python Programming Lab	18.7K	186.9K	2.67	00:05:49
4.	Virtual Astrophysics Lab	8.7K	29K	3.07	00:02:16
5.	Ultra fast Laser Spectroscopy Lab	4.4K	10.5K	3.76	00:02:37
6.	Virtual Combustion and Automization Lab	4.3K	18.5K	2.7	00:04:13
7.	Electron Microscopy For Beginners	2.6K	18.6K	1.71	00:06:13
8.	Virtual Lab Aerospace Engineering	2.2K	11.1K	1.22	00:05:30

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Cumulative Page views	919.8K

FINANCE

The Institute has a decentralized financial management structure, organized largely by the primary source(s) of funds.

FY2021-22 accounts are prepared as per the guidelines of Ministry of Education (MoE), the administrative ministry of the Institute, conveyed vide their letter no. 29-4/2012-IFD dated April 17, 2015. The unaudited accounts were duly adopted by Chairman, Board of Governors (BOG) on June 28, 2022.

The accounts are available with the title 'Un-audited Annual Accounts (2021-22)' at the following link:
https://www.iitk.ac.in/new/annual-accounts

Following are the highlights of Institute's FY 2021-22 financials:

* Balance sheet size of over Rs. 4,496 Crore, without any valuation added for the IIT brand.
* Operating income is of Rs. 724.35 Crore (excluding deferred revenue income w.r.t. depreciation of Rs. 141.86 Crore), of which Rs. 617.56 Crore was spent towards operating expenditure and Rs. 57.13 Crore towards repayment of HEFA Loan. Income to the tune of Rs. 16.46 Crore has been ploughed back as retained earnings for repayment of HEFA loan.
* MHRD released revenue and capital funds of Rs. 552.03 Crore and Rs. 62.49 Crore respectively under schemes Support to IITs and Prime Minister Research Fellowship.

Table below presents the summary of financial status for the FY2021-2022

INDIAN INSTITUTE OF TECHNOLOGY KANPUR

INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31MARCH 2022

(Amount in Rs)

PARTICULARS	SCHEDULE	CURRENT YEAR 2021-22	PREVIOUS YEAR 2020-21
INCOME			
Academic Receipts	9	66,81,94,364	73,29,15,895
Grants/Subsidies			
Grants against Salary	10	2,56,45,00,000	2,35,25,33,559
Grants against Pension	10	89,90,46,968	81,71,54,489
Grants against Others	10	1,09,99,13,051	1,02,70,55,105
Grants against Scholarships	10	77,53,39,981	71,76,85,939
Grants against HEFA Interest	10	10,46,62,823	9,00,30,608
Grants against P M Research	10	7,67,97,939	3,97,32,120
Income from Investments	11	34,71,21,099	26,92,34,555
Interest earned	12	2,20,30,809	2,09,36,275
Other Income	13	68,55,25,597	1,00,65,42,914
Prior Period Income	14	3,37,122	-
Deferred Revenue Income	4	1,41,86,63,368	-
TOTAL (A)		**8,66,21,33,121**	**7,07,38,21,459**
EXPENDITURE			
Staff Payments & Benefits (Establishment Expenses)			
MHRD Grant Salaries	15	2,46,11,18,009	2,21,92,50,688
MHRD Grant Retirement and Terminal Benefits	15	1,51,46,17,248	1,70,81,31,325
Academic Expenses			
MHRD Scholarships	16	77,53,39,981	71,76,85,939
Other Academic Expenses	16	32,95,63,710	21,07,69,468
Administration and General Expenses	17	45,06,27,585	40,23,69,586
Transportation Expenses	18	-	-
Repairs & Maintenance	19	47,96,30,418	45,07,15,691
Finance Costs	20	11,03,15,337	9,02,93,262
Depreciation	4	1,42,62,51,913	24,18,968
Other Expenses	21	4,66,80,963	3,24,42,950
Prior Period Expenses	22	77,973	-
TOTAL (B)		**7,59,42,23,137**	**5,83,40,77,877**
BALANCE BEING EXCESS OF INCOME OVER EXPENDITURE (A-B)		**1,06,79,09,984**	**1,23,97,43,582**
Utilization Against HEFA Loan		**57,13,00,000**	**48,11,50,000**
Utilization against Capital Expenditure		**-**	**43,10,88,901**
Internal Receipts Retained for HEFA loan		**16,46,40,357**	**-**
BALANCE BEING SURPLUS/(DEFICIT) CARRIED TO CAPITAL FUND		**33,19,69,627**	**32,75,04,681**

The P. K. Kelkar Library provides access to the resources in all formats to meet the research and teaching needs of the Institute. The library is equipped with RFID technology and facilitates self-check-in/self-check-out and inventory management. Our web catalog enhances the way to search and retrieve resources, enables print options, support rating, comments, making of lists, and exports search results in different formats. The library has CCTV for better surveillance & security and high-speed Wi-Fi internet access. Library subscribes to its periodicals in digital form and books in both print and electronic. During the period, a total of Rs.1840.27 Lacs was spent on new resources.

A. ACQUISITION UNIT

During the financial year 2021-22, PK Kelkar Library spent Rs. 1840.27 Lacs on Books and Journals. Expenditure details as per significant collections are given below in Fig. 1.

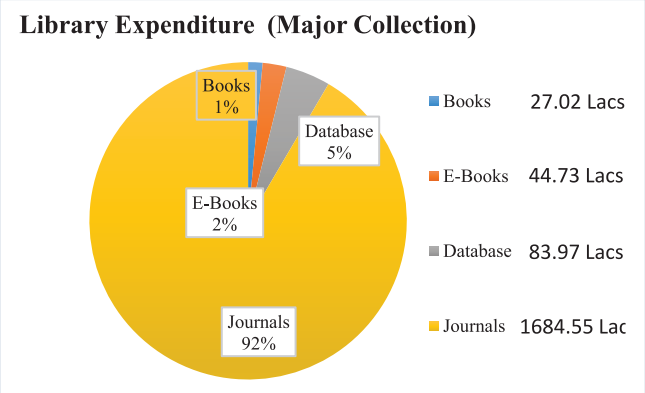


Fig. 1

Books:

The institute library continues with its efforts to procure largely e-Textbooks on priority along with print books during FY 2021-22 to facilitate reading materials. During this period, the library procured 422 books (print+ebook) by spending an amount of Rs.71.75 lakhs, including 322 print books and 100 e-books.

In addition, a total of 116 books added to the collection were through donations. The donors of these gifted books were duly acknowledged.

The departmental breakup of the purchased books is placed in Table-I.

Table–I: Departmental breakup of the purchased books

Department/ Centers	No. of books purchased	
	Print	Electronic
Aerospace Engineering	5	8
Biological Science & Biological Engineering	0	6
Civil Engineering	41	7
Centre for Lasers and Photonics	1	0
Chemical Engineering	13	4
Chemistry	7	10
Cognitive Science	45	0
Computer Science Engineering	11	9
Design Programme	3	0
Economics Science	3	1
Electrical Engineering	28	3
Earth Sciences	4	10
Humanities and Social Sciences	31	5
Industrial & Management Engineering	2	4
Mathematics and Statistics	5	5
Mechanical Engineering	65	10
Materials Science and Engineering	6	11
Materials Science Programme	5	0
Nuclear Engineering & Technology	0	0
Physics	44	7
Sustainable Energy Engineering	3	0

Online Resources

The library has subscribed and provided campus-wide access to more than 13350 peer-reviewed journals and 24 bibliographic, citation, and factual databases for 2022.

The expenditure for subscribing to various online resources (journals and databases) was Rs.1768.52 Lacs (GST included). The primary subscribed online resources from different publishers are mentioned in Table-II.

Table-II: Online resources

Library Subscribed	eSS supported
1. American Chemical Society	1. ACM Digital Library
2. American Physiological Society	2. American Institute of Physics
3. APA PsycArticles	3. American Physical Society
4. Cambridge University Press	4. Annual Reviews
5. CMIE database (selected datasets)	5. ASCE Journals Online
6. EBSCO (selected datasets)	6. ASME Journals Online
7. Economist Magazine	7. Economic & Political Weekly
8. Elsevier (ScienceDirect)	8. ISID Database
9. Grammarly	9. J Gate Plus (JCCC)
10. IEEE/IET	10. JSTOR
11. Indiastat	11. MathSciNet
12. Institution of Civil Engineers	12. Nature
13. Institute of Physics	13. Oxford University Press
14. Optical Society of America	14. Project Muse
15. Royal Society of Chemistry	15. Springer
16. SAGE Publications	16. Web of Science
17. SciFinder	**
18. Scopus	**
19. SIAM	**
20. Springer-Nature	**
21. Taylor and Francis	**
22. Thomas Telford / ICE	**
23. Walter De Gruyter	**
24. Wiley	**

Technical Processing

All the books added to the library collection were informed to the students, faculty members, and academic staff through weekly lists of new additions by e-mail Web OPAC link every Monday. The technical processing unit processed all newly acquired, old books for modifications/damage of labeling, bar-coding, RFID tagging, etc.

B. ARCHIVES UNIT

Archives serve as "reminiscences" of an institute. The functions of the Institute Archives Unit are to acquire, arrange, describe and preserve documents of the Institute. Archives Unit has an excellent collection of a. Photographs like Institute convocations, events, functions & essential occasions of the Institute b. Institute annual reports, brochures, pamphlets, DVD's, and personal records of retired faculty & staff. Archived data are made searchable and retrievable through Intranet only. During the period, 15 reports were archived.

C. AUTOMATION:

Our personnel maintain the library's dynamic, secured website (https://pkklib.iitk.ac.in). The site provides information and navigation to the resources subscribed by the library. These contents are updated regularly. The library also develops and maintains various web-based services, such as an in-house e-Textbook gateway. The online request of Untraceable books, library resources usage statistics, resources manuals, budget details, new arrivals of books, etc., are other services provided through our website. The total number of theses that were archived reached 18604 up to March 31, 2022.

During the Covid-19 pandemic, the unit successfully handled users requirements in digital mode. SSL Certificate implemented in servers to secure the Library website (https://pkklib.iitk.ac.in), Web OPAC (https://libserv.iitk.ac.in) and Institutional repository (https://etd.iitk.ac.in:8443/jspui/).

D. CIRCULATION AND MAINTENANCE UNIT

The unit's functions include the issue and return of reading materials, resolving references and referral queries, binding of library holdings, inter-library loan (ILL), archival of thesis in electronic format, and other activities like issuing dues/no dues clearance. It also worked to repair and maintain the library building premises, equipment, furniture, and fittings.

Circulation statistics

During the above period, 29613 books were checked out/renewed, and 12834 were checked in. A total number of 42447 transactions were carried out. Eight (8) books were reported as lost, and a sum of Rs. 77172.00 was recovered, and three (3) books were also received to replace the lost book. One thousand seven hundred sixty-four students, 28 faculty members, 61 PDFs and 45 staff members were issued no dues.

Inter-library loan (ILL)

The library facilitates its users and other institutes for delivering the documents and books through resource sharing with other institutions. ILL unit also provides a reference and inter-library loan facility. During the period, 174 (71 internal & 103 external) document requests were fulfilled to IITK and other library users.

Archival of theses

During the period, 473 theses were archived in the Electronic Thesis and Dissertation (ETD) repository.

Binding section statistics

The library had spent an amount of Rs. 74,340.00 for the binding of 210 damaged/ mutilated books during the financial year.

Maintenance Unit

Other than regular maintenance work, the vinyl flooring of three floors was also completed.

Awards

Mr. Amrit Lal Saini was conferred the merit award 2021 for exemplary service with utmost commitment towards his duty.

Finally, I would like to place on record my thanks to all SLC members, library staff, institute administration, students, and security for their help in the smooth functioning of the library. Special mention must be made of the continued support from the Director and Deputy Director, without which modernization activity would have lost its rigours and enthusiasm.

DIGITAL INFRASTRUCTURE AND AUTOMATION

(a) COMPUTER CENTRE

Computer Centre (CC) caters to the computational and IT related needs of the academic as well as residential community at IIT Kanpur. The main facilities provided by CC are: High Performance Computing, Institute Local Area Network covering academic area, residential area and students' hostels, E-mail facility to over 13000 users, Computer Labs, Website development and maintenance, various software for specialized research and general use by the campus.

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. All the CC facilities are backed up by a UPS system and diesel generator for 24 hours uninterrupted supply.

The Institute Computer Center has three High-Performance Computing (HPC) setups. The latest one Param SANGANAK with a peak computing power of 1.67 Petaflops is designed and commissioned under National Supercomputing Mission (NSM) to cater to the computational needs of IIT, Kanpur, and various Research and Engineering institutes of the region. Two other Institute setups are HPC2013 and HPC2010, which have ranked 369 and 130 in top 500 lists (www.top500.org), in the November 2010 and June 2013 lists respectively. HPC2013 became ranked 118 in the top 500 lists in June 2014 with the addition of extra nodes. Param SANGANAK, HPC2013, and HPC2010 have configured over the InfiniBand network of 100Gbps, 56Gbps, and 40Gbps respectively and have 312 nodes, 893 nodes, and 468 nodes respectively. Together these setups have 1673 computational nodes. These HPC setups are extensively used by students, faculty members, and other researchers of the Institute.

The Institute has a fully managed Local Area Network of more than 25000 nodes, connecting all the hostel rooms, offices and residences over wired as well as wireless network. It has 10+2 Gbps connectivity to the Internet via different Internet service providers including NKN. CC provides single sign-on facility for seamless wi-fi connectivity within the campus and eduroam for seamless wi-fi connectivity for members travelling to participating institutes worldwide.

CC maintain 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 softwares are also hosted on central servers for use by students and faculty on their own computers.

(b) NEW OFFICE AUTOMATION- 'PINGALA'

The new office automation (NOA) is an institute project that functions under the department of digital infrastructure and planning (DDIA). It is an online automation portal for accessing various departments of the institute through an ERP system named "Pingala." The stakeholders of Pingala include the students, faculty, and campus residents. IIT Kanpur's new office automation project is named after the influential ancient scholar Pingala (c. 3rd/2nd century BCE), the author of Chandahsastra, who presented the binary numeral system to the world for the first time.

This online automation aims to provide ease in automation, easy report generation, and cross-platform portability through a secure information portal that provides data security. The most adaptable and preferred features include the mobile portability and scalability of the system. Through Pingala, the users can access the functionaries of prominent departments like DOAA, DOFA, DOSA, and other facilities like IWD and library with ease and security.

The project was kick-started in 2015, maneuvering to regulate the routine monotonous task to computers and enhance creativity for its users. Pingala is designed with the viewpoint of keeping the automation system user-friendly, aesthetic, secure yet simple and appealing.

The institute service covered under Pingala include administrative modules, academic modules, research project management systems, external connect systems, and E-payment gateways. Pingala not only caters to the students and faculty network but also all the campus residents through modules like complaint management system (CMS). As of now, Pingala is running 37 modules having sophisticated functionalities like faculty recruitment in DoFA, pre-registration in DoAA, and many more. Other essential services available on the online platform include employee leave system, address book, online survey, and faculty information system (FIS).

Pingala is available 24*7 for its users from every nook and corner of the world to access its elaborate functionalities and modules and aims to become more prevalent eventually with the pace of time.

CENTRE FOR CONTINUING EDUCATION

The Centre for Continuing 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 Outreach Building, First Floor, Room No. 207.

The activities are organized under two different cells, namely

1. Quality Improvement Programme (QIP)
2. Continuing Education Cell (CEC)

This write-up describes the various activities of the above two 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.5,000 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 (AICTE 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

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. 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 20% of the gross receipts of the course is chargeable by CCE 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 CCE for approval by the Deputy Director. Besides these programmes CCE will also approved the activities of Courses/ Workshop /Seminar/ Conferences/Symposium/Training programme throughout the year.

Summary of various activities during the year 2021-2022

1. QIP Students
   (a) M. Tech. Candidates admitted - Nil
   (b) Ph.D. Candidates admitted - 02
2. Short term courses conducted under QIP-Nil
3. Short term self-financed courses conducted - 55
4. Workshops/ Conferences/ Seminars conducted - 18

MEDIA TECHNOLOGY CENTRE

The Media Technology Centre, IIT Kanpur is engaged in development of high-quality educational content and its dissemination through Internet, Television and Radio Media. The center is currently involved with two major MOE Projects (NPTEL IVSwayam and Swayam Prabha) along with various other academic and research activities.

Facilities/Activities:

We have two state of the art recording studios equipped with High-Definition multi-camera set-up with 16 channel switcher, chroma, graphic tablets etc. for seamlessly recording the content. Also, we have cutting edge video editing platforms to produce high quality digital content.

- Engaged in creatingvideo-based course content for outreach education.
- Creative platform for the students, where they can explore their hidden talent and attain greater heights. Student of the Communication Design in the Design Program have an academic relevance to the resources of the centre. While PhD and M.Des students are engaged in media and design research, UG students continue to exhibit their ample creative talents by producing social campaigns, documentary films, radio programs and various web based applications exploiting the varied domains of media arts.
- Besides, there are undergraduate students of who utilize the resources to work on video assignments in HSS Level 1 and 2 courses.
- Audio Video recording facility of seminars,

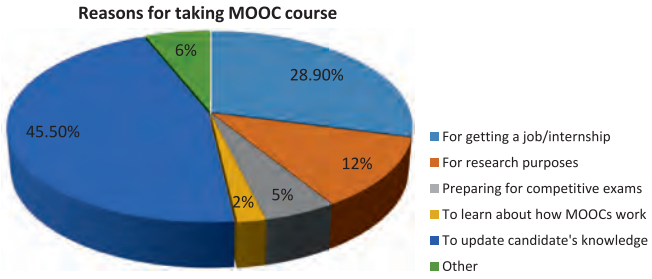
workshops, conferences, major institute eventsare available at a very nominal charge.

- A trained team of more than 50 project employees engaged in recording, editing and management of the generated e-content for the NPTEL Swayam Portal.

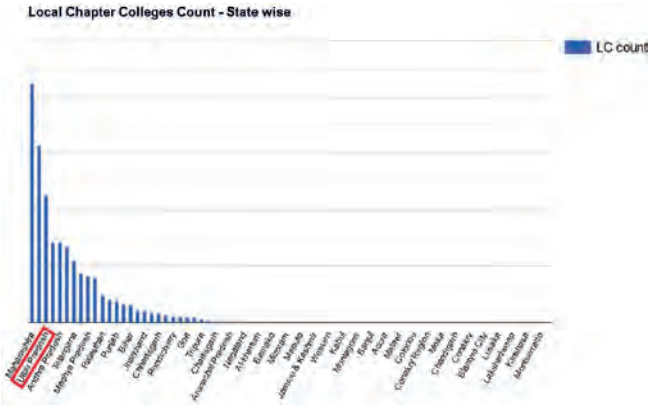
Central Sector Scheme for MOOCs-Complaint e-content creation (NPTEL Phase IV)

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 group for this project consists of students and faculty members of institutions offering Undergraduate/Postgraduate education in India.

Since 2014, IIT Kanpur has completed 323 courses. In the current ongoing semester (JANUARY-APRIL'22), we offered 70 courses. Now, we are in the final stage of publishing the results and generating the e-certificates. In the next semester, we are offering 77 courses of which first set of courses will start from 25th of July 2022 and the second set of courses will start from 22nd of August 2022.There are close to 4200+ local chapters today with identified expert faculty members of these institutions serving as local mentors for the students enrolled in NPTEL courses. We actively conducted several NPTEL E-Awareness workshop both in English and Hndi through ZOOM due to the pandemic. 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.



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 940 local chapters today with identified expert faculty members of these institutions serving as local mentors for the students enrolled in NPTEL courses. Since April2020 we have conducted online workshops both in English &Hindi.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.



Uttar Pradesh is the second largest state in the Local Chapter count(highlighted in the above figure).These Local Chapters are all under IIT Kanpur.

AICTE and NPTEL have signed an MOU whereby advanced NPTEL online certification courses are approved for Faculty Development Programme by AICTE. A large number of Advance Level Courses are being offered by NPTEL which are 1 credit, 2 credit and 3 credit courses. In the upcoming July 2021course run, IIT Kanpur is offering62courses of which 7are new and 55 are reruns.

Highlights:

NPTEL Domain: NPTEL Domain Certification is the best way to gain expertise in an area of interest, gain mastery to pursue higher education and become more employable for jobs in opted area. Courses grouped to help learner's specialize in 51 domains across 12 disciplines. Completing a domain helps to gain expertise in a specific area. This can be helpful for learners who wish to work in a particular area as part of their job or research. Example: VLSI or Power Electronics domain in Electrical Engineering. Apart from this, for students in colleges, getting a domain certificate, which involves completing the specified 5 or 6 courses would indicate to recruiters about how motivated and independent the students are to become a domain scholar.

NPTEL+: NPTEL has launched the new portal NPTEL+ to expand the variety of offerings and courses for learners . At present, 3 types of training programs are proposed:

- NPTEL courses in self-paced mode: NPTEL is now offering self-paced courses where learners may progress through the course and complete assignments at their own pace. Once a learner joins these courses, they may watch video lectures, and complete assignments as per their convenience. Learners may also choose to write a remote proctored online exam from the comfort of their homes and earn a certificate.

- Short term training programs from the IITs/IISc: Short term training programs which might involve fully live lectures coupled with hands-on training or a blended mode of learning (recorded videos + live

lectures) are planned to be offered. These would primarily be by the faculty of various IITs, IISc, etc. and would be on fixed dates with fixed timings for the sessions.

- Other programs: These programs include courses from institutes/organizations that are partnering with NPTEL. The contents are targeted towards specialized courses in an emerging technology or complementing the existing NPTEL courses with dedicated hands on content to equip the learners to be industry ready.

International NPTEL Learners: NPTEL is setting up modalities to conduct in-person exams in as many countries as possible. Currently, we conduct in-person exams in the following cities outside India.

- UAE - Dubai, Sharjah, Abu Dhabi
- Bahrain - Manama
- Sri Lanka - Colombo, Jaffna
- Kuwait-Salmiya

Also, we actively conduct remote proctored examination for students residing in other countries.

DTH Channels (11 &16), IIT Kanpur

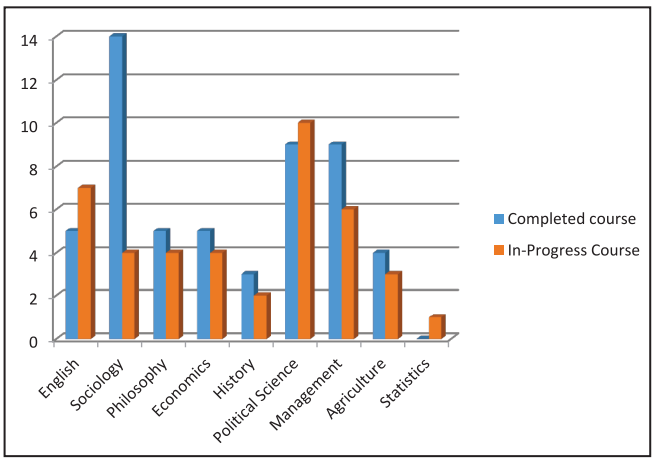
Swayam Prabha Channels (11 &16) of IIT Kanpur has been stared with an aim to initiate new ways of learning by educating students with better and improved methods of curriculum. It offers education through virtual classroom and students can access digital repositories from Swayam Prabha portal.

Swayam Prabha-Team at IIT Kanpur is dedicated to carry education direct to home of the learners through the Swayam Prabha DTH channels. Hitherto it has aired around 4960 hours of course content on both the channels during 2021-2022. During this financial year around 5 new courses (180) hrs. of content are being developed in Channel 11.

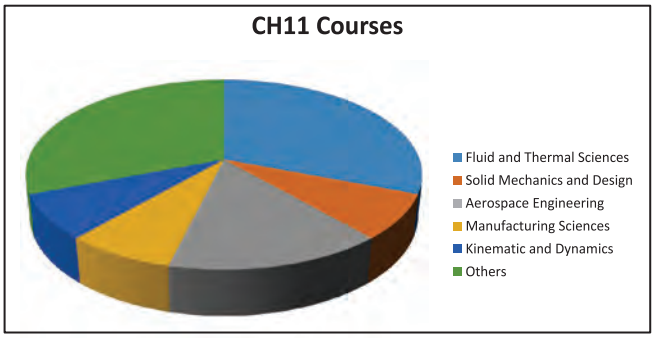
Exclusively channels 11 and 16 are being used to broadcast all the courses pertaining to the following mentioned department.

The Channel 16 of Swayam Prabha telecasts courses in Humanities, Social Sciences i.e Economics, Literature, Linguistics, Philosophy, Political Science, History, Sociology, Foreign Languages, Design, Psychology and different topics relevant to the Management studies. Channel 16 has 54 completed courses and 41 are in progress.

Channel 16 Academic Coverage:



The Channel 11
Channel 11 Academic Coverage:



Major Achievements:

Several new courses in Hindi Vernacular are being aired to help students learn and enhance their knowledge base and skills.

As desired by MOE, both of channels IIT Kanpur (11 &16) currently telecasting several new courses catering to the 2nd year of engineering education (B.Tech).

Both of the Swayam Prabha channels have transmitted around 10 new "Tutorial Based Courses" amounting to 140 hrs. of content on Portal. Lectures recorded at other institutes are also being sourced from here (Channel 11 and 16) on Swayam Prabha Portal.

FM 90.4 Community Radio Station

IITK Community Radio serves the local community in and around the campus; our main objective is to broadcast content which is popular, relevant and useful to our listeners. We encourage people through our programs on local culture and art, health awareness and hygiene, education, agriculture and several other motivational content.

In the year 2021-2022 IITK community radio station aired programs like, Vigyan ke Anmol Ratn (Program based on the life of Scientists), Bharat ke Ajoobe (Program based on Wonders of India), Hauslon Ki Udaan (Program based on Inspirational People), Special Days(Information about

Special Days), Financial Literacy & Awareness based promo (Collaboration with RBI), voting awareness song created by IITKCR, Watan ka Raag (Program based on Freedom Fighters). Sangeet Sansaar (program based on Indian Musical Instruments). Educational Program (Collaboration with CIET and NCERT). Program based on Covid-19 Prevention Campaigns and Covid-19 Vaccination(Myths and Misconception),Interviews with Doctors and Health workers (Corona Warriors) and asked about the Myths and Misconception about Corona and importance of Vaccination. IITKCR appreciated by the Medical Health and Family Welfare Government of Uttar Pradesh and Unicef for Spreading Awareness On Covid Appropriate Behaviours. Tara Covid -19 Series (Program based on covid awareness).

Community Participation: (Interview with General Secretary, Media & Culture Gymkhana IITK, Interview with Head Media & Publicity Antaragni 2021, Interview with Ms. Rita Singh about Rozi siksha kendra IITK, Interview with IIT KV Principal Shri. R.N. Wadalkar). Mini RJ Workshop organized by IITCR.

Interviews with Communities about Campus activities, Social and educational issues.
Interviews and coverage of events in and around the campus (Faculty, students, community members and locals) are aired to provide inspiration to our listeners; this in turn has increased community participation and listenership.

A team of 13 young, active and dedicated members aim at generating interest in the minds and hearts of our listeners and raise awareness on issues of local and global importance to meet the real objective of community radio.

Organic Farming

A MOU has been signed between Prasar Bharati and IIT Kanpur to develop 26 episodes of 22minutes each on Organic Farming.

External Funding

The table below shows the external funding for the financial year 2021-2022

S. No.	Project Title & Agency	Category	Amount
1.	CSSMOOCs NPTEL IV, MHRD	Sponsored	3,93,07576.00
2.	Swayam Prabha, MHRD	Sponsored	1,13,35000.00
3.	Radio	Consultancy	17,86,000.00
Total			**5,13,28,576.00**

INTERNAL COMPLAINTS COMMITTEE

The Internal Complaints Committee (ICC), IIT Kanpur, first constituted under the Office Order No. DIR/IITK/2016/OO-04, dated March 9, 2016, has been undertaking its investigations under the Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013 and IIT Kanpur (Prevention, Prohibition and Redressal of Sexual Harassment of Students) Rules, 2017.

During the period April 1, 2021 to March 31, 2022, the ICC received 1 complaint from a Ph.D. student. In this case of harassment and stalking, the respondent has been issued a semester drop for two semesters and has also been debarred from entering the campus for this entire duration. Furthermore, his academic programme in IIT Kanpur would resume after a certification from a medical board.

WOMEN'S CELL

a. Conduction of department-specific awareness sessions on gender-based discrimination and sexual harassment were held for the members of the faculty, staff as well as postgraduate students of the following departments:

1. Aerospace Engineering Department: 17th July 2021
2. Biological Sciences and Bioengineering: 21st August 2021
3. Chemical Engineering Department: 18th September 2021
4. Civil Engineering Department: 13th November, 2021

b. Orientation session for new members of the faculty was held on 3rd April 2021. During this session, the new members of faculty were made aware of the mandate and the activities of the Women's Cell of IIT Kanpur. Further, they were informed about the following policy of the Institute. Policy on Romantic or Sexual Relationships between Individuals in Positions of Authority and Student/Employee of the Institute 2020.

c. An orientation session on issues related to sexual harassment and gender discrimination was held for the newly admitted Y21 postgraduate students (summer admission) on 27th July, 2021.

d. An orientation session on issues related to sexual harassment and gender discrimination was held for the newly admitted Y21 undergraduate students on 14th November 2021.

e. An orientation session on issues related to sexual harassment and gender discrimination was held for the newly admitted Y21 postgraduate students (winter session) on 8th January 2022.

The Institute is committed to maintain a work environment wherein faculty, staff and student members from different community can work in a coherent environment. It is the Institutes endeavor to ensure that no discrimination takes place at workplace. The Institute has appointed a Liaison Officer who can be contacted in the event of any incident of caste based discrimination. Particulars of Liaison Officer are as under:

Name: Dr. R K Sachan
Designation: Joint Registrar
Department: Dean, Research and Development
Email ld: sachan@iitk.ac.in
Contact No.: 0512 259 7385

An online complaint register portal is being created for the SC/ST/OBC/PwD community to register their complaint officially. The url of the portal is given below:

http://www.iitk.ac.in/new/complains-of-caste-discrimination

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 for 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) Regular employees of IIT Kanpur who are educationally qualified and otherwise eligible can be considered for the recruitment upto a maximum of 50 years of age for Group-B & C posts, 55 years of age (upto Level-12) and 57 years of age (Level-13 & above) for Group-A posts. The due relaxation in upper age is made available for SC/ST/OBC/ PwD and Ex-servicemen candidates as per Central Govt. Rules;

(b) Age relaxation for Project Employees working in IIT Kanpur will be as per the Office Order No. DIR/IITK/2019/OO-73 dated July 04, 2019.

(c) SC/ST/PwD and Female candidates are fully exempted from payment of application and registration fees;

(d) 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., or actual fare incurred whichever is less by shortest route on submission of tickets in original.

Employment notification etc.:

During the period of report, the detail of Advertisement issued through Recruitment Section is as under:

Sl. No.		Name of the post(s)	No. of Vacancies							Published in
			SC	ST	OBC	PwD	EWS	UR	Total	
1		Deputy Registrar	1	-	-	-	-	2	3	All Editions of Times of India (Ascent), The New Indian Express Dainik Jagran (Nai Rahein + iNEXT + Mid day Mumbai), The Indian Express + Financial Express + Loksatta + Jansatta, Employment News/Rozgar Samachar and University news
2		Assistant Registrar (P K Kelkar Central Library)	1	-	-	-	-	-	1	
3		Assistant Registrar	-	-	3	1 (UR)	1	3	8	
4		Hindi Officer	-	-	-	-	-	1	1	
5		Students' Counselor	-	-		-	-	1	1	
6		Junior Technical Superintendent (Translation)	-	-	-	-	-	1	1	
7		JUNIOR TECHNICAL SUPERINTENDENT								
	A	ACMS	1	-	-	-	1	2	4	
	B	BSBE	1	-	-	-	-	-	1	
	C	Computer Centre	1	-	-	1 (UR)	-	1	3	
	D	Central Cryogenics Facility	-	-	-	-		1	1	
	E	Central Experimental Animal Facility	-	-	-	-	-	1	1	
	F	Earth Science	-	-	1	-	-	-	1	
	G	New Office Automation	-	-	-	-	-	1	1	
8		Junior Superintendent [Centre for Nano Sciences]	-	-	-	-	-	1	1	
9		Junior Superintendent	1	1	1	1 (UR)	2	8	14	
10		Physical Training Instructor	1	-	1	-	-	2	4	
11		JUNIOR TECHNICIAN								
	A	ACMS	1	-	-	-	-	3	4	
	B	Centre for Nano Sciences	-	-	-	-	-	1	1	
	C	Central Experimental Animal Facility	-	-	-	-	-	1	1	
	D	Chemistry	2	-	-	-	1	2	5	
	E	CSE	1	-	-	-	-	-	1	
	F	Earth Science	-	-	-	1-	1	1	3	
						OBC-HH				
	G	Sustainable Energy Engg.	-	-	1	-	-	1	2	
12		Junior Assistant	4	1	10	1-UR-OH 1-UR-VH	4	10	31	
13		Driver Grade-II	-	-	-	-	-	1	1	
		TOTAL	15	2	17	6	10	45	95	

The recruitment for all academic posts of Institute is made through the press/ professional journals/ circulars to educational institutes etc.

For Selection	Total **05** Selection Committee meetings: **05** S/C meeting, wherein SC and OBC representative included

Inclusion of SC/ST/OBC and Minority Community Member:

One SC/ST/OBC member of comparable status and if minority candidates are short-listed for selection process then one member of Minority Community is included in the Selection Committee as a full member. For the period of report, the detail of Selection Committee meetings held through Recruitment Section is given below:

Call letters for Interviews/Appointment letters:

1. To ensure that the appointment letters to the selected candidates are received by the candidates (including reserved category candidates) well in time – the appointment letters are being sent through registered post or courier and also through email to ensure the delivery and call letters to the short-listed candidates are being sent through email only.

2. Normally, a minimum of three weeks' time for call letters via email for written/ practical test or interviews and for appointments a minimum of one month's period of interval is being provided.

Existing Strength of Non-Academic Staff as on 01.04.2022

Recruited through Recruitment Section

Group	SC	%age	ST	%age	OBC	%age	GEN	Total	Mode of Selection		
									Contract	Regular	Deputation
A	06	13.95	01	2.32	08	18.60	28	43	*01*	*42*	-
B	51	18.61	12	4.37	59	21.53	152	274	-	*274*	-
C	63	24.80	01	0.39	65	25.59	125	254	-	*254*	-
TOTAL	120	21.01	14	2.45	132	23.11	305	571	*01*	*570*	-

CELL FOR DIFFERENTLY ABLED PERSON (CDAP)

Cell for Differently Abled Persons (CDAP) at IIT Kanpur, established on February 14, 2017, has the following objectives-

- To provide a conducive environment to all differently-abled students (hence referred to as SwD, Students with Disabilities), employees, and other casual workers of the institute.
- Work as a single window to cater to the needs of differently-abled people.
  ii. Coordinate with all the officials/departments to address the issues related to academics and accommodation on campus.
- CDAP, along with the other institutes/external bodies, has taken up the following initiatives towards the inclusive education of SwDs on campus-

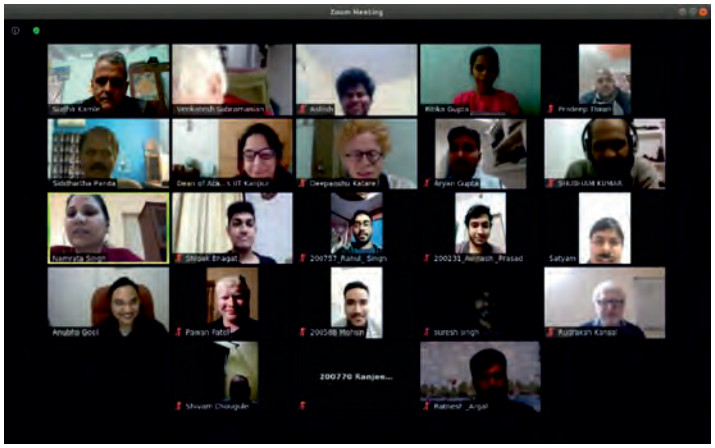
  1. Group Tutor System - to assist differently- abled students.
  2. Implementation of accommodation in examinations-
     a. Compensatory time
     b. Various textual or visual formats of question papers
     c. Availability of Scribes
3. Work with Student Placement Office to efficiently cater to the needs of SwDs during the recruitment process.

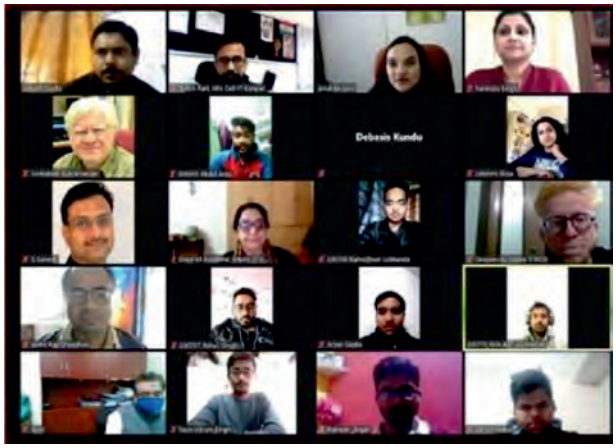
- To better understand the requirements of a SwD and to apprise them of facilities available on campus, CDAP uses an accommodation form adapted from XRCVC, Mumbai, for each student to gather information about their unique needs. The form is filled during the first few weeks of joining the campus for the first time and updated every year.
- Promote interaction with other institutes and enable exposure of challenged community on campus to external resources available through Invited talks by organizations from other institutes. PwDs with inspiring achievements and organizations working in PwD empowerment are regularly invited as guests during the CDAP Annual Day in January.

Covid Response

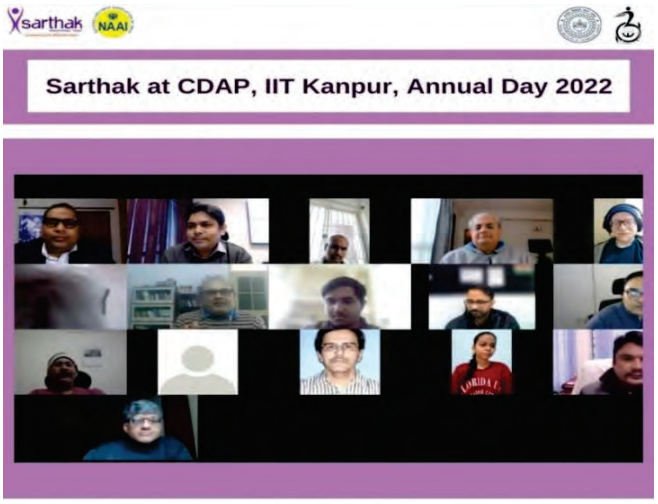
The Covid 19 pandemic brought the world to a standstill in 2021 and completely changed how we as a society came together. Everyone had to adjust their lives to entirely new modes of functioning radically. Even in this situation, CDAP continued working towards its mission.
In tailoring and implementing an appropriate Covid response, we at CDAP have worked the following-

- Students have been informed of several techniques to make e-content accessible online (OCR readers, software to convert speech to text, are some such tools).
- Virtual Fresher's Interaction Session 2021.
- Virtual celebration of Annual Day 2021 (International Day of Persons with Disabilities).





FRESHER'S INTERACTION SESSION



Chief Guest of Annual Day 2021: Dr. Jitendra Agarwal (CEO, Sarthak Educational Trust)

Highlights of the Year 2021

The vibrance of the first offline event after the Covid 19 outburst for about a year and a half. The Sport event on 'UDAAN' for the differently abled students was hosted by Team-UDGHOSH in collaboration with CDAP.

The "International Day of Persons with Disabilities" aims to promote the rights and well-being of persons with disabilities in all spheres of society and development, and to increase awareness of the situation of persons with disabilities in every aspect of political, social, economic and cultural life.

The theme for IDPD this year was **"Leadership and participation of persons with disabilities toward an inclusive, accessible and sustainable post-COVID-19 world."**

- **UDGHOSH 2021**

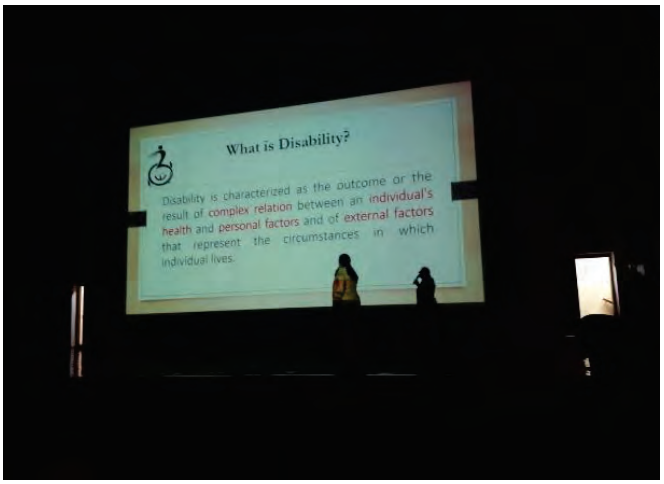
UDGHOSH, the annual sports meet of IIT Kanpur, which in the true sense, it is an exhibition of sporting fervor, with help of CDAP organized UDAAN, sports events for differently-abled students. This event every year mark visits by international level sportspersons in the DAP category.

Motivational Talk by Mr. Sharad Kumar (Para high jumper)

CDAP Team together with students of Deaf & Dumb School

- **Sensitization session for UG students during an Orientation 2021**

This session was interactive and was conceived in three parts: Understanding Disability and Inclusion, Simulation and Sensitization Activities and finally reflecting through Feedbacks. The session was a great way to make students realize the challenges faced by DAPs every day.

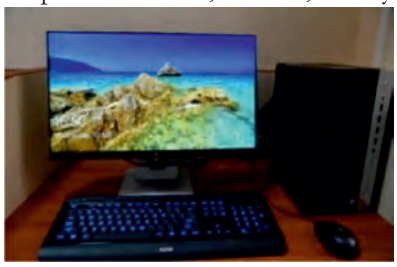


- **Digitized Accommodation**

In order to ensure the best quality for all, it is imperative for students with disabilities who seek to have any accommodations during their course of study, to fill and submit the Accommodation Intake Form. The forms, developed with assistance from XRCVC, Mumbai, have been digitized and are being filled online from this year at IIT Kanpur.

- **Assistive Technologies**

Some computers have been equipped with software to facilitate accessibility for visually challenged students. These computers are equipped with large monitors, assistive keyboard, and 3 special software, NVDA, Chatty Infty and Infty Reader. These PCs are available in computer center and library. Students are being trained on campus about how to use this software.



- **UDAAN (UDGHOSH)**

UDGHOSH with the help of CDAP organized sports events for differently-abled students under the initiative - UDAAN in 2018 and 2019.

✓ ***UDAAN Motto:*** As a progressive society, we have to encourage differently-abled society members to reach heights that they might have deemed a near impossibility.

CDAP members with Mr. Murlik Petkar, First Paralympic gold me

- **Sensitization Session**

A sensitizing session "How does it feel to be Different?" was conducted for students during the orientation. The session, hosted by Dr. Gaurav Raheja (IIT, Roorkee) was interactive and was conceived in three parts: Understanding Disability and Inclusion, Simulation and Sensitization Activities and finally reflecting through Feedbacks. The session was a great way to make students realize the challenges faced in every day by DAPs.

Sensitization session for stu

- **Alumni Connect**

CDAP sincerely acknowledges the support provided by alumni. We are grateful to Mr. Ranodeb Roy (Alumni BT-CSE, 1990) for supporting the needs of DAP students by donating INR 11 Lakhs through DORA. This fund will be utilized in providing necessary individualized support that maximizes academic and social development consistent with the goal of full inclusion. In year 2020 a student had benefitted from this initiative.

*Some plans for productive utilization of funding made available to CDAP are under processing.

Beneficiary: Mr. Sahil Khan

Media Coverage

DAINIK JAGRAN
(PAGE- 07) 15-01-2022

कैप सारथी एप से दिव्यांग छात्र ले रहे हैं जानकारी

जासं, कानपुर : आइआइटी में शुक्रवार को दिव्यांग प्रकोष्ठ का वर्चुअल वार्षिकोत्सव व अंतरराष्ट्रीय दिव्यांगता दिवस का आयोजन किया गया। इसमें दिव्यांगजन के अधिकारों व कल्याण के लिए विशेषज्ञों ने जानकारी दी। शुभारंभ प्रकोष्ठ के समन्वयक प्रो. कौशिक भट्टाचार्य ने किया। मुख्य अतिथि सार्थक एजुकेशन ट्रस्ट के संस्थापक व सीईओ डा. जीतेन्द्र अग्रवाल रहे।

प्रकोष्ठ के छात्र सदस्य दीपांशु कटारे ने मुख्य अतिथि का जीवन परिचय बताया। डा. अग्रवाल ने ट्रस्ट में हो रही गतिविधियों व रोजगार के अवसरों के लिए दिए जा रहे प्रशिक्षण की जानकारी दी। उन्होंने बताया कि पिछले वर्ष कैप सारथी नाम से एप लांच किया गया है, जिसमें रोजगार से संबंधित जानकारी उपलब्ध कराई गई है। इन दिनों ट्रस्ट आइआइटी, एनआइटी आदि संस्थानों में पढ़ रहे दिव्यांग विद्यार्थियों को रोजगार उपलब्ध कराने का प्रयास कर रहा है। प्रकोष्ठ के सदस्य प्रो. वेंकटेश ने भी छात्रों को दी जाने वाली सुविधाओं के बारे में बताया। सीडीएपी सेयरमैन प्रो. समित रे चौधरी ने निर्माण कार्यों की जानकारी दी। इस दौरान संस्थान के रजिस्ट्रार के.के तिवारी, डीन रिसर्च एंड डेवलपमेंट प्रो. एआर हरीश व शिकायत निवारण अधिकारी संदीप सिंह, प्रो. कौशिक भट्टाचार्य, प्रो. अनुभा गोयल, प्रो. केएस वेंकटेश, सत्यम गुप्ता, रितिका गुप्ता व अन्य छात्र उपस्थित रहें।

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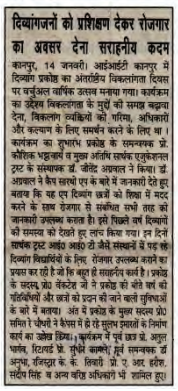

दिव्यांगजनों को प्रशिक्षण देकर रोजगार का अवसर देना सराहनीय कदम

कानपुर, 14 जनवरी। आईआईटी कानपुर में दिव्यांग प्रकोष्ठ का अंतर्राष्ट्रीय विकलांगता दिवस पर वर्चुअल वार्षिक उत्सव मनाया गया। कार्यक्रम का उद्देश्य विकलांगता के मुद्दों की समझ बढ़ावा देना, विकलांग व्यक्तियों की गरिमा, अधिकारी और कल्याण के लिए समर्थन करने के लिए था। कार्यक्रम का शुभारंभ प्रकोष्ठ के समन्वयक प्रो. कौशिक भट्टाचार्य व मुख्य अतिथि सार्थक एजुकेशनल ट्रस्ट के संस्थापक डॉ. जीतेंद्र अग्रवाल ने किया। डॉ अग्रवाल ने कैप सारथी एप के बारे में जानकारी देते हुए बताया कि यह एप दिव्यांग छात्रों को शिक्षा में मदद करने के साथ रोजगार से संबंधित सभी तरह की जानकारी उपलब्ध कराता है। इसे पिछले वर्ष दिव्यांगों की समस्या को देखते हुए लांच किया गया। इन दिनों सार्थक ट्रस्ट आईए आईटी जैसे संस्थानों में पढ़ रहे दिव्यांग विद्यार्थियों के लिए रोजगार उपलब्ध कराने का प्रयास कर रही है जो कि बहुत ही सराहनीय कार्य है। प्रकोष्ठ के सदस्य प्रो. वेंकटेश जी ने प्रकोष्ठ की बीते वर्ष की गतिविधियों और छात्रों को प्रदान की जाने वाली सुविधाओं के बारे में बताया। डॉ. ने प्रकोष्ठ के मुख्य सदस्य प्रो. समित रे चौधरी ने वेबसाइट में हो रहे सुलभ प्रयासों के निर्माण कार्य का उल्लेख किया। कार्यक्रम में पूर्व छात्र डॉ. अतुल पांचाल, रिटायर्ड डॉ. सुधीर कामले सहित समन्वयक डॉ अनुभा, रजिस्ट्रार के. के. तिवारी, प्रो. ए. आर हरीश, संदीप सिंह व अन्य वरिष्ठ अधिकारी भी शामिल हुए।

RASHTRIYA SAHARA (PAGE- 06) 15-01-2022

दिव्यांग प्रकोष्ठ का वर्चुअल वार्षिक उत्सव मनाया गया

■ सहारा न्यूज ब्यूरो
कानपुर।

आईआईटी में दिव्यांग प्रकोष्ठ का वर्चुअल वार्षिक उत्सव मनाया गया। इसके साथ ही प्रकोष्ठ की ओर से अंतरराष्ट्रीय विकलांगता दिवस का कार्यक्रम भी आयोजित किया गया। कार्यक्रम का उद्देश्य विकलांगता के मुद्दों की समझ को बढ़ावा देना और विकलांग व्यक्तियों की गरिमा, अधिकारों और कल्याण के लिए समर्थन करने के लिए था।

इस वर्चुअल समारोह का शुभारंभ प्रकोष्ठ के समन्वयक प्रो. कौशिक भट्टाचार्य ने किया। आयोजन के दौरान मुख्य अतिथि सार्थक एजुकेशनल ट्रस्ट के संस्थापक तथा सीईओ डॉ. जीतेन्द्र अग्रवाल ने लोगों को सम्बोधित करते हुए कार्यक्रम को आगे बढ़ाया। तत्पश्चात मौजूद प्रकोष्ठ के छात्र सदस्य दीपांशु कटारे ने मुख्य अतिथि के

आईआईटी में किया गया कार्यक्रम का आयोजन

कार्यक्रम का उद्देश्य विकलांगता के मुद्दों की समझ को बढावा देना और विकलांग व्यक्तियों के अधिकारों का समर्थन है

जीवन के बारे में वर्णन किया कि कैसे डॉ अग्रवाल शारीरिक कठिनाइयों के बाद भी आज इतने बड़े मुकाम पर पहुंचे हैं।

कार्यक्रम में डॉ अग्रवाल ने अपने संगठन सार्थक एजुकेशनल ट्रस्ट में हो रही गतिविधियों को बताया जो कि प्रमुखतः दिव्यांजनों के लिए है। संगठन में तरह-तरह के प्रशिक्षण कार्य चलते है। जिसके बाद लोगो को रोजगार का अवसर प्रदान होता है। उन्होने बीते वर्ष लांच सारथी नामक एप का भी उल्लेख किया। एप में रोजगार से सम्बंधित जानकारी उपलब्ध है। इन दिनों सार्थक ट्रस्ट आई.आई. टी .एन.आई.टी जैसे संस्थानों में पढ़ रहे दिव्यांग विद्यार्थियों के लिए रोजगार उपलब्ध कराने का प्रयास कर रही है।

प्रकोष्ठ के सदस्य प्रो. वेंकटेश ने प्रकोष्ठ की बीते वर्ष की गतिविधियों और छात्रों को प्रदान की जाने वाली सुविधाओं के बारे में बताया। इसके बाद प्रकोष्ठ के पूर्व सदस्य रिटायर्ड प्रो. सुधीर कामले ने अपना अनुभव और प्रकोष्ठ के प्रति सद्भावना व्यक्त की। कार्यक्रम में प्रकोष्ठ की पूर्व समन्वयक डॉ अनुभा ने प्रकोष्ठ में होने वाली भविष्य की गतिविधियों का वर्णन किया। कार्यक्रम के दौरान संस्थान के रजिस्ट्रार के के तिवारी, प्रो.एआर हरीश एवं शिकायत निवारण अधिकारी संदीप सिंह व अन्य वरिष्ठ अधिकारी भी मौजूद रहे।

STUDENTS' PLACEMENT OFFICE

Indian Institute of Technology (IIT) Kanpur is known for its academic excellence and is often the 'first stop' for the top ranked industries and research organizations to meet their hiring requirements. Students' Placement Office (SPO) functions as a facilitator for the placement activities and helps recruiters and students alike in making the best hiring decisions. The services rendered by SPO include recruiter registration, student training, résumé short-listing, facilitating the conduction of screening-tests, infrastructure arrangements, scheduling and conducting job-interviews, hospitality, etc. for both internship and recruitment processes. Our hiring partners range from consulting firms to Fast-Moving Consumer Goods (FMCGs) to core industries, software giants, e-commerce and engineering companies. SPO is actively engaged in building and maintaining long term relationships with corporate sector and constantly working towards building illustrious and rewarding career-options for IIT Kanpur students.

Activities of Students' Placement Office is coordinated by "Student Placement Committee (SPC)" which is an advisory body constituted with faculty representatives from all the departments and inter disciplinary programs. SPC is headed by the Chair, SPO with the support from Vice-Chair, SPO and Career Development Officer. Execution of allthe SPO activities is done by the SPO staff and student team comprising of Overall Placement Coordinators (OPCs), Assistant Coordinators (ACs), DepartmentPlacement Coordinators (DPCs) and student volunteers who coordinate all placement activities organized by the SPO. Representatives from the student gymkhana also participate in SPC meetings as invited guests and contribute to the decision-making process. Starting from this year, SPO has also initiated therecruitment facilitation for PhD scholars in industries, reputed academic institutions, research labs, and in consultancy firms across the globe. A team of PhD placement coordinators consisting of PhD student representatives from all the departments has been formed and is actively helping our PhD scholars in their job pursuit. SPO/IIT Kanpur also encourages innovations and entrepreneurship ventures.

Placement Office Activities

SPO activities in 2021-22 can broadly be divided into three sectors: (1) facilitating hiring of current students for internships (academic and industry), (2) organizing professional training for interview preparations, and (3) coordinating recruitment process for graduating students through Campus Recruitment Drive. In the first quarter of 2021-22, the focus of SPO team was on attracting potential employers for participation in placement and internship processes. Potential recruiters were identified based on inputs from SPO team,departmental recommendations, and student feedback from previous placement seasons. Shortlisting of potential employers was carried out based on pre-defined screening criteria (in accordance with SPO guidelines), and the recruiters were invited to campus for student-employer interactions through Pre-placement Talks (PPTs). Efforts of SPO team was instrumental in bringing in a total of 55 newrecruitersfor internship and full time hiring during the placement season of 2021-22.

Internships for Current Students

SPO encourages pre-final year students to participate in summer internship programs. IIT Kanpur boasts of a well-structured internship programme that carries the reputation of earning post internship/pre-placement offers (PPOs) for a large percentage of students. A total of591internships were offered during the internships season2021-22.Some of the prominent recruiters who participated in 2021-22 internship program include Adobe Systems, American Express, ITC Limited, Microsoft India Pvt Ltd, Oracle India Pvt ltd, P&G, Google, HUL, Goldman Sachs, Qualcomm, Samsung,Texas Instruments, JP Morgan Chase, etc.

Placement Preparations

SPO has revamped its placement preparation programs which now provides 360-degree career solution for students, which are organized in coordination with Career Development Cell (CDC) along with support from IITKanpur Student Gymkhana. Through these training

sessions, SPO provides guidance and support to students in their job pursuits through career counselling sessions, résumé preparation workshops, soft skill development programs, providing learning materials for placement preparations, organizing professional training services, providing assistance in offer finalization, documentation etc.Training and career orientation programs were intended towards developing professional ethics among students and guiding them in making educated career decisions. Students were also encouraged to pursue their careers in respective sectors of interest which often vary from core engineering sector to IT, Financial, Banking, Analytics, Consulting jobs, Research and Development, Academia etc.

SPO in association with CDC organized numerous professional training sessions during academic year 2021-22 for the students participating in placement and internship processes. Various training sessions were conducted by many professional bodies including M/s. Prepleaf Private Limited, M/s. British Council, M/s My Analytics School throughout the academic year. SPO team also organized training sessions intended towards improving résumé writing skills, conducted multiple practice/guidance sessions for aptitude tests, group discussions and personal interviews at the beginning of placement season. SPO team along with faculty members, volunteers from Student Gymkhana also conducted personal guidance and soft skill enhancement sessions for selected student groups in improving personality and interpersonal skills required for job interviews. Discussions/ career awareness workshops/talks by invited alumni members working in various sectors were also organized as part of placement preparations. The following preparation activities were conducted for placement season 2021-22.

- Career counselling by professional agencies/experts towards soft-skills development, professional-communication, and personality-development.
- Résumé writing workshopsfor assistance on preparation of professional résumés.
- Collecting corporate feedback on employee expectations for different job sectors.
- Feedback on companies and interview experiences from students who participated in last year placement for use as orientation/information material for current students.
- Résumépreparation/verification of applicants.
- Student sessions on internship experiences at various industry sectors.
- Sessions on group discussions and personal interviews as part of placement preparations by invited alumni members (last 4 years). Relevant study materials (video, links, PPT etc.) were uploaded on preparation portal for future references.
- Career awareness talks by invited Alumni and sharing their corporate working experience.
- Development of further interaction pattern.

Campus Recruitment Drive

Recruitment drive for the academic year 2021-22was held in two phases. Though preparations and shortlisting activities for campus placements started in July onwards, Phase-1 of recruitments officially started on Dec. 1, 2021.About300+recruiters participated to hire students for full time employments.In Phase-1 placement season 2021-22, A total of 59 top tier firms with 74 different profiles from various sectors conducted interviews on Day 1,an unprecedented 384 job offers were extended, and 304 of those were accepted by IIT Kanpur students. Because of the pandemic restrictions, entire recruitment drive was conducted online both for the internships and campus recruitments. This hiring spree of companies continued until 15th Dec 2022 for Phase-I.

Based on hiring numbers, the top recruiter for this placement season is Rakuten Mobile which hired 29 students. Other top recruiters of the season were Intel Technology Pvt. Ltd, Microsoft India Pvt Ltd, EXL Services, ICICI bank etc, SAP Labs etc.

"One student one job" policy (single offer acceptance policy) was continued to ensure equal opportunity to all students registered with SPO. Phase-2 of the recruitments started in January 2022 andcontinued till May 2022. A total of 405 organizations registered in the campus placements andapproximately 87.4% of the registered students have been placed so far.

This includes students in both undergraduate and postgraduate levels. 640 out of 686 registered students in B. Tech and B.S. degree programs (approx. 93%) were placed during the season. UG placement count also includes 141 accepted PPOs extended to them as part of academic internship provided through SPO. Program wise placement statistics are presented in Fig.1.

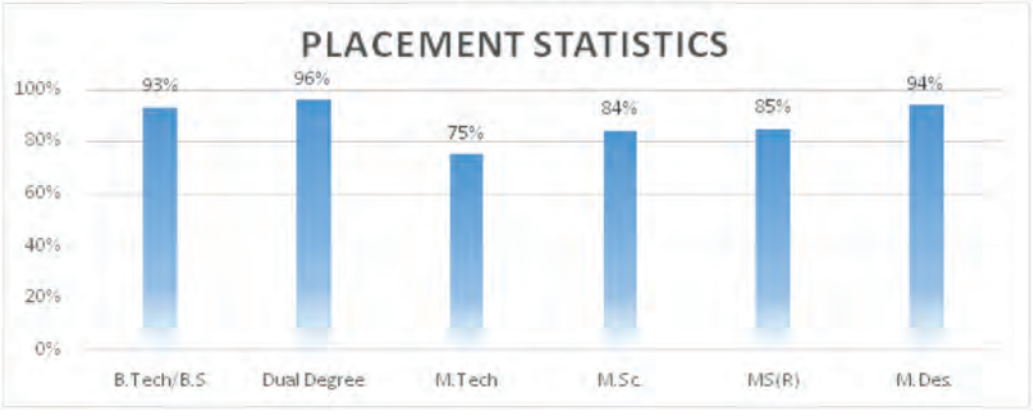

Fig. 1: Placement statistics of various degree programs at IIT Kanpur during placement season 2021-22.

Amongst the various PG programs, 96% in Dual degree program, 94% in Master of Design (M. Des.) and 85% in MSR got placed during the current placement season. In all 623 out of 759 registered PG students (approx. 82%) were placed during the season

A total of 1263 students out of the 1445 registered students were placed through SPO during the academic year 2021-22. The overall placement stood at 87.4%, which commends the dedicated efforts of the entire SPO team including the student, staff & faculty coordinators. A summary of department level placement record for the current season is shown in Figure 2.

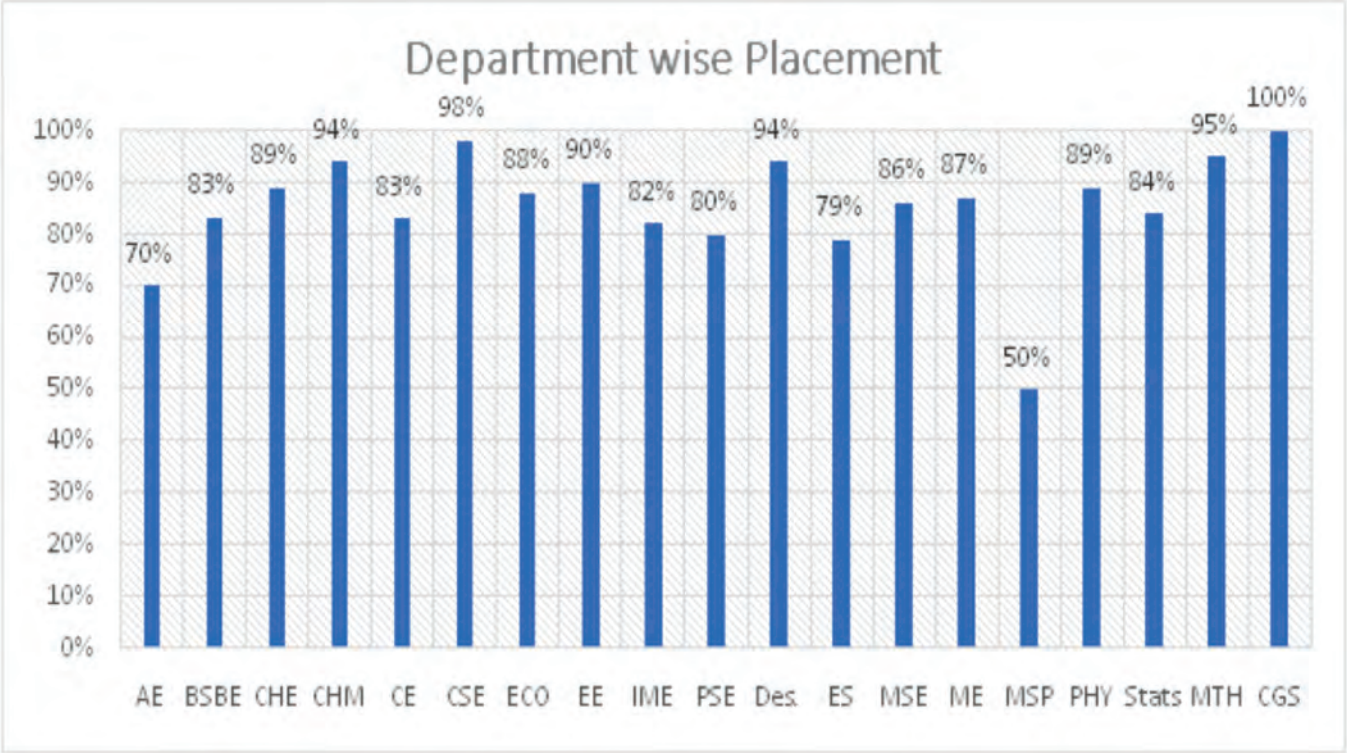

Fig. 2: Placement across various departments of IIT Kanpur during placement season 2021-22.

Among the various departments, CSE, CHM, EE, Des., Maths, CGSrecorded student placement percentage of above 90%. Percentage students placed in other departments are also provided in the figure above. The percentage calculations presented above are derived based on the number of graduating students who have registered with the placement office. A good number of graduating students do not register for placements as they are interested in pursuing higher studies or entrepreneurship options. In addition, an appreciable number of IIT Kanpur students pursue Civil Services jobs or take-up career options in public sector companies and, therefore, abstain from participating in the recruitment process.

Students of IIT Kanpur continued to demonstrate a strong commitment to their core educational background in their choice of employment. The Placement drive witnessed highest participation from coding and software firms which accounted for 43% of the total placements, whereas 19% was comprised of core firms.

Some of the top recruiting firms that visited IIT Kanpur for hiring students in core engineering sector include Intel, Cisco System, Schlumberger, Eaton, L&T Constructions, Tata Advance System, Tata Steels, Jindal Stainless Limited, Mahindra & Mahindra etc. This trend observed in the last few years seems to have taken strong roots at IIT Kanpur. A summary of sector wise placement record for Y2021-22 is shown in Figure 3.

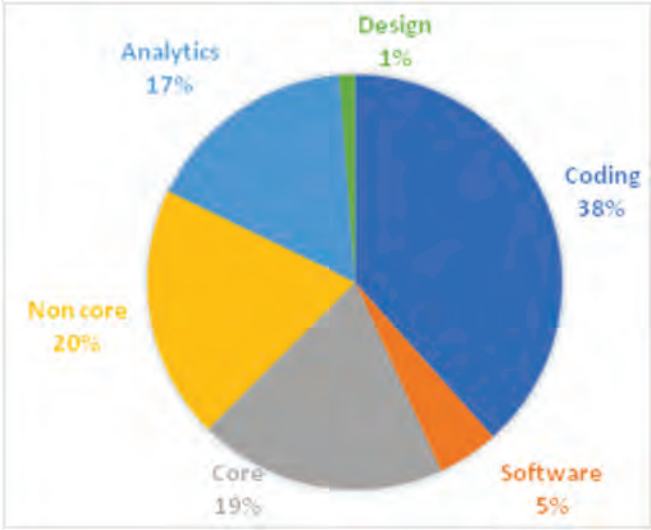

Fig. 3: Sector wise placement statistics of IIT Kanpur during the placement season 2021-22.

Some of the prominent recruiters who participated in Campus Recruitment Drive 2021-22 include Adobe Systems, Accenture Japan Ltd, Amazon Development Center India,American Express,Axis Bank Ltd.,Bajaj Auto Limited, Eaton,EXL Services,Google, Goldman Sachs,Jaguar Land Rover Limited, HSBC,JP Morgan

Chase & Co.,Mastercard,Microsoft,Oracle India Private Limited,Quantiphi Analytics Solutions Pvt. Ltd, Samsung, Taiwan Semiconductor Manufacturing Company,Texas Instruments, Uber etc.

New Initiatives:

1) PhD Placement Drive:

SPO-IITK has initiated the facilitation of PhD Placements. We have been reaching out to the prospective recruiters to ascertain the possibilities of PhD hirings from IITK. It has been receiving positive responses from various stakeholders like Industry partners, Academia as well as from students.

A PhD Placement Brochure has been created to formalise the process along with a team of student volunteers to assist SPO in the process all along. An PhD Alumni Portal is also developed to extend our reach to our Alumni for enhancing Post-Doc& other job opportunities for our PhD Scholars (Link: https://spo.iitk.ac.in/demo/).

We have already received three offers so far through our PhD placements and this number is going to increase as many more interviews/ presentations are still in process with various recruiters. The students are showing keen interest and taking part in the placement activities enthusiastically.

2) Toastmasters club:

SPO has set up the Toastmasters Club to make IITK students effective communicators. We thank our generous donor Mr. Suresh Bazaj an IITK Alumnusfor this support to start Toastmaster Club at IIT Kanpur. We also thank DoRA office & IITK Foundation for facilitating this milestone of Toastmaster club at IIT Kanpur.

Somemajor steps taken by SPO to make the Toastmasters Club effective, familiar, and customary among the student community are as follows:

1. Propagated the Toastmasters club benefits among students through multiple mails.
2. Arranged Demo session for the interested students.
3. Request for self-nominations for the club membership.
4. Arranged introductory meetings among the self-nominated students.
5. Onboarding the new student members in Toastmasters International members.
6. District 41 officials visited campus for the guidance in setting up the club. SPO Arranged demo meetings for self-nominated students with District 41 delegates.

   As of now, around 100+ students have shown interest in joining the club and are participating actively in meetings.One club has been set up and another is in pipeline.

Acknowledgements

SPO expresses its sincere gratitude to the institute administration for providing financial and infrastructural support for the successful execution of various placement activities. SPO also sincerely thanks the members of various institute offices, viz DOAA, DOSA, DORA, IITK Foundation, Cell for Differently Able Persons (CDAP), Computer Centre and allied facilities and various sections of Institute Works Department for their help and support in organizing these events. SPO takes the opportunity to thank Career Development Centre and Student Gymkhana for the technical inputs and unparalleled support in coordinating and managing various SPO events. Services of OPCs, SPCs, ACs, DPCs, volunteers, and SPO office staff are sincerely acknowledged.

SERVICES AND AMENITIES

Following Services and Amenities are available at IIT Kanpur Campus:

Campus School, Estate Office, Health Centre, IWD, Physical Education Section, Store & Purchase and Visitor's Hostel.

https://web.iitk.ac.in/july14dordn/data/Annual-Report-2021-22/Services_and_Amenities-English_version.pdf

INDIAN INSTITUTE OF TECHNOLOGY KANPUR

BALANCE SHEET AS AT 31st MARCH 2022

(Amount-Rs)

SOURCES OF FUNDS	SCHEDULE	CURRENT YEAR 31.03.2022	PREVIOUS YEAR 31.03.2021
Corpus/Capital Fund	1	19,63,36,34,269	18,84,71,44,874
Designated/Earmarked/Endowment Funds	2	4,81,89,57,046	3,98,70,62,526
Current Liabilities & Provisions	3	20,50,52,45,898	19,41,56,83,979
	TOTAL	**44,95,78,37,213**	**42,24,98,91,379**

APPLICATION OF FUNDS	SCHEDULE	CURRENT YEAR 31.03.2022	PREVIOUS YEAR 31.03.2021
FIXED ASSETS			
Tangible Assets	4	14,37,25,05,668	13,10,16,36,989
Intangible Assets	4	12,63,76,818	11,01,74,952
Capital Works-In-Progress	4	2,34,27,45,992	1,99,41,93,099
INVESTMENT FROM EARMARKED/ENDOWMENT FUNDS			
Long Term	5	4,47,03,14,982	3,52,86,42,331
Short Term	5	3,18,91,14,500	1,64,90,00,000
Investment - Others	6	10,000	10,000
Current Assets	7	18,50,90,15,347	19,23,96,00,960
Loans, Advances & Deposits	8	1,94,77,53,906	2,62,66,33,048
	TOTAL	**44,95,78,37,213**	**42,24,98,91,379**
SIGNIFICANT ACCOUNTING POLICIES	23		
CONTINGENT LIABILITIES AND NOTES TO ACCOUNTS	24		

DY. REGISTRAR (F&A) 4/5/22

DY. REGISTRAR (F&A)

DY. DIRECTOR

DIRECTOR

DATED :

INDIAN INSTITUTE OF TECHNOLOGY KANPUR

INCOME AND EXPENDITURE ACCOUNT FOR YEAR ENDED 31st MARCH 2022

(Amount-Rs)

PARTICULARS	SCHEDULE	CURRENT YEAR 31.03.2022	PREVIOUS YEAR 31.03.2021
INCOME			
Academic Receipts	9	66,81,94,364	73,29,15,895
Grants/Subsidies			
Grants against Salary	10	2,56,45,00,000	2,35,25,33,559
Grants against Pension	10	89,90,46,968	81,71,54,489
Grants against Others	10	1,09,99,13,051	1,02,70,55,105
Grants against Scholarships	10	77,53,39,981	71,76,85,939
Grants against HEFA Interest	10	10,46,62,823	9,00,30,608
Grants against P M Research	10	7,67,97,939	3,97,32,120
Income from Investments	11	34,71,21,099	26,92,34,555
Interest earned	12	2,20,30,809	2,09,36,275
Other Income	13	68,55,25,597	1,00,65,42,914
Prior Period Income	14	3,37,122	-
Deferred Revenue Income	4	1,41,86,63,368	-
	TOTAL (A)	**8,66,21,33,121**	**7,07,38,21,459**
EXPENDITURE			
Staff Payments & Benefits (Establishment Expenses)			
Moe Grant Salaries	15	2,46,11,18,009	2,21,92,50,688
Moe Grant Retirement and Terminal Benefits	15	1,51,46,17,248	1,70,81,31,325
Academic Expenses			
MoE Scholarship	16	77,53,39,981	71,76,85,939
Other Academic Expenses	16	32,95,63,710	21,07,69,468
Administration and General Expenses	17	45,06,27,585	40,23,69,586
Transportation Expenses	18	-	-
Repairs & Maintenance	19	47,96,30,418	45,07,15,691
Finance Costs	20	11,03,15,337	9,02,93,262
Depreciation	4	1,42,62,51,913	24,18,968
Other Expenses	21	4,66,80,963	3,24,42,950
Prior Period Expenses	22	77,973	-
	TOTAL (B)	**7,59,42,23,137**	**5,83,40,77,877**
BALANCE BEING EXCESS OF INCOME OVER EXPENDITURE (A-B)		**1,06,79,09,984**	**1,23,97,43,582**
Utilization Against HEFA Loan		**57,13,00,000**	**48,11,50,000**
Utilization Against PLAN Grant		-	**43,10,88,901**
Internal Receipts Retained for HEFA Loan		**16,46,40,357**	-
BALANCE BEING SURPLUS/(DEFICIT) CARRIED TO CAPITAL FUND		**33,19,69,627**	**32,75,04,681**
SIGNIFICANT ACCOUNTING POLICIES	23		
CONTINGENT LIABILITIES AND NOTES TO ACCOUNTS	24		

DY. REGISTRAR (F&A) 25/06 DY. REGISTRAR (F&A) DY. DIRECTOR DIRECTOR

DATED :

INDIAN INSTITUTE OF TECHNOLOGY KANPUR

RECEIPTS AND PAYMENTS ACCOUNT FOR THE YEAR ENDED 31ST MARCH 2022

RECEIPTS	CURRENT YEAR 31.03.2022	PREVIOUS YEAR 31.03.2021	PAYMENTS	CURRENT YEAR 31.03.2022	PREVIOUS YEAR 31.03.2021
BANK BALANCES			EXPENSES		
Current accounts	1,13,40,97,368	65,97,56,995	Establishment Expnese	3,09,30,38,620	2,92,95,66,356
Savings accounts	1,93,53,85,833	85,46,54,619	Academic Expeses	1,15,80,49,047	50,64,65,598
			Administrative Expenses	46,72,57,496	40,35,00,751
GRANTS RECEIVED			Transportation Expenses	-	-
From Govemment of India -Capital	62,49,00,000	91,75,00,000	Repairs & Maintenance	46,58,07,963	51,48,72,892
From Govemment of India- Revenue	5,52,02,60,762	5,54,02,18,208	Finance Cost	10,63,74,011	1,88,01,228
			Other Expenses	4,51,35,266	3,10,45,901
RECEIPTS EARMARKED / ENDOWNMENT FUNDS	3,15,78,91,558	3,58,20,70,627			
			PAYMENTS EARMARKED / ENDOWNMENT FUNDS	2,33,31,76,016	2,99,57,40,955
SPONSORED PROJECTS SCHEMES	1,96,72,75,284	1,69,68,55,745			
			PAYMENTS SPONSORED PROJECTS	1,87,70,51,038	1,54,85,69,392
FELLOWSHIPS PROJECTS SCHEMES	14,16,11,920	9,35,38,136			
			PAYMENTS FELLOWSHIPS PROJECTS SCHEMES	10,96,85,182	10,55,75,681
OTHER PROJECT RECEIPTS	2,17,59,86,342	1,37,07,06,190			
			PAYMENTS OTHER PROJECTS	1,38,39,57,755	76,57,63,404
ACADEMIC RECEIPTS	70,68,46,961	77,23,66,424			
			INVESTMENTS AND DEPOSITS MADE	15,80,58,68,541	10,97,05,15,155
INTEREST RECEIVED ON					
Bank Deposits	25,05,12,145	26,37,06,248	EXPENDITURE ON FIXED ASSETS	2,08,85,68,503	2,31,65,84,912
Loans, Advances & Others	41,84,220	23,39,647			
Savings Bank Accounts	1,59,14,861	1,87,72,185	LOAN PAID TO HEFA	57,13,00,000	48,11,50,000
INVESTMENT DEPOSITS ENCASHED	12,43,61,95,937	10,64,32,64,115	DEPOSIT AND ADVANCES	10,70,10,258	23,06,93,285
OTHER INCOME	27,95,87,959	23,86,56,706	TRF TO OTHER UNITS	1,69,75,31,750	3,54,09,49,899
OTHER RECEIPTS	6,76,05,961	-			
PRIOR PERIOD INCOME	2,84,455	-	PAYMENT AGAINST SCHLORSHIP	7,05,08,102	2,03,15,536
DEPSOITS AND ADVANCES	9,49,23,499	10,52,68,428	PAYMENT AGAINST STATUTORY LIABILITIES	50,93,20,952	50,39,72,299
TRF FROM OTHER UNITS	1,61,54,61,399	3,35,75,03,654			
RECEIPTS AGAINST RETIREMENT BENEFITS	-	46,61,326			
RECEIPTS AGAINST SCHLORSHIP	7,51,45,884	7,22,59,718	BANK BALANCES		
			Current accounts	31,02,32,781	1,13,40,97,368
LOAN FROM HEFA	82,55,57,473	75,94,67,474	Savings accounts	82,97,56,540	1,93,53,85,833
TOTAL	33,02,96,29,821	30,95,35,66,445	TOTAL	33,02,96,29,821	30,95,35,66,445

DY. REGISTRAR (F&A)

DY. REGISTRAR (F&A)

DY. DIRECTOR

DIRECTOR

INDIAN INSTITUTE OF TECHNOLOGY KANPUR

CASH FLOW FOR THE YEAR ENDED 31st MARCH 2022

CASH FLOW FROM OPERATING ACTIVITIES		
Grants Received Revenue	5,52,02,60,762	
Academic Incomes	70,68,46,961	
Earmarked/ Endowment Fund Received	3,15,78,91,558	
Receipts for Sponsored Projects/ Schemes	4,28,48,73,546	
Interest on Bank Deposits	25,05,12,145	
Interest on Loans & Advances to Employees	41,84,220	
Interest on Savings Bank Account	1,59,14,861	
Other Income	27,95,87,959	
Prior Period Income	2,84,455	
Receipts against Deposits & Advances	9,49,23,499	
Receipts against Scholarship	7,51,45,884	14,39,04,25,850
Establishment Expenses	3,09,30,38,620	
Academic Expenses	1,15,80,49,047	
Administrative Expenses	46,72,57,496	
Repairs & Maintenance Expenses	46,58,07,963	
Finance Expenses	10,63,74,011	
Other Expenses	4,51,35,266	
Payments against Scholarship	7,05,08,102	
Payments from Earmarked / Endowment Fund	2,33,31,76,016	
Payments for Sponsored Projects/ Schemes/	3,37,06,93,975	
Payments against Deposits & Advances	10,70,10,258	
Other Payments	8,20,70,351	
Statutory Payments	50,93,20,952	11,80,84,42,057
Net Cash Flow from Operating Activities		**2,58,19,83,793**
CASH FLOW FROM INVESTING ACTIVITIES		
Grants Received Capital	62,49,00,000	
Other Receipts	6,76,05,961	
Investment Enchashed	12,43,61,95,937	**13,12,87,01,898**
Investment in Term Deposits	15,80,58,68,541	
Creation / Purchase of Fixed Assets	2,08,85,68,503	**17,89,44,37,044**
Net Cash Flow from Investing Activities		**-4,76,57,35,146**
CASH FLOW FROM FINANCING ACTIVITIES		
Cash Receipts	82,55,57,473	
Repayment of Loan	57,13,00,000	
Net Cash Flow From Financing Activities		**25,42,57,473**
NET INCREASE IN CASH		**-1,92,94,93,880**
Closing Cash Flow Balance as on 31.03.2022		1,13,99,89,321
Opening Cash Flow Balance as on 01.04.2021		3,06,94,83,201
NET INCREASE IN CASH		**-1,92,94,93,880**

DY. REGISTRAR (F&A) DY. REGISTRAR (F&A) DY. DIRECTOR DIRECTOR

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