DIRECTOR'S REPORT

Honorable Professor Jayathi Y. Murthy, President, Oregon State University, Dr. K Radhakrishnan, Honorable Chairperson, 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, and members of faculty, alumni, staff and student community: I heartily welcome you all to the fifty-seventh con- vocation of the Indian Institute of Technology Kanpur. I would also like to congratulate the graduating students and their families on this joyous occasion.

ACADEMIC ACTIVITIES

After several waves of the COVID-19 pandemic and the related challenges, the academic sessions are now back to normalcy. It is my privilege to share some of our activities from this year. I am happy to inform you that the total number of PhD degrees awarded at this Convocation is 239. 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 fulfilling a defined set of academic requirements. I am glad to inform you that 12 students are graduating in this Convocation's sixth batch of MTech and PhD Joint Degrees. Additionally, 1 student is graduating in this Convocation's first batch of MDes and PhD Joint Degree. I am also happy to convey that the second batch of 205 students of the e-master's programme will be conferred a degree today in this 57th Convocation. In all, 2331 degrees are being awarded at this Convocation with the following details:

GRADUATION DATA

Degree	Number of Recipients
PhD	226
MTech-PhD (Joint Degree)	12
MDes-PhD (Joint Degree)	1
MTech	456
MBA	36
MDes	17
MS (by Research)	77
PGPEX-VLFM	40
MSc (2-yr)	165
e-Masters	205
Double Major	26
Dual Degree	89
MS-PD (MS part of the Dual Degree)	14
BTech	842
BS	125
Total	**2331**

In keeping with the flexibility that the IIT Kanpur academic Programme is known for, 64 students are graduating with two Minors whereas 238 students are graduating with one Minor.

You will be delighted to know that 17 graduating students are graduating with three Minors, and 3 students is graduating with four Minors. In all, 429 Minors are being awarded. In addition, by spending one additional year at the Institute, 89 undergraduate students are graduating with a Master's degree and their Bachelor's while 26 of our undergraduate students are graduating with a Second Major. Thirteen of our postgraduate students are graduating with an additional Master's and PhD degree by earning extra credits. Out of 1082 students of the Bachelor's and Bachelor's-Master's dual degree programmes who are being awarded the degree today, 192 students are graduating with a Distinction (CPI of 8.5 and above). To keep pace with the evolving knowledge in science, technology, and other areas, the Senate approved 13 new undergraduate courses and 150 new postgraduate courses from June 1, 2023, to May 30, 2024. It is a great pleasure to share that the degrees are being awarded to graduating students are at the 57th Convocation today both in the physical and digital modes. The degrees in the on-line mode are being shared through an in-house block chain driven technology developed at our Institute under the National Block chain Project. The digital degrees are also being uploaded to the National Academic Depository.

ACADEMIC INITIATIVES

Several academic initiatives were undertaken this year and they are likely to greatly strengthen our educational programs and several more are in the pipeline.

KOTAK SCHOOL OF SUSTAINABILITY

The industrial revolution and anthropogenic activities have led to an unprecedented rise in greenhouse gas emissions and global warming. Global warming is a real threat to our existence and the planet and is now manifested as several untimely natural calamities, pollution of natural systems and rapid loss of biodiversity. Given the seriousness of the issue, IIT Kanpur has established a 'School of Sustainability' by cohesively integrating its expertise in different thematic areas. The school will provide the thought leadership to the country on this global challenge and conduct impactful educational and outreach programs. Considering the importance of sustainability, the Kotak-Mahindra Bank, a leading bank in India, has supported the school financially as part of their CSR initiatives. In honor of this contribution, the school has been named 'Kotak School of Sustainability'. This initiative will certainly put IIT Kanpur on the world map as the leading educational institute in India and at the global level in sustainability education, research and innovation, translation and outreach.

NEW PROGRAMMES & DEPARTMENTS

This academic year witnessed several new beginnings. Here are details in brief.

Joint Degree Program for Master of Technology

With the increase in IIT Kanpur's international visibility and the remarkable success of the Joint Degree Program at PhD level, there have been requests from universities abroad to initiate a joint Master of Technology (MTech) degree program on a similar concept. Therefore, to cater to these requests and enable IIT Kanpur master students to get international experience, a Joint Degree Program for MTech has been approved. The students selected to the Joint Degree Program for MTech will spend the first year at their parent institution and the second year at the partner institution. The program's research component will be conducted either fully or partly at the partner institution.

Joint Degree Program in Master of Business Administration

Further strengthening IIT Kanpur's international visibility and the commendable success of the Joint Degree Program at the PhD level, the University of Wisconsin, Milwaukee (UWM) has expressed interest in launching a joint Master of Business Administration (MBA) degree program based on a similar concept. In view of this request and also to enable IITK students to get an international experience, a Joint Degree Program for MBA with University of Wisconsin, Milwaukee has been approved. This will also be extended to other universities that express a similar interest. The students selected to the joint MBA degree programme will be required to spend the first year at IIT Kanpur and the second year at University of Wisconsin, Milwaukee.

Master of Technology (MTech) program in Biomedical Engineering

In India, there is a scarcity of highly trained biomedical engineers who can serve the industry, despite the Government of India's emphasis on becoming self-reliant in healthcare technologies.

To address this need, IIT Kanpur has introduced an MTech program in Biomedical Engineering. The course component of this program is meticulously designed to provide students with a balanced curriculum, whereas the project component will expose students to product development centered around addressing practical challenges in the field of Biomedical Engineering.

Spot admission to PhD program

IIT Kanpur, as the premier engineering institute of the nation, is becoming a top choice for students from various colleges who wish to pursue postgraduate studies. In 2017, IIT Kanpur started offering direct admission to PhD for 6th and 7th semester BTech students from Centrally Funded Technical Institutes (CFTIs). Now, the institute aims to expand beyond CFTIs. According to the NIRF ranking, many non-CFTI institutes are ranked higher than several CFTIs, presenting new opportunities to attract talented PhD students. To facilitate this, IIT Kanpur has approved spot admissions for 4th-year BTech/BS students from non-CFTIs and 2nd-year MTech students from CFTIs to its PhD programs.

eMasters programme in "Applied Health Economics, Financing and Policy" by the Department of Economic Sciences

Healthcare is one of the most significant and rapidly expanding sectors and industries in the world, and it plays a pivotal role in the global economy and society. The availability and accessibility of health services are increasing, but at the cost of affordability and equality. Currently, there are only a few Masters and diploma courses on public health available in India, and most of them focus on public health and epidemiological aspects with no or limited attention to health economics, systems, policies and financing. To enable students to understand and address complex challenges in the health sector with a perfect blend of multidisciplinary knowledge from economics, finance and public health, IIT Kanpur has begun an eMasters program in 'Applied Health Economics, Financing and Policy'.

This course will help students make healthcare decisions in the dynamic and constantly changing world by being aware of the economic and financial environment. This will also help them in understanding the complex interplay between economics, public policy, data and population health.

eMasters programme in "Climate Finance and Sustainability" by the Department of Economic Sciences

Climate finance is a trending and upcoming area due to climate change concerns and countries' commitment to carbon reduction and net-zero emissions. Companies have started monitoring emissions and formulating mitigation and net-zero strategies. These developments have created new platforms for alternative finance, including emission trading and carbon offset instruments. The eMasters Program in 'Climate Finance and Sustainability' has been designed to provide a comprehensive and practical understanding of climate finance and sustainable finance, which is an integral part of the carbon management ecosystem. The program offers a balanced exposure to climate finance and the workings of carbon markets, different products, their trading mechanism, carbon accounting, economic, social and governance (ESG) framework. The program is useful for budding economists, finance and investment managers, consultants and researchers.

eMasters programme in "Business Leadership in Digital Age" by the Department of Economic Sciences

With its plethora of innovations, the digital revolution is upsetting the traditional pillars of business. The developing geopolitical scenario is disrupting the global supply chain. Technology plays an essential role in handling and managing businesses. Technology requires knowledge of the relevant scientific background and understanding of how to manage and successfully develop its potential. No matter how critical technological tools are, their job is limited in nature, and the knowledge of economic, managerial, and regulatory agencies is equally, if not more critical. The eMasters Program in 'Business Leadership in Digital Age' covers the essential tools of economic and managerial principles in pricing, financing, and analytics. The emphasis is on understanding the new technologies, their governance, and the relevant regulatory environment. This course is designed to provide appropriate exposure to the changing technological landscape for businesses. This course is suitable for administrators and business executives with some experience.

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eMasters programme in "Artificial Intelligence and Machine Learning" by the Department of Electrical Engineering

From self-driving cars to personalized healthcare, Artificial Intelligence is transforming the way we live and work. As such, there is a growing need for industry professionals to learn and apply these technologies to remain competitive and relevant in their fields. The eMasters program on Artificial Intelligence and Machine Learning can address this need by providing industry professionals with the latest knowledge and skills in Artificial Intelligence and Machine Learning, empowering them to make informed decisions and solve complex problems using Machine Learning techniques. With its flexible online format and practical curriculum, this program can offer industry professionals the convenience and accessibility they need to upskill and stay ahead of the curve in today's rapidly evolving job market.

eMasters programme in "Digital Governance & Management" by the Department of Management Sciences

The Ministry of Electronics & Information Technology, Government of India, launched the 'Digital India' program with the vision to transform India into a digitally empowered society and a knowledge-based economy by ensuring digital access, digital inclusion, digital empowerment and bridging the digital divide. The aim of the eMasters program in Digital Governance & Management is to enhance capabilities for a digitally empowered new India. This programme is specifically aimed at the officers of the Central and State Government, Central and State Public Sector Undertakings, Private Sector and NGOs who are expected to gain a sound understanding of the Vision and Mission of Digital India, appreciate the entire governance eco-system of the Government/organizations in its holistic perspective and identify challenges in implementing digital initiatives.

eMasters programme in "Renewable Energy and e-Mobility" by the Department of Sustainable Energy Engineering

The program's vision is to offer high-quality, rigorous academic programmes at the PG levels in renewable energy and e-mobility and play a leading role in creating a technology development ecosystem in the country. Through quality education and human resource development, the eMasters Program in Renewable Energy and e-Mobility aims to be a contributor to the national vision of energy sustainability. The program aims to train working professionals interested in making a career in this fast-growing domain to help them get the required technical knowledge and find a suitable opportunity.

RESEARCH & DEVELOPMENT

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

RESEARCH HIGHLIGHTS

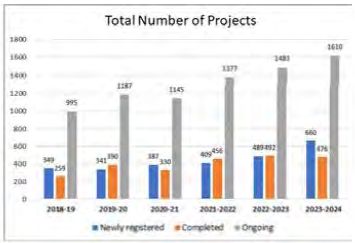
1610 externally funded projects are ongoing with a total sanctioned amount of Rs. 1527.30 crore.

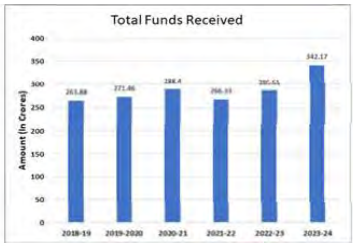
414 sponsored projects were sanctioned during 2023-24 worth Rs. 371.24 crore.

246 consultancy projects were sanctioned during 2023-24 worth Rs. 102.65 crore.

During 2023-24, total funds received for sponsored projects were Rs. 227.0 crore and for consultancy projects Rs. 115.2 crore

***Sponsored Research:** A Summary of 6 years*





LEADING FUNDING AGENCIES

(Rs. in Crore)

Ministry of Electronics and Information Technology	60.00
Laurus Labs Limited	31.86
Ministry of Education	19.96
U.P. Government	15.30
Wellcome Trust - DBT Alliance	9.98

Table capturing five major funding agencies with sanctioned amount

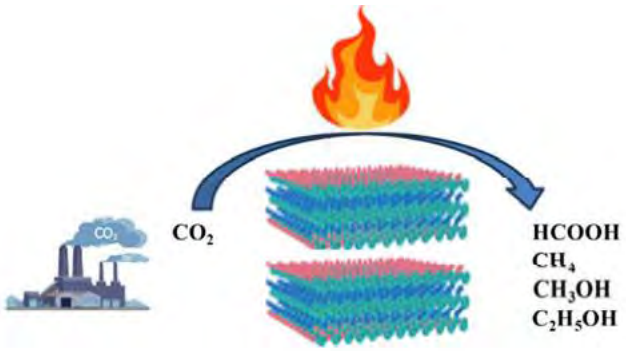
LEADING FUNDING INDUSTRY PARTNERS

Laurus Labs limited, Aravaali Power Corporation Private Limited, New Energy and Industrial Technology Development, Bharat Petroleum Corporation Limited, Shapoorji Pallonji Company Private Limited and Unilever Limited.

MAJOR PROJECTS SANCTIONED

CO_2 concentrations in the atmosphere continue to rise primarily due to human activities such as burning fossil fuels and deforestation, and its adverse impacts on the environment and human society have become increasingly evident. These impacts include rising temperatures, changes in precipitation patterns, sea level rise, ocean acidification, and disruptions to ecosystems and biodiversity. To mitigate these issues, CO_2 capture and conversion technologies have gained

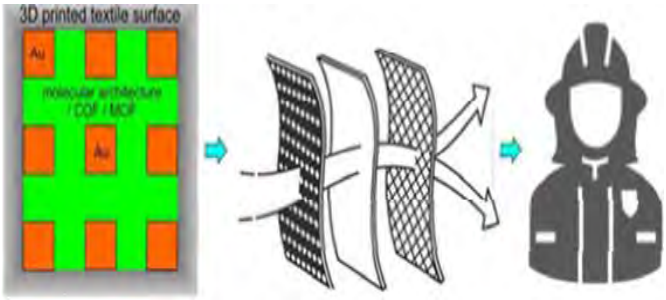
Development of Indigenous Integrated Carbon Capture and Conversion (ICCC) Technology funded by Bharat Petroleum Corporation Limited



significant attention as promising strategies. One of the emerging materials, MXenes, is a strong candidate for CO_2 capture and utilization (CCU). MXenes are a class of two-dimensional inorganic compounds that consist of atomically thin layers of transition metal carbides. These materials have an inherent ability to be an efficient catalyst for CO_2 conversion into CO, MeOH, CH_4, and many other products. However, the conversion of CO_2 achieved to date for the reported MXenes is ~30% and is workable in bit harsher conditions. Improving MXene could enhance the CO_2 adsorption and its conversion to some value added chemicals in normal conditions. This project aims to improve the CO_2 adsorption and conversion properties of

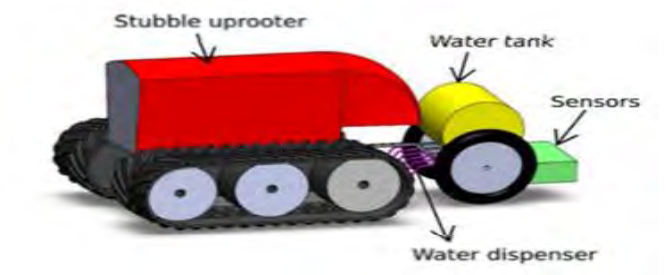
MXene, preferably in terms of workable conditions and conversion rate.

3D Printed Technical Textiles for Defence Exosuits: Custom Fabrics for Physiological Monitoring and Decontamination Applications funded by Ministry of Textiles



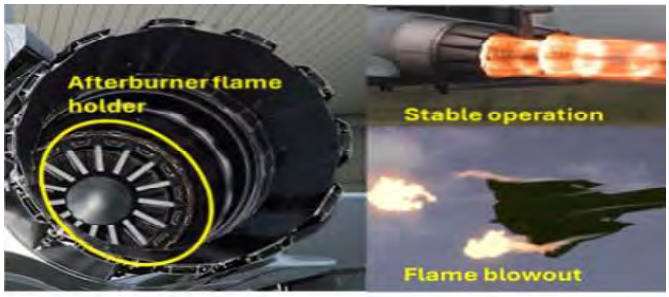
The objectives of this approved research proposal funded by National Technical Textile Mission, Government of India, concerns development of composites for custom technical textiles from the standpoint of solution processivity, 3D printing of textiles, customized textiles for defence exosuits using imprinted elements, and composite textiles for physiological monitoring with strategically embedded chemical and biological decontaminating fibres. It is anticipated that such layered custom fabric layers will have applications for personalized protective systems using innovative and lightweight protective textiles, with embedded IoT- based sensor technologies to afford rapid mitigation of chemical and biological threats at the interface of skin tissue barriers and sensitive organs, notably the eyes, skin, and lungs. In addition, this project will also afford development of textile with embedded microcapsules that could contain active agents for detoxification of chemical and biological warfare agents, as well for delivering therapeutics, or light emitters for photodynamic action. This project has Defence Material and Stores Research and Development Establishment (DMSRDE), Kanpur, as an application partner for defence applications.

Design and Development of a Smart Electric Stubble-Harvester and Integrated Baler toward Sustainable Agro- Residue Management funded by Department of Science and Technology



In order to prepare the fields quickly for the subsequent cultivation, farmers take recourse to stubble-burning, which causes major air pollution in Northern India. Moreover, the uncontrolled burning contributes to the waste heat as well as loss of valuable crop residues for bio-degradable composites, battery-cells and others. This project focuses on the development of electricity driven integrated harvesting mechanism with smart soil moisture monitoring, and robotic uprooting system. The system will have 4 major components - the end-effector unit, Balechamber, Continuous Wheel-Tracks, and Control-Unit. The uprooted stubbles will be compacted in bale form and carried to the thermal power plant for energy generation.

Experimental Characterization of Flame Stabilization in a Jet Engine Afterburner funded by Aeronautics Research and Development Board



Indigenous development of Advanced Medium Combat Aircraft (AMCA) class, all weather, fifth generation, twin engine, multirole combat aircraft for the Indian Air Force and the Indian Navy relies heavily on the successful operation of the afterburner. During the project, funded by the Aeronautical Research and Development Board (ARDB), a test rig will be realized to mimic actual operating conditions of a jet engine afterburner, and high-speed laser-based optical diagnostics will be employed to unravel spray, flame, and flow features. The stability map of the afterburner and the experimental database generated during this project will be instrumental in realizing the indigenous development of the jet engine afterburners for future large aero-engine configurations.

Supporting Indigenous Development of Low-Cost Sensors funded by Clean Air Fund

Air quality sensors are already ubiquitous with increasing prevalence due to climate change and general air quality degradation in cities. However, the current mass-produced sensors take a one-size-fits-all approach and do not consider the fact that particle counts are a strong function of the type, size and shapes. The project, therefore, aims to develop networked particle sensors which are 'locale-aware' and make a conscious particle count using AI/ML techniques.

SATHEE Initiatives (NMEICT Phase III) funded by Ministry of Education

The SATHEE (Self-Assessment Test and Help for Entrance Exams) initiative by IIT Kanpur, launched in collaboration with the Ministry of Education, is a transformative online platform designed to assist students preparing for competitive exams like JEE, NEET, CLAT,

SSC, Railway, Banking and others. It provides a comprehensive suite of resources, including video lectures from IIT and IISc faculties, interactive learning modules, and AI-based assessment tools. With multilingual support and mentorship from premier institute scholars, SATHEE aims to democratize education, ensuring that every aspirant has an equal opportunity to excel, regardless of their background.

Pollutant Source Apportionment and Environment Impact Assessment Study at IGSTPP (Indira Gandhi Super Thermal Power Plant), Jhajjar, Haryana funded by Aravali Power Company Private Limited

Industrialization is on the increase and so is the environmental pollution due to emissions and waste generated from industries. It is desirable that for existing industrial areas stressed under high ambient pollution levels, scientific and systematic identification of sources and their contributions to ambient air quality are established for effective air quality management. Thermal power plants, predominantly use coal as fuel for electricity generation and emit several pollutants, PM_{10}, $PM_{2.5}$, SO_2, CO, and NOx. The current project intends to address such environmental issues of IGSTPP. The project delves into the assessment of GIS-based emission inventory of pollutants, emission quantification, dispersion and impact of pollutants and suggests remedial measures and technology to minimize and manage the emissions from the power plant.

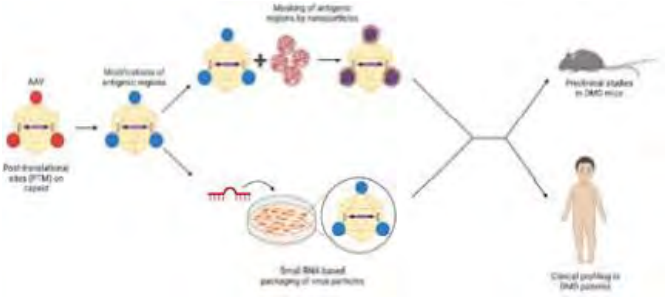
Establishment of Phase-II of National Centre of Excellence for Large Area Flexible Electronics (NCFlexE) funded by Ministry of Electronics and Information Technology

The National Centre for Flexible Electronics (NCFlexE) as a Centre of Excellence at IIT Kanpur was established in 2014 by the Ministry of Electronics and Information Technology (MeitY), Government of India, and IIT Kanpur to catalyse growth of domestic industry in the emerging area of flexible electronics. Support for Phase II of NCFlexE, with a total project outlay of Rs. 83.08 crore over a period of 5 years, was approved in November 2023. The objectives and outcomes include undertaking collaborative projects with industries, development of prototypes, transfer of technologies, incubating companies, and training personnel in the field of flexible electronics.

Power sector Reform Programme – Phase II funded by UK's Foreign, Commonwealth & Development Office (FCDO)

Centre for Energy Regulation (CER), IIT Kanpur at Department of Management Sciences was set up through seed funding by the UK's Foreign, Commonwealth & Development Office (FCDO). CER leads Regulatory Research, Capacity Building, and Knowledge Dissemination activities, fostering interactions among regulatory bodies, utilities, and other stakeholders in the Indian Power Sector to drive sustainable power sector development. "Power Sector Reforms (PSR) Programme - Phase II" is supported by the FCDO under the India - UK collaboration on climate and energy. The program focuses on supporting structural reforms, integrating renewable energy, and building regulatory capacity through technical expertise and institutional strengthening.

Next Generation AAV Vectors for Duchenne Muscular Dystrophy Gene Therapy funded by DBT-Wellcome Trust Team Science Grant



Duchenne Muscular Dystrophy (DMD), is a vascular disorder in humans (1:3500 male births). DMD leads to progressive muscle wasting in affected boys, who ultimately succumb to the disease due to heart or lung failure. Gene therapy, a method to replace the altered gene (dystrophin) with a normal copy, has not been very effective for this condition. The project proposes to address this, first by designing AAV9 vectors with improved transduction and immune evasive potential. A combination of rational engineering of viral capsids strategically modified at the rate limiting post translational modification (PTM) sites, and which overlap with antigenic epitopes, combined with nanoparticle mediated epitope masking is likely to overcome these major barriers in DMD gene therapy. Further optimization such as the microRNA-based vector production, will further complement and enhance the functionality of AAV9 vectors. Finally, in preparation for a possible clinical

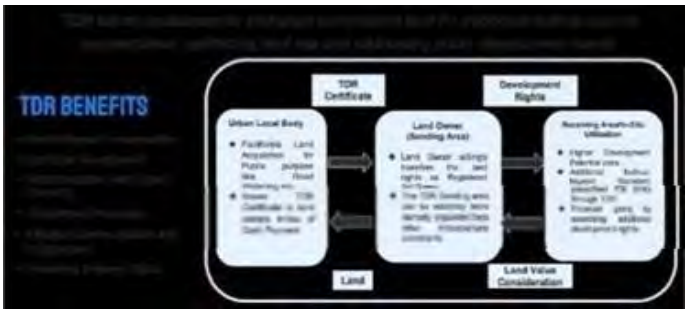
translation, we will also profile the genetic alterations and immune status in a large number of patients with DMD to provide clinical insights on the role of recipient status in future gene therapy trials.

Fatigue Performance Models for Cement Treated Base Materials funded by Ministry of Road Transport & Highways

The current design guideline for asphaltic pavement in India (IRC:37-2018) recommends constructing long-life/perpetual pavement (for the design life of 50 years and above) for expressways and high-density corridors. Such pavement structures are essentially thicker pavement structures which are less susceptible towards bottom-up fatigue cracking, which has essentially led to the development of the concept of an "endurance limit".

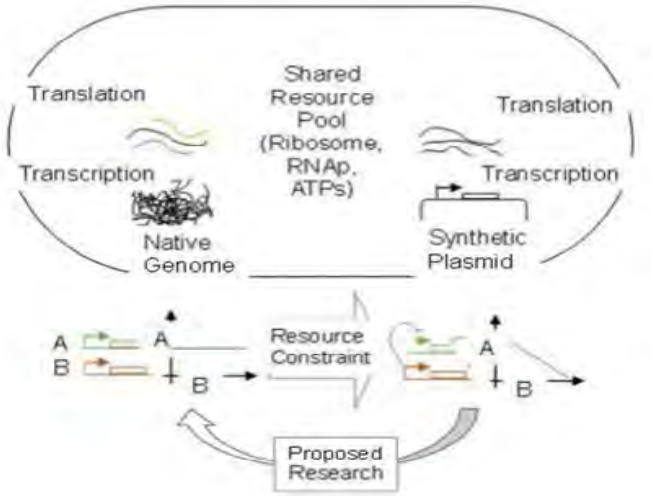
Although IRC 37-2018 suggests constructing perpetual pavement, the corresponding technical recommendations are purely based on published research work from overseas research laboratories. Since India's traffic loading pattern and environmental conditions are significantly different from those of other countries, the recommendations from overseas countries may not be fully applicable. Unfortunately, no research work has been published in this area so far from Indian research laboratories. This clearly indicates the need for in-house detailed research work to make appropriate recommendations based on our own materials, prevalent Indian climatic conditions, and those in-line with our own design specifications. This proposed research work is aimed at identifying the endurance limit of typically utilized asphalt mixtures in India for perpetual pavement structure. It will further investigate the role of temperature and asphalt mixture volumetrics in changing the endurance limit of typically utilized asphalt mixtures in India for perpetual pavement structures. In the overall context, these individual outcomes will immensely contribute towards upgrading the existing recommendation on endurance limit for perpetual pavement in IRC 37:2018.

Development Of Blockchain-Based TDR Portal funded by Kanpur Development Authority



The Kanpur Development Authority (KDA) spearheads the state's urban development strategies by introducing Transferable Development Rights (TDR) as a transparent and efficient mechanism to compensate property owners and enhance city infrastructure. Older, densely populated areas of Kanpur lack modern amenities. This necessitates land acquisition, which burdens KDA's finances. TDR offers a novel solution by compensating landowners with development rights that can be used on the same or different parcels of land or sold at fair market value to real estate developers, who can use them to increase building heights. KDA, in collaboration with C3I Hub, IIT Kanpur, would utilize block chain technology to ensure tamperproof generation, transfer, and utilization of these rights. The city would be divided into sending and receiving zones, with TDRs issued in sending zones and utilized in receiving zones, promoting equitable development. Following the pilot in Kanpur, the TDR system will be integrated with all development authorities across the state.

Mitigating Resource Burden of Heterologous Biomolecular Circuits in Escherichia Coli funded by DBT-Wellcome Trust



Synthetic biology, particularly in therapeutics, depend on the production of specific proteins through combinations of modified genes inserted into cells, such as bacteria. However, when these inserted genes are activated, they consume resources that would otherwise be used by the host cell for its regular activities. This competition for resources can harm the host cell, potentially causing the failure of the entire system. The aim of this project is to alleviate the strain on cells caused by the competition for resources, especially ribosomes, between natural cellular processes and synthetic genetic circuits in synthetic biological systems. To achieve this goal, four fundamental objectives are proposed. First, develop mathematical models to quantify the stress imposed on cells by implemented genetic circuits. These models will help predict cellular capacity using control theoretic tools, thus advancing predictive biology. Secondly, characterize functional maps that link genotypes to the resource demands of gene expression using machine learning techniques. This understanding will facilitate the design of regulatory elements from scratch. Thirdly, design biomolecular feedback controllers to maintain the balance of translational resources, ensuring that both natural and synthetic gene expression demands are met. Lastly, by studying the regulatory pathways that natural organisms

have evolved to cope with various stresses such as nutrient deprivation or heat shock, the project aims to apply these principles to design synthetic biological systems that are robust against cellular burden. These multidisciplinary approach combines system theory, computational methods, and molecular biology experimentation to address these challenges. Ultimately, this research seeks to establish rational frameworks for reducing cellular burden, thereby advancing the frontier of synthetic biology and enhancing the reliability of living therapeutics.

COLLABORATIONS THROUGH MOU

IIT Kanpur signed an MoU with Govt of Uttar Pradesh to collaborate in the R&D efforts of UP Digital Health Stack under the National Health Stack program of The Ayushman Bharat Digital Mission.

lIT Kanpur will mentor **Indian Institute of Skills (IIS) Kanpur** and has entered into an MoU with lIS Kanpur for establishing State-of- the- art Laboratories on Advanced Manufacturing, Robotics and Automations and develop cutting-edge curriculum. The event was organised by the

Ministry of Skill Development and Entrepreneurship and graced by the Hon'ble Minister Shri Dharmendra Pradhan.

IIT Kanpur signed an MoU with Indian Navy (IN) for strengthening the collaborative relationship between the academia and the armed forces to foster a conducive environment for innovation and knowledge exchange.

An MoU with **Commander Works Engineer (CWE) Lucknow** has been signed to work in the areas of Net Zero Carbon and Solid Waste Management in Lucknow Cantonment.

IIT Kanpur signed an MoU with **NMTronics India Pvt. Ltd.** to establish Center of Excellence for Electronics Manufacturing and Skills Development at IIT Kanpur. The center aims to foster collaboration in research and development while providing advanced learning

opportunities through IIT Kanpur's learning and development programs and will be equipped with cutting-edge technology, including a fully automated Surface Mount Technology (SMT) Line.

IIT Kanpur and **Samsung India Electronics Pvt. Ltd.** Entered into an MoA to work together on research project, hiring good resources, training and higher education during the tenure of this agreement.

IIT Kanpur signed an MoU with **Trimble Applanix** to develop pool of domestic knowledge and capacity working with Trimble Applanix UAV product portfolio within India.

Organo Technologies Pvt Ltd and lIT Kanpur entered a research collaboration MoU to work in the areas of Road construction/ Maintenance.

MoU with **Indian Institute of Craft & Design, Jaipur (IICD)** for undertaking collaborative work on development of rural handmade products with the objective of developing craft sector, preserving traditional arts and crafts was signed.

Airbus Group India Private Limited and IIT Kanpur entered an MoU to work in the areas of technology, research and training in the areas of aerospace.

An MoU to advance Hardware Security Technology was signed between **C-HERD and JISA Softech PVT LTD (JISA)**, an Indian Deep-Tech startup, in collaboration with Department of Computer Science & Engineering, IIT Kanpur.

Kalyan Singh Super Specialty Cancer Institute (KSSSCI) partnered with Karkinos Healthcare and IIT Kanpur to establish the Center for Advanced Molecular Diagnostics and Research for Cancer (CAMDRC) in Lucknow. This initiative aligns with the shift towards molecular diagnostics in cancer care, offering personalized treatments based on genetic insights and improving patient outcomes.

IIT Kanpur and **Military Engineer Services (MES)** Jhansi signed an MoU to convert Army stations into Carbon Neutral campuses. The MoU intends to establish a demonstrable model through a real- world example of achieving carbon neutrality and help to create a Carbon Neutral path for India to achieve sustainability.

TMEIC and IIT Kanpur entered an MoU to work in the areas of Power Electronics research and Product development including development of new generation PV inverter and UPS systems.

National Power Training Institute (NPTI) and IIT Kanpur have entered into an MoA for working professionals from government & private sectors in the area of Hydro, Renewable Energy, and Smart Grid.

IIT Kanpur & **National Automotive Test Tracks (NATRAX)** announced the signing of an MoU to facilitate collaboration in the areas of Real Drive Emission and Emission Norms, as well as other areas as deemed fit in the future.

IIT Kanpur and **Blockchain for Impact (BFI)** forged strategic partnership to accelerate Healthcare Innovation in India under the BFI-Biome Virtual Network Program to nurture innovations and driving advancements in healthcare in India. BFI has pledged to allocate over $150,000 USD across three years to develop programs specifically tailored to healthcare-focused startups at Startup Incubation and Innovation Centre, IIT Kanpur, aimed at developing impactful solutions that address critical gaps in India's healthcare landscape.

An MoU was signed with **Engineers India Limited (EIL)** to form the IITK-EIL Clean Energy Research Center, which will address two of the important thrust areas - green hydrogen, and carbon sequestration, along with conversion of the same to value-added products or even fuels.

MoU with **ICICI Bank** was executed to provide startups with a comprehensive support system. This collaboration offers digital banking services, regulatory assistance, fundraising support, and knowledge-sharing events. Startups will benefit from streamlined financial services and compliance guidance, as well as opportunities to connect with potential investors.

IIT Kanpur distinguished alumnus Dr. Rajeev Gautam (BT/ChE/1974) has generously contributed 250,000 USD to establish three endowed programs focused on promoting research and education in the Department of Chemical Engineering, IIT Kanpur, which will support the establishment of Om Prakash Gautam Endowed Faculty Chair, Rajeev and Joyce Gautam Faculty Fellowship and Rajeev and Joyce Gautam travel grant for students.

R&D EVENTS

IIT Kanpur's Tableau in "Maa Tujhe Pranam" event

IIT Kanpur received the 3rd prize for showcasing its technological prowess at the "Maa Tujhe Pranam" program on August 15th, 2023, organized by Amar Ujala in collaboration with the district administration.

The institute's Tableau, featured two advanced drones "Vibhram" and "Orbit" highlighting technological expertise in unmanned aerial systems, and a prototype of a Bi-Propellant Semi-Cryogenic Liquid Rocket Engine by Space-Phyllic, an incubated company of SIIC, IIT Kanpur.

PAN-IIT Global Technology Summit

The Pan- lIT Global Technology Summit held on December 8th and 9th, 2023 in Bengaluru witnessed an unprecedented gathering of around 5000 participants from diverse sectors such as industries, academia, government, startups, and various stakeholders. lIT Kanpur made a significant impact at the summit with three distinctive stalls that highlighted its prowess in innovation, research, and technology transfer.

The Startup Incubation and Innovation Centre (SIIC), the Cyber Physical Systems Innovation Hub (C3i Hub), and a comprehensive overview of research at IIT Kanpur were the focal points, serving as a testament to the institute's commitment to pushing the boundaries of knowledge and fostering industry collaborations.

IIT Kanpur's participation at inter IIT Research Fair IInvenTiv 2024

IInvenTiv-2024, 2nd edition of R&D Innovation Fair of Higher Education Institutes of India, was held at IIT Hyderabad on January 19-20, 2024. In this event, 90 institutions participated and showcased their innovations. The participants included 23 IITs, 31 NITs, 7 IISERS, 6 IIITs, IISc and top 50 NIRF engineering institutes. Honorable Shri. Dharmendra Pradhan, Minister of Education, and Minister of MSMEs, GOI was the Chief guest of this event.

IIT Kanpur showcased the following technologies:

- Svan M2: quadruped robot research platform (Domain: Defence and Space)
- Self-starting novel J shaped blade vertical axis wind turbine to harvest energy at low to high wind speeds (Domain: Sustainable technologies)
- Strips for simultaneous electrochemical detection of total and direct bilirubin (Domain: Affordable Health care)

RESEARCH INFRASTRUCTURE

Hypervelocity Expansion Tunnel Test Facility India's first Hypervelocity Expansion Tunnel Test Facility was successfully established and tested by IIT Kanpur. This is a major achievement that puts India amongst a handful of countries with this advanced hypersonic testing capability. The development of the facility was supported by the Fund for Improvement in S&T Infrastructure (FIST) of the Department of Science and Technology, Government of India (DST) with a sum of Rs 4.5 Crore in 2018.

The facility was developed by the Hypersonic Experimental Aerodynamics Laboratory at the Department of Aerospace Engineering, IIT Kanpur and is capable of generating flight speeds between 3-10 km/s, simulating the hypersonic condition. Named S2, it was indigenously designed and developed and is a valuable test facility for ongoing missions of ISRO - Indian Space Research Organisation and DRDO including Gaganyaan, RLV and hypersonic cruise missiles.

Centre of Excellence (CoE) for UAV/Drone

The centre of excellence for autonomous unmanned aerial vehicles is being setup with support from Government of Uttar Pradesh. It is envisaged as an interdisciplinary centre that would bring all stakeholders from across the state under one umbrella to initiate capacity building, training and design of UAV / Drone technology through state wide joint effort between the users, developers, researchers,

manufacturers and service providers. The centre is envisioned to play three roles:

- Cutting edge technology development in relation to UAV systems and its commercialization to enable delivery of affordable customized solutions,
- Provide training on state-of-the-art UAV systems and tools to the stakeholders and support capacity building through workforce creation, and
- Hand holding of various startups and providing technical consultancy to established companies in the domain of UAVs.

The key focus of the centre is to carry out and support product development and manufacturing of various UAVs for application to multiple sectors.

Advanced Research Facility to develop Materials and Technologies for Energy, Environment and Healthcare

In January 2024, IIT Kanpur's Chemical Engineering department received its third Department of Science & Technology's Fund for Improvement of S&T Infrastructure (FIST) grant. Through this grant, department aims to enhance research infrastructure and facilities to support R&D in emerging areas and attract new talent. Recognizing the need to focus on crucial areas such as energy, environment and healthcare, the department seeks to align with national priorities and contribute through R&D and skilled workforce development. These fields require specialized infrastructure in nanotechnology, catalysis, drug delivery, advanced materials and more. The sanctioned equipment s, including Small Angle X-ray Scattering (SAXS), Advanced Rheometer, High Performance Liquid Chromatography (HPLC) with Gel Permeation Chromatography (GPC), Gas Chromatography Mass Spectrometry (GCMS) and Ion Chromatography, will be invaluable in advancing research in these innovative materials and methods. With new expert faculty and a ₹7.63 Crore grant, the department is poised to advance research, train skilled professionals and support industry needs.

Centre for Excellence in Advanced Technologies for Monitoring Air quality indicators (CoE-ATMAN)

Centre of Excellence in Advanced Technologies for Monitoring Air-quality indicators (CoE ATMAN), https://iitk.ac.in/atman/index.php approved by PSA office, Government of India, is currently executing 5 projects. CoE ATMAN's activities focus on development of indigenous PM Sensor development, Real-Time Source Attribution with portable sensors, use of AI/ML capabilities for establishing nationwide AQ monitoring networks, air shed delineation, AQ forecasting, Dynamic Hyper-Local Source Apportionment (DHSA) and network optimisation. Following projects are endorsed under the CoE ATMAN: a) Open Philanthropy. Rural air quality monitoring in UP and Bihar, b) Clean Air Fund (CAF). Indigenous Development of Low-Cost Sensors, c) Clean Air Fund (CAF). Atman-Centre of Excellence: Core Support Grant, d) Clean Air Fund (CAF). Dynamic Hyper-Local Source Apportionment for Real-Time Policy Action, e) Rail India Technical & Economic Services Ltd. (RITES). DHSA at Kanpur.

Nmtronics Center Of Excellence for Electronics Manufacturing and Skill Development" funded by Nmtronics (India) Private Limited

IIT Kanpur will be establishing a "Center of Excellence for Electronics Manufacturing and Skills Development" through the CSR initiative of NMTronics India Pvt. Ltd. This center will house state-of-the-art equipment for Surface Mount Technology. The primary objectives of the center include skill development through a joint certification & diploma program by NMTronics and IIT Kanpur, supporting New Product Introductions for start-ups across India and providing R&D and process consultancy to the rapidly growing electronics manufacturing industry. It will also function as a test bed for electronics related research in the institute including 5G, IoT, smart manufacturing, biomedical devices, and others. The center is expected to be ready by November 2024.

Jay Pullur Non-Invasive Brain Stimulation Laboratory

The Cognitive Science Department has established the 'Jay Pullur Non-Invasive Brain Stimulation Laboratory' to conduct cutting-edge research in Brain Mapping and Stimulation, advancing neuroscience.

Installation of 200 KW Rooftop Solar PV Plant

Solar Energy is one of the most significant cleaner and renewable forms of energy source that does not produce air pollution or greenhouse gases. Harnessing renewable energy is critical as we try to achieve IIT Kanpur's net zero commitment aligned with our sustainable developmental goals. With the generous support from our distinguished alumnus Mr. Bhadresh Shah (BT/MME/1974), Managing Director, AIA Engineering Ltd., a 200 KW Rooftop Solar PV Plant was installed on the terrace of the New Core Lab on 23 February. 10 Invertors, each with a capacity of 20 KW are installed in this plant. It is expected to reduce carbon footprint on the campus by 233.60 tons of Carbon Dioxide per annum.

NEW INITIATIVES

Kotak School of Sustainability

IIT Kanpur and Kotak Mahindra Bank have come together to incubate the 'Kotak School of Sustainability' with the overall vision of providing thought leadership, developing solutions towards sustainability actions and preparing future generations to lead the cause of sustainable development.

The school will cohesively integrate cross-disciplinary professionals, ideas and entities relevant to the different facets of sustainability, enabling a transformative change in the actions towards sustainable development. It will be a conglomerate of the relevant departments, centres and other entities at IIT Kanpur, thus providing an enabling environment or synergistic research collaborations across the identified thematic areas. These interdisciplinary collaborations will enable the conduct of impactful and diverse educational and outreach programs, solution-driven innovations, the development of entrepreneurship and collaborations with external stakeholders. The school would also act as a platform for upskilling of different stakeholders through its outreach and capacity-building programs. In particular, it will play a vital role in the sustainable development of the Indo-Gangetic region, using its location as an advantage. The emphasis will be on developing holistic and end to end solutions encompassing all aspects of sustainability.

INNOVATION AND INCUBATION

During the Financial Year 2023 – 24, a total of 141 IPRs were filed by the Institute including 125 Indian Patent applications, 6 US Patents, 4 Chinese patents, 3 Design registrations, 1 Trademark application and 2 Copyrights, the total number of IPRs granted were 242, and 14 technologies were licensed to Industry Partners. In a remarkable display of innovation, IIT Kanpur has achieved a significant milestone by achieving an exceptional licensing rate of around 14%. This accomplishment solidifies the institute's commitment to ground breaking research and marks the third consecutive year in which IIT Kanpur has secured the highest number of IPRs in its history, taking the overall achievement to 1098 IPRs till date, out of which 732 have been granted so far along with 143 technologies licensed for commercialization. In the FY 2023-24, the Institute IPR Cell has facilitated the highest number of technology transfer transactions i.e. 14 Technologies were licensed to Industry partners.

TECHNOLOGIES LICENSED (2023-24)

- **IIT Kanpur signed a breakthrough Memorandum of Agreement with Laurus Labs for licensing novel gene therapy assets.**

In a historic milestone, our institute has entered into a Memorandum of Agreement (MOA) with Laurus Labs to introduce groundbreaking gene therapy assets to the market. This collaboration marks a paradigm shift with regards to innovation and advancement in the field of bioengineering in India, with this unprecedented industry-first investment in a faculty research group.

IIT Kanpur has transferred several gene therapy assets developed by Prof. Jayandharan G Rao, Molecular Genetics and Therapeutics Lab, BSBE Department, through in-licensing to Laurus Labs, who will provide a research grant to facilitate their progression through pre-clinical development. Laurus Labs will also fund the necessary clinical trials and spearhead the launch of these cutting-edge products not only in India but also in emerging markets. In addition, Laurus Labs will establish a state-of-the-art Good Manufacturing Practice (GMP) facility at IIT Kanpur's Techno Park, bolstering the

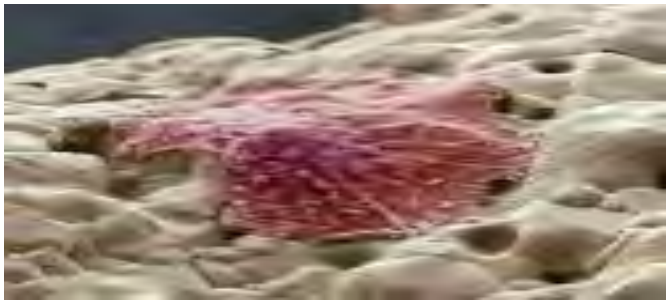
production capabilities of gene therapy products. They will actively engage in the Contract Development and Manufacturing Organization (CDMO) business for cell and gene therapy, leveraging the capabilities of the GMP facility.

- **A Bilirubin detection technology transferred to Sensa Core Medical Instrumentation Pvt. Ltd.:**

IIT Kanpur developed technology titled "Electrochemical Sensor for Bilirubin Analysis in Human Blood/Serum" has been transferred to Sensa Core Medical Instrumentation Pvt. Ltd., a Hyderabad based pioneer in Ion-selective Based Electrolyte Analysers, Arterial Blood Gas Electrolyte Metabolite Analysers and Mass production of Glucose Test strips and Haemoglobin Test Strips.

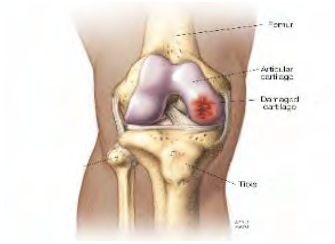
The licensee has planned to add Bilirubin Test strips to its portfolio as a part of Point of Care testing and screening. The licensed technology aims to address neonatal jaundice that is a prevalent health issue faced by new- borns in India. Neonatal jaundice is a prevalent clinical condition, affecting roughly 60% of full-term and 80% of preterm new-borns with a mortality rate of 7.3 per 1000 live births in India.

The novel electrochemical sensing strip developed by Prof. Siddhartha Panda and Dr. Nishant Verma, has three variants that can simultaneously detect the direct and total bilirubin in a single drop of blood and deliver results within a minute. All the three variants have been protected by an Indian Patent Application number. This sensor is expected to be used for bedside testing, in diagnostic laboratories, and even in health screening centres.



- **Transfer of a bone regeneration technology:**

Upholding the technology translation dynamism for commercialization from the Institute, another touchstone obtained by IIT Kanpur in the field of healthcare, a technology titled “Nano-Hydroxyapatite based porous polymer composite scaffolds for bioactive molecule delivery in musculoskeletal regeneration” developed by Prof. Ashok Kumar and his team from Department of Biological Sciences and Bioengineering at IIT Kanpur, has been licensed to a Canadian company named “Conlis Global Inc.”, with an objective to overcome the problems related to bone and joint disorders, capable of biocompatible bone regeneration



The invention has an application in acting as carrier for bone active biomolecules, delivering them directly at the implant site. The novel material is biodegradable and has osteoinductive (bone healing process) and osteopromotive (material for new bone growth) properties for bone regeneration. They are highly biocompatible resulting in good cell material interaction with osteoblast cells (cells responsible for mineralization of bone during bone formation and bone remodelling), exhibiting a high mechanical strength and interaction between the polymer network and the solvent.

These functionalized porous composite scaffolds can be used as fillers in large size bone defects, without compromising the connectivity and structural defects, oxygen and blood circulation thereby enhancing tissue formation, mineralization, and rapid defect healing. It can also be used as bone substitute, overcoming autograft limitations.

The primary objective of the present invention is to overcome the drawbacks of the existing remedies, other alternatives have been associated with infection and immune related complications. Henceforth, this 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.

- **IIT Kanpur, IIT Madras and SAMEER Collaborate to License 5G RAN to Tejas Networks, a Tata Group Company**

In one of the largest & pivotal technology transfer from Indian academia, a 5G Radio Access Network (RAN) technology, collaboratively developed at IIT Kanpur, IIT Madras & SAMEER, has been officially licensed to Tejas Network – a Tata Group company.

This notable move took place on Dec 11, 2023, at IIT Madras, in presence of Prof V Kamakoti, Director, IITM, Dr. Kumar N Sivarajan, Prof Bhaskar Ramamurthi, IITM, Dr. P Hanumantha Rao, DG SAMEER, Prof Rohit Budhiraja, IITK & Dr. Radhakrishna Ganti, IITM & Prof Ajit K Chaturvedi, IITK. The technology, from a multi-institutional 5G Test Bed project supported by the Department of Telecommunications, Government of India, funding, will enhance India's pioneering efforts in groundbreaking transformative innovation and create significant growth opportunities for the rapidly evolving telecommunications industry

- **Technology Transfer to Ecotech Instruments**

IIT Kanpur licensed a technology titled 'Selective Collection of PM10 and PM2.5 Particles from Dust Samples for Chemical Analysis,' a technical know-how, developed by Prof. Mukesh Sharma from the Department of Civil Engineering, to Ecotech Instruments Pvt. Ltd. on November 10, 2023. The novel technology is the PM10 and PM2.5 Profile Sampler, selectively collects PM10 and PM2.5 particles from dust samples or direct source emissions onto a chosen filter matrix.

Urban areas face significant challenges in effectively controlling air pollution, made worse by a lack of comprehensive data on particulate matter sources. Current monitoring methods often fail to provide detailed insights into the chemical composition and origins of pollutants, hindering the development of targeted pollution control strategies. The developed technology addresses these challenges. Within the profile sampler, a dilution system incorporating the required amount of clean air has been designed to closely mimic atmospheric dilution, thus obtaining representative samples reflective of any source type according to underlying scientific principles. The sampler underwent validation for the consistency of PM2.5 and PM2.5-10 particle collection across various types of dust.

- **Block chain systems for data integrity and record**

IIT Kanpur has licensed multiple technologies in the field of block chain to Trential Technologies Pvt. Ltd. invented by Prof. Manindra Agrawal & Mr. Tanmay Yadav from the Department of Computer Science and Engineering of the Institute.

The technology has been translated to the industry partner for its further development into a scalable product, heading towards working with user agencies across the globe to build, deploy and maintain the solution. The technology shall be used to create a tamper-proof, immutable record of property registry, smart cards for consent management, novel wallet management for permissioned block chains, integration to handle cases of impersonation, etc.

- **IIT Kanpur's licensed technology – The Air Sampling Device launched in the market.**

IIT Kanpur is proud to announce that one of its latest licensed technologies, an Air Sampling Device, has been launched as a product in the market.

The developed technology was licensed to an air quality monitoring company, Air shed Planning Professionals to bring appropriate, reliable and cost-effective solutions to the Indian Air Quality Management Industry. The Air Sampling Device was introduced in a product launch event on 11th March 2024 at Pioneer Batch Continuing Education Centre (PBCEC) of the Indian Institute of Technology Kanpur.
Air shed Planning Professionals, an incubate at Startup Innovation & Incubation Centre (SIIC), IIT Kanpur, has been engaged in providing expertise in the field of air pollution, research and practice, being a licensee to a low-cost technology for efficient air sampling, for bioaerosol & particulate matter for commercialization.
Such technologies are developed at the institute to promote micro, small and medium enterprises, for boosting the indigenous ecosystem. The device collects samples for the assessment of different parameters of air, including quality

of respirable air, monitoring and sampling of ambient air and quantitative evaluations of substances present in the air along with providing quantitative estimates of different microbial colonies load in the ambient air.

Accompanied by a stakeholder discussion encompassing stakeholders from Institutions, the Pollution Control Board, R&D houses, infrastructure companies and industry partners discussed the milestones and potential of different products to bring revolutionary change in the cleantech domain, wherein they also opined on the milestones and potential of different tech-driven products to address shortcomings in the Indian Air Quality Monitoring ecosystem.

STARTUP INCUBATION & INNOVATION CENTRE IIT KANPUR

EVENTS AND PROGRAMS IN THE YEAR 2023-24

- SIIC conducted a 10-day Design Awareness Program under the MSME scheme. SIIC was the implementing agency for the "Design" sub-component of the MSME Innovative Scheme. The 10-day Awareness Program aimed to create awareness about this prestigious Scheme and promote technology interventions among aspiring MSMEs, innovators, and budding entrepreneurs.
- The Health Tech Ideation & Innovation program (HII) was held at IIT Kanpur from 12th June to 30th June to encourage young innovators and entrepreneurs to innovate and commercialize indigenous medical devices.
- The Indo-Korean Knowledge Exchange Program, a joint effort involving Seoul Startup Hub, AIIDE-CoE, and Startin UP, exemplified the dedication to promoting innovation and bolstering bilateral ties. The workshop ended with a commitment from SIIC, IIT Kanpur's experts with a promise to collaborate, exchange knowledge, and build fruitful partnerships.
- SIDBI, with SIIC, IIT Kanpur, featured five innovative startups at the WBAF World Congress 2023 in Durban, South Africa, showcasing India's tech advancements and dedication to startup support and financial inclusion, highlighting India's global entrepreneurial impact.
- SIIC, IIT Kanpur, and the German Centre for Research and Innovation (DWIH) joined forces for Cohort 2 of the Innovators Connect TANDEM Program. Teams attended workshops in Bengaluru, Kanpur, and Bhubaneswar from November 20th to 30th, receiving guidance from experts.
- SIIC, IIT Kanpur has partnered with the Ministry of Housing and Urban Affairs (MoHUA), to support sustainability focused startups through the Startup Gateway for Garbage Free Cities 2.0 program. The selected startups received a funding support of Rs 20 lakh, a one-year incubation program, and mentoring from subject-specific experts.
- The India ASEAN Start-up Summit 2023, a collaborative initiative between India and Malaysia, held on 12th and 13th December, brought together start-up founders, investors, policymakers, and incubators. The event attended by a delegation from DST India led by SIIC, IIT Kanpur, aimed to promote entrepreneurship.
- SIIC, IIT Kanpur, participated in Global BioIndia 2023 on 12th December 23, organized by BIRAC and the Department of Biotechnology, Government of India. The event featured SIIC showcasing innovative startups and success stories to dignitaries.
- SIIC, IIT Kanpur participated in the India International Science Festival 2023-24 that took place from January 17-20 at Faridabad RCB, organized collaboratively by the Ministries of Science and Technology, Earth Sciences, Space, and Atomic Energy, along with Vijnana Bharati. The festival aimed to involve diverse communities in innovative science with a Swadeshi spirit, showcasing how STEM solutions improve lives.
- SIIC, IIT Kanpur hosted a workshop to raise awareness about the Design component of the MSME Innovative Scheme, supported by the Ministry of MSME on February 7, 2024 to foster innovation and entrepreneurship in the MSME sector. The event aimed to enlighten participants about the program's significance, through dynamic presentations, outlining key aspects of the design component.
- Social Innovation Lab by CITI launched its second cohort in collaboration with IIT Kanpur on March 7, 2024 to assist early-stage startups in Agritech and Cleantech. The initiative supported 30 early-stage startups and accelerated 15 growth-stage high-impact startups.
- SIIC, IIT Kanpur hosted 'Abhivyakti 24', its annual startup festival, on March 15th and 16th. The event featured a grand inaugural ceremony and gathered entrepreneurs, investors, mentors, and officials. SIIC incubated startups showcased their products, highlighting SIIC's commitment to innovation and entrepreneurship.

SUCCESS STORIES AT SIIC, IIT KANPUR

- **Jatayu Healthcare -** This startup was marked as the winner of the Pitchers Plot Event, which was organized by BITS Pilani Hyderabad.

- **LCB fertilizers** won the UPICON event's pitching competition.

- **DREAM Aerospace** - An SIIC startup had been honoured with the prestigious TANSEED 4.0 Grant of Rs. 10 Lakh by the Hon'ble Chief Minister of Tamil Nadu, Shri. M.K. Stalin. The startup was selected for the Chunauti 5.0 Programme Seed Fund Scheme. They received a Rs. 10 Lakh investment cheque at the Leap Ahead Startup Summit 2023. It also won the Eureka - Road to Enterprise Contest,

which is Asia's largest Business Model Competition organized by the e-Cell of IIT Bombay, and was awarded a cash prize of Rs. 1.25 Lakh INR.

- **RF Nanocomposites Pvt. Ltd.** - This startup was invited to the prestigious IETE International Conference India (IICI-23) on 'Artificial intelligence' (AI) and 'Machine learning' (ML) Driving 5G - Advanced and 6G - Making 6G and Artificial intelligence (AI) in India for the World'. They came together with industry leaders, policymakers, and experts in the field to explore cutting-edge advancements in AI, ML, and 5G technologies.
- **AiRTH** - AiRTH presented their innovative solutions at VivaTech 2023 in Paris, France. AiRTH introduced an Antimicrobial Air purifier, proven to deactivate the SARS-CoV- 2 virus within 1 minute.

- **napID Zero-Factor Authenticator** - This year, napID had the privilege of representing India at VivaTech, held in Paris. napID's One-Touch Authenticator helps banks and enterprises to authenticate genuine users and prevent fraudulent login and payments. napID was also the Winner of the Global Audition of the Korea Startup Challenge. napID had been a part of Korea's leading accelerator, Seoul Fintech Lab, funded by the Seoul Metropolitan Government.

- **Life and Limb Private Limited** - Life and Limb Private Limited, a leading startup in Digital Transformation, was honoured with the Prestigious CII Startup entrepreneur Awards in New Delhi, presented by Saint-Gobain. Life and Limb clinched the prestigious Gold Award for Innovation at the esteemed 2023 Medical event held in Chennai. This startup won the 'Innovation in Deeptech' category at the 14th Aegis Graham Bell Award, supported by MeitY Startup Hub and graced by the presence of the Honourable Minister of Road Transport and Highways, Shri. Nitin Gadkari.

- **AgrowSure Products and Innovations** - This startup won this year's Youth Co: Lab Program in Gender Equality Category by Atal Innovation Mission, NITI Aayog in collaboration with United Nations Development Programme (UNDP) and Citi Foundation.

- **ProMeat** - This startup won this year's Youth Co: Lab Program by UNDP India, Citi Foundation, Atal Innovation Mission, and NITI Aayog.

- **Saptkrishi** - This startup made its mark at the G-20 Agriculture Ministers Meeting held at HICC Hyderabad. Its participation in this prestigious event signifies recognition and appreciation for its innovative agricultural practices.

- Startup20 Shikhar Summit held in Gurugram – Our startups, AiRTH, ProMeat, GRIDsentry, Nadipulse, and Life and Limb, had showcased at the Summit.

- **Forensic CyberTech** - This startup had made a remarkable achievement by winning the prestigious iDEX-DIO DISC 9 challenge # 26 of the Ministry of Home Affairs (MHA), GOI – Indian Cyber Crime Coordination Centre (I4C) on the problem "Portable Mobile Forensic Suite and a cloud version."

- **Treacle Tech and Arishti Info Labs** won DoT grant for innovation. These startups won a prestigious grant under the Digital Communication Innovation Square (DCIS) Scheme by the Department of Telecommunications, Government of India.

- **VOLTWORKS** - Voltworks was awarded the best startup at the Atal Incubation Center (AIC) Sonipat Startup Summit winning a grant of INR 4 lakhs.

- **AGRONXT SERVICES** - Won the UPICON event's pitching competition. This startup took part in the G20 Agricultural Exhibition at the Indian Agricultural Research Institute, New Delhi. They collaborated with global leaders to advance agricultural technology and sustainable farming practices. This startup also emerged as the winner of the Global Fundraising Stage at the World Congress of World Business Angels Investment Forum (WBAF), Durban, South Africa.

- A fellow of the **School of International Biodesign-Synergising Healthcare Innovation and Entrepreneurship (SIB SHInE) program**, achieved third place at the 2023 TiE Women Global Pitch Competition in Lucknow.

- **Arishti Info Labs Pvt. Ltd.** - Arishti Labs won the prestigious IDEX DIO DISC 9 challenge # 07 of the Indian Air Force on the problem "Development of a multi-engine AV (Anti-Virus) solution".

- **Climec Labs** - This startup was honoured with the prestigious NASSCOM Spotlight Award in the "Ideation to Engineering Leadership" category. Their ground breaking creation, 'Aerem', signifies a significant milestone and showcases its profound impact on startups.

- **SocioDent Pvt. Ltd.** - SocioDent was honoured at the 14th NCPEDP-Mphasis Universal Design Awards 2023. This recognition underscores the company's dedication to advancing universal design and fostering an inclusive future.

- **Ksham Innovation** - This startup was selected for the ATF Awards 2023, as the Best Assistive Technology Startup People Choice Award. Its unique technology was specifically designed to empower people with

disabilities, enabling them to communicate, learn, and perform daily tasks with greater ease and independence.

- **EndureAir Systems** - An SIIC, IIT Kanpur, startup, it played a pivotal role in the rescue mission at the Silkyara tunnel in Uttarakhand. The deployment of their drone, named Alakh, proved instrumental in saving the lives of 41 trapped workers.

- **Uneako** - A participant in the 'Startup Gateway for Garbage Free Cities' (SGGFC), earned recognition as one of the top 8 single-use plastic alternatives. This contribution aligned with the plastic-free initiative at Ram Mandir, Ayodhya, inaugurated by Chief Minister Shri. Yogi Adityanath.

- **Treacle Technologies Pvt. Ltd.** -This startup won the prestigious AWS x Campus Fund Grand Challenge 2023. Specializing in defensive security, this startup ensured that businesses stay secure amid the dynamic digital landscape.

- **Samak Technologies** - It secured the second position in the esteemed 4th Edition of the START-O-VATION National Startup Summit. This event was conducted by the Indian Chamber of Commerce in partnership with Invest India.

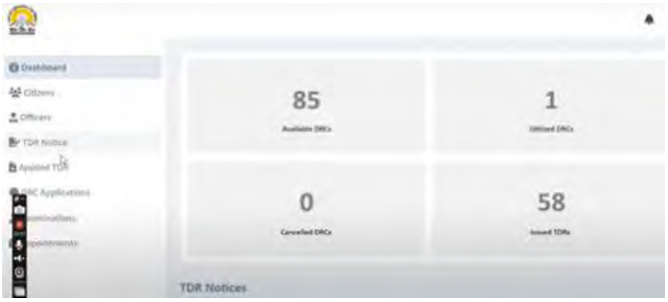
- **Rcube Recycling** - This startup was an awardee under the Startup Gateway for Garbage-Free Cities program funded by MoHUA, and had been shortlisted in the top 20 MSMEs for the prestigious 16th Bangladesh Int'l Plastics, Printing & Packaging Industry Fair.
- **Weather Risk Management Services (WRMS) Global** - This startup formerly incubated with SIIC, IIT Kanpur secured €2.1 million (INR 17 crore) from the InsuResilience Solutions Fund.

C3I HUB

C3iHub (Cybersecurity and Cybersecurity for Cyber-Physical Systems Innovation Hub) is a Technology Innovation Hub established at IIT Kanpur in 2020, funded by Department of Science and Technology, Government of India, under the National Mission of Interdisciplinary Cyber-Physical Systems. As the name implies, C3iHub addresses cybersecurity issues of cyber-physical systems in its entirety. From analysing security vulnerabilities and developing tools to address them at various levels of critical cyber-physical system architectures, nucleating start-ups developing such tools at scale, partnering with industries for co-development and technology transfer, to training the next generation of cybersecurity researchers, C3iHub works on every level that facilitates country's adoption and advancement of cyber-physical systems. Current employee size of C3iHub as a Section 8 company is more than 120 and is expected to reach 200 by end of 2024.

Past year was a significant year for C3iHub in terms of technology readiness to deployment, patents granted, new Govt./industry collaborations established, and increase in supported R&D projects and start-up numbers.

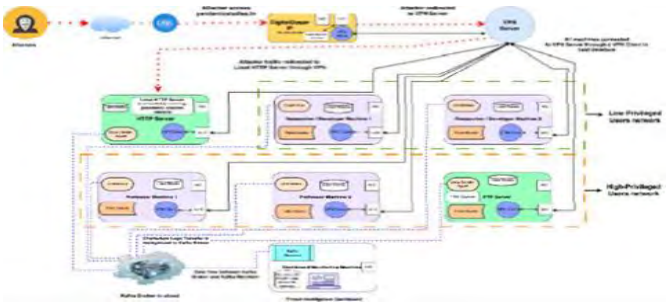
C3iHub's researchers have developed a unique block chain based (TRL 8) Transferable Development Rights (TDR) system that allows secure, transparent, and tamper-proof storage and management of Development Rights Certificates (DRCs). A secure wallet linked to Aadhaar is issued to owners to store the DRCs. The TDR portal is integrated with online building plan approval system allowing authorities to monitor the real time usage of DRCs. C3iHub's developed portal has success fully undergone user acceptance testing and has gained approval from the Kanpur Development Authority (KDA) for rollout in Kanpur. Successful deployment in Kanpur will pave the way for its broader deployment across Uttar Pradesh. Deployment of this technology will enable transparent trading of land holdings in cities that have been acquired by city administration, and reduce litigations, frauds, scams and other such issues.



TDR Portal Dashboard

C3iHub researchers have designed and developed a novel technology, 'ADAPT' (TRL 4), adaptive camouflage-based orchestration of behavioral honeypots, tailored specifically to capture Advanced Persistent Threat (APT) attacks. APT attackers are sophisticated attackers, often backed by nations, who remain undetected in user networks and computer systems for a prolonged period with goal of stealing critical and sensitive data as well as gaining command and control of user- and user-associated systems, causing catastrophic consequences. Their usual targets are crucial national entities like government, critical infrastructure, and defense. Traditional honeypots fail to engage APT attackers through the entire attack life cycle. C3iHub researchers strategically positioned the attack paths aligning with the Tactics, Techniques and Procedures (TTPs) of three popular APT groups in the honeypot network. They also deployed a novel camouflaged chatterbox application within the honeypot network offering regular chat interface while periodically tracking attacker activity by enabling periodic log transfers. The orchestrated honeypots, deployed for 100 days, recorded 13,906,945 hits from 4,238 unique IP addresses across the globe. The honeypots successfully identified attacks from Hong Kong with similarities to known Chinese threat groups (doi.org/10.1145/3651991).

A National Patent has been granted to C3iHub researchers on "System and Method for Kernel-level Active Darknet Monitoring in a Communication Network" (Patent Number 506825). Commercial threat intelligence fails to detect & analyse organization specific threats, while darknet monitoring works for organization- specific threats by engaging with attacker in near real-time & detecting source IP address of attack attempts. C3iHub's deployed darknet sensors successfully gather organization- specific threat intelligence.



Design of Honeypot Network

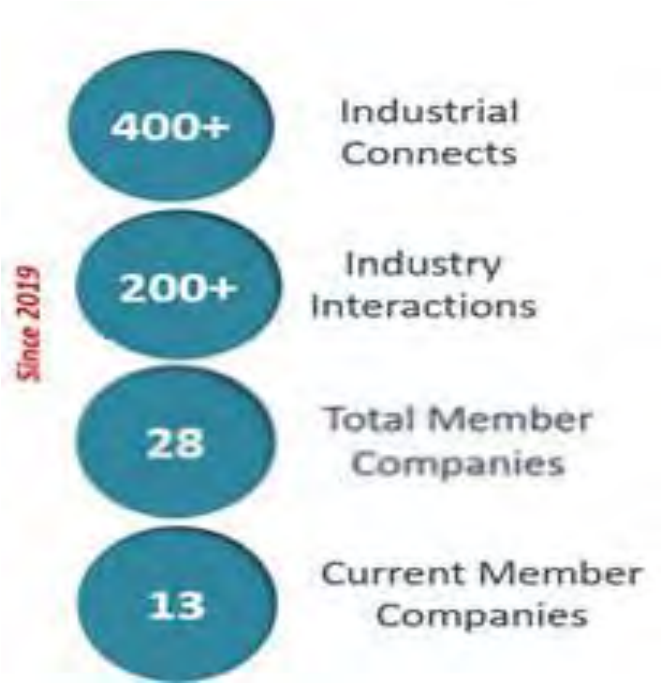
C3i Hub is also developing Cyber Security Capability Maturity Model (CSCMM) and assessment and analytics tool/framework for critical sectors of the country (banking, power and energy, government, health, telecom, transport and others.) with NCIIPC (National Critical Information Infrastructure Protection Centre), and has initiated piloting with organizations of critical sectors, which will help organizations to improve their cybersecurity readiness. C3iHub hosted two National level workshops in the last year: (i) 3rd National Workshop on Technology Innovation in Cyber- Physical Systems – TIPS 3.0, organized by the Department of Science and Technology on 5th – 6th October 2023, and (ii) 1st Workshop on Cybersecurity Capability Maturity Model (CSCMM) Development, in collaboration with the National Critical Information Infrastructure Protection Centre NCIIPC on November 3rd – 4th 2023. Also, C3iHub successfully celebrated Grand Launch of 19 incubated Start-ups from Cohorts III, IV and V on March 29, 2024 at New Delhi. C3iHub's Govt. and Industry partnerships have significantly expanded over the last year, with MoUs signed with Tata Advanced Systems Limited (TASL), Bhilai Steel Plant (SAIL), Mumbai Port Trust, Government of Rajasthan, and International Financial Services Centers Authority (IFSCA).

Dr. Yuvraj Agarwal, Associate Professor from Carnegie Mellon University (CMU), Pennsylvania, delivered a distinguished talk at C3iHub on building and deploying trustworthy IoT systems. Dr. Charles Clancy, MITRE CTO and SVP MITRE Labs, delivered a distinguished talk at C3iHub emphasizing the importance of post quantum cryptography for a quantum-safe internet.

C3iHub has funded 17 new R&D projects in reputed institutions across the country as well as 10 new start-ups in the last year, bringing the total number of supported R&D projects and start-ups each to fifty. More than half of C3iHub start-ups have commercialized their products. Through cybersecurity skill development programs, C3iHub has trained more than 10,000 individuals in the past year.

Professor Yuvraj Agarwal, CMU, Pennsylvania, Dr. Charles Clancy, MITRE

IIT KANPUR RESEARCH AND TECHNOLOGY PARK FOUNDATION



IIT Kanpur Research and Technology Park Foundation, with the brand name Technopark@iitk, officially started its operations on 1st March 2019 with the primary intent of promoting industry, IIT Kanpur and government collaborations to create indigenous cutting-edge and cost-effective technologies.

Since its inception, Technopark@iitk has been engaging with industry, big, medium, and small enterprises, and prominent industry associations. In tandem, it is actively reaching out to its other stakeholders that include faculty, students, research scholars and R&D organizations. These interactions have helped companies define their vision and key objectives. In the past five years, having reached out to close to 400 companies and having interactions with 200+, Technopark@iitk is continuously evolving and making steady progress towards its now clearly-defined objectives.

HIGHLIGHTS (2023-24)

Inauguration of the new State-of-the-Art Technopark@iitk Phase I Building.

The Inauguration ceremony was marked by the presence of Professor Abhay Karandikar, Secretary, Department of Science and Technology, Government of India, who served as the Chief Guest and Shri Awanish Awasthi,

Advisor to the Chief Minister of Uttar Pradesh, as the Guest of Honor. Professor Karandikar, who had previously laid the foundation stone of this building during his tenure as the Director of IIT Kanpur, delivered an address envisioning Technopark as a pivotal hub for industry-academia collaborations to develop cutting-edge technologies. Shri Awanish Awasthi discussed several upcoming government initiatives, particularly in the pharmaceutical sector, aimed at bolstering IIT Kanpur's role as a vibrant industrial hub. The ceremony was presided by Professor S. Ganesh, the Former Officiating Director of IIT Kanpur and Professor Amarendra K Singh, Professor-in-Charge, Technopark@iitk.

Concurrent with the inauguration, a workshop on "Industry- Academia Collaborations: Challenges and Opportunities" was held. The workshop concluded with a comprehensive panel discussion on the "Role of Technology parks in furthering Industry- Academia collaboration".

The Phase I building is a state-of-the-art architecture spread over 2.5 lakh sq. ft. with over 1.5 lakh sq. ft. of usable space. It is equipped with the latest amenities such as auditorium, conference room, meeting and training rooms, cafeteria, recreational facility, co-working spaces and a multipurpose room.

For IIT Kanpur and Technopark@ iitk, the Phase 1 building launch is an exciting chapter in times to come to bridge industry-academia for nurturing technologies and innovation. It reinforces our commitment to provide a world-class state-of-the-art infrastructure for industries to thrive and shape the future of technology.

Mission Mode Project Undertaken

Under the Defence Testing Infrastructure Scheme (DTIS) of the Ministry of Defence, Government of India, world-class Defence testing facilities are being set up in the two Defence Corridors of India, TIDCO and UPDIC. Of the three domains to be set up in the Uttar Pradesh Defence Industry Corridor (UPDIC), two verticals Communications and Unmanned Aerial Systems (UAS) are earmarked for the Kanpur node.

Technopark@iitk in collaboration with the DPSUs will host both Communications & UAS test facilities within its new building spread over an area of 18000 sq. ft. The lead industry partners for Communications and UAS verticals are Bharat Electronics Limited (BEL) and Hindustan Aeronautics Limited (HAL), respectively. The facilities will be available for use for startups, industry and academia at fixed user charges.

Technopark@iitk has also signed an MoU with the UP Expressways Industrial Development Authority (nodal agency for UP Defence Corridor) to offer R&D support to the companies participating in the corridor activities.

R&D Impact Generated

Technopark@iitk measures its success by assessing the impact generated on the IIT Kanpur R&D ecosystem through various modes of collaboration between its member companies and the IIT Kanpur ecosystem.

INDUSTRY R&D CENTERS SET UP IN TECHNOPARK

- Laurus Labs (27000 sq. ft.) Establishing cGMP vector manufacturing facility
- IHUB NTIHAC FOUNDATION (27000 sq. ft.) Cybersecurity Technology Innovation Hub
- TVM Signalling & Transportation Systems (1600 sq. ft.) EstablishingR&D facility to develop new technologies for Railways
- Merai Newage (3500 sq.ft.) Establishing AI/ML facility
- Q-Line Biotech (4700 sq. ft) Establishing R&D facility to develop Medtech products
- GCRS, Medetronix, SkyAI, Cingularity TEC (2500 sq.ft.)

Projects Sanctioned	MoUs/NDAs Signed
JK Cement (3)	Aditya Birla Science and
JK Fenner (1)	AVPL International
Meril Diagnostics (1)	Absolute
Technithon International	J K Fennner
Toka Technologies (1)	Jindal Stainless Limited
Four (4) in discussion stages	

Miscellaneous

- Three Student Awards (under CSR) by JK Fenner.
- Full-time hirings by TISA Aerospace (2), Meril Diagnostics (11), Q-Line Biotech (1), Maraal Aerospace (1).
- Sponsorship for Chemineers Society event (2023) by Medetronix.
- Discussions underway for Licensing and commercialization of a patented technology (Bhu Parikshak).
- Showcased the IITK ecosystem at different industry forums and platforms
- Created Job Opportunities.

Current Member Company Portfolio

Laurus Labs is a leading research-driven Indian multinational pharmaceutical and biotechnology company headquartered in Hyderabad. Founded in 2005, the company is heavily R&D driven and invests in cutting-edge research to develop new cures for challenging diseases. The focus areas include Generics API, Generics FDF and Synthesis. (*Member since September 2023*)

Q-line Biotech is a leading provider of in-vitro diagnostic (IVD) products and instrumentation since 2013. It offers a diverse range of diagnostic solutions including clinical chemistry analyzers, reagents and rapid tests catering to various medical specialities. The company has two ISO 13485:2016 and GMP certified manufacturing units in Delhi and Lucknow with complete assembly and packaging lines and quality check labs. (*Member since May 2023*)

Merai Newage is an Indian medical device company that manufactures clinically researched in-vitro diagnostic kits and surgical needs like vascular intervention devices, orthopaedic implants, robotics, endo-surgery, and ENT products. (*Member since March 2024*)

Medetronix is a medical device manufacturing company specializing in portable medical diagnostic & bio-sensing devices with an aim to advance electrochemical sensing technologies capable of facilitating multiple real-life health sensing and diagnostics. The company has its presence in Bengaluru as well. (*Member since May 2019*)

TVM Signalling and Transportation Systems are system integrators and solution providers in the Transportation sector, focusing on Railway Signalling, Smart City domains. As a group company of 106+ year old Kyosan Electric Manufacturing, Japan, it has performed 1,000+ turnkey commissioning for the railways of India, Bangladesh, and Malaysia, and provided Signalling Design Engineering Services for the railways of UK, South Africa, and Australia. (*Member since March 2024*)

Injectoplast is a leading system supplier to the Automotive industry in India and worldwide, providing solutions for modules and systems made of engineering plastics components and assemblies. The company has three manufacturing facilities at Kanpur, Pune and Chennai serving the major automotive car making hubs in India. (*Member since June 2019*)

TISA Aerospace is a Hyderabad-based OEM for Unmanned Aerial Vehicles (UAVs) specialized in design and development of Fixed wing UAVs and Hybrid Drones. The company is a subsidiary of Raghu Vamsi Machine Tools and extends its services to all leading Aerospace and Defence organizations. (*Member since 2022*)

Maraal Aerospace is a deep tech IIT Kanpur incubated startup company involved in design, development, and manufacturing of Ultra Long Endurance Fixed Wing Solar UAVs & subsequently High-Altitude Long Endurance Solar powered Unmanned Aerial Vehicles (HAPS). (*Member since 2024*)

Singularity TEC is a leading industrial and military-grade engineering and manufacturing company specializing in the production of propulsion systems, aircraft structure components and avionics for drone flights. (*Member since September 2022*)

IHUB NTIHAC Foundation is a Section-8 not-for-profit company set up under the National Mission on Interdisciplinary Cyber-Physical Systems (NM-ICPS). With the intent of developing a robust cyber-security ecosystem, the company focuses on active research and development in cybersecurity of cyber physical systems across the country.

SkyAI Technologies is an AI based product development company that specializes in artificial intelligence, computer vision, machine learning, IOT solutions, customized software and enterprise SaaS products. Some of their products include Personalized Recommendation System, Anti-Drones System, Vision-based Precision Landing, On-board Module for Drones, Face Mask Detection, Face Recognition and VIP customer alert and Object Detection in Aerial Images. (*Member since August 2023*)

Geo Climate Risk Solutions is a solution provider, consultancy and advisory services firm that focuses on environment and sustainability challenges, climate and natural hazard risk analytics, groundwater impact assessment, GHG emission and environment social governance, geospatial tech integrations, and water and land risk sustainability. (*Member since August 2020*)

HRMAC Technologies is an ISO certified MSME enterprise for product designing, fabrication, processing, characterization, modelling, and simulation of advance materials for applications in different industrial sectors. (*Member since 2022*)

Technithon International is a Singapore based leading provider of sustainable green technologies for surfactants and specialties, oleochemicals and environmental systems for abatement of emissions. (*Member since May 2021*)

JK Cement is one of India's leading manufacturers of Grey Cement and one of the leading White Cement manufacturers in the World. (*Member since November 2021*)

DRDO-INDUSTRY- ACADEMIA CENTRE OF EXCELLENCE AT IIT KANPUR (DIA COE IITK)

Technology life cycle is getting shorter and shorter with the advancement in science, thereby, affecting the entire humanity. For our Armed Forces, threat scenario is ever changing, and the need of the hour is that we equip them with systems that have superior operational capabilities to combat. It means exploration of newer technologies all around. At the same time, self-reliance in critical technologies is also required to escape from the clutches of exploitation and dependency. Therefore, one must focus on developing state-of-the-art systems from multiple angles and engage in interdisciplinary research by leveraging internal expertise available within the country. IIT Kanpur and Defence Research & Development Organization (DRDO) have collaborated to establish a DIA CoE at IIT Kanpur for interdisciplinary research in next generation defence technologies. Shri Sanjay Tandon, Professor of Practice, Dept. of Management Sciences is the Director of the Centre.

The aim of the Centre is to build an ecosystem to facilitate technology development in the academic environment through experienced faculty and bright scholars. It is expected to harness and synergize the strengths of academia, student community, research scholars, niche technology industries, and DRDO scientists to provide impetus to research and innovations in identified technology domains.

This centre is mandated to spearhead focused research in identified research and development verticals, including Printing on Flexible Substrates to build devices and systems based on thin films for strategic applications; Advanced Nanomaterials to provide fundamental contribution to material selection and design; Accelerated Material Design and Development to reduce the number of actual trial experiments while reaching optimal solution via high throughput experiments; High Energy Materials to focus on the modelling of high-performance explosives and performance prediction of metalized explosives; and Bio-Engineering to develop technologies for applications ranging from sensing hazardous agents to wound healing. Professor S Sundar Kumar Iyer (EE), Professor Kantesh Balani (MSE), Professor Amarendra Kumar Singh (MSE), Professor Jayant Kumar Singh (CHE), and Professor Vivek Verma (MSE) respectively have been nominated as Research Coordinators (RCs) for these research verticals (RVs).

In the last one year, several steps, such as, interactions with DRDO scientists in the form of meetings, visits, and workshops to understand DRDO's needs and to identify potential areas of collaboration; recruitment of manpower; and allocation of space, have been taken for setting up of DIA CoE IITK. As a result of these efforts, a total of 75 project proposals, worth more than Rs. 465.27 crore, have been submitted on a diverse range of topics for the consideration of DRDO.

Research Vertical (RV)	Proposals Submitted	Cost (in crores)	Proposals under consideration for Funding	Cost (in crores
Printing on Flexible Substrate	11	77.31	6	64.77
Advanced Nanomaterials	19	111.73	4	38.07
Accelerated Material Design & Development	13	126.68	6	87.33
High Energy Materials	9	54.48	8	46.71
Bioengineering	16	67.19	10	14.70
Outside the RVs of DIA CoE IITK	7	27.88	5	24.51
Total	**75**	**465.27**	**39**	**276.10**

Research Vertical wise compilation of project proposals submitted and under consideration with DRDO

Projects in Printing on Flexible Substrates include Flexible antenna for software-defined radios (SDR); Miniaturized multiband antenna; Flexible printable electronics for stealth applications; Flexible encapsulation for photovoltaic (PV) devices operating under harsh environment; Flexible solid-electrolyte alternative chemistry batteries.

Projects in Advanced Nanomaterials include Multispectral stealth solutions with coatings and meta-surfaces; Third generation super-hydrophobic foul-release marine coatings; Smart metamaterials for radio frequency (RF) stealth solution; Metamaterials for antenna.

Projects in Accelerated Material Design and Development include Accelerated development of next generation naval steel; Ti-based superalloys; Measurement of properties and defect detection in multilayer composites.
Projects in High Energy Materials include High pressure route to nitrogen rich HEDM; Insensitive high energy density material (HEDM) Developing catalytic Strategies for enzymatic degradation of nitrocellulose (NC) and other nitro-aromatics; Shock attenuation in layered targets; Particle morphology characterization tools and software; Analysing shock effects through reactive molecular dynamics simulations.

Projects in Bioengineering include Simulation model for forced air multi-fuel space heater; Measuring trust in human robot interaction in emergency situation.

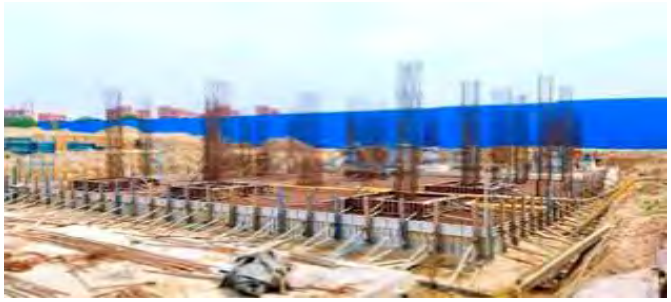
Besides the above, Centre has also received project proposals which were beyond the research verticals identified for our Centre like Dynamic suspension-based space robotics platform for experimental validation of spacecraft close-proximity operations; and Development

of formally verified micro-kernel for SDR. These proposals have been forwarded to other DIA CoEs whose RV areas are aligned with that of the submitted proposal areas, for their consideration.

GANGWAL SCHOOL OF MEDICAL SCIENCES AND TECHNOLOGY AT IIT KANPUR

On September 25th 2023, the Bhoomi Pujan of the Gangwal School of Medical Sciences and Technology was carried out to initiate the construction of Medical School, Super speciality hospital, academic block, and others. The event was held in the presence of Director, IIT Kanpur; Deputy Director, IIT Kanpur; Board members of IIT Kanpur, associated deans, faculty, staff, Shri. Ajay Saraogi from JK Cements, several donors, team members of Tata Consulting Engineers Limited (Project Management Consultants), and Larsen and Toubro (L&T) (Contractor).

INFRASTRUCTURE



Following the floating of tender in the CPP Portal on March 3rd, 2023 for executing the construction activity, which includes super-speciality hospital (G+5), academic block (G+5), utility block, roads, culverts, underground services, other services like main gate, compound wall, street lighting, landscaping, and others., several processes were carried out to award the contract to L&T in September.L&T shared the timeline of 24 months for completing the construction and commissioning of the project. Construction work has started on-site and a recent picture is shown here:

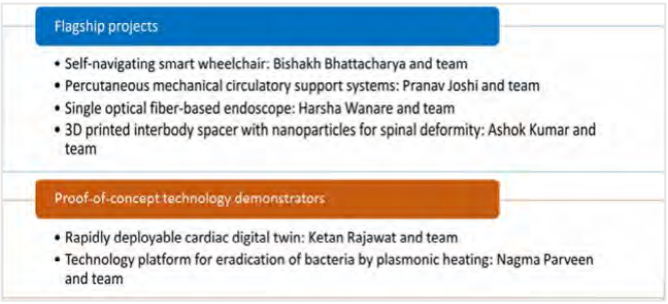
The tender for the construction of studio apartments for resident doctors and development of the school complex with funding support from REC Foundation and IBM India Pvt Ltd has been initiated in the allocated site for Gangwal School on IIT Kanpur Campus. Campus development including boundary walls, road development, landscaping, and others are going on. At present, the casting of slab up to G+9 is completed for the residential block at the site.

RESEARCH & DEVELOPMENT

As a part of futuristic medical technology, eleven R&D centers of excellence (CoE) have been planned. Some CoEs have been recognized by donors for funding. These CoEs will be executed phase-wise and are expected to deliver to the society
and country.

The Hridyantra (LVAD) project has advanced to the next level wherein the following steps are being focussed:

- Full maglev technology and associated electronics and control
- Endurance tests of an extracorporeal device with fresh human blood
- Planning and conducting large animal trials with the device in explanted and in vivo implanted conditions
- Planning clinical trials in a major centre of cardiovascular surgery



Further, 11 Centers of Excellence proposals were submitted to be considered as “Flagship Projects” for funding from the Institute. Clinical and Technical experts reviewed the presentations. Four proposals are identified for “Flagship Projects” and two proposals are recommended as “Proof-of-concept” technology demonstrators.

Several activities including symposiums, seminars, team visits, and workshops are being conducted by the R&D team to actively engage in the MedTech domain. Some activities are described below:

Shri Awanish Awasthi and Dr. GN Singh, Advisors to Hon'ble Chief Minister of UP visited Gangwal School. They discussed plans for medical education, R&D and innovation in biomedical technology and reimagining medical education and ushering in novel health technologies in Uttar Pradesh.

Dr Akhilesh Sharma, President of Alkem Laboratories visited IIT Kanpur in July 2023 and discussed mutually interesting areas of drug discovery, APIs, disease biology, and other avenues with faculty members associated with Gangwal School.

Engagement with Uttar Pradesh Government (ICICI Bank Foundation): Shri Ranjan Kumar, Secy Health, GoUP, Shri PS Sen Sharma, PS, Health, GoUP, and their team members visited IIT Kanpur on September 14, 2023. MoU between DHFW, **GoUP** & IIT Kanpur was signed for UP Digital Health Stack.

IIT Kanpur has signed an MoU with Swansea University, United Kingdom on August 14, 2023.

Gangwal School of IIT Kanpur and the University of Glasgow, Scotland signed an MoU on November 9, 2023 for various initiatives on Research and Development.

An MoU between the Gangwal School of Medical Sciences and Technology, IIT Kanpur, and Faculty of Medicine, Dentistry, and Health Sciences, University of Melbourne, was signed by the former officiating Director, IIT Kanpur, on 30th November 2023.

As an advancement in fortifying the collaborative research and training between the IIT Kanpur and Armed Forces Medical Services (AFMS), Professor S. Ganesh, and Professor Sandeep Verma, Professor-in-Charge, GSMST

& Air Marshal Sadhna S Nair, VSM, DGHS(AF) discussed areas of mutual interest.

Professor S Ganesh, the former officiating Director, IIT Kanpur and Professor Gianluca Vago, President of Fondazione CNAO signed an MoU with Fondazione CNAO - Centro Nazionale di Adroterapia Oncologica in Pavia, Italy, to establish joint research programme.

ACADEMIC RELATIONS & PARTNERSHIPS

At present, the following faculty have been appointed for the Gangwal School:

- Dr. Vikram Mathews, Professor & Director, Christian Medical College & Hospital, Vellore, appointed as Distinguished Visiting Professor.
- Mr. Yashdeep Kumar, Global Director, Stryker Technology Center at Stryker Corporations, USA, appointed as Adjunct Professor.
- Dr. Saurav K. Bhunia, Principal R&D Engineer, Cardiovascular Systems, Inc, USA, appointed as Adjunct Professor.
- Professor Saroj Kanta Mishra, Former Professor, Department of Endocrine Surgery, SGPIMS, Lucknow appointed as a Distinguished Visiting Professor.
- Dr. Nazneen Aziz, Former President and CEO, Variant Genomics, Inc, USA appointed as a Visiting Professor.
- Professor Krishnan Ganapathy, Director, Apollo Telemedicine Networking Foundation & Apollo Tele Health Services, Chennai appointed as a Distinguished Visiting Professor.
- Professor Gaurav Agarwal, Head, Department of Endocrine & Breast Surgery, Sanjay Gandhi Post Graduate Institute of Medical Sciences, Lucknow appointed as a Distinguished Visiting Professor.
- Professor Aditya Kapoor, Head, Cardiology, Sanjay Gandhi Post Graduate Institute of Medical Sciences, Lucknow appointed as Distinguished Visiting Professor.
- Dr. Sridhar Sivasubbu, Senior Consultant, Vishwanath Cancer Care Foundation appointed as an Adjunct Professor.
- Dr. Prashant Kumar, Chief Scientific Officer, Karkinos Healthcare Private Limited appointed as an Adjunct Professor.
- Dr. Venkataramanan Ramachandran BSc, MBA, LLB, EngD, Karkinos Healthcare Private Limited appointed as an Adjunct Professor.

- Professor Pratap S. Khanwilkar, Founder /CEO, Ignition Key LLC- Advancing Healthcare appointed as a Professor of Practice.
- Dr. Martin J. Lohse, lnstitut fur Pharmakologie und Toxikologie, Germany appointed as a Distinguished Visiting Professor.
- Professor Richard Anthony Strugnell, Dept. Microbiology and Immunology, The University of Melbourne appointed as a Distinguished Visiting Professor.
- Professor Jaideep Srivastava, Dept. of Computer Science & Engineering, University of Minnesota, USA, appointed as a Distinguished Visiting Professor.
- Professor Costanza Emanueli, Faculty of Medicine, National Heart & Lung Institute, Chair in Cardiovascular Science, Imperial College, London appointed as a Distinguished Visiting Professor.

FUND RAISING

DONOR VISITS

Mr. Hemant Jalan, MD, Indigo Paints, founder-donor of the Gangwal School of Medical Sciences and Technology visited IIT Kanpur on 4th September 2023. He shared his ideas and proposed ideas to develop the World's best Med Tech technology.

Dr. Dev Joneja, Chief Risk Officer at Exodus Point Capital Management, founder donor of the Gangwal School of Medical Sciences and Technology visited IIT Kanpur on 28th December 2023. After a brief discussion with Professor Ganesh, the officiating Director, IIT Kanpur and the GSMST team, he visited the Hridyantra project facility and the medical school construction site.

Alumni Visit

Mr. Arun Seth (BT/EE/1973) visited campus and discussed the ongoing activities of the Medical School and the grand vision for the future. He has been an Advisory Board Member and Task Force member of the Medical School at IIT Kanpur since the nascent stages of the project and is also a board member of the Section 8 company IIT Kanpur Foundation for Medical Research and Technology.

Mr. Gautam Khanna (BT/ME/1988) presently CEO of PD Hinduja Hospital & Medical Research Centre and Head of Hinduja College of Nursing, Mumbai also visited campus and discussed the ongoing activities of the Medical School. He's been an active member of the Task Force of the Medical School at IIT Kanpur since the very beginning stages of the project and has been contributing his valuable suggestions and facilitating various collaborative activities. During his visit he also visited the construction site and R&D labs.

MEHTA FAMILY CENTRE FOR ENGINEERING IN MEDICINE

Major highlights of the centre for the year 2023-2024 are listed below:

Inauguration and Research Symposium Mehta Family Centre for Engineering in Medicine

The inauguration of the Mehta Family Centre for Engineering in Medicine, IIT Kanpur was held on November 6th 2023, marked by a two-day inaugural research symposium.

The inauguration was graced by presence of Shri Rahul Mehta and Smt Jyoti Mehta of the Mehta Family Foundation, Dr. Shankar Subramaniam, UCSD, Dr Gang Bao, Rice University, invited heads from other Mehta Family Centres, students and faculty of IIT Kanpur.

Dr. K. Radhakrishnan, Chairman BOG, IIT Kanpur and Professor S. Ganesh the Former Officiating Director IIT Kanpur, presided over the inaugural function. Professor. Abhay Karandikar, Secretary, Department of Science & Technology (and the former Director of IIT Kanpur) was the honorable Chief Guest for the occasion.

The two-day research symposium was organized in three modules covering the three focus areas of MFCEM, namely Digital medicine, Molecular Medicine and Regenerative medicine. Keynote addresses by stalwarts in respective fields, invited talks, students' presentations and

poster sessions provided an exhilarating platform for vibrant interaction and discussion.

Summary

▪ Awards / Honors / Recognitions	**8**
▪ Fellow of Academy	**1**
▪ Elected President/Chair/Board member	**11**
▪ Fellowships and Grants	**6**
▪ Patents (Filed/Granted)	**22**
▪ Peer reviewed Publications	**53**

MFCEM Events

▪ (MFCEM Dialogues/Workshop)	**6**
▪ Student Achievements	**14**

MFCEM inauguration and ribbon cutting ceremony

Awards / Honors / Recognitions

- Professor Dhirendra S. Katti was awarded the Tata Innovation Fellowship
- Professor Ashok Kumar was awarded the Dr. Nandagudi Suryanarayana Rao Academic Award, by the National Academy of Medical Sciences (NAMS) for the year 2023.
- Professor Ashok Kumar was conferred the Distinguished Biomaterials Scientist Award, by the Society of Biomaterials and Artificial Organs, India (SBAOI)—for his seminal contribution in the areas of functional cryogel biomaterials and bone substitutes in regeneration.
- Professor Nitin Gupta was awarded the S. Ramachandran National Bioscience Award for Career Development.
- Professor Ramasubbu Sankararamakrishnan was awarded the Distinguished Teacher Award, 2023.
- Professor Sandeep Verma was conferred the INAE-SERB Abdul Kalam Technology Innovation National Fellowship.
- Professor Arun Kumar Shukla was awarded the Infosys prize, 2023 in Life Sciences for his path breaking contributions to the field of G-protein coupled receptor (GPCR) biology.
- Professor Bushra Ateeq was awarded the Rajib Goyal Prize (2021-2022) for Young Scientists conferred by Kurukshetra University (2024) in the Life Sciences category.

Fellow of Academy

- Professor Bushra Ateeq was elected Fellow of Indian National Science Academy.
- Prof. Ashoke De was elected as Associate Fellow of the American Institute of Aeronautics and Astronautics.

Elected President/Chair/Board member

- Professor Ashok Kumar has been elected as the President of the prestigious Society for Biomaterials and Artificial Organs India.
- Professor Dhirendra S. Katti has been elected as Presidents of the prestigious Biomaterials and Tissue Engineering Societies of India.
- Professor Bushra Ateeq, was elected External Member Senate of the NIPER-Raebareli (Sept 2023 – Sep 2026).
- Professor Bushra Ateeq was inducted as member, Academic & Research Programme Advisory Committee 2023 of Satyendra Nath Bose National Centre for Basic Sciences, Salt Lake, Kolkata
- Professor Jayandharan Rao was elected member Board of Studies, School of Health Science and Technology, VIT, Vellore.
- Professor Jayandharan Rao was inducted into Selected Expert Committee (SEC) on Biomanufacturing for the subsector - Precision Biotherapeutics: Cell and Gene Therapy 2023.
- Professor Jayandharan Rao was Selected Expert Member (SEC), Program Advisory Committee (PAC), CRG, SERB, India. 2023
- Professor Jayandharan Rao was inducted in Faculty Selection committee, Pandit Deendayal Energy University, Gandhinagar 2023
- Professor Jayandharan G. Rao was accorded the Chair 2023, Global outreach Committee 2023, American Society of Gene and Cell Therapy, Washington DC, USA. Professor Jayandharan G. Rao was accorded the Chair 2023, Training sub-committee, Education and outreach Committee, International Society of Thrombosis and Hemostasis, USA.
- Professor Ashok Kumar has been appointed as the Director of the IIT Kanpur-La Trobe University Research Academy.

Fellowships and Grants

- Professor Sandeep Verma received Abdul Kalam Technology Innovation National Fellowship by the Indian National Academy of Engineering for “Chemically Engineered Thermostable Human Insulin for Diabetic Patients”
- Professor Sandeep Verma received fellowship from the Ministry of Education, STARS Scheme, for “Development of nitric oxide releasing multifaceted

biomaterial based approach for infected diabetic wounds",

- Professor Jayandharan Rao, received the Wellcome Trust DBT Team Science Grant (Rs. 998 Lakhs) for "Next generation AAV vectors for Duchenne Muscular Dystrophy gene therapy".
- Professor Jayandharan Rao initiated the Laurus lab-IITK consultancy for Development of cGMP facility at IIT Kanpur.
- Professor Bushra Ateeq, received the Transformational and Advanced Research in Sciences (STARS); Ministry of Education; Indian Institute of Science, Bangalore, for "Targeting oncogenic transcription factor ERG in prostate cancer by employing HBS-α-helicomimics technology".
- Professor Rakesh Kumar Majhi, received the DST Technology Development Program, for Therapeutic Antimicrobial Chemicals and Antimicrobial Peptides (TACAP). Role: Co-PI.

MFCEM Dialogues

The MFCEM Dialogues is an interactive event that includes a short presentation by the global leader in the field of "Engineering in Medicine".

- The first MFCEM Dialogues talk had Professor Mriganka Sur, Newton Professor of Neuroscience, Massachusetts Institute of Technology, on February 24, 2024.
- For the second MFCEM Dialogues session, Dr. Deepak Vashishth, the Director of Rensselaer Polytechnic Institute Center, for Biotechnology and Interdisciplinary Studies (CBIS), gave a talk on "Loss and Modulation of Bone and Brain Health in Diabetes and Alzheimer's", on March 18, 2024.

MFCEM Workshops

Three workshops were organized and the intent of the workshops was to invite young bioentrepreneurs to interact with the student community and share their experience of running bioinspired startups.

- Ms. Rashie Jain is an entrepreneur, co-founder and CEO of Onco.com, a healthcare technology company focused on providing end-to-end care management to cancer patients. Rashie Jain did her BTech from BSBE, IIT Kanpur.
- Dr. Aridni Shah is the Co-Founder and CEO of immunitoAI, accompany that develops novel antibody therapeutics with pre-defined drug properties using AI-based bottom-up approach.
- Professor Sandhya Kaushika, Tata Institute of Fundamental Research (TIFR), Mumbai, conducted a vibrant session on "Fun & frustration: navigating career paths in science".

Student Achievements

- Sakshi Goel, PhD student of Professor Bushra Ateeq, was awarded the INSA Medal for Young Scientists 2022.
- Deepak M. Khushalani PhD student of Professor Nitin Mohan, has won the Best Poster Presentation Award at the Annual PMRF (Prime Minister's Research Fellowship) Symposium organized at IIT Madras, February 2023.
- Ankita Das a PhD student of Professor Ashok Kumar, was awarded the best oral presentation for "Elastomeric antioxidant cardio protective patches: A paradigm bioengineered intervention" at the ACMR 2023.
- Tanay Biswas, A PhD student of Professor Bushra Ateeq, has been selected for the Mehta Rice Engineering Scholars Program, an initiative of The Bhupat & Jyoti Mehta Family Foundation & Rice University.
- Triya Saha, A PhD student of Professor Ashok Kumar received the Bajpai-SAHA Student Award for the Best Oral presentation during the 33rd National Conference of the Society for Biomaterials and Artificial Organs, India (SBAOI) and the International Conference on Biomedical Materials and Technology" BioTEx 2023 Nov 29 to Dec 1, 2023 at the Indian Institute of Technology Delhi, India.
- Ekta Srivastava, A PhD student of Professor Ashok Kumar has received the Best Oral Presentation Award at ICCM 2023.
- Zahra Sifat Zaidi, A PhD student of Professor D Katti, has received SBAOI Best Poster (Third prize) Presentation Award in the International Conference on Biomedical Materials and Technology BioTEx 2023, organized by SBAOI held from Nov 29- Dec 1, 2023, at the Indian Institute of Technology Delhi, Delhi, India.
- Saptomee Chakraborty, A PhD student of Professor Dhirendra Katti received ACS Best Poster Presentation Award International Conference on Biomedical Materials and Technology BioTEx 2023, organized by SBAOI held from Nov 29- Dec 1, 2023, at the Indian Institute of Technology Delhi.
- Ubaid Tariq, A PhD student of Professor Ashok Kumar was recipient of Best Poster Presentation at the International Conference on Biomedical Materials and Technology" Bio- TEx 2023; Nov 29 to Dec 1, 2023 at the Indian Institute of Technology Delhi, India.
- Mohan Kumar BS, A PhD student of Professor Jayandharan G Rao, has been selected as Prime Minister's Research Fellow (PMRF) 2023. He has also been selected to receive a 2023 ASH Abstract Achievement Award (2023) in the 65th ASH Annual Meeting & Exposition, San Diego, California during 9-12, Dec 2023.
- Pratiksha Sarangi, A PhD student of Professor Jayandharan Rao has been selected for a poster

presentation for her work titled "AAV based lncRNA and factor 8 gene therapy is therapeutic in a murine model of hemophilic arthropathy" the ESGCT 30th Annual Congress, Brussels on 24-27, Oct 2023.

- Deepak Khushalani, A PhD student of Professor Nitin Mohan, was conferred with the Best Poster Award at the All- India Cell Biology Conference 2024, held at ACTREC, Tata Memorial Centre Mumbai
- Umar Khalid, A PhD student of Professor Bushra Ateeq, was awarded the "Mangala Bamne Young Scientist Award for Oral Presentation" at the 43rd Annual Indian Association for Cancer Research (IACR) Conference 2024.
- Ayush Goel, A PhD student of Professor Bushra Ateeq, has been selected for the highly competitive Overseas Visiting Doctoral Fellowship (OVDF) under the Purdue University- Science and Engineering Research Board (SERB), India partnership program.

CHANDRAKANTA KESAVAN CENTRE FOR ENERGY POLICY AND CLIMATE SOLUTIONS

The Chandrakanta Kesavan Centre conducts Lecture Series, workshops, in IIT Kanpur to foster sustainability and innovation. From climate modelling to decarbonization, these initiatives aim to achieve a zero-landfill campus, engage academia, and train military engineers, while inspiring young minds on renewable energy and environmental stewardship.

HIGHLIGHTS OF 2023-2024

Chandrakanta Kesavan Lecture Series

This series featured eight lectures by eminent personalities from academia and industries. The lectures covered topics such as climate modelling, sustainable technologies, path to Net-zero, wastewater treatment, environmental governance and India's energy transition, enriching knowledge in these fields.

Zero landfill IIT Kanpur campus

An audit was completed for all the waste generated at IIT Kanpur. The audit is the first step in creating the plan for a zero landfill IIT Kanpur campus.

Conferences/Workshops/Symposiums

An "India-UK Symposium on Decarbonization and Sustainability: Engaging Academia and Industries for Net-Zero [Sustain-NZ]: Held on 26-27 February 2024, the symposium addressed the environment friendly energy technologies, such as next generation solar, batteries or hydrogen technologies, that are made using cheap, abundant, and sustainable materials with the aim to mitigate the climate crisis. Scholars, researchers from India and UK, and industry experts attended, with a focus on the future energy transition.

Partnerships

MoU signed with Military Engineer Services (MES) Jhansi and Lucknow to help them become carbon neutral; various tasks carried out so far are:

- Two hands-on training sessions on carbon-neutral campuses and their certification were conducted.
- Plan to do a land availability audit to help them set up a solar power system.
- Discussions are underway to help them create a net-zero energy, net-zero water and waste building at MES Jhansi

Fostering young minds

To make them aware of sustainability & renewable energy sources and the related experiments, a visit was planned for school kids (40 students of KV IIT Kanpur) on October 12, 2023.

SAMTEL CENTRE FOR DISPLAY TECHNOLOGIES AND NATIONAL CENTRE FOR FLEXIBLE ELECTRONICS

VISION AND OBJECTIVES

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 working on prototype building and eventual productization of technology related to Flexible Electronics. The area 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 productization 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, also known as the FlexE Centre) was set up as a Centre of Excellence at 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 catalyse 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. The second phase

of NCFlexE has been sanctioned for the tenure of five years starting from November 2023.

Sl No.	Particular	No.
1.	Patents filed	17
2.	Publications	09
3.	NDA with Industries	07
4.	Ongoing Projects	02

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

Technology Transfer

The technology for simultaneous detection of direct and total bilirubin, developed at the National Centre for Flexible Electronics (NCFlexE), IIT-Kanpur, has been licensed to Sensa Core Medical Instrumentation Pvt. Ltd., a Hyderabad based company which is a leading manufacturer of Ion-selective Based Electrolyte Analyzers, Arterial Blood Gas Electrolyte Metabolite Analyzers, Glucose Test strips and Haemoglobin Test Strips. The bilirubin sensor incorporates a unique five electrode configuration that allows simultaneous detection of direct and total bilirubin on a single strip, and comprises a novel trimetallic nanocomposite-based catalyst, which can detect bilirubin effectively despite the presence of other components in the sample. Bilirubin is a pigment in our blood, detecting the level of which can help diagnose certain health conditions, such as jaundice. This sensor is expected to be used for bedside testing, in diagnostic laboratories, and even in health screening centers.

Outreach Activities

Participation and exhibition on the following events were held:

- 4th Electronics Supply Chain Summit in, Radisson Hotel, Noida from 8th May, 2023 to 9th May, 2023.
- Semicon India 2023', a premier showcase of India's semiconductor capabilities and chip design innovation, Exhibition in Gandhinagar from 25th July 2023 to 30th July 2023.
- PAMEX-2024 (An International Exhibition on Printing and Allied Machinery Industries), organized by All India Federation of Master Printers (AIFMP) at Bombay Exhibition Center, Goregaon, Mumbai, Maharashtra, India, 6-9 February 2024.
- 50th Dairy Industry Conference & Exhibition 2024, hosted by Indian Dairy Association (IDA), at HITEX Exhibition Center, Hyderabad, India, 4th March, 2023 to 6th March 2024.

SCDT-FlexE Centre Webinar Series (launched in 2021 and is on-going since)

SCDT and FlexE Centre Webinar Series brings together every month scientists, engineers, researchers, students, entrepreneur and industry players involved in different aspects of flexible electronics from around the country (and sometimes outside India as well) on a common platform. Speakers in these monthly one-hour webinars are accomplished individuals in any field associated with flexible electronics. All details can be found at

https://www.iitk.ac.in/scdt/webinars.html

Awards and Honors

- IIT Kanpur was honored with the prestigious **AssisTech Foundation (ATF) Awards 2023** for engaging in assistive technology activities with the "Best AT Initiative by Educational Institutes" under the enablers category of ATF Awards. The award was based on activities including the technologies developed at the National Centre for Flexible Electronics - "Haptic smartwatch for blind and visually impaired" and "Single refreshable braille cell based braille learning device with a touch sensitive array". The award ceremony took place in Bengaluru during the Bengaluru Tech Summit (BTS) on 1st December, 2023. ATF Awards is India's first and foremost dedicated flagship awareness initiative for the Assistive Technology ecosystem. These awards aim to recognize the unsung heroes who are significantly impacting the lives of people with disabilities worldwide through the power of Assistive Technology (AT).

- IIT Kanpur was bestowed with a prestigious **STEM Impact Award 2024** for engaging in impactful technology transfer activities, during the annual STEM Summit - 2024, held in Bengaluru on February 1, 2024, in recognition of the socioeconomic impact created with the technology transfer of the invention of a 'Haptic Smart Watch for Blind & Visually Impaired', developed at the National Centre for Flexible Electronics. STEM (Society for Technology Management) is a non-profit organization providing a facilitative environment for Technology Transfer Processes and professional development of technology management professionals in Life Sciences, Material Sciences, IT, Engineering, Law, and others.

NATIONAL AEROSOL FACILITY

The National Aerosol Facility (NAF) at IIT Kanpur in collaboration with Bhabha Atomic Research Centre (BARC) under Department of Atomic Energy (DAE) is a state-of-the-art, multipurpose research center dedicated to study aerosol behaviour under conditions simulating severe nuclear reactor accidents. During such accidents, fission products are typically released from the reactor core as aerosol particles and gases. Their release, transport, and retention within the reactor and containment systems directly impact the potential spread of radioactivity to the environment, posing significant risks to human health. Given the hazardous nature of these aerosols, NAF plays a vital role in understanding the behaviour of aerosols and improving safety measures and mitigation strategies. The

major objectives of NAF include generating an extensive database on aerosol retention factors in representative PHT (Primary Heat Transport) piping systems for various thermal-hydraulic conditions during typical post severe accident scenarios, both dry and wet conditions. This database is used for the validation and development of nuclear accident codes.

In April 2022, NAF completed its setup and commissioning activities for nuclear reactor safety research on Indian PHWRs. Key milestones include the characterization of aerosol generators and the initiation of experiments, which enhance safety measures for Indian PHWRs. Currently, a Research Establishment Officer and a senior project scientist are working at NAF. The future research agenda at NAF encompasses several key initiatives. Experiments will be conducted to measure temperature profiles across various sections of the test area, alongside refining sampling methodologies to analyze aerosol number and mass characteristics. Recent developments have seen the initiation of a new project in collaboration with Reactor Safety Division (RSD) of BARC, titled "Aerosol Transport Behaviour Experiments at National Aerosol Facility in Context of Nuclear Reactor Accidents," with a funding of Rs. 48 Lakh awarded in April 2023. The NAF is supporting numerous initiatives, ensuring the facility's self-sufficiency. Presently, projects totalling about 55.5 crore are in progress. This influx of funding from ongoing and previous projects underscores the robust economic sustainability of the facility.

Following are the wide array of projects and initiatives registered under NAF. The funding agencies and title of the projects are mentioned below.

Swiss Agency for Development and Cooperation (2020-2024). Contribution to Research for Clean Air Project in India.

Central Pollution Control Board (2022-2025). Creation of Secretarial Support at IIT Kanpur.
Klenviron Technologies Pvt. Ltd (2024-2027). Testing the Efficacy of Air Purifier Modules under Outdoor and room Conditions.

Center of Excellence in Artificial Intelligence (2024) for Sustainable Cities in PoC stage. Forecasting and modelling for Urban sustainability under 4 tracks viz. Air Quality, Energy, Mobility and Governance.

Ministry of Earth Sciences (MoES) (2023-2027). Ice Nucleating Particle and Cloud Condensation Nuclei Properties in The North-Western Himalayas (Ice-Crunch).

CENTRE OF EXCELLENCE IN ADVANCED TECHNOLOGIES FOR MONITORING AIR-QUALITY INDICATORS (COE ATMAN)

Centre of Excellence in Advanced Technologies for Monitoring Air-quality indicators (CoE ATMAN), (https://iitk.ac.in/atman/index.php) approved by PSA office, Government of India, is currently executing 5 projects. CoE ATMAN's activities focus on development of indigenous PM Sensor development, Real-Time Source Attribution with portable sensors, use of AI/ML capabilities for establishing nationwide AQ monitoring networks, air shed delineation, AQ forecasting, Dynamic Hyper-Local Source Apportionment (DHSA) and network optimization.

Following projects are endorsed under the CoE ATMAN

- Open Philanthropy. Rural air quality monitoring in UP and Bihar.
- Clean Air Fund (CAF). Indigenous Development of Low- Cost Sensors.
- Clean Air Fund (CAF). Atman-Centre of Excellence: Core Support Grant.
- Clean Air Fund (CAF). Dynamic Hyper-Local Source Apportionment for Real-Time Policy Action.
- Rail India Technical & Economic Services Ltd. (RITES). DHSA at Kanpur.

Ambient air quality Monitoring of Rural Areas using Indigenous Technology (AMRIT) project

A dense network with 1400 nodes of Sensor Ambient Air Quality Monitor (SAAQM) covering 534 and 826 block development offices respectively across the states of Bihar and Uttar Pradesh, was established. Partnership has been established with state government departments in Bihar (BSPCB and rural development department) and Uttar Pradesh (Department of Ministry of Environment, Forest and Climate Change, UP Pollution Control Board and department of rural development) for monitoring and mitigation. Unprecedented hyper-local air quality data has been collected starting April 2023 across the 2 states. Towards this endeavour, IIT Kanpur has also established first-of-its kind 3 colocation-calibration facilities to simultaneously evaluate 280-300 SAAQM.

Dynamic Hyper-Local Source Apportionment for Real- Time Policy Action

The project seeks to establish a novel technique called Dynamic Hyper-local Source Apportionment (DHSA) for real-time and low cost Source Apportionment (SA). Mobile AQM laboratory housing sophisticated instruments (like Aerosol Mass Spectrometer (AMS), Xact, Scanning Mobility Particle Analyzer (SMPS), Aethalometers, E-Bam, Optical Particle Sizer (OPS), along with the portable sensor units) was developed for testing the technique across Lucknow and Kanpur. The mobile laboratory has completed 2 seasons of sampling across different category sites in Lucknow.

NATIONAL CENTRE FOR GEODESY

The National Centre for Geodesy (NCG) at IIT Kanpur was set up on July 1, 2019, with the support of the Department of Science and Technology (DST), Govt. of India. NCG is the first of its kind centre in India to support educational and research activities in the field of Geodesy. The centre is established as a solution to the limited national-level education opportunities in the country on Geodesy and other aligned areas and aims to act as a hub of excellence in teaching and research at the national and international levels. NCG plans to conduct various research and academic activities to promote Geodesy education. This particularly involves offering postgraduate (PG) programs to students and professionals working in relevant fields, organizing short term training programs, conferences, workshops, and schools for imparting necessary education on Geodesy, preparing online courses and teaching materials, taking research projects in the field of Geodesy, setting up highly precise geodetic facilities, signing memorandums of understanding (MoU) with various national and international organizations working in Geodesy and relevant areas, and others.

The primary objective of the NCG is to nucleate and strengthen the activities in the field of geodesy education, capacity building, and academic research and development. During the last year, NCG took up various tasks in line with its objectives.

Major achievements of the center in the last year

- NCG organized three short-term courses/ workshops/training in the field of geodesy and allied areas, which were attended by participants from a diverse range of stakeholders, including Academia, Industry, Military, and Government.
- NCG supported eight PhD students and NCG staff members for training abroad and presenting research work at prestigious conferences, in Australia, Germany, Switzerland, Singapore, South Africa and USA.
- NCG organized an open house on 4th November 2023 to communicate the importance of Geospatial Science and Technology for Nation Building to over 800 students from nearby schools and colleges.
- NCG team showcased different instruments over the three days of the national event organized at DPS Azad Nagar, Kanpur in which more than 40 DPS schools participated. Dr. Somalin Nath and Dr. Sushant represented NCG as judges for this national-level competition.
- To promote industrial collaboration, the NCG team participated in the India Geospatial Leadership Summit (IGLS) 2024, organized by the Association of Geospatial Industries (AGI) on February 20, 2024. NCG collaborated as the Educational Partner for the summit organized by AGI, showcasing its leadership and expertise in the geospatial domain.
- NCG has been selected as the host institute for the next DORIS station, which is also the first DORIS station in India. The selection was made after competing with seven other international proposals submitted under Call for Proposal by International DORIS Service. The station will be operational by the end of 2024.
- NCG, with the support of DST, has been able to establish six Regional Centres for Geodesy, which are working in tandem with NCG to spread geodesy education in the country. An academic NCG-RCG CORS network has also been established.
- PhD students with support of NCG are collaborating with various international institutes, such as University of Tasmania Australia, ETH Zurich, TU Wien, GFZ Germany, Geodetic Observatory of Pecny Czech Republic, TU Munich Germany, University of Melbourne Australia, and University of Bern Switzerland.
- Dr. Ropesh Goyal, REO at NCG has been awarded the Indian Society of Geomatics's Professor K. N. Rao Endowment Young Achiever Award 2023 for his contributions in geometrical and physical geodesy.
- NCG staff participates actively in the International Association of Geodesy (IAG). Dr. Ropesh Goyal, REO at NCG has also been invited to participate as the member of the Governing IAG's Global Geodetic Observing System and Advisory Board of International Gravity Field Service. Further, he also chairs an international joint study group on geoid modelling with 15 geodesists from 10 countries.
- NCG has been active in contributing to the implementation of the National Geospatial Policy 2022. NCG team has started a publication series on the general articles in the Current Science journal disseminating the basics and importance of the

geodetic data in the country. Further, Professor Onkar Dikshit and Dr. Ropesh Goyal are participating in the national working groups on 'Standards' for Land Administration Domain Model and Geodetic Reference Frame, respectively. NCG is committed to act as the national resource centre, i.e., making its resources available to other Indian institutions for education and training purposes.

- NCG is exploring the pathway to establish a new vertical on 'Geodesy' under the Indian Society of Geomatics.
- NCG has signed academic and collaborative MoUs with 14 national and international organisations/institutes, four others are near finalisation. These are in addition to the institute level MoUs with international institutes for joint degree and training programs.
- Acknowledging the progress of NCG and the importance of its continuance, the DST has approved two years extension of the NCG.

A few important new R&D initiatives of NCG include:

Map generalisation; Geoid using airborne gravimetery; DORIS for vertical total electron content; Ionospheric Coupling Processes due to Earthquakes & Space weather effects; Calibration of NISAR Data with GNSS-IR Derived Soil Moisture for Precision Soil Moisture Retrieval; Impact of geoid on hydrodynamic and landslide studies.

OFFICE OF INTERNATIONAL RELATIONS (OIR) NEW PARTNERSHIPS

In academic year 2023-24, IIT Kanpur signed five new partnership agreements with universities in Australia, Europe and North America. These new partnerships include:

1. Europe - University of Luxembourg in Luxembourg for cooperation in the areas of faculty and student exchange, joint research activities and exchange of academic material and publications.

2. North America – (i) New York University (NYU), USA for setting up a collaborative research centre, NYU Tandon-IITK Advanced Research Centre; (ii) the University of Rhode Island, USA for cooperation in the areas of faculty and student exchange, short term academic programs, joint research activities and exchange of academic material and publications; and (iii) the University of Wisconsin- Milwaukee, USA for a joint MBA degree program.

3. Australia - Western Sydney University, Australia for cooperation in the areas of faculty and student exchange, joint activities such as conferences, seminar and lectures, joint research activities and exchange of academic material and publications.

Establishment of New Collaborative Research Centre With New York University

In September 2023, IIT Kanpur signed an agreement with NYU. This agreement is in continuation to the MoU that was signed between the two institutes in September 2020 for Dual Doctoral Degree Program. The aim is to set up the NYU Tandon-IITK Advanced Research Centre. The focus of this Centre will be collaborative research in the specific areas of critical and emerging technologies including AI and machine learning, cybersecurity, wireless communications, robotics, transportation and semiconductor technology.

Delegation from IIT Kanpur visits NYU for the signing of the agreement

In an effort to further facilitate research collaboration between faculty at IIT Kanpur and NYU, the first call for NYU Tandon- IITK Joint Research Funding was announced in January 2024. After receiving grant proposals submitted jointly by faculty from NYU and IIT Kanpur, seven proposals were awarded the seed grant. The IIT Kanpur awardees of this grant will receive seed funding of up to ₹ 15,00,000 to primarily facilitate travel of the PIs and their graduate students for collaborative research.

NYU Tandon-IITK Joint Research Seed Grant Awardees: Professor Angshuman Karmakar (CSE), Professor Urbi Chatterjee (CSE), Professor Shakti Gupta (ME), Professor Raghvendra Chaudhary (EE), Professor R Sankararamakrishnan (BSBE), Professor Suvendu Samanta (EE), Professor Gururaj Vishwanath (EE) and Professor Pranamesh Chakraborty (CE).

IITK-Rice University Joint Research Symposium

The IITK-Rice University Joint Research Symposium was held on May 06, 2024 at Rice University, USA. The symposium was a culmination of the joint research conducted by the awardees of the Rice-IITK Strategic Collaboration Awards (SCA) 2023. With the grant period coming to an end, the eight awardees (along with their co-PIs at Rice University) presented their research findings either in person or in virtual mode.

JOINT DEGREE PROGRAM (JDP)

In March 2024, IIT Kanpur signed its first Joint MBA Program with the Lubar College of Business, University of Wisconsin- Milwaukee (UWM), USA. This program

provides MBA students at IIT Kanpur an opportunity to expand their horizons and earn a joint MBA degree from UWM and IIT Kanpur.

IIT Kanpur now has Joint Doctoral Degree Partnerships with 13 universities in addition to the Joint MBA Degree partnership with UWM. A total of 60+ students from IIT Kanpur have so far participated in these joint degree programs.

VISITS OF FOREIGN DELEGATIONS TO IIT KANPUR

Several foreign university delegations visited IIT Kanpur in 2023-24 to discuss possibilities for academic and research collaborations. Many of these visits have led to fruitful relationships between IIT Kanpur and the partner universities abroad.

From Australia, a delegation from the University of Melbourne (UoM) visited IIT Kanpur. As an outcome of this visit:

- A new joint centre between IIT Kanpur and UoM has been proposed.
- UoM faculty who visited IIT Kanpur identified and met potential faculty collaborators.

From the USA, delegations from New York University and University of California Santa Cruz visited IIT Kanpur. Both of these delegation visits were primarily aimed at strengthening an existing relationship with IIT Kanpur.

From Nepal, Mid-West University delegation visited IIT Kanpur to review previous collaborations and to discuss ways to further expand the partnership.

From Japan, a delegation from the University of Aizu visited IIT Kanpur. They signed a promising MOU, setting the stage for enriching academic experiences and fostering global partnerships.

IIT KANPUR VISITS OVERSEAS

USA - To strengthen ongoing relationships and explore new collaboration opportunities a delegation from IIT Kanpur visited leading universities in the USA in August 2023. The delegation included Professor Abhay Karandikar (then Director), Professor Dhirendra S Katti, (then DoIR), Professor Ashish Garg (Head SEE), Professor Sandeep Verma (Head Gangwal School of Medical Sciences & Technology) and Mr. Kapil Kaul (CEO IITKDF). The delegation toured and met the officials at the Embassy of India, Washington D C; the Association of American Universities in Washington D C; Rice University; the State University of New York (SUNY) Buffalo; and Drexel University. During these visits, various programs such as internships, symposiums, semester exchange and others were discussed to strengthen the existing partnership.

Canada: A distinguished delegation from IIT Kanpur including Professor Dhirendra S Katti (then DoIR), Professor Ashish Garg (Head SEE), Professor Raju Kumar Gupta (CHE), Professor Lalit Pant (SEE) and Professor Raghavendra Ragipani (CHE), visited the University of Alberta (UoA) in March 2024. The delegation participated in a joint IITK-UoA Energy Transition Research Workshop, highlighting the importance of collaborative research. Possibility of establishment of a joint re search centre by IIT Kanpur and the University of Alberta was also discussed during this visit.

Australia: A delegation from IIT Kanpur that included Professor Subramaniam Ganesh (then Acting-Director), Professor Kantesh Balani (DoRA), Professor Sandeep Verma (Head Gangwal School of Medical Sciences and Technology) and other senior faculty members, visited the University of Melbourne (UoM) in November 2023. The purpose of the meeting was to discuss the ongoing Joint Degree Program with UoM as well as other collaborative research programs. Gangwal School of Medical Sciences and Technology (GSMST) and the Faculty of Medicine, Dentistry, and Health Sciences (FMDHS) at the University of Melbourne also formalized a pivotal collaboration through the signing of a Memorandum of Understanding during this visit. IIT Kanpur's delegation, headed by the then Officiating Director, Professor. S. Ganesh; joined by Professor. Sandeep Verma; Professor. S C Srivastava, Director of IITK-LaTrobe academy; and other senior faculty members associated with IIT Kanpur-La Trobe University Research Academy visited La Trobe University, Australia.

TRAVEL SUPPORT FOR STUDENTS IN JOINT DEGREE PROGRAMS

To encourage more doctoral students from IIT Kanpur to join one of our 13 Joint Degree Programs, the Institute approved a one-time travel support of up to ₹ 1.5 lakh. This

travel support will cover return economy airfare, airport transfers and visa processing fees of the JDP students.

IIT KANPUR STUDENT MOBILITY OVERSEAS

20+ students from IIT Kanpur were nominated for semester exchange at partner universities in 2023-24. Over 40 IIT Kanpur students were accepted for internships at foreign universities.

FOREIGN STUDENTS AT IIT KANPUR

IIT Kanpur hosted 45 foreign students in academic year 2023- 2024 with 34 of them pursuing a post-graduate degree at IIT Kanpur, 01 came for semester exchange and 10 for internships. The 34 students pursuing a post-graduate degree are from countries such as Bangladesh, Jordan, Indonesia, Bhutan, Syria, Ethiopia, Sudan, Iran, Nepal and Myanmar. The details are as follows:

- 15 are pursuing a Ph.D. degree and
- 19 are enrolled in a Master's program

In addition to this, IIT Kanpur has also hosted 10 internship students from Bhutan, Australia, Bangladesh, Zambia, Switzerland and Nepal.

Also, in 2023-24 one postgraduate student from Ecole Nationale Supérieure d'Arts et Métiers (ENSAM), France visited IIT Kanpur for two semesters under an exchange program between IIT Kanpur and ENSAM.

SHORT-TERM COURSES FOR FOREIGN WORKING PROFESSIONALS

In 2023-2024 IIT Kanpur organized three courses under the Indian Technical and Economic Cooperation Programme (ITEC), the leading capacity building platform by the Ministry of External Affairs, Government of India. IIT Kanpur offers various courses under ITEC every year and the list of courses for 2024 is as follows:

- Strategic HRM for Organizational Excellence (January 2024) – Course taught by Professor Amit Shukla (DoMS)
- Industrial Economics & Engineering Management (February 2024) – Course taught by Professor Deep Mukherjee (ECO) and Professor Faiz Hamid (DoMS)
- Application of Artificial Intelligence and Machine Learning in Business Finance (February 2024) – Course taught by Professor Abhinav Tripathi (DoMS)

HAPPY HOUR FOR INTERNATIONAL STUDENTS

The first happy hour for international students was organized in March 2024 which was very well received. In May 2024 as part of the happy hour, the OIR organized a wall climbing session in which many foreign students participated enthusiastically.

The aim of these monthly sessions is to bring together international students and give them a chance to share their problems/ issues with the OIR staff.

FESTIVAL CELEBRATIONS

In 2023-24, the OIR celebrated Holi, Diwali and Eid with diya lighting and rangoli-making and festive food. The purpose of these celebrations was to acquaint international students with the culture and practices of India.

These celebrations were very well received by the students who attended in large numbers.

DEAN OF RESOURCES & ALUMNI

Out of the total amount of ₹ 362.00 crore pledged by donors in FY 2023-24, a sum of ₹ 156.90 crore has already been received, as compared to ₹ 182.79 crore received in the FY 2022-23, and the balance is expected to be received based on the milestones achieved as set by the donors in the next 2-3 years.

MAJOR INITIATIVES IN FY 2023-24

	Amount in ₹ (Crore)
Gangwal School of Medical Sciences and Technology	103.29
Social Innovation Lab	11.50
Scientific Research	8.94
The Mehta Family Centre for Engineering in Medicine	6.66
Chandrakanta Kesavan Centre for Energy Policy and Climate Solutions	4.20
Kotak School of Sustainability	3.00
Smt. Lata and Shri K G Karandikar Faculty Chair	1.66
Karandikar Student Scholarship	
Karandikar Best Ph.D. Thesis Award	
The Pawan Tewari Goldman Sachs Sustainability Faculty Chair	
Pawan Tewari Goldman Sachs Endowment Towards AI for Social Good	
The Pawan Tewari Goldman Sachs Scholarships	1.58

Major Donations received towards various fund-raising campaigns in FY 2023-24

S. No	Name of the Campaign	Goal Amount ₹(Crore)	Amount Received ₹(Crore)
1	Lalit Beniwal Memorial Fund	1.00	1.33
2	P T Narasimhan Fund for Performing Arts	1.50	0.71
3	V Srinivasan Memorial Fund	0.25	0.12
4	Professor N Sathyamurthy Endowment Lecture Series	0.25	0.04
5	Professor G D Agarwal Chair	1.25	0.0052
6	Sahyog: A Student Financial Aid Initiative	2.50	0.0088

Donations received by the Gangwal School of Medical Sciences & Technology till 31st March 2024

S.No	Name of the Donor	Pledged Amount in		Realized amount in ₹(Crore)
		Million USD	₹ (Crore)	
1	Mr. Muktesh Pant (BT/CHE/1976)	2.50	19.00	19.19
2	Dr. Dev Joneja (BT/ME/1984)	2.50	19.00	20.05
3	Mr. Anil Bansal (BT/ME/1977)	2.50	19.00	9.75
4	Mr. Rakesh Gangwal (BT/ME/1975)	13.50	100.00	108.27
5	Dr. Deepak Mohan Narula (BT/EE/1985)	0.60	5.00	3.85
6	Mr. Hemant Jalan (BT/CHE/1977)		18.00	15.00
7	IBM		47.00	31.50
8	JK Cements		60.00	30.00
9	REC Foundation		14.40	10.64
10	HDFC Bank		20.00	16.97
11	Sutwala Family		0.41	0.41
12	Vikram Tannan		0.50	0.50
	Total	**21.60**	**322.31**	**266.13**

Major Donations received towards Endowment Activities in FY 2023-24

S. No.	Faculty Chairs	Amount in ₹ (Crore)
1	Smt. Lata and Shri K G Karandikar Faculty Chair	1.27
	Fellowships	
1	Rajeev and Joyce Gautam Faculty Fellowship	0.50
	Scholarships	
1	Karandikar Student Scholarship	0.26
2	Shri Mohan Shetye Excellence Scholarship	0.26
3	Dilip Nigam Memorial Scholarship	0.24
	Awards	
1	Karandikar Best Ph.D. Thesis Award	0.12
	Distinguished Lecture Series	
1	Late Professor Amit Dutta Memorial Distinguished Lecture Series	0.125
	Departmental Fund	
1	Rakesh Bhargava-Class of 1973 Annual Travel Grant	0.25

Class Fund in FY 2023-24

Class	Pledged Amount in ₹ (Crore)	Realized Amount in ₹ (Crore)	Initiatives Supported
1998	8.25	1.81	Yet to be Decided by the Class
1974	10.11	4.00	Scholarships, Faculty, CHE Development Fund, Solar Power Project
1994	NA	0.20	Institute Counselling Service
1973	NA	0.55	Scholarship

TOP DONORS IN FY 2023-24

S. No.	Name of Donor	Amount in ₹(Crore)	Purpose
1	Mr Rakesh Gangwal (BT/ME/1975)	33.20	Gangwal School of Medical Sciences and Technology
2	Dr. Dev Joneja (BT/ME/1984)	7.08	Annual Gift Programme Gangwal School of Medical Sciences and Technology
3	Mehta Family Foundation	6.65	The Mehta Family Centre for Engineering in Medicine
4	Mr. Hemant Jalan (BT/CHE/1977)	6.00	Gangwal School of Medical Sciences and Technology
5	Mr. Anil Bansal (BT/ME/1977)	5.42	Annual Gift Programme Gangwal School of Medical Sciences and Technology
6	Mr. Sudhakar Kesavan (BT/CHE/1976)	4.20	Lalit Beniwal Memorial Fund Chandrakanta Kesavan Centre for Energy Policy and Climate Solutions
7	Mr. Muktesh Pant (BT/CHE/1976)	4.15	Gangwal School of Medical Sciences and Technology
8	Mr. Ashish Karandikar (BT/EE/1995)		Karandikar Best Ph.D. Thesis Award Karandikar Student Scholarship Smt. Lata and Shri K G Karandikar Faculty Chair
9	Mr Pawan Tewari (BT/EE/1988)	1.58	Pawan Tewari Goldman Sachs Endowment Towards AI for Social Good The Pawan Tewari Goldman Sachs Scholarships The Pawan Tewari Goldman Sachs Sustainability Faculty Chair
10	Dr. Deepak Mohan Narula (BT/EE/1985)	1.45	Gangwal School of Medical Sciences and Technology
11	Dr. Vikram Narasimhan (MS2/CHM/1984)	0.71	Professor P T Narasimhan Memorial Fund Professor N Sathyamurthy Endowment Lecture Series
12	Shraman Foundation	0.62	Sudhir Singhal Scholarship
13	Dr. Rajeev Gautam (BT/CHE/1974)	0.58	Rajeev and Joyce Gautam Student Travel Grant Rajeev and Joyce Gautam Young Faculty Fellowship in CHE
14	Mr. Vikram Tannan	0.50	Gangwal School of Medical Sciences and Technology
15	Mr. Gaurav Deepak (BT/ME/1996)	0.50	Class 1996 Legacy project
16	Professor Jayadev Misra (BT/EE/1969)	0.50	IITK Girls' Hostel
17	Mr. Gopal Sutwala (BT/CHE/1973) & Family	0.41	Gangwal School of Medical Sciences and Technology
18	Dr. Tara Shetye Behrend	0.26	Shri Mohan Shetye Excellence Scholarship
19	Yuva Unstoppable	0.35	Yuva Unstoppable Scholarship
20	Mr. Rakesh Bhargava (BT/CHE/1973)	0.26	1973 Class Fund Rakesh Bhargava-Class of 1973 Annual Travel Grant
21	Mr. Jagjeet S Bindra (BT/CHE/1969)	0.26	Jeet Singh Bindra Scholarship for Female Students Post Graduate Research Lab in CHE
22	Mr. Vikram Chalana (BT/EE/1991)	0.25	Class 1991 legacy project Lalit Beniwal Memorial Fund
23	Ms. Seema Srivastav (BT/EE/1976)	0.25	Dilip Nigam Memorial Scholarship

ALL TIME DONORS

Leadership Donors


Mr. Rakesh Gangwal
(BT/ME/1975)


Mr. Narayana Murthy
(MT/EE/1969)


Dr. Dev Joneja
(BT/ME/1984)


Mr. Muktesh Pant
(BT/CHE/1976)


Mr. Anil Bansal
(BT/ME/1977)


Mr. Sudhakar Kesavan
(BT/CHE/1976)


Mr. Hemant Jalan
(BT/CHE/1977)


Late Dr. Ranjit Singh
(BT/MME/1965)


Mr. Rahul Mehta
(non-alumni)

Principal Donors


Professor Chandralekha Singh
(Non-Alumni)


Mr. Jeremy Levy
(Non-Alumni)


Mr. Jagjeet S Bindra
(BT/CHE/1969)


Mr. Lokvir Kapoor
(BT/ME/1987)


Ms. Asha Jadeja Motwani
(non-alumni)


Dr. Prabhu Goel
(BT/EE/1970)


Ms. Nirmala Govindan
Wife of late Mr. Jay Pullur
(MT/CSE/1987)

Major Donors


Mr. Pawan Tewari
(BT/EE/1988)


Mr. Ranodeb Roy
(BT/CSE/1990)


Dr. Deepak M Narula
(BT/EE/1985)


Mr. Rajiv Batra
(BT/EE/1982)


Mr. Ajay Dubey
(BT/CHE/1980)


Dr. Devendra Shukla
(BT/CE/1967)


Mr. Ashish Karandikar
(BT/EE/1995)


Mr. Kal Shastri
(MSC2/PHY/1976)


Mr. Kushal C Sacheti
(MT/CHE/1971)


Mr. Sudhir M Mittal
(BT/CHE/1970)


Mr. Alok Agarwal
(BT/EE/1979)


Dr. B V R Mohan Reddy
(MT/ME/1974)

Philanthropic donations in FY 2023-24

Name	Amount in ₹(Crore)	Purpose
Mehta Family Foundation	6.65	The Mehta Family Centre for Engineering in Medicine
Shraman Foundation	0.62	Sudhir Singhal Scholarship
Yuva Unstoppable	0.35	Yuva Unstoppable Scholarship
Radha Kishan Kanodia Dharmarth Trust	0.04	Radha Kishan Kanodia Dharmarth Scholarship
Rastogi Family Fund	0.02	Gangwal School of Medical Sciences and Technology
Mahaluxmi Charitable Society	0.01	Class of 1974 Legacy Fund

Corporate Partners in FY 2023-24

Name	Amount in ₹ (Crore)	Purpose
HDFC	16.98	Gangwal School of Medical Sciences and Technology
J K Cement Mr. Yadupati Singhania (BT/CE/1977)	15.00	Gangwal School of Medical Sciences and Technology
Citibank	11.50	Social Innovation Lab
IBM India	9.00	Gangwal School of Medical Sciences and Technology
REC Foundation	4.00	Gangwal School of Medical Sciences and Technology
Kotak Mahindra Bank	3.00	Kotak School of Sustainability
Tower Research Capital Markets India	1.51	Scientific Research
Portescap India	1.01	Scientific Research
Suraj Logistix	0.63	Scientific Research
Power Finance Corporation	0.62	Scientific Research
TCS Fellowship	0.53	Scientific Research
Nmtronics (India)	0.51	Scientific Research
Faiveley Transport Rail Technologies India	0.48	Scientific Research
Cookson India	0.40	Scientific Research
PFC Consulting	0.40	Scientific Research
IvyCap Ventures Advisors	0.39	Endowment to Support Entrepreneurship
Vacmet Foundation	0.35	Scientific Research
LIC Housing Finance	0.33	Scientific Research
Solar Energy Corporation of India	0.30	Scientific Research
SLR Infrastructure	0.23	Scientific Research
EcoEnergy Insights	0.21	Scientific Research
Kewal Engineering Mr. Rajiv Chawla (BT/ME/1977)	0.21	Scientific Research
Ericsson India	0.20	Scientific Research
Khanna and Khanna	0.16	Scientific Research
J K Fenner (India)	0.14	Scientific Research
Sahasra Electronics Mr. Ajit Chakravarti (BT/ME/1977)	0.14	1972 Golden Jubilee Legacy Project
PNC Infratech	0.12	Scientific Research
Brisk Electronics	0.10	Student with Disability Project
Pradeep Metals	0.10	Class 1978 Legacy Project
P N International	0.09	Scientific Research
AIA Engineering Mr. Bhadresh Shah (BT/ME/1974)	0.08	Scientific Research
ANSYS Software	0.08	Scientific Research
Bright 4 Wheels Sales	0.08	Scientific Research
Rahman Industries	0.07	Scientific Research
CSI Engineering Software	0.07	National Information Centre of Earthquake Engineering (NICEE)
Intelligent Optimization Group Mr. Ravi Jaisinghani (BT/EE/1972)	0.06	Class of 1974 Legacy Fund
Automech India	0.05	Batch of 1965 Scholarship
Apollo Heat Exchangers	0.05	Class of 1974 Legacy Fund
Bharat Forge	0.05	Scientific Research
Trimble Information Technologies India	0.05	Scientific Research
Prachi Leathers Mr. Anil Gupta (BT/ME/1978)	0.04	Class of 1978 Legacy Fund
Lohum Cleantech	0.05	Scientific Research
Power System Operation Corporation	0.04	Scientific Research
National Buildings Construction Corporation, India	0.04	NICEE
AlphaGrep Securities	0.03	Scientific Research
Option Pros LLC	0.02	Lalit Beniwal Memorial Fund
Printed Electronics	0.01	1973 Class Fund
Farm Operation	0.01	Annual Gift Programme
Quality Kiosk Technologies	0.01	V Srinivasan Memorial Fund
Total	69.53	

ALUMNI IMPACT

Some of the major awards and honors received by our alumni in 2023-24 are listed below.

S. No	Award/ Honor	Name/ IITK degree of Alumni	Award Endowed by
1	White House National Medal	Professor Ashok Gadgil (MSC2/PHY/1973)	US National Science Foundation
2	ACM-IEEE CS Ken Kennedy Award	Professor Keshav Pingali (BT/EE/1978)	The Association for Computing Machinery and the IEEE Computer Society
3	Shanti Swarup Bhatnagar Prize for Science & Technology	Professor Dipti Ranjan Sahoo (MT/PHD/CE/2004/2008)	The Council of Scientific and Industrial Research (CSIR)
4	Shanti Swarup Bhatnagar Prize for Science & Technology	Professor Neeraj Kayal (BT/PHD/CSE/2002/2007)	The Council of Scientific and Industrial Re- search (CSIR)
5	Fellows of Indi- an National Science Academy (INSA)	Professor Nitin Saxena (BT/PHD/CSE/2002/2006)	Indian National Science Academy
6	Associate Fellow of the Indian National Science Academy (INSA)	Professor Rahul Mangal (BT/MT/CHE/2010)	Indian National Science Academy
7	J C Bose Fellowship	Professor Nitin Saxena (BT/PHD/CSE/2002/2006)	Anusandhan National Research Foundation
8	IIT Bombay International Award	Professor Nitin Saxena (BT/PHD/CSE/2002/2006)	IIT Bombay
9	S Ramachandran National Bioscience Award	Professor Nitin Gupta (BT/CSE/2004)	Ministry of Science & Technology, Govt. of India
10	1989 Batch Faculty Award on Teachers' Day 2023	Dr. Purushottam Kar (BT/PHD/CSE/2008/2014)	IIT Kanpur
11	Uttar Pradesh Gaurav Samman	Mr. Naveen Tewari (BT/ME/2001)	Govt. of Uttar Pradesh
12	INAE-SERB Adbul Kalam Technology Innovation National Fellowship 2023 for a period of three years	Profesor Jayant K. Singh (BT/CHE/1997)	Indian National Academy of Engineering

The table below lists some Notable Professional Achievements by our Alumni in 2023-24

S.No	Name/ IITK degree of Alumni	Position
1	Shri Amit Agrawal (BT/EE/1991)	CEO of Unique Identification Authority of India (UIDAI)
2	Shri Upender Singh Rawat (MSC5/PHY/1995)	High Commissioner to Uganda
3	Professor Rohit Verma (BT/MME/1990)	Dean of Darla Moore School of Business, University of South Carolina
4	Mr. Srikant Sastri (BT/CHE/1983)	Chairperson of the Geospatial Data Promotion & Development Committee
5	Professor Pradip Swarnakar (PHD/HSS/2008)	Senior Associate (Non- Resident) at Center for Strategic and International Studies (CSIS) under the Energy Security and Climate Change Program
6	Professor Raj N Singh (BT/MME/1967)	Member of the National Academy of Engineering (NAE)

7	Ms. Vartika Shukla (BT/CHE/1988)	Featured in "The She List" of Top 100 Women of India in the Special Issue of India Today
8	Professor Debabrata Goswami (MSC2/CHM/1988)	Joined the Editorial Advisory Board of The Journal of Physical Chemistry (JPC) Letters, published by the American Chemical Society (ACS) for a period of 3 years
9	Mr. Chirag Jain (MSR/AE/2020)	Listed in Forbes India 30 under 30 for year 2024
10	Mr. Rama Krishna Mendu (BT/MT/AE/2018/2019)	Listed in Forbes India 30 under 30 for year 2024
11	Professor Manindra Agrawal (BT/PHD/CSE/1986/1991)	Director of IIT Kanpur
12	Professor Abhay Karandikar (MT/PHD/EE/1988/1994)	Secretary, Department of Science and Technology
13	Professor Mukesh Sharma (MT/CE/1982)	Reappointed (for two years) as an honorary member of the World Health Organization Global Air Pollution and Health – Technical Advisory Group (GAPH-TAG)
14	Mr. Sanjiv Puri (BT/ME/1985)	President of Confederation of Indian Industry (CII)
15	Professor Senthil Todadri (MSC/PHY/1992)	Elected to National Science Academy, USA
16	Pofessor Ashvin Vishwanath (MSC5/PHY/1996)	Elected to National Science Academy, USA

Some Notable entrepreneurial endeavours by alumni of IIT Kanpur in 2023-24 are listed in the following table:

S. No	Start-up Name	Name of Alumnus	Startup Description
1	Shitashii Innovations	Dr. Sunita Mehta (PHD/MSE/2017)	The startup is developing a soft, flexible and communicative device for patients with laryngectomy.
2	Swasvayu Cleantech	Dr. Kaniska Biswas (MT/PHD/DES/2013/2020) Dr. Esha Ray (PHD/ES/2023)	It works in Air pollution control. It focuses on designing & developing water-scrubbing based innovative outdoor air purifiers for different applications.
3	Eleqzee Energy Solutions	Mr. Syed Azhar Hasan (BT-MT Dual/ME/2012) Mr. Saumitra Rajendra Kumar Singh (BT/ME/2011)	At Eleqzee, the innovators are de- signing, engineering, and assembling retrofitted electric vehicles which are safe, certified, and tested by agencies like ICAT/ARAI and others.
4	Aerobos Environment Solutions (AESPL) AESPL Extrawatts Renewables	Mr. Akshansh Yadav (MT/ME/2023)	The startup is developing a vehicle rooftop innovative product for renewable energy generation and atmospheric air purification.
5	Aarush Eco Tech Private Limited	Dr. Amit Singh Chauhan (MT/PHD/CE/2009/2016)	The startup's Smart Bin System uses AI and IoT to monitor, manage and optimally collect waste. It predicts the fill-level of bins and coordinates with the waste management team to ensure timely and efficient collection.

OUTREACH ACTIVITIES

Our alumni network is a powerful asset. Their unique experiences and deep connections with our institution make them invaluable partners in achieving excellence. To foster this partnership, we prioritize dialogue and exchange of ideas with our alumni, as their insights are instrumental in the Institute's continued growth.

US IITKarvaan


IITKarvaan delegation visited United States in August 2023 and held US roadshow networking events in three major cities namely, New York, Houston, and San Francisco. The event was attended by 400+ participants. In addition to alumni networking events, IITKarvaan also visited, New York University, Rice University and World Bank.

Australia IITKarvaan

To foster and strengthen alumni-institute relationship, the Australia IITKarvaan delegation held alumni networking dinner in Melbourne and Sydney in March 2024. The events were attended by more than 100

alumni, and it gave them an opportunity to network and be part of the future roadmap of IIT Kanpur.


IIT Kanpur's alumni engagement programs in 2023-24 were a great success as they brought alumni together, created valuable networking opportunities, and strengthened the institute's reputation. These initiatives significantly improved the bond between IIT Kanpur and its alumni, leading to more alumni support, engagement, and philanthropic contributions.

Reunions: November 2023 - February 2024

Reunions are the most awaited alumni engagement activity of the institute. IIT Kanpur hosted 9 reunions during the current academic year. The youngest class included was the Class of 2013. They celebrated their 10th reunion, whereas the Classes of 1973 and 1974 celebrated their 50th reunion.

These gatherings served as a powerful platform for graduates to reconnect, reminisce, and strengthen their lifelong bonds with the institute. Milestone reunions – 10th, 20th, 25th, and so on – provide natural opportunities for classmates to catch up, share memories, and celebrate their achievements.

The impact, nevertheless, goes beyond individual connections. Reunions offered a valuable two-way exchange. IIT Kanpur showcased its achievements, advancements, and future plans to its alumni, fostering a sense of pride and continued engagement. At the same time, reunions provided a platform for alumni to get involved in the institute's growth through fundraising campaigns, mentorship programs, and other initiatives.

To further strengthen these connections, IIT Kanpur hosted engaging events during the reunions like gala dinners, networking sessions, panel discussions, and campus tours. By fostering stronger alumni relations, these gatherings create opportunities for collaboration, knowledge sharing, and active alumni participation in fundraising and institute campaigns – all key ingredients for continued growth and success of the institute.

INSTITUTE FACULTY

RECRUITMENT

In the current academic year 2023-24, the institute offered faculty position to 22 out of 889 applicants through a rigorous selection procedure and 32 new faculty members joined the institute. The joining number also includes the applicants who were offered a faculty position in the previous academic year but opted to join in the current academic year. The department wise distribution of the new faculty members for 2023-24 is presented below:

Department	Number of new faculty
Aerospace Engineering	-
Biological Sciences and Bioengineering	01
Chemical Engineering	-
Chemistry	01
Civil Engineering	03
Cognitive Science	01
Computer Science & Engineering	01
Earth Sciences	01
Economic Sciences	03
Electrical Engineering	07
Humanities and Social Sciences	01
Management Sciences	03
Materials Science and Engineering	01
Mathematics & Statistics	-
Mechanical Engineering	01
Physics	03
Space, Planetary & Astronomical sciences & Engineering	03
Sustainable Energy Engineering	02
Total	**32**

During the same period the institute also offered Postdoctoral fellowships to 79, Visiting Professor position to 21, Adjunct Faculty position to 09, and Visiting Professor of Practice position to 07 candidates.

AWARDS AND HONOURS

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 honours, including fellowship of professional societies and editorship of international journals.

I am extremely happy to share with you the wonderful news that Professor Bushra Ateeq (BSBE) has been awarded the Tata Innovation Fellowship 2023-24 by the Department of Biotechnology, Government of India. She has also been honoured with the prestigious Fellowship of the Indian National Science Academy (INSA). Professor Shalabh (MTH&S) has received the Professor K Srinivasa Rao Best Researcher Award 2023 by the Indian Society of Probability and Statistics.

Professor Jayant K Singh (CHE) and Professor Sandeep Verma (CHM) have been selected for the prestigious INAE-SERB Abdul Kalam Technology Innovation National Fellowship 2023 for a period of three years. The latter was also selected for the Professor D P Chakraborty 60th Birth Anniversary Commemoration Award by the Indian Chemical Society. Professor Nitin Saxena (CSE), Professor Yogesh M Joshi (CHE) and Professor Mahendra Verma (PHY) were awarded the prestigious J C Bose Fellowship by SERB. Professor Nitin Saxena (CSE) has also been honoured with the prestigious Fellowship of INSA.

Professor S N Tripathi (CE) and Professor Arun K Shukla (BSBE) have been awarded the Infosys Prize 2023. Professor J N Moorthy (CHM) has been presented with the Asian and Oceanian Photochemistry Association (APA) Award 2023. Professor Nisanth N Nair (CHM) has received the Dr. A P J Abdul Kalam HPC Award 2023 under the category, Researcher – R&D in HPC Applications. He was also selected for the Chemical Research Society of India (CRSI) Bronze Medal for the year 2024. Professor Nitin Gupta (BSBE) has been awarded the S Ramachandran National Bioscience Award by the Department of Biotechnology. Professor Ashok Kumar (BSBE) was conferred the Distinguished Biomaterials Scientist Award by the Society of Biomaterials and Artificial Organs, India (SBAOI). He was also elected as a Fellow of Biomaterials Science and Engineering by the International Union of Societies for Biomaterials Science and Engineering.

Professor Krishanu Biswas (MSE) has been elected as a Fellow of the Institute of Materials, Minerals and Mining (IoM3), U.K. Professor Avinash Kumar Agarwal (ME) was elected as a Fellow of The World Academy of Sciences (TWAS). Professor S C Srivastava (EE) was awarded the Life Fellowship of IEEE USA. Professor Braj Bhushan (HSS) has been elected as a Fellow of the esteemed British Psychological Society (BPS). Professor M Jaleel Akhtar (EE) was elected to the Fellowship of the Indian National Academy of Engineering (INAE).

STUDENT AWARDS

The prestigious scholarships and awards received by our students have been a matter of pride and pleasure for us. To name a few, Aritra Ambudh Dutta, Jaskaran Singh and Sanjna S received the prestigious Aditya Birla Scholarship; Abdul Ahad Zareef, Gauri, Alok Kumar Mishra, Aayush Singh and Pratyush Amrit received the O P Jems scholarship; Soumen Giri and Teki Sai Veerabhdra Nikhil received the ACC Fellowship; and 149 students received the Inspire Scholarship.

The complete list of student awards is given at the end of the report along with the faculty awards.

INSTITUTE COUNSELLING SERVICE

Overview and Team Strength

The Institute Counselling Service (ICS) primarily provides psychological, academic, or financial assistance to students. The ICS aims to bring a human touch into a highly competitive academic environment and lends a helping hand to the students in need, thereby trying to create a home away from home. ICS consists of a Head, a team of professional counsellors, psychiatrists and a group of student volunteers dedicated to the welfare of student community and staff members. Currently, there are 7 professional counsellors and 3 psychiatrists who conduct consultations at regular intervals. The student team comprises an undergraduate (UG) wing and a postgraduate (PG) wing. The UG wing has 5 coordinators, 12 core team members (Operations), 11 core team members (Academics), 223 student guides and 191 academic mentors. Whereas the PG wing has 13 core team members, 45 academic mentors, 35 student guides, and 100 orientation team members. For the next academic session PG core team size has been increased from 13 to 20.

Counsellor and Psychiatrists Sessions

Students typically meet the counsellors in two modes – they either approach the counsellors on their own volition, or are referred to the ICS by their friends, faculty members, psychiatrists, or the doctors at the health centre. Students facing academic difficulties are also encouraged to meet the counsellors to develop strategies to cope with distress. In case of emergency, where a student needs urgent psychiatric help, the Counselling Service coordinates with a psychiatrist clinic to ensure the student receives timely and appropriate care. Also, a Psychiatry and De-addiction clinic runs every fortnightly at the Health Center, IIT Kanpur by a renowned psychiatrist of the city. A counsellor of ICS assists the psychiatrist in this clinic. In the academic year 2023-24, the ICS had a total number of 2913 psychotherapeutic sessions.

ACTIVITIES

The team organized various events throughout the year like:

Open Mic & Mini games

On World Suicide Prevention Day an open mic was organized at the Café Coffee Day. People sang, recited, opened-up on their Stories of Hope & comebacks. Open canvasses were installed for people to come and paint their thoughts.

Movie Screening

The event above was followed by the screening of movie, Zindagi Na Milegi Dobara at OAT.

Panel Discussion

On World Suicide Prevention Day, Mr. Satyarup Siddhanta (mountaineer), Dr. Alok Bajpai (psychiatrist), and Mr. Surya Mohan Kulshreshtha (movie director) discussed suicide and reasons for the same. They also discussed how one can stop negativity from entering his/her mind.

Talk-It-Out

The significance of talking things out was presented in a poetic way by Ms. Helly Shah.

Workshop on Substance and Behavioural Addiction

An interactive workshop was conducted by the Institute Counsellors to spread awareness about substance and behavioural addiction.

Various inspiring events were organized on the **World Mental Health Day** to bring attention to the Mental health wellness.

- **Talk on Mindfulness of Wellbeing:** Dr. Sanjay Mahendru (psychiatrist) talked about the importance and significance of mindfulness for well-being in the academic as well as the non-academic routine.
- **Movie Screening:** The talk above was followed by the screening of movie, Chhichhore at OAT.
- **Origami Workshop:** Origami was taught at multipurpose room, OAT, signifying productiveness, and peacefulness.
- **T-Shirt Painting:** Painting is therapeutic in its own way. People showed up in large numbers and let out their thoughts on plain white T-shirts.
- An event named **Hakuna Matata** was organized on Diwali.
- Game Night: To feel the festive vibe the Pre-Diwali Night was celebrated with all sorts of board games, card games and tambola.
- **Token of Happiness:** The security officers were given sweets from ICS to respect and encourage their 24X7 support across the year.
- **Diya Lighting and Sky Lantern Festival:** Whole of OAT along with Hockey and Football were

lighted with diyas and people came to light up and fly the sky lanterns.

- A two-day **Gatekeeper training program** in association with QPR Institute, Bangalore was facilitated for IIT Kanpur students, staff, and faculty members. Participants were trained to identify the signs and symptoms related to suicide, methods to approach and provide initial aid along with referral to mental health professionals for early intervention and support.

- Several Blogs to raise awareness about mental health issues and suicide prevention were uploaded on social media platforms. A two-part medium blog series on suicidal thoughts was appreciated by many students.

- Social media posts such as Motivation videos for placements and Internship Comic Series were shared with the student community.

STUDENTS' ACTIVITIES

MEDIA & CULTURAL COUNCIL

Cultural Extravaganza - Various events like Dance Extravaganza, Musical Extravaganza, Dramatics Eve and others were organized over the weekend from 13-17 April 2023 by different clubs of the Council.

Cultural Nexus - The Fresher's weekend was organized from 26-28 July 2023. It started with a touch of serenity and relaxation with a movie night and ended with a music-filled DJ Night.

Treasure Hunt'23 - The Council organized a Treasure Hunt for the Y23 batch on 23rd September. The event had two stages: The Scavenger Hunt and The Treasure Hunt. The event witnessed participation from 1000+ students. For the first time council secured sponsorship deals worth ₹ 1 Lakh from brands including Coca-Cola, PokerSaints and Zing Pizza.

Participation Visits

- Inter IIT CULT MEET 6.0 was held at IIT Kharagpur and 230+ member contingent from IIT Kanpur participated with the utmost enthusiasm and secured overall 4th position.
- The student community also participated in Rendezvous, the annual cultural festival of IIT Delhi.

Chef it up 2.0 - It attracted a huge participation and helped us prepare for Inter IIT Cult Meet 6.0.

THC House party - This is a one-of-a-kind cultural event aimed at bringing the best of hip-hop to the campus, inviting performances from reputed hip-hop artists all over the country.

Galaxy - The 39th edition of Galaxy, the annual Inter-pool Media and Cultural Competition, was organized successfully from 29th January to February 12, 2024. The event brought together students from various pools, who displayed their talents and competed in various events, fostering an atmosphere of enthusiasm and camaraderie.

SCIENCE AND TECHNOLOGY COUNCIL

SnT Summer Camp 2023 - The Council successfully conducted the SnT Summer Camp 2023 during May - August. A total of 2033 students applied for the SnT Summer Projects, out of which 943 students were finally selected across a total of 52 projects spanning across 12 entities in the Council.

Snt Hackathon 2023 - The Council successfully organized the SnT hackathon in the first week of August. More than 900 students registered for the competition. The hackathon consisted of multiple problem statements covering different domains, such as, Generative AI for impact, Solve for IITK, AlgoStrategy Development, Car Simulation and King's Den.

SnT PAVILLION - The Council organized the SnT Pavillion where freshers were acquainted with the activities of all the entities of the SnT Council. The event was organized in a completely offline mode for the UG Y23 batch in the first week of August 2023.

TAKNEEK - Takneek was organized by the Council in full offline mode starting from the last week of August 2023 and continuing till the first week of September 2023 spanning over a period of 10 days. The event focused on different types of problem statements having varying durations and point structures.

Performance In Inter IIT Tech Meet 12.0 - IIT Kanpur secured the overall 5th position in the 11th Inter IIT Tech Meet. This year the Tech Meet was hosted by IIT Madras in a complete offline mode. IIT Kanpur bagged 4 medals.

1 Gold in the problem statement JLR.
1 Silver in the problem statement Mphasis
2 Bronze in the problem statements IGDC and Math Bowl.

GAMES AND SPORTS COUNCIL

Workshops

- An archery Workshop was conducted for the benefit of archery enthusiasts.
- A workshop for women was conducted on International Women's Day.

- A 3-day workshop by Mr. Deepak Katiyar was organized for the Chess players.
- A two-week workshop by the Kabaddi Society was conducted from September 17, 2023.

Intra IIT Kanpur Sports Events

- Institute Phatta League (IPL) was a thrilling event organized by the Council from 5-13 August 2023.
- The first edition of the Athletics Triad Tournament was organized between 13-14 August 2023, which obtained immense participation from the campus community.
- Aquabuddies was held at the Institute Swimming Pool.
- Racquethalon, an eagerly anticipated institute league encompassing four exhilarating sports - Badminton, Table tennis, Lawn tennis, and Squash - unfolded from 26th January.
- The Intra-IIT Wall Climbing Competition was conducted between 16th August and 19th August at the climbing wall in New Sac, catering to beginner, intermediate, and advanced climbers.
- ICC 2.0, conducted around the campus, was an exhilarating cricket tournament played with a leather ball and served as a platform for aspiring cricketers to showcase their skills for a coveted spot in the Institute Cricket Team.

Felicitation - Annual Sports Felicitation Ceremony was organized by the Council on 2nd July 2023 to acknowledge the contribution of the senior contingent members towards IIT Kanpur Sports.

UDGHOSH 2023 - This year IIT Kanpur celebrated the 19th edition of Udghosh, attracting immense participation nationwide. Our institute's contingent of 300+ athletes competed fiercely over three days turning all sports grounds and courts into battlefronts. The athletes fought determinedly to secure victories for their teams while the crowd's constant cheering added to the exhilaration of the event.

Inter IIT Aquatics Meet - The 37th Aquatics meet was held from 4-8 October at IIT Gandhinagar. The IIT Kanpur team performed creditably and managed to secure multiple medals in variety of events, hence bringing up the tally to close at 3rd position for the Women's Swimming team and 5th position for Men's Swimming team.

Inter IIT Sports Meet 2023 - The IITK contingent continued their stellar record in sports such as volleyball (women) gold, badminton (men) gold, table tennis (men) silver, table tennis (women) silver, athletics (men) silver, aquatics (women) bronze, cricket (men) bronze, squash (women) bronze and weightlifting (men) bronze by grabbing medals and presenting an excellent show of sportsmanship.

INFERNO 2023 - Inferno, organized from 2-10 March showcased various sports catering to both men and women athletes. The event was meticulously planned to accommodate 19 sports competitions for men and 11 for women ensuring a wide representation of athletic disciplines.

Freshers' INFERNO 2023 - Organized from 3-10 September 2023 exclusively for the Y23 students of IIT Kanpur is the annual flagship event for freshers. The event accommodated 16 different competitions.

ACADEMICS AND CAREER COUNCIL (UG)

Product Management Interest Group

Summer Projects - Four product management summer projects, namely: Product Research and Innovation, User-Centric Product Design, Building a Research Publication Website, and Foundation of Successful Product Management, each lasting 5-6 weeks, were offered.

Competition 1 - The Product PowerPlay - This competition aimed to challenge the problem-solving, critical thinking, and strategic decision-making abilities of a student.
ProdCamp 1.0 (A Product Management Bootcamp) – Captivating and informative sessions led by industry experts, hands-on workshops, and regular quizzes were organized as part of the Bootcamp.

Competition 2 - PROD-A-THON - It was a product case study competition in collaboration with the company Merlin by Foyer for all batches (UG and PG).
Product Management Playlist - IIT Kanpur launched its first comprehensive, end-to-end Product Management guide—a playlist carefully crafted with the help of industry experts to assist students in exploring and learning this field.

Career Development Wing

Internship Preparation Sessions - In May Y20 batch students held sessions to help Y21 batch students prepare for internships. They shared preparation resources and addressed attendees' questions. The six major profiles covered were Quant, Software, Consulting, Analytics, Core, and Techno-Managerial.
DSA boot camp and test series for internships - In July, a collaboration with Programming Pathshala offered a subsidized DSA boot camp for the Y21 batch students. Approximately 180-200 courses were sold to campus students.

Internship Mentorship Program'23 - In June and July third year mentors were assigned to second-year students to assist with their internship preparation. Each Y20 mentor overseeing 5-6 mentees based on preferred profiles, provided guidance, resolved doubts, and offered motivation during challenging phases.

Resume-making session and Mock GDs - In July and August resume-making and mock Group Discussions (GDs) sessions were conducted for Y21 batch students.

Sessions on Guesstimates and Soft Skills - In November a session on Guesstimates was conducted by an IIT Kharagpur alumnus, focusing on interview techniques for Guesstimates. Additionally, two interactive soft skills sessions were held in collaboration with Alternative Leadership: one on Emotional Intelligence and the other on Workplace Communication.

Career Connect - Career Connect was organized from 5-7 April. This event aimed to inspire and empower both undergraduate and postgraduate students by providing them with the necessary tools and information to make well-informed decisions in their professional, social, and personal lives. The event featured a wide range of sessions, hackathons, and workshops.

Sessions

- **Debugging the Software Role** - Speakers: Mr. Ayush Nagal (Microsoft), Mr. Satyam Sahu (Google)
- **Consulting Compass** - Speakers: Mr. Anuj Kukreja (Bain & Company), Mr. Akshay Mahajan (Boston Consulting Group), Mr. Tizil Saini (McKinsey & Company)
- **Exploring the Quantverse** - Speakers: Mr. Nilay Tiwari (Quadeye Securities), Mr. Gaurav Saraf (Goldman Sachs)
- **Product Paradigm** - Speakers: Mr. Anurag Meher (CRED), Ms. Eva Rajak (EXL), Mr. Kunal Kotak (Mastercard)
- **Analytics Profile Unveiled** - Speakers: Mr. Sanket Katore (Mastercard), Ms. Divya Chowdary (EXL), Mr. Vishwas Jain (Mastercard)
- **Deep Dive into Core -** Speakers: Ms. Vaidehi Bhoyar (SkyRoot Aerospace), Mr. Suyash Singh (ITC Limited), Mr. Shubham Sharma (NVIDIA), Mr. Sanghamitra Banerjee (Dr. Reddy's Laboratories)

Workshops

- MATLAB Workshop
- Analytics Workshop
- Case Study & Guesstimates Solving Workshop
- Research Paper Writing Workshop

Competitions

- Stock Trading Competition
- Ideation Insomnia

UG Academics Wing

Academic Orientation 2.0 - It is the second flagship event of the wing. The target audience was Y22 batch. The orientation aimed at smoothening the transition from the first year to the second year.

ADM and CDM Recruitment - Department mentors were allocated to supervise communication with students via WhatsApp Groups throughout the year.

AnC booklet - It is an 8–10-page booklet for Y23 students containing relevant information from the UG Manual, an introduction to CCG kits, and essential academic pointers.

Deep Dive into Departments - A series of department sessions were conducted for each UG department especially targeting the sophomores.

Blog Posts on SURGE and Winter Projects - A series of blogs were posted to guide students on the application process for winter projects and SURGE.

ACADEMICS AND CAREER COUNCIL (PG)

ThePG-Academics Wing

Stat of the Art Seminars (SOTA) Workshops – These workhops trained Ph.D. students on delivering effective presentations, communication skills, structuring content, and mastering technical jargon.

Academic Orientation for Freshers - The orientation provided new students with information essential to begin their academic journey at IIT Kanpur.

DPGC Student Interviews - The interviews ensured fair and inclusive representation.

Constructing Effective Appeals Session - The sessions guided students facing academic warnings or terminations by crafting strong appeals and advocating for their academic standing.

The PG-Research Wing

PMRF Guidance Session -The session provided information and guidance on the Prime Minister's Research Fellowship program, including eligibility, application process, and tips for a strong application.

Journal Paper Publishing Session - The wing offered workshops on publishing research findings effectively,

including selecting journals, formatting manuscripts, and navigating peer review.

Understanding the Distinction (Experimental vs. Computational Research) - Interactive session was held to explain the differences between experimental and computational research methodologies, including real-world examples and decision-making factors.

A Driving Progress Autonomous Vehicle Research workshop was also conducted by the Wing.

The PG-Career Development Wing

Core Placement Sessions - These sessions prepared students for core engineering placements through exam strategies, interview techniques, and understanding company expectations.

Non-Core Placement Sessions - The Wing offered workshops for various non-core sectors like data science, consulting, finance, product management, and others.

Consulting - The Wing provided guidance on industry insights, case studies, behavioural interviews, and consulting tools.

Finance and Banking - The sessions covered financial modelling, investment analysis, risk management, and banking operations through case studies and mock interviews.

Product Management -The session covered topics like, product lifecycle, market research, product design, project management, and user experience design.

The PG-International Relations Wing

Studying Abroad - The Wing organized information sessions on applying to PhD and Postdoctoral programs abroad, choosing institutions, writing applications, and securing funding.

Student Exchange Programs - The Wing organized workshops to inform PG students about student exchange programs including benefits, application procedures, and success stories.

Institute Research Symposium (IRS) - It is an annual event organized for researchers to present their work, exchange ideas, and foster collaboration across disciplines.

PRESIDENT STUDENTS' GYMKHANA OFFICE

56th Convocation and Farewell Fantasia - A farewell party for the graduating batch was successfully organized by the Students' Gymkhana. The band "Groovy Guys" performed in a musical extravaganza, which was then followed by a Prom Night in the yoga room. The graduating batch showed up in large numbers and enjoyed the evening.

Diwali with Faculty - The faculty members were wished by the students with personalized handwritten cards and a box of sweets.

Sanitary Pad Machine - To improve accessibility and convenience for female students on campus, the President's Office has recently acquired a sanitary pad vending machine. Currently the vending machine awaits final placement approval from the administration.

Faculty Advisor Programme - To foster closer ties between faculty and students a proposal has been submitted to establish a mentorship program. The Students' Gymkhana would assign dedicated faculty advisors to a group of approximately 20 freshers, encompassing both undergraduate and postgraduate students, either within or outside their academic departments.

Riwayat - Riwayat 24 is the much-anticipated inter-pool cultural extravaganza which took place from February 27 to March 3, 2024. This year's event witnessed enthusiastic participation from all the pools (Peshwas, Shauryas, Aryans, Nawabs, Kshatriyas) across all the participating clubs and cells.

HC Hackathon - A hackathon focused on developing a prototype health center portal was held from 1-17 February 2024. The event garnered interest from the community with 16 teams registering to participate. Over the course of the hackathon 8 teams persevered and submitted documentation outlining their ideas for the portal. 3 teams presented fully functional final drafts. After careful evaluation one team emerged victorious and was awarded for their exceptional work.

ENTREPRENEURSHIP CELL

Flagship Events

- **Esummit** comprised of a startup Expo, a Networking Dinner, and several workshops, talk sessions, and competitions. This year's theme was INQUISITION TO INFINITY.
- **Upstart** drew startups from Bangalore, Delhi, Hyderabad, and Mumbai. Our alumni startups were directly given entry into finals after mentorships.

For Campus

- Entrepreneurship Cell in collaboration with Shark Tank India organized a session where campus startups get the opportunity to pitch in front of the Shark Tank India Team, based on which startups were shortlisted for the Student Special Episodes.

- Startup Internship Program (SIP): During Winter 25+ companies registered to the program offering 100+ opportunities. It is currently an ongoing process.
- Startup Sprint: This was an exhilarating overnight hackathon, a perfect Kickstarter for aspiring startup founders and innovators in campus. 25+ teams participated in this event.
- Bid for the Best: This event was exclusively planned to provide basic knowledge of entrepreneurship to Y'23s in a fun way. More than 350 freshers participated in this event.
- A Startup Clinic was organized for campus startups to connect them with mentors/ alumni. A 12-week Entrepreneurial Bootcamp was also organized to help campus startups just out of the Ideation stages to gain traction. 18 startups participated in this event.
- The HII program was undertaken under the SUEP policy. 15 teams from the campus enrolled for this program.

PUBLIC POLICY & OPINION CELL

Policy Conclave'24 - It is the flagship event of the Cell. The Theme for the event was, "The Fortuitous Decannium". This theme encouraged people to draw inspiration from the fortuitous events of the past, acknowledging that major advancements often emerge unexpectedly. The event was inaugurated by Mr. Armstrong Pame.

BRAHMASTRA - It was a case study competition, which focused on addressing a problem based on key future issues of the nation. For the very first time in the country, participants from various prestigious institutes, IIT Kanpur, IIM Calcutta, IIM Udaipur, BITS Pilani, and IIFT Kolkata, came together to bring an amazing opportunity for everyone.

OUTREACH CELL

Core talks: The main idea behind Core Talks was to enhance the campus community's exposure to the core sector and guide students on how to pursue their career aspirations.

Monsoon Milan was organized to help the campus community network with our alumni base.

COMMUNITY WELFARE CELL (CWC)

Environmental Initiatives through Prakriti

Focus on Environmental Issues - The Prakriti club under the auspices of the CWC has been actively involved in addressing environmental concerns on the campus. This includes both raising awareness and implementing practical solutions to improve environmental sustainability at IIT Kanpur.

Engagement Activities - Throughout the year Prakriti has organized various events, campaigns, and workshops aimed at educating and involving the student community in environmental conservation efforts. These initiatives have fostered a campus- wide commitment to eco-friendly practices.

Promotion of Cultural Understanding and Values through Vivekananda Samiti - The Samiti organized lectures, interactive sessions, and community service events, which have helped enhance student life by providing deeper cultural insights and fostering inclusivity.

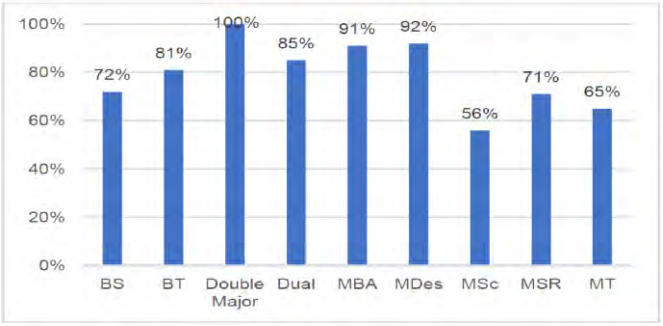
Broad Community Engagement Inclusive Events and Programs - The CWC has been instrumental in organizing various activities that cater to the broader student body and the community around the campus. These programs are designed to improve welfare, stimulate intellectual growth, and promote social responsibility among students.

Collaboration and Partnerships - To maximize the impact within IIT Kanpur, the CWC regularly collaborates with other organizations and departments within IIT Kanpur. These partnerships have enabled the cell to offer a wider range of services and reach a larger audience.

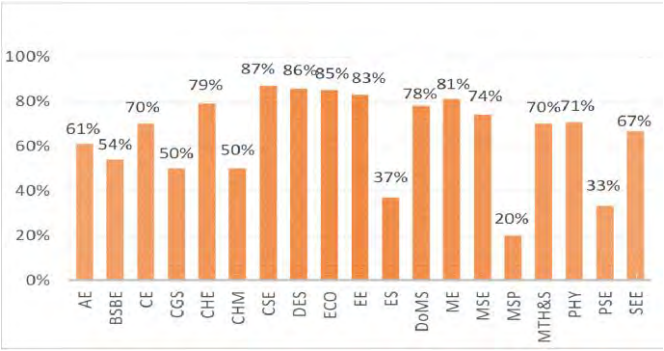
STUDENTS' PLACEMENT OFFICE

"*One student one job*" (single offer acceptance) policy, ensuring equal opportunity for all students registered with Students' Placement Office (SPO), was continued this year as well. The campus recruitment drive for the academic year 2023-24 was conducted in hybrid mode across two phases. Phase-1 officially began on December 01, 2023 and continued until 15th December 2023, with initial preparations and related activities starting in July 2023. Phase-2 of the campus recruitment commenced in mid-January 2024. A total of 481 organizations registered for campus placements across both phases. As on May 31, 2024 out of 1448 registered students, 1096 were placed through the SPO during the academic year 2023-24, encompassing both undergraduate and postgraduate levels. This year, more than 66 companies extended 220 Pre-Placement Offers (PPOs), marking an approximate 6% increase compared to the last year. So far, IIT Kanpur students have received 22 international offers. The overall placement rate stood at 76%, reflecting the dedicated efforts of the entire SPO team, including students, staff, and faculty coordinators. In undergraduate programs, 687 out of 849 registered students, approximately 81% secured placements. In postgraduate programs, 409 out of 599 registered

students, approximately 68% were placed. A significant number of graduating students chose to pursue higher studies or entrepreneurship over placements.



Placement statistics of various degree programs at IIT Kanpur during placement season 2023-24



Branch wise placement statistics of IIT Kanpur for placement season 2023-24

Note: The above placement details are as on May 31, 2024, and are subject to change following the final compilation of the 2023-24 placement drive. Some of the prominent recruiters who participated in the Campus Recruitment Drive 2023-24 include Goldman Sachs, Deutsche India, EXL, Google, Futures First, Microsoft India, Oracle India, Tata Projects, BPCL, Navi, Qualcomm, Jaguar Land Rover India, Reliance Industries, Prutor, and Texas Instruments.

SPO INITIATIVES

In addition to the regular campus placement drive, SPO also successfully organized Shodhspandan 2024. In this first-ever exclusive PhD recruitment event, our exceptional PhD scholars demonstrated their expertise across disciplines ranging from engineering to humanities to over 25 participating industries and academic institutions. 20 of our PhD students secured job through this exclusive recruitment drive.

EPILOGUE

Dear Graduating Students of the 57th Convocation, I congratulate you all on this momentous occasion in your life! This day brings back the nostalgia of my own graduation 34 years ago. I also take this opportunity to extend my heartiest congratulations to all the proud parents who have played a central role in their children's achievements throughout. Graduating from college is a significant milestone in a student's life, one which is one of the most bittersweet moments. It is hugely rewarding as you have accomplished the goal you have been working towards for a long time; and at the same time, you are about to bid farewell to the place where you spent many years learning, making friends, and creating memories!

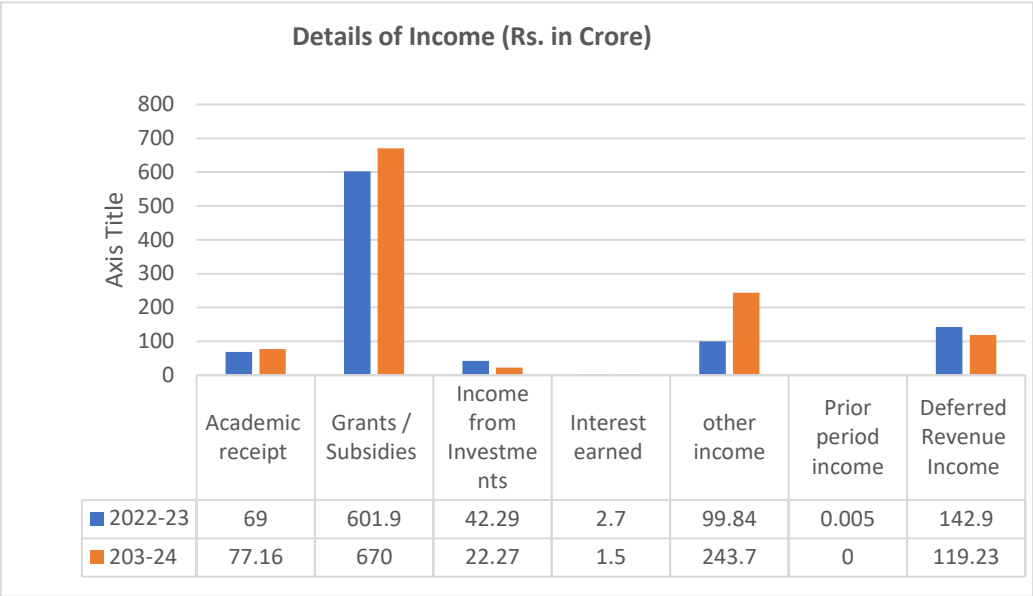
Dear Graduates, you all belong to a fortunate group of young people who have had an opportunity to obtain education from one of the preeminent institutions in the country. While you step into a new journey, some of you

will choose to work in the industry, some will choose to go in for higher studies, and some may opt to se rve the country as civil servants. Whichever profession you choose, I am confident that the spirit of IITK you have imbibed will act as your conscience and guiding light in navigating any complex situation.

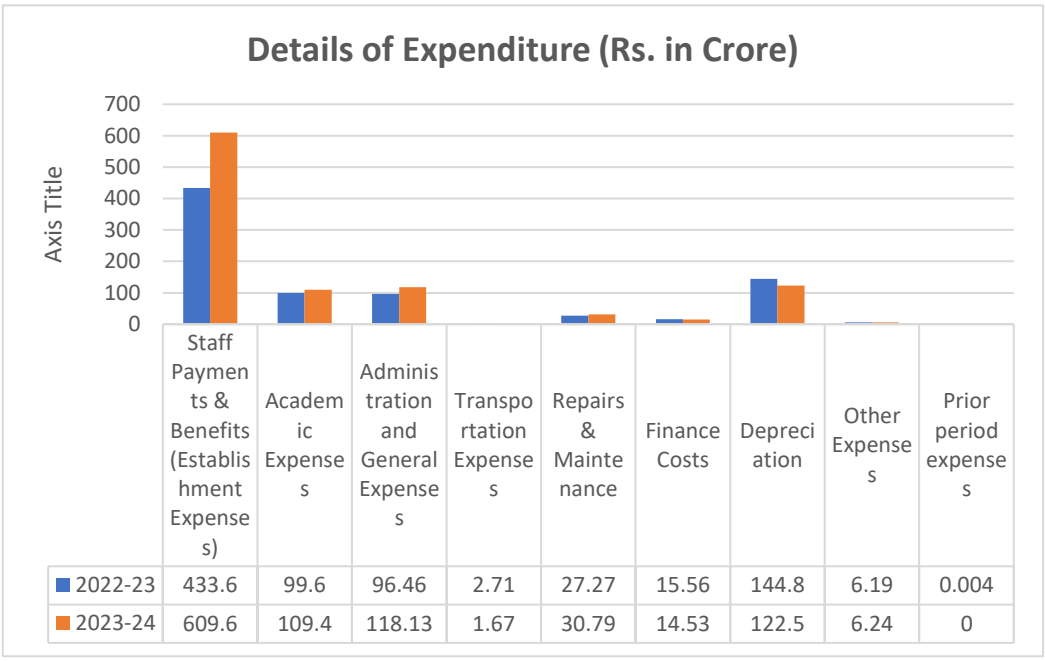
Recently, there is a huge demand for technically skilled youth in our country to solve India's various problems and grow the nation's economy. The emphasis is on transforming our country into a nation of job-creators rather than job-seekers by building an indigenous, innovative, and strong ecosystem by promoting entrepreneurship. The Govt of India has launched several initiatives such as 'Vocal for Locals', 'Atmanirbhar Bharat', 'Make in India', 'Startup India', etc., that provide tremendous opportunities for the youth of our country to be more self-reliant. By leveraging your technical knowledge and applying it for innovation and entrepreneurship, you can not only identify and solve societal challenges but also foster economic growth through job creation. You have the opportunity to shape the nation's trajectory by contributing to economic growth and, thereby, a brighter future for our country. I urge you to make the best of this opportunity. Although you are graduating today, always remember learning is a continuous process in life. The ability to learn and adapt swiftly, even in unprecedented circumstances, helps us take the future in our stride.

The details about Books Published, Fellowships, Award and Honors, Appointments, Editorship/Membership, Students Awards, List of major project sanctioned, Lab/Facilities developed in the department, Software developed and technology developed during the year 2023-24 are available at link below.

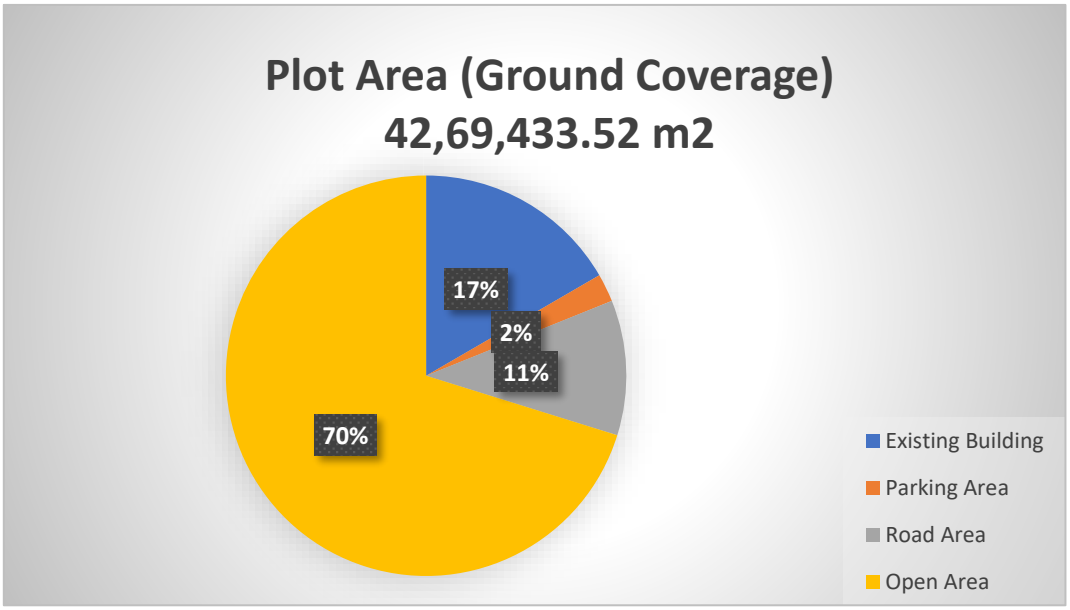
https://web.iitk.ac.in/july14dordn/data/Annual-Report-2023-24/Link-1.pdf



	Academic receipt	Grants / Subsidies	Income from Investments	Interest earned	other income	Prior period income	Deferred Revenue Income
2022-23	69	601.9	42.29	2.7	99.84	0.005	142.9
203-24	77.16	670	22.27	1.5	243.7	0	119.23



	Staff Payments & Benefits (Establishment Expenses)	Academic Expenses	Administration and General Expenses	Transportation Expenses	Repairs & Maintenance	Finance Costs	Depreciation	Other Expenses	Prior period expenses
2022-23	433.6	99.6	96.46	2.71	27.27	15.56	144.8	6.19	0.004
2023-24	609.6	109.4	118.13	1.67	30.79	14.53	122.5	6.24	0



ORGANIZATION CHART

Board of Governors
1st April, 2023 to 31st March, 2024

CAIRMAN

Dr. K. Radhakrishnan
Antariksh Bhavan
New B.E.L. Road
Bengaluru – 560 231

Members:

Prof. S. Ganesh [w.e.f. September 26, 2023]
Officiating Director
Indian Institute of Technology, Kanpur – 208016

Prof. Abhay Karandikar [upto September 25, 2023]
Director
Indian Institute of Technology, Kanpur
Kanpur – 208016

Council Nominees:

Smt. Saumya Gupta (Ex-officio)
Joint Secretary (Technical Education)
Ministry of Human Resource & Development
Shastri Bhawan, New Delhi – 110001

Dr. Saurabh Srivastava
Former Chairman, NASSCOM
Founder Chairman, Indian Angel Network
New Delhi- 110024

Shri Pradeep Goyal
Chairman & Managing Director
Pradeep Metals Ltd.
Navi, Mumbai – 400 701

Dr. Manoj Gonuguntla
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. Bishakh Bhattacharya [upto December 31, 2023]
Department of Mechanical Engineering
Indian Institute of Technology, Kanpur - 208016
Prof. Manas K. Ghorai [upto December 31, 2023]
Department of Chemistry
Indian Institute of Technology, Kanpur – 208016

Prof. R. Sankararamakrishnan [w.e.f. January 01, 2024]
Department of Biological Sciences and Bioengineering
Indian Institute of Technology Kanpur – 208 016

Prof. Shikha Dixit [w.e.f. January 01, 2024]
Department of Humanities and Social Sciences
Indian Institute of Technology Kanpur – 208016

Secretary:

Prof. Braj Bhushan
Officiating Registrar
Indian Institute of Technology Kanpur – 208016

Finance Committee
1st April, 2023 to 31st March, 2024

CHAIRMAN

Dr. K. Radhakrishnan
Chairman, Finance Committee
Antariksh Bhavan
New B.E.L. Road
Bengaluru – 560 231

MEMBERS

Prof. S. Ganesh [w.e.f. September 26, 2023]
Officiating Director
Indian Institute of Technology, Kanpur – 208016

Prof. Abhay Karandikar [upto September 25, 2023]
Director
Indian Institute of Technology, Kanpur – 208016

Smt. Saumya Gupta (Ex-officio)
Joint Secretary (Technical Education)
Ministry of Human Resource & Development
Shastri Bhawan, New Delhi – 110001

Shri Sanjog Kapoor
Joint Secretary & Financial Adviser
GOI, Department of Higher Education
Ministry of Human Resource Development
Shastri Bhawan, New Delhi – 110 001

Dr. Saurabh Srivastava
Former Chairman, NASSCOM
Founder Chairman, Indian Angel Network
C-482, Defence Colony, New Delhi- 110024

Prof. Manas K. Ghorai[upto December 31,2023]
Department of Chemistry
Indian Institute of Technology, Kanpur – 208016

Prof. Shikha Dixit [w.e.f. January 01, 2024]
Department of Humanities and Social Sciences
Indian Institute of Technology Kanpur – 208016

Secretary:

Prof. Braj Bhushan
Officiating Registrar
Indian Institute of Technology Kanpur – 208016

Building & Works Committee
From 1st April, 2023 to 31st March, 2024

CHAIRMAN

Prof. Abhay Karandikar [upto September 25, 2023]
Director
Indian Institute of Technology, Kanpur – 208016

Prof. S. Ganesh [w.e.f. September 26, 2023]
Officiating Director
Indian Institute of Technology, Kanpur – 208016

MEMBERS

Shri arvagya Kumar Srivastava
Ret. 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

Dr. Sudip Paul
General Manager (Structural Department)
Engineers India Limited
5th Floor, Tower-I, EIL Office, Gurugram Complex
Gurugram (Haryana) – 122 001

Prof. Bishakh Bhattacharya [upto December 31, 2023]
Department of Mechanical Engineering
Indian Institute of Technology, Kanpur - 208016

Prof. R. Sankararamakrishnan [w.e.f. January 01, 2024]
Department of Biological Sciences and Bioengineering
Indian Institute of Technology Kanpur – 208 016

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

Secretary:

Prof. Braj Bhushan
Officiating Registrar
Indian Institute of Technology Kanpur – 208016

INSTITUTE F ACULTY

In the current academic year 2023-24, the institute offered faculty position to 22 out of 889 applicants through a rigorous selection procedure and 32 new faculty members joined the institute. The joining number also includes the applicants who were offered a faculty position in the previous academic year but opted to join in the current academic year. The department wise distribution of the new faculty members for 2023-24 is presented below:

Department	Number of new faculty
Aerospace Engineering	-
Biological Sciences and Bioengineering	01
Chemical Engineering	-
Chemistry	01
Civil Engineering	03
Cognitive Science	01
Computer Science & Engineering	01
Earth Sciences	01
Economic Sciences	03
Electrical Engineering	07
Humanities and Social Sciences	01
Management Sciences	03
Materials Science and Engineering	01
Mathematics & Statistics	-
Mechanical Engineering	01
Physics	03
Space, Planetary & Astronomical sciences & Engineering	03
Sustainable Energy Engineering	02
Total	**32**

During the same period the institute also offered Postdoctoral fellowships to 79, Visiting Professor position to 21, Adjunct Faculty position to 09, and Visiting Professor of Practice position to 07 candidates.

The department-wise faculty list available at link below.

https://web.iitk.ac.in/july14dordn/data/Annual-Report-2023-24/Link-2.pdf

The department-wise Books, conference and journal articles available at link below.

https://web.iitk.ac.in/july14dordn/data/Annual-Report-2023-24/Link-3.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 science and engineering disciplines 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). 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.

The latest recommendations have been implemented for UG programmes from 2022 and PG programmes in 2023.

Undergraduate Programme

The Institute offers the following undergraduate programmes:

- Four-year BTech Programmes in Aerospace Engineering, Biological Sciences and 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 and Scientific Computing, and Physics.

The four-year undergraduate programme consists of two parts, having a 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 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, Economics, Mathematics and Statistics, where students with undergraduate backgrounds 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 creating 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

The MTech Programmes are available in all the core Engineering Branches of Aerospace Engineering, Biological Sciences and 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 tests/interviews are conducted in some cases.

MBA Programme and Post Graduate Programme for Executives

The MBA Programme is offered by the Department of Management Sciences (DOMS). The students admitted to this programme are selected through an all-India examination known as CAT followed by the interview and group discussions. The department also offers Post Graduate Program for Executives for Visionary Leadership in Manufacturing.

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) exist 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 a 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 completing 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 bachelor's programmes.

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

eMasters Programme

The Institute has initiated the eMasters programme for working professionals. It is an online programme offered by the departments and faculty from the same or more than one academic department. It is offered for working professionals who can continually upgrade their knowledge and keep up with the latest developments in diverse fields to be effective and remain relevant.

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. The CSS and MOOC-compliant e-content under NPTEL IV is expected to play an important role in an affordable and high-quality online and open-access education drive of MHRD. The Mookit, developed from the 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 project CSS-MOOCs aims 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 from 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 channels. These channels broadcast the NPTEL course contents 24 by 7 in Mechanical Engineering, Humanities and Social Sciences, and Management.

The Details of admission data and graduation data are available at link below.

https://web.iitk.ac.in/july14dordn/data/Annual-Report-2023-24/Link-4.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 2023-24 has reached 1610 with a total sanctioned amount of Rs. 1527.30 Crore. During 2023 - 2024, the Institute received sanctions for 414 sponsored projects worth Rs. 371.24 Crore and 246 consultancy projects of value Rs. 115.2 Crore.

Some of the major sponsoring agencies during the year 2023-24 are Ministry of Electronics and Information technology (MEITY) with the total sanctioned amount of Rs.60.0 Crore, Laurus Labs with the total sanctioned amount of Rs. 31.86 Crore, U.P. Government with the total sanctioned amount of 15.30 Crore, and Wellcome trust-DBT Alliance with the total sanctioned amount of Rs. 9.98 Crore.

Some of the major industries which have funded projects this year include Laurus Labs limited, Aravali Power Corporation Private Limited, Envirotech Industry Limited, New Energy and Industrial Technology Development, Bharat Petroleum Corporation Limited, Shapoorji Pallon-ji company private limited and Unilever Limited.

During the Financial Year 2023 – 24, a total of 141 IPRs were filed by the Institute including 125 Indian Patent applications, 6 US Patents, 4 Chinese patents, 3 Design registrations, 1 Trademark application and 2 Copyrights, the total number of IPRs granted was 242, and 14 technologies were licensed to Industry Partners.

Till date, 1098 IPRs have been filed, out of which 732 have been granted so far along with 143 technologies licensed for commercialization.

A total of 203 companies are currently incubated at Startup Innovation and Incubation Centre (SIIC), IIT Kanpur and 182 have graduated so far.

The Details of IPRs filed, IPRs granted, List of sponsored projects national, Consultancy projects (National and International), Institute lectures and Memorandum of understanding are available at link below:

https://web.iitk.ac.in/july14dordn/data/Annual-Report-2023-24/Link-5.pdf

Project Number: MHRD/ES/2019522
Project Title: Flood Risk Assessment in Tropical Rivers in the Anthropocene 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:

1. To understand the hydro-geomorphic processes and their variability using hydrological and morphometric analysis in the Ghaghra basin.
2. To assess the spatio-temporal channel planform dynamics to establish form-process linkage and its influence on flooding.
3. 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.
4. To perform flood inundation modeling and flood hazard mapping using hydro-geomorphic approach.
5. To integrate all data for a comprehensive assessment of the flood hazard in the Ghaghra river basin.

Progress Report:

We performed the hydrological data analysis, highlighted the importance of stage data for flood studies, and performed flood inundation mapping using a high-resolution digital elevation model derived from UAV at four selected windows. For this we acquired two data sets- (1) at-site-measured water discharge and water levels, and (2) data derived from the Unmanned Aerial Vehicle (UAV). The discharge (10-daily average) and water level (10-daily average) were collected from Central Water Commission (CWC) India between 1960 and 2020. The UAV survey was done in June 2022 using a DJI phantom 4 pro quadcopter. The UAV survey was accompanied by Real Time Kinematics - Global positioning system (RTK-GPS) survey to improve the positional and altitude accuracy of the UAV-derived data using Trimble R12 GNSS. The UAV-derived images were processed into a Digital Elevation Model (DEM) and OrthoMosaic using the standard workflow of Agisoft Metashape. Before performing the flood frequency analysis, we carried out the trend analysis using Mann-Kendall's test. We used the 10-daily stage vs. 10-daily discharge relationships and developed rating curves to show the observed discharge variability at different water levels (stages). The discharge variability at different water levels is difficult to assess using these fitted rating curves.

Discharge along Ghaghra is highly variable and seems 5-10 many times more than Rapti. We used the 10-daily stage *vs* 10-daily discharge relationships and developed rating curves to show the observed discharge variability at different water levels (stages). The discharge variability at different water levels is difficult to assess using these fitted rating curves. It is essential to highlight that significant discharge variability due to unsteady flow conditions might reach higher water levels at very low discharges at all four stations. This indicates that these stations are susceptible to flood hazard conditions at relatively low discharge values.

We generated high-resolution orthophoto and DEM, which were further used in flood inundation mapping (Figure 1). Our generated DEMs have a spatial resolution of 5-6 cm. The vertical accuracy (RMSE) of DEM was between 6 cm to 16 cm for stations in Ghaghra while at Birdghat in Rapti the vertical accuracy was 26cm. The flood inundation maps were generated at 10-, 20-, 50- and 100-year return intervals. Figure 2 (left) shows the flood inundation map of Birdghat which also contains flood depth information. Figure 2 (right) shows the flood inundation at Birdghat using SAR data. It should be noted that our inundation maps always overestimate the flood area as they are not actual inundations but areas which are likely to be flooded at a certain stage level.

Highlights (3 bulleted points):

1) Hydrological analysis (Trend analysis and flow duration curves) and stage-based flood frequency analysis to predict the return period of different stage levels.
2) LULC mapping of the basin using Google Earth Engine and hydro geomorphic assessment of the upper part of the basin and its flood potential.
3) Generation of UAV-derived DEM-based inundation maps for different stage levels without running a data-intensive hydraulic model.

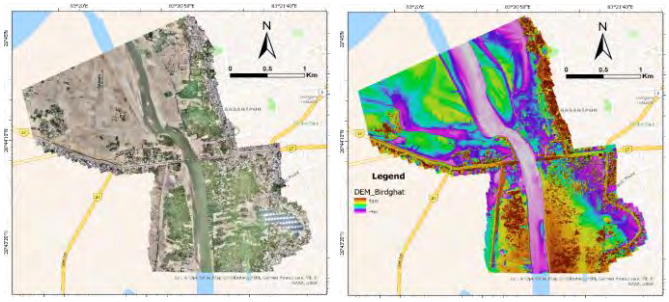


Figure 1: Orthophoto of the Birdghat on left and DEM on right.

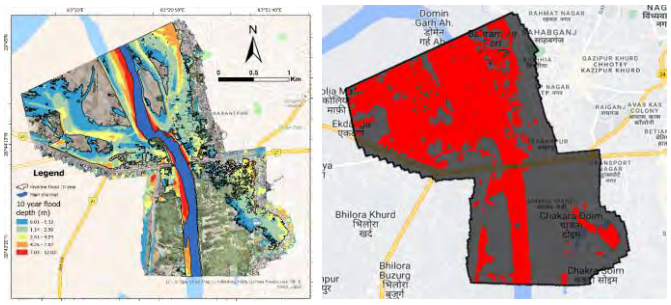


Figure 2: Susceptible flood areas in the left and flood inundation extent on the right.

Project Number: 2023271/P-2850
Project Title: Language Documentation, Digital Archiving and Application of Big-data in Language Contact and Variation Research
Project Investigator: Chaithra Puttaswamy
Co-Investigator(s): Usha Udaar (IITK); Anju Saxena (Uppsala University, Sweden); Lars Borin (University of Gotheburg, Sweden)
Industry Collaborators (if any): None
Project Initiated on: August 2023

Project objectives:

- Creating a network of academicians working on digital archiving of language documentation material
- Exploring possibilities of utilizing big-data tools aid language contact and variationist studies
- Brainstorming and training through workshops for young researchers on languages contact and variation studies
- IIT Kanpur students visiting Uppsala university for training
- Publications of monographs and journal articles

Progress Report:

Profs Anju Saxena and Lars Borin visited IIT Kanpur from 15th February 2024 to 10th March 2024. They delivered lectures to undergraduate students on topics related documentation of language contact, comparative linguistics, and computational tools for analysis of linguistic data. Collaborative research to conduct fieldwork in the Himalyan region and the Nilgiri region was discussed with colleagues in IIT Kanpur. This research will lead to comparative analysis of the phenomenon of contact and variation in these regions and publication of monographs. The visit of IITK students to visit Uppsala university for further training in using computational tools for linguistic analysis was planned for Spring 2025. A workshop on language documentation and archiving at IITK Outreach Center Nodia from 21-23 March 2024. The workshop saw participants from academic institutions across India being trained by leading experts of language variation, language archiving and areal linguistics.

Highlights (3 bulleted points):

- Visit of the project collaborators from Sweden
- Lectures by the visitors to undergraduate and postgraduate students at IIT Kanpur
- Workshop on Language Documentation and Archiving at IITK Noida Outreach Center

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: Vishal Govind Rao
Co-Investigator(s): NA
Industry Collaborators (if any): Ongoing Collaboration with TATA Steel
Project Initiated on: 09-06-2020

Project objectives:

In this project, we aim to use plasmonic metal nanoparticles and molecular catalysts to develop plasmonic nanocomposites that can absorb in the visible range via localized surface plasmon resonance and the antenna effect. The nanocomposites are designed to transfer plasmon energy to a molecular catalyst layer, which can then carry out catalysis, such as CO_2 reduction. By combining plasmonic metal nanoparticles with appropriate catalytic materials, we create platforms for manipulating the flow of electromagnetic energy at the nanometer scale.

We initially designed Au-Pt and Au-Pd core-shell plasmonic photocatalysts, where the plasmonic energy stored in the core is directed to the shell and the adsorbate hybrid states upon plasmon decay. This design allows molecular control of the energy flow and excited charge carrier generation in these systems. Additionally, we extended our objective to use lead halide perovskites to direct charge carriers to ferrocene molecules functionalized with various groups. This approach aims to understand the binding and charge transfer processes at the interface of the perovskite nanocrystal and the redox relay molecule.

Understanding the complex nanocrystal-ligand

interfacial chemistry is paramount for achieving the highly desired colloidal stability of lead halide perovskite (LHP) nanocrystals in aqueous media. Surface ligands play a crucial role in determining the stability and photo physical properties of LHP nanocrystals and significantly influence the interfacial energy and charge transfer processes. This work opens avenues for exploring anchoring moieties that facilitate charge transfer across the perovskite interface, thereby impacting its photocatalytic applications.

Progress Report:

We designed Au−Pt nanocubes (Au−Pt NCs) with a plasmonic Au core coated by a thin Pt shell, providing both plasmonic and catalytic activity at the Au−Pt interface. Plasmon decay generates hot charge carriers at the interface, which transfer to Pt catalytic sites, driving selective chemical reactions. We demonstrated plasmon-assisted cascade reduction of nonfluorescent resazurin dye to nonfluorescent dihydroresorufin via a highly fluorescent resorufin intermediate.

We also developed Au–Pd core-shell nanoparticles (Au–Pd CS NPs) by growing anisotropic Pd over Au nanocubes. These NPs exhibited a high conversion rate for nicotinamide adenine dinucleotide hydrogen (NADH) regeneration under visible light, with limited activity in the dark. Neither Au nanocubes nor Pd seed nanoparticles showed significant NADH regeneration under the same conditions, highlighting the synergistic effect of the plasmonic core and catalytic shell. Our study expands the range of catalysts for β-NAD+ reduction and provides mechanistic insight into plasmon-driven catalysis, crucial for improving catalytic efficiency.
In our work with perovskites, we linked ferrocene (Fc) with amino acid residues to create three molecular redox relays with different –COOH to Fc ratios. These relays were used to probe hole transfer dynamics in $CsPbBr_3$ perovskite nanocrystals (NCs) for photocatalytic applications. Our findings, supported by recent reports of an $FcTc_2$-functionalized perovskite solar cell achieving a 25% power conversion efficiency (PCE), indicate that careful selection of functionalities to be integrated with the Fc core holds great potential for perovskite solar cells.

We further modified the $CsPbBr_3$ NC surface with strategically designed multifunctional ligands, facilitating efficient charge extraction and passivating the NC surface in water. NMR spectroscopy and contact angle measurements revealed that the polar terminal groups of the ligands enhance the hydrophilicity of the NC-ligand system, aiding the transfer of $CsPbBr_3$ NCs from toluene to water. The PSLE treatment preserved the structural integrity of the $CsPbBr_3$ NCs. This system, along with ferrocene-modified $CsPbBr_3$, was successfully employed for CO_2 reduction to CO.

Highlights:

We published 11 papers in peer-reviewed journals.

1. “Plasmonic chemistry for sustainable ammonia production”, A. Choudhary, A. Halder, P. Aggarwal, and V. G. Rao* Communications Materials - Nature (2024), 5, 69.
2. “Harnessing Pb–S Interactions for Long-Term Water Stability in Cesium Lead Halide Perovskite Nanocrystals”, M. Ahlawat, A. Sahu, and V. G. Rao* Small (2024), 2401326.
3. “Binding Strength-Guided Shuttling of Charge Carriers from Perovskite Nanocrystals to Molecular Acceptors”, S. Singh, D. Mittal, V. Gurunarayanan, A. Sahu, R. Ramapanicker, and V. G. Rao* ACS Appl. Energy Mater. (2023), 6, 8091–8101.
4. “Synergistic binding between an engineered interface and functionalized ferrocene offers remarkable charge extraction efficiency in lead halide perovskites”, M. Ahlawat, S. Kumari and V.G. Rao* J. Mater. Chem. A (2023), 11, 13289.
5. “Covalent Organic Framework: An Emerging Catalyst for Renewable Ammonia Production”, I.H. Chowdhury, S. Gupta and V. G. Rao* ChemCatChem (2023), 15, e2023002.
6. "Engineering Water Stable Perovskite and Plasmonic-Perovskite Nanocomposites: A Step toward Unleashing the True Potential of Perovskite Catalysis", P. Aggarwal, M. Ahlawat, and V. G. Rao* Adv. Mater. Interfaces (2023), 10, 2202029.
7. "Perovskite photocatalysis: realizing long-lived charge-separated states at the interface of CsPbBr3 nanocrystals and functionalized ferrocene molecules", S. Singh, D. Mittal, V. Gurunarayanan, A. Sahu, R. Ramapanicker, and V. G. Rao* J. Mater. Chem. A (2022), 10, 21112.
8. "Photocatalytic NADH Regeneration Employing Au–Pd Core–Shell Nanoparticles: Plasmonic Modulation of Underlying Reaction Kinetics", S. Singh, S. Kumari, M. Ahlawat, and V. G. Rao* J. Phys. Chem. C (2022), 126, 15175–15183.
9. "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.
10. "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.
11. "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 tested our designed plasmonic catalyst and perovskite catalyst for CO2 reduction and found them active in converting CO2 to CO. However, due to limited access to an online GC system, we have only performed the measurements a few times and haven't yet quantified the yield. Currently, we are investigating lead halide perovskites to direct charge carriers towards ferrocene molecules functionalized with various functional groups. This research aims to understand the binding and charge transfer processes at the interface between the perovskite nanocrystal and the redox relay molecule. We pioneered water-stable perovskite nanocrystal (NC) technology by developing the first versions using ligand chemistry. This breakthrough unlocks their potential as next-generation catalysts for CO_2 reduction and other clean energy applications. Our work paves the way for exploring anchoring moieties to facilitate charge transfer across the perovskite interface, thereby impacting its photocatalytic performance. Additionally, these perovskite catalysts have demonstrated the ability to convert CO_2. In collaboration with Tata Steel, we plan to leverage these catalysts for future CO_2 reduction efforts.

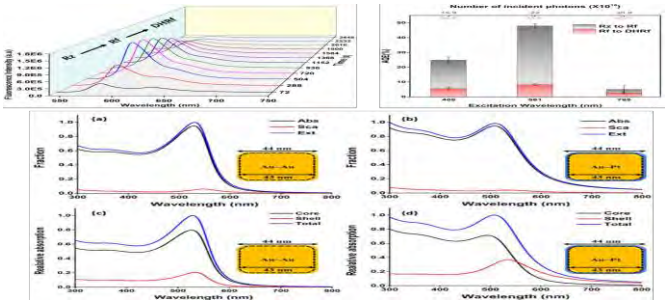


Figure 1: Rf emission spectrum (λex=530 nm) monitored during Au–Pt NCs catalyzed Rz reduction to DHRf.

Excitation wavelength-dependent apparent quantum efficiency (AQE) for both Rz to Rf and Rf to DHRf conversion. Simulated fractional extinction, absorption, and scattering cross-section of (a) 43 nm Au cube core and 1 nm Au shell and (b) 43 nm Au cube core and 1 nm Pt shell. (c) and (d) show the simulated relative absorption fraction from the core and shell portion of nanoparticles (associated figures are the corresponding nanoparticle models with specific dimensions under consideration).

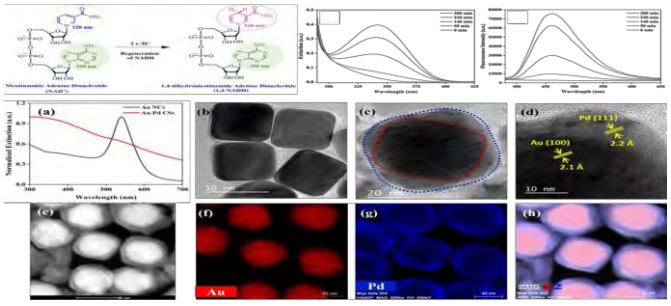


Figure 2: Two-electron reduction of NAD+ to NADH. The NADH regeneration can be monitored by following the absorption at 340 nm and emission in the range of 440–470 nm. Optical and structural analysis of Au NCs and Au–Pd CS NPs.

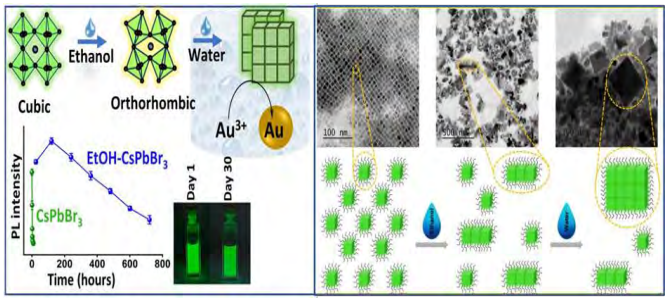


Figure 3: Stability test demonstrating the stability of EtOH-$CsPbBr_3$ NCs in water and TEM image transformation for $CsPbBr_3$ NCs in toluene, representing isolated cubic crystals; to $CsPbBr_3$ in ethanol and toluene mixture, with linear aggregates of cubic NCs; and EtOH-$CsPbBr_3$ NCs in water, highlighting the aggregated NCs assembly.

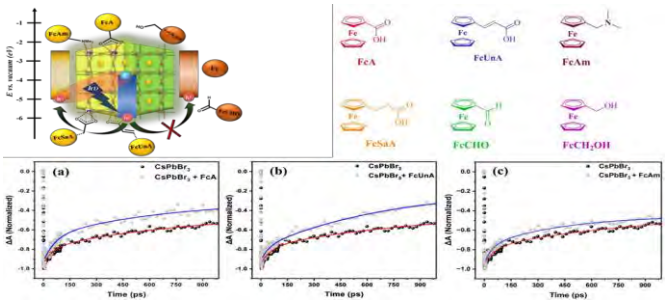
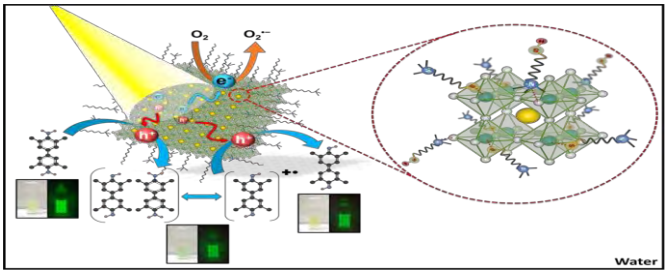


Figure 4: Bleach recovery comparison of $CsPbBr_3$ NCs with and without the addition of (a) FcA, (b) FcUnA, and (c) FcAm up to 1000 ps time delay.



Scheme 1. A plausible mechanism for the oxidation of TMB using visible light and pCPBM NCs as an effective photocatalyst.

Project Number: SPARC/2019-2020/P1978/SL
Project Title: Development of Super-hard Stellite-based Metal Matrix Coatings Using Laser Cladding
Project Investigator: Sudhanshu Shekhar Singh, Manoj Gupta
Co-Investigator(s): Kallol Mondal, E-Wen Huang
Industry Collaborators (if any):
Project Initiated on: 28.07.2023

Project objectives:

1. To develop stellite 6 coating on steel substrate by laser cladding by process optimization.
2. To develop hard particle [nitride (BN, TiN)/carbide (B4C, TiC)] reinforced stellite 6 composites (MMCs) using laser cladding. Process optimization will be carried out.
3. Microstructural and mechanical characterization of both stellite 6 and MMCs coatings.

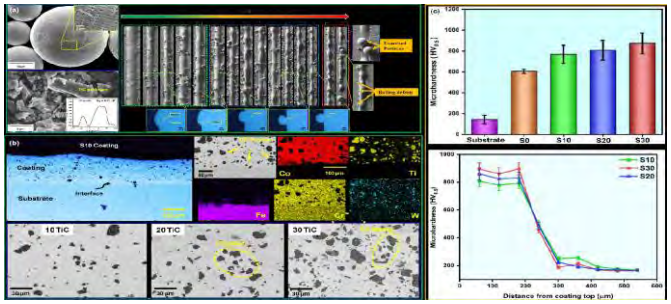
4. Determination and comparison of wear and corrosion behavior of stellite 6 and MMCs coatings.
5. Numerical modelling to predict the microstructure and clad geometry in a single track stellite 6 and its composites.

Progress Report (200-250 words):

Considering the proposed objectives of this project, the first two objectives have been fully achieved to date, and the third one is currently in progress. Initially, as-received powders (Stellite 6, TiC) were characterized using SEM to investigate the shape, size, and distribution of powders. It was observed that Stellite 6 powders were primarily spherical, while TiC particles were irregular. The average powder size of Stellite 6 and TiC particles were 22.9 and 9.1 μm, respectively (Fig. 1a). Furthermore, scan speed (one of the process parameters) has been optimized for the single tracks based on their geometrical features (e.g., track surface, melt pool size, and aspect ratio) as shown in fig. 1b. With the optimized scan speed, multi-tracks overlapping 50% were deposited and further optimized. It was found that 500 mm/s was the optimum scan speed on the given set of parameters. For the fabrication of Stellite-based composites, TiC particles have been reinforced in the matrix with 10, 20, and 30 vol.%, denoted as S10, S20, and S30, respectively. Again, the scan speed was found to be 500 mm/s as optimized. Microstructural characterization showed that the matrix predominantly consists of the dendrites of a Co-based (γ-fcc) solid solution, where TiC particles are embedded. The TiC particles in S10 were uniformly distributed in the matrix, whereas agglomeration starts appearing in the case of S20 and S30 composites. Hardness results showed a progressive increment with additions of TiC contents (Fig. 1c).

Highlights (3 bulleted points):

1. Suitability of the powders for the laser processing have been analyzed.
2. Optimization of Scan speed for single tracks as well as for multi-tracks have been carried out.
3. Multi layered Stellite 6 and Stellite 6 - TiC MMCs coating have been successfully fabricated.



Project Number: MHRD/MET/2018064
Project Title: VIRTUAL LABS PROJECT (PHASE-III EXTENDED)
Project Investigator: Prof. Kantesh Balani
Co-Investigator(s)/Collaborators (if any): N/A
Project Initiated on: 24/04/2018 (Till Mar. 31, 2026)
Project objectives (50 words):

The main objectives of the Third Phase of the Virtual Labs project are: to develop a methodology for the fast 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 (100 words):

A total of 90 experiments are to be developed by IIT Kanpur for Phase III Ext. Virtual Lab, wherein IIT Kanpur had developed 78 experiments and other 12 experiments are under development/review. The review process of experiments that are developed is in progress and these experiments are hosted in the Beta-hosted link (status of lab updated in *Annexure 1.1*), and three labs (with 29 experiments) are centrally hosted (*Annexure 1.2*).

In addition to this,

- Proposals for the development of 22 proposals (~200 experiments) were submitted. Out of which 17 proposals (~170 experiments) were approved & these labs are under development.
- In year 2022-23 & 2023-24, 90 new experiments are to be developed by IIT Kanpur wherein IIT Kanpur had developed 78 experiments are other 12 experiments are under development/review process. Developed experiments are under central-hosting process.
- 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 the 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 which is now centrally hosted.

Overall summary:

After affiliation with AKTU, we are doing very well in recruiting the nodal centres. Herein, REC Banda, PSIT Kanpur and Bundelkhand University have been renewed to regional nodal centres which have thrusted forward the pace of popularizing Virtual Labs. The development of 12 experiments is in progress and 78 experiments that are developed has been hosted in beta hosting link in GitHub

which are reviewed by domain experts. Migration of lab from Phase 2 to Phase 3 template is done and English to Hindi conversion of one virtual lab has been done an one is in under conversion.

Highlights (3 bulleted points):

1. 90 Virtual Lab experiments were committed, but already 78 experiments are being developed and reviewed by the reviewers and currently beta hosting is done on the website.
2. Three labs (29 experiments) are now hosted on central server.
3. Migration of Phase 2 labs to Phase III template and Hindi conversion of one Virtual lab is done and one is in under conversion.
4. Over 63.3 Lakh cumulative users and 1.2 Cr. cumulative Page views nation-wide of virtual labs across the consortium (out of which 3.75 Lakh users and 8.71 Lakh views are from IIT Kanpur) are marked by google analytics (since Apr. 2023) as labs are getting included to provide the demographic distribution of virtual labs.

Annexure 1.1: List of Labs and experiments that have been developed and others are under development.

S. No	Lab Name	Name of Experiment	Status
1.	Mechanical Metallurgy Lab	Tensile Test and Stress Strain Curve of Steel	Beta-hosted
		Stress-Strain Curve of Various Materials	Beta-hosted
		Instrumented Indentation of Materials	Beta-hosted
		Creep High Temperature Test of Materials	Beta-hosted
		Charpy and Izod Impact Testing of Materials	Beta-hosted
		Age Hardening in Aluminum Alloys	Beta-hosted
		Strain Ageing and Yield Point Phenomenon in Steel	Beta-hosted
		Fatigue Cyclic Load Test of Materials	Beta-hosted
		Bulk and Micro Hardness Test of Materials	Beta-hosted
2.	Food Chemistry Lab	Analysis of water for potable and food purposes	Beta-hosted
		Non-enzymatic browning reactions and its determination	Beta-hosted
		Determination of free fatty acid content in fats and oils	Beta-hosted
		Detection and estimation of oxidative rancidity in fats/oils	Beta-hosted
		Determination of heat stability of vitamin C	Beta-hosted
3.	Basics of Physics-II Lab	Determine the wavelength of sodium light by Newtons ring experiment.	Beta-hosted
		Calibration of ammeter and voltmeter by potentiometer.	Beta-hosted
		To study the resonance condition of a series LCR circuit	Beta-hosted
		To study Hall effect and determine hall coefficient carrier density and mobility of a given semiconductor material using hall effect Set up.	Beta-hosted
		Variation of magnetic field with the distance along the axis of a current carrying coil and estimate the radius of the coil.	Beta-hosted
		Determine the electrochemical equivalent of copper	Beta-hosted
		To determine the wavelength of He-Ne laser light using single slit diffraction	Beta-hosted
		To determine the wavelength of different spectral lines of mercury light using plane transmission grating	Beta-hosted
		To determine the value of acceleration due to gravity (g) using compound pendulum	Beta-hosted
		To draw hysteresis (B-H curve) of a specimen in the form of a transformer and to determine its hysteresis loss	Beta-hosted
4.	Basics of Electrical Engineering Lab	Study of Instrumentation Amplifiers	Beta-hosted
		Plot V-I characteristics of SCR.	Beta-hosted
		To study running & speed reversal of a 3-phase induction motor and record speed in both direction	Beta-hosted
		Calibration of AC voltmeter and AC ammeter.	Beta-hosted
		To Plot V-I Characteristic of Triac	Beta-hosted
		Connection and measurement of power consumption of a fluorescent lamp (tube light).	Beta-hosted
		Verification of Superposition and Thevenin's Theorem	Beta-hosted
		Measurement of power and power factor in a single-phase ac series inductive circuit and study improvement of power factor using capacitors Theory Power:	Beta-hosted

		Measurement of power and power factor in a single-phase ac series inductive circuit and study improvement of power factor using capacitor.	Beta-hosted
		Study of Instrumentation Amplifier.	Beta-hosted
		Demonstration of cut sections of dc machine, three phase induction machine, single phase induction machine and synchronous machine.	Beta-hosted
5.	Physical Pharmaceutics II	Angle of repose and effect of lubricants/ glidants on flow property of powder.	Beta-hosted
		Bulk Density and Tapped Density Determination of Pharmaceutical Powders	Beta-hosted
		True Density determination of Pharmaceutical Powders	Beta-hosted
		To determine the viscosity of semisolids by using Brookfield's Viscometer	Beta-hosted
		To determine the viscosity of liquid by using Ostwald's Viscometer	Beta-hosted
6	Fluid Mechanics Lab (Chemistry)	Determination of metacentric height	Beta-hosted
		Determination of Cc, Cv, Cd of orifices	Beta-hosted
		To determine the local point pressure with the help of pitot tube	Beta-hosted
		To study the characteristics of a centrifugal pump	Beta-hosted
		Verification of impulse momentum principle	Beta-hosted
		To find out the terminal velocity of a spherical body in water	Beta-hosted
		To find out the pressure drop when a fluid is flowing through a packed bed	Beta-hosted
7	Sample Preparation and Metallography Lab	Construct of Microscope and its components	Beta-hosted
		Microstructure of Various Steels (hypoeutectoid, eutectoid and hypereutectoid)	Beta-hosted
		Microstructure of Various Cast Irons and quantification	Beta-hosted
		Microstructure of common metallic materials (Cu, Al, Ti and brass, etc.)	Beta-hosted
		Quantitative techniques for Grain size measurement (ASTM standard, linear intercept, Jeffries method etc.)	Beta-hosted
		Microscopy: Modes, magnification, and imaging with special contrast techniques like DIC, polarized light etc.	Beta-hosted
		Stereological principles and digital image processing and analysis	Beta-hosted
		Tailoring Microstructure with various heat treatments (annealing, normalizing, and quenching)	Beta-hosted
		Sectioning, Mounting, and Grinding and Surface Preparation	Beta-hosted
		Technique for Polishing and Etching of Materials (including Electropolishing, tint etching etc.)	Beta-hosted
8	Fluid Mechanics Lab	Coefficient of discharge of given Venturi meter.	Beta-hosted
		Determine loss variables for different types of flow in pipe and open channels	Beta-hosted
		Variable area duct and verifying Bernoulli's energy equation.	Beta-hosted
		Hydraulic coefficients for flow through an orifice	Beta-hosted
		Friction coefficients for pipes of different diameters	Beta-hosted
		Characteristic curves of Pelton wheel.	Beta-hosted
		Drawing the characteristic curves of Gear pump	Beta-hosted
		Conducting experiments and drawing the characteristics curves of Francis turbine.	Beta-hosted
		Characteristic curves of Kaplan turbine.	Beta-hosted
		Characteristic curves of reciprocating pump	Beta-hosted
9	Wear and Tribology of Materials Lab	Abrasive and Adhesive Wear of Material (metal on metal) and ceramic to polymer articulating pair.	Beta-hosted
		Estimating wear rate via weight loss and volume loss method	Beta-hosted
		Effect of sliding speed on wear of materials	Beta-hosted
		Effect of load on wear of materials	Beta-hosted
10	Basic Chemistry Laboratory-I	Thin layer chromatography of ink	Beta-hosted
		Measurement of electrical conductance to determine the dissociation constant of acetic acid	Beta-hosted
		Kinetics of iodide-hydrogen peroxide clock reaction	Beta-hosted
		Rate constant and activation energy of potassium permanganate and oxalic acid reaction	Beta-hosted
		Determination of saponification value of oil	Beta-hosted
		Adsorption of Acetic acid by charcoal	Beta-hosted
		Partition coefficient of acetic acid in water and butanol	Beta-hosted

Annexure 1.2: List of Labs and experiments that have been successfully centrally hosted and reviewed by lab domain experts.

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-I	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 fiber	Central-hosted

Project Number: MHRD/MET/2014258
Project Title: Virtual Lab – Phase II
Project Investigator: Prof. Kantesh Balani
Co-Investigator(s)/Collaborators (if any)
Project Initiated on: 07/11/2014 (Till Mar. 31, 2026)

Project objectives (50 words):

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 achieving a target participation of 30,000 users in the current year.

Progress report (100 words):

A usage count of 8.71 Lakh views is obtained (page-views). A total of 256 workshops have been conducted till now (142 workshops in FY 2023-24). A total of 73 nodal centres (*Annexure 2.1*) have been created with affiliation to IIT Kanpur till March 31st , 2024, and 58 nodal centres are re-enrolled (*Annexure 2.2*) in FY 2023-2024 with IIT Kanpur. A total of 15 new nodal centres are affiliated with IIT Kanpur from 2024 till March 2024. Also, 142 workshops are conducted in nodal centres (*Annexure 2.3*) in FY 2023-2024. The total workshop usage is 2.63 Lakh (8.71 Lakh views in website hits).

Overall Summary of Virtual Labs:

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 8 additional lab, making a total of 9 labs to FOSS level-6 and 2 labs in FOSS level-5). The list of current stats of virtual labs is provided in *Annexure 3* (targets achieved).
- Two project engineers, two project associates, two assistant project manager and two project technicians are available 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. 11 labs have been hosted and 9 labs have achieved FOSS level 6, and also two others have achieved FOSS level of 5 (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. 10 project employees were hired and more than 70 interns hired for the development.
3. A total of 73 nodal centre were recruited in FY 2023-24. The usage count (of 8.71 Lakh online usage + 2.63 Lakh workshop usages) has substantially exceeded the annual targeted count of 30,000.

Annexure 2.1: List of Total Nodal Centers (1st April 2023 to 31st March 2024

S. N.	College	Date	Contact Person
1	Dayanand Anglo Vedic (PG) College, Kanpur	Jan. 30, 2024	chauhanrasmi@gmail.com
2	Dr. Ambedkar Institute of Technology Bengaluru	Jan. 24, 2024	vidya91.et@drait.edu.in
3	Dayananda Sagar Academy of Technology and Management	Jan. 29, 2024	hodise@dsatm.edu.in
4	Anand Engineering College	Jan. 01, 2024	pankaj.mittal@sgei.org
5	Rajkiya Engineering College, Bijnor	Jan. 31, 2024	suneel.ee@recb.ac.in
6	ITS Ghaziabad	Jan. 24, 2024	varunarora.ka@its.edu.in
7	IIMT College of Engineering, Greater Noida	Feb. 08, 2024	research.iimtgn@iimtindia.com
8	Shambhunath Institute of Engineering and Technology Allahabad	Feb. 14, 2024	hrituparnapaul@siet.in
9	Pranveer Singh Institute of Technology, Kanpur	Jan. 31, 2024	aparna.dixit@psit.ac.in
10	Rameshwaram Institute of Technology and Management,Lucknow	Feb. 05, 2024	directorengg@ritm.in
11	Pacific School of Engineering	Feb. 02, 2024	jrh.pse@gmail.com
12	PSIT College of Engineering, Kanpur	Jan. 31, 2024	pragatiuapdhyay@gmail.com
13	Rajkiya Engineering College, Mainpuri	Jan. 29, 2024	jayantmani.tripathi@recmainpuri.in
14	Rajkiya Engg College, Kannauj	Jan. 29, 2024	rajeev@reck.ac.in
15	RK University	Jan. 01, 2024	chetan.patel@rku.ac.in
16	Chaudhary Charan Singh University, Meerut	Feb. 14, 2024	anilphy@ccsuniversity.ac.in
17	Sandip Foundation's, Shri Ram Polytechnic, Madhubani	Jan. 24, 2024	deepak.choudhary@shrirampolytechnic.org
18	HBTU, Kanpur	Feb. 09, 2024	pchaudhari@hbtu.ac.in
19	Feroze Gandhi Institute of Engineering and Technology, Raebareli	Feb. 05, 2024	jay288.iet@gmail.com
20	Meerut Institute of Engineering & Technology, Meerut	Feb. 01, 2024	praveen.chakravarti@miet.ac.in
21	Axis Institute Of Technology And Management, Kanpur	Jan. 24, 2024	abhayshukla@axiscolleges.in
22	Katihar Engineering College, Katihar	Jan. 24, 2024	arbind.iitg@gmail.com
23	RustamJi Institute of Technology, Gwalior	Feb. 06, 2024	ussharma001@gmail.com
24	Buddha Institute of Technology Gorakhpur	Feb. 01, 2024	tp@bit.ac.in
25	Dr. Ambedkar Institute Of Technology For Handicapped, U.P.	Jan. 29, 2024	shweta@aith.ac.in
26	Bharat Institute of Technology, Meerut	Feb. 08, 2024	dean_academics@bitmeerut.co.in
27	Kanpur Institute of Technology, Kanpur	Jan. 30, 2024	habib.rahman@kit.ac.in
28	Amity University, Chhattisgarh	Jan. 30, 2024	nrathore@rpr.amity.edu
29	Galgotias University	Feb. 23, 2024	saurabh@galgotiasuniversity.edu.in
30	Allen house Institute of Technology, Kanpur	Jan. 31, 2024	me.avinash@allenhouse.ac.in
31	Faculty of Engineering, Moradabad	Jan. 25, 2024	dramit.engineering@tmu.ac.in
32	Government Degree College, Budaun	Jan. 29, 2024	srathorephy@gmail.com

33	IPS Academy, Indore, Madhya Pradesh	Feb. 01, 2024	hod.telecom@ipsacademy.org
34	Pandit Prithi Nath (PG) College, Kanpur	Jan. 29, 2024	satish0402@gmail.com
35	Institute of Technology and Management, Gorakhpur	Jan. 29, 2024	vineet.rai1985@gmail.com
36	Goel Institute of Technology and Management, Lucknow	Feb. 01, 2024	hodit.gitm@goel.edu.in
37	RR Institute of Modern Technology, Sitapur Road, Lucknow	Feb. 23, 2024	manoj@rrgi.in
38	School of Basic Science, UIET, CSJM University	Feb. 05, 2024	anjudixit@csjmu.ac.in
39	Maharana Pratap Engineering College, Kanpur	Feb. 08, 2024	atulverma@mpgi.edu.in
40	Motihari College of Engineering, Bihar	Jan. 24, 2024	narenkumarjan000@gmail.com
41	Rajkiya Engineering College, Banda	Jan. 24, 2024	ashutosh.tiwari@recbanda.ac.in
42	Swami Vivekanand Subharti University, Meerut	Jan. 01, 2024	arunabansal75@gmail.com
43	Christ Church College, Kanpur	Feb. 05, 2024	satya1209prakash@gmail.com
44	Indus Institute of Technology and management	Jan. 30, 2024	idus350.cse@gmail.com
45	Institute Of Engineering & Technology Bundelkhand University, Jhansi	Feb. 15, 2024	
46	Shri Venkateshwara University, Gajraula, U.P	March 05, 2024	nats.svu@svu.edu.in
47	St. Aloysis Institute of Technology, Jabalpur, M.P	Jan. 23, 2024	satishsouni@gmail.com
48	Hindustan Institute of Management and Computer Studies, Mathura	Jan. 31, 2024	prashant.sharma@sgei.org
49	Ambalika Institute of Management And Technology	Jan. 19, 2024	jitendrakurmi458@gmail.com
50	JSS Academy of Technical Education, Noida	Jan. 24, 2024	prachichhabra@jssten.ac.in
51	G.C.R.G. Memorial Trusts Group of Institution, Lucknow	Jan. 24, 2024	shivi.chaturvedi@gmail.com
52	Chitkara University	Jan. 18 2024	amandeep.1124@chitkara.edu.in
53	Rajkiya Engineering College, Sonbhadra	Jan. 31, 2024	amodtiwari@gmail.com
55	Sant Shiromani Kabir Saheb Mahavidhyalaya	Jan. 31, 2024	sskscollege@gmail.com
55	Govt. Model College	Jan. 16, 2024	ramendraphy@gmail.com
56	Seth Gyaniram Bansidhar Podar College, Nawalgarh	Jan. 17, 2024	dean.it@podarcollege.com
57	Lakhmi Chand Institute of Technology	Jan. 16, 2024	dr.bhumika.das@lcit.edu.in
58	Integral University Lucknow	Jan. 31, 2024	kavita@iul.ac.in
59	Veerbhumi Govt. P.G. college, Mahoba	Feb. 14, 2024	anurag8161@gmail.com
60	Charotar University of Science and Technology	Feb. 19, 2024	hod.cse@charusat.ac.in
61	Aryika Gyanmati Government Girls Polytechnic Faizabad	Feb. 14, 2024	pankajgautam257@gmail.com
62	Rani Durgavati Vishwavidyalaya, Jabalpur	March 01, 2024	ssandhu@rediffmail.com
63	Mahakausal University	March 04, 2024	amanshukla752406@gmail.com
64	Govt. Arts College, Newas	March 05, 2024	arunimasharma28@gmail.com
65	Aligarh College of Engineering & Technology, Aligarh	March 06, 2024	gopal.vashistha@acetup.org
66	Vidya College of Engineering, Meerut	March 11, 2024	akvashishtha@vidya.edu.in
67	Vikrmajit Singh Sanatan Dharma College	March 12, 2024	psdobal@gmail.com
68	Aryan Institute of Engineering and Technology, (AIET), Barakuda, Khurda, Bhubaneswar	March 06, 2024	ranjan2mallick@gmail.com
69	St. Aloysius Institute of Technology (Edu.)	March 12, 2024	rashmimanishjaiswal@gmail.com
70	Kamla Nehru Institute of Technology, Sultanpur		akhilesh@knit.ac.in
71	Rajdhani Engineering Collage, Bhubaneshwar, Orissa	March 19, 2024	hodme@rec.ac.in
72	Dr. A.P.J. Abdul Kalam Institute of Technology, Tanakpur	March 22, 2024	nehabishtakit@gmail.com
73	Rajkiya Engineering College, Ambedkar Nagar	March,03, 2024	saurabh@recabn.ac.in

Annexure 2.2: List of Re-enrolled Nodal Centers in 2023

S. N.	College	Contact Person
1	Dayanand Anglo Vedic (PG) College, Kanpur	chauhanrasmi@gmail.com
2	DR AMBEDKAR INSTITUTE OF TECHNOLOGY BENGALURU	vidya91.et@drait.edu.in
4	Anand Engineering College	pankaj.mittal@sgei.org
5	Rajkiya Engineering College, Bijnor	suneel.ee@recb.ac.in
6	ITS Ghaziabad	varunarora.ka@its.edu.in
7	IIMT College of Engineering, Greater Noida	research.iimtgn@iimtindia.com
8	Shambhunath Institute of Engineering and Technology Allahabad	hrituparnapaul@siet.in
9	Pranveer Singh Institute of Technology, Kanpur	aparna.dixit@psit.ac.in
10	Rameshwaram Institute of Technology and Management, Lucknow	directorengg@ritm.in
11	Pacific School of Engineering	jrh.pse@gmail.com
12	Rajkiya Engineering College, Mainpuri	jayantmani.tripathi@recmainpuri.in
13	Rajkiya Engg College, Kannauj	rajeev@reck.ac.in
14	RK University	chetan.patel@rku.ac.in
15	Chaudhary Charan Singh University, Meerut	anilphy@ccsuniversity.ac.in
16	Sandip Foundation's, Shri Ram Polytechnic, Madhubani	deepak.choudhary@shrirampolytechnic.org
17	HBTU, Kanpur	pchaudhari@hbtu.ac.in
18	Feroze Gandhi Institute of Engineering and Technology, Raebareli	jay288.iet@gmail.com
19	Meerut Institute of Engineering & Technology, Meerut	praveen.chakravarti@miet.ac.in
20	AXIS INSTITUTE OF TECHNOLOGY AND MANAGEMENT, KANPUR	abhayshukla@axiscolleges.in
21	Katihar Engineering College, Katihar	arbind.iitg@gmail.com
22	RustamJi Institute of Technology, Gwalior	ussharma001@gmail.com
23	Buddha Institute of Technology Gorakhpur	tp@bit.ac.in
24	Dr. Ambedkar Institute Of Technology For Handicapped, U.P.	shweta@aith.ac.in
25	Bharat Institute of Technology, Meerut	dean_academics@bitmeerut.co.in
26	Kanpur Institute of Technology, Kanpur	habib.rahman@kit.ac.in
27	Amity University, Chhattisgarh	nrathore@rpr.amity.edu
28	Allenhouse Institute of Technology, Kanpur	me.avinash@allenhouse.ac.in
29	Faculty of Engineering, Moradabad	dramit.engineering@tmu.ac.in
30	Government Degree College, Budaun	srathorephy@gmail.com
31	IPS Academy, Indore, Madhya Pradesh	hod.telecom@ipsacademy.org
32	Pandit Prithi Nath (PG) College, Kanpur	satish0402@gmail.com
33	Institute of Technology and Management, Gorakhpur	vineet.rai1985@gmail.com
34	Goel Institute of Technology and Management, Lucknow	hodit.gitm@goel.edu.in
35	RR Institute of Modern Technology, Sitapur Road, Lucknow	manoj@rrgi.in
36	School of Basic Science, UIET, CSJM University	anjudixit@csjmu.ac.in
37	Maharana Pratap Engineering College, Kanpur	atulverma@mpgi.edu.in
38	Motihari College of Engineering, Bihar	narenkumarjan000@gmail.com
39	Rajkiya Engineering College, Banda	ashutosh.tiwari@recbanda.ac.in
40	Swami Vivekanand Subharti University, Meerut	arunabansal75@gmail.com
41	Christ Church College, Kanpur	satya1209prakash@gmail.com
42	Indus Institute of Technology and management	idus350.cse@gmail.com
43	Institute Of Engineering & Technology Bundelkhand University, Jhansi	
44	Shri Venkateshwara University, Gajraula, U.P.	nats.svu@svu.edu.in
45	St. Aloysis Institute of Technology, Jabalpur, M.P.	satishsouni@gmail.com
46	Hindustan Institute of Management and Computer Studies, Mathura	prashant.sharma@sgei.org
47	Ambalika Institute of Management and Technology	jitendrakurmi458@gmail.com
48	JSS Academy of Technical Education, Noida	prachichhabra@jssten.ac.in
49	G.C.R.G. Memorial Trusts Group of Institution, Lucknow	shivi.chaturvedi@gmail.com
50	Chitkara University	amandeep.1124@chitkara.edu.in
51	Rajkiya Engineering College, Sonbhadra	amodtiwari@gmail.com
52	Sant Shiromani Kabir Saheb Mahavidhyalaya	sskscollege@gmail.com
53	Govt. Model College	ramendraphy@gmail.com
54	Seth Gyaniram Bansidhar Podar College, Nawalgarh	dean.it@podarcollege.com

55	Lakhmi Chand Institute of Technology	dr.bhumika.das@lcit.edu.in
56	Integral University Lucknow	kavita@iul.ac.in
57	Aligarh College of Engineering & Technology, Aligarh	gopal.vashistha@acetup.org
58	Vidya College of Engineering, Meerut	akvashishtha@vidya.edu.in

Annexure 2.3: List of workshops conducted (1st Apr-2023 to 31st Mar-2024)

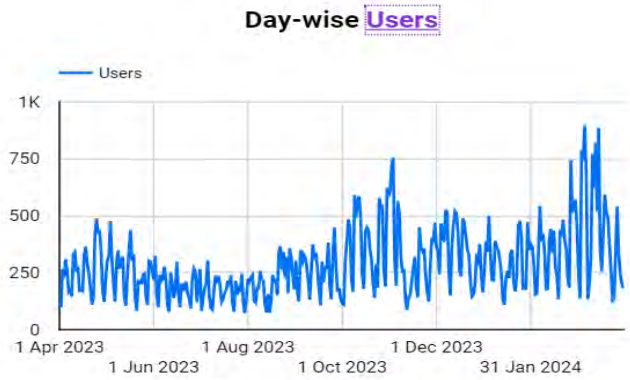
S.No.	Collage/ University	Date
1.	Pranveer Singh Institute of Technology, Kanpur	2023-04-27
2.	ITS Ghaziabad	2023-04-24
3.	Government Degree College, Budaun	2023-04-23
4.	Government Degree College, Budaun	2023-04-22
5.	ITS Ghaziabad	2023-04-20
6.	ITS Ghaziabad	2023-04-11
7.	Institute Of Engineering & Technology Bundelkhand University, Jhansi	2023-05-27
8.	ITS Ghaziabad	2023-05-25
9.	School of Basic Science, UIET, CSJM University	2023-05-24
10.	Dr. Ambedkar Institute of Technology For Handicapped, U.P.	2023-05-18
11.	ITS Ghaziabad	2023-05-17
12.	ITS Ghaziabad	2023-05-10
13.	IPS Academy, Indore, Madhya Pradesh	2023-05-10
14.	ITS Ghaziabad	2023-05-03
15.	ITS Ghaziabad	2023-05-02
16.	ITS Ghaziabad	2023-05-01
17.	Institute Of Engineering & Technology Bundelkhand University, Jhansi	2023-05-27
18.	Institute Of Engineering & Technology Bundelkhand University, Jhansi	2023-06-30
19.	Rajkiya Engineering College, Bijnor	2023-06-24
20.	Pranveer Singh Institute of Technology, Kanpur	2023-06-10
21.	Institute Of Engineering & Technology Bundelkhand University, Jhansi	2023-07-27
22.	Institute Of Engineering & Technology Bundelkhand University, Jhansi	2023-07-21
23.	Maharana Pratap Engineering College, Kanpur	2023-07-20
24.	Institute Of Engineering & Technology Bundelkhand University, Jhansi	2023-07-14
25.	Institute Of Engineering & Technology Bundelkhand University, Jhansi	2023-07-05
26.	Institute Of Engineering & Technology Bundelkhand University, Jhansi	2023-07-04
27.	Institute Of Engineering & Technology Bundelkhand University, Jhansi	2023-07-01
28.	Government Degree College, Budaun	2023-08-31
29.	Pranveer Singh Institute of Technology, Kanpur	2023-08-29
30.	G.C.R.G. Memorial Trusts Group of Institution, Lucknow	2023-08-26
31.	Institute Of Engineering & Technology Bundelkhand University, Jhansi	2023-08-26
32.	G.C.R.G. Memorial Trusts Group of Institution, Lucknow	2023-08-25
33.	G.C.R.G. Memorial Trusts Group of Institution, Lucknow	2023-08-24
34.	G.C.R.G. Memorial Trusts Group of Institution, Lucknow	2023-08-23
35.	Buddha Institute of Technology Gorakhpur	2023-08-23
36.	G.C.R.G. Memorial Trusts Group of Institution, Lucknow	2023-08-22
37.	G.C.R.G. Memorial Trusts Group of Institution, Lucknow	2023-08-21
38.	Institute Of Engineering & Technology Bundelkhand University, Jhansi	2023-08-17
39.	Institute Of Engineering & Technology Bundelkhand University, Jhansi	2023-08-11
40.	Shri Venkateshwara University, Gajraula, U. P.	2023-08-10
41.	St. Aloysis Institute of Technology, Jabalpur, M. P.	2023-08-07
42.	Institute Of Engineering & Technology Bundelkhand University, Jhansi	2023-08-01
43.	Institute Of Engineering & Technology Bundelkhand University, Jhansi	2023-09-30
44.	JSS Academy of Technical Education, Noida	2023-09-27
45.	ITS Ghaziabad	2023-09-26
46.	G.C.R.G. Memorial Trusts Group of Institution, Lucknow	2023-09-25
47.	Katihar Engineering College, Katihar	2023-09-22
48.	Allenhouse Institute of Technology, Kanpur	2023-09-22
49.	Ambalika Institute of Management and Technology	2023-09-21
50.	HBTU, Kanpur	2023-09-20
51.	Rajkiya Engineering College, Banda	2023-09-19
52.	Axis Institute Of Technology And Management, Kanpur	2023-09-15
53.	ITS Ghaziabad	2023-09-11

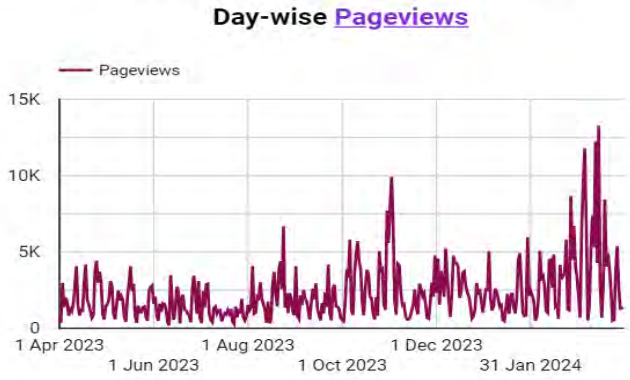
54.	Institute Of Engineering & Technology Bundelkhand University, Jhansi	2023-09-09
55.	Pranveer Singh Institute of Technology, Kanpur	2023-09-09
56.	Government Degree College, Budaun	2023-09-01
57.	Allenhouse Institute of Technology, Kanpur	26-10-2023
58.	Institute Of Engineering & Technology Bundelkhand University, Jhansi	20-10-2023
59.	Rajkiya Eng College, Kannauj	17-10-2023
60.	Anand Engineering College	13-10-2023
61.	Sandip Foundation's, Shri Ram Polytechnic, Madhubani	12-10-2023
62.	Meerut Institute of Engineering & Technology, Meerut	12-10-2023
63.	Chitkara University	10-10-2023
64.	Pranveer Singh Institute of Technology, Kanpur	09-10-2023
65.	IIMT College of Engineering, Greater Noida	06-10-2023
66.	ITS Ghaziabad	05-10-2023
67.	Aligarh College of Engineering & Technology, Aligarh	2023-11-29
68.	Lakhmi Chand Institute of Technology	2023-11-24
69.	Swami Vivekanand Subharti University, Meerut	2023-11-23
70.	RustamJi Institute of Technology, Gwalior	2023-11-22
71.	Dr Ambedkar Institute of Technology Bengaluru	2023-11-18
72.	Faculty of Engineering, Moradabad	2023-11-08
73.	Lakhmi Chand Institute of Technology	2023-11-07
74.	Dayananda Sagar Academy of Technology and Management	2023-11-06
75.	Rajkiya Engineering College, Bijnor	2023-11-03
76.	Chaudhary Charan Singh University, Meerut	2023-11-03
77.	Rajkiya Engineering College, Banda	2023-12-21
78.	Rajkiya Engineering College, Banda	2023-12-20
79.	G.C.R.G. Memorial Trusts Group of Institution, Lucknow	2023-12-15
80.	Goel Institute of Technology and Management, Lucknow	2023-12-12
81.	Lakhmi Chand Institute of Technology	2023-12-07
82.	Lakhmi Chand Institute of Technology	2023-12-07
83.	Hindustan Institute of Management and Computer Studies, Mathura	2023-12-05
84.	Kanpur Institute of Technology, Kanpur	2023-12-04
85.	Rameshwaram Institute of Technology and Management, Lucknow	2023-12-01
86.	Lakhmi Chand Institute of Technology	2023-12-01
87.	Ambalika Institute of Management and Technology	2024-01-29
88.	Chitkara University	2024-01-27
89.	Ambalika Institute of Management and Technology	2024-01-25
90.	Ambalika Institute of Management and Technology	2024-01-22
91.	Ambalika Institute of Management and Technology	2024-01-16
92.	Rajkiya Engineering College, Banda	2024-01-12
93.	Chitkara University	2024-01-12
94.	Rajkiya Engineering College, Banda	2024-01-11
95.	Lakhmi Chand Institute of Technology	2024-01-11
96.	JSS Academy of Technical Education, Noida	2024-01-11
97.	Government Degree College, Budaun	2024-01-11
98.	Rajkiya Engineering College, Banda	2024-01-10
99.	Government Degree College, Budaun	2024-01-10
100.	Rajkiya Engineering College, Banda	2024-01-09
101.	JSS Academy of Technical Education, Noida	2024-01-09
102.	Ambalika Institute of Management and Technology	2024-01-09
103.	Government Degree College, Budaun	2024-01-09
104.	Rajkiya Engineering College, Banda	2024-01-08
105.	Lakhmi Chand Institute of Technology	2024-01-08
106.	Government Degree College, Budaun	2024-01-08
107.	Government Degree College, Budaun	2024-01-07
108.	Government Degree College, Budaun	2024-01-06
109.	Chitkara University	2024-01-05
110.	Ambalika Institute of Management and Technology	2024-01-03
111.	Chitkara University	2024-01-03
112.	Lakhmi Chand Institute of Technology	2024-01-01
113.	Chitkara University	2024-01-01
114.	Ambalika Institute of Management and Technology	2024-02-29

115.	St. Aloysis Institute of Technology, Jabalpur, M. P.	2024-02-29
116.	Ambalika Institute of Management and Technology	2024-02-28
117.	St. Aloysis Institute of Technology, Jabalpur, M. P.	2024-02-28
118.	Ambalika Institute of Management and Technology	2024-02-27
119.	Ambalika Institute of Management and Technology	2024-02-26
120.	School of Basic Science, UIET, CSJM University	2024-02-26
121.	Ambalika Institute of Management and Technology	2024-02-23
122.	Ambalika Institute of Management and Technology	2024-02-21
123.	Ambalika Institute of Management and Technology	2024-02-19
124.	Dr Ambedkar Institute of Technology Bengaluru	2024-02-14
125.	School of Basic Science, UIET, CSJM University	2024-02-09
126.	Dr. Ambedkar Institute Of Technology Bengaluru	2024-02-09
127.	Lakhmi Chand Institute of Technology	2024-03-28
128.	Ambalika Institute of Management and Technology	2024-03-27
129.	Ambalika Institute of Management and Technology	2024-03-22
130.	Ambalika Institute of Management and Technology	2024-03-20
131.	Integral University Lucknow	2024-03-20
132.	Lakhmi Chand Institute of Technology	2024-03-18
133.	Lakhmi Chand Institute of Technology	2024-03-15
134.	Chitkara University	2024-03-14
135.	Ambalika Institute of Management and Technology	2024-03-13
136.	Pacific School of Engineering Surat	2024-03-13
137.	Ambalika Institute of Management and Technology	2024-03-07
138.	Ambalika Institute of Management and Technology	2024-03-06
139.	Lakhmi Chand Institute of Technology	2024-03-05
140.	Ambalika Institute of Management and Technology	2024-03-05
141.	Ambalika Institute of Management and Technology	2024-03-04
142.	Ambalika Institute of Management and Technology	2024-03-01

Annexure 3: List of Labs at IIT Kanpur and Analytics (Available since Apr. 01, 2022):

Sr. No.	Lab Name	PI Name	FOSS Level
1	**Virtual Astrophysics Lab**	**Dr. P.K.Jain**	**6**
2	**Ultrafast Laser Spectroscopy**	**Dr. 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**	**Dr. V. Srivastava, Dr. J. Akhtar**	**5**
7	**Transducers and Instrumentation Virtual Lab**	**Dr. 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**





Project Number: MOE/MEDC/2022401
Project Title: Central Sector Scheme for MOOCs-Complaint e-content creation (**NPTEL Phase IV)**
Project Investigator: Prof. Satyaki Roy
Project Initiated on: 31st August,2016 (Approval letter dated 31st March 2009 already submitted at R&D)

Project objectives:

Swayam NPTEL is a programme initiated by Government of India and designed to achieve the three cardinal principles of Education Policy: Access, Equity and Quality. The objective of this effort is to take the best teaching, learning resources to all, including the most disadvantaged. SWAYAM seeks to bridge the digital divide for students who have remained untouched by the digital revolution and have not been able to join the mainstream of the knowledge economy. 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 (200-250 words):

Since 2014, through an online portal, 4-, 8-, or 12-week online courses, on topics relevant to students in all years of higher education along with basic core courses in sciences and humanities with exposure to relevant tools and technologies, are being offered. The enrolment to and learning from these courses involves no cost. An in-person, proctored certification exam (optional) will be conducted at Rs. 1000/- per course and an E-verifiable certificate is provided through the participating institutions. In the previous semester (July-November, 2023) IIT Kanpur floated 84 courses and 17 were new.

In the recently completed semester (January-April, 2024), we offered 82 courses of which 18 were new. Now, we are in the final stage of publishing the results and generating the E-certificates. There are close to 6496+ local chapters today with identified expert faculty members of these institutions serving as local mentors for the students enrolled in NPTEL courses.

Highlights (3 bulleted points):

NPTEL+: NPTEL has launched the new portal NPTEL+ to expand the variety of offerings and courses for learners.

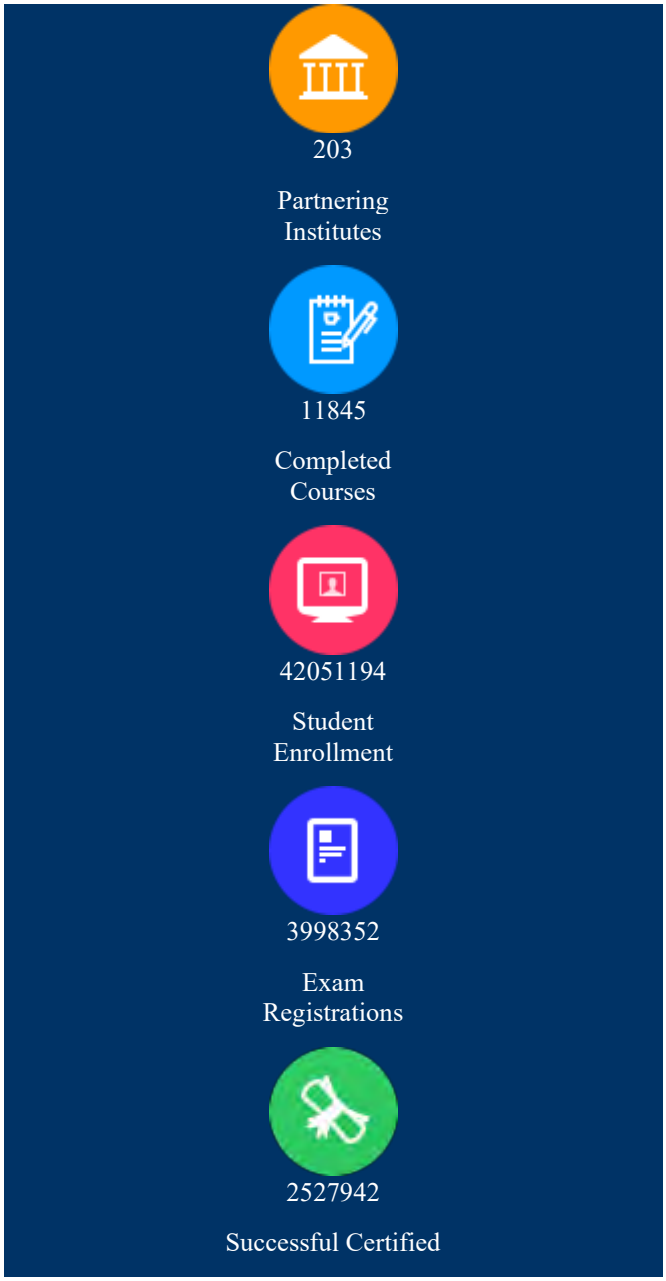
- Short term training programs from the IITs/IISc: Short term training programs which might involve fully live lectures coupled with hands-on training or a blended mode of learning (recorded videos + live lectures) are planned to be offered. These would primarily be by the faculty of various IITs, IISc, 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.

- IIT Kanpur as Virtual National Coordinator helped Banaras Hindu University to develop 15 courses for the INI portal.

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 and Kuwait – Salmiya

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

Statistics:



Largest online repository in the world of courses in engineering, basic sciences, and selected humanities and social sciences subjects

Online web portal http://nptel.ac.in – more than 1.6 Billion+ **views**
YouTube channel for NPTEL – most subscribed educational channel, **4.5 million+ channel subscribers.**

Project Number: MoE/STARS-1/261
Project Title: Short and Long-term Fog Predictions using Data Science
Project Investigator: Arnab Bhattacharya, IIT Kanpur
Co-Investigator(s): Shivam Tripathi, 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 7 days lead time.
3. To identify predictors for fog forecasting using a literature survey.
4. To develop a coherent fog dataset by integrating data from ground sensors, satellites, and mass and social media.
5. To disseminate the results using a website.

Progress Report (200-250 words):

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 was 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 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). To address the problem of limited ground observations of fog in North India, a Bayesian neural network model was developed that utilizes INSAT-3D satellite data for real-time fog monitoring, alongside a low-cost sensor that detects fog using optical images.

A free public website (https://fog.iitk.ac.in/) is developed to show the real-time status of fog and disseminate fog prediction results for 11 north Indian cities. The website gives an option to revisit past predictions and compare performances of different models. It also displays various observed meteorological parameters, and has facilities to compare visibility across cities. The website also shows live data captured at IIT Kanpur. These include visibility, soil moisture, particulate matter, and meteorological sensors.

Highlights (3 bulleted points):

- 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.

- Various meteorological sensors along with an inhouse developed low-cost optical fog detection are deployed at IIT Kanpur, and data are displayed on a real-time basis on the website.
- Multiple data science models have been developed for the short-term prediction of fog. A probabilistic satellite-based fog monitoring model is developed for North India. Models are being developed for long-term fog prediction.

Figure 1. *Sensors and display board installed at IIT Kanpur – (a) visibility sensor, (b) real-time display board in the faculty building, (c) automatic weather station, and (d) low-cost optical sensor for fog detection.*

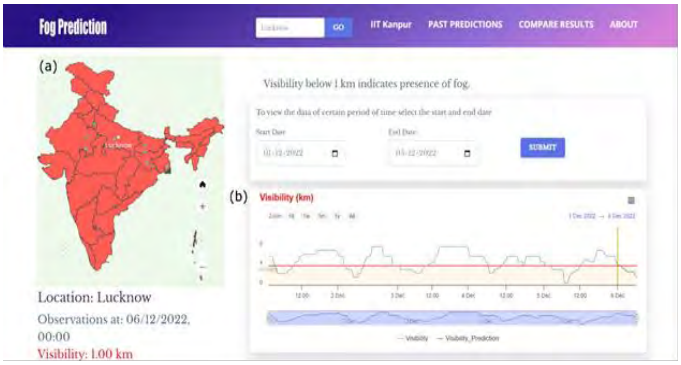


Figure 2. *Fog prediction website snapshot (for a past date) showing (a) cities where we forecast fog, (b)visibility (fog) prediction for next 3 hours (blue: past visibility, green: visibility forecast, red: 1-km visibility line separating fog and no-fog, yellow: current time)*

Project Number: DORA /DORA/2018461
Project Title: Unnat Bharat Abhiyan - Rozi Shiksha Kendra (RSK)
Project Investigator: Prof. Sandeep Sangal
Co-Investigator(s): Prof. Sudhanshu Shekhar Singh
Industry Collaborators (if any): NABARD, UP Madhyamik Shiksha Parishad (Govt of UP), Unnat Bharat Abhiyan, RuTAG IIT Kanpur, Indian Institute of Craft and Design (Jaipur), Pratham Education Trust, Aranyaani Food Forest, Kanpur Parivartan Forum, Prachi Leathers Pvt Ltd, NABARD, Shiksha Sopan

Project Initiated on: 01-02-2019

Project objectives:

1. Provide World Class Education to all rural children, free of cost
2. Train rural youth to enhance their employability
3. Work with artisans to improve their quality and marketability
4. Promoting sustainable agriculture and enhancing farmer income
5. Nurture entrepreneurship

Progress Report (200-250 words):

The five pillars of growth for RSK are: online rural education, skilling of youth, pottery, solar dehydration and coordination of colleges for Unnat Bharat Abhiyan (Fig 1). The first batch students of Online Rural Education Initiative (OREI) performed well (Fig 2) in the UP Board Examination 2024, establishing the potential it has on bridging the educational gap in rural India.

The 2-year skilling project supported by NABARD was successfully completed in 2023 with 305 rural youth trained.

Out of these 255 could successfully complete the full course, and more than 80% got employed. The programme is attracting village girls from far off distance, and transforming them into confident girls, with rising aspirations.

RSK is actively engaging with potters of Bithoor and facilitated registration of more than 70 potters in the Vishwakarma Yojna. Regular design workshops and exposure visits have resulted into a jump in their product range, quality and price they fetch in market. The pottery cluster of Bithoor is on a growth pathway, and RSK is committed to its comprehensive development.

RSK has launched an intervention for farmers to do value addition of fruits and vegetables through solar dehydration. This year one training workshop was held, and more are planned for the coming years.

RSK is implementing the Unnat Bharat Abhiyan scheme as Regional Coordinator. Together with 51 participating institutes, thousands of students are getting engaged in rural development. The students find the experience of volunteering n villages a rewarding and satisfying experience.

Highlights (3 bulleted points):

1. UP board examination results showed that the efforts made in the last two years have made a significant impact (see figure 2). Now, online rural education initiative is being supported by UPMSP, GoUP and 12 rural schools (in Kanpur, Lucknow and Gorakhpur) that have joined the programme.
2. In the last two years, RSK has trained more than 500 rural youth (more than 250 in last year alone, mostly women in the age group 18 to 35 year old) on 'Industrial Sewing Machine

Operator (SMO)'. Most of the trainees are placed in top 5 exporting units of Kanpur (see figures 3 & 4).

3. RSK is coordinating Unnat Bharat Abhiyan with 51 colleges in 17 districts of UP. Students volunteer their time in the adopted villages, and contribute towards nation building.

Some representative Figures:

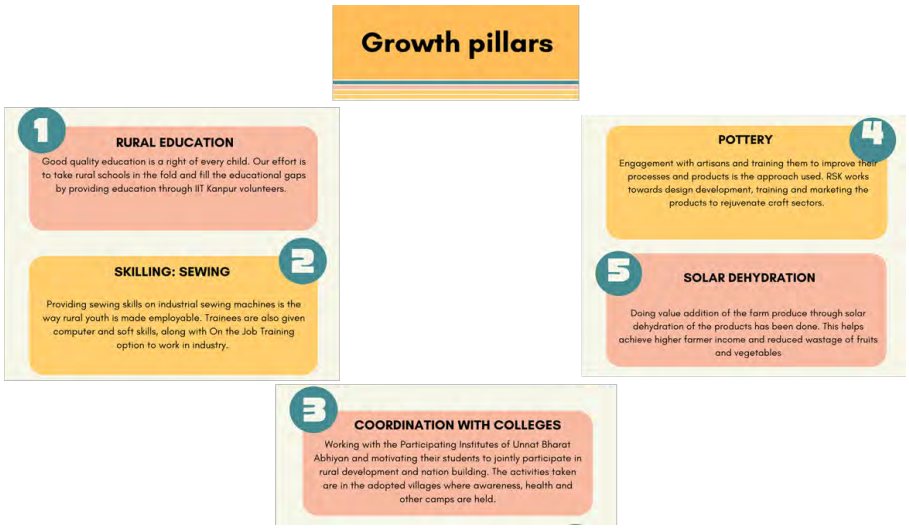


Figure 1

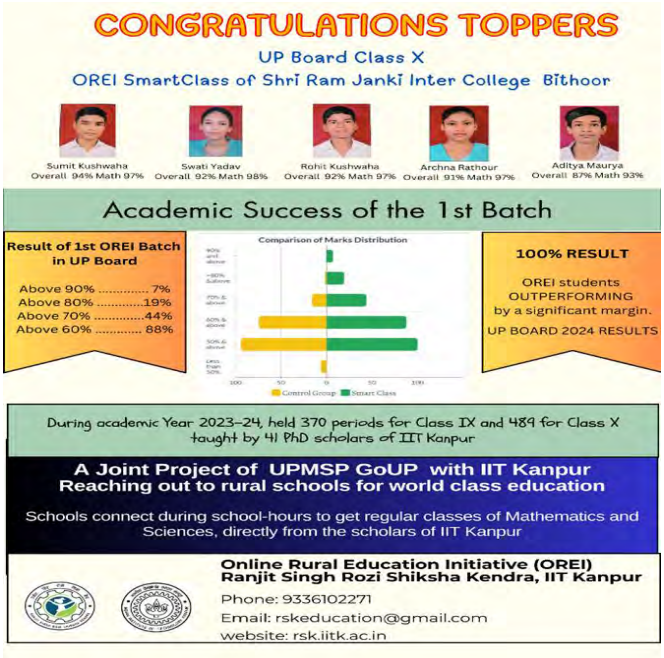


Figure 2

Figure 3

Ministry of Education has funded a diverse array of projects across various fields to promote innovation and development in India. These initiatives include research in geomorphology, which aids in environmental management and disaster mitigation; digital archiving, which preserves valuable historical and contemporary data; and nano plasmonic research, enhancing medical diagnostics and optical computing. Additionally, projects on improved steel coating for durability aim to extend the lifespan of steel structures, while virtual labs provide remote access to experiments, democratizing education. The National Programme on Technology Enhanced Learning (NPTEL) offers online courses to enhance the quality of engineering and science education. Other notable projects include fog prediction using data science, leveraging big data to improve weather forecasting for safety and planning, and the Unnat Bharat Abhiyan, which promotes rural development through innovative solutions and community engagement. The Ranjit Rozi Shiksha Kendra focuses on vocational training, enhancing employability in rural areas.

These initiatives collectively drive scientific research, technological innovation, and socio-economic development in India. By bridging gaps in education and infrastructure, they aim to improve the quality of life and education across the country. The Ministry's support not only advances academic and industrial standards but also fosters inclusive growth, ensuring that the benefits of progress reach all segments of society. Through these projects, India is making significant strides in enhancing its technological capabilities, educational landscape, and socio-economic development.

FINANCE

Table below presents the summary financials:

INDIAN INSTITUTE OF TECHNOLOGY KANPUR

INCOME AND EXPENDITURE ACCOUNT FOR THE PERIOD ENDED 31ST MARCH 2024

(Amount - ₹)

PARTICULARS	SCHEDULE	CURRENT YEAR 31.03.2024	PREVIOUS YEAR 31.03.2023
INCOME			
Academic Receipts	9	77,16,82,267	68,86,15,717
Grants / Subsidies	10	6,70,19,12,999	6,01,82,92,707
Income from Investments	11	22,27,08,871	42,29,05,339
Interest earned	12	1,50,54,156	2,74,11,199
Other Income	13	2,43,70,87,832	99,84,57,902
Prior Period Income	14	-	5,22,060
Deferred Revenue Income	4	1,19,23,18,600	1,42,89,79,967
	TOTAL (A)	**11,34,07,64,725**	**9,58,51,84,891**
EXPENDITURE			
Staff Payments & Benefits (Establishment Expenses)	15	6,09,63,96,457	4,33,62,65,490
Academic Expenses	16	1,09,45,25,312	99,66,94,957
Administration and General Expenses	17	1,18,13,46,428	96,46,51,560
Transportation Expenses	18	1,67,42,309	2,71,74,541
Repairs & Maintenance	19	30,79,10,688	27,27,03,566
Finance Costs	20	14,53,34,158	15,56,45,906
Depreciation	4	1,22,54,45,884	1,44,88,79,640
Other Expenses	21	6,24,62,864	6,19,03,275

Prior Period Expenses	22	-	4,66,414
	TOTAL (B)	**10,13,01,64,100**	**8,26,43,85,349**
BALANCE BEING EXCESS OF INCOME OVER EXPENDITURE (A-B)		**1,21,06,00,625**	**1,32,07,99,542**
Utilization Against HEFA Loan		**87,98,00,000**	**62,13,00,000**
Internal Receipts Retained for HEFA Loan		**14,38,45,902**	**14,43,98,236**
BALANCE BEING SURPLUS/(DEFICIT) CARRIED TO CAPITAL FUND		**18,69,54,723**	**55,51,01,306**
SIGNIFICANT ACCOUNTING POLICIES **CONTINGENT LIABILITIES AND NOTES TO ACCOUNTS**	23 24		

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

FY2023-24 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 24, 2024.
The accounts are available with the title 'Annual Accounts (2023-24)' at the following link:
https://www.iitk.ac.in/new/annual-accounts

Following are the highlights of Institute's FY 2023-24 financials:

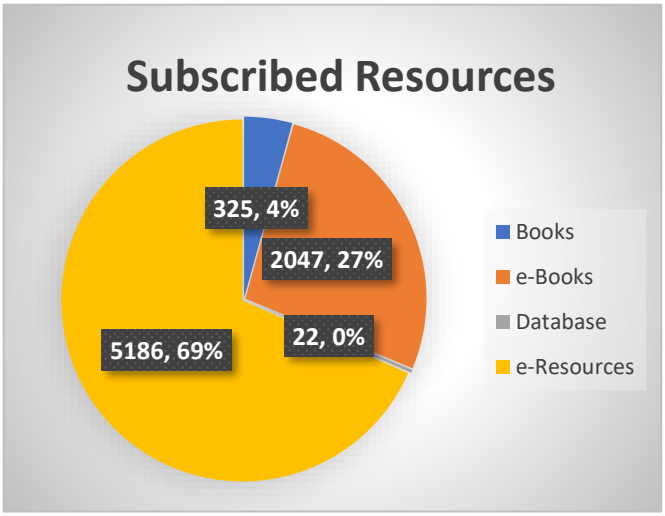
- Balance sheet size is of ₹ 5,564 crores, without any valuation added for the IIT brand.
- MHRD released revenue and capital funds of ₹ 670.19 crores and ₹ 117.98 crores respectively under scheme Support to IITs.
- Institute has generated revenue of ₹ 1014.84 crores (excluding deferred revenue income w.r.t. depreciation of ₹ 119.23 crores), of which ₹ 893.78 crores was spent towards recurring expenditure and ₹ 87.98 crores towards repayment of HEFA Loan. Income to the tune of ₹ 14.38 crores has been ploughed back as retained earnings for repayment of HEFA loan. In addition to this, institute has incurred expenditure of ₹ 116.62 crores on capital expenditure.

P. K. KELKAR LIBRARY

The P. K. Kelkar Library provides access to resources in all formats to meet the Institute's research and teaching requirements. The library is equipped with RFID technology and facilitates self-check-in/self-check-out and inventory management. Our web catalogue enhances search and retrieval resources, enables print options, supports rating and comments, and exports search results in different formats. The library has CCTV for better surveillance & security and high-speed Wi-Fi internet access. The library subscribes to its periodicals in digital form and books in both print and electronic. The library spent Rs. 2030.19 Lacs on new resources during this period.

A. ACQUISITION UNIT-II

The acquisition unit deals with acquiring printed books and e-resources, including e-books, e-journals and databases on the recommendations of the various departments. All recommended books are procured through a systematic purchase process. All newly acquired books and gratis collections are accessioned and technically processed for labelling, bar-coding, RFID tagging, etc. It also updates the database and performs technical processing work for old books, including catalogue editing/ modification of approximately 4300 books. All the books added to the library collection were circulated to the academic community through e-mail every week.



Books:

The Institute library procures eBooks and print books during FY 2023-24 to facilitate reading materials. During this period, the library procured 2372 books (print + ebook) by spending an amount of Rs.

19.57 lakhs, including 325 print books and 2047 e-books.

In addition, GSMST has a total of 10 books, and donations (gratis) have added a total of 255 books to the collection. The donors of these gifted books were duly acknowledged.

During the financial year 2023-24, PK Kelkar Library spent Rs. 2030.19 Lacs on Books and Journals. Expenditure details as per significant collections are given below in Fig. 1.

The library distributes its budget among all departments as per the established budget formula. Subsequently, the library has procured various resources for the departments.

The unit involves technical processing of all newly acquired and old books required for bibliographic modifications/ editing/ damage for labelling, bar-coding, RFID tagging, etc. The library weeded out **3112 old damaged books (both accessioned and un-accessioned)** from the library during 2023-24 with the approval of the competent authority.

Online Resources

The library has subscribed and provided campus-wide access to more than 6102 (eSS) + 5186 (Self Subscribed) peer-reviewed journals and 22 bibliographic, citation, and factual databases.

The expenditure for subscribing to various online resources was Rs.2010.62 Lacs (GST included). The primary subscribed online resources from major publishers and journals number are mentioned below in Table-I.

Table-I: IITK subscribed online resources

Sl. No.	Publisher	No. of Journals
1	American Association for the Advancement of Science	5
2	American Chemical Society	95
3	American Economic Association	7
4	American Institute of Aeronautics and Astronautics	6
5	American Mathematical Society	11
6	American Meteorological Society	3
7	American Psychological Association	120
8	ASTM Digital Library	9
9	Begell House	30
10	Brill Academic Publishers	3
11	British Medical Journal	1
12	Cambridge University Press	142
13	Canadian Science Publishing	3
14	Cell Press	13
15	Company of Biologists	5
16	Duke University Press	7
17	Economic and Political Weekly	1
18	Elsevier	3003
19	European Mathematical Society	2
20	Geological Society of America	2
21	Guilford	1
22	Inderscience Publishers	1
23	Informs	14
24	Institute of Electrical and Electronics Engineers (IEEE/IET)	400
25	Institute of Mathematical Statistics	3
26	Institute of Mathematics, Polish Academy of Sciences	4
27	Institute of Physics	81
28	International Association for Hydraulic Engg. and Research	4
29	International Press	6
30	IOS Press	3
31	Johns Hopkins University Press	10
32	Jove	1
33	Mary Ann Liebert, Inc.	3
34	Mathematical Sciences Publishers	2
35	Mineralogical Society of America	3
36	MIT Press	13

37	Nature Publishing Group	37
38	Now Publishers Limited	13
39	Optical Society of America	13
40	Oxford University Press	14
41	Penn State University Press	1
42	Philosophy Documentation Center	3
43	PNAS	1
44	Rockefeller University Press	1
45	Royal Society of Chemistry	55
46	Sage Publications	543
47	Seismological Society of America	2
48	Société Mathématique De France	2
49	Society of Exploration Geophysicists (Seg)	2
50	Society of Indian Automobile Manufacturers (SIAM)	17
51	SPIE	15
52	Springer	4
53	Taylor And Francis	63
54	Techno Press	3
55	Theime Medical and Scientific Publishers	2
56	Thomas Telford / Ice	25
57	Trans Tech (Scientific.net)	1
58	University Of Chicago Press	7
59	University Of Illinois Press	1
60	University of Michigan	1
61	Walter De Gruyter Gmbh & Co.	9
62	Wiley	301
63	World Scientific	10
64	Yokohama Publishers	2
65	Other Society Publication	21
	TOTAL	5186

Table-II: IITK subscribed Databases

Sr. No.	Database Name
1	CMIE - CapEx
2	CMIE - Economic Outlook
3	CMIE - Prowess(DX)
4	CMIE - Prowess(IP)
5	EBSCO - Business Source Ultimate
6	EBSCO – Econlit With Full Text
7	EBSCO – Humanities International Complete
8	EBSCO – Psychology and Behavioural Science Complete
9	EBSCO – Socindex With Fulltext
10	Epwrf India Time Series Database
11	Euromonitor Passport Category Level(Global)
12	IEC Standards
13	Indian Standards - Civil Engineering (CED)
14	Indian Standards - Water Resources (WRD)
15	Indiastat Database
16	Inspec
17	Pearson Crystal Data
18	Proquest Dissertation And Thesis Part A & B
19	Scifinder 'N'
20	Scopus

B. AUTOMATION AND ARCHIVES UNIT

The Archives serve as repositories of the Institute's history. The tasks of the Institute Archives Unit include obtaining, organizing, describing, and archiving relevant documents. Within its collection, the Archives Unit possesses diverse items, such as photographs of convocation, events, functions, and significant moments, as well as materials like Institute annual reports,

brochures, pamphlets, and personal records belonging to retired faculty and staff. Archived data can be searched and retrieved, but access is limited. During the period, Peter Menezes from the USA generously donated three documents, and the archives have seen visits from various IITK departments, students, and others who have also requested information related to documents.

The automation and digitization of archives are currently underway with the support of PINGALA by the Institute.

C. CIRCULATION AND MAINTENANCE UNIT

The unit involves various activities like issuing & return reading materials, resolving user queries, binding library books & periodicals, Inter-Library Loans (ILL), archival of electronic Theses and dissertations, and issuing dues clearance. The unit also looks after the maintenance activities of the building, furniture & fittings, and other types of equipment.

Circulation statistics

Transactions	
Total Checkout & renewals	53057
Total Checked in	22723
Total Transactions	**75780**
Lost and replacement of books	
Number of books reported lost	07
Number of books replaced	00
The amount collected as the replacement cost	69391.90
Inter Library Loan	
Internal request received	84
External request received	233
Total	**317**
Theses archived in Institutional Repository (http://etd.iitk.ac.in)	
PhD	240
MS (Research)	48
MTech	428
MDes	21
Total	**737**

Jay Pullur reading room

The Jay Pullur reading room of the PK Kelkar library was inaugurated on July 2023. It is located on the ground floor of the library. The tables and chairs in the room has been procured by the generous donation of the family of Late Mr. Jay Pullur (MT/CSE/1987). This room is used extensively by the members of IITK, especially the students. This space can accommodate about 150 users at any given time.

Awards

Mr. Brij Mohan Singh (Asstt. Library and Information Officer) is conferred with merit award 2023 for exemplary service with utmost commitment towards their duty.

Finally, I would like to place on record my sincere gratitude to all the SLC members, library staff, the Institute administration, students, and security for their unstinting support, enabling the smooth functioning of the library. Special mention must be made to the continued support from both the Director and Deputy Director, without which the modernization activities which the library had embarked on over the last few years, would have not been possible.

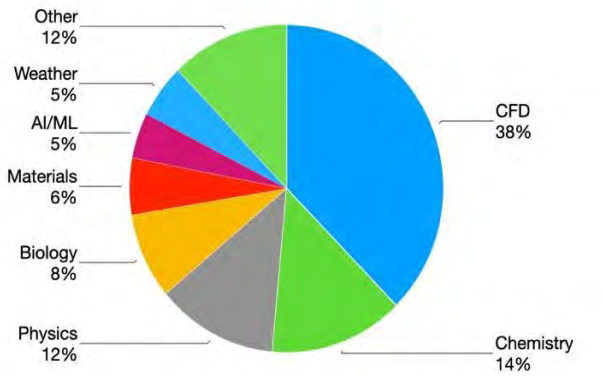
DIGITAL INFRASTRUCTURE AND AUTOMATION

Computer Centre (CC) caters to the computational and IT-related needs of the academic and residential community at IIT Kanpur. Essential services provided by CC include the Institute Local Area Network covering academic areas, residential areas, and students' hostels, E-mail services, High Performance Computing (HPC), Computer Labs, website development and maintenance, purchase and maintenance of various software for specialized research, and general use by the campus. CC provides help and support for purchasing, installing, and configuring such hardware and software on demand.

The Centre functions around the clock. The center has five data centers hosting computing and other servers, parallel clusters for various 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-hour uninterrupted supply.

The Institute Computer Centre houses three HPC systems. The newest, Param Sanganak, is a heterogeneous and hybrid (CPU+GPU) supercomputer with a peak computing power of 1.67 Petaflops and was developed and commissioned by the National Supercomputing Mission (NSM) to meet the computational demands of IIT Kanpur and other research and engineering institutes in the country. It ranked in the top 10 HPC systems in the country. HPC2013 has a computing power of 330 TF, which ranked 131st on the Top 500 list (www.top500.org)

in 2013. HPC2010 has a computing power of 63 TF. It ranked as the 369th fastest computer in the world in June 2010. Currently, HPC2010 is being phased out. These HPC systems have a user base of about 400 users and about 100 research groups. They are extensively used by students, faculty, and other researchers at the Institute. Researchers across disciplines have used these facilities. These HPC systems are well maintained and have an uptime of 97%. The usage of these facilities is beyond 90%. Over the past two years, users have published more than 300 publications. About 120 graduated students



have used the HPC facilities in the last three years.

IIT Kanpur has an open-source, self-hosted clustered emailing system with a present user count of more than 18000 users. Users access the email account via self-hosted webmail solutions and on their devices via SSL/TLS security and centrally authenticated services. Emails are backed up hourly for a fortnight. Three spam and virus firewalls are in place to safeguard email accounts. CC also provides a forwarding and bulk emailing facility via fault-tolerant SMTP and relay servers. Mail storage is now on NVME with the latest controllers and new backend storage.

The Institute has a fully managed Local Area Network of more than 30,000 wired nodes, connecting all the hostel rooms, offices, and residences using a 10 Gbps backbone and 1 Gbps access network. The wired network is complemented by an 802.11ac wireless network using over 3000 Access Points. We have 10 + 4 Gbps connectivity to the Internet via different Internet service providers, including NKN. CC provides a single sign-on facility for seamless Wi-Fi connectivity within the campus, and Eduroam for seamless Wi-Fi connectivity for members traveling to participating academic institutes worldwide. The institute services can be accessed from outside the campus using SSL VPN.
A cybersecurity committee is set to create and implement a comprehensive cybersecurity policy and establish a structured approach to managing and protecting assets and data from cyber-attacks. A cybersecurity cell is created to act against cyber threats and security incidents. The cell is also working towards creating security awareness and compliance among all stakeholders, including students, faculty, staff, and service providers.

CC runs and manages thirteen computer labs, which have about 820 computers. These are managed under a Facility Management Service as an institute-funded project. The labs are used to teach core and departmental courses like MTH209A, MTH208A, ELC111A, SPA 604, CHE381, COM200, PHY473A ESC111/112, ESC113, MTH308B, and CE687A. The labs are also used to hold certain exams for the courses, student placement, PhD admissions, and institute recruitment. Apart from these, they are regularly used for conferences, workshops, and QIP courses. A variety of STEM software like Aspen, Hysys, Matlab, Stata, R-Studio, Octave, AutoCAD, Fusion360, Ansys, Dev C++, Python, and Eclipse to name a few, are available. The facility is open to all the departments from 8 AM to 2 AM on all days. Around 400 students access the labs daily. The usage goes very high during the examination period and other events, and the demand is handled in multiple shifts. A few desktops in CC, New Core Building, and Library are dedicated to the print disabled. These have special software for reading out the screen, a back-illuminated large print keyboard, and touch-sensitive monitors. Most of the labs have projector and whiteboard facilities. We are constantly adding more

gadgets to help the instructors to teach, like interactive panels, ePodium, and audio systems.

The institute provides Microsoft Office 365 online services comprising of Azure Active Directory providing Microsoft Account to all permanent faculty, post-doctoral fellows, permanent staff, and regular students. This is a single sign-on service that provides tools and features like Office 365 Online, OneDrive storage, SharePoint, and MS Teams for video conferencing, collaboration, and classroom management. In addition, the users also get a subscription to Azure Development tools for teaching,

which provides a variety of development software. It also provides the facility of Exchange Online mail service to all. This service provides a 50 GB mailbox, Calendar, Contacts, ToDo, and many other collaborative tools to the users, which seamlessly synchronize on desktop and mobile devices, thus considerably increasing the productivity of the users.

The Institute Website and several Deans, Departments, Centers, Services, etc. are being centrally managed by the Institute Website Team from 2020 onwards. The Institute Web team is in the process of developing and deploying smart device-compatible websites as per the current demands with structured data organization and content flow. The team emphasizes the incorporation of advanced features to enhance user experience and meet the evolving requirements of the Institute. The team continually enhances the Institute's web presence by adhering to the latest SEO standards, implementing cutting-edge web practices, and ensuring all websites are optimized for peak performance, security, and user engagement. The MoE has given the responsibility to IIT Kanpur for designing and developing an IIT council smart device-compatible website. This website consolidates the ongoing Research Projects, major research initiatives, publications, annual reports, technology developed, patents, etc., across IITs. It also summarizes the faculty and student-related information across the IITs.

The Office Automation (OA) division was established in 1992, and currently, it functions under the Dean of Digital Infrastructure and Automation (DDIA). The primary objective of OA is to automate various activities of different departments and units in the Institute. The OA team is involved in the design, development, and implementation of software, enhancements, and user training. OA has a team of personnel dedicated to software design, development, and deployment. There are dedicated personnel who work in system administration, database administration, and web server administration. Currently, approximately 175 services have been deployed and are in use by various departments and sections in the institute. These services are being used in departments like Accounts, Pension, Provident Fund, Payroll, Income Tax, DORD, DOFA, DOSA, DOAA, DORA, DOAD, ADMIN, COW, REG, RTI, Recruitment Section, Counselling Service, VH, Stores and Purchase, Health Centre, Estate Office, Hostels, IWD, ID cell, OA portal, Security unit, Telephone directories, VLFM and CCE(SURGE) etc.

In 2015, the institute launched an online automation portal called "Pingala." This platform is designed for students, faculty, and campus residents to streamline processes, generate reports, and ensure cross-platform compatibility. Pingala provides seamless access to key departments like DOAA, DOFA, and DOSA, as well as facilities such as the IWD and the library. Pingala offers various services, including administrative and academic modules, research project management systems, external connection systems, and E-payment gateways. It caters to the campus community, featuring modules like the complaint management system (CMS). Currently, Pingala runs 37 modules with advanced functionalities such as faculty and postdoc recruitment, student registration, course add/drop options, admissions, and more. Other key services on the platform include an employee leave system, address book, online surveys, and the faculty information system (FIS). In 2022, a new initiative was launched to develop over 160 additional modules, broadening Pingala's scope to serve all institute departments.

The Telephone Exchange at IIT Kanpur provides Analog and IP telephone services to the entire campus. The Alcatel IP PBX installed in the Telephone Exchange supports up to 5000 Analog extensions and up to 2000 IP extensions. For outside connectivity, there are two PRI lines, one from BSNL and one from Tata Telecom. The exchange provides 12X7 operator service, 8X6 maintenance services, and 24x7 support for critical and emergency services. Telephone communication within the campus can be through a four-digit extension number, and direct inward dialing from outside has to use a 259/679 prefix.
The ID Cell is the first point where a new faculty member, staff member, or student will visit to obtain the ID card and medical booklet of the institute. Smart Cards are provided by the Cell. New digital ID cards are now being developed and are under testing.

DDIA also organized several outreach and training programs. This includes training programs for the faculty, staff, and students on Microsoft Office tools, Data & AI using Azure, and HPC training. The HPC Symposium was recently conducted (April 20, 2024) to provide a platform for HPC users from various branches of science and technology to come together to present their research findings, share new ideas, and discuss the future of computing. Exascale Research Summit and Panel Discussion was jointly hosted by NVIDIA and IIT

Kanpur on May 2, 2024. During the event, hands-on and experience of the latest NVIDIA chips, paving the way for a new era of exascale computing. The panel discussions were conducted to catalyze collaboration and ideation, fostering a dynamic environment for pushing the boundaries of research and technology. demo sessions were conducted to provide a firsthand

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.

Further, SURGE, FLP and Vigyan Jyoti also run under the aegis of CCE.

(a) **SURGE:** Students-Undergraduate Research Graduate Excellence (SURGE) program, is an approved internship Program of IIT Kanpur, which runs under the aegis of Centre for Continuing Education (CCE), IIT Kanpur. This program provides an opportunity to undergraduate and M.Sc first year students of IITK, Non-IITK and also to the students of SAARC countries, with an objective of giving in-hand experience of technical learning in their field of research.

(b) **FLP:** The Foreign Language Programme was established in the early years of IIT Kanpur and acquired a more formal structure during the 1970s. For more than 50 years of now, our wide variety of language courses have been helping students to widen their intellectual horizons and get better integrated within an international working environment.

(c) **Vigyan Jyoti Program:** IIT Kanpur organizes Vigyan Jyoti programme, supported by Department of Science and Technology (DST). This is a holistic program to encourage and inspire female students to pursue higher education and thereby become self-reliant and independent in their future life. The primary aim of this program is to create gender enabling environment and strengthen the eco-system. As early grooming reaps huge rewards, promoting interest in science and technology amongst the girl students in their early education years will definitely be very beneficial for them.

Besides the above programmes, the CCE will also be approving for conduction of various activities comprising Courses/Workshop /Seminar/ Conferences/ Symposium/ Training programme throughout the year.

Summary of various activities during the year 2023-2024

1. **QIP Students**

   a) M. Tech. Candidates admitted - Nil
   b) Ph.D. Candidates admitted - Nil

2. Short term courses conducted under QIP – Nil

3. Short term self-financed courses conducted - 74

4. Workshops/ Conferences/ Seminars conducted – 44

INTERNAL COMPLAINT 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, the IIT Kanpur (Prevention, Prohibition and Redressal of Sexual Harassment of Students) Rules, 2017 and the Indian Institute of Technology Kanpur (Inquiry into Complaints of Sexual Harassment of Women at Workplace) Rules, 2021. During the period April 1, 2023 to March 31, 2024, the ICC received 11 complaints. In each of these cases the Complainant was either a Ph.D. student, BTech student and a UG Summer Intern and the Respondent was either a B.Tech. student, Ph.D. student, a member of the Faculty or a Staff member.

The details of the cases have been provided as Annexure 1.

Annexure 1

S. N.	Complainant	Respondent	Nature of Complaint	Action taken	Timeline
1	Female PhD students	Male PhD Student	Sharing of meme on social media invasion of privacy violation of modesty	Barred from participating in or representing IIT Kanpur in any event or competition for a period of 6 months	Complaint received on 24-3-23 and decision taken on 26-5-23
2	Female PhD student	Male PhD Student	Inappropriate touching	Deregistration for the summer term	Re-inquiry started on 14-4-23 and decision taken on 26-5-23
3	Female UG summer intern	Male Faculty Member	Inappropriate Sexually Colored Behavior	ICC recommended that appropriate punishment be awarded to the Respondent by the Disciplinary Authority as per the Statutes of IIT Kanpur. Compulsory retirement was	Complaint received on 21-6-23 and decision taken on 4-8-23

				awarded to the Respondent.	
4	Female PhD student	Male PhD Student	Harassment, virtual stalking and unwanted physical contact	Deregistration from the PhD program for 1.5 semesters	Complaint received on 20-7-23. Decision taken on 9-10-23
5	Female BTech students	Female and Male BTech students	Recording inappropriate videos without consent	Deregistration from the BTech program for 1 year	Complaint received on 28-7-23 and 30-7-23. Decision taken on 4-11-23
6	Female BTech student	Male BTech students	Inappropriate sexual contact without consent	Deregistration from the BTech program for 1 semester	Complaint received on 28-7-23. Decision taken on 3-11-23.
7	Female PhD Student	Male PhD Student	Virtual and physical stalking	Deregistration from the PhD program for 1 semester	Complaint received on 8-8-23. Decision taken on 14-11-23.
8	Female PhD Student	Male PhD Student	Virtual and physical stalking	Deregistration from the PhD program for 1 semester	Complaint received on 11-9-23. Decision taken on 15-12-23.
9	Female BTech student	Male BTech students	Inappropriate sexual contact without consent	Deregistration from the BTech program for 1 year and thereafter staying outside campus	Re-inquiry started on 3-1-24 and decision taken on 19-4-24
10	Female BTech Student	Male Staff Member	Inappropriate touching without consent	Recommend sensitization with regard to respecting physical boundaries	Complaint received on 14-1-23. Decision taken on 22-4-23.
11	Female BTech Student	Male Staff Member	Virtual and physical stalking	Barred from holding any position at IIT Kanpur for a period of 1 year	Complaint received on 24-2-24. Decision taken on 27-5-24.

GENDER CELL

Following is the report of activities of the cell during this period:

a. To raise awareness about the ongoing fight against sexual harassment, the Women's Cell conducted a community Event - a 5 km Run and 5 km Walk - with the theme **- Break The Silence, Stand Up Against Sexual Harassment** on 2nd April, 2023.

b. Awareness session on **"Gender Sensitization and Sexual Harassment"** for students and members of faculty of the Material Sciences department was held on 11th April, 2023.

c. Awareness session on "**Gender Sensitization and Sexual Harassment**" for students and members of faculty of the Humanities and Social Sciences department was held on 9th May, 2023.

d. Awareness session on "**Gender Sensitization and Sexual Harassment**" was held for newly admitted Y22 postgraduate students (summer admission) on 25th July, 2023.

e. An information session on the mandate and activities of the Women's Cell as a part of the Student Guides Workshop organized by the Counselling Service, IIT Kanpur, was conducted on 26th July, 2023.

f. An orientation session on issues related to sexual harassment and gender discrimination was held for the newly admitted Y22 undergraduate students on 5th August, 2023.

g. A talk on **"POSH Act (Prevention of Sexual Harassment at workplace)"** by Ms. Amreeta Swarup, an Advocate-on-Record in the Hon'ble Supreme Court of India was hosted by Women's Cell, IIT Kanpur on 16th November, 2023.

h. Awareness session on "**Gender Sensitization and Sexual Harassment**" was held for newly admitted postgraduate students in January, 2024.

i. A talk titled, "**Degendering STEM: Why so Slow**?" by an eminent scientist Prof. Prajval Shastri was hosted by Gender Cell on the occasion of the Women's Day on 8th March, 2024.

j. As part of the International Women's Day celebrations, the Gender Cell organized a screening of the film '**Turup**', followed by a discussion with one of the movie's actors, Nidhi Qazi on the themes of gender discrimination and how gender interacts with other social structures.

k. The Gender Cell organized the 6th edition of the IITK Community Event – a 5 Km Run and Walk event with the theme - **Stride Together, Step up Against Gender Discrimination**.

l. As per office order no **DIR/IITK/2024/00-003 dated January 3, 2024**, Women's Cell was renamed as Gender Cell. This was changed after Women's Cell submitted a proposal to the director for change in the name of the Women's Cell at IIT Kanpur to better reflect the inclusive and equitable values that our institution upholds.

m. Throughout this period the Gender Cell addressed numerous complaints filed by students/ staff members and counseled all the complainants, facilitated their subsequent meetings, if required, with the ICC PO and the Legal Cell expert of the institute. Some of the students were provided specialized counselling session by the professional counselor of the Gender Cell who is specially equipped to handle sexual harassment cases. The Gender Cell Chairperson issued a strict warning to the respondent in many cases.

RAJBHASHA PRAKOSHTHA

IIT Kanpur is an Institute of national importance where students from all over the country and abroad are admitted for higher education in Science, Engineering, Technology, and Humanities disciplines. Therefore, the English language has been adopted as the medium of instruction/syllabus, research, and academic activities.

Rajbhasha Prakoshtha is ensuring the implementation of the Official Language Act in the Institute and complying with the Annual Program issued by the Department of Official Language, Ministry of Home Affairs, Govt. of India, and carrying out all possible efforts to create awareness of the usage of Hindi among the Institute employees/students. Sansthan Rajbhasha Karyanvayan Samiti, which is constituted by the Director under the chairmanship of the Deputy Director, monitors and provides guidelines to the Rajbhasha Prakoshtha in its planning, performance and activities. The said Committee holds quarterly meetings to promote the official language (Hindi) in the Institute throughout the year. In view of disseminating the Official Language in the Institute, Rajbhasha Prakoshtha conducts various activities like the organization of Hindi Divas/Hindi Fortnight/International Hindi Diwas/ International Mother Language Day/ Hindi workshops/ Akshar- a three day long literary festival/ Hindi Book Exhibition/ Seminars and Kavi Sammelans etc. Half yearly Hindi Magazine "ANTAS" is also published on every Republic and Independence Day.

In compliance with the directives of the Department of Official Language, Ministry of Home Affairs, Hindi fortnight/week was observed by conducting various competitions in September 2023 along with Hindi Divas Samaroh held on 29th September 2023 in which winners of the various competitions were honored with cash prize. Rajbhasha Prakoshtha is also, dedicated to the upliftment of Hindi in the Institute and is always ready to co-ordinate with each and every Department/Section of the Institute in implementing the orders and directives received time to time from the Department of Official Language, Ministry for Home Affairs and Ministry of Education, Govt. of India.

In compliances with the Article 3 (3) of the Official Language Act 1963, Prakoshta receives Office orders/ Circulars/ Notices/ Annual Report/ Annual Account Report from the Directorate, Administration, Registrar Office, Account Section etc. and translates them immediately into Hindi or vice versa. The Press release and Invitation cards are prepared and issued bilingually. The Quarterly, half-yearly, and yearly reports regarding the progress and the implementation of the Official language in the Institute are uploaded on the Rajbhasha website and sent to the concerned Ministries & Departments timely, so that the Institute can achieve the target prescribed by the Department of Official Language, Ministry for Home Affairs.

Further, it is also intimated that IIT Kanpur is also chairing the Town Official Language Implementation Committee Karyalaya-3 & the Director, IIT Kanpur is the Chairman of this Committee. It is also worth mentioning here that IIT Kanpur has organized the 6th meeting of the said committee on 23rd Oct. 2023.

SC/ST/OBC/PWD CELL

Implementation of reservation orders:

The effective date of implementation of reservation for **SC**s and **ST**s in the direct recruitment is **5th September 1974** in this Institute and the implementation of reservation for **OBC**s and **PwD**s 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.

(e) 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	**Registrar**	-	-	-	-	-	1	**1**	All Editions of The Hindu, Times of India (Ascent), The New Indian Express, Dainik Jagran (Nai Rahein + iNEXT + Mid-day Mumbai), The Indian Express + Financial Express + Loksatta + Jansatta, HT Shine + HH Shine + Mint Shine (HH job Search + shinejob.com portal-complimentary), Amar Ujala, Employment News/ Rozgar Samachar and University news
2	**Deputy Registrar**	-	1	1	1-OH	-	2	**5**	
3	**Assistant Counselor**	1	-	3	-	1	1	**6**	
4	**Assistant Registrar**	1	1	1	1-VH	1	1	**6**	
5	**Assistant Executive Engineer (Elec)**	-	1*	-	-	-	1*	**2***	
6	**Hall Management Officer**	1	-	1	-	-	2	**4**	
7	**Medical Officer**	-	1	-	1-HH	-	-	**2**	
8	**Safety Officer**	-	-	-	-	-	1	**1**	
9	**Junior Technical Superintendent**								
	A ACMS	-	-	-	-	1*	-	**1***	
	B BSBE	1*	-	-	-	-	-	**1***	
	C Computer Centre	1*	-	-	-	-	1*	**2***	
	D Computer Centre & New Office Automation	-	-	-	1-VH 1*-HH	-	-	**1*+1**	
	E Computer Centre (Cyber Security & Email, Cloud and Related Services)	-	1	-	-	-	1	**2**	
10	**Junior Engineer (Civil)**	1	-	1	-	-	1	**3**	
11	**Jr Technical Superintendent (Translation)**	-	-	-	-	-	1*	**1***	
12	**Junior Safety Officer**	-	-	2	-	1	1	**4**	
13	**Junior Superintendent**	1	1*	1	1-OH	-	7	**11**	
14	**Senior Library Information Assistant**	1	1	1	-	-	-	**3**	
15	**Junior Assistant**	-	-	2	1-VH 1-VH 1-HH	-	-	**4*+1**	
16	**Junior Technician**								
	A CE01	1*	-	1*	-	-	-	**2***	
	B CS01	3*	-	6*	-	1*	-	**10***	
	C GE01	1*	-	-	-	-	-	**1***	
	D ME01	1*	-	1*	-	-	-	**2***	
	E MS01	-	-	-	-	1*	-	**1***	
	F PH01	-	-	-	1*-HH	1*	-	**2***	
17	**Junior Assistant (Library)**	2	-	2	-	-	1	**5**	
18	**Executive Engineer**	1	-	1	-	-	3	**5**	
	TOTAL * Backlog vacancies	17	7	24	10	7	25	**90**	

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

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 01.04.2024

Recruited through Recruitment Section

Group	SC	%age	ST	%age	OBC	%age	EWS	GEN	Total	Mode of Selection		
										Contract	Regular	Deputation
A	**9**	16.98	**2**	3.77	**10**	18.86	**-**	**32**	**53**	-	*53*	-
B	**45**	15.90	**14**	4.94	**68**	24.02	**2**	**154**	**283**	-	*283*	-
C	**90**	21.07	**4**	0.93	**122**	28.57	**17**	**194**	**427**	-	*427*	-
TOTAL	**144**	18.87	**20**	2.62	**200**	26.21	**19**	**380**	**763**	-	*763*	-

CELL FOR DIFFERENTLY ABLED PERSON

Highlights of CDAP activities in 2023-2024

Orientation 2023

Talk by Dr. Namrata Singh (Member, CDAP)

The orientation talk begins with a session for student guides, focusing on sensitizing them to the challenges faced by students with disabilities. This session aimed to equip the guides with the knowledge and strategies necessary to support these students effectively. A second session was organized for all new students, providing an overview of the CDAP (Cell for Differently Abled Persons), detailing its mission, services, and resources available to assist students in need of accommodations. The final session was dedicated to the parents of SwDs, introducing them to the CDAP office and support systems available on campus.

UDAAN 2023: Sports Event

The UDAAN event, held in October 2023, is a celebrated sports gathering for students with disabilities, showcasing their talent, determination, and sportsmanship. The event includes various sports such as chess, cricket, badminton, carom and athletics. These competitions provided a platform for participants to display their athletic skills, fostering a sense of community and inclusivity.

Chess competition: IIT Kanpur vs. IIT Delhi

The event was graced by a motivational talk from a renowned Paralympian **Mr. Jagseer Singh**, who served as the chief guest. He shared his inspiring journey, detailing the challenges he faced and overcame, and encouraged the participants to pursue their dreams with resilience and passion.

For the past three years, UDAAN has been proudly sponsored by the CDAP.

Sensitization Workshop

This session was conducted for teaching and non-teaching staff, led by **Neha Trivedi** (founder, SPANDAN Consultancy). The session aimed to raise

awareness about the challenges faced by differently abled people and to equip the staff with the knowledge and skills needed to support and include these people effectively.

By raising awareness and providing practical guidance, the session empowered teaching and non-teaching staff to better support and advocate for differently abled people, thereby contributing to a more empathetic and inclusive society.

Annual Day

On January 13th 2024, the Annual Day of the CDAP was celebrated to observe the International Day of Persons with Disabilities. The event commenced with a speech by the Director IIT Kanpur, followed by a variety of cultural events including dance, music, and poetry performances. Talks on assistive technologies, such as

Indian Sign Language for people who are hard of hearing, were also featured. The program concluded with a motivational talk by the chief guest, Manpreet Kalra, Director of the Divyang Development Society, who shared inspiring insights and experiences.

Alumnus Talk

Yash Srivastava, a differently abled alumni who graduated in 2023, delivered an inspiring talk aimed at motivating students with disabilities. He shared his personal journey over the last five years on campus, highlighting the challenges he faced and the strategies he employed to overcome them. He emphasized the importance of resilience and determination in navigating academic and social hurdles.

STUDENTS' PLACEMENT OFFICE

The Indian Institute of Technology (IIT) Kanpur is renowned for its academic excellence and is the premier choice for top-tier industries and research organizations seeking to fulfil their hiring needs. The Students' Placement Office (SPO) acts as a bridge for placement activities, aiding both recruiters and students in making optimal hiring decisions. The services provided by SPO encompass recruiter registration, pre-placement training, facilitating screening tests, scheduling and conducting job interviews, hospitality, among others, for both internship and recruitment processes. Our recruitment partners include consulting firms, Fast-Moving Consumer Goods (FMCGs) companies, core industries, software giants, e-commerce businesses, and engineering firms. SPO is committed to fostering and maintaining long-term relationships with the corporate sector and consistently works towards creating distinguished and rewarding career opportunities for IIT Kanpur students.

The activities of the Students' Placement Office are coordinated by the "Student Placement Committee (SPC)," an advisory body comprising faculty representatives from all departments and interdisciplinary programs. The SPC is led by the Chairperson, SPO, with support from the Vice-Chair, SPO, and the Career Development Officer. The execution of all SPO activities is managed by the SPO staff and a student team, which includes Overall Placement Coordinators (OPCs), Assistant Coordinators (ACs), Department Placement Coordinators (DPCs), and student volunteers who oversee all placement activities organized by the SPO. Similarly, a team of PhD placement coordinators, consisting of PhD student representatives from all departments, actively assists our PhD scholars in their job search.

Placement Office Activities:

The activities of the Students' Placement Office (SPO) in 2023-24 can be broadly categorized into two main sectors: (1) facilitating the hiring of current students for placement and internships, (2) organizing professional training to prepare students for interviews.

In the first quarter of 2023-24, the SPO team focused on attracting potential employers to participate in the placement and internship processes. Potential recruiters were identified based on inputs from the SPO team, departmental recommendations, and student feedback from previous placement seasons. The shortlisting of potential employers was carried out based on predefined screening criteria in line with SPO guidelines, and these recruiters were invited to campus for student–employer interactions through Pre-placement Talks (PPTs). The efforts of the SPO team were instrumental in bringing in a total of 92 new recruiters for both internships and full-time hiring during the 2023-24 placement season.

Internship Drive

The SPO actively encourages pre-final year students to participate in summer internship programs. IIT Kanpur has a well-structured internship program known for resulting in a significant number of pre-placement offers (PPOs). During the 2023-24 internship season, a total of 471 internships were offered, with 440 of those accepted by students. Some of the prominent recruiters who participated in the 2023-24 internship program included Adobe Systems, Amazon, American Express, Accenture, Axxela Research & Analytics Private Limited, Bain, BCG, BNY Mellon, Dr. Reddy's Laboratories, Microsoft India Pvt Ltd, NPCI, Oracle India Pvt Ltd, Goldman Sachs, Quadeye Securities, Jaguar Land Rover India Limited, Vedanta Resources Limited, and more.

Placement Preparations

The SPO has revamped its placement preparation programs to offer a comprehensive 360-degree career solution for students. These training sessions provide students with guidance and support in their job searches through career counselling sessions, resume preparation workshops, soft skills development programs, learning materials for placement preparation, professional training services, assistance with offer finalization, and documentation. The orientation and training programs aim to help students develop their professional identities and make informed career choices. Students are encouraged to pursue careers in their fields of interest, including Core Engineering, IT, Finance, Banking, Research and Development, Analytics, Consulting, and Academia.

During the 2023-24 academic year, the SPO organized numerous professional training sessions for students involved in the placement and internship processes. The team also arranged mock interview sessions and conducted guidance and soft skill enhancement programs to improve students' personality traits and

interpersonal skills essential for job interviews. For students aspiring to pursue higher studies, professional-led sessions provided insights into opportunities available in India and globally. These sessions also covered information about exams such as GRE, TOEFL, and IELTS.

Campus Recruitment Drive

"*One Student, One Job*" policy (single offer acceptance policy) was continued to ensure equal opportunity to all students registered with SPO this year. Recruitment drive for the academic year 2023-24 was held in two phases. The ***Phase-1*** of recruitments officially started on 1st December 2023 and continued till 15th December 2023. However, the preparations and shortlisting activities for campus placements started from July onwards. 497 recruiters participated to hire students for full time employments. On Day 1 of the placement drive, a total of 56 top tier firms with 101 different profiles from various sectors conducted interviews. An unprecedented 485 job offers were extended, and 428 of those were accepted by IIT Kanpur students on this day. This includes a combination of campus placements and Pre-Placement Offers (PPOs). This year, more than 66 companies extended 220 Pre-Placement Offers (PPOs), marking an approximately 6% increase compared to the last year. The recruitment drive was conducted in hybrid mode for internships and campus recruitments. The ***Phase-2*** recruitment started from January 2024 and continued till mid-July 2024. Some of the prominent recruiters who participated in the Campus Recruitment Drive 2023-24 include Goldman Sachs, Databricks, Graviton Research Capital, Deutsche India, Google, Futures First, Microsoft India, Oracle India Pvt. Ltd., Tata Projects Limited, BPCL, Navi, Qualcomm, Jaguar Land Rover India Limited, Reliance Industries, and Texas Instruments.

In spite of prevailing market uncertainties, we succeeded in registering a total of 497 companies for the campus placements. A total of 1111 students out of the 1430 registered students were placed through SPO during the academic year 2023-24. This includes students in both undergraduate and postgraduate levels. So far IITK students have received 22 international offers. The overall placement for both UG and PG stood at 77.6%, which commends the dedicated efforts of the entire SPO team including the students, staff and faculty coordinators.

In B. Tech, Double Major, Dual Degree and B. S. programs, 738 out of 899 registered students (approx. 82%) were placed during the placement drive. In M.Tech, MS(R), MBA & M.Des programs, 373 out of 531 registered students (approx. 70%) were placed during the recruitment drive 2023-24. A summary of program wise placement record for the current season is shown in Figure 1 and a summary of branch/IDP wise placement record for the current season is shown in Figure 2. The data presented above is based on the number of graduating students who have registered with the placement office. These statistics are based on the number of graduating students who registered with the placement office.

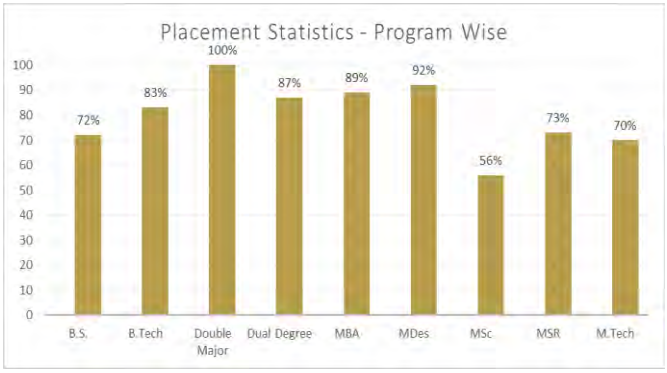


Fig. 1: *Placement statistics of various degree programs at IIT Kanpur during placement season 2023-24*

Fig. 2: *Placement statistics of various branches/IDPs at IIT Kanpur during placement season 2023-24*

The below Figure 3 presents a summary of sector-wise placement records for the 2023-24 recruitment drive. Students from IIT Kanpur maintained a strong focus on their core educational disciplines. The Core Engineering sectors saw the highest percentage of placements, comprising 33% of the total, while Coding and Software firms accounted for 28% of the placements.

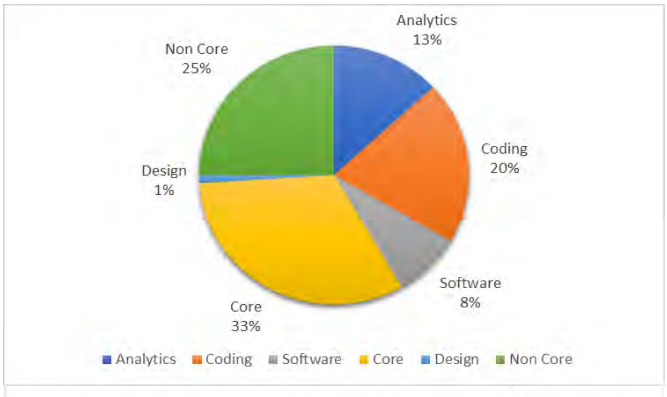


Fig. 3: *Sector wise placement statistics of IIT Kanpur during the placement season 2023-24*

Some of the top recruiting firms that visited IIT Kanpur

Initiatives:

PhD Placement Drive: The SPO successfully organized IIT Kanpur's inaugural PhD placement drive, *Shodhspandan 2024*, marking a significant milestone in

supporting doctoral candidates. A pioneering in-house PhD Placement Portal was launched, facilitating active engagement between recruiters and students. To date, over 25 companies have registered on the platform, resulting in 22 PhD students securing placements.

Support for Differently Abled Students: Efforts to support differently abled students have resulted in a commendable 65% placement rate this year. An exclusive facility center has been established, featuring specially equipped workstations and wheelchair accessibility, to enhance their academic and career pursuits.

Overseas Study Sessions: The SPO organized informative sessions on overseas studies, offering master classes and expert-led training sessions. Additionally, quiz links and discount coupon codes were shared to benefit students, ensuring comprehensive support for their international academic aspirations.

Toastmasters Program: The Toastmasters Program at IIT Kanpur has expanded with the addition of two new clubs, bolstering student engagement and participation to a total of 136 active members. Recognized for its significant impact on communication and leadership skills development, IIT Kanpur has received the prestigious ***"Communication & Leadership Award"*** from Toastmasters International for two consecutive years. This achievement underscores the institute's commitment to fostering effective communication practices among its students, supported by the generous contribution of Mr. Suresh Bazaj, an IITK alumnus.

These initiatives underscore the SPO's commitment to fostering inclusive growth and academic excellence at IIT Kanpur.

Acknowledgements

SPO extends its heartfelt appreciation to the institute administration for their invaluable financial and infrastructural support in successfully conducting various placement activities. We would also like to express our gratitude to the different offices of the institute, including DOAA, DOSA, DORA, IITK Foundation, Cell for Differently Able Persons (CDAP), Computer Centre, and allied facilities, as well as various sections of the Institute Works Department, for their assistance and support in organizing these events. Additionally, SPO acknowledges the Career Development Centre and Student Gymkhana for their technical expertise and unwavering support in coordinating and managing SPO events. We are grateful for the dedication and contributions of OPCs, SPCs, ACs, DPCs, volunteers, and SPO office staff whose efforts have been instrumental in our endeavors.

SERVICES AND AMENITIES

The details of services and amenities like Campus School, Estate Office, Health Centre, Institute Works Department, Physical Education Section, Safety Report, Store & Purchase and Visitors Hostel and Allied Facilities are available at link below.

https://web.iitk.ac.in/july14dordn/data/Annual-Report-2023-24/Services-and-Amenities.pdf