





# INDIAN INSTITUTE OF TECHNOLOGY (BHU) VARANASI

## Annual Report 2020-21











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- Indian Institute of Technology (BHU) Varanasi

#### **Director's Report** INDIAN INSTITUTE OF TECHNOLOGY (BHU) VARANASI



**Prof. Pramod K Jain** Director, IIT(BHU) Varanasi

## "The New IIT (BHU) emerges from the old, building on its earlier strengths, and transforming itself to meet the challenges of the future."

The Indian Institute of Technology (BHU) Varanasi owes its existence to Mahamana Pandit Madan Mohan Malviya, Bharat Ratna -the founder of the first residential university of modern India, Banaras Hindu University, who could foresee the vital role of technical education in strengthening independent India. Engineering education in BHU started in 1919 with the establishment of Banaras Engineering College (BENCO). The next stage of development saw the establishment of College of Technology (TECHNO) and College of Mining & Metallurgy (MINMET). In 1968, the erstwhile engineering colleges of BHU, namely BENCO, MINMET, and TECHNO, were merged to form the Institute of Technology (IT-BHU). The erstwhile IT-BHU was ranked consistently amongst the top engineering institutions of the country. IT-BHU became IIT (BHU) Varanasi on June 29, 2012, by an Act of Parliament. Following conversion to IIT, the Institute engaged itself in taking up the mammoth task of putting many of the procedures and practices similar to those of IITs.

#### **Academic Activities:**

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The Institute has maintained a high academic standard since its inception. It has produced luminary engineers and administrators who have served the nation with distinction. The current student strength is 7365 with 3,672 B.Techs, 1,431 IDD, 33 B.Arch., 808 M.Tech, 83 M.Sc., 97 M.Pharma and 1241 Ph.D. students after Ph.D. admission of even semester 2020-21. The student strength of previous three years and steady increase is shown in the figure below:





A Memorandum of Understanding (MoU) was signed between IIT Guwahati and IIT (BHU) Varanasi on 27 November 2020. Under this MoU, IIT (BHU) Varanasi and IIT Guwahati for a Joint Doctoral Programme from Jul 2021. The admission of the first batch of students during the joint degree has already started. This is the first time in the country that two IITs have come together to offer a joint degree programme. The vision behind this is to build a "Network of Excellence" of all IITs rather than each one striving to become a "Tower of Excellence". The IIT council accepted the proposal to start Joint Degree Programs. Through this academic collaboration, both the institutes are expecting significant boost in high quality research and foundation for further academic collaborations. Considering the National education policy (NEP- 2020), such educational reforms and academic collaborations between the premier educational institutes will promote multidisciplinary academic programs and research for the knowledge based economy of the country. Both the institutes are also considering to start a Joint MTech program on the similar line to provide multi-institutional and multidisciplinary MTech programs.

Amidst the corona crisis, in 2020-21, IIT (BHU) Varanasi has shifted completely to online teaching. All the classes and examinations were successfully conducted through online mode. Institute has done a mega paradigm shift. Several online teaching softwares like Microsoft Team, Google meet were included to facilitate the online teaching. The Institute has demonstrated its in-house capabilities in the digital world by organizing its mega events through the online mode. The institute organized prime events viz. Orientation Program'20 and 9<sup>th</sup> Convocation by using mixed reality based real-time video processing techniques. The Institute has also completely migrated on National Knowledge Network (NKN)'s 10 Gbps link harnessing high-speed high-performance Internet Access which has supported various online activities of the Institute.

The current strength of regular faculty members of the Institute is 309. In addition to this, 07 visiting professors also contribute to the academic activities of the Institute. At present, the Institute has 15 Departments and three interdisciplinary Schools that include the newly established Department of Architecture, Planning, and Design. Central facilities in the Institute include the Supercomputing Centre, Computing and Information Services (CCIS), Central Instrumentation Facility (CIF), Main Workshop, Institute Main Library, and Industrial Consultancy & Testing Services. Teaching and Learning Cell continues to cover all aspects of pedagogy, course delivery, laboratory projects, assessment, and facilitating online courses. Institute has also started two-years M.Sc. programs in Physics and Chemistry from the academic session 2020-2021. Department of Computer Science & Engineering, IIT(BHU) started the M. Tech. course with specialization in Artificial Intelligence(AI) and Internet of Things(IoT) from the academic session 2021 with the aim of advancing the field of AI and IoT for the good of humanity. Further, decision about start of M. Tech. course on Artificial Intelligence and Internet from academics session 2020-21 was taken.

#### Convocation

The 9<sup>th</sup> Convocation was held on February 08, 2021. Shri Jay Chaudhry CEO & founder of Zscalar, U.S. based cyber security Company delivered the convocation address. A total of 1739 various degrees were awarded in the 9th Convocation of the Institute. During the 9th Convocation, only Medal/Cash prizes winners and Ph.D. graduates were permitted to attend the convocation in physical mode. More than 250 candidates received Medal/Cash prizes and degrees in person. This is the first time when the Institute has organized it's convocation by using Mixed Reality with AR-VR augmentation. The Chief Guest and the Chairman, BoG both delivered their speeches from the podium of the auditorium itself, through their digital virtual presence. Interestingly, this mixed reality technology demonstration has been the in-house capability of the Institute. This whole event was broadcasted live on YouTube and attended by thousands of people across the globe, mostly being our own students, alumni and their families.

#### **Research & Development activities**

Our Institute has a mission to fulfil the needs of the nation through Research and Innovation. Faculty members and students are engaged in cutting edge research under various schemes. To inculcate research culture in the students, the institute has set up Tinkering Labs in various departments. Students are involved in research projects





from almost the early stage of their education. The institute gives partial support to the research initiatives of faculty members through grants like Seed Money, Research Support Grant. The institute also provides Lab Grants for up-gradation of teaching labs and supports Central Instrument Facility acquisitions.

#### (i) Sponsored Projects, International Visits, and MOU

The Institute has proven expertise in the areas of the steels, advanced materials, microwave technology, electrical and electronic devices, artificial intelligence, composite materials, novel reactor design, new drugs and sensors/ biosensors apart from others. The Institute has identified thrust areas of Research in Green and Clean Energy, Hydrogen Energy, Environment and Water, Healthcare, Bioengineering, Biomedical Devices, Artificial Intelligence, Precision Engineering, Material Science and Defense needs etc.

Significant numbers of projects have been initiated to address the national needs and social issues like the development of functional materials for energy, development of compact hydrogen generation devices, and biofuel cells to energy. Key issues taken up for studies include real-time simulation of smart grids with distributed energy resources and integration/control of renewable energy systems. There are faculty members extensively involved in the design and development of new drugs, biomimetic materials for organs, and biosensors. Institute is collaborating with various Institutions of high repute in India and abroad and also industries involved in high tech research like Tata Motors, Nissan Motors, Amazon AWS Educate, Power Grid Corporation of India Ltd., Indian Refractory Makers Association (IRMA), Indian Pharmacopoeia Commission (IPC), NCL, CISCO, UPEIDA, ISRO, GAIL (India) Limited, etc. Aiming to provide design expertise to the manufacturing MSME sector under Credit Linked Capital Subsidy and Technology Up-gradation Scheme (CLCS-TUS), an MoU was signed between IIT (BHU), Varanasi and the Ministry of Micro, Small and Medium Enterprises (MSME). The MoU aims to bring the Indian manufacturing and design fraternity on a common platform to provide expert advice and cost-effective solutions on real time design problems, resulting in product development and continuous improvement of existing products. An MoU was signed on 4th February, 2021 between the Ministry of Road Transport and Highways and IIT (BHU), Varanasi. Aiming to research, develop, and deploy innovative technologies in road and highway infrastructure, it is focused on Speed, Scale, Safety and Sustainability. Under this MoU, an endowment fund for 10 years will be created to support Research and Development activities and IIT (BHU), Varanasi will support MoRTH officers to join PhD and M. Tech. programmes offered and also create a Professorial Chair to promote the joint efforts.

Even during the covid pandemic our faculty members were very active in research activities. The total amount of the fund generated by the institute through sponsored Projects and Schemes was 31.473 crores during 2020-21. The faculty members in 2020-21 have published around 1516 publications even during the pandemic and the total citation was 28470. Figure below shows the progressive development in the number of publications and citations over the years.







#### (ii) Central Instrumentation Facility (CIF)

Central Instrument Facility (CIF) is one of the Specialized Research Facilities at IIT (BHU) Varanasi. Our mission is to provide futuristic research infrastructure and quality education services in support of advanced instrumentation. The CIF offers facilities of sophisticated instruments and technical expertise to support faculty and students' research and industrial R&D. The centre has state-of-the-art facilities like CNC Mill and CNC lathe, Prototyping Machine for electronic circuits, Magnetic Property Measurement System, Tribometer, NMR (500 MHz), thin-film & powder XRD, BET, ICP-MS, high-resolution SEM and TEM. Few other sophisticated instruments like XPS and Tabletop SEM are recently added to the list amongst others.

#### (iii) Centre for Computing and Information Services (CCIS)

Centre for Computing and Information Services (CCIS) offers high-end computational servers, web servers, network services, and provides a robust platform for various academic and research activities of the Institute. The Centre also manages licensed software, email services, and in-house software development for the institute needs. CCIS is a growing unit and projects are in early-stage for developing it into a facility poised horizontally to meet the crescent demand of scientific and research infrastructure of the Institute.

#### (iv) Precision Engineering Hub

A Precision Engineering Hub (PEH) was inaugurated on 24th March, 2021, by Prof. Pramod Kumar Jain, Director, IIT (BHU). The purpose of the hub is to serve as an ecosystem for product ideation and creation. The hub is built with the help of funds from Defence Corridor, Design Innovation Centre, and Technology Innovation Hub. It is divided into 4 phases operating on a 24-hour basis. The main focus of PEH is aligned with the national objective to support the Make in India and Atma Nirbhar Bharat initiatives. The latest technology that the hub is equipped with includes laser cutting machines, CNC machines, high strength color polymer HP Fusion Jet 3D printer, Markforge X7 composite 3D printer, and Ultimaker S5 Pro 3D printer.

#### (v) Design and Innovation Centre (DIC)

DIC, BHU has been established to work on the possibilities of innovation in Technology and Humanities, Liberal Arts, Social Science, Art, Culture, Music, languages and other relevant areas. DIC, IIT (BHU) Varanasi and DIC, BHU work as HUB, and the center has three spokes; (i) Indian Institute of Information Technology, Allahabad, (ii) Motilal Nehru National Institute of Technology, Allahabad, (iii) University of Allahabad. Center has established three labs namely; Graphic and Digital Media Lab, Digital Innovation Gallery & Design Cafe (Prototype lab and Workshop Place). Graphic and Digital Media Lab provides the facility of graphic design, web design, mobile app design, imaging, animation, documentaries, design counselling, etc. The Digital Innovation Gallery works as an exhibition platform for IIT (BHU) Varanasi, BHU and other spokes of DIC-BHU. A modern prototyping lab has also been established for students. At present, DIC is running "Understanding Design Course" with IIT Bombay under ODS Model, and the total intake of IIT (BHU) Varanasi is 35.

#### (vi) Intellectual Property Rights, Testing, and Consultancy

Extension of our expertise and laboratory facilities to the industries of this region is a crucial service activity of the Institute. All the major departments of the Institute actively engage in providing industrial consultancy and testing services to a large number of industries and entrepreneurs of the region and also to large industrial houses. During this year, several consultancy and testing projects valued at over approximately Rs.12.88 crores were completed successfully. Further, valuing research and innovation, IIT (BHU) Varanasi has kept exploring ideas and continued experimenting with them. Understanding its responsibility as one of the premier institutes of our country, the Institute has undertaken various initiatives in the Research and Development sector including patents and IPR. During 2020-2021, a total of 37 patents have been filed and a total 45 patents published. Researchers of the Institute are continuously working towards them. Portraying an overall extensive research culture, the patents have been filed by the researchers from the Schools of Biochemical, Biomedical, Material Science Engineering and the Departments of Ceramic, Chemical, Civil, Electronics, Mechanical, Metallurgical, and Pharmaceutical Engineering.





#### (i) Number of Patents filed during FY 2020-21 is 37 and published 45.

#### (vii) Research Centers

#### • Supercomputing Centre

A Supercomputing Center has been set up in the Institute under the National Supercomputing Mission. The supercomputer PARAM Shivay has a peak processing speed of 833 Tera FLOPS. Sixty percent of the processing power is for local use by the IIT (BHU) Varanasi and BHU research community, and the rest for other CFTIs and research labs across the nation. The system has been commissioned under the "Make in India" program, and the hardware has been manufactured at a plant in Chennai by the French company Atos. The system is a sophisticated mix of CPUs and GPUs with relevant systems and application software based on open source. IIT (BHU) Varanasi Supercomputing Centre was inaugurated by honourable Prime Minister Shri Narendra Modi.

#### • Malaviya Centre for Excellence for Defence Corridor

The Government of Uttar Pradesh has also made IIT (BHU) Varanasi a primary knowledge partner in its prestigious defence corridor project, and Institute has thus inked an MOU with Uttar Pradesh Expressway Industrial Development Authority (UPEIDA). Uttar Pradesh Government has allocated Rs. 69 crores for the creation of R&D facilities in niche areas as centre for Defence Materials and Precision Engineering. The proposal also envisages IIT (BHU) Varanasi as a hub for skill development for defence industrial needs.

#### • Sustainable Coal Mining in Northern Coalfields Limited

IIT (BHU) Varanasi and NCL joined hands to ensure a robust Industry-Institute partnership given mutual benefit and in the interest of mineral conservation, mine productivity and advancement in clean technologies in the energy sector. Through this collaboration, NCL also ensures social upliftment of the region surrounding Varanasi, Singraulli, and Sonbhadra by planning and execution of dedicated CSR / welfare projects strictly in terms of the company's CSR policy by involving Incubation Cell of IIT (BHU) Varanasi.

#### • Collaborative research centre of the Indian Pharmacopoeia Commission

IIT (BHU) Varanasi is now recognized as a collaborative research center of the Indian Pharmacopoeia Commission (IPC) of the Union Ministry of Health and Family Welfare, which will help to promote quality research in the area of pharmaceutical and medical devices. This will aim to develop new methods and procedures for the analysis of pharmaceutical substances and dosage forms. IIT(BHU) Varanasi also has a focus to reduce the healthcare cost by developing low-cost methods of Active Pharmaceutical Ingredients(APIs) to make India self-reliant (Atmnirbhar Bharat) in the sector of bulk drugs. As the regulatory landscape in the health sector has been dynamically evolving in the country to protect safety, rights and wellbeing of the patients, the current scientific innovations in drug development and medical devices would play an important role in the healthcare profession. Therefore, IIT(BHU) Varanasi is striving hard to strengthen the standard setting processes in the sector of pharmacovigilance and medical devices.

#### • Centre of Excellence in Refractories

The primary aims and objectives of the center is to build-up a self-sustaining center for hands-on ceramic research & training at the institute for contributing to our country's knowledge economy. The centre also aims at extending the testing facilities of refractories/high-temperature ceramics and composites for industries as well as national labs/ institutes and government organizations nationwide. The centre is involved in industrial-training programs in key emerging areas that lead to technology-driven innovations for future generation technologies. This center and its facilities are dedicated for implementing various national missions, including, "Make in India", "Creative India Innovate India", "Start-up India", "Kaushal Bharat Kushal Bharat" and "Atmanirbhar Bharat (self-reliant India)".





#### • Center of Energy and Resource Development (CERD)

The Centre for Energy and Resources Development was established under the Frontier Areas of Science & Technology (FAST) scheme of MHRD. The broad aim of this centre is to undertake world-class research that integrates the scientific, technological, economic, policy and socio-technical aspects of energy to deliver key tools needed to enable, enhance and accelerate the transition toward sustainable energy systems. The centre is developing cutting edge technologies in the energy sector for rural, urban, SMEs and other industries of the region. The center's research activities also includes solar based energy systems, future energy technologies-Fuel cells, Hydrogen, Energy from Agro and Urban.

#### • Technology Innovation Hub (TIH)

The Department of Science and Technology, Government of India has identified Data Analytics and Predictive Technologies (DAPT) as one of the domain areas of Technology Innovation Hub (TIH) under India's National Mission on Interdisciplinary Cyber Physical System. DST has identified IIT (BHU) Varanasi as one of the institutes for establishing TIH under the scheme. In order to meet the objectives of the DAPT, IIT (BHU) Varanasi has identified five thrust areas; 1) Telecommunications, 2) Power, 3) Defence Research and Development, 4) Road Transport and Highways and 5) Healthcare. The activities envisioned under the DAPT will provide impetus to Smart Cities Mission, State of the Art Defence infrastructure development and health and family welfare of the country. It helps in manufacturing via the invention of new products, services and the creation of skilled young human resources at all levels (technicians, researchers, scientists, and entrepreneurs) and will become a key contributor to realizing the vision of "Digital India."

I-DAPT-Hub Foundation, IIT (BHU) Varanasi is set up in technology vertical- Data Analytics & Predictive Technologies. The DAPT aims to address issues related to power management in the Smart Cities Mission, Transportation, Healthcare, Intelligent Communication System, and Defence infrastructure of the Government of India. It aims to Develop Industry 4.0 compliant software and hardware protocol, develop nationally scalable critical technology solutions for the society and industry viz. City Verticals: Smart Energy & Power, Intelligent Transportation & surveillance, Ubiquitous Healthcare Systems and Intelligent Networks and Communication Systems and DAPT applications on Defence Systems. Development of DAPT based environment and user-friendly smart grid infrastructure for optimal power/energy flow and enable India to be a leading resource country in affordable Brain/Mind Health delivery utilizing cyber-physical technology and digital processing are some of the important objectives of I-DAPT Hub Foundation. In addition, it aims at solving societal problems of water, gas and waste management and beyond, for societal and commercial use, nurture start-ups and increase in the job market, produce skilled manpower for advanced technology development and deployment of DAPT enabled Intelligent CPS and Smart IoTs. The DAPT is proposed to be implemented over five years. During this period, DAPT will become self-sustainable and all the finances, administration, and R&D will be solely generated/managed by IIT (BHU) Varanasi within the framework of the Government of India guidelines.

#### Main Library and E-resource

The IIT(BHU) Varanasi library system consists of the Main Library and five departmental libraries, which collectively support teaching, research, and extension programs of the institute. The library system, besides having an excellent print collection of over 1,42,000 volumes of books, journals, theses, reports, pamphlets, it also provides access to over 15,000 electronic journals and more than 3,000 electronic books, e-standards, and databases in science, engineering, and technology. Library provides reading room facilities, access to Digital Library, web OPAC, remote access of e-resources, discussion room facility, and reference services related to research and teaching. The library has also created the Indian research Information Network System (IRINS) database of Institute researcher's profile, and Institutional Repository. Library also supports research activities by providing the Research Support Tools (Anti-Plagiarism software, Grammarly, InSite, JCR, reference management tools, etc.). Recently the library organized an author workshop by Wiley, Taylor & Francis, and Workshop cum User Awareness Program on InSite and Turnitin.





#### **Unnat Bharat Abhiyan**

Unnat Bharat Abhiyan (UBA) is an MHRD (now MoE) initiative with a total sanctioned cost of Rs 3.50 crore and aimed at solving technological problems of the common man. This project is a joint venture of all IITs and many other Institutes of National Importance. UBA is conceptualized as a movement to connect institutes of higher education with local communities to address the development challenges of rural India through appropriate technological inventions. IIT (BHU) Varanasi is also identified as one of the Regional Coordinating Institutions (RCIs) on the basis of their earlier experience and infrastructural competence etc. It acts as a nodal center for promoting & facilitating UBA networks in its region. Several villages in and around Varanasi and Mirzapur were adopted and IIT(BHU) Varanasi students are actively involved in counselling and providing the necessary technical inputs (such as preservation and promotion of rural crafts, advice for sanitation and hygiene, rainwater harvesting, solar lights for the community, forestation, drinking water quality, etc.) to the villagers.

#### Alumni Connect, Endowment, Scholarship and Resource generation

The Institute is grateful to its Alumni Community which has always come forward in times of need and volunteered for providing support and guidance. With the mission to strengthen the bond between the alumni and the students, frequent engaging sessions and formal/informal meets were organized in the form of ABBA's chaupaal sessions, SAIC's guidance sessions and the alumni lectures series. The yearly Student-Alumni Mentorship Program, aimed at providing personalized guidance to students from the Alumni, was launched in March this year. The program provided one-on-one mentorship to over 400 students by our accomplished alumni mentors in various career domains. To update our alumni community about the various developments in the Institute, SAIC released three editions of its monthly alumni newsletter - Alma Communiqé till March 2021. Covering information related to each section of the Institute, each had an overall readership of 1100+ alumni from across the globe. In the online setting, the Institute has successfully facilitated the delivery of 500+ documents including transcript, copy of migration certificates, etc, to alumni across the world. SAIC's website acted as the single-point platform for all alumni services and updates throughout the year. It hosted 4,012 users and touched a total high of 3900+ new user visits. IIT (BHU) Varanasi signed an MoU with Media.net Software Services (India) Pvt. Ltd. on 30th March, 2021 to establish 'Media.net Emerging Scholars Program', an endowment merit-cum-means scholarship for B.Tech. students at IIT (BHU) in pursuance of the Grantor's Corporate Social Responsibility initiatives. The Scholarship may be utilized by the selected students to cover part of their tuition fee and purchase of books, stationery, laptop and other educational material. The interest earned on the one-time grant received shall be utilized to fund the Scholarship. IIT (BHU), Varanasi, and IIT (BHU) Foundation, USA signed a Memorandum of Understanding (MoU) On 1st January 2021 to raise funds for the Institute. The Foundation's Board of Directors will pursue prudent investment of assets, oversee the distribution of funds to IIT (BHU), and monitor their use for various projects and initiatives. The Foundation and the Institute shall work together to expand resources and ensure progress within all the domains by making sure that the donated assets are used to the best of their abilities. The Reliance Foundation has offered 40 scholarships to the students of IIT (BHU) Varanasi in the areas of AI and Computer Science from academic session 2020-21 onwards. Launched by Reliance Industries Limited Chairman Mr. Mukesh Ambani and Reliance Foundation Chairperson Mrs. Nita Ambani, students will have to enrol in their first year to avail the scheme. The selected UG students will receive up to a total of Rs. 4 lakhs (Rs. 1 lakh per year), and the PG students will receive up to Rs. 6 lakhs (Rs. 3 lakhs per year). Total endowment fund received by our alumni during 2020-21 was Rs 1,91,87,632/-

The Student Alumni Mentorship Program (SAC) is a one of its kind program where students are mentored by experienced alumni on a one-on-one basis. SAIC is dedicated to providing avenues for three-fold interaction among students, alumni, and the Institute to develop a vibrant community, creating opportunities to thrive for the benefit of the commonwealth. Following the appointment of the new Dean of Resource and Alumni Affairs, Prof. Rajeev Srivastava, the new SAIC team for session 2020-2021 was formed in December 2020. The Alumni Visiting Faculty





(AVF) Program was continued in the online semesters with renowned alumni from different industries teaching full-credit courses as visiting faculty. The initiative saw 15 alumni faculty teach five different courses in the odd & even semester of 2020-21. The program was a success with 570+ students opting for these alumni-taught courses. In the even semester, a new course on 'Applied Deep Learning' was also added to the program. SAIC strengthened its online presence among alumni and students by launching various online initiatives, including a series of posts covering the history of our Institute, a '100-year journey' video on the occasion of Institute Foundation day and a series of 3-posts around International Women's Day. The recently launched Instagram account of SAIC gained 700+ followers, and the Youtube, and Twitter handles of SAIC were initiated as well. Moving forward, SAIC aims to build more alumni connections and closely knit the Institute's vast alumni network together. SAIC shall continue to grow at the same rate and endeavour towards the realization of its goal to bring together the student and alumni fraternity of IIT (BHU) Varanasi.

#### Institute Works Department (IWD) & Infrastructure Development

Infrastructure development is the need of the hour. In addition to repair and maintenance of the hostels, guest house, faculty apartments/quarters and academic buildings, road side development and maintenance of the pavements/bituminous roads are duly undertaken by IWD. At present, three major construction projects are ongoing in the Institute.

- 1. Construction of Dhanrajgiri Hostel-II (S+7) with Dinning block (G+1) behind Dhanrajgiri Hostel at IIT(BHU) Varanasi
- 2. Construction of Student Activity Centre with Indoor Sport Facilities (G+2) in Rajputana Ground at IIT (BHU) Varanasi.
- 3. Construction of Apartments (S+8) for Faculty and Officers behind Vivekanand Hostel at IIT (BHU) Varanasi

#### **Training and Placement**

The Training and Placement Cell of IIT (BHU) facilitates the process of placement of students passing out of the Institute. During 2020-21, 255 companies (198 in 2019-20) visited the campus for holding campus interviews and made a total of 883 offers. The average pay package has increased by ~ 7.43%. The industries visiting us were of varied nature: Core Engineering, IT & IT-enabled Services, Manufacturing, Consultancy, Finance, Management, R & D, etc. The Institute boasts of some of the best placement packages among the IITs. The Cell also collaborates with leading organizations and institutes in setting up of internship and training program for our students. The Cell has managed to arrange 554 paid internships through campus selection during 2020-21, and this saw an increase of 21.76% compared to 455 selections in 2019-20. Improvement in placement during the last three years is shown in the figure below:







#### Students' Activities and achievements

The Institute nurtures technical, social, cultural, and sporting activities pursued by the Students' Gymkhana through different councils, Students' Parliament, and other student groups. Besides games and sports, the artistic and creative talents of students are encouraged through various activities like dramatics, debates, music, visual arts, etc. and clubs like Radio, Audio, Photography, Automobile, Aero-Modeling, Cine and Computer Club. Students Gymkhana successfully organized its annual techno-management festival Technex, cultural festival Kashiyatra & games event Spardha. Apart from these, students of IIT (BHU) participated in various IIT meets and brought laurels to the Institute.

#### (i) Cultural Activities

It's a big feat that even in this online era, a total of 17 Events and 15 Workshops were conducted during the session this year by the students of the institute. These included 3 major council events: Aagman 2021 (fresher's event), Cultural Week'21 and the IIT BHU Model United Nations 2021. Many other events like Kalakriti - Online Fine Arts Competition (Cultural Heritage of Kashi), Vayam - Online Poetry Competition (Rashtriya Ekta Diwas) and Utsav- Online Creativity Competition (Connecting Students on Diwali) were organised on club specific levels, to provide students a platform to bring the best of out of their creativity and let them explore their potential. The Cultural Week of IIT (BHU) Varanasi witnessed an overall 1500+ participation, [including both workshops (nearly 700) and events (nearly 1000)] and took forward the legacy of the Institute with huge participation, coming not only from the IIT BHU students but also the International students of foreign countries like Malaysia, Australia, the Philippines, South Korea, Japan, New Zealand, and other regions of the world.

The IIT BHU MUN emerged as the largest North India MUN conference with 217 Portfolios as we successfully collaborated with the United Nations Organisations - UNIC and UNESCO alongside the Indian National Commission for Cooperation with United Nations (INCCU) for the 2021 edition.

A series of highly interactive dramatics, literary and fine arts workshops were conducted by the popular Indian artists under the banner of Cultural Council. These included the likes of Bollywood Fame Mr. Divvyendu Sharma, National Award Winning Writer Mr. Vikram Chandra, Regional Actor Mr. Karn Mehta, National Award Winning Lyricist Mr Varun Grover and the Renowned Sketch Artists like Mr. Sadashiv Sawant and Ms Mona Biswarupa.

Throughout the session, a special emphasis was given towards establishing the alumni relations and initiating the pan student-alumni activities. The Cultural Council together with AIBA, the Association of IIT BHU Alumni, initiated the Kashi Utsav Cultural Event, which saw immense participation from both the students as well as the prestigious alumni of IIT BHU. The panel of esteemed alumni including the artists like Ms Pooja Shah, Mr Jagjeet Shyamkunwar and Mr. Ankit Sachan conducted various learning sessions for our students, to enhance their cultural skills through the medium of digital techniques.

Our students further brought laurels to the institute as the IIT BHU Quiz Club won the Ex-Quizite National Quiz hosted by IIT Bhilai, 1st position in the SBSC India Quiz, 3rd position in the MNNIT Allahabad's Avishkar National Quiz and 3rd position also in the GMC All India Quiz . The IIT BHU Fine Arts Club won gold medals at the Cultural Festivals of IIT Gandhinagar, IIT Bhilai and Delhi University alongside winning the Runner-up trophy in the Inter Institute Art Contest hosted by IIT Bombay. The IIT BHU Literary Club members Mr Akshay Akash and Mr Vikhayat Dwivedi emerged as the international breaking adjudicators and won honorable mentions in tenplus national and international events including Melbourne Pre-Australs 2020, UADC Asian Championship 2020, Uhuru Worlds 2021 and Asia Pacific WSDC 2021. The Literary Club students also had a remarkable performance at the All India Heartfulness Essay Event 2021, as one of our students Ms Nisitha Vallamdasu won the overall bronze medal while our five other students received the Honorable Mentions Awards from the United Nations Information Centre, of India and Bhutan. The IIT BHU Dance Club members Mr Siddhant Jaiswal and Mr. Vivek Parihar won the National Dance Competitions at CultRang'21 hosted by IIT Goa and Zest'21 hosted by IIIT Hyderabad.





#### (ii) Games and Sports Activities

Games and Sports Council, IIT (BHU) had taken part in a plethora of Sports events and competitions even during this Pandemic era through online mode. More than 18 Sports events including Sports Workshops and Sports Motivational talks were conducted during the year. Starting from the Girls Weekend which was conducted during 20<sup>th</sup> to 21<sup>st</sup> March, 2021 to promote sporting culture among the girls consisting of four events viz. 60sec. challenges, 3 km Run/Walk and IIT BHU Women's Chess Championship and guest talks were delivered by Ms. Padmini Rout (WGM & IM) and Ms. Nisha Mohota (WGM & IM).

The yearlong intra-college IIT BHU Chess Grand Prix was organised where 12 rounds were held with participation from 115 students. An interactive session with IM Erik Kislik was held along with an exhibition match in order to give a better insight into chess. A chess event exclusively for the batch of 2020 was conducted where more than 100 students participated including motivational talk by Ms. Harshita Guddanti, Women International Master was conducted to encourage freshers. The All-India Chess League was conducted where in 20 institutes of the country took part, IIT (BHU) reached the finals of the League. The Chess Club, IIT BHU, won the Kashi vs Prayag chess tournament against MNNIT Prayagraj Chess club. The Royal Battles, a series of analyses of some of the most intriguing world championship matches in the history of chess is being conducted by the Chess Club, besides this Chess club has been actively participating in the All IITs Chess Club matches too. The institute teams have been interacting with the sports fraternity through regular sport specific fitness challenges round the year.

Hon'ble Director of the institute Prof. Pramod Kumar Jain flagged-off the Fit India Cyclothon on 19th December 2020 as part of the Fit India Movement held at a national level where about 100 participants took part including local citizens.

The Council also organised a series of Basic Fitness Challenges for new entrants of 2020 and existing students as well. The Council also conducted Motivational talks by Shri J.P Singh, the former Head Coach of the Indian Basketball Team on 19<sup>th</sup> January 2021 and by Maj. Gen. (Retd.) Shri P. K. Sehgal on the occasion of Birth Anniversary of Great Netaji Subhash Chandra Bose on 23<sup>rd</sup> January 2021.

Sport specific interactive sessions were conducted for students who are keen on learning the basics of sports or any queries regarding sports in general. The council was also a part of Win India 2.0, a sporting campaign spearheaded by the IITs. The events include quizzical and E-sports. Yoga sessions were organised daily for the students of the institute particularly for millennials, it is imperative that they remain mentally fit too. A consistent practice offers a plethora of mental and physical health benefits when put together these benefits of yoga and fitness contribute to increased feelings of well-being.

Despite the online situation, the council remains ever active and is leaving no stone unturned to keep the students engaged through various activities.

#### (iii) Activities by Science and Technology Council

The students under the Science and Technology council took the new initiatives in the institute. *Consulting Crew'20*, a series of sessions on solving business cases, aimed towards helping the students targeting business profiles for their placements was organized. They also organized an event *InnoSights* which was a biweekly infotainment series run across social media handles of the club for sharing innovative breakthroughs and upcoming technologies ie. technologies of the 2020s and 2025s via articles/videos. The students also conducted regular online workshops and training programs like the GitHub page for Robotics Research Group (RoboReG) and open-sourced the projects done in RoboReG. A youtube channel was started by the club of programmers on programming skills of the students. The students also organized an event by the name iMaze where the participants applied the concepts learned through theoretical workshops for solving real life problems. There were 180 teams (3 members each) registered for the event and around 110 teams were successfully able to complete the task. The Finance, Economics and Business Clubs of the institute in collaboration with IIT-Bombay, IIT-Guwahati, IIT-





Delhi and IIT-Roorkee launched FinFest, India's first student festival solely focused on Finance and Economics, containing a plethora of workshops, webinars, competitions and prizes worth INR 1.8 lakhs. Other events were also conducted through online mode on star gazing, PM School Case Study Challenge, Codeforce, and Alumni mentorship programme. The students also organized guest talks by eminent people like, Mr. Harsh Goela, Mr. Aditya Dhavala, Mr. Piyush Ranjan, Mr Shreyansh Daftry, Prof. Annapurni Subramanian and Mr. Rakshit Sinha. Our students won in several inter-institute competitions like Asia level Consulting Competition, IIM Ahmedabad Red Bricks Summit, Decipher - Product Development Challenge conducted by Testbook, qualified for the National Finale of Flipkart GRID 2.0 Robotics Challenge. 23 students got selected in Google Summer of Code 2021. One student from the institute got selected in Microsoft Reinforcement Learning Open Source Fest and Two students got accepted as mentees in LFX Mentorship.

#### (iv) Activities by the Film & Media Council

The council conducted surveys on popular mainstream topics like National Education Policy and directed several Outreach series. It started a special series for the council's official social media handle called Product Photography that featured pictures of simple products in the most unique way. Another contemporary series called Virtuoso was revealed where the life stories and magnum opus of the greatest out of the box creators will be appreciated. Apart from these series and the regular features of the prominent digital artists on the social media pages, various clubs under the council also organised photography, writing and B-roll making competitions for the freshers in college. Workshops in the field of Filmmaking, Photography, Journalism, Graphic Designing and Animation were conducted by various renowned artists for a learning experience for the newcomers. In addition to these initiatives, the council members also won prestigious inter-college digital arts events.

#### (v) Social Service

The institute believes that the inherent humaneness and the spirit of volunteerism already existent in every individual needs to be nurtured and further developed, thereby blooming out with the full potential to benefit the society as a whole. Nourishing these values and skills will foster an all-pervasive sense of social service amongst the student fraternity, catering to our society's needs and challenges. The Social Service Council, IIT (BHU), students were in regular touch with people from nearby *basti* people, enquired about their well-being. They made sure ration and daily requirements are available to them. 'Robinhood Army' helped in Patiya Basti by providing Ration. We provided financial support to the needy with the help of alumni. Students formulated a proper dedicated team (Emergency Food Response Team) for providing food etc, during the pandemic to needy people in nearby Basti. Mess Worker Relief Movement was initiated in the institute and students participated as volunteers in the relief work being carried out by the institute for helping the casual workers like mess workers, dhobis etc. Their efforts helped in over 61 lakhs being distributed to over 400 mess workers and dhobies. The students also organized regular events through online mode to celebrate festivals like Diwali Celebrations, Christmas Celebrations, Republic Day Celebrations, Kashi Utsav 2021, Daan Utsav with the underprivileged children. The underprivileged children participated in events like painting, drawing models and reciting poems which were organized and judged by the students. Jagriti 2021, Institute's annual socio-awareness and celebratory weekend, Jagriti '21, was organised online from March 26th to 28th, 2021, witnessing quality participation and sensitising talks. Several other events like Abhipraya '20 - A case study event aimed at engaging freshers in studying social problems and presenting ideas along with learning various skills, Webinar on the topic of Mental Health, etc. were also organized by the students.

#### Technology Innovation and Incubation Center (TIIC)

Technology Innovation and Incubation Center (TIIC), is an umbrella organization at IIT (BHU) Varanasi for fostering entrepreneurial ecosystem and nurturing start-ups in the East UP region. It administers various units which provide 'Start to Scale' support for entrepreneurship and facilitates research activities to convert into commercial ventures. Different units under TIIC are:





*NCL-IIT(BHU) Incubation Centre:* NCL-IIT(BHU) Incubation Centre (NIIC) is a joint collaboration of Indian Institute of Technology (Banaras Hindu University) and Northern Coalfields Limited. NCL – IIT (BHU) Incubation Centre, is a Technology Business Incubator for fostering entrepreneurship and nurturing tech start-ups of IIT(BHU) Varanasi. The business incubator provides 'Start to scale' support for technology-based entrepreneurship and facilitates the conversion of research activity into entrepreneurial ventures.

*RKVY-RAFTAAR Agri Business Incubator (R-ABI):* R-ABI is a scheme funded by the Ministry of Agriculture and Farmers' Welfare (MoA & FW) which is working in close collaboration with other incubators. This scheme aims at strengthening the infrastructure in agriculture and allied areas in order to promote agripreneurship and agri business by providing financial support and nurturing the incubation ecosystem in and around Uttar Pradesh.

*CISCO thingQbator Makerspace Program:* As a part of a CSR initiative, Cisco Systems along with NASSCOM Foundation has established a "thingQbator" makerspace at IIT (BHU). This AI and IoT based makerspace program helps to accelerate innovation and entrepreneurship among the student community of IIT (BHU) Varanasi. Students not only play with the ideas but become creative problem solvers and strengthen the start-up ecosystem of India.

**E-Cell:** The Entrepreneurship Cell (E-Cell) is an institute body run by the students of IIT(BHU) Varanasi devoted towards acting as a symbiotic link between the entrepreneurs of E-Cell IIT(BHU) Varanasi and the existing startup ecosystem as well acting as a hub where all start-ups can meet, collaborate and innovate. It helps in creating a Startup Ecosystem, building relations for promotion of Startups and Entrepreneurship at IIT (BHU) Varanasi. E-Cell organized several business plan Competitions, workshops, hackathons and Interactive sessions from high-end speakers and entrepreneurs. The flagship event, Founder's Speak, launched in Nov 2020 which is a monthly event to connect aspiring entrepreneurs with Successful founders and serial entrepreneurs with great exits. E-Cell also opened the platform to first-year students, Chase Unicorn, to develop their management acumen, business ideas and craft them into opportunities in adversity. The event saw tremendous participation with 200+ registrations and 150+ students participating. Total 11 teams were selected for the final round. The final round required them to pitch their business plan in front of a panel. The event concluded with students receiving valuable feedback and suggestions from the judges. The event was a major hit and received positive feedback from participants and judges. Start-up Assistance Programme (SAP) of E-Cell ran a mentorship program for the first time. It saw enrollment of 320+ freshers along with 30+ sophomores as mentors. Taking forward the learnings from the first Mentorship Program, SAP launched the Mentorship Program Phase 2.0 in March 2021, having only selected students from Phase 1. This time, it contained 4 highly active mentors and 140+ enthusiastic and active freshers. To make the Entrepreneurship ecosystem more robust and cooperative, SAP laid the foundation of the PAN India Entrepreneurship community group. It has 350+ members as of now along with alumni, founders, and students from all over India. Research Innovation and Entrepreneurship Unit (RIEU) is a dedicated unit under the helm of E-Cell, IIT(BHU) Varanasi that aims to promote innovation-driven research entrepreneurship in various fields of science and technology. RIEU focuses on cultivating artistic research culture on the campus by seeking industrial collaborations to build a concrete connection between the institute and the industry. CiscothingQbator under the helm of E-Cell, IIT(BHU) Varanasi is the bridge of communication between the student and the thingQbator community, making the interaction more obvious. The last big event, "Fusion'21, " was an inter-thingQbator idea storm, a collaborative fest between IGDTUW and IIT (BHU) Varanasi, providing an opportunity to work on mind-boggling ideas. Our collaboration with IGDTUW took the fest to another level and gave us a good working experience with a family feel

#### **COVID-19 Related contributions**

The Institute is working on several COVID-19 related projects, including one supported by the Department of Science and Technology (DST) of the Government of India. Re-purposing clinically approved drugs for possible treatment for COVID-19 by targeting SARS-CoV-2 main protease is being carried out by professors and scientists





of the School of Biochemical Engineering, IIT (BHU), Varanasi. Other contributions made by the Institute include the development of masks and PPE kits using functional silver nanoparticles spray and non-touch sanitizer dispensers. The Institute, playing its role in the nation's fight against COVID-19, is also involved in training of police personnel and city administration regarding sanitization. The Chief Minister of Uttar Pradesh announced the conduction of Oxygen Audit with the assistance of IIT (BHU) Varanasi and few other institutions. The Institutes has assisted the U.P. Govt. in conducting oxygen audits for proper monitoring of medical oxygen during the second wave of COVID.

#### **Concluding Remarks:**

In conclusion, IIT (BHU) Varanasi is continuously striving for a better future. The new IIT (BHU) Varanasi emerges from the old, building on its earlier strengths, and transforming itself to meet the challenges of the future. The major highlights of this year's (2020-21) achievements of IIT (BHU) Varanasi are:

- Total publications were 1516 in 2020-21 in journals of high repute compared to 1273 in the year 2019-20. Hence, even during the pandemic time the institute has improved its publication record by 19%. The number of citations has also increased to 28470 compared to 20830 in previous year.
- The total sanctioned extramural grants obtained under sponsored research projects and schemes etc. was 31.473 crores even during the pandemic.
- The institute has maintained its high placement record even during the pandemic time. The average pay package has increased by ~ 7.43% and an increase of 21.76% was witnessed in the internship offer during the year 2020-21 compared to previous year.
- The institute retained 11<sup>th</sup> position in NIRF Ranking 2020 for engineering category and ranked 26<sup>th</sup> in the overall category of NIRF Ranking 2020, scaling two positions up compared to the previous year 2019 (28<sup>th</sup>). The current NIRF Ranking is awaiting and we are confident that our ranking will further improve.

\*\*\*\*\*\*\*\*\* JAI HIND JAI BHARAT \*\*\*\*\*\*\*\*\*



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#### 2. Apex Committees

#### 2.1 Members of Board of Governors (2020-21)

#### 1. Chairman

Padma Shri Dr. Kota Harinarayana

2. Vice-Chairman (Nominated by Executive Council, BHU)

Prof. Anand Mohan Member, Executive Council, BHU

#### Director (ex-officio) Member Prof. Pramod Kumar Jain Director, IIT (BHU), Varanasi (ex-officio) IIT (BHU), Varanasi – 221 005

- **4. Council Nominee (Members)** Prof. Praveen Kumar
- a) Transportation Engineering Group Department of Civil Engineering Indian Institute of Technology Roorkee Roorkee-247667 (Uttarakhand)
- b) Additional Secretary/Joint Secretary (TE), MoE, ex-officio Ministry of Education, Shastri Bhawan, New Delhi – 110 001

#### 5. Executive Council, BHU Nominee from amongst its members

- a) Prof. Adya Prasad Pandey Member, Executive Council, BHU Prof. Ashim Kumar Mukherjee
- Member, Executive Council, BHU
  [Director, Mothi Lal Nehru Institute of Research and Business Administration University of Allahabad
  Chatham Lines Campus Allahabad University, Allahabad-211 002, Uttar Pradesh]

#### 6. State Government Nominee (Member) (Uttar Pradesh State Government Nominee)

a) Prof. Vinay Kumar Pathak, Vice- Chancellor, APJAKTU, Lucknow

#### 7. Senate Nominee (Member)

- a) Prof. Rajnesh Tyagi Department of Mechanical Engg., IIT(BHU)
- b) Prof. Shyam Bihari Dwivedi Department of Civil Engg., IIT(BHU)
- Dr. S. P. Mathur, Registrar Registrar, Indian Institute of Technology (BHU), Varanasi-221 005 Till 22/01/2021
- Shri Rajan Srivastava Registrar (I/C) Registrar, Indian Institute of Technology (BHU), Varanasi-221 005
   From 23/01/2021 onwards





#### 2.2 Members of Senate (2019-20)

- **A.** In terms of provision contained in Section 14(d) of the Institutes of Technology Act, 1961 (as amended from time to time), the Chairman, Board of Governors, IIT(BHU), vide his order dated 26.03.2019, has nominated the following members to the Senate of the Institute for a period of Two years w.e.f. 01.04.2019:
  - 1. General Manager, Bharat Heavy Electrical Ltd., Heavy Equipment Repair Plant, Tarna, Shivpur, Varanasi-221003 (included vide mail dated 19.05.2020)
  - 2. MR. Manish Bhardwaj, Director, DRDO Transit Facility, 3/240, Vishal Khand, Gomti Nagar, Lucknow-226010 (including vide mail dated 19.05.2020)
  - 3. Prof. Sunil Khijwania, Dept. of Physics, IIT Guwahati, Guwahati-781039 (skhijwania@iitg.ernet.in)
  - 4. Prof. Manoj Kumar Tiwari, Industrial & Systems Engineering, IIT Khargapur, West-721302 (deanpc@adm.iitkgp.ernet.in)
  - 5. Prof. Nagendra Kumar, Dept. of Humanities & Social Sciences, IIT Roorkee, Roorkee-Haridwar-247667 (nagenfhs@iitr.ac.in)
- **B**. In terms of provision contained in Section 5(1)(c) the Director and the Chairman, Senate has nominated the following faculty members to the Senate for a period of one year w.e.f. 01.04.2019:

#### **Dept. of Metallurgical Engineering**

6. Dr. Vikas Jindal,

#### **Dept. of Mining Engineering**

7. Dr. Rajesh Rai,

#### **Dept. of Electronics Engineering**

8. Dr. Manoj Kumar Meshram,

#### **Dept. of Electrical Engineering**

9. Dr. N. Krishna Swami Naidu,

#### **Dept. of Civil Engineering**

10. Dr. Nikhil Saboo,

#### **Dept. of Mechanical Engineering**

11. Dr. Ajinkya Nandkumar Tanksale,

#### **Dept. of Computer Science & Engineering**

12. Dr. Ruchir Gupta, (on deputation December 2020),

#### **Dept. of Ceramic Engineering**

13. Dr. Ashutosh Kumar Dubey,

#### Dept. of Pharmaceutical Engineerig & Tech.

14. Dr. Sunil Kumar Mishra,

#### Dept. of Chemical Engineering & Tech.

15. Dr. Sweta,

#### **School of Biochemical Engineering**

16. Dr. Ashish Kumar Singh,

#### **School of Biomedical Engineering**

17. Dr. Sanjiv Kumar Mahto,





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#### **School of Materials Science & Technology**

18. Dr. Shrawan Kumar Mishra,

#### **Dept. of Mathematical Sciences**

19. Dr. Lavanya Selvaganesh,

#### **Dept. of Physics**

20. Dr. Abhishek Kumar Srivastava,

#### **Dept. of Chemistry**

21. Dr. V. Ramanathan,

#### **Dept. of Humanistic Studies**

22. Dr. Satish Kanaujia,

#### C. Professor Members

- 23. Prof. Ram Pyare
- 24. Prof. Vinay Kumar Singh
- 25. Prof. A.S.K. Sinha (On Deputation w.e.f. 09.07.2019)
- 26. Prof. Pradeep Kumar Mishra (On Deputation w.e.f. 14.12.2020)
- 27. Prof. Pradeep Ahuja
- 28. Prof. Manoj Kumar Mondal
- 29. Prof. Ram Saran Singh
- 30. Prof. (Mrs.) Vijaya L. Yadava
- 31. Prof. Satya Vir Singh
- 32. Prof. H. L. Pramanik (23.10.2020)
- 33. Prof. Veerendra Kumar
- 34. Prof. Goutam Banerjee
- 35. Prof. Devendra Mohan
- 36. Prof. Prabhat Kumar Singh
- 37. Prof. Prabhat Kumar Singh Dixit
- 38. Prof. Sasankasekhar Mandal
- 39. Prof. Rajesh Kumar
- 40. Prof. Shyam Bihari Dwivedi
- 41. Prof. K.K. Pathak
- 42. Prof. Arun Prasad
- 43. Prof. A.K. Tripathi
- 44. Prof. K.K. Shukla
- 45. Prof. Rajeev Srivastava
- 46. Prof. S.K. Singh
- 47. Prof. Shiva Pujan Singh
- 48. Prof. S.K. Nagar
- 49. Prof. R.K. Pandey
- 50. Prof. Rakesh Kumar Srivastava
- 51. Prof. Rakesh Kumar Mishra
- 52. Prof. Ranjeet Mahanty
- 53. Prof. Devender Singh
- 54. Prof. Mitresh Kumar Verma
- 55. Prof. Ram Khelawan Saket
- 56. Prof. P. Chakrabarti (On Deputation w.e.f. 10.05.2018)



#### 57. Prof. P.K. Jain (On Deputation w.e.f. 21.11.2017)

- 58. Prof. V.N. Mishra
- 59. Prof. Satyabrat Jit
- 60. Prof. M. K. Meshram (28.09.2020)
- 61. Prof. Virendra Pratap Singh
- 62. Prof. A.K. Agrawal
- 63. Prof. V.K. Srivastava
- 64. Prof. Santosh Kumar
- 65. Prof. S.P. Tewari
- 66. Prof. K.S. Tripathi
- 67. Prof. A.P. Harsha
- 68. Prof. Sanjay Kumar Sinha
- 69. Prof. Sandeep Kumar
- 70. Prof. Rajesh Kumar
- 71. Prof. Prashant Shukla
- 72. Prof. Pradumna Ghosh
- 73. Prof. Shailendra K. Shukla
- 74. Prof. Rajnesh Tyagi
- 75. Prof. Saroja Kanta Panda
- 76. Prof. Prabhash Bhardwaj
- 77. Prof. R. K. Gautam (24.03.2021)
- 78. Prof. R. K. Mandal
- 79. Prof. N. K. Mukhopadhyay
- 80. Prof. Sunil Mohan
- 81. Prof. (Mrs.) N. C. Shanti Srinivas
- 82. Prof. B. Nageshwar Sarma
- 83. Prof. Kamlesh Kumar Singh
- 84. Prof. Om Prakash Sinha
- 85. Prof. Indrajit Chakraborty
- 86. Prof. B. K. Shrivastava
- 87. Prof. Netai Chandra Karmakar
- 88. Prof. Aarif Jamal
- 89. Prof. Piyush Rai
- 90. Prof. Sanjay Kumar Sharma
- 91. Prof. Suprakash Gupta
- 92. Prof. B. Mishra
- 93. Prof. S.K.Singh
- 94. Prof. Sanjay Singh (On Deputation w.e.f. 23.02.2019)
- 95. Prof. S.K. Shrivastava
- 96. Prof. (Mrs.) S. Hemalatha
- 97. Prof. Sairam Krishnamurthy
- 98. Prof. (Mrs.) R. B. Rastogi
- 99. Prof. Prem Chandra Pandey
- 100. Prof. Syed Hadi Hasan
- 101. Prof. (Mrs.) Vandana Srivastava
- 102. Prof. Yogesh Chandra Sharma
- 103. Prof. D. Tiwary





104. Prof. K.D. Mandal 105. Prof. Tanmoy Som 106. Prof. (Mrs.) Rekha Srivastava 107. Prof. Lal Pratap Singh 108. Prof. Sanjay Kr. Pandey 109. Prof. (Mrs.) S. Mukhopadhyay 110. Prof. S.K. Upadhyay 111. Prof. Subir Das 112. Prof. Murali Krishna Vemuri 113. Prof. Prasant Kumar Panda 114. Prof. D. Giri 115. Prof. Prabhakar Singh 116. Prof. Sandeep Chatterjee 117. Prof. Rajendra Prasad 118. Dr. Mira Debnath Das (ret. 30.11.2019) 119. Prof. R. M. Banik 120. Prof. Pradeep Srivastava (On Deputation w.e.f. 18.02.2020) 121. Prof. Vikash Kumar Dubey 122. Prof. P. K. Roy 123. Prof. Neeraj Sharma 124. Prof. Rajiv Prakash 125. Prof. Pralay Maiti 126. Dr. Akhilesh Kumar Singh





#### 2.3 Members of Finance Committee (2020-21)

#### Chairman (ex-officio)

a) Dr. Kota Harinarayana,

Chairman, BoG, IIT(BHU)

#### Member (ex-officio)

a) Prof. Pramod Kumar Jain,

Director, IIT (BHU), Varanasi – 221 005

#### Members nominated by the Central Government, Members (ex-officio)

- a) Additional Secretary/Joint Secretary (TE), MoE, ex-officio Ministry of Education, Shastri Bhawan, New Delhi-110 001
- b) Joint Secretary & Financial Advisor to the Government of India Integrated Finance Divison, Department of Higher Education, Ministry of Education, New Delhi

#### **Board Nominees (Members)**

- a) Prof. Rajiv Prakash School of Materials Science & Technology, IIT(BHU), Varanasi-221 005
- b) Prof. Prabhakar Singh Department of Physics, IIT(BHU)

#### Registrar (ex-officio) Secretary

- a) Dr. S. P. Mathur, Registrar
  Registrar, Indian Institute of Technology (BHU), Varanasi-221 005
  Till 22/01/2021
- b) Shri Rajan Srivastava Registrar (I/C), Registrar, Indian Institute of Technology (BHU), Varanasi-221 005
   From 23/01/2021 onwards





#### 2.4 Members of Building & Works Committee (B & WC) (2020-21)

Prof. Pramod Kumar Jain Director (ex-officio), IIT (BHU), Varanasi – 221 005	Chairman (ex-officio)
Prof. A.K. Jain Head, Dept. of Civil Engg., IIT Delhi, New Delhi- 110 016.	Member
Prof. S.Y. Kulkarni Ex-Professor & Head, Dept. of Architecture & Planning, IIT-Roorkee 103 Palm Green Apartments, Milap Nagar,Delhi Road, Roorkee, 247 667	Member
Shri Shyam Mohan Garg General Manager (Mech.) UP State Bridge Corporation Ltd., Setu Bhawan,16 MM Malaviya Marg, Lucknow – 226 001.	Member
Shri Vijay Pal Superintending Engineer Urban Electric Distribution Circle Meerut Pashchimanchal Vidyut Vitaran Nigam Limited, Rangoli Substation, Shastri Nagar Meerut 250004	Member
Prof. Shyam Bihari Dwivedi Department of Civil Engg., IIT(BHU)	Member
Kamal Nain Rai Former Chief Executive (CW&E) and Advisor (Special Projects), DRDO, Ministry of Defence <b>From 11/02/2021</b>	Member
Dr. S. P. Mathur, Registrar Registrar, Indian Institute of Technology (BHU), Varanasi-221 005 <b>Till 22/01/2021</b>	(ex-officio) Secretary
Shri Rajan Srivastava Registrar (I/C) Registrar, Indian Institute of Technology (BHU), Varanasi-221 005 <b>From 23/01/2021 onwards</b>	(ex-officio) Secretary





## List of Conveners of Under Graduate Committees (DUGC) and Post Graduate Committees (DPGC) of the Departments/Schools for the Session 2020-2021 (w.e.f. 01.09.2020)

Department/School	DUGC Conveners	DPGC Conveners
Bio-Chemical Engineering	Dr. Ashish Kumar Singh	Dr. Sanjay Kumar
Bio-Medical Engg.	Dr. Marshal	Dr. S. K. Rai
Ceramic Engineering	Dr. Imteyaz Ahmad	Dr. Preetam Singh
Chemical Engineering & Technology	Dr. Debdip Bhandary	Dr. Ravi P. Jaiswal
Chemistry	Dr. Arindam Indra	Prof. K. D. Mandal
Civil Engineering	Dr. P. R. Maiti	Dr. Brind Kumar
Computer Science and Engineering	Dr. A. K. Singh	Dr. Pratik Chattopadhyay
Electrical Engineering	Dr. V. N. Lal	Dr. R. K. Singh
Electronics Engineering	Dr. M. K. Meshram	Dr. M. Thottappan
Humanistic Studies	Dr. Shail Shankar	Dr. Vinita Chandra
Materials Science & Technology	Dr. A. K. Mishra	Dr. Sanjay Singh
Mathematical Sciences	Dr. S. Lavanya	Prof. Subir Das
Mechanical Engineering	Prof. S. K. Sinha	Prof. R. K. Gautam
Metallurgical Engineering	Dr. K. Chattopadhyay	Dr. R. Manna
Mining Engineering	Dr. Suresh Kumar Sharma	Dr. S.K. Palei
Pharmaceutical Engineering and Technology	Dr. M.S. Muthu	Dr.(Mrs.) Ruchi Chawla
Physics	Dr. A. K. Singh	Dr.(Mrs.) Anita Mohan
Architecture, Planning and Design	Dr. Aditya Pratap Sanyal	No PG Course





### 3. Faculty Administration

#### 2.1 Faculty Position as on 31.03.2021

Faculty Members	309		
Visiting Faculty/Institute Professor/Emeritus Professor	05 + 02 + 00 = 07		
2.2 Faculty Members appointed during 2020-21			
Professors	03		
Associate Professors	03		
Assistant Professors	24		
Visiting Faculty/Institute Professor	03 + 00 = 03		
Contractual Faculty	Nil		

#### 2.3 List of Faculty Members appointed during 1<sup>st</sup> April 2020-31<sup>st</sup> March 2021

Sl. No.	Employee ID No.	Name of Faculty	Designation	Department/Section	Date of Joining
1	50252	Dr. Subrata Panda	Assistant Professor	Ceramic Engg.	19.11.2020
2	50261	Dr. Abir Ghosh	Assistant Professor	Chemical Engg. & Technology	28.12.2020
3	50265	Dr. Sanjay Katheria	Assistant Professor	Chemical Engg. & Technology	29.01.2021
4	50243	Dr. Ajay Pratap	Assistant Professor	Comp. Sci. & Engg.	30.06.2020
5	50244	Dr. Mayank Swarnkar	Assistant Professor	Comp. Sci. & Engg.	07.07.2020
6	50248	Dr. Prasenjit Chanak	Assistant Professor	Comp. Sci. & Engg.	13.08.2020
7	50254	Dr. Sukarn Agarwal	Assistant Professor	Comp. Sci. & Engg.	03.12.2020
8	50258	Dr. Avirup Maulik	Assistant Professor	Electrical Engg.	11.12.2020
9	50257	Dr. Chinmaya K.A.	Assistant Professor	Electrical Engg.	16.12.2020
10	50268	Dr. Maria Thomas	Assistant Professor	Electrical Engg.	01.03.2021
11	50246	Dr. Priya Ranjan Muduli	Assistant Professor	Electronics Engg.	27.07.2020
12	50247	Dr. Sushant Mittal	Assistant Professor	Electronics Engg.	29.07.2020
13	50255	Dr. Saurabh Pratap	Assistant Professor	Mechanical Engg.	07.12.2020
14	50256	Dr. Joy Prakash Misra	Assistant Professor	Mechanical Engg.	21.12.2020
15	50260	Dr. Akhilendra Pratap Singh	Assistant Professor	Mechanical Engg.	28.12.2020
16	50251	Dr. Sudipta Patra	Assistant Professor	Metallurgical Engg.	10.11.2020
17	50259	Dr. Pandeeswar Makam	Assistant Professor	Chemistry	24.12.2020
18	50262	Dr. Samya Banerjee	Assistant Professor	Chemistry	07.01.2021
19	50266	Dr. Rosy	Assistant Professor	Chemistry	01.02.2021
20	50242	Dr. Abhash Kumar Jha	Assistant Professor	Mathematical Sciences	09.06.2020
21	50249	Dr. Prodyut Dhar	Assistant Professor	Bio-Chemical Engg.	22.10.2020
22	50264	Dr. Abhishek Suresh Dhoble	Assistant Professor	Bio-Chemical Engg.	22.01.2021
23	50253	Dr. A.R. Jac Fredo	Assistant Professor	Bio-Medical Engg.	16.11.2020
24	50250	Dr. Nikhil Kumar	Assistant Professor	SMST	09.11.2020





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Sl. No.	Employee ID No.	Name of Faculty	Designation	Department / Section	Date of Joining with (FN/AN)
1	17500	Dr. Hiralal Pramanik	Professor	Chemical Engg. & Tech.	23.10.2020 (AN)
2	16628	Dr. M. K. Meshram	Professor	Electronics Engg.	28.09.2020 (AN)
3	18239	Dr. Rakesh Kumar Gautam	Professor	Mechanical Engg.	24.03.2021 (AN)

Associate Professor

Associate Professor

Associate Professor

15.10.2020

04.11.2020

15.10.2020

**Civil Engineering** 

Comp. Sci. & Engg.

Mining Engg.

#### 2.4 List of internal faculty/staff members who joined during the period from April 2020-March 2021

#### 2.5 Faculty/staff members who resigned/were relieved

Dr. Ankit Gupta

Dr. Ruchir Gupta

Dr. Amit Kumar Verma

Sl. No.	Employee ID No.	Name of Faculty	Designation	Department/Section	Date of Relief (with FN/AN)
1	50245	Dr. Shubhendu Dutta	Assistant Professor	Electrical Engineering	30.11.2020
2	50179	Dr. Puneet Kumar Bindlish	Assistant Professor	Humanistic Studies	10.03.2021 (AN)

#### 2.6 Faculty/staff members who retired between April 2020-March 2021

Sl. No.	Employee ID No.	Name of Faculty	Designation	Department	Date of Birth	Date of Retirement (with FN/AN)
1	13738	Dr. (Mrs.) R. B. Rastogi	Professor	Chemistry	05.04.1955	30.04.2020
2	13694	Dr. Ram Pyare	Professor	Ceramic Engineering	04.05.1955	31.05.2020
3	13780	Dr. S.K. Nagar	Professor	Electrical Engineering	10.05.1955	31.05.2020
4	13742	Shri. A.C. Mohan	Assistant Professor	Chemical Engg. & Tech.	15.07.1955	31.07.2020
5	13879	Shri. A.K. Srivastava	Associate Professor	Pharmaceutical Engg. & Tech.	04.09.1955	30.09.2020
6	13811	Dr. V.K. Srivastava	Professor	Mechanical Engineering	02.10.1955	31.10.2020
7	13887	Dr. R.M. Banik	Professor	Bio-Chemical Engg.	25.11.1955	30.11.2020
8	13746	Dr. B.N. Rai	Professor	Chemical Engg. & Tech.	31.12.1955	31.12.2020
9	18218	Dr. O.P. Sinha	Professor	Metallurgical Engg.	01.01.1956	31.12.2020
10	13818	Dr. V.P. Singh	Professor	Mechanical Engineering	11.01.1956	31.01.2021

#### 2.7 Faculty/staff members who expired while in service

Sl. No.	Employee ID No.	Name of Faculty	Designation	Department	Date of Birth	Date of Expiry (with FN/AN)
NIL						





Sl. No.	Name of Faculty	Designation	Department	From	То	Details	Remarks
1	Dr. R K Pandey	Professor	Electrical Engi- neering	10.07.2016 (AN)	10.07.2021	On Deputation for 5 years	Re-joined the Institute on 18.08.2020
2	Dr. P K Jain	Professor	Electronics Engineering	21.11.2017 (AN)	20.11.2022	On Deputation for 5 years	
3	Dr. P. Chakrabarti	Professor	Electronics Engineering	09.05.2018 (AN)	09.05.2023	On Deputation of 5 years	
4	Dr. Sanjay Singh	Professor	Pharmaceutical Engg. & Tech.	23.02.2019 (AN)	23.02.2024	On Deputation for 5 years	
5	Dr. A.S.K. Sinha	Professor	Chemical Engi- neering	09.07.2019 (AN)	30.06.2021	On Deputation	Date of Retirement: 30.06.2021
6	Dr. Pradeep Sri- vastava	Professor	Bio-Chemical Engineering	18.02.2020 (AN)	18.02.2025	On Deputation for 5 years	
7	Dr. P.K. Mishra	Professor	Chemical Engg. & Tech.	14.12.2020 (AN)	14.12.2023	On Deputation for 3 years	

#### 2.8 Faculty members/officers/staff members on long leave (On Deputation)

#### a. Faculty/staff members on extraordinary leave

Sl. No.	Name	Designation	Department	From	То	Details	Remarks
1	Dr. Ruchir Gupta	Associate Professor	Comp. Sci. & Engg.	17.11.2020 (AN)	17.11.2023	To join the post of Professor at JNU, New Delhi	
2	Dr. Bidya Binay Karak	Assistant Professor	Physics	06.01.2021	07.03.2021	Humboldt Fellowship, Germany	

#### b. Faculty members on sabbatical leave

Sl. No.	Name	Designation	Department	From	То	Remarks
			NIL			





– Indian Institute of Technology (BHU) Varanasi

#### 4. Non Faculty Administration

#### 1. Brief Introduction: Indian Institute of Technology (BHU)

#### 2. Staff Position (as on 31<sup>st</sup> March 2021): Non-faculty members

#### 2.1. Staff members in Position

Group A Staff	23
Scientific Officers	07
Technical Staff	224
Administrative Staff	133

#### 2.2. Staff Members appointed during 2020-21

Administrative Staff	01
Contractual Staff	00

#### 2.3. List of Staff Members appointed during 1<sup>st</sup> April 2020-31<sup>st</sup> March 2021

Sl. No.	Employee ID No.	Name of Staff	Designation	Department/ Section	Date of Join- ing
1.	50267	Sri Amit Kumar Vishwkarma	Junior Assistant	R.O. (Admin.)	25.02.2021

**2.4.** Staff members who resigned/were relieved during 1<sup>st</sup> April 2020-31<sup>st</sup> March 2021

Sl. No.	Employee ID No.	Name of Staff	Designation	Department/Sec- tion	Date of Relief (FN/AN)	
1.	50197	Sri Sanjay Dangi	Junior Assistant	Academic Affairs	23.06.2020 (AN)	
2.	10003	Dr.Shubhendu Prakash Mathur	Registrar	Director Office	23.01.2021	

#### 2.5. Staff members who retired between 1<sup>st</sup> April 2020-31<sup>st</sup> March 2021

Sl. No.	Employee ID No.	Name of Staff	Designation	Department/ Section	Date of Birth	Date of Retirement (with FN/AN)
1.	16523	Sri Bal Govind Singh	Senior Technician	Metallurgical Engineering	01.06.1960	31.05.2020
2.	13957	Sri Ajay Kumar	Senior Technical Superintendent (Gr.II)	Bio-Medical Engineering	01.07.1960	30.06.2020
3.	18621	Sri Muhammad Sharaj	Technical Superintendent	Metallurgical Engineering	09.07.1960	31.07.2020
4.	14231	Sri Lalji	Senior Technician	R&D	07.07.1960	31.07.2020
5.	13963	Sri Paras Nath Singh	Senior Technical Superintendent	Mechanical Engineering	25.08.1960	31.08.2020
6.	13636	Sri Lallan Prasad	Junior Technical Superintendent	Main Workshop	05.08.1960	31.08.2020
7.	16534	Sri Ram Bhaju Prasad	Junior Technical Superintendent	Main Workshop	01.09.1960	31.08.2020





Sl. No.	Employee ID No.	Name of Staff	Designation	Department/ Section	Date of Birth	Date of Retirement (with FN/AN)
8.	13977	Sri Kali Prasad	Senior Technical Superintendent	Mechanical Engineering	14.09.1960	30.09.2020
9.	14087	Sri Chandra Bhushan Singh	Technical Superintendent	Mining Engineering	01.01.1961	31.12.2020
10.	16567	Sri Binod Kumar Singh	Technical Superintendent	Electronics Engineering	05.01.1961	31.01.2021

#### 2.6. Staff members who expired while in service

S. No.	ID No.	Name of Staff	Designation	Department/ Section	Date of Birth	Date of Expiry (with FN/AN)
				NIL		

#### 2.7 Officers/staff members on long leave

S. No.	ID No.	Name of Staff	Designation	Department	From	То	Details	Remarks
				NIL				

#### a. Staff members on extraordinary leave

S. No.	ID No.	Name of Staff	Designation	Department	Department From To		Details	Remarks	
				NIL					





#### 5. Academic Programmes and Award of Degrees

The Institute offeres Ph.D. programmes in all 17 departments (Department of Humanistic Studies established in 2015-16), M.Tech. programmein 13 streams/specializations, M.Pharm. programme in onestream/specialization (M.Tech. programme started in Decision Sciences and Engineering instead of Industrial Management from the session 2020-21), B.Tech. programmes in 10engineering departments, Dual Degree(B.Tech. and M.Tech.) programmes in 14engineering departments/schools/science departments, B.Arch. programme in 1 department (Department of Architecture, Planning and Design, established in 2019-20), besides a preparatory course for SC/ST students during the yearunder report.

The Institute has recently developed online registration portal, fee deposition portal as well as declaration of results etc. through the online. The registration portal was started from the session 2014-15 and onwards in the Institute to facilitate the students. Fee deposition portal has been designed and institute fee submitted by the students successfully during even semester 2019-20. Due to COVID-19 all academic programmes related to admission, verifications, registration, teaching etc. has been done through online only.

An academic section, examination unit and scholarship section are under the Dean (Academic Affairs) of the Institute. Three smart lecture theatre complexes has been established and equipped with LCD project in each class rooms alongwith the backup of the electricity. The classes for the Institute core courses, HULM and Institute Open elective has been hold centrally in the lecture theaters of the Institute. The Examination unit published the online application forms for the admission of PG annually and for Ph.D. Programmes biannual of every year. Online profile registration, add/drop courses, department-wise/subject-wise students list, grade submission, declaration of results, transcripts has keen automated and taken care by the examination unit. The Scholarship section look the fellowships (Institute or other) of the students. Academic Section looks the works related to Ordinances, admissions process for B.Tech./B.Pharm./IDD through JEE(Advanced) and M.Sc. through JAM jointly conducted by the IITs, students leave, conductingsemester examinations, preparation of academic calendar, class time-tables under supervision of Dean (Academic Affairs)/Associate Dean (Academic Affairs), UG/PG/Core Courses. The office of the Dean (Academic Affairs) has totally automated for the Ph.D. submission as well as submission of grade portal, overload, physical registration also.

#### Admissions 2020-2021

Candidates for admission to the 4-Year B.Tech., 5-Year B.Arch. and5-Year Dual Degree programmes were selected through JEE(Advanced) and on thebasis of the All India Rank. 2-Year M.Sc. programmes started from the session 2019-20 in the Department of Physics and Chemistry, the candidates were selected through JAM, jointly conducted by the IITs. 2-Year M.Tech./M.Pharm. programmes, candidates get admitted on the basis of GATE/ GPAT score. Quite a few candidates were also selected for the M.Tech. programme underthe Sponsored and Q.I.P. programmes through interviews and/or written tests. Selection for the Ph.D. programmes was done through tests/interviews, they must qualify the GATE or GPAT or UGC/CSIR-NET. To attract the foreign national students for studies in India, the Institute has also taken admission in PG and Ph.D. Programmes through the Study in India Portal as well as ASEAN Fellowship programmes conducted by the Govt. of India.

The number of students and scholars admitted to the various programmes in July 2020 and in January 2021 arelisted in Table as shown below.

Sl. No.	Department/School	B.Tech.	Dual Degree (B.Tech. & M.Tech.)	B.Arch.	M.Sc.	M.Tech.	M.Pharm.	Ph.D.	Total
1.	Architecture Planning and Design			18					18

#### **Table Fresh admissions**



6	n.	110	89
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Sl. No.	Department/School	B.Tech.	Dual Degree (B.Tech. & M.Tech.)	B.Arch.	M.Sc.	M.Tech.	M.Pharm.	Ph.D.	Total
2.	Biochemical Engineering		21			8		7	36
3.	Biomedical Engineering		18			7		5	30
4.	Ceramic Engineering	67	15			22		2	106
5.	Chemical Engineering	151				52		5	208
6.	Chemistry		16		21			5	42
7.	Civil Engineering	116	30			65		6	217
8.	Computer Science and Engineering	99	35					7	141
9.	Electrical Engineering	113	29			51		9	202
10.	Electronics Engineering	129				40		6	175
11.	Humanistic Studies						10	10	
12.	Decision Science and Engineering					12			12
13.	Industrial Management							1	1
14.	Materials Science and Technology		24			17		23	64
15.	Mathematical Sciences		51					16	67
16.	Mechanical Engineering	142	29			56		20	247
17.	Metallurgical Engineering	96	26			27		14	163
18.	Mining Engineering	117	23			31		3	174
19.	Pharmaceutical Engineering and Technology	68	14				50	10	142
20.	Physics		24		25			17	66
21.	Systems Engineering					8		1	09
Tota	1	1098	355	18	46	396	50	167	2130

In addition, 70 students (SC – 15; ST – 47; OBCPD – 2; GEPD – 6) joined the preparatory course, classes held at IIT-Kanpur.

#### Category/Gender-wise students among fresh admissions

S1.	Pro-	Ger	neral	C	BC	EV	WS	S	C		ST	P	D		Total	
No.	gramme	Male	Fe-	Male	Female	Male	Fe-	Male	Fe-	Male	Female	Male	Fe-	Male	Fe-	To-
			male				male		male				male		male	ται
1.	B.Tech.	349	88	245	62	93	23	139	30	49	14	4	2	879	219	1098
2.	Dual Degree (B.Tech. & M.Tech.)	109	31	80	22	30	8	44	11	10	5	4	1	277	78	355
3.	B.Arch.	6	2	5	2	1				1	1			13	5	18
4.	M.Sc.	13	5	10	3	4	1	4	2	1	2		1	32	14	46
5.	M.Tech.	124	29	91	16	40	1	55	7	19	3	10		340	56	396
6.	M.Pharm.	8	7	13	3	4	2	3	4	2	2	2		32	18	50





– Indian Institute of Technology (BHU) Varanasi

<b>S1</b> .	Pro-	Geı	neral	C	)BC	EV	NS	S	C		ST	I	PD		Total	
No.	gramme	Male	Fe-	Male	Female	Male	Fe-	Male	Fe-	Male	Female	Male	Fe-	Male	Fe-	To-
			male				male		male				male		male	tal
7.	Ph.D.	41	18	44	12	13	4	14	3	4	1	3		119	48	167
	Total	650	180	488	120	185	39	259	57	86	28	23	4	1692	438	2130

#### The students admitted during the year included the following:

Foreign national	3	EW	ſS		224
OBC	608	Spc	onsored	M.Tech.	05
Scheduled Castes	356			Ph.D.	04
Scheduled Tribes	114	Q.I.	.P.		Nil.
Physically handicapped	27	Pro	ject		
Women Students	438	Ext	ernal registration	Ph.D.	08

#### **Enrolment of Students/Scholars**

The total numbers of students on roll in various programmes of the Institute in the academic year 2020–2021 areprovided in Table.

#### **Table: Students on roll**

Sl. No.	Department/School	B.Tech.	Dual Degree (B.Tech. & M.Tech.)	B.Arch.	M.Sc.	M.Tech.	M.Pharm.	Ph.D.	Total
1.	Architecture Planning and Design			33					33
2.	Biochemical Engineering		86			18		41	145
3.	Biomedical Engineering		84			15		46	145
4.	Ceramic Engineering	235	78			34		43	390
5.	Chemical Engineering	517	0			102		60	679
6.	Chemistry		85		39	0		77	201
7.	Civil Engineering	383	111			132		83	709
8.	Computer Science and Engineering	309	112			0		71	492
9.	Electrical Engineering	373	111			103		51	638
10.	Electronics Engineering	408				82		58	548
11.	Humanistic Studies					0		35	35
12.	Decision Sciences and Engineering					12			12
13.	Industrial Management					10		12	22
14.	Materials Science and Technology		103			37		75	215
15.	Mathematical Sciences		153			0		117	270
16.	Mechanical Engineering	470	116			114		82	782
17.	Metallurgical Engineering	321	108			70		59	558
18.	Mining Engineering	414	107			62		50	633
19.	Pharmaceutical Engineering and Technology	242	75				98	70	485
20.	Physics		102		44			105	251
21.	Systems Engineering				0	16		10	26
	Total	3672	1431	33	83	807	98	1145	7269

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S1.	Pro-	Gen	eral	OI	BC	EV	vs	S	C	S	Т	P	D		Total	
No.	gramme	Male	Fe- male	Total												
1.	B.Tech.	1365	252	881	134	173	41	474	77	213	32	27	3	3133	539	3672
2.	Dual Degree (B.Tech. & M.Tech.)	538	106	323	46	57	13	191	23	104	16	12	2	1225	206	1431
3.	B.Arch.	10	6	8	2	2	0	3	0	1	1	0	0	24	9	33
4.	M.Sc.	25	9	19	5	4	1	8	4	4	3		1	60	23	83
5.	M.Tech.	273	50	192	31	77	5	105	17	31	10	16	0	694	113	807
6.	M.Pharm.	17	13	22	9	8	3	9	6	3	5	3		62	36	98
7.	Ph.D.	343	191	302	91	33	12	101	32	20	6	12	2	811	334	1145
	Total	2571	627	1747	318	354	75	891	159	376	73	70	8	6009	1260	7269

#### Category/Gender-wise students on roll

#### The students on roll including the following:

Foreign national	6	EWS		429
OBC	2065	Sponsored	M.Tech.	5
Scheduled Castes	1050		Ph.D.	9
Scheduled Tribes	449	Q.I.P.		15
Physically handicapped	78	Project		14
Women Students	1260	External registration	Ph.D.	16

The branch-/discipline-wise and year-wise details of students enrolled in the 4-Year B.Tech., 5-Year Dual Degree B.Tech.-M.Tech. programmes are provided here:

#### 4-Year B.Tech. students on roll

S1. No.	Branch	2020	2019	2018	2017 and earlier batches	Total
1.	Ceramic Engineering	67	62	52	54	235
2.	Chemical Engineering	151	132	116	118	517
3.	Civil Engineering	116	99	88	80	383
4.	Computer Science and Engineering	99	84	67	59	309
5.	Electrical Engineering	113	97	84	79	373
6.	Electronics Engineering	129	113	86	80	408
7.	Mechanical Engineering	142	121	109	98	470
8.	Metallurgical Engineering	96	90	68	67	321
9.	Mining Engineering	117	114	88	95	414
10.	Pharmaceutical Engineering and Technology	68	62	54	58	242
	Total	1098	974	812	788	3672



#### 5-Year B.Arch. students on roll

Sl. No.	Branch	2020	2019	2018	2017	2016 and earlier batches	Total
1.	Architecture Planning and Design	18	15				33

#### 5-Year Dual Degree (B.Tech. and M.Tech.) students on roll

Sl. No.	Branch	2020	2019	2016	2017	2016 and earlier batches	Total
1.	Biochemical Engineering	21	18	15	16	16	86
2.	Biomedical Engineering	18	15	15	17	19	84
3.	Ceramic Engineering	15	15	14	17	17	78
4.	Chemistry	16	15	14	21	19	85
5.	Civil Engineering	30	20	21	20	20	111
6.	Computer Science and Engineering	35	28	18	16	15	112
7.	Electrical Engineering	29	22	20	20	20	111
8.	Materials Science and Technology	24	22	18	21	18	103
9.	Mathematical Sciences	51	43	20	19	20	153
10.	Mechanical Engineering	29	27	21	19	20	116
11.	Metallurgical Engineering	26	25	18	21	18	108
12.	Mining Engineering	23	26	17	21	20	107
13.	Pharmaceutical Engineering and	14	13	13	20	15	75
	Technology						
14.	Physics	24	22	20	18	18	102
	Total	355	311	244	266	255	1431

#### 2-Years M.Tech. students on roll

Sl. No.	Branch	2020	2019	Total
1.	Biochemical Engineering	8	10	18
2.	Biomedical Engineering	7	8	15
3.	Ceramic Engineering	22	12	34
4.	Chemical Engineering	52	50	102
5.	Civil Engineering	65	67	132
6.	Electrical Engineering	51	52	103
7.	Electronics Engineering	40	42	82
8.	Decision Sciences and Engineering	12		12
9.	Industrial Management	00	10	10
10.	Materials Science and Technology	17	20	37
11.	Mechanical Engineering	56	58	114
12.	Metallurgical Engineering	27	43	70
13.	Mining Engineering	31	31	62
14.	Systems Engineering	8	8	16
	Total	396	411	807





#### 2-Years M.Pharm. students on roll

Sl. No.	Branch	2020	2019	Total
1.	Pharmaceutical Engineering and Technology	50	48	98

#### 2-Years M.Sc. students on roll

Sl. No.	Branch	2019	2018	Total
1.	Chemistry	18		18
2.	Physics	19		19
	Total	37		37

#### Ph.D. scholars on roll

Sl. No.	Branch	2020	2019	2018	2017	2016 and previous years	Total
1.	Biochemical Engineering	7	13	11	7	3	41
2.	Biomedical Engineering	5	12	6	11	12	46
3.	Ceramic Engineering	2	4	10	16	11	43
4.	Chemical Engineering	5	21	14	11	9	60
5.	Chemistry	5	22	21	18	11	77
6.	Civil Engineering	6	20	25	15	17	83
7.	Computer Science and Engineering	7	10	15	29	10	71
8.	Electrical Engineering	9	18	7	9	8	51
9.	Electronics Engineering	6	9	11	26	6	58
10.	Humanistic Studies	10	14	6	5		35
11.	Industrial Management	1	3	2	3	3	12
12.	Materials Science and Technology	23	12	17	14	9	75
13.	Mathematical Sciences	16	29	39	23	10	117
14.	Mechanical Engineering	20	11	14	19	18	82
15.	Metallurgical Engineering	14	9	13	15	8	59
16.	Mining Engineering	3	13	11	13	10	50
17.	Pharmaceutical Engineering and Technology	10	19	22	8	11	70
18.	Physics	17	30	23	26	9	105
19.	Systems Engineering	1	2	2	2	3	10
	Total	167	271	269	270	168	1145

#### Students Intake in different programmes

The Institute offered the following programmes in various departments/school. The Department/School-wise Intake is given below:




# Department/Programme-wise Intake capacity of Session 2020-21

COURSES	Students Intake										
	GE	OBC	EWS	SC	ST			PwD			Total
						GE	OBC	EWS	SC	ST	
Four-Years B.Tech. Programmes											
Ceramic Engineering	29	19	7	11	5	2	1		1		75
Chemical Engineering	60	40	15	22	11	3	2	1	1	1	156
Civil Engineering	46	31	11	17	9	2	2	1	1		120
Computer Science & Engg.	39	25	9	14	7	2	1	0	1	1	99
Electrical Engineering	44	30	11	16	8	2	2		1	1	115
Electronics Engineering	51	34	13	19	9	3	2	1	0	1	133
Mechanical Engineering	57	38	14	21	11	3	2	1	1		148
Metallurgical Engineering	41	27	10	15	8	2	1	1	1	0	106
Mining Engineering	53	36	13	20	9						131
Pharmaceutical Engineering and Technology		20	8	11	6	2	1	00	1	0	80
Total	451	300	111	166	83	21	14	5	8	4	1163
Five-Years Integrated M.Tech. Dual Degree Programmes											
Biochemical Engineering with M.Tech. in Biochemical Engineering and Biotechnology		6	2	4	2	1	1	0	0	0	25
Bioengineering with M.Tech. in Biomedical Technology	8	5	2	3	1	1	0	0	1	 00	21
Ceramic Engineering	8	5	2	3	1	0	1	0	0	0	20
Civil Engineering	12	8	3	4	2	0	0	0	1	0	30
Computer Science & Engineering	13	9	3	5	3	0	1	0	0	0	34
Electrical Engineering with M.Tech. in Power Electronics	12	8	3	5	2	0	0	0	0	0	30
Engineering Physics	11	7	3	4	2	1	0	0	0	0	28
Industrial Chemistry	8	5	2	3	2	1	0	0	0	0	21
Materials Science & Technology	11	7	3	4	1	1	0	0	1	0	28
Mathematics & Computing	20	13	5	7	4	1	1	1	0	0	52
Mechanical Engineering	12	8	3	4	2	1	1	00	0	1	32
Metallurgical Engineering	11	7	3	4	2	0	0	1	0	0	28
Mining Engineering	13	8	2	5	2	0	0	0	0	0	30
Pharmaceutical Engineering and Technology	8	5	2	3	2	1	00	0	0	0	21
Total	156	101	38	58	28	8	5	2	3	1	400
Five-Years B.Arch. Degree Programme											
Architecture		7	2	4	2	1	00	0	0	0	26





COURSES	Students Intake										
	GE	OBC	EWS	SC	ST	PwD				Total	
						GE	OBC	EWS	SC	ST	
Two-Years M.Sc. Programmes											
Chemistry	9	6	2	4	2	1	1				25
Physics	10	7	3	3	1	0	0	0	0	1	25
Total	19	13	5	7	3	1	1			1	50

COURSES			Studen	ts Inta	ke		
	GE	OBC	EWS	SC	ST	PC#	Total
Two-Years M.Tech. Programmes							
Biochemical Engineering	5	3	1	2	1	(1)	12
Biomedical Engineering	5	3	1	2	1	(1)	12
Ceramic Engineering	10	6	2	4	2	(1)	24
Chemical Engineering	25	15	6	9	4	(3)	59
Civil Engineering	33	21	8	11	6	(4)	79
Electrical Engineering	25	15	6	9	4	(3)	59
Electronics Engineering	25	15	6	9	4	(3)	59
Decision Sciences and Engineering	5	3	1	2	1	(1)	12
Materials Science & Technology	10	6	2	4	2	(1)	24
Mechanical Engineering	25	15	6	9	4	(3)	59
Metallurgical Engineering	25	15	6	9	4	(3)	59
Mining Engineering	15	9	4	5	3	(2)	36
Systems Engineering	5	3	1	2	1	(1)	12
Two-Years M.Pharm. Programme							
Pharmaceutical Engineering and Technology	20	13	5	7	4	(2)	49
Grand Total of 2-Years M.Tech. Courses	233	142	55	84	41	(29)	555

# Student intake numbers for PC (5%) category has not been added in calculating total number of seats, as provision for the physically challenged candidate will be made from within the respective category.

### Convocation

The 9thConvocation was held on February08, 2021. Shri Jay Chaudhry CEO & founder of Zscalar, U.S. based cyber security Company was delivered the convocation address. A total of 1739 various degrees were awarded in 9th Convocation of the Institute. The 9th Convocation was held first time in virtual as well as online mode in the world. During 9th Convocation, only Medal/Cash prizes winners and Ph.D. graduands were permitted to attend the convocation in physical mode, more than 250 candidates received Medal/Cash prizes and degrees in person. The department-wise details of the degrees awarded are provided in Table.





#### **Degrees** awarded

Branch	Ph.D.	M.Tech.	М.	I.M.D.	Dual Degree				B.Tech.	В.	Total
			Pharm.		B.Tech.	M.Tech.	B. Pharm.	M. Pharm.		Pharm.	
Biochemical Engineering	3	7	00	0	13	13	0	0	0	0	36
Biomedical Engineering	5	8			12	12					37
Ceramic Engineering	5	12	00	0	18	18	0	0	48	0	101
Chemical Engineering	17	43			0	0			106		166
Chemistry	12	0	00	0	14	14	0	0	0	0	40
Civil Engineering	4	33			26	26			81		170
Computer Science & Engg.	9	0	00	0	17	17	0	0	65	0	108
Electrical Engineering	14	16			23	23			86		162
Electronics Engineering	11	30	00	0			0	0	88	0	129
Industrial Management	1	6									7
Materials Science & Tech.	13	17	00		13	13	0	0	0	0	56
Mathematical Sci- ences	6			1	23	23					53
Mechanical Engineering	16	23	00		24	24	0	0	110	0	197
Metallurgical Engineering	7	33			18	18			60		136
Mining Engineering	5	25			18	18	0	0	89	0	155
Pharmaceutics	13		36		18	18			42		127
Physics	9	00	00		21	21	0	0	0	0	51
Systems Engineering	3	5									8
TOTAL	153	258	36	1	258	258	0	0	775	0	1739

With this convocation, the total number of degrees awarded so far by the Institute is **42,572**. Total 13,909 degrees awarded by IIT(BHU) and before conversion of IT-BHU into IIT(BHU), the IT-BHU was awarded total number of degrees is 28,663:

<b>Sl. No.</b>	Programme	No	. of degrees awarded	_
		After conversion	Before conversion	Total
1.	Ph.D.	780	854	1634
2.	M.Tech.	2455	3119	5574
3.	M.Pharm.	411	653	1064
4.	I.M.D.	266		266
5.	Dual Degree B.Tech.	1472	0	1472
	M.Tech.	1472		1472
6.	Dual Degree B.Pharm.	76	0	76
	M.Pharm.	.Pharm. 76		76





Sl. No.	Programme	No. of degrees awarded					
		After conversion	Before conversion	Total			
7.	B.Tech.	6777	22,947	29,724			
8.	B.Pharm.	124	1,090	1,214			
	Total	13,909	28,663	42,572			

#### Award of Medals and Prizes to Students

#### **Convocation prizes**

Medals and Prizes awarded to students at the 9<sup>th</sup>Convocation:

#### 1. Ms. Ritu Sinha

She is awarded I.I.T.(B.H.U.) Varanasi Medal for standing First at the M.Tech. in Biochemical Engineering Examination, 2020.

#### 2. Shri Shahrukh Khan

He is awarded I.I.T.(B.H.U.) Varanasi Medal for standing First at the M.Tech. in Biomedical Engineering Examination, 2020.

#### 3. Shri Sayan Chattopadhyay

He is awarded I.I.T.(B.H.U.) Varanasi Medal for standing First at the M.Tech. in Ceramic Engineering Examination, 2020.

#### 4. Ms. Supriya Gupta

She is awarded I.I.T.(B.H.U.) Varanasi Medal for standing First at the M.Tech. in Chemical Engineering Examination, 2020.

#### 5. Shri Surendra Baniya

He is awarded

- a) I.I.T.(B.H.U.) Varanasi Medal for standing First at the M.Tech. in Civil Engineering Examination, 2020.
- b) R.P. Singh, IRSE (Retired) Gold Medal for securing highest marks at the M.Tech. in Civil Engineering Examination, 2020.

#### 6. Shri Anshul Bansal

He is awarded I.I.T.(B.H.U.) Varanasi Medal for standing First at the M.Tech. in Electrical Engineering Examination, 2020.

#### 7. Shri Gautam Kumar

He is awarded I.I.T.(B.H.U.) Varanasi Medal for standing First at the M.Tech. in Electronics Engineering Examination, 2020.

#### 8. Shri Tanveer Singh Behl

He is awarded Sanjeev Memorial Gold Medal for securing First position at the M.Tech. in Electronics Engineering (Digital Technology and Instrumentation) Examination, 2020.

#### 9. Shri Akkana Anudeep Kumar

He is awarded I.I.T.(B.H.U.) Varanasi Medal for standing First at the M.Tech. in Industrial Management Examination, 2020.





#### 10. Shri Soumya Chakraborty

He is awarded I.I.T.(B.H.U.) Varanasi Medal for standing First at the M.Tech. in Materials Science and Technology Examination, 2020.

#### 11. Shri Vinay Kumar Yadav

He is awarded

- a) I.I.T.(B.H.U.) Varanasi Medal for standing First at the M.Tech. in Mechanical Engineering Examination, 2020.
- b) Prof. (Dr.) Mahendra Kumar Jain Nyayacharya Gold Medal for securing highest CPI at the M.Tech. in Mechanical Engineering Examination, 2020.

#### 12. Shri Nikhil Pandey

He is awarded S.K. Memorial Gold Medal for standing First position at the M.Tech. in Mechanical Engineering (Machine Design) Examination, 2020.

#### 13. Shri Sadhu Munidhileep Kumar

He is awarded I.I.T.(B.H.U.) Varanasi Medal for standing First at the M.Tech. in Metallurgical Engineering Examination, 2020.

#### 14. Shri Kapil Beniwal

He is awarded I.I.T.(B.H.U.) Varanasi Medal for standing First at the M.Tech. in Mining Engineering Examination, 2020.

#### 15. Shri Mayur Zope

He is awarded I.I.T.(B.H.U.) Varanasi Medal for standing First at the M.Tech. in Systems Engineering Examination, 2020.

#### 16. Shri Shaik Azad

He is awarded I.I.T.(B.H.U.) Varanasi Medal for standing First at the M.Pharm. Examination, 2020.

#### 17. Shri Vaidyula Rinish Reddy

He is awarded I.I.T.(B.H.U.) Varanasi Medal for standing First at the 5-Year I.D.D. (B.Tech.-M.Tech.) in Industrial Chemistry Examination, 2020.

#### 18. Shri Gampa Phanideep

He is awarded I.I.T.(B.H.U.) Varanasi Medal for standing First at the 5-Year I.D.D. (B.Tech.-M.Tech.) in Mathematics and Computing Examination, 2020.

#### 19. Shri Gautam Kamalakar Naik

He is awarded I.I.T.(B.H.U.) Varanasi Medal for standing First at the 5-Year I.D.D. (B.Tech.-M.Tech.) in Engineering Physics Examination, 2020.

#### 20. Ms. Apoorva Nagar

She is awarded I.I.T.(B.H.U.) Varanasi Medal for standing First at the 5-Year I.D.D. (B.Tech.-M.Tech.) in Biochemical Engineering (Biochemical Engineering and Biotechnology) Examination, 2020.

#### 21. Shri Rahul Choudhary

He is awarded I.I.T.(B.H.U.) Varanasi Medal for standing First at the 5-Year I.D.D. (B.Tech.-M.Tech.) in Bioengineering (Biomedical Technology) Examination, 2020.





#### 22. Ms. Soujanya Madasu

She is awarded I.I.T.(B.H.U.) Varanasi Medal for standing First at the5-Year I.D.D. (B.Tech.-M.Tech.) in Ceramic Engineering Examination, 2020.

#### 23. Shri Anunay Jain

He is awarded I.I.T.(B.H.U.) Varanasi Medal for standing First at the 5-Year I.D.D. (B.Tech.-M.Tech.) in Civil Engineering (Structural Engineering) Examination, 2020.

#### 24. Shri Adit Agarwal

He is awarded I.I.T.(B.H.U.) Varanasi Medal for standing First at the 5-Year I.D.D. (B.Tech.-M.Tech.) in Computer Science & Engineering Examination, 2020.

#### 25. Shri Shubham Aggarwal

He is awarded I.I.T.(B.H.U.) Varanasi Medal for standing First at the 5-Year I.D.D. (B.Tech.-M.Tech.) in Electrical Engineering (Power Electronics) Examination, 2020.

#### 26. Shri Abhimanyu Chattopadhyay

He is awarded I.I.T.(B.H.U.) Varanasi Medal for standing First at the 5-Year I.D.D. (B.Tech.-M.Tech.) in Materials Science & Technology Examination, 2020.

#### 27. Shri Shivam Kumar

He is awarded I.I.T.(B.H.U.) Varanasi Medal for standing First at the 5-Year I.D.D. (B.Tech.-M.Tech.) in Mechanical Engineering Examination, 2020.

#### 28. Shri Shukla Shivank Sanjay

He is awarded I.I.T.(B.H.U.) Varanasi Medal for standing First at the 5-Year I.D.D. (B.Tech.-M.Tech.) in Metallurgical Engineering Examination, 2020.

#### 29. Shri Abhishek Singh

He is awarded I.I.T.(B.H.U.) Varanasi Medal for standing First at the5-Year I.D.D. (B.Tech.-M.Tech.) in Mining Engineering Examination, 2020.

#### 30. Shri Bhaskar Anand

He is awarded I.I.T.(B.H.U.) Varanasi Medal for standing First at the5-Year I.D.D. (B.Tech.-M.Tech.) in Pharmaceutical Engineering and Technology Examination, 2020.

#### 31. Ms. Mahima Mathur

She is awarded I.I.T.(B.H.U.) Varanasi Medal for standing First at the B.Tech. in Ceramic Engineering Examination, 2020.

#### 32. Ms. Aishwarya Sharma

She is awarded Harbans Gokul Memorial Gold Medal for standing first at the B.Tech. among the Electrical, Electronics and Ceramic Engg. Exam. 2020 and Best Project work in the area of Electrical, Electronics and Ceramics.

#### 33. Shri Avnish Singh

He is awarded:-

- a) I.I.T.(B.H.U.) Varanasi Medal for standing First at the B.Tech. in Chemical Engineering Examination, 2020.
- b) Prof. B.B. Bansal Memorial Gold Medal for being involved in Social Services/Co-curricular activities and having highest CPI at the undergraduate engineering Examination, 2020 among such students.





- c) The R.B.G. Modi Medal for standing First at the B.Tech. in Chemical Engineering Examination, 2020.
- d) Manishi Sharma Memorial Gold Medal for securing First position at B.Tech. Chemical Engineering Examination, 2020.
- e) Mrs. Gargi Devi Trivedi Memorial Gold Medal for securing highest marks in B.Tech. Chemical Engineering Examination, 2020.
- f) Prof. Y.D. Upadhya Memorial Gold Medal for securing highest CPI at B.Tech. Chemical Engineering Examination, 2020.
- g) Dr. R.J. Rathi Financial Award Rs. 1000/= cash for standing First at the B.Tech. in Chemical Engineering Examination, 2020.
- h) Manishi Sharma Memorial Cash Prize Rs. 2000/= for securing First position at the B.Tech. in Chemical Engineering Examination, 2020.

#### 34. Ms. Roli Bansal

She is awarded Smt. Indira Tripathi Gold Medal for securing highest CPI among the girl students at the B.Tech. in Chemical Engineering Examination, 2020.

#### 35. Shri Ankit Kumar

He is awarded:-

- a) I.I.T.(B.H.U.) Varanasi Medal for standing First at the B.Tech.in Civil Engineering Examination, 2020.
- b) CRS Iyengar Memorial Gold Medal for securing highest marks in B.Tech. 4-Year Civil Engineering Examination, 2020.
- c) Rai Bahadur Taracharan Gue Memorial Award Rs. 500/= cash for standing First at the B.Tech. in Civil Engineering Examination, 2020.
- d) Late Prof. Manoranjan Sengupta Platinum Jubilee Merit AwardRs. 1000/= cash for securing highest marks in B.Tech. in Civil Engineering Examination, 2020.
- e) Meenakshamma Shankaranaramappa Prize Rs. 500/= cash for securing highest marks in Environmental Engineering (Theory) at the B.Tech. Civil Engineering Examination, 2020.

#### 36. Ms. Jyoti Agrawal

She is awarded Smt. Indira Tripathi Gold Medal for securing highest CPI among the girl students at the B.Tech. in Civil Engineering Examination, 2020.

#### 37. Shri Ankan Bohara

He is awarded:-

- a) I.I.T.(B.H.U.) Varanasi Medal for standing First at the B.Tech.in Computer Science & Engineering Examination, 2020.
- b) President's Gold Medal for outstanding performance in academics among all disciplines of B.Tech. Examination 2020.
- c) C. Raja Gopal Memorial Gold Medal for securing highest marks in B.Tech. 4-Year Computer Science & Engineering Examination, 2020.
- d) Late Shri Shyam Sunder Lal Razdan Memorial Gold Medal for securing highest percentage of marks in B.Tech. Examination, 2020.
- e) Prof. Gopal Tripathi Memorial Gold Medal for securing highest marks at the B.Tech. Examination, 2020.
- f) Smt. Arati Paul and Prof. Binod Bihari Paul Gold Medal for securing highest marks in IV Year Examination among all the students of B.Tech. Examination, 2020.



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- g) Umesh Pratap Singh Gold Medal for First Rank at the B.Tech. Examination, 2020 among all the branches.
- h) Shri Raj Kishore Kapoor Silver Medal for securing highest marks at the B.Tech. Examination, 2020.
- i) Dr. Annie Besant Prize (in the forms of books by Dr. Annie Besant including copy of the 'Bhagavadgita') for standing First position among all the branches of B.Tech. Examination, 2020.

#### 38. Shri Naveen Punjabi

He is awarded Prof. V.V. Chalam Prize (The Prize shall be in the form of books by Mr. J. Krishnamurti) for standing Second position among all the branches of B.Tech. Examination, 2020.

#### 39. Ms. Shristi Raj

She is awarded Smt. Indira Tripathi Gold Medal for securing highest CPI among the girl students at the B.Tech. in Computer Science & Engineering Examination, 2020.

#### 40. Shri Shikhar Gupta

He is awarded:-

- a) I.I.T.(B.H.U.) Varanasi Medal for standing First at the B.Tech. in Electrical Engineering Examination, 2020.
- b) The R.B.G. Modi Medal for standing First at the B.Tech. in Electrical Engineering Examination, 2020.
- c) Himmat Narayan Singh Memorial Gold Medal for securing the First position and First Division in B.Tech. Electrical Engineering Examination, 2020.
- d) CRS Iyengar Memorial Gold Medal for securing highest marks in B.Tech. 4-Year Electrical Engineering Examination, 2020.
- e) N.V.R. Nageshwar Iyer (Prize Rs. 100/= in the form of books) for standing First in B.Tech. in Electrical Engineering Examination, 2020.
- f) Late Prof. Manoranjan Sengupta Platinum Jubilee Merit AwardRs. 1000/= cash for securing highest marks in the B.Tech. in Electrical Engineering Examination, 2020.

#### 41. Ms. Ananya Gupta

She is awarded:-

- a) Director's Gold Medal for outstanding all-round performance and excellent organizational abilities and leadership qualities among all B.Tech. graduates of 2020.
- b) Smt. Indira Tripathi Gold Medal for securing highest CPI among the girl students at the B.Tech. in Electrical Engineering Examination, 2020.

#### 42. Shri Aman Shreshtha

He is awarded:-

- a) I.I.T.(B.H.U.) Varanasi Medal for standing First at the B.Tech.in Electronics Engineering Examination, 2020.
- b) Lala Balak Ramji Kohinoor Memorial Gold Medal for securing highest marks at the B.Tech. Examination, 2020 among the branches of Civil, Mechanical, Electrical and Electronics Engineering.
- c) Late Prof. Nagesh Chandra Vaidya Gold Medal for standing First at the B.Tech. in Electronics Engineering Examination, 2020.
- d) Dr. (Late) Nandita Saha Roy Memorial Gold Medal for securing First position in B.Tech. Electronics Engineering Examination, 2020.





- e) C. Raja Gopal Memorial Gold Medal for securing highest marks in B.Tech. 4-Year Electronics Engineering Examination, 2020.
- f) Dr. Ayyagari Sambasiva Rao Prize Rs. 1000/= cash for standing First at the B.Tech. in Electronics Engineering Examination, 2020.
- g) Late Prof. Manoranjan Sengupta Platinum Jubilee Merit Award Rs. 1000/= cash for securing highest marks in B.Tech. in Electronics Engineering Examination, 2020.

#### 43. Ms. Anshi Jain

She is awarded Prof. A.K. Ghosh Silver Medal for standing Second Position in B.Tech. in Electronics Engineering Examination, 2020.

#### 44. Shri Prashant Baghel

He is awarded:-

- a) I.I.T.(B.H.U.) Varanasi Medal for standing First at the B.Tech.in Mechanical Engineering Examination, 2020.
- b) The Prince of Wales Medal for standing First at the B.Tech. in Mechanical Engineering Examination, 2020.
- c) Sudhir Kumar Sharma Memorial Gold Medal for securing highest marks in B.Tech. Mechanical Engineering Examination, 2020.
- d) CRS Iyengar Memorial Gold Medal for securing highest marks in B.Tech. 4-Year Mechanical Engineering Examination, 2020.
- e) Late Prof. Manoranjan Sengupta Platinum Jubilee Merit Award Rs. 1000/= cash for securing highest marks in B.Tech. in Mechanical Engineering Examination, 2020.

#### 45. Ms. Yavnika Chauhan

She is awarded Smt. Indira Tripathi Gold Medal for securing highest CPI among the girl students at the B.Tech. in Mechanical Engineering Examination, 2020.

#### 46. Ms. Anoushka Pal

She is awarded:-

- a) I.I.T.(B.H.U.) Varanasi Medal for standing First at the B.Tech.in Metallurgical Engineering Examination, 2020.
- b) Late Dr. R.N. Singh and Mrs. Uma Singh Medal for securing highest CPI among the girl students at the B.Tech. Examination, 2020.
- c) Swarnamma Memorial Gold Medal for securing highest marks in B.Tech. 4-Year Metallurgical Engineering Examination, 2020.
- d) Smt. Indira Tripathi Gold Medal for securing highest CPI among the girl students at the B.Tech. in Metallurgical Engineering Examination, 2020.
- e) The Bishan Das Basil Medal for securing First position among B.Tech. in Mining and Metallurgical Engineering Examination 2020.

#### 47. Shri Vatsal Jain

He is awarded Ms. Indira Ananthachari Endowment Fund Prize Rs. 10,000/= cash for securing highest CPI more than 7.50 and family income is less than Rs. 5 lacs per annum at the B.Tech. Metallurgical Engineering Examination, 2020.





#### 48. Shri Harsha Vardhan Saragadam

He is awarded Ms. Indira Ananthachari Endowment Fund Prize Rs. 10,000/= cash for securing highest CPI more than 7.50 and family income is less than Rs. 5 lacs per annum at the B.Tech. Metallurgical Engineering Examination, 2020.

#### 49. Shri Devank Singhai

He is awarded Ms. Indira Ananthachari Endowment Fund Prize Rs. 10,000/= cash for securing highest CPI more than 7.50 and family income is less than Rs. 5 lacs per annum at the B.Tech. Metallurgical Engineering Examination, 2020.

#### 50. Shri Shubham Kumar Mahato

He is awarded:-

- a) I.I.T.(B.H.U.) Varanasi Medal for standing First at the B.Tech.in Mining Engineering Examination, 2020.
- b) Dr. B.S. Verma Memorial Gold Medal for securing highest marks in B.Tech. Mining Engineering Examination, 2020.

#### 51. Shri Parth Ajmera

He is awarded:-

- a) I.I.T.(B.H.U.) Varanasi Medal for standing First at the B.Tech. in Pharmaceutical Engineering & Technology Examination, 2020.
- b) Aruna and Malviya Medal for standing First at the B.Tech. in Pharmaceutical Engineering & Technology Examination, 2020.
- c) Late Prof. G.P. Srivastava (Prize Rs. 200/= in the form of books) for standing First at the B.Tech. in Pharmaceutical Engineering & Technology Examination, 2020.

#### 52. Ms. Gauri Katiyar

She is awarded Late Sundari Devi Gold Medal for securing highest CPI > 8.50 as a girl student in Pharmaceutical Engineering and Technology at the B.Tech. Examination, 2020.

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# 6. Department of Architecture, Planning & Design

#### Year of Establishment: 2019

#### Head/Coordinator of the Department/School: Prof. K. K. Pathak w.e.f. April 2019

#### 1. Brief Introduction of the Department/School:

The department aims at addressing essential challenges faced by our country's infrastructure industry and academia. Students should not only have the creative urge to ideate a better built environment, but also develop confidence to experiment and invent technologies to execute those ideas. The program will essentially prepare students for a career in mainstream architectural practice in private and public domains, there will be a significant thrust to encourage them to take up other careers in research, academics, journalism, outreach and advocacy which are becoming increasingly relevant and even critical to the continuation of a habitable world as will be progressively defined through the lens of the universally accepted Sustainable Development Goals (SDG).

Now-a-days none of the subjects are completely independent. They are interdisciplinary and transdisciplinary in nature. IIT (BHU) is one of the best centre for setting up a new department of architecture and planning because here we have other well-established departments which will support interdisciplinary research and projects, e.g. the Electronics Department will help the planners know about the sensors, similarly the Department of Material science and Ceramic Engineering will let us know about the new materials as substitute, Electrical Department will support in Energy management, Computer Department in developing compatible software development, Mechanical Department will help in developing devices etc. Therefore, having all well-established departments will definitely help the new department grow in a faster and better way.

**Major areas of Research:** Currently there is no PhD programme. The PhD programme will be started due course of time considering expertise of faculty members

#### Area of the Department/School (in square meters): 900.00

#### Infrastructure

S. No.	Particulars	Number
1	No. of Classrooms	02 (Studios)
2	No. of Lecture Halls	01
3	No. of Laboratory	01
4	No. of Computers available for students in the Department/School/ School	16

#### Unique Achievement / Preposition of the Department/School

#### 2. Academic Programmes offered

#### **Students on Roll**

S. No.	Programme	I Year	II Year	III Year	IV Year	V Year & above
1.	B. Tech/B.Arch	18	14	Nil	Nil	Nil





S. No.	Name of Student	Roll No.	Conference/Seminar/Symposia/Workshop	Date & Venue	Financial Assistance From
ÌNDIA					
1	Gomati Goswami	19218006	Re-Imagining Court Infrastructure in India	Apr 05, 2021; Online	Nil
2	Gomati Goswami	19218006	Higher Education - Opportunities Abroad in Association with Student Alumni Interaction Cell (SAIC) IIT BHU	Jan 10, 2021; Online	Nil
3	Gomati Goswami	19218006	Energy Simulation by UPNEDA Lucknow - ECBC	Dec 31, 2020; Online	Nil
4	Sahil Ali Salmani	19218012	Architecture Visualisation	Jul 28, 2020; Online	Nil
5	Sahil Ali Salmani	19218012	The Role of Artificial Intelligence in Architecture	Oct. 2020; Online	Nil
ABROA	AD				
1	Gomati Goswami	19218006	Sustainable Interior Design Week by Martina Salomone, Architect @ U.K.	Nov 2-8, 2020; Online	Nil
2	SAHIL ALI SALMANI	19218012	Sustainable Interior Design Week	Nov. 6, 2020; Online	Nil
3	Sahil Ali Salmani	19218012	Working with Materials in SketchUp	Feb. 18, 2021; Online	Nil
	Sahil Ali Salmani	19218012	U Green	Mar. 30, 2021; Online	Nil

# Names of students/scholars who attended conferences/workshops/seminars and symposia abroad or in India

# Names of students/scholars who got prizes and awards outside the Institute

S. No.	Name of Student	Roll No.	Name of Prize	Date & Venue	Prize awarded by
1	A Mohamed Rafee	20218001	Winner (certificate of recognition)	Feb. 10, 2021(Online)	IITB-ISRO-AICTE Mapathon
2	Anju	20218002	Winner (certificate of recognition)	Feb. 10, 2021(Online)	IITB-ISRO-AICTE Mapathon
3	Asif Hussain Mazumder	20218003	Winner (certificate of recognition)	Feb. 10, 2021(Online)	IITB-ISRO-AICTE Mapathon
4	Deepti Gupta	20218004	Winner (certificate of recognition)	Feb. 10, 2021(Online)	IITB-ISRO-AICTE Mapathon
5	Hemank Vats	20218005	Winner (certificate of recognition)	Feb. 10, 2021(Online)	IITB-ISRO-AICTE Mapathon
6	M Madhumitha	20218008	Winner (certificate of recognition)	Feb. 10, 2021(Online)	IITB-ISRO-AICTE Mapathon
7	Paras Bhatia	20218010	Winner (certificate of recognition)	Feb. 10, 2021(Online)	IITB-ISRO-AICTE Mapathon
8	Pratibha Yadav	20218011	Winner (certificate of recognition)	Feb. 10, 2021(Online)	IITB-ISRO-AICTE Mapathon
9	Priyanshu Prasad	20218012	Winner (certificate of recognition)	Feb. 10, 2021(Online)	IITB-ISRO-AICTE Mapathon





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S. No.	Name of Student	Roll No.	Name of Prize	Date & Venue	Prize awarded by
10	Seema Hazowary	20218014	Winner (certificate of recognition)	Feb. 10, 2021(Online)	IITB-ISRO-AICTE Mapathon
11	Shinde Prathamesh Sharadrao	20218015	Winner (certificate of recognition)	Feb. 10, 2021(Online)	IITB-ISRO-AICTE Mapathon
12	Yazura Shankhdhar	20218018	Winner (certificate of recognition)	Feb. 10, 2021(Online)	IITB-ISRO-AICTE Mapathon
13	Gomati Goswami	19218006	2nd Prize in Presentation/Dissertation on Architecture Assignment as part of Shubhashray Housing Internship Assignment	Mar. 19, 2021; LinkedIn, FB	Shubhashray Housing
n					

# Faculty & their Activity

# Faculty and their areas of specialisation

S. No.	Name, Qualifications, Employee No.	Date of award of PhD Degree	Major Areas of Specialization (Max. 3 Areas)
Profess	sor		
1	Prof. K. K. Pathak 50056(PhD)	Feb 2000	Solid and structural Mechanics
Assista	ant Professor		
1	Dr. Aaditya Pratap Sanyal 50240 (PhD)	June 2019	Construction Management, Green Building, Climatology
Assista	ant Professor(Full time on Contract)		
1	Dr. Harsimran Kaur FAC- VF 22 (PhD) (Full time on contract)	June 2020	Urban Sustainability, Hill Architecture, Spatial Analytics and Data Visualization
2	Ar. Renuka Singh FAC-VF24 (M.Arch.) (Full time on contract)	-	Urban Design, Architectural Design, Nature Based Solutions
3	Ar. Akhil Nawani FAC-VF23(M.Arch.) (Full time on contract)	-	

# **Technical and Non-Teaching Staff**

Sl. No.	Name, Qualifications	Designation, Em- ployee No.	Date of Appointment in the department
1.	Ravi Kumar Sonkar, B.Tech.	Junior Assistant 50090	25/12/2020
2.	Abhishek Tiwari, MBA	Data Entry Operator (Outsourcing)	05/08/2019





### Short-term courses/workshops/seminars/symposia/conferences organised by faculty members

S. No.	Coordinator		Title			Period
1	Dr. Aaditya Pratap Sanyal	Opportunities	and	Challenges	in	Feb. 01-06, 2021
		sustainable construction practices				

# Short-term courses/workshops/seminars/symposia/conferences/training programmes attended by faculty members in academic institutions and public sector undertakings

S. No.	Name of Faculty Member	Title	Period and Venue
Semina	rs/Symposia/Conferences		
1	Dr. K. K. Pathak	65th CONGRESS OF ISTAM, International Conference, ISTAM-2020;	Dec 09-10, 2020; GITAM University, Hyderabad, India,
2	Dr. K. K. Pathak	The International Conference on Futuristic Technologies 2021,	Jan. 22-24, 2021; Indian Institute of Technology, Delhi, India,
3	Dr. Aaditya Pratap Sanyal	Virtual Environment Software Training	Aug. 08-15, 2020; Online
4	Dr. Aaditya Pratap Sanyal	Recent Trends of Research in Civil Engineering structures	Sept 22-26, 2020; Department of Civil Engineering, NIT Rourkela
5	Dr. Aaditya Pratap Sanyal	Sustainable Construction Engineering: Research and Practices	Oct 19-23, 2020; Department of Civil Engineering, VNIT, Nagpur
6	Dr. Aaditya Pratap Sanyal	Sustainable Architecture Week	Jan 11-15, 2021; organised by UGREEN, Brazil (online)
7	Dr. Aaditya Pratap Sanyal	Sustainable Interior Design Week	Mar 15-19, 2021; organised by UGREEN, Brazil
8	Dr. Aaditya Pratap Sanyal	International Virtual Workshop on Energy management in Smart Cities (EMSC-2021)	Mar 25-26, 2021; BITS, Pilani
9	Dr. Harsimran Kaur	TEQIP-III, International Congress on Sustainable Development through Engineering Innovations	Sept 17-19, 2020; Online by Guru Nanak Dev Engineering College Ludhiana, Punjab
10	Dr. Harsimran Kaur	Risk Management of Biological and Cascading Hazards: in the Context of Pandemics	Oct 12-16, 2020; Online by IITR, RIKA India, Keio university, ARISE India, GIDM
11	Dr. Harsimran Kaur	Hill Area Environment, Climate Change, Sustainable Development and Landslide Risk Reduction & Resilience	Oct 20, 2020; Online by NIDM, Ministry of Home Affairs, GoI & IIT Guwahati
12	Dr. Harsimran Kaur	Socio-ecological Resilience in Hills	Dec 18-22, 2020; NIT Hamirpur
13	Dr. Harsimran Kaur	Planning Pandemic Resilient Cities for India: The Road Ahead	Jan 8, 2021; Atal Bihari Vajpayee Institute of Good Governance and Policy Analysis (AIGGPA)
14	Dr. Harsimran Kaur	Assessing urban sustainability	Jan 11-15, 2021; VNIT Nagpur
15	Dr. Harsimran Kaur	Disaster Resilient Building Constructions	Jan 27-30, 2021; CSIR-CBRI, Roorkee
16	Dr. Harsimran Kaur	Archi-tech conference	Feb 27-28, 2021; IIT Madras
17	Ar. Akhil Nawani	Risk Management of Biological and Cascading Hazards: In the Context of Pandemics	Oct 12-16, 2020; by Keio University, IIT Roorkee, RIKA India, Arise India, GIDM (Online)





– Indian Institute of Technology (BHU) Varanasi

S. No.	Name of Faculty Member	Title	Period and Venue
18	Ar. Akhil Nawani	Opportunities and Challenges in sustainable construction practices	Feb 01-06, 2021; Department of APD, IIT-BHU (Online)
19	Ar. Akhil Nawani	Archi-Tech Summit	Feb 27-28, 2021 at IIT Madras (Online).
20	Ar. Renuka Singh	Sustainable Architecture Week	Jan 11-15, 2021; organised by UGREEN_US (online)
21	Ar. Renuka Singh	Opportunities and Challenges in Feb 01-06, 2021; Departme sustainable construction practices IIT-BHU (online)	
22	Ar. Renuka Singh	Sustainable Interior Design Week	Mar 16-19, 2020; organised by UGREEN_US (Online)
Meeting	zs		
1	Dr. Harsimran Kaur	Indo-U.S.KnowledgeExchangeforDec 12, 2020; Online by ArizeResilient Future CitiesUniversity - US, Town and Planning Organization - India	
2	Dr. Harsimran Kaur	TEQIP-III Sponsored International Conference "AtamNirbhar Bharat: Technological Transformation and Preparedness in the Post Covid World"	23rd, 2021 Online appointed as session chair by Deenbandhu Chhotu Ram University of Science & Technology, Murthal, Sonepat

# Special lectures delivered by faculty members in other institutions

S. No.	Name of faculty Member	Topic of Lecture	Institution	Date
1	Dr. K. K. Pathak	Engineered Affordable Housing	Shri Vaishnav Institute of Architecture, Indore	Dec. 5, 2020
2	Dr. K. K. Pathak	Advancement in Modelling & Simulation in Design & Manufacturing Field	Oriental Institute of Science & Technology, Bhopal	Jul 30, 2020
3	Dr. Aaditya Pratap Sanyal	Fire Hazard Mitigation Strategies for High-rise Buildings	KPR Institute of Engineering and Technology, Coimbatore	Oct 15, 2020
4.	Dr. Harsimran Kaur	Engineering Aspect of Design: Computer Applications in Design	Design and Innovation, BHU	Mar 16, 2021

#### Honours and awards

S. No.	Name of Faculty Member	Details of Award
1	Dr. Aaditya Pratap Sanyal	Invited as External Expert Member of Board of Studies (B. Arch) in IET Dr. Rammanohar Lohia Avadh University, Ayodhya on Oct. 17, 2020
2	Dr. Aaditya Pratap Sanyal	Invited in Expert Committee for evaluation of Concepts, Designs and Details for project "Redevelopment of Dr. Sampoorand Stadium at Sigra" at Varanasi Smart City Limited, Varanasi on Oct. 23, 2021
3	Dr. Harsimran Kaur	Declared as Champion in IITB-ISRO-AICTE Mapathon

# Fellowships of academic and professional societies

S. No.	Name of Faculty Member	Details of Fellowship
1	Dr. Aaditya Pratap Sanyal	IGBC-Accredited Professional, Life-time





#### Books, monographs authored/co-authored

S. No.	Name of Author/Co-Author	Title	Publisher
1	V. Siwach, V. Bhardwaj, A. Sharma and A. P. Sanyal	Energy Retrofitting Using Daylighting: A Literature Review, in Issues in Contract Management and Energy Management,	Research and Publication Department, NICMAR, 2020

#### 1. Design and Development Activities

#### New facilities added

S. No.	Details (Infrastructure, Equipments, etc.)	Value (in Lakhs of Rupees)
1	Climatology Laboratory (IES VE 2021, Radiant Temparature, Solar Power Meter, Thermohygrometer, Air Quality Monitor, Lux Meter, Infrared Thermometer, Universal IAQ Instrument, Digital Thermometer, Sound Level Meter, Thermal Imaging Camera)	Rs. 11.80 lakhs
2	Computer Laboratory (16 Desktop PC)	Rs. 11.52 lakhs

#### 5. Research and Consultancy

#### **Research Publications**

S. No.		No.
1	Total Number of Papers Published in Refereed National Journals	04
2	Total Number of Papers Published in Refereed International Journals	01
3	Total Number of Papers Presented in National Conferences	02
4	Total Number of Papers Presented in International Conferences	01

#### **Refereed International Journals**

1. Kaur H. and Garg P. (2020) City Profile: New Tehri. International Journal of Cities. 102(102718):1-19

#### **Refereed National Journal**

#### Before sanding nodal member should ensure that the Publications should be strictly in this format.

- Chaubey, A.K., Raj, S., Tiwari, P., Kumar, A., Chakrabarti, A., and Pathak, K.K. (2020) Bi-axial and shear buckling of laminated composite rhombic hypar shells, Structural Engineering and Mechanics, Vol. 74, No. 2, 227-241
- 2. Narayan, Sharma, A. and Pathak, K.K. (2020) Buckling analysis of space frames using experimental and numerical techniques, Journal of Structural Engineering, 47(3)-227-232
- 3. Agrahari, R.K., Pathak K.K. and Sharma A. (2020) Seismic acceleration amplification factor model for nonstructural components in RC frame structures, Journal of Structural Engineering,47(3)-181-194
- 4. Narayan and Pathak K.K. (2020) Buckling analysis of braced frames under axial and lateral loadings: The effect of bracing location, Advances in Structural Technologies, LNCE, 81-317-334

#### **Proceedings of International Conferences**

 Sehgal V and Kaur H. 2020. Urban Heritage Conservation for Sustainable Development: A Case of Kapurthala. Sustainable Development Through Engineering Innovations 113: 235-244, International Conference of SDEI, GNDEC, Ludhiana, India, September 2020.

#### **Proceedings of National Conferences**

1. Narayan and Pathak K.K. (2020) Controlling the excessive deflection of beams in the braced frames under





repetitive loads, 65th CONGRESS OF ISTAM, International Conference, ISTAM-2020 at Hyderabad (9-10 Dec 2020), India organized by GITAM University.

2. Narayan and Pathak K.K. (2021) Analysis of structural engineering problems based on futuristic connection definitions, The International Conference on Futuristic Technologies 2021 at Delhi (22-24 Jan 2021), India organized by Indian Institute of Technology, Delhi

#### 6. Any other Information

#### 1. Expert lecture organised

Sl. No.	Name of Speaker	Торіс	Date
1.	Ar. Nilanjan Bhowal Principal Architect, Design Consortium	Sustainable Architecture	Aug 02, 2020 (Online mode)
2.	Dr. S.P. Bhattacharya Assistant Professor IIT Kharagpur	The Utility of structures in Architectures	Nov 19, 2020 (Online mode)
3.	UPECBC	Energy Simulation and Energy Conservation Building Code	Dec 28, 2020 (Online mode)
4.	Mr. Shovin Bhattacharjee Artist, Designer & Art Conservator (Founder@SHOVINstudio	Art-Design	17/02/2021 (Online mode)
5.	Prof. Pushplata, Retired Professor IIT Roorkee	Architectural Design Process	01/03/2021 (Online mode)
6.	Ar. Gurucharan Chhabra Architect	A Journey into Architectural Design	05/03/2021 (Online mode)

#### 2. Design Consultation at IIT-BHU

- a. Logo design for I-DAPT Hub Foundation, IIT-BHU, Varanasi
- b. Review of layout of animal house of the Department of Pharmaceutical Engineering and Technology, IIT(BHU) date: 21.10.2020
- c. Design the Steam Power Lab of Department of Mechanical Engineering, IIT(BHU), date: 22.10.2020
- d. Wall design of Entry foyer, Main Building, IIT-BHU (Ongoing)







Climatology Lab



Drafting Studio





# 7. Department of Ceramic Engineering

Year of Establishment : 1924

**Complete Name of Department :** Department of Ceramic Engineering **Head of the Department of Ceramic Engineering:** Prof. V. K. Singh

### 1. Brief Introduction of the Department:

The founder of Banaras Hindu University, Pandit Mandan Mohan Malviyaji instituted courses in Glass and Ceramic Technology as early as 1924 with the noble objective of advancing glass and ceramic technology in India. The Department offers B. Tech, B. Tech - M. Tech. (Dual Degree), M. Tech. and Ph. D. degrees in Ceramic Engineering. M. Tech. and Ph. D. programs are interdisciplinary and are also open to those students of allied branches of Engineering and Sciences, who qualify GATE or NET—Sponsored candidates from industries and R&D organization are also admitted in the PG Programs. The Department is pursuing active research in the emerging areas of glass, glass ceramics, bio-glass and bio-glass ceramics, refractories, ceramic white-wares, pottery & porcelain, cement, electrical and electronic ceramics. Research papers are being published in reputed national and international Journals regularly.

The Department regularly works in collaboration with Academic and Research institutions, National Laboratories and various Ceramic industries through regular contacts, visits, seminars, symposia, workshops and conferences. The Department has also been rendering technical advice and consultancy to the industries under Industrial Consultancy and Testing Services of the Institute from time to time. The contribution of this very Department of Ceramic Engineering during past is unparallel to the entire industrial, research and development and educational areas in the country. The Department is having number of projects funded by different government and private organization. For enhancing collaboration with Academic and Research Institutions globally, the Department has MOU with University of Connecticut and Oklahoma USA, to create research and testing facilities for industrial development established IIT (BHU) – IRMA Centre of Excellence for Refractory with participation of Industrial Organizations and to work for technology up-gradation and support for Small and Medium sized ceramic and glass industries created Mahamana Glass and Ceramic Technology Skill Development Centre.

#### **Teaching programs**

4 Years B. Tech. - Ceramic Engineering

5 Years B. Tech. - M. Tech. Dual Degree (IDD), Ceramic Engineering

2 Years M. Tech. - Ceramic Engineering

Ph.D. - Ceramic Engineering

#### Major areas of Research:

- » Glass and Glass Ceramics
- » Refractories
- » Electrical and Electronic Ceramics
- » Cement and Advanced Building Materials
- » Bio Ceramics
- » Ceramic Micronutrients
- » Energy Materials; Fuel cell, Solar cell, and Batteries
- » Ceramic Waste Management
- » Ultra-High Temperature & Light Weight Ceramics





### Area of the Department/School (in square meters): ${\sim}5000~m^2$

#### Infrastructure

S. No.	Particulars	Number
1	No. of Classrooms	2
2	No. of Lecture Halls	2
3	No. of Laboratory	8
4	No. of Computers available for students in the Department/School/School	23

# 2. Academic Programmes offered

#### **Students on Roll**

S. No.	Programme	I Year	II Year	III Year	IV Year	V Year& above
1.	B. Tech	67	39	35	44	-
2.	Dual Degree	15	10	10	18	15
3.	M. Tech/ M. Pharm	21	11	-	-	-
4.	Ph. D (Under Institute Fellowship)	1	2	10	14	17
5.	Ph. D (Under Project Fellowship)	-	-	1	-	-
6.	Ph. D (Under Sponsored Category)	1	-	-	-	-

# Names of students/scholars who attended conferences/workshops/seminars and symposia abroad or in India

S. No.	Name of Student	Roll No.	Conference/Seminar/Sympo- sia/Workshop	Date & Venue	Financial Assistance From
ÌNDIA					
1	Akanksha Gupta	18031007	International Virtual Conference on "Frontiers in Manufacturing Technology" (FMT 2020)	October 13-14, 2020, organized by Department of Physics, School of Applied Sciences, Kalinga Institute of Industrial Technology (KIIT), Bhubaneswar-751024, Odisha, INDIA.	Self
2	Akanksha Gupta	18031007	26 <sup>th</sup> International Conference (Online) of International Academy of Physical Sciences (CONIAPS XXVI) on 'Advances in Applied Physics & Earth Sciences'	December 18-20 <sup>th</sup> 2020 at Department of Physics, School of Basic Sciences, Manipal University Jaipur, INDIA.	Self

#### Names of students/scholars who got prizes and awards outside the Institute

S. No.	Name of Student	Roll No.	Name of Prize	Date & Venue	Prize awarded by
1	Mr.SayanChattyopadhyay	18032013	PMRF	02/02/2021	Govt. of India





# Names of scholars/students who won Convocation/Institute Day prizes

S. No.	Name of Student	Roll No.	Name of Prize	Prize awarded by
1	Shri Sayan Chattopadhyay	18032013	He is awarded I.I.T.(BHU) Varanasi Medal for standing First at theM.Tech. in Ceramic Engineering Examination, 2020.	IIT(BHU)
2	Ms. Soujanya Madasu	15034014	She is awarded I.I.T.(BHU) Varanasi Medal for standing First at the5-Year I.D.D. (B.TechM.Tech.) in Ceramic Engineering Examination, 2020.	IIT(BHU)
3	Ms. Mahima Mathur	16035022	She is awarded I.I.T.(BHU) Varanasi Medal for standing First at theB.Tech. in Ceramic Engineering Examination, 2020.	IIT(BHU)
4	Ms. Aishwarya Sharma	16035004	She is awarded Harbans Gokul Memorial Gold Medal for standing firstat the B.Tech. among the Electrical, Electronics and Ceramics Engg.Exam. 2020 and Best Project work in the area of Electrical, Electronicsand Ceramics.	IIT(BHU)

# 3. Faculty & their Activity

### Faculty and their areas of specialisation

S. No.	Name, Qualifications, Employee No.	Date of award of PhD Degree	Major Areas of Specialization (Max. 3 Areas)
PROFE	SSORS		
1	Prof. Vinay Kumar Singh, 17365	1994	Bio-Ceramics, Cements, Dental Materials, Glass, Refractories
ASSOC	CIATE PROFESSORS		
1	Dr. Anil Kumar, 16730	1991	Glass Technology & Furnaces
2	Dr. M. R. Majhi, 18295	2012	Refractory Technology, Bio Ceramics, Composite Material
ASSIS	TANT PROFESSORS		
1	Dr. P. K. Roy, 19780	2009	Magnetic & ferroelectric ceramics, Size dependent properties of nano materials, Synthesis-structure- property correlation in materials, Refractories, Waste management
2	Dr. Ashutosh Kumar Dubey, 50037	2012	Piezoelectric Biomaterials, Functionally graded materials, Nanoporous bioceramics
3	Dr. Mohammad Imteyaz Ahmad, 50043	2009	Inorganic photovoltaic materials, Composites, Materials Processing
4	Dr. Preetam Singh, 50042	2010	Energy Materials, Rechargeable Battery, Fuel Cells
5	Dr. Santanu Das, 50055	2012	Synthesis and characterizations of various functional nanostructures, including, 2D graphene and transition metal di-chalcogenides (TMDC), CNT, ferrite-nanoparticles, quantum dots etc for applications in the field of transistors, hydrogen energy, light sensor diode, energy storage, sensors, energy generations, and other optoelectronic device applications.
6	Dr. Subrata Panda,50252	2018	Advanced Materials Processing, Metal Hydrides, Powder Processing, Advanced Ceramics etc.





S. No.	Name, Qualifications, Employee No.	Date of award of PhD Degree	Major Areas of Specialization (Max. 3 Areas)
Senior	Scientific Officer		
1.	Dr. Sudama Singh, 18991	1992	Pollution Control and Refractory
2.	Dr. R. K. Chaturvedi, 18989	1991	Corrosion and Glass Nutrients

# **Technical and Non-Teaching Staff**

Sl. No.	Name, Qualifications	Designation, Employee No.	Date of Appointment in the department
1	Shri R. K. Sharma Intermediate	Senior Technical Superintendent Gr II, 16662	22.12.1989
2	Shri Bhagmal Singh Intermediate	Senior Technical Superintendent Gr II, 16655	12.01.1990
3	Shri Mansha Ram Intermediate	Senior Technical Superintendent 13712	28.05.1987
4	Shri Madan Kumar Intermediate	Senior Technical Superintendent 13710	22.02.1985
5	Shri Pankaj Kumar Singh Intermediate	Senior Technical Superintendent 18750	15.12.2008
6	Shri Subash Singh Intermediate	Technical Superintendent 13723	15.10.1998
7	Shri Barun Kumar Singh Intermediate	Junior Technical Superintendent 13722	15.10.1998
8	Shri Shiv Jatan Intermediate	Junior Technical Superintendent 14203	12.08.1991
9	Shri P. K. Bhaduri Intermediate	Senior Technician 16739	21.08.1982
10	Shri Gopal Yadav Intermediate	Junior Technical Superintendent 16213	20.04.1995
11	Shri Raj Kumar Mishra Intermediate	Senior Technician 18656	05.08.2008
12	Shri Ashish Tripathi Graduation	Senior Technician 19607	21.07.2012
13	Shir Vinod Kumar High School	Junior Technical Superintendent 13707	16.05.1997
14	Shri Pawan Kumar Post Graduation	Junior Superintendent 50165	08.08.2017
15	Shri Shailendra Kumar Post Graduation	Junior Assistant 50093	08.05.2017

# Short-term courses/workshops/seminars/symposia/conferences organised by faculty members

S. No.	Coordinator	Title	Period
1	Dr. Pradip Kumar Roy	Thin film devices for sensor applications	25-29 <sup>th</sup> January,2021 (Co-Coordinator)
2	Dr. Pradip Kumar Roy	Advances in Machining and Processing Technology	01-06 <sup>th</sup> February,2021 (Co-Coordinator)
3	Dr. Santanu Das	Industrial Practice of Refractories and High-Temperature Ceramics: Testing and Characterizations	March 22nd-23rd, 2021
4	Dr. Santanu Das	AICTE Sponsored Short Term Course On "Advanced Materials Characterizations: From fundamentals toward applications"	February 22-26, 2021
5	Dr. Santanu Das	Advanced Course 2: Material Synthesis and Experimental Technique – Bulk to Nano	21 <sup>st</sup> September 2020 to 03 <sup>rd</sup> October 2020
6	Dr. Santanu Das	Foundation Course 1: Materials Synthesis and characterizations	07 <sup>th</sup> Sep 2020-19 <sup>th</sup> Sep 2020





S. No.	Name of faculty Member	Topic of Lecture	Institution	Date
1	Dr. Pradip Kumar Roy	Usage of Nano Materials in Industrial Lightning Arrester	International Seminar on Emerging Technologies of Nano Science, Environment and Energy: Covid-19 Restriction', at K.C. College of Eng. &Mgmt Studies & Research, Thane, India	23-24 <sup>th</sup> June, 2020
2	Dr. Pradip Kumar Roy	Metal oxide varistor for surge arrestor	National Workshop on 'Introduction to Ceramic Science, Technology and Manufacturing'Organized by Dept. of Ceramic Engineering, UCET, BTU, Bikaner, India	December 7-9 <sup>th</sup> , 2020
3	Md Imteyaz Ahmad	3D printing of ceramics	National Institute of Technology Patna	December 10, 2020
4	Md Imteyaz Ahmad	X-ray photoelectron spectroscopy: Applications	National Institute of Technology Patna	December 17, 2020
5	Dr. Santanu Das	Emerging functional nanomaterials for electronic, optoelectronic, and energy devices	Centre for Nanotechnology Research, Vellore Institute of Technology, Vellore TN	March 9 <sup>th</sup> , 2021
6	Dr. Santanu Das	Two-dimensional hetero- structured materials for functional applications: New archetypes of nano-scale engineering	Rajkiya Engineering College Banda	September 22 <sup>nd</sup> 2020
7	Dr. Santanu Das	Synthesis and Processing of Advanced Materials and Nanomaterials: Part II	ManonmaniamSundraranar University Tirunelveli 627012	08 <sup>th</sup> September 2020
8	Dr. Santanu Das	Synthesis and Processing of Advanced Materials and Nanomaterials: Part I	ManonmaniamSundraranar University Tirunelveli 627012	07 <sup>th</sup> September 2020
9	Ashutosh Kumar Dubey	Piezoelectric Bioceramics as next generation prosthetic orthopedic implants	OBMODTEA 2020 at NIT Rourkela (online)	25 September, 2020
10	Ashutosh Kumar Dubey	Influence of surface charge on cellular and antibacterial response	SCTA 2020 NIT KSurathkal (Online)	18 December, 2020
11	Ashutosh Kumar Dubey	Piezobiomaterials: New generation prosthetic orthopedic implants	ICBMI-2020 jointly by Bharathiar University, IISc Bangalore, IIT-Delhi and IIT-Guwahati (online)	8 December, 2020

# Special lectures delivered by faculty members in other institutions

#### Books, monographs authored/co-authored

S. No.	Name of Author/Co- Au- thor	Title	Publisher
1	Ashutosh Kumar Dubey	Interdisciplinary Engineering Sciences: Concepts and Applications to Materials Science	CRC Press (Taylor and Francis Group, UK)
2	Satyabrata Jit and Santanu Das	2D Nanoscale Heterostructured Materials: Synthesis, Properties and Applications	Elsevier, USA





S. No.	Name of Author/Co- Au- thor	Title	Publisher
3	Chandan Kumar, Santanu Das, and Satyabrata Jit	Chapter 7: Device Physics and Device Integration of 2D Heterostructures in 2D Nanoscale Heterostructured Materials: Synthesis, Properties and Applications	Elsevier, USA
n			

# Editorial boards of journals

S. No.	Name of Faculty Member	Position (Editor/ member)	Name of Journal
1	Ashutosh Kumar Dubey	Associate Editor	International Journal of Applied Ceramic Technology (@ American Ceramic Society), Wiley

# 4. Design and Development Activities

# **Patents** filed

S. No.	Name of Faculty Member	Title of Patent
1	Dr. Santanu Das	A two dimensional photosensitive metal oxide semiconductor (mos) capacitor
2	Dr. Pradip Kumar Roy	An eco-friendly method of fabricating mullite foam and a product thereof
3	Dr. Pradip Kumar Roy	A method of fabricating density gradient multi-layered spinel refractory and a product thereof
4	Dr. Pradip Kumar Roy	Composition and method for synthesis of strontium hexaferrite based non-rare- earth magnets

# 5. Research and Consultancy

# Sponsored research projects

S. No.	Title	Period	Funding Agency	Amount (in lakhs of Rs.)	Co- ordinator
1	Development of rare earth free ceramic magnet with high energy and curie temperature for motor applications	July2017 to Jan 2021	DST- Early Career Research Award Scheme	45.221	Dr. P. K. Roy
2	Development of high strength ceramic magnet for rotating machine applications	Oct 2019 To Sept 2022	IMPRINT IIC	35.916	Dr. P. K. Roy
3	Metal nanostructure assisted plasmonic hot electron induced phase transformation in 2D-transition metal di- chalcogenides for hydrogen evolution reaction	2020-2023	MHRD	1.0 Cr	Dr. Santanu Das
4	Materials for Hydrogen Generation By Solar Water Splitting	2020-2024	Norwegian Council of Education and Research, Norway	3.3 million NOK	Dr. Santanu Das





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S. No.	Title	Period	Funding Agency	Amount (in lakhs of Rs.)	Co- ordinator
5	Development of Ceramic Nitride thin-films for soft x-ray applications	2020-2022	UGC-DAE consortium for Scientific Research	50,000 INR	Dr. Santanu Das
6	Ageing studies and estimation of thermal properties of liner materials	2019-2022	DRDO	1.6 Cr INR	Prof. P. Maiti, SMST
7	Surface charge induced antibacterial and cellular response of Hydroxyapatite- perovskite composites for orthopedic implant applications	2021-24	CST, Govt. of Uttar Pradesh	Rs. 10,92,000/-	Dr. Ashutosh Kumar Dubey

#### Faculty members' participation with other universities under MoUs

- 1. Dr. Santanu Das, University of Malaysia, Pahang
- 2. Dr. Ashutosh Kumar Dubey with Nagoya Institute of Technology, Nagoya, Japan.

#### **Research Publications**

S. No.		No.
1	Total Number of Papers Published in Refereed International Journals	45
2	Total Number of Papers Presented in International Conferences	03

**Refereed International Journals** (Rai Amrendra, Rai Pooja, Kumar Vijay, Singh Naresh Kumar, Singh Vinay Kumar. (2020) Effect of Sintering Temperature on the Physico Mechanical Behavior of SiC Reinforced Zinc Magnesium Based Composite. Metals and Materials International. 1-9.

- 1. Rai Amrendra, Rai Pooja, Kumar Vijay, Singh Naresh Kumar, Singh Vinay Kumar. (2020)Study of mechanical, electrochemical, cellular and antibacterial response of  $Zn_2Mg_6SiC$  biodegradable implant. Ceramics International. 46, 18063–18070.
- 2. Rai Pooja, Chaturvedi Raj Kumar, Mishra Apoorv, Kumar Vijay, Singh VK (2020) To develop biodegradable Mg-based metal ceramic composites as bone implant material. Bull Mater Sci. 1-7.
- 3. Chaturvedi RK, Kumar Vijay, and Singh VK (2020) Leaching behavior of vitreous fertilizers for application as plant nutrients. Journal ofFood Nutrition and Agriculture. 3:14-18.
- Pandey N, Ram SC, Chackravarty I and MajhiMR(2020)Physical and thermo-mechanical properties of coated and without coated alumina-boron based refractory castable for petrochemical industry application. 28(2): 698-703.
- 5. Hossain SK S, Roy PK(2020)Sustainable ceramics derived from solid wastes: a review" Journal of Asian Ceramic Societies. 8(4); 984–1009.
- 6. SutharMukesh, KAvinash Srivastava, Joshi Raj K,Roy P K(2020) Nanocrystalline cerium-doped Y-type barium hexaferrite; a useful catalyst for selective oxidation of styrene, Journal of Materials Science: Materials in Electronics.31: 16793-16805.
- 7. VermaPriyanka, Roy P K(2020)Effect of Gd substitution on the dielectric and magnetic properties of BSFO based multiferroic system. Journal of Materials Science: Materials in Electronics. 31: 13028–13039.
- 8. Hossain SK S, PyareRam, Roy PK(2020) Synthesis of in-situ mullite foam using waste rice husk ash derived sol by an ecological slip-casting route. Ceramics International. 46: 107871-10878.





- 9. Hossain SK S, K. Praveena, Roy P K(2020) Study the magnetic and dielectric properties of Sn substituted nickel-cobalt ferrite synthesized by auto combustion method. Journal of Materials Science: Materials in Electronics.31: 15097-15107.
- 10. Singh A, Kumar Mand Dubey AK (2020) Effect of pre-existing diseases on COVID-19 infection and role of new sensors and biomaterials for its detection and treatment. Medical Devices and Sensors. e10140: 1-18.
- 11. Khare D, BasuBand Dubey A K (2020) Electrical stimulation and piezoelectric biomaterials for bone tissue engineering applications. Biomaterials. 258: 120280.
- 12. Verma A S, Kumar D and Dubey A K (2020), Antibacterial and cellular response of Piezoelectric Na<sub>0.5</sub>K<sub>0.5</sub>NbO<sub>3</sub> modified 1393 bioactive glass. Materials Science and Engineering C. 116: 111138.
- 13. Saxena A, Kakimoto K and Dubey A K (2020) Polarization induced dielectric and electrical response of electrovector hydroxyapatite and ferroelectric sodium potassium niobate ceramics. Journal of Physics D: Applied Physics. 53: 395402.
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- 21. Kumar A and Ahmad M I (2020) Microstructure, Defects and Electrical Properties of Solution-Processed Al Doped ZnO Transparent Conducting Films. Appl. Phys. A, 126: 598.
- 22. Aftab A and Ahmad M I (2020) Role of additives SnX<sub>2</sub> (X=F, Cl) and anti-solvents on the of PV absorber FASnI<sub>3</sub> films. Mater. Lett. 275: 128071.
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- 42. Sushil J, Kumar A, Gautam A. and Ahmad M.I. (2021) High Entropy Phase Evolution and Fine Structure of Five Component Oxide (Mg, Co, Ni, Cu, Zn)O by Citrate Gel Method, Mater. Chem. Phys., 259: 124014.
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#### **Refereed National Journal**

#### **Proceedings of International Conferences**

 S. K. Ghosh, S. Bhattacharyya, and S. Das, "Graphene-based metasurface for wideband linear to circular polarization conversion," in 2020 URSI Regional Conference on Radio Science (URSI-RCRS 2020), Varanasi, India, 12-14 February, IEEE Xplore 2020, DOI: 10.23919/URSIRCRS49211.2020.9113624.

# Kindly Provide Brief Details of 5 Articles from the Department/School with maximum no. of Citations in last 5 years

<b>S. NO.</b>	Title	Authors	Journal Name	Volume, Date, Page No	Publisher	Impact Factor	Citation
1	Rice husk/rice husk	SK Saddam	Journal	6 (4) (2018)	Taylor &	2.653	65
	ash as an alternative	Hossain,	of Asian	299–313	Francis		
	source of silica in	Lakshya Mathur,	Ceramic				
	ceramics: A review	P. K. Roy	Societies				

#### 6. Other activities

#### **Instrument purchase**

S. No.	Details (Infrastructure, Equipments, etc.)	Value (in Lakhs of Rupees)
1	Vacuum oven with PID controller 200 deg. C. (02 No.)	2,18,400-00
2	Automatic Temperature Controlled Oven Upto 300°C. (01 No.)	58,000-00
3	Tungsten carbide die set, pressure of 25 tons. (08 Nos.)	2,52,000-00
4	Planetary ball mill with speed control, grinding balls and jars (02 set)	3,49,230-00
5	Digital Electronic Balance (01 no.)	58,275-00
6	Hydraulic Press & die	1,15,500-00
7	Temperature controller for furnace upto 1450°C (2 set)	1,94,250-00
8	Grey agate mortar and pestle (150mmsize) (08 Nos.)	2,85,600-00
9	Probe Micromanipulator (01 No.)	53,550-00
10	High Temperature Muffle Furnace	1,94,775-00
11	Big Size Furnace Suitable For Pottery Works	4,22,835-00





# IMAGES OF THE EQUIPMENTS OF TRADITIONAL CERAMIC IN THE DEPARTMENT









# 8. Department of Chemical Engineering & Technology

Year of Establishment: 1921

**Complete Name of Department:** Chemical Engineering & Technology **Head of the Department:** Prof. Vijay Laxmi Yadav w.e.f. 01.01.2020

# 1. Brief Introduction of the Department:

Department of Industrial Chemistry was established in 1921 at Banaras Hindu University. Subsequently, it was renamed as the Department of Chemical Engineering and Technology in 1956. The Department has established several benchmarks of achievements in teaching and research. It modernizes its programmes to impart education in upcoming areas of chemical engineering.

The Department presently offers courses leading to B.Tech., M.Tech. and Ph.D. degrees in Chemical Engineering. The Department also offers courses to IIT(BHU) and Banaras Hindu University. In the new undergraduate curriculum, the department has been entrusted to offer a number of institute level courses either independently or jointly with other departments. The research facilities of the department are utilized not only by other departments of the institute and BHU but also by other teaching institutions and research laboratories.

The floor area of the department is 4,002 sq. meter. The department has 27 laboratories, one workshop, 7 lecture theatres, one 250 seat auditorium, one library having over 11,000 volumes of text and reference books and a textbook bank and high speed internet facility. The Department also has a seminar room and a few instruction rooms and some rooms for faculty members.

The University Grants Commission, New Delhi has granted the Department the Status of Centre of Advanced Study in Chemical Engineering. The Department also enjoys the status of DST – FIST Sponsored Department.

The Department enjoys an excellent rapport and professional interaction with various industrial organisations. Faculty members are engaged in high level consultancy work in industry, where as some others have projects funded by the industry. Besides these, the Department also provides know-how for process improvement/ development, raw materials and products analysis, pollution monitoring facilities, etc. to the industries in and around Varanasi.

#### **Major areas of Research**

Currently major areas of research in the department are waste water treatment, separation processes, catalysis, biotechnology, fuel cell and simulation. The department has identified three major thrust areas for future research as energy, environment and nanotechnology with emphasis on developing affordable solutions for the problems in the country such as drinking water, energy (harvesting, production and storage) and healthcare.

#### Area of the Department/School (in square meters):

The floor area of the department is 4,002 sq. meter.

#### Infrastructure

Sl. No.	Particulars	Number
1	No. of Classrooms	07
2	No. of Lecture Halls	03
3	No. of Laboratory	27
4	No. of Computers available for students in the Department	80





- Indian Institute of Technology (BHU) Varanasi

#### Unique Achievement / Preposition of the Department

- 1921: Established as Department of Industrial Chemistry
- 1935: Two year M.Sc. (Tech.) Degree course started.
- 1949: Four year Bachelor Degree Course in Engineering started
- 1956: Renamed as the Department of Chemical Engineering and Technology
- 1963: Two year Master Degree in Chemical Engineering started
- 1993: Special Assistance under SAP/ COSIST Programmes of UGC
- 1997: IFFCO Chair was granted by IFFCO Ltd, New Delhi
- 1999: UGC Centre of Advanced Study
- 2004: DST-FIST (Level I)
- 2005: UGC Centre of Advanced Study Phase II
- 2010: UGC Centre of Advanced Study Phase III
- 2013: DST FIST (Level I further for next 5 years)

### 2. Academic Programmes offered

#### Students on Roll

<b>S1. No.</b>	Programme	I Year	II Year	III Year	IV Year	V Year & above
1.	B. Tech/B.Arch	193	156	129	117	Nil
2.	Dual Degree	Nil	Nil	Nil	Nil	Nil
3.	M. Tech/ M. Pharm	47	50	Nil	Nil	Nil
4.	Ph.D. (Under Institute Fellowship)	04	15	11	13	10
5.	Ph.D. (Under Project Fellowship)	Nil	Nil	Nil	Nil	Nil
6.	Ph.D. (Under Sponsored Category)	01	Nil	Nil	Nil	Nil

# Names of students/scholars who attended conferences/workshops/seminars and symposia abroad or in India

Sl. No.	Name of Student	Roll No.	Conference/Seminar/ Symposia/Workshop	Date & Venue	Financial Assistance From
ÌNDIA					
1	Ravi Kumar Sonwani	16041006	Conference	18.12.2020 to 20.12.2020 IIT (BHU)	N/A
2	Ravi Kumar Sonwani	16041006	Workshop	01.03.2021 to 05.03.2021 IET, Lucknow	N/A
3	Swati Suman	17041504	Workshop	18.12.2020 to 22.12.2020 Online	Self
4	Swati Suman	17041504	Seminar	28.08.202 to 29.08.2020 Online	Self





<b>S1. No.</b>	Name of Student	Roll No.	Conference/Seminar/ Symposia/Workshop	Date & Venue	Financial Assistance From
5	Swati Suman	17041504	E-conference	09.07.2020 to 10.07.2020 Online	Self
6	Swati Suman	17041504	Webinar	21.07.02020 Online	self
7	Aniruddha Sharma	17045017	Conference	18.12.2020 to 20.12.2020 IIT(BHU)	NA
8	Ankit Gupta	17045019	Conference	18.12.2020 to 20.12.2020 IIT(BHU)	NA
8	Anirudh Shivam	17045123	Conference	18.12.2020 to 20.12.2020 IIT(BHU)	NA
9	Pranjal Tripathi	18042008	Conference	04.04.2021 to 08.04.2021 BISR, Jaipur	Institutional
10	Himanshu Tiwari	18041002	Webinar	18.12.2020 to 20.12.2020 IIT(BHU)	MHRD
ABROAD	D				
1	Nil	Nil	Nil	Nil	Nil

#### Names of students/scholars who got prizes and awards outside the Institute

S1. No.	Name of Student	Roll No.	Name of Prize	Date & Venue	Prize awarded by
1	Akash Verma	18045010	Ranked in top 10 all over India, IIMT Mega Online Challenge KAVACH	May-June 2020 Online	Ministry of MSME, Government of India & IIIMT
2	Akash Verma	18045010	Ranked in top 10 teams all over India, Cisco thingQbator Felicitation	September 2020 Online	NASSCOM Foundation, Bangalore
3	Akash Verma	18045010	Among top 50 venture ideas, Together' 21	January 2021 Online	Schulich School of Business, Canada & Invest India

#### Names of scholars/students who won Convocation/Institute Day prizes

<b>Sl. No.</b>	Name of Student	Roll No.	Name of Prize	Prize awarded by
1	Supriya Gupta	18042039	Varanasi Medal for standing First at the M.Tech.	IIT(BHU)
2	Roli Bansal	16045080	Indira Tripathi Gold Medal for securing highest CPI among the girl students at the B.Tech.	IIT(BHU)
3	Avnish Singh	16045118	Varanasi Medal for standing First at the B.Tech.	IIT(BHU)
4	Avnish Singh	16045118	Prof. B.B. Bansal Memorial Gold Medal for being involved in Social Services/Co-curricular activities and having highest CPI	IIT(BHU)
5	Avnish Singh	16045118	The R.B.G. Modi Medal for standing First at the B.Tech.	IIT(BHU)





— Indian Institute of Technology (BHU) Varanasi

<b>Sl. No.</b>	Name of Student	Roll No.	Name of Prize	Prize awarded by
6	Avnish Singh	16045118	Manishi Sharma Memorial Gold Medal for securing First position at B.Tech.	IIT(BHU)
7	Avnish Singh	16045118	Mrs. Gargi Devi Trivedi Memorial Gold Medal for securing highest marks in B.Tech.	IIT(BHU)
8	Avnish Singh	16045118	Prof. Y.D. Upadhya Memorial Gold Medal for securing highest CPI at B.Tech.	IIT(BHU)
9	Avnish Singh	16045118	Dr. R.J. Rathi Financial Award Rs. 1000/= cash for standing First at the B.Tech.	IIT(BHU)
10	Avnish Singh	16045118	Manishi Sharma Memorial Cash Prize Rs. 2000/= for securing First position at the B.Tech.	IIT(BHU)

# 3. Faculty & their Activity

# Faculty and their areas of specialisation

Sl. No.	Name, Qualifications, Employee No.	Date of award of PhD Degree	Major Areas of Specialization (Max. 3 Areas)
PROFES	SORS		
1	Dr. Birendra Nath Rai Ph.D. 13746	1991	Bio-Remediation, Water Pollution Control, Air Pollution Control And Environmental Biotechnology
2	Dr. Pradeep Kumar Mishra Ph.D., Professor (HAG) 13747	1995	Waste water treatment, Membrane technology, Biomass bioprocessing, Bioenergy, Nanotechnology
3	Dr. Pradeep Ahuja Ph.D. 13748	1996	Modeling and Simulation, Thermodynamics and Kinetics
4	Dr. Manoj Kumar Mondal Ph.D. 13749	2004	Environmental Chemical Engineering, Nano- adsorbents/composites for Wastewater Treatment, Biomass Waste to Energy and Chemicals
5	Dr. Ram Sharan Singh Ph.D. 16729	2007	Chemical Engineering, Environmental Biotechnology, Aerosol particularly black carbon and Its Impact on Environment and Health
6	Dr. Vijay Laxmi Yadav Ph.D. 13745	2002	Transfer Processes, Polymer Technology, Reaction Engineering
7	Dr. Satya Vir Singh Ph.D. 18210	2006	Adsorption, Membrane Separation, Photo catalysis
8	Dr. Hiralal Pramanik Ph.D. 17500	2008	Fuel Cell Technology, Energy Engineering, Pyrolysis of Plastics
ASSOCI	ATE PROFESSORS		
1	Dr. Bhawna Verma Ph.D. 18152	2013	Heat Transfer In Narrow Tubes; Biodiesel; Carbon Materials/ Nanocomposites Materials For Enhanced Capacitance
2	Dr. Pradeep Kumar Ph.D. 18479	2007	Catalytic thermal Treatment, Coagulation- Flocculation, Adsorption
3	Dr. Rajesh Kumar Upadhyay Ph.D. 50235	2010	Multiphase Flow, Flow measurement techniques, Membrane Reformer, Hydrogen Energy





<b>Sl. No.</b>	Name, Qualifications, Employee No.	Date of award of PhD Degree	Major Areas of Specialization (Max. 3 Areas)
ASSIST	ANT PROFESSORS		
1	Mr. Durga Prasad A. 18151		Process modeling and simulation, Optimization techniques, Process dynamics and control, Process Equipment design.
2	Dr. Jyoti Prasad Chakraborty Ph.D. 19844	2011	Chemical Reaction Engineering; Torre faction; Pyrolysis
3	Dr. Sweta Ph.D. 19770	2012	Environmental Catalysis, Reaction Kinetics, Polymer Blends, Diesel Exhaust Treatment
4	Dr. Ravi Prakash Jaiswal Ph.D. 50025	2008	Solar Energy, Wastewater Treatment, Interfacial Adhesion
5	Dr. Ankur Verma Ph.D. 50026	2011	Nano-fabrication, Colloids and interfacial science, microfluidics
6	Dr. Manoj Kumar Ph.D. 50027	2009	Advance Functional Materials, Environment, Nano therapeutics
7	Dr. Vijay Shinde Ph.D. 50171	2013	Solid state and material chemistry, Heterogeneous catalysis for energy application, sustainability and green chemistry
8	Debdip Bhandary Ph.D. 50229	2016	Nano-science, Molecular Simulation, Polymers
9	Dr Abir Ghosh Ph.D. 50261	2018	Complex Fluids, Thin Films, Li-ion Batteries
10	Sanjay Katheria Ph.D. 50265	2018	Heterogeneous catalysis and structured reactors
SERB Research Scientist			
1	Dr. Manish Srivastava	2011	Materials science condensed matter (experimental) Catalyst as electrode materials in fuel cell application Catalyst for bioenergy applications Catalysts for biosensing applications

# Technical and Non-Teaching Staff

<b>Sl. No.</b>	Name, Qualifications	Designation, Employee No.	Date of Appointment in the department
1	Sri Arvind Kumar M.Sc. (Information Technology)	Sr. Technical Superintendent 14069	22.03.1997
2	Sri Umesh Pratap Singh Intermediate	Technical Superintendent 17688	23.01.2006
3	Sri Ram Chandra Sachiv Intermediate, I.T.I.	Technical Superintendent 14123	28.10.1985
4	Sri Meharman Thapa Intermediate	Technical Superintendent 14126	01.06.1982
5	Sri Arjun Prasad Gond M.A.	Technical Superintendent 14144	05.04.1990
6	Sri Sudhir Kumar Intermediate	Technical Superintendent 14145	21.12.1990





<b>Sl. No.</b>	Name, Qualifications	Designation, Employee No.	Date of Appointment in the department
7	Sri Chand Lal Intermediate, I.T.I	Jr. Technical Superintendent 14140	25.06.1987
8	Sri Om Prakash Patel Intermediate	Jr. Technical Superintendent 14148	28.09.1993
9	Sri Surendra Kumar Verma Intermediate	Jr. Technical Superintendent 14147	02.06.1994
10	Shri. Murli Dhar Mishra B.Sc., Diploma in Electrical Engineering	Technical Superintendent 18024	15.01.2007
11	Sri Sudhir Kumar B.Sc	Jr. Technical Superintendent 18094	20.02.2007
12	Sri Rajesh Kumar I.T.I., Diploma	Sr. Technician 18622	07.08.2008
13	Sri Vinay Kumar  I.Sc., Diploma in Medical Laboratory Technology	Sr. Technician 18625	05.08.2008
14	Sri Ajay Kumar Pandey B.A., Desktop Publishing	Sr. Technician 18623	05.08.2008
15	Sri Shailendra Kumar Upadhyay Intermediate	Sr. Technician 18629	05.08.2008
16	Sri Raj Kumar B.Sc., Post Graduate Diploma in Computer Applications	Sr. Technician 18626	05.08.2008
17	Sri Ankit Kumar M.Sc. (Information Technology), Advanced Certified Hardware and Network Professional	Sr. Technician 18627	05.08.2008
18	Sri Dhirendra Kumar Pandey B.A., I.T.I., Diploma	Sr. Technician 19272	10.02.2011
19	Sri Anand Prakash Upadhyay L.L.B	Jr. Technician 11579	25.01.1997
20	Sri Lal Bahadur Ram B.Sc.	Jr. Technician 19602	11.07.2012
21	Shir Zishan Ahmed B.Sc.	Jr. Assistant 50104	09.05.2017

#### Short-term courses/workshops/seminars/symposia/conferences organised by faculty members

Sl. No.	Coordinator	Title	Period
1	Prof. Pradeep Kumar Mishra	E-content Development for Online Teaching & Learning: Need of the Hour	25.06.2020
2	Prof. Pradeep Kumar Mishra	Role of Indian Institutes of Technology in implementation of National Education Policy 2020: Challenges and Opportunities	28.08.2020
3	Dr. Rajesh Kumar Upadhyay	Decoding the Flow Behaviour of Multiphase Flow Reactors through Experimental and Numerical Tools	18.01.2021 to 23.01.2021

# Short-term courses/workshops/seminars/symposia/conferences/training programmes attended by faculty members in academic institutions and public sector undertakings

Sl. No.	Name of Faculty Member	Title	Period and Venue
Semina	rs/Symposia/Conferences		
1	Prof. Pradeep Kumar Mishra	Design Thinking and Business Modelling	19.05.2020 Online
2	Prof. Pradeep Kumar Mishra	Discussion on Environment	25.05.2020 Online
3	Prof. Pradeep Kumar Mishra	Pandemic Risks: Impacts and Mitigation – Priorities	26.06.2020 Online





Sl. No.	Name of Faculty Member	Title	Period and Venue
4	Prof. Pradeep Kumar Mishra	Water: Current Global Scenario and Remedies There of Harish Chandra P.G. College Varanasi	26.06.2020 Varanasi
5	Prof. Pradeep Kumar Mishra	National Level Training Programme on Disaster Risk, Vulnerability Assessment and Management	01.07.2020 New Delhi
6	Prof. Pradeep Kumar Mishra	Principal's Conclave	07.05.2020 Ghaziabad
7	Prof. Pradeep Kumar Mishra	One day Webinar on the theme 'Contemporary Environmental Issues: Concepts, Tools & Practices	24.07.2020 Online
8	Prof. Pradeep Kumar Mishra	Inauguration of Mahamana Malaviya Mission (Rural, Varanasi) ERT Programme	08.10.2020 Varanasi
9	Prof. Pradeep Kumar Mishra	Web seminar: Impact of Mahatma Gandhi in our Education Policy https://nic.webex.com/nic/onstage/g. php?MTID=eaef98f47f8c56b90d5ed1d9051dac0a0	19.08.2020 Online
10	Prof. Pradeep Kumar Mishra	TEQIP-III RTU (ATU) sponsored Faculty Development Programme on Green Energy: The Energy of Future	09.10.2020 Jaipur
11	Prof. Pradeep Kumar Mishra	7th annual international virtual Convention on Climate Change & Water (C3W-2020) entitled "Sustainability in Current Scenario: Challenges & Solutions" (SCSCS-2020)	06.11.2020 Online
12	Prof. Pradeep Kumar Mishra	Roadmap for INI's march towards MERU	06.11.2020 Webinar
13	Prof. Pradeep Kumar Mishra	Lecture Series for this semester in the department of Chemical Engineering	12.11.2020 SASTRA Deemed University, Tamilnadu
14	Prof. Pradeep Kumar Mishra	EAC Meeting	08.12.2020 Online
15	Prof. Pradeep Kumar Mishra	Orientation Programme	10.12.2020 BHU
16	Prof. Pradeep Kumar Mishra	Orientation Programme	11.12.2020 BHU
17	Prof. Ram Sharan Singh	26 <sup>TH</sup> International Conference Of International Academy Of Physical Sciences	18.12.2020 to 20.12.2020IIT(BHU)
18	Prof. Ram Sharan Singh	Webinar (NITI NEP-2020) on	16.03.2021IIT(BHU)
19	Dr. Bhawna Verma	Biodiesel Production from Indigenous Non-Edible Feedstocks Using Immobilized Pseudomonas cepacia Lipase	22.02.2021 to 26.02.2021 Online
20	Dr. Pradeep Kumar	Removal of COD, Color and Chromium from Tannery Waste water with Associated Process of Adsorption and Catalytic thermal treatment	23.04.2021 to 24.04.2021 MNIT, Jaipur

# Special lectures delivered by faculty members in other institutions

<b>Sl. No.</b>	Name of faculty Member	Topic of Lecture	Institution	Date
1	Prof. Pradeep Kumar Mishra	Design Thinking and Business Modelling	IIT(BHU)	19.05.2020
2	Prof. Pradeep Kumar Mishra	Discussion on Environment	IIT(BHU)	25.05.2020




Sl. No.	Name of faculty Member	Topic of Lecture	Institution	Date
3	Prof. Pradeep Kumar Mishra	Pandemic Risks: Impacts and Mitigation – Priorities	IIT(BHU)	26.06.2020
4	Prof. Pradeep Kumar Mishra	Water: Current Global Scenario and Remedies There of	Harish Chandra P.G. College Varanasi	26.06.2020
5	Prof. Pradeep Kumar Mishra	National Level Training Programme on Disaster Risk, Vulnerability Assessment and Management	Delhi Technological University	01.07.2020
6	Prof. Pradeep Kumar Mishra	Principal's Conclave	By Krishna Engineering College, Ghaziabad	05.07.2020
7	Prof. Pradeep Kumar Mishra	One day Webinar on the theme 'Contemporary Environmental Issues: Concepts, Tools & Practices	University of Jharkhand, Ranchi	24.07.2020
8	Prof. Pradeep Kumar Mishra	Inauguration of Mahamana Malaviya Mission (Rural, Varanasi) ERT Programme	IIT(BHU)	08.10.2020
9	Prof. Pradeep Kumar Mishra	Web seminar: Impact of Mahatma Gandhi in our Education Policy https://nic.webex.com/nic/onstage/g php?MTID=eaef98f47f8c56b90d5ed1d9051dac0a0	Gandhi Smriti & Darshan Samiti	19.08.2020
10	Prof. Pradeep Kumar Mishra	TEQIP-III RTU (ATU) sponsored Faculty Development Programme on Green Energy: The Energy of Future	Rajasthan Technical University, Kota and Swami Keshvanand Institute of Technology, Management & Gramothan, Jaipur	09.10.2020
11	Prof. Pradeep Kumar Mishra	7th annual international virtual Convention on Climate Change & Water (C3W-2020) entitled "Sustainability in Current Scenario: Challenges & Solutions" (SCSCS-2020)	Gyan Vihar University, Jaipur	06.11.2020
12	Prof. Pradeep Kumar Mishra	Roadmap for INI's march towards MERU	IIIT Allahabad, Prayagraj & MNNITA Prayagraj	06.11.2020
13	Prof. Pradeep Kumar Mishra	Lecture Series for this semester in the department of Chemical Engineering (by SASTRA Deemed University, Tamilnadu, India	SASTRA Deemed University, Tamilnadu	12.11.2020
14	Prof. Pradeep Kumar Mishra	EAC Meeting	EAC- Bharat VC, & Microsoft Team (MNNIT)	08.12.2020
15	Prof. Pradeep Kumar Mishra	Orientation Programme Nodal officers of technical institutes and SPCBs regarding annual inspection of GPIs	Academic Staff l institutes and SPCBs College, BHU of GPIs	
16	Prof. Pradeep Kumar Mishra	Orientation Programme	Academic Staff College, BHU	11.12.2020
17	Prof. Manoj Kumar Mondal	Combined SO <sub>2</sub> , NOx and CO <sub>2</sub> removal from simulated thermal power plant stack gases Society Head Quarter, India		27.12.2020
18	Prof. Manoj Kumar Mondal	Sustainable energy production from waste biomass	IIT(BHU)	22.01.2021





<b>Sl.</b> No.	Name of faculty Member	Topic of Lecture	Institution	Date
19	Prof. Manoj Kumar Mondal	Recent trends of chemical absorption in the field of $\mathrm{CO}_{_2}\mathrm{Capture}$	Pandit Deendayal Energy University, Gandhinagar	06.03.2021
20	Prof. Ram Sharan Singh	Bioremediation of Organic Waste	IET Lucknow	06.02.2021
21	Prof. Ram Sharan Singh	An Introduction to Instrumental Methods for analysis of fuels and chemicals	MNIT Jaipur	04.01.2021
22	Prof. Ram Sharan Singh	Analytical Techniques for Composition Measurement	RBS Agra	22.06.2020
23	Prof. Vijay Laxmi Yadav	Role of women in science and technology	MNNIT Allahabad	08.03.2021
24	Prof. Hiralal Pramanik	Renewable Chemicals Ethanol and Glycerol: Potential Resources of Future Power Generation via Fuel Cell Technology 1 <sup>st</sup> -5 <sup>th</sup> March 2021	IIT(BHU)	01.03.2021 to 05.03.2021
25	Dr. Jyoti Prasad Chakraborty	Biomass Energy Systems and its Utility	Coochbehar Government Engineering College, West Bengal	04.11.2020
26	Dr. Jyoti Prasad Chakraborty	Application of Chemical Reaction Engineering in the Green Energy Revolution	Dr. Ambedkar Institute of Technology for Handicapped, Kanpur	05.02.2021
27	Dr. Ravi Prakash Jaiswal	Solar Energy: the Future Global Energy	IIT(BHU)	03.03.2021
28	Dr. Ankur Verma	The introduction to opt fluidics and application of fluidic lenses for detection in biochips	IIIT Allahabad	24.09.2021

## Honours and awards

S1. No.	Name of Faculty Member	Details of Award			
1	Prof. Pradeep Kumar Mishra	Dr. V.G. Patel Award on 29.08.2020 Entrepreneurship Development Institute of India, Gujarat (https://ediindia.webex.com/ediindia/j php?MTID=mdd2c81496df2810c4583490c0a4b5e7e)			
2	Prof. Manoj Kumar Mondal	World ranking of top 2% scientists from India in the field Chemical Engineering, Stanford University, USA			
3	Prof. Manoj Kumar Mondal	Member, Board of Governors Rajkiya Engineering College, Deogaon, Azamgarh			
4	Prof. Manoj Kumar Mondal	Member, Board of Governors Rajkiya Engineering College, Banda			
5	Prof. Vijay Laxmi Yadav	Member, Board of professional studies Department of Industrial of Chemistry, Mizoram University, Aizawl			
6	Prof. Hiralal Pramanik	Member of Scientific Advisory Board (SAB) of SDEWES-2021, Dubrovnik, Croatia, October 10-15, 2021.			
7	Dr. Pradeep Kumar	International Research Award on new Science Invention NESIN 2020, Best Researcher Award, Science father			





### Fellowships of academic and professional societies

<b>Sl. No.</b>	Name of Faculty Member	Details of Fellowship
1	Dr. Manish Srivastava	SERB-Research Scientist

### Books, monographs authored/co-authored

Sl. No.	Name of Author/Co- Author	Title	Publisher
1	Neha Srivastava, Manish Srivastava, Vijai Kumar Gupta & P.K. Mishra	Nanomaterials in Biofuels Research	ISBN 978-981-13-9333-4, Springer Nature
2	Neha Srivastava, Manish Srivastava, Vijai Kumar Gupta & P.K. Mishra	Biofuel Production Technologies: Critical Analysis for Sustainability	ISBN 978-981-13-8637-4, Springer Nature
3	Neha Srivastava, Manish Srivastava, Vijai Kumar Gupta & P.K. Mishra	Microbial Strategies for Techno- economic Biofuel Production	ISBN 978-981-15-7190-9, Springer Nature
4	Neha Srivastava, Manish Srivastava, Vijai Kumar Gupta & P.K. Mishra	Substrate Analysis for Effective Biofuels Production	ISBN 978-981-329-607-7, Springer Nature
5	Manish Srivastava, Neha Srivastava, P.K. Mishra & Vijai Kumar Gupta	Green Synthesis of Nanomaterials for Bioenergy Applications	ISBN:9781119576785 Wiley Blackwell
6	S. Srivastava, S.B. Agrawal & M.K. Mondal	Bio surfactants for heavy metal remediation and bio economics	ISBN:9781119671008 Wiley
7	G.K. Gupta & M.K. Mondal	Fundamentals and mechanistic pathways of dye degradation using photo catalysts	Elsevier
8	A.K. Prajapati & M.K. Mondal	Emerging nanocomposites as highly efficient materials for photo catalysis of dye: synthesis routes, characterization, and reaction mechanism	Elsevier
9	S. Srivastava, S.B. Agrawal & M.K. Mondal	Biological Based Methods for the Removal of Volatile Organic Compounds and Heavy Metals	Elsevier
10	S. Dixit & V.L. Yadav	Biodegradable Polymer Composite Films for Green Packaging Applications	Handbook of Nanomaterials and Nanocomposites for Energy and Environmental Applications, Springer
11	S. Dixit & V.L. Yadav	Green Composite Film Synthesized from Agricultural Waste for Packaging Applications	Green Composites, Springer
12	Rajesh Kumar Upadhyay	Steam Reforming Catalysts for Membrane Reformer in Catalysis for Clean Energy and Environmental Sustainability Vol-2	Springer

## Editorial boards of journals

Sl. No.	Name of Faculty Member	Position (Editor/ member)	Name of Journal
1	Prof. M.K. Mondal	Academic Editor	Adsorption Science & Technology
2	Dr. Manish Srivastava	Editorial Board Member	Nanoscience & Nanotechnology-Asia
2	Dr. Manish Srivastava	Editorial Board Member	Current Smart Materials





# 4. Design and Development Activities

#### New facilities added

Sl. No.	Details (Infrastructure, Equipments, etc.)	Value (in Lakhs of Rupees)
1	EQE and IQE Measurement Unit for Solar Device	35.00
2	Infrastructure created for research on Unitized regenerative fuel cell for the production of ultrapure hydrogen, oxygen and electricity funded by SERB. Equipment procured: Hydrogen Storage, Solar Panel (Procured this year 2021); Autoclave reactor, digital mass flow controller, Fuel cell stack hardwares with temperature controller and humidifier, DC electronic load (Procured last year 2020).	22.00
3	Membrane reformer test rig	20.00
	Multichannel Data analyser	18.00
4	Fluorescence Microscope	17.00
5	Procured New Equipments like gas cylinders, water bath chiller, mass flow controllers for research on Novel integrated engineering approach for effective tar decomposition and its last minute removal to fuel gas reforming in biomass pyro-gasification funded by SERB	8.00
6	Molecular Simulation Lab Two GPU based computational servers	6.92
7	Electrochemical workstation	4.25
8	Stereo zoom Microscope	2.00
9	Dual Channel Syringe pump	1.00

### 5. Research and Consultancy

# Sponsored research projects

<b>Sl.</b> No.	Title	Period	Funding Agency	Amount (in lakhs of Rs.)	Coordinator
1	Detailed study on the effect of mining as well as thermal power station on natural water bodies in Singrauli region and recommendation thereof	03 years	NCL, Singrauli	69.00	Dr. Pradeep Kumar Financial authority PI: Prof. Vijay Laxmi Yadav
2	Novel integrated engineering approach for effective tar decomposition and its last minute removal to fuel gas reforming in biomass pyro-gasification	2020-2023	SERB, Government of India	35.63	Prof. Manoj Kumar Mondal
3	Regional Characterization of Atmospheric Aerosol at Varanasi Region,	2019-2022	Vikram Sarabhai Space Center, ISRO	30.00	Prof. Ram Sharan Singh
4	SPARC Project, Ministry of Human Resource Development -	2018-2021	MHRD	72.00	Prof. Ram Sharan Singh
5	A Stack Development of Unitized Regenerative Proton Exchange Membrane Fuel Cell for Large Scale Production of Ultra-Pure Hydrogen Fuel, Oxygen Using Solar Energy and Uninterrupted Power	2019-2022	SERB, Government of India	37.615	Prof. Hiralal Pramanik





Sl. No.	Title	Period	Funding Agency	Amount (in lakhs of Rs.)	Coordinator
6	Development of Natural Gas Based Membrane Reformer for Fuel Cell Grade Hydrogen Production	2.5 years	GAIL	121.54	Dr. Rajesh Kumar Upadhyay
7	Investigation of Flow Behavior of Pulsed Sieve Plate Column through Radiotracer Based Techniques	03 years	BRNS	33.755	Dr. Rajesh Kumar Upadhyay
8	Design and Development of a Membrane Reformer Prototype for Production of Ultra-Pure Hydrogen from Methanol for Fuel Cell Based Vehicle and Power Generators	05 years	DST	114.3615	Dr. Rajesh Kumar Upadhyay
9	Direct Cooling of the Silicon Photovoltaic Module Enabled by Modification of the Backside EVA- Layer	2019-2022	SERB	41.50	Dr. Ravi Prakash Jaiswal
10	Development of graphene supported hetroatom doped metal sulphide hybrid nanostructures for hydrogen evolution reaction: Application in fuel cell	02 years	SERB	16.00	Dr. Manish Srivastava

#### Industrial consultancy projects (Ongoing only)

Sl. No.	Name of Faculty Member	Title	Industry	Amount (in lakhs of Rs.)
1	Prof. Pradeep Kumar Mishra	RKVY-RAFTAAR Scheme	ICAR	5000.00
2 Prof. Pradeep Kumar Mishra		Inspection of GPI's at Ganga Basin for CPCB	СРСВ	133.00

#### Faculty members' participation with other universities under MoUs (Ongoing only)

- 1. The MoU between Tallinn University of Technology, Estonia and Indian Institute of Technology (BHU) Varanasi, India
- 2. The MoU between Indian Institute of Technology (Banaras Hindu University) Varanasi and University of Louisville (UofL), USA
- 3. The MoU between Indian Institute of Technology (BHU) Varanasi, India and Sultan Qaboos University, Oman
- 4. The MoU between Indian Institute of Technology (BHU) Varanasi, India and Bioenergy Development Board, Lucknow, UP, India

#### **Research Publications**

<b>Sl. No.</b>		No.
1	Total Number of Papers Published in Refereed National Journals	08
2	Total Number of Papers Published in Refereed International Journals	99
3	Total Number of Papers Presented in National Conferences	01
4	Total Number of Papers Presented in International Conferences	Nil





#### **Refereed International Journals**

- 1. Kushwaha D., Srivastava N., Prasad D.A., Mishra P.K. and Upadhyay S.N. (2020) Biobutanol production from hydrolysates of cyanobacteria Lyngbya limnetica and Oscillatoria obscura, Fuel 271 (2020) 117583, IF: 5.578
- Srivastava N., Elgorban A.M., Mishra P.K., Marraiki N., Alharbi A.M., Ahmad I. and Gupta V.K. (2020) Enhance production of fungal cellulase cocktail using cellulosic waste, Environmental Technology & Innovation 19 (2020) 100949, IF: 3.356
- 3. Srivastava M., Srivastava N., Mishra P.K. and Malhotra B.D. (2021) Prospects of nanomaterials-enabled biosensors for COVID-19 detection, Science of the Total Environment 754 (2021) 142363, IF: 6.551
- 4. Srivastava K.R., Dixit S., Pal D.B., Mishra P.K., Srivastava P., Srivastava N., Hashem A., Alqarawi A.A. and Abd\_ Allah E.F. (2021) Effect of nanocellulose on mechanical and barrier properties of PVA–banana pseudostem fiber composite films, Environmental Technology & Innovation 21 (2021) 101312, IF: 3.356
- Srivastava N., Srivastava M., Mishra P.K., Kausar M.A., Saeed M., Gupta V.K., Singh R. and Ramtekeg P.W. (2020) Advances in nanomaterials induced biohydrogen production using waste biomass, Bioresource Technology 307 (2020) 123094, IF: 7.539
- Srivastava N., Srivastava A., Singh R., Srivastava K.R., Srivastava M., Mishra P.K., Gupta V.K. and Thakur V.K. (2021) Advances in the Structural Composition of Biomass: Fundamental and Bioenergy Applications, Journal of Renewable Materials, Vol.9, No.4, 2021, pp.615-636, doi:10.32604/jrm.2021.014374 IF: 1.3
- Barcelos M.C.S., Ramos C.L., Kuddus M., Rodriguez-Couto S., Srivastava N., Ramteke R.W., Mishra P.K. and Molina G. (2020) Enzymatic potential for the valorization of agro-industrial by-products, Biotechnol Lett https://doi.org/10.1007/s10529-020-02957-3, IF: 1.977
- 8. Kumar, M., Srivastava, N., Upadhyay, S.N., and Mishra, P.K. (2020) Thermal degradation of dry kitchen waste: kinetics and pyrolysis products, October 2020, Biomass Conversion and Biorefinery, Springer Nature
- 9. Kumar M., Bhardwaj G., Upadhyay S.N., and Mishra P.K. (2021) Kinetic analysis of the slow pyrolysis of paper wastes, March 2021, Biomass Conversion and Biorefinery, Springer Nature.
- Pandey D. and Mondal M.K. (2021) Experimental data and modeling for density and viscosity of carbon dioxide (CO<sub>2</sub>)-loaded and -unloaded aqueous blend of 2-(ethylamino)ethanol (EAE) and aminoethylethanolamine (AEEA) for post-combustion CO<sub>2</sub> capture. Journal of Molecular Liquids 330 (115678) IF: 5.065.
- 11. Pandey D. and Mondal M.K. (2021) Thermodynamic modeling and new experimental CO<sub>2</sub> solubility into aqueous EAE and AEEA blend, heat of absorption, cyclic absorption capacity and desorption study for post-combustion CO<sub>2</sub> capture. Chemical Engineering Journal 410 (128334) IF:10.652.
- Singh S., Pandey D., and Mondal M.K. (2021) New experimental data on equilibrium CO<sub>2</sub> loading into aqueous 3-dimethyl amino-1-propanol and 1,5-diamino-2-methylpentane blend: empirical model and CO2 absorption enthalpy. Journal of Chemical & Engineering Data 66 (740–748) IF: 2.369.
- Prajapati A.K. and Mondal M.K. (2021) Development of CTAB modified 3-phase -Fe<sub>2</sub>O<sub>3</sub>-Mn<sub>2</sub>O<sub>3</sub>-Mn<sub>3</sub>O<sub>4</sub> nanocomposite as novel super-adsorbent for Congo red dye adsorption. Journal of Environmental Chemical Engineering 9 (104827) IF: 4.300.
- 14. Kannaujiya M.A., Prajapati A.K., Mandal T., Das A.K. and Mondal M.K. (2020) Extensive analyses of mass transfer, kinetics and toxicity for hazardous acid yellow 17 dye removal using activated carbon prepared from waste biomass of Solanum melongena. Biomass Conversion and Biorefinery https://doi.org/10.1007/ s13399-020-01160-8 IF: 2.602.
- 15. Prajapati A.K. and Mondal M.K. (2020) Comprehensive kinetic and mass transfer modeling for methylene blue dye adsorption onto CuO nanoparticles loaded on nonporous activated carbon prepared from waste coconut shell. Journal of Molecular Liquids 307 (112949) IF: 5.065.





- Prajapati A.K, Das S. and Mondal M.K. (2020) Exhaustive studies on toxic Cr(VI) removal mechanism from aqueous solution using activated carbon of Aloe vera waste leaves. Journal of Molecular Liquids 307 (112956) IF: 5.065.
- Bala R. and Mondal M.K. (2020) Study of biological and thermo-chemical pre-treatment of organic fraction of municipal solid waste for enhanced biogas yield. Environmental Science & Pollution Research 27 (27293– 27304) IF: 3.056
- Gupta G.K. and Mondal M.K. (2020) Mechanism of Cr(VI) uptake onto sagwan sawdust derived biochar and statistical optimization via response surface methodology. Biomass Conversion and Biorefinery https://doi.org/10.1007/s13399-020-01082-5 IF: 2.602.
- 19. Gupta S., Gupta G.K. and Mondal M.K. (2020) Thermal degradation characteristics, kinetics, thermodynamic and reaction mechanism analysis of pistachio shell pyrolysis for its bio-energy potential. Biomass Conversion and Biorefinery https://doi.org/10.1007/s13399-020-01104-2 IF: 2.602.
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- 22. Pandey D. and Mondal M.K. (2020) Equilibrium CO<sub>2</sub> solubility in the aqueous mixture of MAE and AEEA: Experimental study and development of modified thermodynamic model. Fluid Phase Equilibria 522 (112766) IF: 2.838.
- 23. Singh S., Chakraborty J.P. and Mondal M.K. (2020) Torrefaction of Acacia nilotica: Oxygen distribution and carbon densification mechanism based on in-depth analyses of solid, liquid, and gaseous products. Energy & Fuels 34 (12586–12597) IF: 3.421.
- 24. Ram M. and Mondal M.K. (2020) Conversion of unripe coconut husk into refined products using humidified air in packed bed gasification column. Biomass Conversion and Biorefinery 10 (409–421) IF: 2.602.
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- 27. Singh N., Mhawish A., Banerjee T., Ghosh S., Singh R.S. and Mall R.K. (2021) Association of aerosols, trace gases and black carbon with mortality in an urban pollution hotspot over central Indo-Gangetic Plain Atmospheric Environment, Volume 246, 1 February 2021, 11808
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- 37. Swain G., Sonwani R.K., Giri B.S., Singh R.S., Jaiswal R.P. and Rai B.N. (2020) Collective removal of phenol and ammonia in a moving bed biofilm reactor using modified bio-carriers: Process optimization and kinetic study, Bioresource Technology, Volume 306, 123177, June 2020.
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- 39. Akbar A.A.M., Karthikeyan R.K., Sentamil S.M., Rai M.K., Priyadharshini M., Maheswari N., Janani S.G., Padmanaban V.C. and Singh R.S. (2020) Removal of Reactive Orange 16 by adsorption onto activated carbon prepared from rice husk ash: statistical modelling and adsorption kinetics, Separation Science and Technology, Volume 55, Issue 1, 2020.
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- 44. Giri B.S., Gun S., Pandey S., Trivedi A., Kapoor R.T., Singh R.P., Abdeldayem O.M., Rene E.R., Yadav S., Chaturvedi P., Sharma N. and Singh R.S. (2020) Reusability of brilliant green dye contaminated wastewater using corncob biochar and Brevibacillus parabrevis: hybrid treatment and kinetic studies, Pages 743-758, Jun 2020. Bioengineered, https://doi.org/10.1080/21655979.2020.1788353
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- 65. Singh B. and Kumar P. (2020) Physicochemical characteristics of hazardous sludge from effluent treatment plant of petroleum refinery as feedstock for thermochemical processes Journal of Environmental Chemical Engineering, Volume 8, Issue 4, August 2020, 103817
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- 98. Ghosh A., Foster J.M., Offer G., and Marinescu M. (2021) A Shrinking-Core Model for the Degradation of High-Nickel Cathodes (NMC811) in Li-Ion Batteries: Passivation Layer Growth and Oxygen Evolution. Journal of The Electrochemical Society. 168: 020509.
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#### **Refereed National Journal**

- 1. Arif Z., Sethy N.K., Mishra P.K. and Verma B. (2020) Green approach for the synthesis of ultrafiltration photocatalytic membrane for tannery wastewater: modeling and optimization. Journal of Environmental Science Technology, Accepted.
- 2. Arif Z., Sethy N.K. and Mishra P.K. (2020) Development of eco-friendly, self-cleaning, antibacterial membrane for the elimination of chromium (VI) from tannery wastewater. Journal of Environmental Science Technology
- 3. Swain G., Sonwani R.K., Singh R.S., Jaiswal R.P. and Rai B.N. (2020) Removal of Acid blue 113 dye in a moving bed biofilm reactor using isolated bacterial species J. Indian Chem. Soc. Vol. 97, October(A)
- 4. Swain G., Sonwani R.K., Nagar P., Giri B.S., Jaiswal R.P., Singh R.S. and Rai B.N. (2020) Biodegradation and kinetic analysis of phenol using low-density polyethylene immobilized Bacillus flexus GS1 IIT (BHU) in a packed bed bioreactor, Journal of the Indian Chemical Society, 97, 1-7, March 2020.
- 5. Sonwani R.K., Swain G., Singh R.S. and Rai B.N. (2020) Optimization of Methylene blue removal by mixed bacterial culture isolated from dye contaminated site, J. Indian Chem. Soc., Vol. 97, pp. 1-6, March 2020.
- 6. Kumar P., Singh R., Dixit S. and Yadav, V.L. (2020) Pervaporation of Ethanol/Water Mixtures by Polyethylene based Fly Ash Composite Membranes. Journal of Scientific and Industrial Research (JSIR), 79(10) 873-877.





- 7. Gaurh P. and Pramanik H. (2020) Performance and reusability assessment of ZSM-5 for the production of lighter aromatics via pyrolysis of waste polystyrene. Indian J Chemical Tech. (27);375-386.
- 8. Kumar D., Giri B.S. and Verma B. (2020) Improved performance of immobilized lipase from optimized biosupport material (polyvinyl alcohol/AlgNa) and its characterization. Indian Journal of Experimental Biology.58:803-810

#### **Proceedings of National Conferences**

 Nigam M., Kumar P., Upadhaya S. and Singh S.R. (2021) Removal of COD, Color and Chromium from Tannery Waste water with Associated Process of Adsorption and Catalytic thermal treatment International Conference on Advances in Chemical, Biological and Environmental Engineering (ICACBEE-2021) (April 23-24, 2021) Paper Code: ICACBEE-2021-OP-006 Department of Chemical Engineering Malaviya National Institute of technology Jaipur

# Kindly Provide Brief Details of 5 Articles from the Department/School with maximum no. of Citations in last 5 years

- 1. Vikrant K., Giri B.S., Raza N., Roy K., Kim K.H., Rai B.N. and Singh R.S. (2018) Recent advancements in bioremediation of dye: current status and challenges, Bioresource technology 253, 355-36 [Cited 221]
- 2. Srikar S.K., Giri D.D., Pal D.B., Mishra P.K. and Upadhyay S.N. (2016) Green Synthesis of Silver Nanoparticles: A Review, Green and Sustainable Chemistry, 2016, 6, 34-56 [Cited 187]
- Vikrant K., Kim K.H., Ok T.S., Tsang D.C.W., Tsang Y.F, Giri B.S. and Singh R.S. (2018) Engineered/designer biochar for the removal of phosphate in water and wastewater, Science of The Total Environment 616, 1242-1260 [Cited 166]
- Rai M.K., Shahi G., Meena V., Meena R., Chakraborty S., Singh R.S. and BN Rai (2016) Removal of hexavalent chromium Cr (VI) using activated carbon prepared from mango kernel activated with H<sub>3</sub>PO<sub>4</sub>, Resource-Efficient Technologies 2, S63-S70 [Cited 135]
- Srivastava N., Srivastava M., Mishra P.K., Gupta V.K., Molina G., Rodriguez-Couto S., Manikanta A. and Ramteke P.W. (2017) Applications of fungal cellulases in biofuel production: advances and limitations. Renewable & Sustainable Energy Reviews, 82 (2018) 2379-2386 [Cited 90]





# 9. Department of Civil Engineering

#### Year of Establishment:1949

Head of the Department: Prof. Prabhat Kumar Singh Dikshit w.e.f. 01.01.2020

### 1. Brief Introduction of the Department

The Civil Engineering Department was established in 1949 (then known as Civil and Municipal Engineering) in BENCO (Banaras Engineering College) which was a part of BHU. The formal sanction of the Visitor of the University to create this Dept. was received in 1956 and the B.Sc Engineering (Civil & Municipal) Degree was recognized by the Govt. of India in 1958. The department was rechristened to the present name in the year 1975. Presently, it caters its student with seven specialized Post Graduate courses like Environmental Engineering, Geotechnical Engineering, Hydraulic Engineering, Structural Engineering, and Transportation Engineering. The department has taken up various research programmes apart from regular teachings and the research activities, namely CSIR, UGC, SAP, HUDCO, DST and AICTE. It has a created cooperation with industries to work for the various tasks given by Govt., Semi-Govt. and other Private organisations. It is particularly dedicating in providing solutions to the people of the country with technical solutions and guidelines. It conducts short-term courses, training courses, seminars, workshops and conferences for enrichment in quality of students and entrepreneurs. The department has its own Civil Engineering Society which is dedicated in organising lectures by various experts in their respective field, group discussions, competitions, sports and various other extra-curricular and cultural activities so that there would be an holistic all round development of students. Also this society conducts a separate fest for the Civil Engineering Students, known as, Shilp.

# **Major areas of Research**

Group A: Structural Engg., Geotechnical Engg., Transportation Engg. and Engg. Geoscience

Thrust Areas: Development and characterization of Smart materials and Construction Technologies for sustainable infrastructure.

Group B: Hydraulics & Water Resource Engg., Env. Engg., Geoinformatics Engg.

Thrust Areas: Water Resources Management, River Modelling, Water quality monitoring and treatment, River Health Restoration, Waste Management and Pollution Control.

# Area of the Department (in square meters):

#### Infrastructure

S. No	Particulars	Number
1	No. of Classrooms	5
2	No. of Lecture Halls	4
3	No. of Laboratory	10
4	No. of Computers available for students in the Department/ School	60

# 1. Academic Programmes offered Students on Roll

S. No.	Programme	I Year	II Year	III Year	IV Year	V Year & above
1	B. Tech.	119	111	86	74	-
2	Integrated Dual Degree	30	28	24	22	22
3	M. Tech.	59	63	-	-	-





S. No.	Programme	I Year	II Year	III Year	IV Year	V Year & above
4	Ph. D. (Under Institute Fellowship)	4	16	25	15	13
5	Ph. D. (Under Project Fellowship)	1	2	2	-	5 (JRF)
6	Ph. D. (Under Sponsored Category)	1	-	-	1	-

# 3. Faculty & their Activity

Faculty and their areas of specialization

S. No.	Name, Qualifications, Em- ployee No.	Date of award of PhD Degree	Major Areas of Specialization (Max. 3 Areas)
PROFESS	SORS		
1	Prof. Veerendra Kumar	1986	Structural Engineering; Plastic design and analysis
2	Prof. Gautam Banerjee		Environmental Engineering
3	Prof. Devendra Mohan	2004	Environmental Engineering
4	Prabhat Kumar Singh	2000	Environmental Engineering (Water Quality Monitoring and Control, Solid Waste Engineering and Management, River Health Studies)
5	Prof. Prabhat Kumar Singh Dikshit	2010	Hydraulics and Water Resources Engineering, R S and GIS
6	Prof. Sasankasekhar Mandal	2002	Wind effect on structures, Advanced Concrete Technology, FEM analysis of structures
7	Rajesh Kumar	2004	Structural Engineering, Earthquake Engineering, Concrete Technology
8	Prof. Shyam Bihari Dwivedi	Dec, 1992	Engineering Geosciences
9	Prof. Arun Prasad	2000	Geotechnical Engineering (Soil stabilization, Unsaturated soil mechanics, Slope stability)
10	Prof. Krishna Kant Pathak	2001	Structural Engineering
ASSOCIA	TE PROFESSORS		
1	Dr. Kamlesh Kumar Pandey		Hydraulics & Water Resources Engineering
2	Dr. Brind Kumar	19.10.2001	Transportation Engineering
3	Dr. Pabitra Ranjan Maiti		Structural Engineering
4	Dr. Sanjay K. Gupta	7-Sep-08	Hydraulics and Water Resources, Modelling and Compu- tation, Hydraulic Systems Design
5	Dr. P. Bala Ramudu	12.10.2007	Geotechnical Engineering- Environmental Geotechnics; Geopolymers; Remediation of Contaminated Sites; Elec- treo Osmotic consolidation
6	Dr. Medha Jha	December, 2003	Engineering Geosciences
7	Anurag Ohri	2012	Geoinformatics Engineering, Municipal Solid Waste Management, Surveying
8	Dr. Ankit Gupta	04 <sup>th</sup> Aug. 2012	Transportation Engineering, Sustainable Pavement Materials, Traffic Engineering
ASSISTA	NT PROFESSORS		
1	Dr. Kesheo Prasad		Hydraulics & Water Resources Engineering
2	Dr. Suresh Kumar		Geotechnical Engineering





S. No.	Name, Qualifications, Em- ployee No.	Date of award of PhD Degree	Major Areas of Specialization (Max. 3 Areas)
3	Dr. Shishir Gaur	July, 2010	Numerical Modelling, Optimization, GIS & Remote Sensing
4	Dr. Nikhil Saboo	May, 2016	Transportation Engineering: Pavement Materials, De- sign and Analysis
5	Dr. Rosalin Sahoo	March 2015	Composite Plates/Shells, CNT/Smart/FGM, Uncertainty Analysis
6	Dr. Supriya Mohanty	18-Jun-14	Geotechnical Earthquake Engineering, Liquefaction Potential Evaluation, Nonlinear Dynamic Response Analysis.
7	Manash Chakraborty,	31st July, 2015	Geotechnical Engineering, Numerical Analysis, Limit Analysis
8	Dr. Abhisek Mudgal	Dec. 2011	Transportation Engineering
Visiting l	Faculty		
1	Dr. Prithvish Nag		Geoinformatics

### Technical and Non-Teaching Staff

Sl. No.	Name, Qualifications	Designation	Date of Appointment in the Department
1	Shri Kamlesh Kumar	Junior Superintendent	31/07/2017
2	Shri Rajesh Prasad	Junior Assistant	07/03/2019
3	Shri Ajit Kumar	Skilled Clerical Staff (Ex-Cadre)	16/04/2015
5	Shri Lalji	Sr. Technical Superintendent	30/05/1987
6	Shri Sharada Prasad	Sr. Technical Superintendent	12/1/1989
8	Shri Basanta Prasad	Jr. Technical Superintendent	28/12/1990
9	Shri Vinod Kumar Singh	Senior Technician	14/10/1993
11	Shri A. K. Jaiswar	Senior Technician	22/02/2007
12	Shri R. B. Bhandari	Senior Technician	16/05/2007
13	Shri Yashwant Singh	Senior Technician	6/6/2007
14	Shri Amit Kumar Singh	Senior Technician	11/11/2011
15	Shri Shankar Ram	Junior Technician	13/06/2012
16	Shri Netrapal	Junior Technician	13/06/2012
17	Shri Rama Shankar Singh	Skilled Worker	1/1/2010
18	Shri Jai Singh Yadav	MTS-Skilled Worker	1/1/2015
19	Shri Deepak Kharwar	Unskilled Worker	22/01/2015
20	Shri Mintoo Lal Srivastava	MTS-Skilled Worker	13/12/2016
21	Shri Nitin Srivastava	MTS-Skilled Worker	13/12/2016
22	Shri Amar Srivastava	MTS-Skilled Worker	19/01/2017





S. No.	Coordinator	Title	Period
1	Dr. Ankit Gupta and Dr. Nikhil Saboo	Data Collection and Analytics in Pavement Management Systems	March 01-05, 2021
2	Dr. Rosalin Sahoo	Mechanics of Advanced Composites Materials	09th-13th Feb 2021

#### Short-term courses/workshops/seminars/symposia/conferences organized by faculty members

# Short-term courses/workshops/seminars/symposia/conferences/training programmes attended by faculty members in academic institutions and public sector undertakings

S. No.	Name of Faculty Member	Title	Period and Venue
Semina	rs/Symposia/Conferen	nces	
1	Ankit Gupta	International Symposium on Bituminous Materials	Dec. 14-16, 2020. Lyon, France (Online Mode)
2	Manash Chakraborty	Online FDP on Sustainable Env. Geotechnics	05 <sup>th</sup> -09 <sup>th</sup> Oct., 2020, SRKREC, AP
3	Manash Chakraborty	IGC Conference	16 <sup>th</sup> -20 <sup>th</sup> Dec., 2020, Vizag (Online Mode)
4	Prof. S. Mandal	Overcoming Covid-19 challenges through innovations in construction industry.	28 <sup>th</sup> December 2020 to 01 January 2021,PSIT College of Engineering, Kanpur, UP
5	Prof. Rajesh Kumar	Advances in Vibration Analysis	December 28-december 31, 2020, Department of Civil Engineering, IIT (BHU), Varanasi

#### Special lectures delivered by faculty members in other Institutions

S. No.	Name of faculty Member	Topic of Lecture	Institution	Date
1	Manash Chakraborty	Numerical solution of flow through saturated soils	VelTech Inst. Of Science and Technology	8 <sup>th</sup> Dec., 2020
2	Rosalin Sahoo	Analysis of Laminated Composite and Sandwich Structures	Malla Reddy College of Engg. and Technology, Hyderabad	30 <sup>th</sup> July 2020
3	Rosalin Sahoo	Shear Deformation Theories for Composite Laminate	MBM Engineering College, Jodhpur	12 <sup>th</sup> Sept 2020
4	Rosalin Sahoo	Mathematical Modelling of Composite Plate Structures	IGIT Sarang, Odisha	26 <sup>th</sup> Feb 2021
5	Prof. Rajesh Kumar	Covid-19: Engineering and Construction Industry Response	Faculty Development Program (FDP) on Overcoming Covid19 Challenges through Innovation in Construction Industry, PSIT College of Engineering, AKTU, Lucknow, (UP)	December 28-January 1st, 2021
6	Prof. Rajesh Kumar	Structural Health Monitoring (SHM) of Engineered Structures	TEQIP-III (ATU) Sponsored online FDP on Structural Health Monitoring, Rajasthan Technical University, Kota, India	August 26-30, 2020





### Fellowships of academic and professional societies

S. No.	Name of Faculty Member	Details of Fellowship
1	Dr. Supriya Mohanty	Associate Member, American Society of Civil Engineers (ASCE)
2	Dr. Supriya Mohanty	Member, Earthquake Engineering Research Institute (EERI)
3	Dr. Supriya Mohanty	Associate Member, Institute of Engineers, India (IEI)
4	Dr. Supriya Mohanty	Life Member, JICA (Japan International Cooperation Agency) Alumni Association of India (JAAI)
5	Dr. Supriya Mohanty	Life Member, Indian Geotechnical Society (IGS)
6	Dr. Supriya Mohanty	Life Member, Indian Society of Earthquake Technology (ISET)
7	Dr. Supriya Mohanty	Life Member, Association of Consulting Civil Engineers (India)

#### Books, monographs authored/co-authored

S. No.	Name of Author/ Co- Author	Title	Publisher
1	Shekhar S., Chauhan M.S., Omar P.J., Jha M. (2021)	River Discharge Study in River Ganga, Varanasi Using Conventional and Modern Techniques	The Ganga River Basin: A Hydrometeorological Approach. Society of Earth Scientists Series.
	WI. (2021)	and Modern rechniques	3-030-60869-9_7

#### Editorial boards of journals

S. No.	Name of Faculty Member	Position (Editor/ member)	Name of Journal
1	Ankit Gupta	Academic Editor	International Journal - Advances in Civil Engineering, Hindawi. [SCIE IF: 1.176]
2	Ankit Gupta	Editorial Panel Member	International Journal ICE - Transport, Institution of Civil Engineers, UK. [SCIE IF: 1.099]
3	Ankit Gupta	Member, Editorial Board	International Journal for Traffic and Transportation Engineering
4	Dr Medha Jha	Member	Sci-Front, Journal of Multiple Sciences

# 4. Design and Development Activities

New facilities added

S. No.	Details (Infrastructure, Equipments, etc.)	Value (in Lakhs of Rupees)
1	COD Digester	238,050.00
2	Core-Bit and Core Cutter	24,381.00
3	GPS Signal Receiver, Field Controller	169,500.00
4	Temperature controller for oven.	5,500.00
5	Walkers Steelyard Balance	75,000.00
6	Rice Apparatus Vaccum Pycnometer	449,750.00
7	Set of Rock and Mineral Specimen	152,618.00
8	Concrete Test Hammer	84,000.00
9	Wireless 3D stereo glasses kit	109,200.00
10	Vacuum Desicators	49,980.00





S. No.	Details (Infrastructure, Equipments, etc.)	Value (in Lakhs of Rupees)
11	DJI Mini	179,500.00
12	GEO 5 software package	94,395.00
13	Profoscope(Rebar Locator)	238,350.00
14	Gas Analysis Apparatus	22,500.00
15	Automatic Compactor	249,060.00
16	Fine particulate Sampler	158,080.00
17	DTP Work Station Computer	128,936.00
18	Length Comparator, Slump Test Apparatus, Vicat Apparatus, Lateral Extensometer	118,230.00
19	Direct Shear Test Apparatus	220,500.00
20	Laptop for Faculty members	1,425,270.00
	Total	4,192,800.00

#### **Patents filed**

S. No.	Name of Faculty Member	Title of Patent
1.	Bala Ramudu Paramkusam, Deep Jyoti Singh, Arun Prasad	"SYSTEM FOR ELECTRO-OSMOTIC SOII
		CONSOLIDATION AND A METHOD THEREOF

# 5. Research and Consultancy

# Sponsored research projects

S. No.	Title	Period	Funding Agency	Amount (in lakhs of Rs.)	Co-ordinator
1	Propagation and mitigation model of mixed road traffic noise for planning of mid-sized Indian cities	2017-2022	MHRD and MoUD under IMPRINT India	338.0	Brind Kumar
2	Automatic Map Generation from High Resolution Images Applying Deep Learning Techniques	2021-24	DST, New Delhi	33.22 lakh	Dr. Shishir Gaur, Dr. S.P.Maurya
3	Investigation on Dynamic Response Analysis of Shallow Foundation Resting on Pond Ash Deposits	2016-2019	SERB Division, Department of Science & Technology, New Delhi, India	Rs 36.14 Lakhs	Dr. Supriya Mohanty
4	Measurement of Shear Wave Velocity Using Bender Element Tests for Earthquake Response Analysis	2018-2019	IIT(BHU), Varanasi	Rs 14.65 Lakhs	Dr. Supriya Mohanty
5	Studying few aspects of soil behaviour and incorporating them in Limit Analysis	2018-2022	DST Inspire	Rs. 35 Lakhs	Dr. Manash Chakrabarty
6	Understanding the engineering behaviour of unsaturated geomaterials and implementing it in limit analysis for solving geotechnical problems	2019-2021	SERB-SRG	Rs. 27.3 Lakhs	Dr. Manash Chakrabarty





S. No.	Title	Period	Funding Agency	Amount (in lakhs of Rs.)	Co-ordinator
7	Improvement of delamination fracture toughness in nano-graphene particles reinforced polymer composite laminates: An experimental-numerical approach	2021-2024	SERB	RS 18.3 Lakhs	Dr. Rosalin Sahoo
8	Active vibration control of smart composite and sandwich structures in hygrothermal environment	2017-2020	ECRA, SERB	Rs 19 Lakhs	Dr. Rosalin Sahoo
9	An Experimental Approach to Dynamic Response of Woven Fibre composite Plates in hygrothermal environment	2018-2020	IIT (BHU)	Rs 10 Lakhs	Dr. Rosalin Sahoo

# Industrial consultancy projects

S. No.	Name of Faculty Member	Title	Industry	Amount (in lakhs of Rs.)
1	Dr. Kamlesh Kumar Pandey	Vetting of Hydraulic design of Pressurized piped Irrigation Network for Rajgarh Lift of Phase II Irrigation Network under Parwan Major Irrigation Netwok	Vice President M/s JWIL Infra Limited, 102, Geetanjali Tower Opp. ESI Dispensary, Ajmer Road, Jaipur, Rajasthan	177,000.00
2	Dr. Kamlesh Kumar Pandey	Vetting of Hydraulic design of pressurized piped network for CAD RMC Lift of Phase II Irrigation Network under Parwan Major Irrigation Network.	M/s JWIL Infra Limited, 102, Geetanjali Tower Opp. ESI Dispensary, Ajmer Road, Jaipur, Rajasthan	236,000.00
3	Dr. Kamlesh Kumar Pandey	Vetting of the design and drawings of Raw Water & Clear Water Main for Jhansi Water Supply.	Ankur Srivastava Manager- Business Development, Concrete Udyog Limited, Plot NO. 5,6 & 7, Industrial Area Bijoli, Jhansi (UP)	442,500.00
4	Dr. Kamlesh Kumar Pandey	Vetting of design and drawing of Pontoon for the work "Supply of erection testing and commissioning of barge mounted pump sets at Chadrama"	Nath Engineering Works Near New Court Building, Main Road, Uditnagar, Rourkela Odisha	118,000.00
5	Dr. Kamlesh Kumar Pandey	Proof checking of drawing of Major Bridge at km. 36+070 (based on revised HFL) along with hydrology report in the above cited Highway Project.	M/s Patel Infrastructure Ltd. Patel House, Beside Prakruti Resort, Chhani Road, Chhani, Vadodara, Gujarat.	206,500.00
6	Dr. Kamlesh Kumar Pandey	Vetting of design and drawing of Additional Water Distribution Network of Nowadi Tikamgarh Project.	M/s JWIL Infra Limited FM 15C block, Mansarover Complex, Hoshangabad, Bhipal, Madhya Pradesh	59,000.00
7	Dr. Kamlesh Kumar Pandey	Vetting of Hydraulic Design & Drawing of Additional Water Distribution Network of zone 10 and 17 of Manpur Umaria Project.	M/s JWIL Infra Limited FM 15C block, Mansarover Complex, Hoshangabad, Bhipal, Madhya Pradesh	59,000.00

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S. No.	Name of Faculty Member	Title	Industry	Amount (in lakhs of Rs.)
8	Dr. Kamlesh Kumar Pandey	Byarma Multi Village Rural Water Supply Scheme District Damoh (MP)	M/s Jwil Infra Limited Flat No. B-504, B-block, 5th floor, Keelandev Towers, Shivaji Nagar, Bhopal, Madhya Pradesh	118,000.00
9	Dr. Kamlesh Kumar Pandey	Majholi Multi Village Rural Water Supply Scheme District Sidhi (MP)	M/s Jwil Infra Limited Flat No. B-504, B-block, 5th floor, Keelandev Towers, Shivaji Nagar, Bhopal, Madhya Pradesh	59,000.00
10	Dr. Kamlesh Kumar Pandey	Vetting for water supply drawing and pump capacity design.	Larsen & Toubro Limited Goverdhan Enclave, Sector-20, Vrindavan Yojna-4, Raibarely Road, Lucknow, UP	59,000.00
11	Prof. Krishna Kant Pathak	Vetting of design, design calculations and drawings of shops above ramp of multi level parking in Chamba District	M/s Avadh Consultancy Services 28, Phase 3, Prakash Lok, Shimla Bypass, Majra, Dehradun	94,400.00
12	Prof. Krishna Kant Pathak	Site visit and technical recommendation for reinstating of eroded right bank approach road of Takiya Ghat Bridge over Sarayu River in Bahraich District	Executive Engineer Provincial Division, PWD Bahraich	649,000.00
13	Prof. Krishna Kant Pathak	Vetting of structural design and drawings of (1) Umbha Police Chowki, Type I, II & III residence quarters in Sonbhadra Distt. (2) Retaining wall on Imliya Nala of Shivpur Lahartara Fulvariya 4 lane road in Varanasi Distt.	M/s Mahadev Engineers and Consultants C1, Bhwneshwar Nagar Colony, Varanasi	88,500.00
14	Prof. Krishna Kant Pathak	Vetting of design, design Calculations and drawings of- (1) Intake well with connecting bridge (2) 4000 kl CWR	M/s R.K. Engineers Sales Ltd. 502, Anand Indulgence Apartment, Rajpur Road, Jhakhan, Dehradun	177,000.00
15	Prof. Krishna Kant Pathak	Structural design of minor bridge (box culvert) on Gadai river in Village Bindpurwa District Chandauli	Executive Engineer Provincial Division, PWD Chandauli	118,000.00
16	Prof. Krishna Kant Pathak	Vetting of design, design calculations and drawings of the following bridges- (1) 60m san Pedestrain Bridge over river Lodhiya Between village Padayl Badeli in Distt. Nainital (2) 30m span steel Truss Motor Bridge over Shipra river at Km 1 of Kathgodam Bhowali Motor Road in Distt Nainital	Technical Consultancy Services 14-C, GMS Road, Arawali Enclave, Dehradun	118,000.00
17	Prof. Krishna Kant Pathak	Third Party Quality Inspection of the Construction works of- (1) Govt. Allopathic Medical College, Ambedkar Nagar (2) REC Ambedkar Nagar	Unit Incharge REC Ambedkar Nagar, Camp Unit : Plot No. 4, Sector 7, Gomti Nagar Ext., (Near Shaheed Path) Lucknow	177,000.00





S. No.	Name of Faculty Member	Title	Industry	Amount (in lakhs of Rs.)
18	Prof. Krishna Kant Pathak	Proof checking of analysis for provision of elastomeric bearing over POT/PTFE bearing	M/s Sutra Consultancy and Constructions Singharia Gorakhpur	47,200.00
19	Prof. Krishna Kant Pathak	Vetting reports of structural design and drawings for Mussoorie Reorganization Water Supply Scheme for Mussoorie town.	M/s R.K. Engineers Sales Ltd. 502, Anand Indulgence Apartment, Rajpur Road, Jhakhan, Dehradun	236,000.00
20	Prof. Krishna Kant Pathak	Vetting of structural designs and drawings of 15 Nos of common service centres under PMJKV scheme	Executive Engineer UP Waqf Vikas Nigam Limited, Lucknow	177,000.00
21	Prof. Krishna Kant Pathak	Vetting of design, design calculations and drawings of abutment design of 30 m span steel girder motor bridge at Kathgodam	M/s Avadh Consultancy Services 28, Phase 3, Prakash Lok, Shimla Bypass, Majra, Dehradun	70,800.00
22	Prof. Krishna Kant Pathak	Vetting of structural drawings of ITI Siddiqpur, Distt- Jaunpur	Project Manager Bhadohi Unit, UPRNN Bhadohi, House No. 2, Vivekanand Nagar Colony, Lohamandi, Maldahiya, Varanasi	29,500.00
23	Prof. Krishna Kant Pathak	Site inspection and report preparation on water logging problem in the basement of 500 bedded academic hospital building in Rajkiya Medical College, Azamgarh	Project Manager Azamgarh Unit, New Collectorate Campus, Civil Lines, Azamgarh	70,800.00
24	Prof. Krishna Kant Pathak	Proof checking of foundation and substructure, protection work and launching scheme etc. of Bridge No. 31 on River Ghaghara as per payment schedule (Stage 1-15% of Total amount)	Chief Project Manager III RVNL Varanasi, Beside DRM office, Lahartara, Varanasi	384,267.00
25	Prof. Krishna Kant Pathak	Proof checking of design & drawings of ROB 19 B KM 882/21-23 on ALD- CNB Railway section of NCR at Sirathu Railway yard for UPSBC	C. S. Engineers & Consultants S-524/203, II Floor, Neelkanth House, School Block, Shakarpur, Delhi	29,500.00
26	Prof. Krishna Kant Pathak	Proof checkiing of structural drawings and design calculations of tilt & shift of Well of Pier P27 for work bridge over river Ganga at Unchahar-Naubasta Ghat on Khaga (Fatehpur) road to join Fatehpur from ALD-LKO state highway in distt. Fatehpur	C. S. Engineers & Consultants S-524/203, II Floor, Neelkanth House, School Block, Shakarpur, Delhi	59,000.00
27	Prof. Krishna Kant Pathak	Third party quality control audit of the construction works of first floor in the Bhairo Talab Campus	Registrar Mahatma Gandhi Kashi Vidyapith, Varanasi	56,640.00
28	Prof. Krishna Kant Pathak	Third Party quality inspection of construction work of district Resource Centre Building in District Azamgarh	Additional Chief Officer District Panchayat, Azamgarh	88,500.00





S. No.	Name of Faculty Member	Title	Industry	Amount (in lakhs of Rs.)
29	Prof. Krishna Kant Pathak	Proof checking of design & drawings of RP3-RP4 span of ROB at level crossing No. 29-B at KM 801/17-19 between Karchana and Beerpur Railway stations on Allahabad Mughalsaray section in Prayagraj Distt.	M/s VASU ENGITECH SOLUTIONS PRIVATE LIMITED 2/65, VIPUL KHAND, GOMTI NAGAR, Lucknow, Uttar Pradesh	41,300.00
30	Prof. Krishna Kant Pathak	Proof checking of designs of following minor bridges as extension of existing bridges in connection with doubling of Mau-Shahganj Project- (i) Proposed bridge No. 3,41,49 and 27 (ii) Existing bridge No. 3,41,49 and 24	Tripti Dwivedi Singharia, Sadar, Gorakhpur, Uttar Pradesh, 273008	177,000.00
31	Prof. Krishna Kant Pathak	Proof checking of design & drawings of proposed construction of 2 Lane Road Over Bridge at Level X No. 10A on North Centeral Railway on Mughalsarai-Allahabad Rail Section at KM. 744/13-15 District Mirzapur.	M/s C S ENGINEERS & CONSULTANTSS-524,203, 2nd FLOOR, NEELKANTH HOUSE, SCHOOL BLOCK, SHAKARPUR, EAST DELHI, DELHI	118,000.00
32	Prof. Krishna Kant Pathak	Vetting of design, design calculations and drawings of (1) Kandolia Sport Ground (2) Multi Level Parking	SUBHASH CHANDRA AVADH BIHARI GUPTA 28 PRAKASH LOK, PHASE III, SHIMLA BYE PASS MAZRA, DEHRADUN	82,600.00
33	Prof. Krishna Kant Pathak	Proof Check of structural drawings of minor irrigation RCC structures.	Chairman and Administrator Greater Sharda Shahayak Smadesh, C-23, Gokhale Road, Lucknow, Uttar Pradesh	99,120.00
34	Prof. Krishna Kant Pathak	<ul> <li>Proof checking of design &amp; drawings of foundation, pier &amp; pier cap of following three ROBs -</li> <li>1. Between Lohta and Varanasi Railway Station.</li> <li>2. Between Shivpur and Varanasi Railway Station.</li> <li>3. At KM 1037/12-14 in Jhansi-Beena Station</li> </ul>	M/s C S ENGINEERS & CONSULTANTS S-524,203, 2nd FLOOR, NEELKANTH HOUSE, SCHOOL BLOCK, SHAKARPUR, EAST DELHI, DELHI	70,800.00
35	Prof. Krishna Kant Pathak	Vetting of Structural design and drawings of ROC work at 48 No. Handiya Prayagraj, UP	ASHISH SINGH S 24/6 A-1 KH-2, INDRA NAGAR COLONY, TAKTAKPUR, VARANASI, Uttar Pradesh	23,600.00
36	Prof. Krishna Kant Pathak	Vetting of Structural Drawings of Nursing College in Sant Kabirnagar District under PMJVK.	UTTAR PRADESH WAQF VIKAS NIGAM LIMITED 118, 1ST FLOOR, JAWAHAR BHAWAN, ASHOK MARG, LUCKNOW, Lucknow, Uttar Pradesh	59,000.00





S. No.	Name of Faculty Member	Title	Industry	Amount (in lakhs of Rs.)
37	Prof. Krishna Kant Pathak	Proof checking of design calculations and drawings of the 6 lane ROB in lieu of level crossing no 27 at Railway Km. 34/3-4 on Delhi-Rewari near Basai Dhankat Railway Station.	M/s ADESH KUMAR AND SONS 397-398, Upper Ground Floor, Pocket-4, Sector-22, Rohini, North West Delhi, Delhi	59,000.00
38	Prof. Krishna Kant Pathak	Proof checking of design and drawings of Retaining wall with pile foundation for ROB 78 A Prayagraj District	M/s VASU ENGITECH SOLUTIONS PRIVATE LIMITED 2/65, VIPUL KHAND, GOMTI NAGAR, Lucknow, Uttar Pradesh	41,300.00
39	Prof. Krishna Kant Pathak	Proof checking of design & drawings of Aluminium hanger structure (Temporary) for construction of 150 bedded general hospital at Paavan Dham Site, Haridwar, Uttrakhand.	AKSHAY KOTHIYAL BRAHMPURI CHOWK, NIRANJANPUR, DEHRADUN Uttarakhand	35,400.00
40	Prof. Krishna Kant Pathak	Proof checking of design & drawings calculation of tilt & shift of Well of Pier P18 and P31 for work Bridge over river Ganga at Unchahar-Naubasta Ghat on Khaga (Fatehpur) road to join Fatehpur from ALD-LKO state highway in distt. Fatehpur	M/s C S ENGINEERS & CONSULTANTS S-524,203, 2nd FLOOR, NEELKANTH HOUSE, SCHOOL BLOCK, SHAKARPUR, EAST DELHI, DELHI	47,200.00
41	Prof. Krishna Kant Pathak	Third Party Quality inspection of the construction of buildings, roads and interlocking works at 9 sites of underconstruction Balrampur- Lakhimpur Khiri Raod	Executive Engineer UPCLDF, Balramput Unit, HQ: 29 Kabir Marg (Near Yojna Bhawan), Claysquare Lucknow, Uttar Pradesh	159,300.00
42	Prof. Krishna Kant Pathak	Third party quality inspection of the construction of roads and interlocking works in 14 villages of Balrampur district under Integrated Schemes	UPSCIDCO Limited TC/46-V, Vibhuti Khand, Gomti Nagar, Lucknow	247,800.00
43	Prof. Krishna Kant Pathak	Proof checking of structural design of temporary structure/staging of PSC girder for 42m span bridge at km 158 of NH 121	KAY KAY Construction 16, Civil Line, Haridwar, Uttarakhand	47,200.00
44	Prof. Krishna Kant Pathak	Vetting of structural design and drawings of 60m long box culvert under CRF (at chainage 20.400) in Bhogpur- Raisi road in Haridwar district of uttarakhand	Technical Consultancy Services 14-C, GMS Road, Arawali Enclave, Dehradun	59,000.00
45	Prof. Krishna Kant Pathak	Vetting of structural drawings of 200 bedded building for the students of Medical Technology Building in the campus of SGPGIMS Lucknow	M/s MOTHERS PRIDE INFRASTRUCTURES PRIVATE LIMITED M 4/22, VINAY KHAND, GOMTI NAGAR, LUCKNOW 226010-Uttar Pradesh	35,400.00





S. No.	Name of Faculty Member	Title	Industry	Amount (in lakhs of Rs.)
46	Prof. Krishna Kant Pathak	Vetting of Structural Drawings of Forensic Laboratory Gorakhpur.	M/s MOTHERS PRIDE INFRASTRUCTURES PRIVATE LIMITED M 4/22, VINAY KHAND, GOMTI NAGAR, LUCKNOW- 226010-Uttar Pradesh	35,400.00
47	Prof. Krishna Kant Pathak	Vetting of structural drawings of - (1) Atal Residential School, Gonda (2) Atal Residential School, Lalitpur (3) Multi-Level parking in Collectorate Complex, Lucknow	M/s MOTHERS PRIDE INFRASTRUCTURES PRIVATE LIMITED M 4/22, VINAY KHAND, GOMTI NAGAR, LUCKNOW- 226010-Uttar Pradesh	153,400.00
48	Prof. Krishna Kant Pathak	Detailed structural design of the protection works of the bridge on Rapti river and connecting approach at km-15 of Tilakpur-Madhvapur Ghat-Malhipur road in Shravasti District.	PROVINCIAL DIVISION BAHRAICH BHINGA, SHRAWASTI- 271831-Uttar Pradesh	295,000.00
49	Prof. Krishna Kant Pathak	Vetting of structural drawings of Women working hostels under PMJVK scheme in Distt Kanpur Nagar	UTTAR PRADESH WAQF VIKAS NIGAM LIMITED 118, 1ST FLOOR, JAWAHAR BHAWAN, ASHOK MARG, LUCKNOW-226001-Uttar Pradesh	29,500.00
50	Prof. Krishna Kant Pathak	Following consultancy services for 4 lane flyover at KM 2.5000 on NH-24A- a. Load Test-PSC Girder Superstructure(1 No.) b. Load Test - Steel Composite Superstructure (1 No.) c. Rebound hammer test -2 No per span (Total 30 Nos)	ASC INFRATECH PRIVATE LIMITED H-37, First Floor, Sector-63, Noida, Gautam Buddha Nagar, , 201301-Uttar Pradesh	708,000.00
51	Prof. Krishna Kant Pathak	Proof checking of design, design calculations and drawings of the approaches of 2 lane ROB at Village Jharli at Level X-ing No. C-27 on Rewari Hisar Railway Line on Chhuchakwas Matanhali Bahu Karoli Road in Jhajjar District.	Engineering and Planning Consultant 219-220, Somdutt Chambers-II, Bhikaiji Cama Place, New Delhi-110066	118,000.00
52	Prof. Krishna Kant Pathak	Vetting of design, design calculations and drawings of Water Treatment Plant for Almora Water Supply Scheme.	M/s Avadh Consultancy Services 28, Phase-3, Praksh Lok, Shimla Bypass, Majra Dehradun	295,000.00
53	Prof. Krishna Kant Pathak	Proof checking of design, design calculations and drawings of the proposed bridge of 55.834 m clear span BR No. 265 at KM 66.110 on Rohtak- Meham-Hansi New Railway line on crossing Hansi-Tosham Road.	M/s ROCKWIN INDIA CONSULTING ENGINEERS PVT. LTD. S.C.O. No. 35, 2nd Floor, Emperor Square, TDI City, Kundli, Sonipat-131028 Haryana	47,200.00





S. No.	Name of Faculty Member	Title	Industry	Amount (in lakhs of Rs.)
54	Prof. Krishna Kant Pathak	Vetting of design, design calculations and drawings of sub structures of following bridges under PMGSY scheme- (a) 24 m span steel bridge on Nandkesri Gwaldam Motor Road JM 08 to Deosari Motor Road at KM 04.00 (Class A loading) (b) 24 m span pan steel Truss motor beidge at KM 09.00 on Tharali to Panigrah Motor Road (Class A loading)	M/s Himalayan Engineers Consultancy & Construction Lane No. 1, Shantikunj Nathanpur, Nehrugram, Raipur Road, Dehradun -248005 Uttarakhand	47,200.00
55	Prof. Krishna Kant Pathak	<ul> <li>Proof checking for condition</li> <li>assessment and preparation of DPR for</li> <li>repair and retrofitting works of -</li> <li>1. Chitpur bridge over circular canel</li> <li>2. Canel Bridge in front of R.G. Kar</li> <li>Hospital</li> <li>3. Karunamayee Bridge over Tolly's</li> <li>nallah</li> <li>4. Chetia RCC bridge connecting</li> <li>Kalighat &amp; Chetia over Toll's Nallah</li> <li>Kolkata</li> </ul>	CORTEX CONSTRUCTION SOLUTIONS PRIVATE LIMITED B-248, BASEMENT, CHITRANJAN PARK, SOUTH DELHI-110019	590,000.00
56	Prof. Krishna Kant Pathak	Vetting of design, design calculations and drawings of the following bridges- (1) 3 No. 18m span at km-7 x section 6/20-6/21, 6/24-6/25 & 2/39-2/40 of proposed Kotra (2) 80m span bridge over Kot River at km-2 x section 1/22-1/24 proposed Kotra-Kalyanpur (3) 60m span bridge in over Moth River at km 5 of proposed Kotra-Kalyanpur- Badwa-Langha motor road in District Dehradun	M/s TECHNICAL CONSULTANCY SERVICES 14-C, GMS ROAD, ARAWALI ENCLAVE, DEHRADUN- 248001-Uttarakhand	177,000.00
57	Prof. Krishna Kant Pathak	Vetting of design, design calculations and drawings of the following bridges- (1) 90m span Pedestrian Bridge over Ladiya River near Selabagh in District Champawat (2)18m RCC Bridge at km 18 of Quarab to Kosi Motor Road in Distt. Almora (3) Construction of Ghat Railing at Har- Ki-Pouri Haridwar	M/s TECHNICAL CONSULTANCY SERVICES 14-C, GMS ROAD, ARAWALI ENCLAVE, DEHRADUN- 248001-Uttarakhand	118,000.00
58	Prof. Krishna Kant Pathak	Vetting of structural design and drawings of steel girder motor bridge (42 m span) on Raigar-Chaudmanya (Km-2) to Bhul ki Adhyali Motor Road.	M/s BRIDGE ROPEWAY TUNNEL AND OTHER INFRASTRUCTURE DEVELOPMENT CO OF UK LIMITED 3/3, INDUATRIAL AREA, PATEL NAGAR, DEHRADUN-248001- Uttarakhand	177,000.00





S. No.	Name of Faculty Member	Title	Industry	Amount (in lakhs of Rs.)
59	Prof. Krishna Kant Pathak	Vetting of structural design and drawings of steel girder motor bridge (36 m span) on Karnaprayag-Almora- Askot (Km 235) to Mirthitalli motor road.	M/s BRIDGE ROPEWAY TUNNEL AND OTHER INFRASTRUCTURE DEVELOPMENT CO OF UK LIMITED 3/3, INDUATRIAL AREA, PATEL NAGAR, DEHRADUN-248001- Uttarakhand	147,500.00
60	Dr. Nikhil Saboo	<ul><li>(1) Mix Design of Evaluation for BC2 and DBM</li><li>(2) Mix Design Evaluation for WMM</li></ul>	Pankaj Kumar DGM(Tech.)/ Project Director, PIU- Azamgarh, NHAI	112,100.00
61	Dr. Nikhil Saboo	Job Mix Design of DBM	Executive Engineer Nirman Khand-II, PWD Badaun	59,000.00
62	Dr. Nikhil Saboo	Job Mix Design of DBM	Executive Engineer Nirman Khand Bhawan, PWD Badaun	41,300.00
63	Dr. Nikhil Saboo	Determination of $C_u C_c$ and percentage fines	Mr. R.K. Nirmal, Manager/ Civil, Regional Project Office, Lucknow, 13 Km Milestone, NH-24, Lucknow (For M/s Suresh Chand Gupta, Khanderao Gate Bahar, Opp. Gandhi Bhawan, Jhansi-284002	5,900.00
64	Dr. Nikhil Saboo	Job Mix Design of DBM	Sant Lal maurya APCO Infratech Private Limited	236,000.00
65	Prof. Rajesh Kumar	Vetting of structural design and drawings of Major Bridge form 31+850 to km. 33+975 in the state of kernataka	AVP-Technical M/s Dilip Buildcon Limited, No. 77, 5th Stage Behind RPM Quatrers, Kunvempunagar-570023	944,000.00
66	Prof. Rajesh Kumar	Vetting of structural design and drawing of Subway at Transport Nagar, Lucknow	M/s Gravita Infrastructures Pvt. Ltd. C-18, Ring Road, Kalyanpur, Lucknow	118,000.00
67	Prof. Rajesh Kumar	Vetting of structural design and drawing of proposed group housing cum commercial cum office building at Plot No. 166, H.No. B38/47 A, Mahmoorganj, Varanasi	M/s Bal Hanuman Infra Developers Pvt. Ltd. 6 A Ground Floor, Kuber AC Market, D 58/2 Rathyatra, Varanasi	206,500.00
68	Prof. Rajesh Kumar	Vetting of structural design and drawing of NH-63 subway at Ch. No. 267.28-	Chief Executive Officer M/s Kalyani Steels Limited, Hospet Road, Ginigera, Taluk & Distt. Koppal, Karnataka	247,800.00
69	Prof. Rajesh Kumar	Vetting of structural design and drawing of 6-HDU and 2-ICU near L.B.S.I.A., Babatpur, Varanasi	M/s S.K. Construction Vill-Varema, Hathi Bazar, Rameshwar, Varanasi	23,600.00





S. No.	Name of Faculty Member	Title	Industry	Amount (in lakhs of Rs.)
70	Prof. Rajesh Kumar	Vetting of structural design and drawing of shade for Baggage Area (Air Side) at L.B.S.I.A., Babatpur, Varanasi	M/s S.K. Construction Vill-Varema, Hathi Bazar, Rameshwar, Varanasi	11,800.00
71	Prof. Rajesh Kumar	Vetting of structural design and drawing of PSC girders of structures of Flyover in district Ghazipur in the state of UP	Jt. Project Director€ M/s Oriental Structural Engineers Pvt. Ltd., Purvanchal Expressway (Package-VIII) r/o Village-Bahadurpur, Pargana- Jahurabad, PO and Tehsil Kasimabad, Distt Ghazipur, UP	590,000.00
72	Prof. Rajesh Kumar	Vetting of structural design and drawing of 2-lane ROB in lieu of LC Lucknow Pratapgarh section in Amethi Yard- Lucknow Division	M/s Gravitas Infrastructures Pvt. Ltd. C-18, Ring Road, Kalyanpur, Lucknow (UP)-226022	118,000.00
73	Prof. Rajesh Kumar	Vetting of structural design and drawing superstructure & substructure for construction of bridges on Tributary of Ganga river on Alipur-Barwara- Sahaswan Road, Kasganj	M/s Mittal Brothers Engineers & Contractors B-41, Nirala Nagar, Lucknow-226020	383,500.00
74	Prof. Rajesh Kumar	Vetting of structural design and drawing of Roof truss structure at 4th floor of club building at Digha Railway Colony.	M/s Lord vishnu Constructions Private Limited 101, Lotus Apartment, New Patliputra colony, Patna, Bihar-800013	88,500.00
75	Prof. Sasankasekhar Mandal	Inspection report of the auditorium building and basement of hospital building, GMC Azamgarh	Project Manager UPRNN Ltd, Azamgarh Unit, Azamgarh	118,000.00
76	Prof. Sasankasekhar Mandal	Vetting of drawings & design of 3000 kl OHT on 21m staging at University Campus, Ring Road, Chitawad, Indore, MP	M/s RSC Infratech Developers LLP, Bhopal C/o Prem Construction Company, 23/3, Neelbad, Bhopal, MP	118,000.00
77	Prof. Sasankasekhar Mandal	Vetting of structural design and drawings of RCC overhead tank capacity 600 kl staging height of 22m at Dehradun	M/s Ankita Construction B-12, Indira Nagar, Shopping Complex, Dehradun-248006	70,800.00
78	Prof. Sasankasekhar Mandal	Proof checking of drawing and design of Bridge no. 4 Katra-Banihal section of USBRL project	M/s Lombardi Engineering Private Limited A 1/20, LGF, Safdarjung Enclave, Safdarjung, South Delhi, New Delhi	531,000.00
79	Prof. Sasankasekhar Mandal	Proof checking of design of fixing of OHE bridge masts on constructed Major Bridges on Mughalsarai-Sonenagar section, Eastern corridor, DFCCIL	The Project Manager BSC-C&C 'JV', DFCCIL Project, Saiyadraja Camp, Chandauli	472,000.00



S. No.	Name of Faculty Member	Title	Industry	Amount (in lakhs of Rs.)
80	Prof. Sasankasekhar Mandal	Vetting of structural design and drawings of Type II quarters (08 blocks) at G.C. CRPF, Chandauli	Executive Engineer Chandauli Project, CPWD, CRPF Camp, Near ESSAR Petrol Pump, Sonhul Chakiya, Chandauli UP	88,500.00
81	Prof. Sasankasekhar Mandal	Vetting of structural design of STP-STR Inlet System	M/s Avian Infrastructure and Energy Pvt. Ltd. A-107, Veena Vihar Apt., Adarsh Vihar colony, Rukanpura, Patna-800014 (C/o VC Project (JV), 2A, New York corner, S.G. Highway, Ahmedabad)	106,200.00
82	Prof. Sasankasekhar Mandal	Vetting of structural design and drawing of side anchoring of tamporary Hanger Structure to be built at Muzaffarpur Airport	M/s Pavilions and Intariors India Pvt. Ltd. A-63, Sector-57, Noida, (UP)	59,000.00
83	Prof. Sasankasekhar Mandal	Vetting and design of major bridge no 1 including allied structures of Katra- Banihal section of USBRL project, J&K	M/s Lombardi Engineering Private Limited A 1/20, LGF, Safdarjung Enclave, Safdarjung, South Delhi, New Delhi	236,000.00
84	Dr. Suresh Kumar	District Court Kushinagar, Padaruna	Unit Incharge Kushinagar Unit, UPRNN Limited, District Hospital, Deoria	59,000.00
85	Dr. Suresh Kumar	Vetting of Initial Pile load test report for 400 mm diameter and 6.5m length of the pile for Rajkiya Mahavidyalay, Biskohar, Sidhharthnagar	PNC Infratech Limited Varanasi-Gorakhpur Road, Village & PO-Kaithi (Markandey Mahadev) Varanasi	118,000.00
86	Dr. Suresh Kumar	Transit Hostel, Police Line, District Deoria	UPRNN Limited Vishweshwaraiya Bhawan, Vibhuti Khand Gomti Nagar, Lucknow	118,000.00
87	Dr. Suresh Kumar	Vetting of Initial Pile load test report for 400 mm diameter and 6.5m length of the pile for Rajkiya Mahavidyalay, Biskohar, Sidhharthnagar	UPRNN Limited Vishweshwaraiya Bhawan, Vibhuti Khand Gomti Nagar, Lucknow	29,500.00
88	Prof. Veerendra Kumar	Vetting of structural design and drawing of drain with cover/without cover for resurfacing of Runway and Allied work at Air Force Station Bagdogra	M/s KCC Buildcon Pvt. Ltd. BU-5, S.F.S. Flats, Near Income Tax Colony, Outer Ring Road, Pitampura, Delhi	59,000.00
89	Prof. Veerendra Kumar	Inspection & checking of design of under construction new Nala up to Turra Nala on Deoria Road	The Director Construction and Design services, UP Jal Nigam, T.C38-V, Vibhuti Khand, Gomti Nagar, Lucknow	70,800.00

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S. No.	Name of Faculty Member	Title	Industry	Amount (in lakhs of Rs.)
90	Prof. Veerendra Kumar	Third party quality inspection of Shri Kashi Vishwanath Corridor	Executive Engineer Construction Division-3, PWD, Varanasi	59,000.00
91	Prof. Veerendra Kumar	Vetting of design and drawing of Launching of 60m clear soan Bow string Girder(9 Nos.)	M/s Galvano India Pvt. Ltd. E-95-97, Site-B, UPSIDC, Ind. Area Surajpur, Greater Noida, Gautam Budh Nagar (UP)	821,280.00
92	Prof. Veerendra Kumar	Vetting of structural design and drawing of substructure and superstructure of bridge for widening of Champadanga-Pursura-Arambgh road section of SH-2 in the distruct of Hooghly in West Bengal	M/s KCC Buildcon Pvt. Ltd. 5 Floor, JMD Empire, Sector-62, Gurugram-122018	944,000.00
93	Prof. Veerendra Kumar	Vetting of structural design and drawing of New School Building at Civil Aviation Training College(CATC) at Prayagraj, UP	M/s Bajrang Nirman Pvt. Ltd. S-1485, Sector-H, LDA Colony, Kanpur Road, Lucknow	44,250.00
94	Prof. Veerendra Kumar	Vetting of structural design and drawing of Proposed SOS MESS (45 No. of Rooms) for ITBP, 48 BN, Chhaora, Bihar	M/s Indradhanushi Services Pvt. Ltd., B-1/46, Sector-K, Aliganj, Lucknow	59,000.00
95	Prof. Veerendra Kumar	Vetting of Revised structural design and drawing of superstructure of Minor Bridge at Ch 76+390 of Aligarh-Tappal Project	M/s Sabz Infra Solution Pvt. Ltd., 3, A-216A, Ground Floor, Budha Marg, Mandawli, Fazalpur, East Delhi, Delhi-110092	59,000.00
96	Prof. Veerendra Kumar	Vetting of structural design and drawing of sludge handling unit for sewerage works in Vindhyachal zone of Mirzapur	M/s Ayyappa Infra Project Pvt. Ltd. 7 MLD STP Vindhyachal, Distt-Mirzapur	47,200.00
97	Prof. Veerendra Kumar	Vetting of design and drawing of Spherical Bearing (4 nos each) for ROB	VP-Designs M/s G.R. Infraprojects Ltd., Purvanchal Express, Vill- Bhaisaha, Near Karha Bazar, Mohamdabad Gohana, Mau	236,000.00
98	Prof. Veerendra Kumar	Vetting of design and drawing of POT- PTFE Bearing (4 nos. each) for ROB in the state of Andhra Pradesh	M/s G.R. Infraprojects Ltd. Survey no. 67/70/71, Beside Avanti Feeds, Vill- Bandapuram, Mandal- Devarapalli, West Godavri Distt., Andhra Pradesh	118,000.00





S. No.	Name of Faculty Member	Title	Industry	Amount (in lakhs of Rs.)
99	Prof. Veerendra Kumar	Vetting of structural design and drawings of Flyover in the state of UP	M/s S & P Infrastructure Developers Pvt. Ltd. & Sri Balajee Enterprises(JV) Village- Meerpur, Near RTO Office, Lakhimpur, Kheri UP	354,000.00
100	Prof. Veerendra Kumar	Vetting of Revised Structural design and drawing of superstructure and substructure of Vehicular over pass in the state of Kerala	M/s EKK Infrastructure Limited 2 Floor, Municipal Building, AM Road Perumbavoor, Ernakulam Kerala	88,500.00
101	Prof. Veerendra Kumar	Vetting of structural design and drawing of abutment and foundation of Bridge in the state of Sikkim	Director M/s S & P Infrastructure Developers Pvt. Ltd. 907 New Delhi House, 27 Barakhamba Road, New Delhi	147,500.00
102	Prof. Veerendra Kumar	Vetting of revised structural design and drawings of substructure of two bridge in the state of UP	M/s G.S. Express Pvt. Ltd, C-877, Mahanagar, Lucknow	141,600.00
103	Prof. Veerendra Kumar	Vetting of structural design and drawing of Sewage Treatment Plant of capacity 600 KLD at CRPF GC, Phaphamau, Allahabad	M/s Orion Engineers H-97, LGF, Lajpatnagar-1, New Delhi	70,800.00
104	Prof. Veerendra Kumar	Vetting of revised structural design and drawing of superstructure of bridge at Ch. 45+540 of Aligarh-Tappal Project	M/s Sabz Infra Solution Pvt. Ltd., A-2, 2 Floor, DDA Sheds, near Indian Bank Okhla Branch, Okhla , New Delhi-110020	59,000.00
105	Prof. Veerendra Kumar	Vetting of structural design and drawing of primary treatment unit for sewerage works in Vindhyachal zone of Mirzapur	M/s Ayyappa Infra Project Pvt. Ltd. 7 MLD STP Vindhyachal, Distt-Mirzapur	47,200.00
106	Prof. Veerendra Kumar	Inspection , verification of materials quality reports, workmanship check and report preparation of Rajkiya Mahila Degree College, Samadi, Aharaula, Azamgarh	Project Manager UPRNN Limited, Azamgarh Unit, New Collectorate Campus, Civil Lines, Azamgarh	59,000.00
107	Prof. Veerendra Kumar	Site visit, witness of NDT Test and report preparation of the bypass line of the 140 MLD STP plant at the UP Jal Nigam site, Dinapur, Varanasi	M/s Unico Engineering Solutions S.No. 116/6/2, Parkhe Chambers, Behind Sai Leela Hotel, Pashan-Sus Road, Pune	118,000.00





S. No.	Name of Faculty Member	Title	Industry	Amount (in lakhs of Rs.)
108	Prof. Veerendra Kumar	Inspection , verification of materials quality reports, workmanship check and report preparation of 2 Nos. 10 seated public toilet, 01 no 05 seated toilet and 1-1 additional disable toilet at campus of district judiciary Azamgarh	Project Manager UPRNN Limited, Azamgarh Unit, New Collectorate Campus, Civil Lines, Azamgarh	59,000.00
109	Prof. Veerendra Kumar	Vetting of design and drawings of twin girder Launching scheme for ROB in the state of Andhra Pradesh	M/s G.R. Infraprojects Ltd. Survey no. 67/70/71, Beside Avanti Feeds, Vill- Bandapuram, Mandal- Devarapalli, West Godavri Distt., Andhra Pradesh	177,000.00
110	Prof. Veerendra Kumar	Inspection , verification of materials quality reports, workmanship check and report preparation of Govt. Girls Inter College, Nandaw, Azamgarh	Project Manager UPRNN Limited, Azamgarh Unit, New Collectorate Campus, Civil Lines, Azamgarh	59,000.00
111	Prof. Veerendra Kumar	Vetting of structural design and drawings of overhead tanks of capacity 650 KL 20.0 m staging, 750 KL 22.0m staging and 625 KL CWR	M/s Ventech Engineers 117/Q/45, LGF Envirad Complex, Sharda Nagar, Kanpur	141,600.00
112	Prof. Veerendra Kumar	Vetting of structural design and drawings substructure and foundation of RUBs for ETAH TPP Project at ETAH, UP	Dy. GM/Civil, RPO-Lucknow, M/s RITES LIMITED Regional Project Office Lucknow, 13 KM Milestone, NH-24, Lucknow-Sitapur Road, Lucknow	236,000.00
113	Prof. Veerendra Kumar	Vetting of structural design and drawing of Well cap for pier P23-3 of Major bridge over river Ghaghra at Chandpur, Ballia, UP	Director M/s CDS Consult (India) Pvt. Ltd., 537, Sector 31, Gurgaon	23,600.00
114	Prof. Veerendra Kumar	Third Party quality inspection of construction work of Prof. Rajendra Singh (Rajjoo Bhaiya) University, Prayagraj	Upper Project Manager Prayagraj Unit-1, UPRNN Ltd., Construction of Prof. Rajendra Singh (Rajjoo Bhaiya) University, Prayagraj	59,000.00
115	Prof. Veerendra Kumar	Vetting of revised structural design and drawings of ROB in the state of Gujarat	M/s Patel Infrastructure Ltd. Patel House, Beside Prakruti Resort, Chhani Road, Chhani, Vadodara, Gujarat	29,500.00
116	Prof. Veerendra Kumar	Third party quality inspection of construction work of Shri Kashi Vishwanath Corridor	Executive Engineer Construction Division-3, PWD, Varanasi	59,000.00





S. No.	Name of Faculty Member	Title	Industry	Amount (in lakhs of Rs.)
117	Prof. Veerendra Kumar	Vetting of structural design and drawings of superstructure of spans 50 m and 18 m and substructure & foundation of pier in Rajasthan	M/s RSCPL-RCC (JV) D-33, RDC Raj Nagar, Ghaziabad UP	295,000.00
118	Prof. Veerendra Kumar	Vetting of structural design and drawing of Span	M/s Salahuddin & JK (JV) Hathua Chawani, Chatradhari Bazar, Chapra, Bihar	590,000.00
119	Prof. Veerendra Kumar	Vetting of structural design and drawing of Phase II Irrigation network under Parwan Major Irrigation Project	Sr. Vice President M/s JWIL Infra Limited, 102, Geetanjali Tower Opp. ESI Dispensary, Ajmer Road, Jaipur, Rajasthan	177,000.00
120	Prof. Veerendra Kumar	Vetting of structural design and drawing of buildings for extension and beatification work of Shri Kashi Vishwanath Temple Road	Chief Executive Officer Shri Kashi Vishwanath Vishist Kshetra Vikas Parishad, Varanasi	1,770,000.00
121	Prof. Veerendra Kumar	Vetting of structural design and driwings of following bridges in connection with doubling between Jhansi-Khairar-MKP & Khairar-BZM including chord line at KID & BZM	M/s Rational Constructions 1-O/14F, Baghambari Gaddi, B.D. Puram, Prayagraj, U.P 211006	398,250.00
122	Prof. Veerendra Kumar	Vetting of structural design and drawings of Well caisson, Barge and Tower & Connecting Platform for fabrication of caisson for construction of new Bridge no 16 (18x61.00m clear span) two lane steel through type girder at Km 17/1 to 18/4 on river Ghaghra between station Manjhi & Bakulha on section chhapra and Aurihar	M/s Accrete Consulting Engineers (P) Ltd. NM-8, 2nd Floor, Sona Tower, Old DLF Commercial Complex, Sector-14, Gurgaon-122001 (Haryana)	118,000.00
123	Prof. Veerendra Kumar	Vetting of Structural design and drawings of Overhead tanks of capacity 1000 KL 20.0 m staging	M/s Ventech Engineers 117/Q/45, L.G.F. Envirad Complex, Sharda Nagar, Kanpur-208025	59,000.00





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S. No.	Name of Faculty Member	Title	Industry	Amount (in lakhs of Rs.)
124	Prof. Veerendra Kumar	Vetting of Structural design and drawings of foundations and substructure of 21x45.7 m span, FL 92.7m for Yamuna Bridge and compare the design and drawing with 17x60.8m span FL93.7 m	Chief General Manager DFCCIL/Allahabad (West), Dedicated Freight Corridor Corporation of India Ltd., 2nd Floor, DFCCIL Operation Control Centre, Subedarganj (Opposit IOCL Campus), Allahabad-211012	354,000.00
125	Prof. Veerendra Kumar	Vetting of Structural design and drawings of IOCL bridge of span arrangement of 6.1m and skew angle 450 for different fill height	Chief General Manager DFCCIL/Allahabad (West), Dedicated Freight Corridor Corporation of India Ltd., 2nd Floor, DFCCIL Operation Control Centre, Subedarganj (Opposit IOCL Campus), Allahabad-211012	177,000.00
126	Prof. Veerendra Kumar	Vetting of strucutrl deisgn and dawign of CWE Office Chandigarh	Executive Director Association of Professionals & Engineering Xperts (APEX), 2/10, Jullena Commercial Complex, New Friends Colony, New Delhi -110025	47,200.00
127	Prof. Veerendra Kumar	Vetting of revised structural design and drawing of Inake well at Devli of Phase II Irrigation Network under Parwan Major Irrigation Network	M/s JWIL Infra Limited 102, Geetanjali Tower Opp., ESI Dispensary, Ajmer Road, Jaipur, Rajasthan – 3202006	23,600.00
128	Prof. Veerendra Kumar	Vetting of Structural design and drawing of following for Phase II Irrigation Network under Parwan Major Irrigation Project	M/s JWIL Infra Limited 102, Geetanjali Tower Opp., ESI Dispensary, Ajmer Road, Jaipur, Rajasthan – 3202006	153,400.00
129	Prof. Veerendra Kumar	Inspection, verification of materials quality reports, workmanship check and report preparation of construction work of Shri Kashi Vishwanath Mandir Corridor as part of Third Party Quality Inspection.	Executive Engineer Construction Division-3, P.W.D., Varanasi	59,000.00
130	Prof. Veerendra Kumar	Vetting of Structural design and drawing of Overhead tank capacity 125 KL , 18 m staging at Community Health Centre, Azamgarh	M/s Jai Bajrang Enterprises S-5/95B, Lakshmanpur, Shivpur, Varanasi	47,200.00
131	Prof. Veerendra Kumar	Structural Design and Drawing of Special Foundation for RC Tower Loction 212 & 213 of 132 K.V. (D/C) Amariya-Puranpur Transmission Line	Executive Engineer Electricity Civil Transmission Division U.P. Power Transmission Corporation Ltd. Hydel Colony, Rampur Bagh, Bareilly (U.P.)	354,000.00



S. No.	Name of Faculty Member	Title	Industry	Amount (in lakhs of Rs.)
132	Prof. Veerendra Kumar	Vetting of design and drawings of Launching scheme of Two span 72 m BOW String Girder at LC- 42/C at RLY Km 571/19-21 between station Sasaram-Karwandia on Mughalsarai- Gaya Section	M/s Galvano India Pvt. Ltd. E-95-97, Site-B, U.P.S.I.D.C., Ind. Area SurAjpur, Greater Noida, Distt. Gautam Budh Nagar (U.P.) - 201306	226,560.00
133	Prof. Veerendra Kumar	Vetting of structural design and drawings Baghabhisanpur Station building under Japla to Son nagar	M/s Ashoka Buildcon Ltd., Rail Son Nagar to Japla, Jagnaryan /Dhanwato Niwas, Vill – Sharkhara, Post- Khaiaha Dehir On Sone - 821307	41,300.00
134	Prof. Veerendra Kumar	Vetting of structural design and drawings VVIP & VIP Guest House, Badminton court (double), Badminton Court (Single), Type-V Residence & Type VI Residence of Northern Railway Buildigns at Lucknow	M/s Vijit & Associates 121, Prince Complex, Naval Kishore Road, Hazratganj, Lucknow-226001	94,400.00
135	Prof. Veerendra Kumar	Vetting of design and drawings of Launching Scheme of 48.0 m BOW String Girder at LC- 56/C between Pusauli-Muthani Station at Km. 609/7- 09	M/s CIS & SP Malik (JV) House No. 680C, Kailash Nagar, Gali No. 1 Sasaram, Rohtas, Bihar	141,600.00
136	Prof. Veerendra Kumar	Vetting of Structural design and drawings of following: (i) Overhead Tank 2000 kL 22.0 m staging (ii) Overhead Tank 500 kL (iii) Overhead Tank 620 kL (iv) Overhead Tank 190 kL (v) CWR 245 kL	M/s Ventech Engineers 117/Q/45, L.G.F. Envirad Complex, Sharda Nagar, Kanpur-208025	295,000.00
137	Prof. Veerendra Kumar	Vetting of revised structural design and drawing of Composite Steel Girder, substrucurre & foundation of ROB in the state of Rajasthan.	M/s KCC Buildcon Pvt. Ltd. Village - Pinan, Near-Shyam Dayal Mandir, Tehsil-Reni, District-Alwar, Rajasthan 301413	59,000.00
138	Prof. Veerendra Kumar	Vetting of design and drawings Launching Scheme of Bow String Girder at Km. 633/7-9 between station DGO- DCX at LC-65/C	M/s M. G. Contractors Pvt. Ltd., In front of Anand Lok Hotel, Vill: Kulaharia, Post+P.S - Durgawati, Dist: Mohania (Babhuva) - Bihar -821 105	141,600.00





S. No.	Name of Faculty Member	Title	Industry	Amount (in lakhs of Rs.)
139	Prof. Veerendra Kumar	Vetting of structural design and drawings of following buildings under Japla to Sonnagar. (minimum charges @ Rs. 20,000/- each): (i) Design of Type 2 staff quarter (ii) Design of Type 3 staff quarter (iii) Design of Navinagar Type 2 double storey staff quarter (iv) Design of Japla West Gumty in frame structure (v) Design of Kajratnawadi West Gumty in frame structure (vi) Design of Kajratnawadi East Gumty (vii) Design of Kajratnawadi Station buiding	M/s Ashoka Buildcon Ltd., Rail Son Nagar to Japla, Jagnaryan /Dhanwato Niwas, Vill – Sharkhara, Post- Khaiaha, Dehri On Sone - 821307	165,200.00
140	Prof. Veerendra Kumar	Vetting of structural design and drawings of 200 capacity barrack for 12th bat. PAC at Fatehpur	Executive Engineer Provincial Division, Public Works Department Fatehpur	118,000.00
141	Prof. Veerendra Kumar	Vetting of design and drawings of Launching scheme of 60 m clear span BOW String Girder (4 Nos.) for Six laning of Varanasi-Aurangabad section NH-2 from Km 786.00 to Km 978.40 in the state of Bihar	M/s Galvano India Pvt. Ltd. E-95-97, Site-B, U.P.S.I.D.C., Ind. Area SurAjpur, Greater Noida, Distt. Gautam Budh Nagar (U.P.) - 201306	396,480.00
142	Prof. Veerendra Kumar	Inspection, quality assurance of civil work of C/o Multi Storied (G+4) two wheeler parking at Godowlia Chowk, Varanasi	Executive Engineer and Sr.Manager (Cvil)-1 B.H.U. Project Varanasi CPWD, Behind Central Office BHU, Varanasi	59,000.00
143	Prof. Veerendra Kumar	Inspection and report preparation of footpath from Godowliya Chowk to Dashashwamedh Ghat under Prasad Yojana at Varanasi	Project Manager U.P.R.N.N. Ltd. Pt. Deen Dayal Govt. Hospital Campus, Pandeypur, Varanasi	59,000.00
144	Prof. Veerendra Kumar	Vetting of design and drawings of Launching for composite girder -01 span of 36.0 m c/c of Brg. @ 200 skew for construciotn of ROB at Rly Km. 594/17-19 in lieu of LC No.52/C at Rly Km. 594/17-19 between Station Khurmabad-Kudra on MGS-Gaya Sections at Road Km. 44351 of village road from G.T. Rad to Golaudih	M/s Galvano India Pvt. Ltd. E-95-97, Site-B, U.P.S.I.D.C., Ind. Area Surajpur, Greater Noida, Distt. Gautam Budh Nagar (U.P.) - 201306	141,600.00




S. No.	Name of Faculty Member	Title Industry		Amount (in lakhs of Rs.)
145	Prof. Veerendra Kumar	Inspection, verification of materials quality reports, workmanship check and report preparation of construction work of Shri Kashi Vishwanath Mandir Corridor as part of Third Party Quality Inspection.	Executive Engineer Construction Division-3, P.W.D., Varanasi	59,000.00
146	Prof. Veerendra Kumar	Vetting of Dismantling Scheme for Super-structure of Lalganj ROB of ongoing Raebareli-Banda Highway Project for UP-gradation of Raebareli- Banda section of NH-232 to 2-lane with paved shoulders from Km. 152+533 to 285+818 in the state of U.P.	Assistant Vice President (Projects) M/s CDS Infra Projects Ltd., 128/75, K Block, Kidwai Nagar, Kanpur Nagar, U.P. – 208011	118,000.00
147	Prof. Veerendra Kumar	Vetting of design and drawing of bowstring 58.5 m	M/s Rational Constructions 1-O/14F, Baghambari Gaddi, B.D. Puram, Prayagraj, U.P 211006	141,600.00
148	Prof. Veerendra Kumar	Vetting of structural design and drawing of Pile Foundation of Bridge over River Yamuna at Mahila Ghat, Chitrkoot	M/s Expert Consultancy Services 474/135A, Bahar Khan Colony, Brahm Nagar, Lucknow-226020	70,800.00
149	Prof. Veerendra Kumar	Vetting of structural design and drawing of strengthen the Foundation & Substructure for Lalganj ROB & Fatehpur ROB for Upgradation of Raebareli-Banda section of NH-232 to 2-Lane with paved shoulders from Km. 152+533 to 285+818 in the stte of U.P.	Assistant Vice President (Projects) M/s CDS Infra Projects Ltd., 128/75, K Block, Kidwai Nagar, Kanpur Nagar, U.P. – 208011	590,000.00
150	Prof. Veerendra Kumar	Vetting of structural design and drawings of station building at Japla under Japla to Sonnagar Pkg 1 Railway Project	M/s Ashoka Buildcon Ltd., Rail Son Nagar to Japla, Jagnaryan /Dhanwato Niwas, Vill – Sharkhara, Post- Khaiaha, Dehir On Sone - 821307	70,800.00
151	Prof. Veerendra Kumar	Inspection and report preparation for proposed construction of first floor above Hospital building at ATS Commando Training Centre, Nadarganj, Lucknow Camps	Upper Project Manager Unit 21 'A', U.P.R.N.N. Ltd., Secretariat Building Extension Work, Darulshafa Campus, Vidhan Sabha Marg, Lucknow - 226001	70,800.00





S. No.	Name of Faculty Member	Title Industry		Amount (in lakhs of Rs.)
152	Prof. Veerendra Kumar	Vetting of structural design and drawing of widening of Major Bridge at Km 250+240 for widening the existing lane to 2-lane with paved shoulder from km239/900 to 294/300 km (Nayagarh to Khurda) excluding Khurda b-pass of NH-57 in the state of Odisha	M/s AEES Consulting Engineers Plot NO. 2018/5839,Niladri Nagar, Near Kesura Chhak, Jharpara, Bhubaneswar, Odisa, – 751006	206,500.00
153	Prof. Veerendra Kumar	Vetting of structural design and drawing of Retaining Wall of 6.0 m height for Varanasi Yard remodellingM/s TIPL-WOODHILL (JV) T-704, Amrapali Zodiac Sector-120, Noida, -201301		29,500.00
154	Prof. Veerendra Kumar	Site visit / review of implemented RCC pre-cast Breast wall at Imphal for Two Laning of Imphal-Moreh Section of NH 39 from Km. 350+000 to 395+680 in the State of Manipur	M/s G R Infraprojects Ltd. 1st Floor, Mantripukhri, Opp. CRPF Camp, Near SP Building, Imphal East – 795002, Manipur, India	118,000.00
155	Prof. Veerendra Kumar	Inspection, verification of materials quality reports, workmanship check and report preparation of Forensic Science Lab, Niwari, Ghaziabad as part of Third Party Quality Inspection	Unit Incharge U.P.R.N.N. Ltd., Noida Unit-3, Zonal Office Campus 3rd Floor C-20/1-A/7, Sector-62, Noida – 201301	118,000.00
156	Prof. Veerendra Kumar	Vetting of structural design and drawing of trenchless crossing at Ganga Barrage Kanpur	M/s GANNON DUNKERLY & CO. LTD., Kanpur	35,400.00
157	Prof. Veerendra Kumar	Structural Design and Drawing of Special Foundation for 132 K.V. Dhaurahara - Nanpara Transmission Line at District Lakheempur	Executive Engineer Electricity Civil Transmission Division-I, U.P. Power Transmission Corporation Ltd., Room No. 227 to 232 , 1st floor, Transmission Bhawan U.P.S.L.D.C. Campus, Vibhuti Khand, Gomti Nagar, Lucknow-226023	177,000.00
158	Prof. Veerendra Kumar	Inspection, verification of materials quality reports, workmanship check and report preparation of construction work of Shri Kashi Vishwanath Mandir Corridor as part of Third Party Quality Inspection.	Executive Engineer Construction Division-3, P.W.D., Varanasi	59,000.00





S. No.	Name of Faculty Member	Title	Industry	Amount (in lakhs of Rs.)
159	Prof. Veerendra Kumar	Vetting of structural design and drawing of superstructure of Bridge at Ch. 24+970 for construction of 2-lane with paved shoulder including geometric improvement from Km. 16.000 to Km. 32.500 of stretch Tarku- Rabangla on N-510 in the State of Sikkim	Director M/s S & P Infrastructure Developers (P) Ltd. 907 New Delhi House, 27 Barakhamba Road, New Delhi – 110001 (Site Address: Construction of Major Bridge at Ch. 24+970 of stretch Tarku-Rabangla of NH- 510 in the state Sikkim)	147,500.00
160	Prof. Veerendra KumarVetting of structural design of Well foundation for Pier P19 and P21 of Major bridge over River Ghaghra on Parsia Devar to Barhaj in distt DeoriaDirector M/s CDS Consult (India) Pvt. Ltd., 537, Sector 31, Gurgaon – 122001		59,000.00	
161	51 Prof. Veerendra Kumar Vetting of design and drawings of Launching scheme of open web girder of RFO (Bridge No. 456 of span 1x79.0 m and Bridge No. 257 of span 1x63.70 m) Corporation of India Ltd., m) Allahabad East, 1 Floor, Ol GM Building, N.C. Railway Valmiki Chauraha, Nawab		Chief General Manager CGM/DFCCIL/ALD(East), Dedicated Freight Corridor Corporation of India Ltd., Allahabad East, 1 Floor, Old GM Building, N.C. Railway, Valmiki Chauraha, Nawab Yusuf Road, Allahabad-211001	354,000.00
162	Prof. Veerendra Kumar	Inspection, verification of materials quality reports, workmanship check and report preparation of Forensic Laboratory, Jhansi, as part of Third Party Quality Inspection.	Upper Project Manager U.P.R.N.N. Limited, Jhansi Unit, B.I.E.T. Campus, Kanpur Road, Jhansi (U.P.) – 284128	82,600.00
163	Prof. Veerendra Kumar	Inspection, verification of materials quality reports, workmanship check and report preparation of Sainik School Jhansi, as part of Third Party Quality Inspection.	Upper Project Manager U.P.R.N.N. Limited, Jhansi Unit, B.I.E.T. Campus, Kanpur Road, Jhansi (U.P.) – 284128	82,600.00
164	Prof. Veerendra Kumar	Inspection, verification of materials quality reports, workmanship check and report preparation of Driving Training Institute, Jhansi, as part of Third Party Quality Inspection.	Upper Project Manager U.P.R.N.N. Limited, Jhansi Unit, B.I.E.T. Campus, Kanpur Road, Jhansi (U.P.) – 284128	82,600.00
165	Prof. Veerendra Kumar	Vetting of structural design and drawings of 200 capacity barrack for 20th bat. PAC at Azamgarh	M/s ATS Structural Consultants D-27, Indira Nagar, Lucknow-6	118,000.00
166	Prof. Veerendra Kumar	Inspection, verification of materials quality reports, workmanship check and report preparation of Construction of 100 bedded (G+5) building for MCH Wing at Sir Sunder Lal Hospital, BHU, Varanasi as part of Third Party Quality Inspection.	Executive Engineer and Sr.Manager (Cvil)-1 B.H.U. Project Varanasi, CPWD, Behind Central Office, BHU, Varanasi	59,000.00

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S. No.	Name of Faculty Member	Title Industry		Amount (in lakhs of Rs.)
167	Prof. Veerendra Kumar	Inspection, verification of materials quality reports, workmanship check and report preparation of C/o 200 nos. Teachers residential flats (G+10), two blocks (100 nos. in each block) at BHU, Varanasi as part of Third Party Quality Inspection.	Executive Engineer and Sr.Manager (Cvil) B.H.U. Project Varanasi-1, CPWD, Behind Central Office, BHU, Varanasi	59,000.00
168	Prof. Veerendra Kumar	dra Vetting of spillage protection Bridge and related arial ropeway structure at Renusagar Power Division. M/s Prosava Private Limiited D14/15 FF, Independent Floor, Ardee City, Gurugram, Haryana-122011		295,000.00
169	Prof. Veerendra Kumar	Vetting of structural design and drawing of Superstructure and Substructure of ROB at Ch. 336+350 & 355+137 for 4 laning of Aligarh-Kanpur section from Km. 289+000 (design Ch. 373+085) (Pkg. 4 from Naviganj- Mitrasen) of NH-91 in the State of U.P.	VP-Designs M/s G R Infraprojects Ltd., Shri Radhe Complex, Bala Ji Nagar, Near Sparsh Hospital, Tiwra Road, Kannauj-209725, U.P.	590,000.00
170	Prof. Veerendra Kumar	Structural design and drawings of proposed Workshop-cum-incubation centre and Girls Hostel (1 BHK apartment)	Executive Engineer (Civil) Amethi Division, CPWD, Group Centre, C.R.P.F Trishundi, Amethi (U.P.) – 228159	442,500.00
171	Prof. Veerendra Kumar	Vetting of structural design and drawing of Superstructure with through type steel truss in both directions of 96 m P2-P5 span c/c expansion joint including RCC deck slab, Bearing, wearing coat , crash barrier, expansion joint of the bridge	M/s IRS Associates LLP 403, Tower 28, Lotus Boulevard, Sector 100, Noida – 201301	147,500.00
172	Prof. Veerendra Kumar	Vetting of design and drawings of followings Launching Scheme of Bow String Girder: (i) At Km. 542/21-23 in lieu of LC No. 32/C/E station CPBH-AUBR on Mughalsarai-Gaya section (ii) At Km. 569/17-19 in lieu of LC No. 41/C between KWD-SSM on Mughalsarai-Gaya section (iii) At Km 649/5-7 in lieu of LC No. 72/B of ROB at Km648/24-26 between station Chandauli Majhwar Saidraja on Mughalsarai-Gaya section	M/s M. G. Contractors Pvt. Ltd., In front of Anand Lok Hotel, Vill: Kulaharia, Post+P.S - Durgawati, Dist: Mohania (Babhuva) - Bihar -821 105	318,600.00





S. No.	Name of Faculty Member	Title Industry		Amount (in lakhs of Rs.)
173	Prof. Veerendra Kumar	Inspection, verification of materials quality reports, workmanship check and report preparation of construction work of Shri Kashi Vishwanath Mandir Corridor as part of Third Party Quality Inspection.	Executive Engineer Construction Division-3, P.W.D., Varanasi	59,000.00
174	Prof. Veerendra Kumar	Vetting of structural design and drawings of following buildings under Japla and Garhwa Road (minimum charges @ Rs. 20,000/- each): (i) Design of Mohammadganj East Goomty in fame structure (ii) Design of Kosiara West Goomty in fame structure (iii) Design of Untari Road East Goomty in fame structure (iv) Design of Untari Road West Goomty in fame structure (v) Design of Karkatta West Goomty in fame structure	M/s Ashoka Buildcon Ltd., Rail Son Nagar to Japla, Jagnaryan /Dhanwato Niwas, Vill – Sharkhara, Post- Khaiaha, Dehri On Sone - 821307	118,000.00
175	Prof. Veerendra Kumar	Inspection, verification of materials quality reports, workmanship check and report preparation of construction work of Prof. Rjendra Singh (Rajjoo Bhaiya) University, Prayagraj as part of Third Party Quality Inspection.	Upper Project Manager Prayagraj Unit-1, U.P.R.N.N. Ltd., Construction of Prof. Rjendra Singh (Rajjoo Bhaiya) University, Saraswati Hi-Tech City, Naini , Prayagraj -211009	59,000.00
176	Prof. Veerendra Kumar	Vetting of structural design and drawings of service building at Dullahapur for Bhatni-Aurnihar Rail line Railway Doubling Project	M/s KEC International Limited Samrajiya Bhawan, Bhariyabad Sadat Road, Near Majui Chowk, Majui, Ghazipur – 275204	29,500.00
177	Prof. Veerendra Kumar	Inspection, verification of materials quality reports, workmanship check and report preparation of Auditorium & Cultural Centre and Guru Gorakhnath Shodhpeeth Gorakhpur	Unit Incharge U.P.R.N.N. Ltd., Gorakhpur Unit-03, Auditorium Work Place, Ramgrhtal Project, Gorakhpur	212,400.00
178	Prof. Veerendra Kumar	Vetting of structural design and drawings of Super structure of following for Mughalsarai –New Karchana section of Eastern Dedicated Freight Corridor Project (Packag-201) (i) Railway Flyover No. 456 (ii) Railway Flyover No. 273	Dedicated Freight Corridor Corporation of India Ltd. First Floor, Old GM Building, NC Railway, Valmiki Chauraha, Allahabad, U.P 211001	354,000.00





S. No.	Name of Faculty Member	Title Industry		Amount (in lakhs of Rs.)
179	Prof. Veerendra Kumar	Vetting of structural design and drawings of following for construction of Bridge over River Ganga at Shivpur Ghat (Near Nauranga) on Dokari- Nauranga Marg in district Ballia (i) Design of Well foundation, Well cap and Plate Pier for Piers P1 to P3, P5 to P8, P10 to P13 and P15 to P17 (ii) Design of well foundation, well cap, pier & pier cap for Pier P4, P9 & P14 (iii) Design of Abutment & Abutment Well A1 & A2	M/s CDS Consult (India) Pvt. Ltd. 537, Sector 31, Gurgaon, Haryana, 122001	336,300.00
180	Prof. Veerendra Kumar	Vetting of design and drawing of POT- PTFE Bearing (6 nos. each) of ROB at Ch. 0+508 for four laning of Dwarka (Kuranga)-Khambhaliya-Devariya Section from Km. 203+500 to 176+500 and from Km 171+800 to 125+00 of SH 25 in the state of Gujarat	M/s G R Infraprojects Limited Revenue Block No. 223, Old Survey No.384/123, Khata No.464, Kochariya, Bavla, Ahmedabad, Gujarat, 382220	177,000.00
181	Prof. Veerendra Kumar	Vetting of structural design and drawings of substructure and foundation of Bridge No. 1/14 of railway siding at NUPPL Ghatampur (U.P.)	M/s RITES LIMITED 13-K.M. Milestone, Regional Project Office Lucknow, N.H 24, Lucknow-Sitapur Road, Lucknow, Uttar Pradesh, 226001	118,000.00
182	Prof. Veerendra Kumar	Vetting of structural design and drawing of Pier Well foundation for Major bridge over River Gomti on Muwai-Buseha in District Barabanki	M/s CDS Consult (India) Pvt. Ltd. 537, Sector 31, Gurgaon – 122001 Haryana	29,500.00
183	Prof. Veerendra Kumar	Vetting of structural design and drawings of following buildings for Bhtani-Aurihar rail line doubling project : (i) Belthra Service Building (ii) Salempur Service Building (iii) Lar Road Service Building.	M/S KEC INTERNATIONAL LTD 308/1, Shivlok Dham, Jansath Raod, Muzaffarnagar, Uttar Pradesh, 251001	88,500.00
184	Prof. Veerendra Kumar	Vetting of Structural design and drawing of Pump House & approach bridge at Sitarampur Dam of Adityapur Water supply scheme	M/s JWIL-SPML (JV) House No 106, Arunodaye, Aditiyapur, Saraikela, Kharsawan, Jamshedpur, Ranchi, Jharkhand, 831013	118,000.00





S. No.	Name of Faculty Member	Title	Industry	Amount (in lakhs of Rs.)
185	Prof. Veerendra Kumar	Inspection, verification of materials quality reports, workmanship check and report preparation of construction work of Shri Kashi Vishwanath Mandir Corridor as part of Third Party Quality Inspection.	Executive Engineer Construction Division-3, P.W.D., Varanasi-221002	59,000.00
186	Prof. Veerendra Kumar	Vetting of revised structural design and drawing of Composite Steel Girder & Piers of ROB at Ch. 149.937 in the state of Rajasthan.	tural design and Steel Girder & LIMITED 9.937 in the state MAANKI, RAMGARH MAANKI, Alwar, Rajasthan, 301019	
187	Prof. Veerendra Kumar	Vetting of structural design and drawings of Well Cap for Pier P8 & P9 of High Level Bridge over River Ghaghra on Chandpur-T.S. MANHA at Bairiya in District Ballia, U.P.	M/s CDS Consult (India) Pvt. Ltd. 537, Sector 31, Gurgaon – 122001 Haryana	59,000.00
188	Prof. Veerendra Kumar	Vetting of design and drawings Launching Scheme of Bow String Girder at IR Chainage 581/1-3, KMGE station limit at LC-46/C/T	M/S M. G. Contractors Private Limited 201, 2nd Floor, Rajendra Enclave, Exhibition Road, Behind Shashi Complex, Patna, Bihar, 800001	106,200.00
189	Prof. Veerendra Kumar	Vetting of structural design and drawing of Superstructure of Bridge on Varuna River (Kalikadham) for Construction of two lane Bridge at Km. 14 Babatpur-Kapsethi-Bhadohi Road at District Varanasi	UP STATE BRIDGE CORPORATION LIMITED 16 MADAN MOHAN MALVIYA MARG, LUCKNOW, Lucknow, Uttar Pradesh, 226001	118,000.00
190	Prof. Veerendra Kumar	Vetting of structural design and drawing of Pile, Pile Cap, Pier and Pier Cap for Bow string girder for 3 lane at Pier (P8 & P9) and Pier (P24 & P25) of ROB at Chainage 19.460 on NH-101 (Mohammadpur-Chhapra Road)	SALAHUDDIN & JK (JV) HATHUA CHHAWANI, Post-CHAPRA, CHATDHARI BAZAR, Chapra, Saran, Bihar, 841301	118,000.00
191	Prof. Veerendra Kumar	Vetting of structural design and drawings of Super structure of OWG span 49.240m for RFO 756 at Ch. 488+752 Km	Dedicated Freight Corridor Corporation of India Limited CPM ALD E DFCCIL, floor-1st Floor, Old GM Building, NC Railway Valmiki Chauraha, Allahabad, Uttar Pradesh, 211001	118,000.00





S. No.	Name of Faculty Member	Title Industry		Amount (in lakhs of Rs.)
192	Prof. Veerendra Kumar	Structural design and drawings of following for Director Bungalow at RGIPT Jais Amethi: (i) Director Bungalow Ground floor & first floor (ii) Servant quarter (iii) Boundary wall (iv) Main gate with Guard room & Electrical room	Executive Engineer (Civil) Amethi Division, CPWD, Group Centre, C.R.P.F Trishundi, Amethi (U.P.) – 228159	177,000.00
193	Prof. Veerendra Kumar	Vetting of structural design and drawing of Well foundation for Abutment of Major bridge over River Ghaghra at Chandpur	M/s CDS Consult (India) Pvt. Ltd. 537, Sector 31, Gurgaon – 122001 Haryana	29,500.00
194	Prof. Veerendra Kumar	Vetting of structural design and drawings of substructure (Pile, Pile Cap & Abutment ) at location A2 of RFO 756	Dedicated Freight Corridor Corporation of India Limited CPM ALD E DFCCIL, floor-1st Floor, Old GM Building, NC Railway Valmiki Chauraha, Allahabad, Uttar Pradesh, 211001	118,000.00
195	Prof. Veerendra Kumar	Inspection, verification of materials quality reports, workmanship check and report preparation of Construction of 6th floor to 10th Floor (vertical extension) of International Boys Hostel Building, BHU, Varanasi as part of Third Party Quality Inspection.	Executive Engineer & SM (C) B.H.U. Project Varanasi-1, CPWD, Behind Central Office, BHU, Varanasi-221005	59,000.00
196	Prof. Veerendra Kumar	Vetting of design and drawings Launching Scheme of Bow String Girder at IR Chainage 586/21-23, SSG at LC No. 49 C/T and at IR Chianage 588/25- 27 KVD-SSG at LC No. 50 C/E	M/S M. G. Contractors Private Limited 201, 2nd Floor, Rajendra Enclave, Exhibition Road, Behind Shashi Complex, Patna, Bihar, 800001	212,400.00
197	Prof. Veerendra Kumar	Vetting of design and drawing of POT- PTFE Bearings (4 nos.) for construction of Two Lane Road Over Bridge (ROB) & 5.5 mtr. Wide FOB in lieu of level crossing No. 72 B at IR Chainage 649/5-7 between Chandauli Mijhawar (CDMR)-Saidraja	M/S M. G. Contractors Private Limited 201, 2nd Floor, Rajendra Enclave, Exhibition Road, Behind Shashi Complex, Patna, Bihar, 800001	118,000.00
198	Prof. Veerendra Kumar	Vetting of revised structural design and drawings of foundation of 100 capacity barrack building at Police Line, District Mau	AKHILESH KUMAR SINGH D-27, FAIZABAD ROAD, INDIRA NAGAR, Lucknow, Uttar Pradesh, 226016	88,500.00





S. No.	Name of Faculty Member	Title Industry		Amount (in lakhs of Rs.)
199	Prof. Veerendra Kumar	Vetting of revised structural design and drawing of Composite Steel Girder of ROB at Ch. 149.937, Bharatmala Pariyojana (Pkg 5) in the state of Rajasthan.	g of revised structural designKCC BUILDCON PRIVATErawing of Composite Steel GirderLIMITEDB at Ch. 149.937, BharatmalaMAANKI, RAMGARHjana (Pkg 5) in the state ofMAANKI, Alwar, Rajasthan,han.301019	
200	Prof. VeerendraVetting of design and drawingsWOODHILLKumarLaunching Scheme for ROB at LC 21 AINFRASTRUCTURE LIMITEDwith Bowstring type GirderD-42, RDC, RAJ NAGAR,Ghaziabad, Uttar Pradesh,201001		118,000.00	
201	Prof. Veerendra KumarVetting of revised design and drawings Launching Scheme for LC No.46/C/T at IR Chainage 581/1-3 , KMGE station limitM.G.CONTRACTORS PRIVATE LIMITED 1324, SECTOR-3, NOIDA, Gautam Buddha Nagar, Uttar Pradesh, 201301		53,100.00	
202	Prof. Veerendra Kumar	Vetting of foundation design of NT & + 9 M BE of DA type tower for Wind Zone 5 with ACSR Single Moose conductor for UPPTCL project	R S INFRAPROJECTS PRIVATE LIMITED A-53/2, Sikandrabad Industrial Area, Sikandrabad, Bulandshahar, Uttar Pradesh, 203205	59,000.00
203	Prof. Arun Prasad	Design of Red Mud Storage(Dam) in 19.5 Hectare at Renukoot facility	Sri Shabdendu Mohan, Head(Alumina Refinery), Hindalco Industries Ltd. , Renukoot-231217	1,770,000.00
204	Prof. Arun Prasad	Vetting of design and drawings of RE Panel for LC #37 and 42	Jhajharia-Galvano JV, Jhajharia Mansion, Jagmal Chowk, Bilaspur (CG), 495001	188,800.00
205	Prof. Arun Prasad	Design and structural stability of Ash Dyke	Sri Anil Kumar Singh,CEO Sasan Power Limited, Siddhi Khurd, Tiyara, Singrauli-486886	118,000.00
206	Prof. Arun Prasad	Design and structural stability of Ash Dyke	Sri Anil Kumar Singh,CEO Sasan Power Limited, Siddhi Khurd, Tiyara, Singrauli-486886	472000
207	Prof. Arun Prasad	RE wall Proof checking	Jhajharia Nirman Limited, Plot # 465, 487 KH No. 62, Pakrikhar, Mohania, Muthani, Kaimur(Bhabua), Bihar	94,400.00
208	Prof. Arun Prasad	Study on structural safety of the low lying areas used for filling fly ash	M/s Sasam Power Limited Post Tiyara, Siddhikhurd, Singrauli, Madhya Pradesh	236,000.00
209	Prof. Arun Prasad	Study on the reason of breach in the embankment of low lying fly ash utilization site(Island 4)	M/s Sasam Power Limited Post Tiyara, Siddhikhurd, Singrauli, Madhya Pradesh	236,000.00





S. No.	Name of Faculty Member	Title	Industry	Amount (in lakhs of Rs.)
210	Prof. Arun Prasad	Desing and drawing for raising of Ash dyke at Bichhari	M/s Hindalco Industries Limited Renukoot works, ADM Building, Renukoot, Sonbhadra, Uttar Pradesh	295,000.00
211	Dr. Brind Kumar	Restoration of cracks on PQC for NH-29 and NH-233	NHAI	23.6 L

## **Research Publications**

#### **Refereed International Journals**

- 1. P. Rawat and S.Mohanty, (2021). Experimental Investigation on MSW Fine Mixed with Fibers: Fiber Reinforced Waste. Journal of Hazardous, Toxic, and Radioactive Waste Mgmt, ASCE, 25(3): 04021009, 1-11.
- 2. M.V.R.K.Reddy,S.Mohanty, and S.Rehana, (2020). Experimental Investigation on Dynamic Characterization of Equi-Proportionate Silt Sand Range Pond Ash at High Strain. International Journal of Geosynthetics and Ground Engineering, Springer, 6(25), 1-14.
- M.V.R.K.Reddy, S.Mohanty, and S.Rehana, (2020). Seismic Performance of Soil-Ash and Soil-Ash-Foundation System: A Parametric Study. International Journal of Geotechnical Earthquake Engineering, IGI Global, 11(1), 45-70.
- 4. J.Choudhary, B.Kumar and A.Gupta (2020) Feasible Utilization of Waste Limestone Sludge as Filler in Bituminous Concrete. Construction & Building Materials. 239: 117781.
- A.Pandey and B.Kumar (2020) Investigation on the Effects of Acidic Environment and Accelerated Carbonation on Concrete Admixed with Rice Straw Ash and Micro silica. Journal of Building Engineering. 29: 101125.
- 6. J.Choudhary, B.Kumar and A.Gupta (2020) Analysis and Comparison of Asphalt Mixes Containing Waste Fillers using Novel Ranking Methodology. Materials in Civil Engineering, ASCE. 32(5): 04020064.
- 7. A.Pandey and B.Kumar (2020) A comprehensive investigation on application of micro silica and rice straw ash in rigid pavement. Construction and Building Materials. 252: 119053.
- 8. J.Choudhary, B. Kumar and A.Gupta (2020) Effect of filler on the bitumen-aggregate adhesion in the asphalt mix. International Journal of Pavement Engineering. 21(12): 1482-1490.
- 9. D.Prasad, A.Pandey and B. Kumar (2020) Sustainable production of recycled concrete aggregates by lime treatment and mechanical abrasion for M40 grade concrete. Construction and Building Materials. 238 (2021) 121119.
- 10. G.Verma and B.Kumar (2020) Prediction of Compaction Parameters for Fine-Grained and Coarse-Grained Soils: A Review. International Journal of Geotechnical Engineering. 14(8): 970-977.
- 11. J.Choudhary, B.Kumar and S.Singh (2021) Assessment of Engineering and Environmental Suitability of Waste Bituminous Concrete Containing Waste Biomass Ash. International Journal of Pavement Research and Technology: 1-13.
- 12. J.Choudhary, B.Kumar and A.Gupta (2021) Potential Utilization of Construction Wastes in Asphalt Pavements using Ranking Framework. Construction and Building Materials. 277: 122262.





- 13. J.Choudhary, B.Kumar and A.Gupta (In press) Bauxite Residue: A Viable Filler for Asphalt Mix. GRADEVINAR, Journal of Croatian Association of Civil Engineers. Paper ID: 2391-2018).
- 14. J.Choudhary, B.Kumar and A.Gupta (2021 accepted) Evaluation of Engineering, Economic and Environmental Suitability of Waste Filler Incorporated Asphalt Mixes and Pavements. Road Materials and Pavement Design (Taylor & Francis) https://doi.org/10.1080/14680629.2021.1905698.
- J.Choudhary, B.Kumar and A.Gupta (2021 accepted) Analyzing the Influence of Waste Fillers on the Ageing Susceptibility of Asphalt Concrete. International Journal of Pavement Engineering (T&F). Article ID = GPAV1927027.
- 16. R. Bhattacharjee, A. Choubey, N Das, A. Ohri, S. Gaur (2020), Detecting the Carotenoid Pigmentation due to Haloarchaea Microbes in the Lonar Lake, Maharashtra, India Using Sentinel-2 Images" Journal of the Indian Society of Remote Sensing.
- 17. Shruti, P.K.Singh,A. Ohri, (2020), "Selecting Environmental Indicators for Sustainable Smart Cities Mission in India", Nature Environment and Pollution Technology, 19(01), 201-210.
- J.Choudhary, ,B.Kumar, and A.Gupta, (2021) "Evaluation of Engineering, Economical and Environmental Suitability of Waste Filler Incorporated Asphalt Mixes and Pavements", International Journal of Road Materials and Pavement Design, Taylor and Francis, 22 (sup1), S624-S640. [IF: 2.582]
- 19. S.Mondal, and A.Gupta, (2021) "Speed Distribution for Interrupted Flow Facility under Mixed Traffic", Physica A: Statistical Mechanics and its Applications, Elsevier, 570, 125798. [IF: 2.924]
- 20. S.Mondal, and A.Gupta, (2021) "A Non-Linear Evaluation Model to Analyse Saturation Flow under Weak-Lane Disciplined Mixed Traffic Stream", Transportation Research Record (TRR), Journal of the Transportation Research Board (TRB), Sage Publications.0361198121998370. [IF: 1.029]
- J.Choudhary, ,B.Kumar, and A.Gupta, (2021) "Potential Utilization of Construction Wastes in Asphalt Pavements as Fillers using Ranking Framework", Construction and Building Materials, Elsevier, Vol. 277, pp. 122262. [IF: 4.419] (https://doi.org/10.1016/j.conbuildmat.2021.122262)
- 22. S.Mondal, and A.Gupta, (2020) "Queue-Based Headway Distribution Models at Signal Controlled Intersection Under Mixed Traffic", Transportation Research Record (TRR), Journal of the Transportation Research Board (TRB), Sage Publications, Vol. 2674 (11), pp. 768-778. [IF: 1.029] (DOI: 10.1177/0361198120949876)
- S.Mondal, and A.Gupta, (2020) "Microsimulation Based Framework For Urban Signalized Intersection Under Mixed Traffic", Proceedings of the Institution of Civil Engineers (ICE) – Transport. [IF: 1.099] (Published Online) (https://doi.org/10.1680/jtran.20.00048)
- M. Chaudhary., N. Saboo., A. Gupta., B. Hofko, and M. Steineder, (2020). "Assessing the Effect of Fillers on LVE Properties of Asphalt Mastics at Intermediate Temperatures", Materials and Structures, Springer Nature, Vol. 53, No. 4, 96. [IF: 2.901] (https://doi.org/10.1617/s11527-020-01532-6)
- S. Mondal, and A. Gupta. (2020) "Assessment of Saturation Flow at Signalized Intersection: A Synthesis of Global Perspective and Future Directions", Current Science, Indian Academy of Sciences, Vol. 111, No. 1, pp. 32-43. [IF: 0.725] (doi: 10.18520/cs/v119/i1/32-43)
- J. Choudhary, B. Kumar, and A. Gupta, (2020) "Performance Evaluation of Bauxite Residue Modified Asphalt Concrete Mixes", European Journal of Environmental and Civil Engineering, Taylor and Francis. [IF: 1.832] (https://doi.org/10.1080/19648189.2019.1691662)
- J. Choudhary, B. Kumar, and A. Gupta, (2020) "Use of Dimension Limestone Sludge as Filler Asphalt Mix", Proceedings of the Institution of Civil Engineers – Construction Materials. (Online Published) (DOI: 10.1680/jcoma.18.00022)





- J. Choudhary, B. Kumar, and A. Gupta, (2020) "Effect of Filler on the Bitumen-Aggregate Adhesion in Asphalt Mix", International Journal of Pavement Engineering, Taylor and Francis, Vol. 21, No. 12, pp. 1482-1490. [IF: 2.646] (http://dx.doi.org/10.1080/10298436.2018.1549325)
- S. Mondal., , V. K. Arya. and A. Gupta, (2020) "An Optimized Approach for Saturation Flow Estimation of Signalized Intersections", Proceedings of the Institution of Civil Engineers – Transport. [IF: 1.099] (DOI: 10.1680/jtran.18.00206) (Published Online)
- J. Choudhary, B. Kumar, and A. Gupta, (2020) "Bauxite Residue: A Viable Filler for Asphalt Mix", Gradevinar, Journal of the Croatian Association of Civil Engineers, Vol., No. pp. (Paper Id: 2391-2018) [IF: 0.599] (Accepted)
- J. Choudhary, A. Gupta, (2020) (2020) "A Review of Methodological Approaches for Saturation Flow Estimation at Signalized Intersections", Canadian Journal of Civil Engineering, NRC Press, Vol. 47, No. 03, pp. 237-247. [IF: 0.985] (https://doi.org/10.1139/cjce-2018-0696)
- J. Choudhary, B. Kumar, and A. Gupta (2020). "Analysis and Comparison of Asphalt Mixes Containing Waste Fillers using Novel Ranking Methodology", Journal of Materials in Civil Engineering, ASCE, Vol. 32, No. 5, pp. 1-13. [IF: 2.169] (DOI: 10.1061/(ASCE)MT.1943-5533.0003137)
- 33. J. Choudhary, B. Kumar, and A. Gupta, (2020). "Feasible Utilization of Waste Limestone Sludge as Filler in Bituminous Concrete", Construction and Building Materials, Elsevier, Vol. 239, pp. 117781. [IF: 4.419]
- 34. D. Nag, A. K. Goswami, A. Gupta, and J. Sen (2020). "Assessing Urban Sidewalk Networks Based on Three Constructs: A Synthesis of Pedestrian Level of Service Literature", Transport Reviews, Taylor and Francis, Vol. 40, No. 2, pp. 204-240. [IF: 6.704]
- 35. J. Choudhary, B. Kumar, and A. Gupta, (2020) "Utilization of Solid Waste Materials as Alternative Fillers in Asphalt Mixes: A Review", Construction and Building Materials, Elsevier, Vol. 234, pp 117271. [IF: 4.419]

S.D. Prasad and M. Chakraborty (2021) Bearing capacity of ring footing resting on two layered soil. Computers and Geotechnics 134, 104088

M. Chakraborty and J. Kumar (2021) Lower bound limit analysis using nonlinear optimization for solving axisymmetric problems using Hoek-Brown yield criterion. International Journal of Geotechnical Engineering 15 (1), 28-39.

S. Sarkar and M. Chakraborty, (2021). Pseudostatic Stability Analysis of Rock Slopes Using Variational Method. Indian Geotechnical Journal, 1-17

- 36. P. R. Maiti and S. K. Bhattacharyya (2020) Liquid –Structure Interaction Coupled Motion of a Cantilever Plate inside a Container: An Experimental Investigation, International Journal of Fluid Mechanics Research, Vol 46, No 6, pp-517-531
- 37. MR Shendkar, D-PN. Kontoni, S. Mandal, P.R. Maiti and D Gautam (2021) Effect of lintel beam on seismic response of reinforced concrete buildings with semi-interlocked and unreinforced brick masonry infills. *Infrastructures*6(1)6: 1-18.
- 38. A. Rawsan and P R Maiti, (2021) Behavior of Nuclear Power Plant Containment under Aircraft Crash, Iranian Journal of Science and Technology, Transactions of Civil Engineering, Springer
- 39. A.K. Shukla, V.K.Philip , P.R.Maiti (2021) Analysis of Moment and Torsion in Skew Plates Using ABAQUS. Advances in Structural Technologies., vol 81. (Springer, Singapore).
- 40. S. M. Singh and P. R. Maiti (2020) Most efficient channel section with multiple slender obstructions in flow path, International Journal of Hydrology Science and Technology, Inderscince





- 41. V. Shivappa and P. R. Maiti (2020) Non-linear analysis of slender straight and curved girders under normal and thermal loads, Journal of Structural Engineering, Vol 47, No-3, pp 233-242, August-September 2020
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## **Refereed National Journal**

- 1. Choudhary J., Kumar, B and Gupta A. (2020) Use of industrial wastes as alternative fillers in bituminous concrete. Indian Highways. Indian Roads Congress, 48(11): 11-22.
- Rawat, P. and Mohanty, S. (2020). 1D and 2D Dynamic Site Response Analysis of Landfill Site in India.7<sup>th</sup> International Conference on Recent Advances in Geotechnical Earthquake Engineering and Soil Dynamics (ICRAGEE 2020), 13-16, July 2020, Indian Institute of Science, Bangalore, India. Paper ID: 69, 1-12.
- 3. Ram, A. K. and S. Mohanty, S. (2020). Seismic Analysis of Soil Pile Structure System in Stratified Ash-Soil Deposit. 7<sup>th</sup> International Conference on Recent Advances in Geotechnical Earthquake Engineering





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- Choudhary J., Kumar, B and Gupta A.. (2020) "Use of Industrial Wastes as Alternative Fillers in Bituminous Concrete", Indian Highways, Journal of Indian Roads Congress (IRC), New Delhi, India, Vol. 48, No. 11, pp. 11-22.
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- Kumar, S, Kumar R and Mandal, S. (2020) Experimental and FE analysis for the buckling behavior of hatstiffened panels under edge compressive loading. Sadhana 45 (130) Springer: doi:10.1007/ s12046-020-01364-8.

## **Proceedings of International Conferences**

- Jayanti Munda, , and Supriya Mohanty, (2020). Improvement on Strength Characteristics of Soil Using Nano Materials: A Critical Review.Proceedings of Indian Geotechnical Conference 2020, December 17-19, 2020, Andhra University, Visakhapatnam, 1-5.
- P. Rawat, P. Kumar, and S. Mohanty, (2020). Study on Permeation Grouting with Cement to Improve Load Carrying Capacity of Sandy Soil.Proceedings of Indian Geotechnical Conference 2020, December 17-19, 2020, Andhra University, Visakhapatnam, 1-7.
- 3. Jayvant Chaudhary, Brind Kumar and Ankit Gupta. 2020. Effectiveness of Glass Powder and Glass-Hydrated Lime Composites as Alternative Fillers in Asphalt Mixes. 99th Annual Meeting of Transportation Research Board, Washington D.C., USA, Paper No. 20-04408, January 12-16.
- 4. Jayvant Chaudhary, Brind Kumar and Ankit Gupta. 2020. Effect of Filler Type and Content on the Rheological Properties of Asphalt Mastics. RILEM International Symposium on Bituminous Materials (ISBM Lyon 2020): 1-7, Lyon, France, June 8-10.
- 5. Jayvant Chaudhary, Brind Kumar and Ankit Gupta. 2020. Effect of Waste Fillers on the Rutting and Fatigue Behavior of Asphalt Mastic and Mixes. 9th International Conference on Maintenance and Rehabilitation of Pavements (MAIREPAV9): 385-395, Zurich, Switzerland, July 1-3.
- 6. A. Singh, and M. Chakraborty, 2020. One dimensional consolidation analysis by assuming Trapezoidal initial pore water pressure distribution. 3rd International Conference in Geotechnical Engineering, Colombo, Srilanka, 2020.
- S. Sarkar, and M. Chakraborty, 2021. Seismic stability of non-homogenous cohesive soil by using calculus of variation." 7<sup>th</sup> International Conference on Recent Advances in Geotechnical Earthquake Engineering and Soil Dynamics, Bangalore, India, 2021.
- 8. Shubham Srivastava, Akash Tiwari and Rajesh Kumar (2020), Design mix and improvisation of pervious concrete by modification in property of materials suitable for urban road, March 02-04, 2020, Second American Society of Civil Engineers(ASCE) India Conference 2020, Kolkata, India
- A. K. Shukla and P. R. Maiti (2020) Experimental Study of Confined Brick Masonry Building. In: Adhikari S., Bhattacharjee B., Bhattacharjee J. (eds) Advances in Structural Engineering and Rehabilitation. Lecture Notes in Civil Engineering, vol 38. Springer, Singapore pp-15-40
- Anjani Kumar Shukla, Saurav, Pabitra Ranjan Maiti (2020) Experimental and Numerical Study to Improve Lateral Load Resistance of Masonry Stack. In: Adhikari S., Bhattacharjee B., Bhattacharjee J. (eds) Advances in Structural Engineering and Rehabilitation. Lecture Notes in Civil Engineering, vol 38. Springer, Singapore pp 1-13





- 11. Aditya Mishra, Anjani Kumar Shukla, Pabitra Ranjan Maiti, Sashankshekhar Mandal (2020) Performance based Evaluation of Passive Base Isolation in Buildings, 2nd ASCE India Conference on Challenges of Resilient and Sustainable Inrastructure Development in Emerging Economics, 2-4 March 2020, Kolkata
- 12. . Satyajit Mondal, and Ankit Gupta (2020) "Queue Based Headway Distribution Models st Signal Controlled Intersection under Mixed Traffic", Proc., of 99th Annual Meeting of Transportation Research Board, TRB-2020, Washington D.C., USA. (Paper Id: 20-04316)

## **Proceedings of National Conferences**

- 1. A. Singh, & S. Mandal, (2020) across wind loading of tall structures: A review Proc. of 2nd ASCE India Conference, March 2 4, Kolkata.
- 2. A. Mishra, A. K. Shukla, P. R. Maiti & S. Mandal, (2020). Performance based evaluation of passive base isolation in buildings, Proc. of 2nd ASCE India Conference, March 2 4, Kolkata.
- V. Kumar and P. R. Maiti (2020) Prospective Materials and Techniques for Affordable Housing in India, International Conference on Sustainable Infrastructure Development: Innovations and Advances (SIDIA 2020), 17- 18th August 2020, University of Petroleum and Energy Studies, School of Engineering, Dehradun, India.





## **10. Department of Computer Science and Engineering**

#### Year of Establishment: 1983

**Head of the Department:** Prof. Rajeev Srivastava from 01.03.2020 to 31.12.2020 & Prof. S. K. Singh w.e.f. 01.01.2021

### 1. Brief Introduction of the Department

The Department of Computer Science and Engineering was established in July 1983. The department offers a 4 year course, B.Tech. in Computer Sc. & Engineering, 5 year Integrated Dual Degree (B.Tech. and M.Tech.) in Computer Sc. & Engineering from 2005-2006, and Ph.D. degree in various specializations of Computer Sc. and Engineering. Computer Sc. & Engineering is the most sought- after branch for the JEE (Advanced) selected students that come to the Institute. Our graduates have distinguished themselves in higher studies at the top Universities. They also occupy positions of eminence in the computer industry. Our Alumni remain in constant touch with us and are contributing in the development of the department. Placements for our graduates are the best in the Institute. The faculty members of the department have international experience and training. The departmental research is focused in the areas of Artificial Intelligence, Parallel and Distributed Computing, Software Engineering, Image Processing and Computer Vision, Machine Learning\Deep Learning, Medical Image Processing, Pattern Recognition, Data mining and Web mining, semantic web, Natural Language Processing (NLP), IoT, Communications, Security and Information Extraction. The department has all the facilities to carry out the related teaching and research work.

#### **Major Area of Research**

Image Processing, Computer Vision and Pattern Recognition, Artificial Intelligence, Natural Language Processing, and Information Retrieval, Software Engineering, Computer Networks, Machine Learning, Cyber Security, High Performance Computing, IoT, Security, Communication

#### Area of the Department (in square meters): 1454.66 Square Meters

#### Infrastructure

S. No.	Particulars	Number
1	No. of Classrooms	05
2	No. of Lecture Halls	03
3	No. of Laboratory	15
4	No. of Computers available for students in the Department/ School	200+

**Unique Achievement / Preposition of the Department:** Department has got approval for two M.Tech programs in AI and IoT, starting from July 2021.

#### 2. Academic Programmes offered and Students on Roll

S. No.	Programme	I Year	II Year	III Year	IV Year	V Year & above
1.	B. Tech.	99	92	76	66	
2.	Dual Degree	35	32	21	17	19
3.	Ph.D (Under Institute Fellowship)	02	04	14	25	06
4.	Ph.D (Under Project Fellowship)	01 (National Level Fellowship)	01			





S. No.	Programme	I Year	II Year	III Year	IV Year	V Year & above
5.	Ph.D (Under	01 Sponsored +	01 UGC	01 Full Time	03 Sponsored	
	Sponsored Category)	01 QIP	JRF + 02	External + 06	+ 01 QIP +	
			QIP	QIP	01 Full Time	
					External	

# Names of students/scholars who attended conferences/workshops/seminars and symposia abroad or in India

S. No.	Name of Student	Roll No.	Conference/Seminar/ Symposia/Workshop	Date & Venue	Financial Assistance From
ÌNDIA					
1	Siddharth Sahay	16074016	International Conference on Computing, Communication, and Intelligent Systems (ICCCIS) 2021	19-20th Feb 2021, Sharda University, Greater Noida, India	Prof. K.K.Shukla
2	Rahul Mishra	17071004	COMSNETS 2021 (Virtual conference)	Jan. 5-9, 2021, Bengaluru, India	No funding
3.	Naina Yadav	18071010	FIRE 2020 (Virtual conference)	Dec. 16-20 2020, Hyderabad	No funding
4.	Supriya Chanda	18071008	FIRE 2020 (Virtual Conference)	Dec. 16-20, 2020 Hyderabad	No Funding
5.	Santosh Kumar Tripathy	18071019	MAI-2021 (Virtual Conference)	11-14 Feb. 2021, IIITDM, Jabalpur, MP	No Funding
6	Abhinav	17071021	CODS-COMAD 2021 (Virtual Conference)	2-4 January, 2021, IISc Bangalore	No Funding
7.	Anshul	16071502	CODS-COMAD 2021 (Virtual Conference)	2-4 January, 2021, IISc Bangalore	No Funding
8.	Vandana Bharti	17071011	CODS-COMAD 2021 (Virtual Conference)	2-4 January, 2021, IISc Bangalore	No Funding
9	Anita Saroj	16071006	FIRE 2020 (Virtual Conference)	Dec. 16-20, 2020 Hyderabad	No funding
10	Rajesh Kumar Mundotiya	16071001	FIRE 2020 (Virtual Conference)	Dec. 16-20, 2020 Hyderabad	No funding
11	Rakesh Kumar	18071011	ICMLBDA 2021 (Virtual Conference)	March 29 - 30 2021 IIT Patna	No funding
12	Shashank Kumar Singh	17071508	ICMLBDA 2021 (Virtual Conference)	March 29 - 30 2021 IIT Patna	No funding
			ABROAD		
1	Rambabu M	18071016	IEEE World Congress on Computational Intelligence (WCCI) 2020 (Virtual)	19 – 24th July, 2020, Glasgow (UK)	No funding
2	Rahul Mishra	17071004	ACM Sensys 2020 (Virtual conference)	Nov. 16-19, 2020 Yokohama, Japan	No funding
3	Arpit Mehta	18075072	Paclic 34 (Virtual conference)	October 24-26, 2020, Hanoi, Viet Nam	No funding



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Indian Institute of Technology (BHU) Varanasi

S. No.	Name of Student	Roll No.	Conference/Seminar/ Symposia/Workshop	Date & Venue	Financial Assistance From
4.	Supriya Chanda	18071008	Workshop on Noisy User- generated Text (W-NUT) with EMNLP 2020 (Virtual Conference)	Nov 19, 2020 Dominican Republic	No Funding
5.	Rajesh Kumar Mundotiya	16071001	Workshop on Noisy User- generated Text (W-NUT) with EMNLP 2020 (Virtual Conference)	Nov 19, 2020 Dominican Republic	No Funding
6.	Amit Kumar	17071018	LoresMT@AACL 2020	December 2020, Suzhou, China	No Funding
7.	Amit Kumar	17071018	The Fifth Conference on Machine Translation(WMT 2020)	November 2020, Online	No Funding
8.	Vikrant Kumar	18075063	Paclic 34 (virtual conference)	October 24-26, 2020, Hanoi, Viet Nam	No funding
9	Rupjyoti Baruah	18071014	The Seventh Workshop on Asian Translation@AACL-IJCNLP (Virtual)	December 4th , 2020, Suzhou, China	No Funding
10	Rupjyoti Baruah	18071014	The Fifth Conference On Machine Translation (WMT 2020) with EMNLP 2020 (Virtual)	November 19-20, 2020	No Funding
11	Anita Saroj	16071006	Semantic Evaluation 2020 (Virtual Conference)	December 12–13, 2020, Barcelona, Spain	No funding
12	Anita Saroj	16071006	(LREC 2020) (Virtual Conference)	13-15 May, 2020, Marseille	No funding

## Names of students/scholars who got prizes and awards outside the Institute

S. No.	Name of Student	Roll No.	Name of Prize	Date & Venue	Prize awarded by
1	Ankit Sinha	18075076	Silver medal in BridgeI2I's Automatic Headline and Sentiment Generator at Inter-IIT tech meet 9.0 (virtual team event)	Mar 26 - 28, 2021. IIT Guwahati	IIT Guwahati / Inter- IIT Committee.
2	Pranav Ajit Nair	18074020	Silver medal in BridgeI2I's Automatic Headline and Sentiment Generator at Inter-IIT tech meet 9.0 (virtual team event)	Mar 26 - 28, 2021. IIT Guwahati	IIT Guwahati / Inter- IIT Committee

### Names of scholars/students who won Convocation/Institute Day prizes

S. No.	Name of Student	Roll No.	Name of Prize	Prize awarded by
1	Ankan Bohara	16075060	President's Gold Medal	Director

### Names of Students/Scholars who went for foreign Internship

S. No.	Name of Student	Roll No.	Name of the Organization	Place of Internship	Country	Duration
1	Harshit Agrawal	18074019	Changwon National University	Changwon (Work From Home)	South Korea	2.5 months



## 3. Faculty & their activity

## Faculty and their areas of specialisation

S. No.	Name, Qualifications, Employee No.	Date of award of PhD Degree	Major Areas of Specialization (Max. 3 Areas)
PRO	FESSORS		
1	Dr. Anil Kumar Tripathi (13770)	1992	Parallel/Distributed Computing and Software Engineering
2	Dr. Kaushal Kumar Shukla (13772)	1993	Artificial Intelligence, Neural Networks, Data Mining
3	Dr. Rajeev Srivastava (18363)	April 2011	Image Processing, Computer Vision, Pattern Recognition, Machine Learning, Video Surveillance, and Medical Image Analysis.
4	Dr. Sanjay Kumar Singh (18362)	August 2004	Artificial Intelligence, Data Science, Machine Learning
ASSO	OCIATE PROFESSORS		
1	Dr. Bhaskar Biswas (16832)	2010	Data Mining, Web Mining and Social Networks
2	Dr. Ravi Shankar Singh (17184)	2010	Data Structures, Algorithms and High Performance Computing
3	Dr. Anil Kumar Singh (50014)	July 2010	Natural Language Processing, Computational Linguistics, Information Retrieval
4	Dr. Ruchir Gupta (50126) (On EOL)	18.06.2014	Peer-to-peer network, Social Networks, Game Theory, NLP and Machine Learning
ASSI	STANT PROFESSORS		
1	Dr. Vinayak Shrivastava (13773)	07.03.2009	Software Engineering, Software Re-engineering
2	Dr. Ravindranath Chowdary C (19845)	31.07.2009	Information Extraction, Text Summarization, Web Mining
3	Dr. Sukomal Pal (50052)	10.09.2012	Information Retrieval, Recommender Systems, Text Mining, Data Science
4	Dr. Lakshmanan Kailasam (50127)	28.06.2013	Reinforcement Learning, Network Science
5	Dr. Hari Prabhat Gupta (50031)	31.10.2014	Computer Networks, WSN, Ubiquitous Computing, and IoT
6	Dr. Tanima Dutta (50075)	16.10.2014	Computer Vision, Deep Neural Networks, Multimedia Forensics, Internet of Things
7	Dr. Amrita Chaturvedi (50125)	12.01.2016	Software Architecture and Design Patterns, Ontologies, Artificial Intelligence, Semantic Web, Big Data Analytics and Machine Learning
8	Dr. Pratik Chattopadhyay (50151)	06.11.2015	Image and Video Processing, Pattern Recognition, Machine Learning, Cyber-security, Generative Neural Networks
9	Dr. Ajay Pratap (50243)	16.07.2018	IoT, Fog Computing, Design and Analysis of Algorithms, Cellular Wireless and 6G networks
10	Dr. Mayank Swarnkar (50244)	30.09.2019	Network Security, System Security, Network Penetration Testing, IoT Security







S. No.	Name, Qualifications, Employee No.	Date of award of PhD Degree	Major Areas of Specialization (Max. 3 Areas)
11	Dr. Prasenjit Chanak (50248)	12.02.2016	Wireless Sensor Networks, Internet of Things (IoT), Cyber-Physical Networks (CPN), Consumer electronics
12	Dr. Sukarn Agarwal (50254)	13.03.2020	Memory Architecture, Network on Chip Design and Management, Thermal Aware Chip Management

## Technical and Non-Teaching Staff

<b>Sl. No.</b>	Name, Qualifications	Designation, Employee No.	Date of Appointment in the department
1.	Dr. Roshan Singh (Ph.D.)	System Analyst (50008)	27.06.2015 (F/N)
2.	Shri Mahesh Pandey (MCA)	System Analyst (50013)	27.08.2015 (F/N)
3.	Shri Ravi Kumar Bharti (Bachelor of Arts)	Junior Assistant (50004)	27.04.2015 (F/N)
4.	Shri Prakhar Kumar (MA - Economics Honours)	Junior Assistant (50132)	10.07.2017 (A/N)
5.	Shri Ritesh Singh (BA – Archaeology)	Junior Assistant (50136)	10.07.2017 (A/N)
6.	Shri Shubham Pandey (M.Sc Physics)	Junior Assistant (50189)	13.06.2018 (F/N)
7.	Dr. Ram Prasad Meena (Ph.D. (Botany)	Technical Superintendent (18756)	06.01.2009 (A/N)
8.	Shri Raghuvir Sharan Tripathi M.Sc. (Tech.)- (Geophysics)	Technical Superintendent (18753)	03.01.2009 (F/N)
9.	Shri Dinesh Kumar Tiwari (M.AEconomics)	Senior Technician (18600)	18.08.2008 (A/N)
10.	Shri Shashi Kant Singh (B.Sc.)	Senior Technician (18640)	18.08.2008 (F/N)
11.	Shri Manoj Kumar Singh (B.Sc.)	Senior Technician (18601)	18.08.2008 (A/N)
12.	Shri Pramod Kumar (B.Sc.)	Senior Technician (18661)	27.04.2011 (A/N)

## Short-term courses/workshops/seminars/symposia/conferences organised by faculty members

S. No.	Coordinator	Title	Period
1	Dr. Ajay Pratap	IoT-enabled 5G Networks: Infrastructure and Security	January 25-30, 2021
2	Dr. Ajay Pratap (Co-coordinator )	Next Generation Networks (NGN) & AI for Data Analytics and Predictive Technology Applications (NGN & AI for DAPT)	March 22-27, 2021.
3	Dr. Prasenjit Chanak (Coordinator)	Internet of Things and Its Applications	December 25-31, 2020
4	Prof. S.K. Singh	Data Analytic and Its applications in Industry	December 14-25, 2020
5	Dr. Prasenjit Chanak (Co-Coordinator)	Data Analytic and Its applications in Industry	December 14-25, 2020
6	Dr. Hari Prabhat Gupta	Summer Workshop cum Internship on Machine Learning Applications to Internet of Things	1st June 2020 to 15th July 2020
7	Prof. Rajeev Srivastava	Online Workshop on Data Structures and Algorithms at LNJPIT CHAPRA	20.07.2020 - 29.07.2020





S. No.	Coordinator	Title	Period
8	Prof. Rajeev Srivastava	Organized two sessions on "Data Science Applications" in VAIBHAV SUMMIT 2020, Govt. of India (Session Chair)	13.10.2020 and 16.10.2020
9	Prof. Rajeev Srivastava	'Data Science Education' in VAIBHAV SUMMIT 2020, Govt. of India (Session Chair)	21.10.2020
10	Dr. Tanima Dutta (Co-coordinator)	Summer Workshop cum Internship on Machine Learning Applications to Internet of Things	1st June 2020 to 15th July 2020
11	Dr Mayank Swarnkar (Co-coordinator)	IoT-enabled 5G Networks: Infrastructure and Security	January 25-30, 2021
12	Dr. Amrita Chaturvedi	International Conference on Machine Learning and Big Data Analytics (ICMLBDA) 2021	29 - 30 March 2021

# Short-term courses/workshops/seminars/symposia/conferences/training programmes attended by faculty members in academic institutions and public sector undertakings

S. No.	Name of Faculty Member	Title	Period and Venue
Semi	inars/Symposia/Confer	ences	
1	Dr. Hari Prabhat Gupta	8th <b>ACM</b> Conference on Embedded Networked Sensor Systems ( <b>SenSys 2020</b> ) and 7th ACM International Conference on Systems for Energy-Efficient Built Environments (BuildSys 2020)	November 16-19, 2020, Yokohama, Japan Virtual and online.
2	Dr. Pratik Chattopadhyay	Online Workshop on Data Structures and Algorithms	LNJPIT CHAPRA 20.07.2020 - 29.07.2020
3	Dr. Ajay Pratap	IEEE Future Networks Webinar - In the era of 5G and 6G, do we still need Wi-Fi?	February 4, 2020, USA, Online
4	Dr. Ajay Pratap	'Data Security' penal member in VAIBHAV SUMMIT 2020, Govt. of India	02.10.2020 to 31.10.2020 (Online)
5	Dr Mayank Swarnkar	'Data Security' penal member in VAIBHAV SUMMIT 2020, Govt. of India	02.10.2020 to 31.10.2020 (Online)
6	Dr Sukomal Pal	'Data Science Applications" in VAIBHAV SUMMIT 2020, Govt. of India, as a panelist.	02.10.2020 to 31.10.2020 (Online)

## Special lectures delivered by faculty members in other institutions

S. No.	Name of faculty Member	Topic of Lecture	Institution	Date
1	Dr. R.S.Singh	High Performance Computing -Parallel Algorithms	On-Campus Online Training for Raisoni Group of Institutions, Pune	05/06/2020
2	Dr. R.S.Singh	High Performance Computing for Machine Learning	Rajasthan Technical University, Kota	17/09/2020
3	Dr. R.S.Singh	High Performance Computing- Paradigm and Architecture	ATAL-FDP at IEC, Ghaziabad	10/11/2020





S. No.	Name of faculty Member	Topic of Lecture	Institution	Date
4	Dr. R.S.Singh	Computer Algorithms	UGC-HRDC, University of Kashmir, Srinagar	
5	Dr. R.S.Singh	Parallel Algorithms	UGC-HRDC, University of Kashmir, Srinagar	05/03/2021
6	Dr. Hari Prabhat Gupta	Introduction of Fog Computing	Missouri University of Science and Technology, USA	28-05-2020
7	Dr. Hari Prabhat Gupta	Intelligent IoT	VIT Bhopal University	22-06-2020
8	Dr. Hari Prabhat Gupta	Intelligent IoT	SPSU Udaipur	11-06-2020
9	Dr. Hari Prabhat Gupta	Intelligent IoT	SCMS School of Engineering and Technology, Kerala	29-07-2020
10	Dr. Hari Prabhat Gupta	Intelligent IoT	GH Raisoni College Of Engineering Nagpur	12-10-2020
11	Dr. Hari Prabhat Gupta	Intelligent IoT	Vellore Institute of Technology, Chennai	26-11-2020
12	Dr. Hari Prabhat Gupta	Intelligent IoT	IIEST, Shibpur	14-12-2020
13	Dr. Hari Prabhat Gupta	Intelligent IoT	NIT Durgapur	09-01-2021
14	Dr. Pratik Chattopadhyay	Machine Learning in Digital Image Processing	G. B. Pant Institute of Engineering and Technology	07.01.2021
15	Dr. Pratik Chattopadhyay	Gait Recognition from Video Data Analysis	IIT Indore	23.12.2020
16	Dr. Pratik Chattopadhyay	Gait Recognition from Video Data Analysis	Computer Science & Engineering Department, FET, MRIIRS	14.12.2020
17	Dr. Pratik Chattopadhyay	Foundation of Machine Learning for Data Science	Dept. of CSE, Kingston Engineering College	07.12.2020
18	Dr. Pratik Chattopadhyay	Gait Recognition from Video Data Analysis	Shri Shankaracharya Technical Campus	28.11.2020
19	Dr. Pratik Chattopadhyay	Emerging Technologies for Effective Management of the Pandemic	IETE Foundation Day, (Online Mode)	02.11.2020
20	Dr. Pratik Chattopadhyay	Application Areas of Data Science in Image/Video Analytics	VAIBHAV Summit 2020 (Served as Rapporteur)	13.10.2020
21	Dr. Pratik Chattopadhyay	Application Areas of Data Science in Health Care and Video Analytics	VAIBHAV Summit 2020 (Served as Rapporteur)	16.10.2020
22	Dr. Pratik Chattopadhyay	Data Science in Education	VAIBHAV Summit 2020	21.10.2020
23	Prof. Rajeev Srivastava	AI/ML in Computer Vision and Its Applications	4th National Seminar on New Trends in Signal Processing (NeTSiP-2021) jointly organized by the IEEE Gujarat Section, IEEE SPS Chapter, GS and Centre for Artificial Intelligence and Language Processing and hosted by DA-IICT, Gandhinagar, Gujarat.	20.3.2021
24	Prof. Rajeev Srivastava	AI/ML and Its Applications in Computer Vision	One week Faculty Development Programme on topic 'Artificial Intelligence and Its Applications (AIIA-21)', LNJPIT Chapra, Bihar.	15.3.2021





S. No.	Name of faculty Member	Topic of Lecture	Institution	Date
25	Prof. Rajeev Srivastava	ML, Computer Vision and its Applications	Two Week Refresher Course on "ARTIFICIAL INTELLIGENCE" organized by UGC-Human Resource Development Centre, JNTUH, Hyderabad	21.11.2020
26	Prof. Rajeev Srivastava	IoT Computer Vision and ML applications	One Week Online Refresher Course on "Programming in Internet of Things" Sponsored by AICTE- ISTE and organized by Dept CSE, JNTUHCEJ, Hyderabad.	23.11.2020
27	Prof. Rajeev Srivastava	Machine Learning Applications for IoT and Computer Vision	National Level one week online on ISTE-STTP- Machine Learning : Applications, Research Challenges (MLARC2020) organized by Nalla Narasimha Reddy Education Society's Group of Institutions, Hyderabad.	2.11.2020
28.	Prof. Rajeev Srivastava	Machine Learning Applications for Computer Vision and IoT	One-Week Faculty Development Program On 'Deep Learning and Machine Learning Applications in Computer Vision' jointly organized by Electronics and ICT Academy at NIT, Patna and Guru Ghasidas Vishwavidyalaya (A Central University), Bilaspur.	24.8.2020
29	Prof. Rajeev Srivastava	IoT for Computer Vision	RTU(ATU) TEQIP-III Sponsored Three days Faculty Development Program on "Internet Of things" (IOT-2020)" at Jagannath Gupta Institute of Engineering and Technology, RTU, Jaipur.	21.8.2020
30	Prof. Rajeev Srivastava	AI, Computer Vision and its Applications	In Two weeks online FDP on Recent research trends on Electronics and Communication Engineering at GBPIET, Pauri-Garhwal, Uttarakhand.	19.8.2020
31	Dr. Tanima Dutta	Application of Deep Neural Networks in Scene Text Detection	A short-term Certificate Programme on Artificial intelligence and machine learning jointly offered by the National Institute of Technology, Jalandhar (NITJ) and Rajiv Gandhi National Institute of Youth Development (RGNIYD), Sriperumbudur, TN	September 30, 2021
32	Dr. Tanima Dutta	Deep Learning Architectures for Digital Watermarking	AICTE Training and Learning (ATAL) Faculty Development Programme on "Cyber Crime & Computer Security"	October 6. 2020





S. No.	Name of faculty Member	Topic of Lecture	Institution	Date
33	Prof. S.K. Singh	Machine Learning Applications in Animal Biometrics	STC on Machine Learning Techniques for Cross-domain Applications Computer Science & Engineering Department, IIT Indore	December 23,2020
34	Prof. S.K. Singh	Application of Artificial Intelligence in Medical Imaging	Ashoka Institute of Technology and Management, Varanasi	July 14,2020
35	Dr. Ajay Pratap	Futuristic IoT Solutions	IEEE Vizac Section India	November 16, 2020
36	Dr. Ajay Pratap	IoT-enabled Industry 4.0 Applications using Fog Computing	one-week ATAL online Faculty Development Program on "Internet of Things", at National Institute of Technical Teachers' Training and Research (NITTTR) Chennai	September 09, 2020
37	Dr. Ajay Pratap	Heterogeneous 5G Networks: A Radio Resource Perspective	Royal Global University Guwahati	July 04, 2020
38	Dr. Ajay Pratap	Algorithmic Foundation of IoT-enabled 5G Networks with Applications	St. Aloysius College, Mangaluru, Karnataka,	June 18, 2020
39	Dr. Mayank Swarnkar	Multimedia Security: Practical Aspect	One week FDP on Multimedia Security and Practices at NIT Patna	20.12.2020
40	Dr. Mayank Swarnkar	Cyber Attacks in IoT Networks	One week FDP on Communication Networks & Machine Learning at IIIT Bhagalpur	22.01.2021

#### Honours and awards

- 1. Prof. S.K. Singh, Chair technical Session at the 25th International Symposium on Frontiers of Research in Speech and Music (FRSM 2020) during 8-9 October 2020 at National Institute of Technology Silchar, India.
- Prof. S.K. Singh, Chair technical Session at the 7th International Conference on Electrical, Electronics and Computer Engineering (UPCON 2020) to be held during 27-29 November 2020 at Motilal Nehru National Institute of Technology Allahabad Prayagraj, India
- 3. Prof. Rajeev Srivastava, Session Chair and panellist in 'Data Science Applications' horizontal, Session-I: Image, Video and Text Analytics: Current Trends and Future' in "Data Science" Vertical of VAIBHAV SUMMIT-2020, Govt. of India on 13.10.2020.
- 4. Prof. Rajeev Srivastava, Session Chair and panellist in 'Data Science Applications', Session-II: Data Mining and applications of Data Science in Health Care, Agriculture, and Smart Cities' in "Data Science" Vertical of VAIBHAV SUMMIT-2020, Govt. of India on 16.10.2020.
- 5. Prof. Rajeev Srivastava, Panellist in 'Data Science Education' horizontal in "Data Science" Vertical of VAIBHAV SUMMIT-2020 organized by Govt. of India on 21.10.2020.
- 6. Prof. Rajeev Srivastava, Chief Guest and Keynote Speaker in National Level one week online workshop on ISTE-STTP- Machine Learning: Applications, Research Challenges (MLARC2020) organized by Nalla Narasimha Reddy Education Society's Group of Institutions, Hyderabad on 2.11.2020.
- 7. Three Ph.D. students (Rahul Mishra, Preti Kumari and Ashish Gupta) under the supervision of Dr. Hari Prabhat Gupta got a student conference grant award sponsored by the IEEE Communications Society (ComSoc), INFOCOM 2021.





- 8. Dr. Ajay Pratap, session chair for the track "Deep Learning and Neural Networks" in 5th IEEE International Conference On Recent Advances and Innovation in Engineering (ICRAIE-2020) at Poornima University Jaipur, Rajasthan India on 02.12.2020.
- 9. Dr. Amrita Chaturvedi, Session Chair for the track "Machine Learning Application in Big Data Analytics" in Springer International Conference on Machine Learning and Big Data Analytics (ICMLBDA 2021) organized by IIT Patna and IIT (BHU) India on 29 - 30 March 2021.
- 10. Dr. Amrita Chaturvedi, Program Chair of Springer International Conference on Machine Learning and Big Data Analytics (ICMLBDA 2021) organized by IIT Patna and IIT (BHU) India on 29 30 March 2021.
- 11. Dr. Amrita Chaturvedi, Publication and Technical Chair at the 6th International Conference on Cyber Security, Privacy in Communication Networks (ICCS) 2020 organized by IIT Patna India on 27 29 December 2020.

S. No.	Name of Faculty Member	Details of Fellowship
1	Prof. Rajeev Srivastava	Senior Member, IEEE, USA
2	Prof. Rajeev Srivastava	Fellow, Institution of Engineers (India)
3	Prof. Rajeev Srivastava	Fellow, IETE (India)
4	Prof. Rajeev Srivastava	Member, ACM, USA
5	Dr. Ravi Shankar Singh	Fellow member, IE(India)
6	Dr. Ravi Shankar Singh	Fellow member, IETE
7	Dr. Hari Prabhat Gupta	Senior Member IEEE
8	Dr. Hari Prabhat Gupta	ACM Member
9	Dr. Tanima Dutta	IEEE Member
10	Dr. Tanima Dutta	ACM Member
11	Prof. Sanjay Kumar Singh	Senior Member IEEE, USA
12	Prof. Sanjay Kumar Singh	Senior Member, ACM, USA
13	Prof. Sanjay Kumar Singh	Life Member, Computer Society of India (CSI)
14	Dr. Ajay Pratap	IEEE Member
15	Dr. Sukarn Agarwal	IEEE Member
16	Dr. Sukarn Agarwal	ACM Member
17	Dr. Ravi Shankar Singh	Senior Member, IEEE
18	Dr. Ravi Shankar Singh	Senior Member, ACM
19	Prof. Rajeev Srivastava	Life Member, Indian Society for Technical Education (ISTE), India
20	Dr Sukomal Pal	Member, IEEE
21	Dr Sukomal Pal	Member, ACM
22	Dr Sukomal Pal	Life Member, BCS-IRSG, UK
23	Dr Sukomal Pal	Life Member, Information Retrieval Society of India
24	Dr. Amrita Chaturvedi	Life member, Indian Science Congress Association.
25	Dr. Amrita Chaturvedi	ACM Member

Fellowships of academic and professional societies





## Books, monographs authored/co-authored

S. No.	Name of Author/Co- Author	Title	Publisher
1	<b>Sanjay Kumar Singh, Ravi Shankar Singh,</b> Anil Kumar Pandey, Sandeep Udmale, Ankit Chaudhary	IoT-Based Data Analytics for the Healthcare Industry	Academic Press
2	S.K. Pani, <b>Sanjay Kumar Singh</b> , R.B. Pachori, L. Garg, and X. Zhang.	Intelligent data analytics for terror threat prediction: Architectures, methodologies, techniques and applications.	Wiley-Scrivener Publishing, 2020.

#### **Editorial boards of journals**

S. No.	Name of Faculty Member	Position (Editor/ member)	Name of Journal
1	Dr. Hari Prabhat Gupta	Topical Guest Editor	IEEE Sensors Journal
2	Dr. Hari Prabhat Gupta	Guest Associate Editor	IEEE Sensors Journal
3	Dr. Hari Prabhat Gupta	Guest Associate Editor	IEEE Consumer Electronics Magazine
4.	Dr. Tanima Dutta	Guest Associate Editor	IEEE Sensors Journal

## 4. Design and Development Activities

#### New facilities added

S. No.	Details (Infrastructure, Equipments, etc.)	Value (in Lakhs of Rupees)
1	GPU Workstation (VCA Lab)	10 Lakhs

#### **Patents filed**

S. No.	Name of Faculty Member	Title of Patent
1	Prof S.K. Singh	A Biometric Based System and Method For Management of Pet Animal

## 5. Research and Consultancy

## Sponsored research projects

S. No.	Title	Period	Funding Agency	Amount (in lakhs of Rs.)	Co- Ordinator
1	Resource- Optimized Fog Computing for Smart Healthcare Application in IoT-enabled Heterogeneous Networks	Dec'2020- Dec'2022	Science and Engineering Research Board, Govt. of India.	29,06,970	Dr. Ajay Pratap
2	Developing Improved Algorithms for Intelligent Video Surveillance	March 2021-March 2024	Science and Engineering Research Board, Govt. of India (Core Research Grant)	29,08,345	Dr. Pratik Chattopadhyay
3	Research and Experiment in the area of advanced data structures and methodologies to represent and process large terrain datasets for efficient rendering	Dec 2019- July 2020	ANURAG, DRDO, Hyderabad	9,95,000.00	Prof. Rajeev Srivastava





S. No.	Title	Period	Funding Agency	Amount (in lakhs of Rs.)	Co- Ordinator
4	Development of an Energy- efficient Wireless Sensor Network for Precision Agriculture	July-2017 to Jan-2021	SERB	34,47,130.00 INR	Dr. Hari Prabhat Gupta
5	A Robust Medical Image Forensics System For Healthcare	September 2018 to June 2021	SERB	14,01810.00 INR	Dr. Tanima Dutta
6	Learning for Radio Resource Management	April 2019-March 2022	NOKIA	12,00,000 INR	Dr. Lakshmanan Kailasam
7	Intelligent System for Computer- Assisted Diagnosis (CAD) of Canine Mammary Tumors	May 2020- April 2022	DBT, GOI	60,91,849 INR	Prof.S.K. Singh
8	Development of text-based matching algorithms for bartering software	May 2020 - May 2021	ASCONSOFT	11,62,500 INR	Dr Sukomal Pal
9	Optimization of Capacity Utilization of Draglines deployed in NCL through Big Data Analytics	November 2019 - November 2022	NCL, GoI	83,97,000 INR	Prof S Gupta (PI), Dr A Kumar (Co-PI), Dr Sukomal Pal (Co-PI)
10	National Post Doctoral Fellowship (N-PDF)	Jan 2021 - Jan 2023	SERB, GoI	21,31,200 INR	Dr Pradeepika Verma (N-PDF) with Dr Sukomal Pal mentor

#### **Research Publications**

#### **Refereed International Journals**

- 1. D R Sahu, J C Yao, M Verma, K K Shukla, (2021) Convergence rate analysis of proximal gradient methods with applications to composite minimization problems, *Optimization*, Taylor & Francis, Vol 70, Issue 1, January 2021, pages 75-100. (online first 2020) DOI 10.1080/02331934.2019.1702040
- 2. Vandana Bharti, B Biswas, and K K Shukla (2020) A Novel Multiobjective GDWCN-PSO Algorithm and its Application to Medical Data Security. ACM Transactions on Internet Technology. [Forthcoming] DOI:10.1145/3397679.
- 3. Mridula Verma, K. K. Shukla (2020) Convergence analysis of accelerated proximal extra-gradient method with applications, *Neurocomputing*, Elsevier, Volume 388, May 2020, Pages 288-300. DOI 10.1016/j. neucom.2020.01.049
- Manisha Singla, Debdas Ghosh, K.K.Shukla, Witold Pedrycz (2020) Robust twin support vector regression based on rescaled Hinge loss, *Pattern Recognition*, Elsevier, vol 105, Online 28 April 2020 DOI 10.1016/j. patcog.2020.107395
- Ritesh Sharma, Sameer Shrivastava, Sanjay Kumar Singh, Abhinav Kumar, et al. (2021) "Deep-ABPpred: Identifying antibacterial peptides in protein sequences using bidirectional LSTM with word2vec." Briefings in Bioinformatics. (IF 8.9)
- Aneesh G. Nath, Anshul Sharma, Sandeep S. Udmale, and Sanjay Kumar Singh. (2021) "An Early Classification Approach for Improving Structural Rotor Fault Diagnosis" in IEEE Transactions on Instrumentation and Measurement, doi:10.1109/TIM.2020.3043959. (IF 3.658)



- Abhinav Kumar, Sanjay Kumar Singh, Sonal Saxena, K. Lakshmanan et al., "CoMHisP: A Novel Feature Extractor for Histopathological Image Classification Based on Fuzzy SVM With Within-Class Relative Density," in IEEE Transactions on Fuzzy Systems, vol. 29, no. 1, pp. 103-117, Jan. 2021, doi: 10.1109/TFUZZ.2020.2995968. (IF 9.518)
- 8. Abhinav Kumar, Sanjay Kumar Singh, Sonal Saxena, K. Lakshmanan et al. "Deep Feature Learning for Histopathological Image Classification of Canine Mammary Tumors and Human Breast Cancer." *Information Sciences*, Volume 145, Pages 405-421, 2020. (IF 5.910)
- 9. Abhinav Kumar, Sanjay Kumar Singh, Sonal Saxena, K. Lakshmanan et al. (2021), "A Novel Cloud-Assisted Secure Deep Feature Classification Framework for Cancer Histopathology Images," in ACM Transaction on Internet Technology . (IF 2.382)
- 10. Rishav Singh, T. Ahmed, A.K. Singh, P Chanak, and Sanjay Kumar Singh. "SeizSClas: An Efficient and Secure Internet of Things Based EEG Classifier." IEEE Internet of Things Journal (2020).(IF 9.936)
- 11. Aneesh G. Nath, Sandeep S. Udmale, and Sanjay Kumar Singh. "Role of artificial intelligence in rotor fault diagnosis: a comprehensive review." Artificial Intelligence Review (2020): 1-60. (IF 5.547)
- 12. Anshul Sharma, and Sanjay Kumar Singh. "A novel approach for early malware detection." Transactions on Emerging Telecommunications Technologies (2020): e3968. (IF 1.594)
- 13. Anshul Sharma, Sanjay Kumar Singh, Sandeep S. Udmale, Amit Kumar Singh, and Rishav Singh. "Early transportation mode detection using smartphone sensing data." IEEE Sensors Journal (2020). (IF 3.043)
- 14. Anshul Sharma, and Sanjay Kumar Singh. "Early classification of multivariate data by learning optimal decision rules." Multimedia Tools and Applications (2020): 1-24. (IF 2.313)
- Rishav Singh, T. Ahmed, Abhinav Kumar, A. K. Singh, A. K. Pandey and Sanjay Kumar Singh. "Imbalanced Breast Cancer Classification Using Transfer Learning," in *IEEE/ACM Transactions on Computational Biology* and Bioinformatics, vol. 18, no. 1, pp. 83-93, 1 Jan.-Feb. 2021, doi: 10.1109/TCBB.2020.2980831. (IF 3.015)
- 16. Energy-aware workflow task scheduling in clouds with virtual machine consolidation using discrete water wave optimization, R Medara, RS Singh Simulation Modelling Practice and Theory, 2021
- 17. Convolution Neural Network based lossy compression of hyperspectral images, Y Dua, RS Singh, K Parwani, S Lunagariya, V Kumar Signal Processing: Image Communication, 2021
- 18. Parallel Lossless HSI Compression Based on RLS Filter, Y Dua, V Kumar, RS Singh Journal of Parallel and Distributed Computing (Elsevier, SCI, IF: 2.296), 2021
- 19. Energy Efficient and Reliability aware Workflow Task Scheduling in Cloud Environment, R Medara, RS Singh - Wireless Personal Communications (Springer, SCIE, IF: 1.061), 2021
- 20. Compression of Multi-Temporal Hyper Spectral Images based on RLS filter, Y Dua, V Kumar, RS Singh The Visual Computer (Springer, SCIE, IF: 1.456), 2020
- 21. Comprehensive Review of Hyperspectral Image Compression Algorithms, Y Dua, V Kumar, RS Singh Optical Engineering (SPIE, SCI, IF: 1.113), 2020
- 22. Error-tolerant approximate graph matching utilizing node centrality information, SP Dwivedi, RS Singh -Pattern Recognition Letters (Elsevier, SCI, IF: 3.255), 2020.
- 23. Nitika Nigam, Tanima Dutta, and Hari Prabhat Gupta, "FactorNet: Holistic Actor, Object and Scene Factorization for Action Recognition in Videos", IEEE Transactions on Circuits and Systems for Video Technology, 2021.
- 24. Swati Chopade, Hari Prabhat Gupta, Rahul Mishra, Preti Kumari, and Tanima Dutta, "An Energy- efficient River Water Pollution Monitoring System in Internet of Things", IEEE Transactions on Green Communications and Networking, 2021 (Accepted).





- 25. Ramakant Kumar, Rahul Mishra, Hari Prabhat Gupta, and Tanima Dutta, "Smart Sensing for Agriculture: Applications, Advancements, and Challenges", IEEE Consumer Electronics Magazine (Early access, doi: 10.1109/MCE.2021.3049623).
- 26. Preti Kumari, Rahul Mishra, Hari Prabhat Gupta, Tanima Dutta, and Sajal K. Das, "An Energy Efficient Smart Metering System using Edge Computing in LoRa Network", IEEE Transactions on Sustainable Computing (Early access, doi: 10.1109/TSUSC.2021.3049705, IF: 3.59).
- 27. Preti Kumari, Hari Prabhat Gupta, and Tanima Dutta, "A Bayesian Game based Approach for Associating the Nodes to the Gateway in Long-Range Network", IEEE Transactions on Intelligent Transportation Systems (Accepted in Nov. 2020).
- 28. Rahul Mishra, Ashish Gupta, Hari Prabhat Gupta, and Tanima Dutta, "A Sensors based Deep Learning Model for Unseen Locomotion Mode Identification using Multiple Semantic Matrices", IEEE Transactions on Mobile Computing, pp. 1-12, August 2020 (Early access, doi: 10.1109/TMC.2020.3015546, IF: 5.112).
- 29. Ashish Gupta, Hari Prabhat Gupta, Bhaskar Biswas, and Tanima Dutta, "An Unseen Fault Classi- fication Approach for Smart Appliances using Ongoing Multivariate Time Series", IEEE Transactions on Industrial Informatics, pp. 1-8, August 2020 (Early access, doi: 10.1109/TII.2020.3016590, IF: 9.112).
- Preti Kumari, Hari Prabhat Gupta, and Tanima Dutta, "Estimation of Time duration for using the allocated LoRa Spreading Factor: A Game-Theory Approach", IEEE Transactions on Vehicular Technology, vol. 69, no. 10, pp. 11090 -11098, Oct. 2020 (IF: 5.379).
- 31. Ashish Gupta, Hari Prabhat Gupta, Bhaskar Biswas, and Tanima Dutta, "A Fault-Tolerant Early Classification Approach for Human Activities using Multivariate Time Series", IEEE Transactions on Mobile Computing, pp. 1-13, Feb. 2020 (Early access, doi: 10.1109/TMC.2020.2973616, IF: 5.112).
- 32. Preti kumari, Hari Prabhat Gupta, and Tanima Dutta, "An Incentive Mechanism-based Stackel- berg Game for Scheduling of LoRa Spreading Factors", IEEE Transactions on Network and Service Management, pp. 1-12, Sept. 2020 (Early access, doi: 10.1109/TNSM.2020.3027730, IF: 3.878).
- 33. Ashish Gupta, Hari Prabhat Gupta, Bhaskar Biswas, and Tanima Dutta, "Approaches and Appli- cations of Early Classification of Time Series: A Review", IEEE Transactions on Artificial Intelligence, vol. 1, no. 1, pp. 47-61, Aug. 2020
- Atul Chaudhary, Hari Prabhat Gupta, K. K. Shukla, and Tanima Dutta, "Sensor Signals based Early Dementia Detection System using Travel Pattern Classification", IEEE Sensors Journal, vol. 20, no. 23, pp. 14474-14481, Dec. 2020 (IF: 3.079).
- 35. Rahul Mishra, Hari Prabhat Gupta, and Tanima Dutta, "A Road Health Monitoring System using Sensors in Optimal Deep Neural Network", IEEE Sensors Journal, pp. 1-8, June 2020 (Early access, doi: 10.1109/ JSEN.2020.3005998, IF: 3.079).
- 36. Surbhi Saraswat, Hari Prabhat Gupta, and Tanima Dutta, "A Writing Activities Monitoring System for Preschoolers using a Layered Computing Infrastructure", IEEE Sensors Journal, vol. 20, no. 7, pp. 3871-3878, April 2020 (IF: 3.079).
- 37. Ashish Gupta, Hari Prabhat Gupta, Bhaskar Biswas, and Tanima Dutta, "A Divide-and-Conquer Based Early Classification Approach for Multivariate", ACM Transactions on Internet of Things, vol. 1, no. 2, pp. 1-21, April 2020.
- 38. Preti Kumari, Hari Prabhat Gupta, and Tanima Dutta, "A Knowledge Distillation-based Trans- portation System for Sensory data sharing using LoRa", IEEE Sensors Journal, pp. 1-8, June 2020 (Early access, doi: 10.1109/JSEN.2020.3025835, IF: 3.079).





- 39. Ramakant Kumar, Rahul Mishra, Hari Prabhat Gupta, and Tanima Dutta, "Smart Sensing for Agriculture: Applications, Advancements, and Challenges", IEEE Consumer Electronics Magazine, pp. 1-6, Dec. 2020.
- 40. Randheer Bagi and Tanima Dutta, "Cost-effective & Smart Text Sensing & Spotting in Blurry Scene Images using Deep Networks", IEEE Sensors Journal, 2020.
- 41. Randheer Bagi, Sabyasachi Mohanty, Tanima Dutta and Hari Prabhat Gupta, "Leveraging Smart Devices for Scene Text Preserved Image Stylization: A Deep Gaming Approach", IEEE Multimedia, vol 27, pg 19, 2020.
- 42. Randheer Bagi, Tanima Dutta and Hari Prabhat Gupta, "Cluttered TextSpotter: An End-to-End Trainable Light-Weight Scene Text Spotter for Cluttered Environment", IEEE Access, vol. 8, pp. 111433-111447, 2020.
- 43. Agarwal S. and Kapoor H.K. (2020) Improving the Performance of Hybrid Caches Using Partitioned Victim Caching. ACM Transactions on Embedded Computing Systems. 20(1): Article 5.
- 44. Sanjay Kumar Gupta and Pratik Chattopadhyay (2021). Gait Recognition in the Presence of Co-variate Conditions. Elsevier Neurocomputing. (accepted).
- 45. Nirbhay Kumar Tagore, Ayushman Singh, Manche Sumanth, Pratik Chattopadhyay (2021). Person Reidentification from Appearance Cues and Deep Siamese Features. Journal of Visual Communication and Image Representation. 75, Article No. 103029.
- 46. Ayush Agarwal, Pratik Chattopadhyay, Lipo Wang (2020), Privacy Preservation through Facial Deidentification with Simultaneous Emotion Preservation. Signal, Image and Video Processing.. DOI: https:// doi.org/10.1007/s11760-020-01819-9
- 47. Sanjay Kumar Gupta and Pratik Chattopadhyay (2020). Exploiting Pose Dynamics for Human Recognition from their Gait Signatures. Multimedia Tools and Applications. DOI: https://doi.org/10.1007/s11042-020-10071-9
- Nirbhay Kumar, Pratik Chattopadhyay, Lipo Wang (2020), T-MAN: A Neural Ensemble Approach for Person Re-Identification using Spatio-temporal Information, Multimedia Tools and Applications, 79(37), 28393– 28409.
- 49. Divyanshu Gupta, Shorya Jain, Utkarsh Tripathi, Pratik Chattopadhyay, and Lipo Wang (2021). A Robust and Efficient Image De-fencing Approach using Conditional Generative Adversarial Networks. Signal, Image and Video Processing, 15(2), 297-305.
- 50. Pratistha Verma, Rajeev Srivastava (2021), "Reconsideration of Multi-stage Deep Network for Human Pose Estimation", Computer Methods in Biomechanics and Biomedical Engineering: Imaging & Visualization, Taylor & Francis. (SCI IF: 1.502). https://doi.org/10.1080/21681163.2021.1902400
- 51. Gargi Srivastava, Rajeev Srivastava (2021), "Colon Tumour Localization using Three Input Variants to Faster R-CNN and Lazy Snapping", *International Journal of Imaging Systems and Technology*, Wiley. (SCI IF: 1.925). https://doi.org/10.1002/ima.22581
- 52. Gargi Srivastava, Rajeev Srivastava (2020), "Annotation of Images using Local Binary Pattern and Local Derivative Pattern after Salient Object Detection Using Minimum Directional Contrast and Gradient Vector Flow", Signal, Image and Video Processing (SIVP-an International Journal), Springer. (SCI IF: 1.824). https:// doi.org/10.1007/s11760-020-01807-z
- 53. Ankit Jaiswal, Rajeev Srivastava (2021), "Forensic Image Analysis using Inconsistent Noise Pattern", *Pattern Analysis and Applications* (PAA-an International Journal), Springer. Vol. 24, pages 655–667, (SCI IF: 1.527).
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- 3. Energy Efficient Virtual Machine Consolidation Using Water Wave Optimization, R Medara, RS Singh, US Kumar, S Barfa, 2020 IEEE Congress on Evolutionary Computation (CEC), 2020
- 4. Preti Kumari, Hari Prabhat Gupta, and Tanima Dutta, " A Nodes Scheduling Approach for Effective Use of Gateway in Dense LoRa Networks", in proc. of the IEEE ICC 2020 June 7 -11, 2020 in Dublin, Ireland.





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- 6. Ashish Gupta, Hari Prabhat Gupta, Tanima Dutta, and Sajal K. Das, "Poster Abstract: Towards Identifying Appliances using Semantic Information", in proc. of the ACM Buildsys 2020, Yokohama, Japan, November 16-19, 2020, pp. 328-329.
- 7. Ashish Gupta, Hari Prabhat Gupta and Bhaskar Biswas, "Early Classification Approaches for Sensors Generated Multivariate Time Series with Different Challenges", in proc. of ICDCN 2021, Nara, Japan, Jan 5th-8th, 2021 Nara, Japan, pp. 241-242.
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- 9. Sukarn Agarwal and Hemangee K. Kapoor. 2020. LiNoVo: Longevity Enhancement of Non-Volatile Last Level Caches in Chip Multiprocessors. pp. 194-199 IEEE Computer Society Annual Symposium on VLSI (ISVLSI), Limassol, Cyprus.
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- 27. Rajesh Kumar Mundotiya, Vikrant Kumar, Arpit Mehta & Anil Kumar Singh (2020, October). Attentionbased Domain Adaption Using Transfer Learning for Part-of-Speech Tagging: An Experiment on the Hindi Language. In Proceedings of the 34th Pacific Asia Conference on Language, Information and Computation (pp. 471-477).
- 28. Ashish Ranjan, Anil Kumar Singh, Anil Kumar Thakur, Ravi Bhushan Mishra, Vibhav Prakash Singh. Sentential Negation Identification of FMRI Data Using k-NN. Machine Intelligence and Smart Systems: Proceedings of MISS 2020, Pages 657-664.





# **11. Department of Electrical Engineering**

#### Year of Establishment: 1919

Head of the Department: Prof. D. Singh w.e.f. 09-May-2018

### 1. Brief Introduction of the Department

Mahamana Pt. Madan Mohan Malviya founded BHU in the year 1916, with benevolent and magnanimous contributions of the then maharajas and other persons of eminence. The University was nurtured by Sir Sunderlal, as the 1<sup>st</sup> V.C. of the university, followed by the great visionaries, such as Pt. Madan Mohan Malviya, Acharya Narendradev, Sir S. Radhakrishnan and many other eminent personalities.

The Benaras Engineering College (BENCO) was started in the year 1919, with its strong foundation laid by revered Prof. Charles A. King, Prof. H. P. Philpot and Prof. M. Sengupta. With the passage of time, College of Mining and Metallurgy (MINMET) and College of Technology (TECHNO) were included, expanding its horizon. These three colleges were merged and named as Institute of Technology in the year 1968 with a view to give more autonomy for its better perspective in terms of academic as well as administrative decisions. Its undergraduate students are admitted through Joint Entrance Examination (JEE) being conducted for all IITs.

Since the inception of BENCO in 1919, combined Bachelor's degree in Mechanical and Electrical Engineering was awarded till 1952. Department of Mechanical Engineering and Department of Electrical Engineering were separated in 1953 and conferred separate degrees in respective disciplines.

Presently, Department of Electrical Engineering runs five post graduate (M. Tech.) programmes in Electrical Machines and Drives (started in 1956), Power Systems (started in 1964), Control Systems (started in 1964), Power Electronics (started in 1982) and Interdisciplinary Systems Engineering (started in, 1982) and Ph. D. programme in all disciplines of Electrical Engineering. The department has also a five year Integrated Dual Degree Program (started in 2006) leading to Master's degree with specialization in Power Electronics.

The department has been sanctioned Special Assistance Programme (SAP) of UGC since 1988 and COSIST program of UGC from 1995 to 2000. Apart from these, the department has been conducting research projects funded by DST, AICTE, CPRI and other R&D organizations of Govt. of India.

Department has very good placement records over the years. The students of this department are joining core companies such as PGCIL, IOCL, HPCL, Trident, Reliance, Maruti, etc. Electronics companies such as Broadcom, Sony, etc are also regularly recruiting students of this department. Our students are also regularly joining software companies such as Morgan Stanley, Goldman Sachs, Citrix, Oracle, SISO, etc. The vast number of job offers is mainly due to the versatility of the branch which ensures that students are allowed to sit for interviews in software, core electrical, electronic as well as non-technical companies.

Some of the department's famous alumni includes, Mr. Nikesh Arora: Senior Vice President and Chief Business Officer at Google, Mr. Rajiv Dogra: Indian diplomat, Ex- Consul General to Karachi, Pakistan, Mr. Gyanesh Pandey: Co-founder, CEO and CTO of Husk Power Systems and Mr. Narla Tata Rao: Winner of Padma Shree, a doyen of power sector in India.

The department is pursuing academic activities with the following goals and objectives:

- Further up-gradation and technological modernization of infrastructural facilities.
- Encouraging teaching innovations through audio visual and multimedia aids.
- Channelizing expertise of faculty in the frontier areas of electrical engineering.
- Research, testing and consultancy.




- Training the undergraduate and post graduate students towards entrepreneurship in consonance with liberalization and privatization policies of the Government.
- Development of energy efficient, environment-friendly electrical technologies as per the norms set by various planning, regulatory and other statutory bodies

### Major areas of Research

Power System, Power Electronics, Machines and Drives, Control System

#### Area of the Department (in square meters)

#### Infrastructure

S. No.	Particulars	Number
1	No. of Classrooms	7
2	No. of Lecture Halls	
3	No. of Laboratory	5
4	No. of Computers available for students in the Department/School/ School	140

### 2. Academic Programmes offered

#### Students on Roll

S. No.	Programme	I Year	II Year	III Year	IV Year	V Year & above
1.	B. Tech	113	112	96	89	NA
2.	Dual Degree	29	26	23	22	24
3.	M. Tech.	53	35	NA	NA	NA
4.	Ph. D (Under Institute Fellowship)	06	10	08	9+1 (zero credit)	6+1 (zero credit)
5.	Ph. D (Under Project Fellowship)	-	02	-	1	-
6.	Ph. D (Under Sponsored Category)	2(QIP)	01(QIP)	01(QIP)	-	_

# Names of students/scholars who attended conferences/workshops/seminars and symposia abroad or in India

S. No.	Name of Student	Roll No.	Conference/Seminar/ Symposia/Workshop	Date & Venue	Financial As- sistance From
<b>Ìndi</b> a					
1.	Devesh Shukla	15081001	NPSC 2020	Dec 2020	Institute Contingency
2.	Ekta Purwar	14081009	NPSC 2020	Dec 2020	Self
3.	Vijay. P. Babu	14081010	SGESC 2021	March 2021	Self
4.	S. Singh	14081011	PEDES 2020	Dec 2020	Institute Contingency
5	Vijay. P. Babu	14081010	PEDES 2020	Dec 2020	Self
Abroad					
1	Devesh Shukla	15081001	SPIES 2020	Sept 15-18 Dec	Self
2	Vijay. P. Babu	14081010	IEEE IAS Annual meeting	Oct 2020	Self





S. No.	Name of Student	Roll No.	Conference/Seminar/ Symposia/Workshop	Date & Venue	Financial As- sistance From
3	E. Sri Lakshmi	15081002	EEEIC / I&CPS Europe	June 2020	Self
4	S. Kharan	15084017	IECON, Singapore	Oct 18-21, 2020	Self
5	Akash Singh	15084002	IECON, Singapore	Oct 18-21, 2020	Self
6	Priyatosh Jena	19081501	IECON, Singapore	Oct 18-21, 2020	Self
7	Jayesh Kumar Motwani	15084008	IEEE ECCE, Detroit	Oct. 11-15, 2020	Self
8	Abhinandan Routray	14081006	IEEE ECCE, Detroit	Oct. 11-15, 2020	Self
9	Nimish Kumar Chaudhari	14084084	IEEE ECCE, Detroit	Oct. 11-15, 2020	Self
10	Shri Prakash Sonkar	16081011	IEEE ECCE, Detroit	Oct. 11-15, 2020	Self
11	Pawan Kumar	17081009	IET PEMD, Nottingham, UK,	21 - 23 April 2020	Self
12	Abhinandan Routray	???	IET PEMD, Nottingham, UK,	21 - 23 April 2020	Self

# 13. Faculty & their Activity

# Faculty and their areas of specialisation

S. No.	Name, Qualifications, Employee No.	Date of award of PhD Degree	Major Areas of Specialization (Max. 3 Areas)
PROFES	SSORS		
1	Dr. S P Singh, Ph.D., Emp. No.13783	1991	Power System Operation and Control, Smart Grid, Distribution Automation.
2	Prof. R. K. Pandey Ph.D. Emp. No.16623	22/05/1992	EHV AC & DC Transmission, FACTS Controllers Design & Analysis, Integrated Large Power System Operation & Control
3	Rakesh Kumar Srivastava B.Tech. EE; M.Tech. EMD; Ph.D. EE; Dip in German. 13788	06 March 2000	Electrical Machines & Drives, Linear Induction Motor, Permanent Magnet Machines
4	Prof. R. K. Misra Ph.D. Emp. No.13791	23/03/ 2005	Power Distribution Systems , AI and its application in Power Systems, Control and Applications of Computational Intelligence in Power Systems
5	Prof. R. Mahanty Ph.D. Emp. No. 13792	10/10/2005	Power Electronics
6	Prof. Devender Singh Ph.D. Emp. No.17094	05/04/ 2002	Short term Load Forecasting, State Estimation, Distributed Generation,
7	M. K. Verma Ph.D. Emp. No. 17590	31/5/2005	Power System voltage stability, Application of FACTS controllers, Smart grid
8	R.K.Saket B.E. (Electrical Engineering), M.E. (Power Electronics), Ph.D. (Reliability Engineering) Emp. No. 17548	16/06/2006	Reliability Engineering, Power System Reliability, Electrical Machines & Drives





S. No.	Name, Qualifications, Employee No.	Date of award of PhD Degree	Major Areas of Specialization (Max. 3 Areas)
ASSOCI	ATE PROFESSORS		
1	Kalpana Chaudhary, Ph. D, Emp no. 16629	19 <sup>th</sup> July 2009	Power Electronics, Electrical Machines and drives, Renewable energy generation
2	Santosh Kumar Singh PhD Emp. No.17446	Date of award: 24th March 2012 Date of PhD defense: 28th November 2011	Power Electronics, Electric Drives, Renewable energy integration
3	Dr. R. K. Singh Ph.D. Emp. No. 17464	12/02/2013	Power Electronics, Energy Storage System and Optimal Bidirectional Battery Chargers, Modelling, simulation, and control of Power Electronics System, Power Electronics for the Hybrid Renewable AC/DC micro-grid, Modeling and control for Point-of-load's, EV/PHEV interface with renewable energy and grid.
4	Dr S. R. Mohanty, PhD (IIT Kharagpur), (Employee No50224)	23/02/2002	Disturbance detection and classification and protection issues in power system and Microgrid, Multi-objective Robust Control and optimization in Microgrid, Wide area Monitoring and control in Smart grid
5	Dr. V. N. Lal Ph.D., Emp. No. 175549	09/09/2015	Power Electronics. Design and Control of Solar PV system, Renewable Energy System,
6	Sandip Ghosh Ph.D. Emp. No 50063	11/11/2010	Control System Engineering
ASSIST	ANT PROFESSORS		
1	Dr. Jeewan Chandra Pandey PhD, Emp. No. 17538	02-02-2018	(i)High Voltage electrical insulation (ii) Nanodielectrics
2	Dr. Manish Kumar Ph.D. Emp. No. 17101		Renewable Energy Technologies Plasma Physics Coherent Radiation Generation, Terahertz Radiation Generation
3	Dr. Shyam Kamal Ph.D. Emp No 50062	14-08-2014	Nonlinear control, Adaptive control, Fault Tolerant Control
4	NK Swami Naidu Ph.D. Emp. No 50209	27/05/2015	Wind Energy Conversion Systems, Battery Energy Storage Systems, Microgrid
5	Ms. Sobhita Meher M. Tech. Emp No 17589		Computer Science
6	Maria Thomas Emp No 50268	01-06-2020	Control theory and applications, sliding mode control, guidance and control of autonomous systems





S. No.	Name, Qualifications, Employee No.	Date of award of PhD Degree	Major Areas of Specialization (Max. 3 Areas)
7	Chinmaya K A Emp No 50257	05/08/2019	Electric Machines & Drives, Power Electronics, Electric Vehicles (EVs).
8	Avirup Maulik Emp No 50258	21-08-2019	Power systems, Distribution system, Microgrid optimization

# Technical and Non-Teaching Staff

S1.	Name	Qualification	Designation, Employee Number	Date of ap	pointment
No.				In IT(BHU)/ (BHU)	In the Department
1	Mr. Sanjeev Kumar Maurya	B.Sc.	Junior Superintendent, 50149 Junior Assistant, 19876	21.07.2017	25.07.2017
2	Mr. Sunil Kumar Sonkar	MBA	Technical Superintendent, 14007	19.02.2015	27.04.2015
3	Mr. A.N.Singh	M.A., B.Sc., CIC		16.06.1988	16.06.1988
4	Mr. R. C. Sharma	B.A.	Technical Superintendent, 14008	26.04.1991	26.04.1991
5	Mr. Radhe Shyam Patel	Intermediate, Polytechnic in EE	Technical Superintendent, 18648	05.08.2008	05.08.2008
6	Mr. B. L. Singh	B.A., Diploma in E.E., DBM	Technical Superintendent, 18657	06.08.2008	06.08.2008
7	Mr. Umesh Mishra	B.Sc.	Senior Technician, 18658	05.08.2008	05.08.2008
8	Mr. Satish Kumar Singh	B.A.	Senior Technician, 18652	06.08.2008	06.08.2008
9	Mr. Dharmendra Kumar Singh	High School+ITI	Senior Technician, 18647	07.08.2008	07.08.2008
10	Mr. Sanjay Kumar Bharti	B.Sc., B.Ed.	Senior Technician, 18659	11.08.2008	11.08.2008
11	Mrs. Ranjana Singh	Postgraduate	Senior Technician, 14740	16.05.1996	13.04.2012
12	Mr. Anjneya Kumar	M.Sc., B.Ed.	Senior Technician 19649	03.08.2012	21.09.2012

### Short-term courses/workshops/seminars/symposia/conferences organised by faculty members

S. No.	Coordinator	Title	Period
1	Dr. R. K. Singh	Data Analytics and Predictive Technology Driven IoT based Smart Grid Infrastructure	March 1-6, 2021
2	Dr. S. K Singh	Transition towards Electric Vehicles and their Charging Ecosystem in India	Jan 11-16, 2021
3	Dr. S. K Singh	Power electronics Challenges and Solutions for the Integration of Electric vehicle Charging network.	March 24-26, 2021
4	Dr. Jeewan Chandra Pandey	Challenges, Opportunities, and Emerging Trend in the Field of High Voltage and Electrical Insulation	01-06 Feb. 2021



# Short-term courses/workshops/seminars/symposia/conferences/training programmes attended by faculty members in academic institutions and public sector undertakings

S. No.	Name of Faculty Member	Title	Period and Venue
Meet	tings		
1	R K Srivastava	Review Meeting with Engineers of DRDO, Pune regarding finalization of CRAS project on Design and Analysis of Linear Induction Motor Drive for EMLS, evaluation of Milestone I & II	03 May 2021 Online mode
2	R K Srivastava	Meeting with Engineers of DRDO, Pune regarding finalization of CRAS project on Design and Analysis of Linear Induction Motor Drive for EMLS, evaluation of Milestone I & II	23 Feb 2021 Period 9 AM to 01 PM Meeting at Rampur Hall, Electrical machines Laboratory, IIT(BHU), Varanasi
3	R K Srivastava	Meeting with Engineers of DRDO, Pune regarding finalization of CRAS project on Design and Analysis of Linear Induction Motor Drive for EMLS, evaluation of Milestone I & II	Online mode 09 June 2020 Period !1:30 AM to 1:30 PM
4	R K Srivastava	MTech. dissertation evaluation, Dept of Electrical Engineering, College of Engineering, Pune	3 Oct 2020 12 noon to 3 PM
5	R K Srivastava	Ph.D. Viva Voce, IIT Kharagpur Estimation of End Effects in Linear Induction Machines using the Peak-to-Peak Ripple in Propulsive Force	08 Feb 2021 12 noon to 2PM Online mode
6	R K Srivastava	Ph.D. Viva Voce, IIT Dhanbad Application of contact-less induction heating in curing processes	Jan 2020
7	R K Srivastava	Ph.D. Viva Voce examination, IIT, Hyderabad, Energy Efficient Drive Configurations for Electric Vehicle Propulsion	20 July 2020 11:30 onward
8	R K Srivastava	Ph.D Viva examination of Mr Shailendra Kumar Supervised by me	26 Sep 5 PM
9	R K Srivastava (TCP member, TENSYMP20, Bangladesh )	Session chair in the First R10 Flagship virtual conference IEEE TENSYMP20, Online mode, IEEE, Bangladesh	06 June 2020 14:45 to 16:45
10	Dr. Santosh K Singh	Data Analytics and Predictive Technology driven IoT based Smart Grid Infrastructure.	March 1-6, 2021 Virtual mode
11	Dr. Chinmaya K A	Session Chair- 2nd Electric Power and Renewable Conference (EPREC-2021)	NIT Jamshedpur

# Special lectures delivered by faculty members in other institutions

S. No.	Name of faculty Member	Topic of Lecture	Institution	Date
1	R. K .Singh	Power and energy management for renewable power application	NIT Jamshedpur	29 Nov 2020
2	R. K .Singh	Smart and flexible microgrid- Power electronics perspective	NIT Delhi	21 Oct 2020
3	R. K .Singh	Power Electronics for Renewables and EVs	Gujrat Technical University	11/12/2020
4	R. K .Singh	Energy Storage System in Modern Power Electronics	Govt Engg College Baruch	11/12/2020





S. No.	Name of faculty Member	Topic of Lecture	Institution	Date
5	M. K. Verma	Voltage Stability: Present Scenario and Future Challenges	GEC, Jagdalpur	13/9/2020
6	M. K. Verma	Secure Operation of Power System in Smart Grid Architecture	K. K. Wagh Institute of Engineering Education & Research, Nashik	16/9/2020
7	M. K. Verma	Voltage Stability Monitoring and Control in Smart Grid Architecture	MNNIT, Allahabad	15/10/2020
8	M. K. Verma	VoltageStabilityMonitoringandControlinSmartGridArchitecturethroughSynchrophasor Measurements	NHCE, Bangalore	7/12/2020
9	M. K. Verma	Voltage Stability Monitoring and Control in Smart Grid Architecture through Optimally Placed PMUs	REC, Ambedkar Nagar	18/12/2020
10	R. K. Pandey	Global/Indian Status on Energy Storage Technologies	IIT Delhi	07/12/2020
11	R. K. Pandey	Smart Grid Architecture with Smart Energy Market Management for Economic Growth of Power and Industry Sector of India	Energy Technology forum 2020, New Delhi	05/12/2020
12	R. K. Pandey	Reliable Grid Operation with Renewable Energy Integration Technology: Intelligent Solar Inverters and FACTS Controllers	MMMUT, Gorakhpur	28/09/2020
13	R. K. Pandey	RenewableEnergyGridIntegrationTechnologyandSmartEnergyManagementKanagement	MNNIT Allahabad	16/09/2020
14	R. K. Pandey	Integrated Power Control: Intelligent Architecture in Renewable Era	GLA University Mathura	14/10/2020
15	R. K. Pandey	Smart Inverters for Grid Integration of Renewable Energy	IEEE UP section Webinar	19/07/2020
16	R. K. Pandey	Renewable Energy Grid Integration Technology and Smart Energy Market Management	NPTI Guwahati	30/07/2020
17	R K Srivastava	Linear Induction Motors	Department of Electrical Engineering Engineering College Jhalawar, Rajasthan	04 Jan 2021
18	S. R. Mohanty	Data Analytics in Wide Area Power System	Smart Technologies and Communication Protocols in Power System (STCPPS-2020 By Department of Electrical Engineering, Rajkiya Engineering College Sonbhadra (UP)	25-12-2020
19	S. R. Mohanty	Application of Optimization Technique in Power network	FDP on Power System Optimization and control Rajkiya Engineering College Ambedkar Nagar	18-12-2020





S. No.	Name of faculty Member	Topic of Lecture	Institution	Date
20	S. R. Mohanty	Wide area Monitoring and Protection with integration Of Renewables	"Power electronics and renewable energy integration in smartgrid, electric vehicle (Pereisgev at NIT Rourkela.	25.09.2020
21	S. R. Mohanty	Protection and Control challenges in Microgrid and possible mitigation	and Control the five-days online short-term course on Microgrid and "advancements in optimization of power generation, drives and control system, at the Department of Electrical Engineering, NIT Hamirpur, Himachal Pradesh, India	
22	Dr. S. K Singh	Silicon Carbide converters reshaping Power electronics landscape ; Recent trends in Hybrid converters	LNJP Institute of Technology, Chhapra, India;	Sep 2020
23	V. N. Lal	PSO Based MPPT Controller for Photovoltaic (PV) System	MMMUT, Gorakhpur	02/10/2020
24	V. N. Lal	PSO Based MPPT Controller for Photovoltaic (PV) Solar System	Rajkiya Engineering College Sonbhadra	25/09/2020
25	Dr. Jeewan Chandra Pandey	Role of Space Charge in Degradation of Polymers	I.I.T. Kanpur	5 <sup>th</sup> March 2021
26	N K Swami Naidu	Application of Power ElectronicsTirumala Engineering College, Narsaraoin Renewable EnergyPet, Andhra Pradesh		03/06/2020
27	N K Swami Naidu	Application of Power Electronics NIT Patna, Bihar in Renewable Energy		08/07/2020
28	N K Swami Naidu	Doubly Fed Induction Generator for Wind Energy Conversion System	The National Institute of Engineering, Mysore	09/07/2020
29	N K Swami Naidu	Application of Power Electronics in Renewable Energy	on of Power Electronics Rajeev Gandhi Memorial College of Pable Energy Engineering and Technology, Nandyal	
30	N K Swami Naidu	Research Trends in Power Electronics	G. H. Raisoni College of Engineering, Nagpur	30/09/2020
31	N K Swami Naidu	Application of Power Electronics in Renewable Energy	Government College of Engineering, Jagadalpur	11/09/2020
32	N K Swami Naidu	Doubly Fed Induction Generator for Wind Energy Conversion System	VSSUT, Burla	12/09/2020
33	N K Swami Naidu	Application of Power Electronics in Renewable Energy	Vardhman College of Engineering, Hyderabad	17/10/2020
34	N K Swami Naidu	Doubly Fed Induction Generator for Wind Energy Conversion System	BVRIT, Hyderabad	24/11/2020
35	N K Swami Naidu	Introduction, major Components & Types of Electric Drives in Electric vehicles	Pragathi Engineering College, Kakinada	30/11/2020
36	N K Swami Naidu	Doubly Fed Induction Generator for Wind Energy Conversion System	Anurag University, Hyderabad	04/01/2021
37	N K Swami Naidu	Doubly Fed Induction Generator for Wind Energy Conversion System	Rajasthan Technical University, Kota	08/02/2021





S. No.	Name of faculty Member	ty Topic of Lecture Institution		Date
38	N K Swami Naidu	Experimental Implementation of IEEE Vizag Bay Section Doubly Fed Induction Generator for Wind Energy Conversion System		27/03/2021
39	Dr. Sandip Ghosh	Multivariable PID Controller Design in robust control framework using LMIS	Shree Ramchandra College of Engineering, Pune	12/11/2020
40	Dr. Sandip Ghosh	Robust Output Feedback Controller Design: LMI Approach	NIT Silchar	17/07/2020
41	Dr. Sandip Ghosh	Robust output feedback controller design using LMIs	Vardhaman College of Engineering, Hyderabad	28/10/2020
42	Dr. Sandip Ghosh	Multivariable output feedback controller design	Dumka Engineering College, Jharkhand	09/07/2020
43	Dr. Sandip Ghosh	Robust Output Feedback Controller Design using Quadratic Analysis Methods	Robust Output Feedback MMMUT Gorakhpur Controller Design using Ouadratic Analysis Methods	
44	Dr. Sandip Ghosh	Robust Output Feedback Controller Design Using LMIs	VSSUT Burla, Odisha	20/12/2020
45	Maria Thomas	Robust Control Design for Posture Stabilization of a Unicycle Robot	STTP on Fractional Order Robust Control System Design (Series-III), Vardhaman College of Engineering Hyderabad	16-03-2021
46	Maria Thomas	Robust Control Design for Posture Stabilization of a Unicycle Robot	Recent Trends in Control Systems Engineering-2021, NIT Patna	01-06-2021
47	Dr. Chinmaya K A	EV Chargers: Methodologies, Design and Control	LNCT group of institutions	20 <sup>th</sup> May 2021
48	Avirup Maulik	Microgrids - Modelling & Operations	G.L.Bajaj Institute of Technology & Management, Greater Noida	08.01.2021
49	R. Mahanty	Quasi passive filter for harmonic filtering and reactive power compensation	MNIT Jaipur	21-25 December 2020
50	R. Mahanty	Harmonic filtering and reactive power compensation	NIT Patna	8-12 February 2021
51	R. Mahanty	Large value AC capacitor for LNCT Bhopal harmonic filtering and reactive power compensation		15-28 March 2021
52	R. Mahanty	Active power filter for power quality improvement	KNIT Sultanpur	14-18 June 2021
53	Dr. Shyam Kamal	A Transition from PID Controllers to Sliding Modes	Workshop on Control System Design- Classical and Modern with Hands-on College of Engineering Pune	26 March 2021
54	Dr. Shyam Kamal	A Transition from PID Controllers to Sliding Modes	RTROEEE 2021, NIT Patna	19 March 2021
55	Dr. Shyam Kamal	Feedback Linearization: A Model- Simplifying Device for Robotic Control Design	Vardhaman College of Engineering- Hyderabad	15 March 2021
56	Dr. Shyam Kamal	A Transition from PID Controllers to Sliding Modes	SDIT, Dausa & RTU, Kota	22 Feb. 2021





S. No.	Name of faculty Member	Topic of Lecture	Institution	Date
57	Dr. Shyam Kamal	A Transition from PID Controllers to Sliding Modes	RTU Kota & MIT Kota	4 Feb. 2021
58	Dr. Shyam Kamal	Free-willArbitraryTimeDepartment of Electronics &Algorithm:TheoryandTelecommunication Engineering SApplicationsPune		5 Dec. 2020
59	Dr. Shyam Kamal	Free-willArbitraryTimeVardhaman College of Engineering-Algorithm:TheoryandHyderabadApplicationsImage: Construction of the second sec		23 Nov. 2020
60	Dr. Shyam Kamal	A Transition from PID to Fractional PID	Department of Electrical and Electronics Engineering Vardhaman College of Engineering Shamshabad, Hyderabad	26 Oct 2020
61	Dr. Shyam kamal	A Brief Overview on Fractional Order Systems	Department of Electrical and Electronics Engineering Vardhaman College of Engineering Shamshabad, Hyderabad	26 oct 2020
62	Dr. Shyam Kamal	A Brief Overview on Fractional Order Systems	MMMUT Gorakhpur, India	24 Oct. 2020
63	Dr. Shyam Kamal	Controlling a Robot : A Newton's Law Based Approach	Gurukula Kangri Vishwavidhyalaya, Haridwar, India	21 Oct 2020
64	Dr. Shyam kamal	A Transition from PID Controllers to Sliding Modes	MMMUT Gorakhpur, India	18 Oct. 2020
65	Dr. Shyam kamal	A Transition from PID Controllers to Sliding Modes	Indian Institute of Information Technology, Nagpur (IIITN)	24 Sept. 2020
66	Dr. Shyam kamal	A Transition to Advanced System Theory	(RRTCIA)-2020 NIT Silchar	5 Sept. 2020
67	Dr. Shyam Kamal	A Transition from PID Controllers to Sliding Modes	NIT Warangal	16 Aug. 2020
68	Dr. Shyam kamal	A Brief Overview on Fractional Order Systems	NIT Warangal	16 Aug. 2020
69	Dr. Shyam kamal	Application of Free-will Arbitrary Time Stability and Stabilization in Robotics	NIT Silchar	19 July 2020

# Honours and awards

S. No.	Name of Faculty Member	Details of Award	
1	Kalpana Chaudhary	SERB-POWER Fellowship Awarded by Science and Engineering Research Board	
2	Dr. Shyam kamal	Recipient of Honourable Mention Award (Team: Yogita Choudhary, Nidhi Malhotra, Pratyush Kumar Sahoo and Shyam Kamal) at the Student Design Competition in Advanced and Intelligent Mechatronics (AIM), 2020 for the development of "Semi-Autonomous Stair Climbing Wheelchair", July 2020 in Boston, MA, USA.	

# Fellowships of academic and professional societies

S. No.	Name of Faculty Member	Details of Fellowship
1	R. K. Misra	IE(I)



S. No.	Name of Faculty Member	Details of Fellowship
2	Dr. Shyam Kamal	INAE Young Associate

# Books, monographs authored/co-authored

S. No.	Name of Author/ Co- Author	Title	Publisher
1	V. H. Saran, Rakesh Kumar Mishra	Advances in Systems Engineering Subtitle: Select Proceedings of NSC 2019	Springer Singapore
2	D. P. Kothari, I. J. Nagrath, R. K. Saket	Modern Power System Analysis, 5th Edition 2021	McGrew Hill, New Delhi
3	R. K. Pandey	Innovations in Electrical and Electronic Engineering	Proceedings of ICEEE 2020, Springer, 2020, DOI, https://doi.org/10.1007/978-981-15- 4692-1, Editors: Margarita N. Favorskaya, Saad Mekhilef, Rajendra Kumar Pandey, Nitin Singh
4	R. K. Pandey	Innovations in Electrical and Electronic Engineering	Proceedings of ICEEE 2021, Springer, 2021, https://www.springer.com/gp/ book/9789811607486 Editors: Mekhilef, S., Favorskaya, M., Pandey, R.K., Shaw, R.N. (Eds.)
5	R. K. Singh	Book: Microgrid for Rural Areas: Research and Case Studies Chapter: Extendable Multiple-Outputs Hybrid Converter for AC/DC Microgrid	Institution of Engineers, UK
6	R. K. Singh	Book: Converter Classification, Analysis and Control issues with EV Chapter: Converter Classification, Analysis and Control issues with EV	Institution of Engineers, UK

# Editorial boards of journals

S. No.	Name of Faculty Mem- ber	Position (Editor/ member)	Name of Journal
1	R. K. Saket	Associate Editor	(1) IEEE Access (WoS & SCIE)
			(2) IET Renewable Power Generation (WoS & SCIE)
			(3) Journal of Electrical Systems (Scopus)
			(4) ETASR (WoS & ESCI)
2	R. K. Pandey	Editorial Board Member	CSEE Journal of Power and Energy Systems

# 3. Design and Development Activities

### New facilities added

S. No.	Details (Infrastructure, Equipments, etc.)	Value (in Lakhs of Rupees)
1	Research area of Electrical machine and drives lab (Civil work)	11.85 lakhs (sanctioned)
2	dSPACE Microlab box	15 Lacs
3	Battery Emulator	10 Lacs





### **Patents filed**

S. No.	Name of Faculty Member	Title of Patent		
1	S. P. Singh	Systems and methods for energy management and voltage control in grid- connected smart community energy resources center		
2	R. K. Misra	A system and method for inrush and fault detection for differential protection of transformer		
3	R. K. Singh	Adaptive Optimal Power Management Technique for Renewable Based Mix Energy System		

# 4. Research and Consultancy

# Sponsored research projects

S. No.	Title	Period	Funding Agency	Amount (in lakhs of Rs.)	Co- ordinator
1	Construction of Non monotonic Lyapunov Function for the Dynamical Systems governed by Differential Inclusions: Project's reference no. MTR/2018/000799	2019-2021 (3 years)	Mathematical Research Impact Centric Support (MATRICS) to the Science and Engineering Research Board (SERB), india	6 Lakhs	Shyam Kamal
2	Output Feedback Controller Design for Linear Parameter Varying Systems	17/Jul/19- 16/Jul/22	SERB (Core Research Grant)	57.32 Lakh	Dr. Sandip Ghosh
3	Development of a solar standalone derive system for electric boats	03/2021- 03/2022	Ornate Agencies Private Limited	5.0	Self
4	Prospects of power converters for Integration of Electric vehicle charging stations with the existing Electric distribution system in India	2019 to 2021	MHRD-SPARC	49.78	Dr. S K Singh (PI)
5	Virtual Synchronous Generator for Microgrid Applications	19 <sup>th</sup> March 2019 to 19 <sup>th</sup> March 2022	SERB	45.54	N Krishna Swami Naidu
6	Mix-Energy-Source Electric Vehicle Charging System Design and its Impact on Indian Smart-distribution-grid	July 2018- July 2021	DST India	90	R. K. Singh
7	Prototype development of Fuel Cell and Photovoltaic Based Innovative Hybrid DC Power Pack for Remote Applications	25.03.2021- 25.03.2024	Science and Engineering Research Board	38.10 Lakh	Dr. Kalpana Chaudhary
8	Development of Cyber Resilient Protection Scheme For AC Microgrid	April 2021-April 2024	DST Core Grant	47	Soumya R Mohanty





### Industrial consultancy projects

S. No.	Name of Faculty Member	Title	Industry	Amount (in lakhs of Rs.)
1	R K Srivastava; O.P. Singh (ME); S. Bhattacharyya (ECE)	Design and Analysis of Linear Induction Motor Drive for EMLS	DRDO, Pune	30.00 (2020-22)

### **Research Publications**

### **Refereed International Journals**

- Singh, S., Veda, S., Singh, S. P., Jain, R., & Baggu, M. M. (2021) Event-Driven Predictive Approach for Real-Time Volt/VAR control with CVR in solar PV rich Active Distribution Network. IEEE Transactions on Power Systems. (Early access).
- 2. Pamshetti, V. B., Singh, S., Thakur, A. K., & Singh, S. P. (2021). Multistage Coordination Volt/VAR Control with CVR in Active Distribution Network in Presence of Inverter-Based DG Units and Soft Open Points. IEEE Transactions on Industry Applications, 57(3), 2035-2047.
- 3. Shukla, D., & Singh, S. P. (2020). Aggregated Effect of Active Distribution System on Available Transfer Capability Using Multi-Agent System Based ITD Framework. IEEE Systems Journal,15(1),1401-1412.
- 4. Thakur, A. K., Singh, S. P., Shukla, D., & Singh, S. K. (2020). Passive method for islanding detection using variational mode decomposition. IET Renewable Power Generation, 14(18), 3782-3791.
- 5. Pamshetti, V. B., & Singh, S. P. (2020). Coordinated Allocation of BESS and SOP in High PV Penetrated Distribution Network Incorporating DR and CVR Schemes. IEEE Systems Journal. (Early access).
- 6. Shukla, D., & Singh, S. P. (2020). Real-time estimation of ATC using PMU data and ANN. IET Generation, Transmission & Distribution, 14(17), 3604-3616.
- 7. Kumar, A., Das, S., Misra, R. K., & Singh, D. (2021). A υ-constrained matrix adaptation evolution strategy with broyden-based mutation for constrained optimization. IEEE Transactions on Cybernetics.
- 8. Jha, B. K., Singh, A., Kumar, A., Misra, R. K., & Singh, D. (2021). Phase unbalance and PAR constrained optimal active and reactive power scheduling of Virtual Power Plants (VPPs). International Journal of Electrical Power & Energy Systems, 125, 106443.
- 9. Sachan, A., Kamal, S., Yu, X., Singh, D., & Xiong, X. (2020). Terminal-Time Synchronization of Multiple Vehicles Under Discrete-Time Communication Networks With Directed Switching Topologies. IEEE TRANSACTIONS ON CIRCUITS AND SYSTEMS II-EXPRESS BRIEFS, 67(11), 2547-2551.
- 10. Routray, A., Singh, R. K., & Mahanty, R. (2021). Modified grey wolf optimisation based reduced device count 17-level hybrid multilevel inverter. IET Power Electronics, 14(8), 1444-1456.
- 11. Samal, S. K., Kumar, V., Singh, R., & Mahanty, R. (2020). Wide Operating Range Minimum Phase Interleaved Hybrid Converter with Reduced Leakage Current. IEEE Transactions on Industry Applications.
- 12. Motwani, J. K., Routray, A., Singh, R. K., & Mahanty, R. (2020). Single DC source diode-assisted hybrid multilevel inverter using a reduced number of active and passive components. IET Power Electronics, 13(18), 4304-4314.
- 13. Samal, S. K., Singh, R. K., & Mahanty, R. (2020). Leakage current minimisation in transformer-less wide operating range interleaved minimum phase hybrid converter with improved AC output quality. IET Power Electronics, 13(18), 4214-4225.
- 14. Ahmad, A., Shiluveru, K., & Singh, R. K. (2020). Switched capacitor-based continuous input current high step-up impedance source DC–DC converter. IET Power Electronics, 13(18), 4204-4213.





- 15. Bussa, V. K., Aman, A., & Singh, R. K. (2020). A Minimum-Phase Dual Output Hybrid Converter for Standalone Hybrid AC/DC Supply Systems. IEEE Transactions on Industry Applications, 57(1), 1044-1056.
- 16. Kumar, P., Singh, R. K., & Mahanty, R. (2020). Performance of MPPT-Based Minimum Phase Bipolar Converter for Photovoltaic Systems. IEEE Transactions on Power Electronics, 36(5), 5594-5609.
- 17. Khandelwal, Y., Routray, A., Singh, R. K., & Mahanty, R. (2020). Reduced voltage stress hybrid multilevel inverter using optimised predictive control. IET Power Electronics, 13(14), 2983-2991.
- 18. Sonkar, S. P., Lal, V. N., & Singh, R. K. (2020). Three-phase quasi-Z source inverters with regulated multiple AC outputs for microgrid applications and three-phase residential load. IET Power Electronics, 13(11), 2222-2235.
- Meher, S. R., Banerjee, S., Vankayalapati, B. T., & Singh, R. K. (2020). A Reconfigurable On-Board Power Converter for Electric Vehicle With Reduced Switch Count. IEEE Transactions on Vehicular Technology, 69(4), 3760-3772.
- 20. Kumar, S., Sarita, K., Saket, R. K., Dheer, D. K., Bansal, R. C., & Mekhilef, S. (2021). Reliability assessment for DFIG-based WECS considering the impact of 3-phase fault and lightning impulse voltage. International Transactions on Electrical Energy Systems, 12952.
- 21. Nishant Jha, Deepak Prashar, Mamoon Rashid, Sachin Kumar Gupta, R.K. Saket (2021), "Electricity Load Forecasting and Feature Extraction in Smart Grids Using Neural Networks", Computers & Electrical Engineering (WoS & SCIE), Elsevier.
- 22. Sharma, S., Varshney, L., Elavarasan, R. M., Vardhan, A. S. S., Vardhan, A. S. S., Saket, R. K., ... & Hossain, E. (2021). Performance Enhancement of PV System Configurations Under Partial Shading Conditions Using MS Method. IEEE Access, 9, 56630-56644.
- 23. Kumari Sarita, Sachin Kumar, R.K. Saket (2021), "Open-Circuit Fault Diagnosis of Multilevel Converter using Entropy Features-based SVM Technique along with Two-Samples based Detection Algorithm", Computers & Electrical Engineering (WoS & SCIE), Elsevier.
- 24. Kumar, S., Saket, R. K., Dheer, D. K., Sanjeevikumar, P., Holm-Nielsen, J. B., & Blaabjerg, F. (2021). Layout optimisation algorithms and reliability assessment of wind farm for microgrid integration: A comprehensive review. IET Renewable Power Generation, Early access, 2021.
- 25. Gupta, T. D., Chaudhary, K., Elavarasan, R. M., Saket, R. K., Khan, I., & Hossain, E. (2021). Design modification in single-tooth winding double-stator switched reluctance motor for torque ripple mitigation. IEEE Access, 9, 19078-19096.
- Kumar, V., Ghosh, S., Naidu, N. S., Kamal, S., Saket, R. K., & Nagar, S. K. (2021). A current sensor based adaptive step-size MPPT with SEPIC converter for photovoltaic systems. IET Renewable Power Generation, 15(5), 1085-1099.
- 27. Kumar, V., Ghosh, S., Naidu, N. S., Kamal, S., Saket, R. K., & Nagar, S. K. (2021). Load voltage-based MPPT technique for standalone PV systems using adaptive step. International Journal of Electrical Power & Energy Systems, 128, 106732.
- 28. Varshney, L., Vardhan, A. S. S., Vardhan, A. S. S., Kumar, S., Saket, R. K., & Sanjeevikumar, P. (2021). Performance characteristics and reliability assessment of self-excited induction generator for wind power generation. IET Renewable Power Generation. Early access, 2021.
- 29. Kumar, R. R., Chetri, C., Devi, P., Saket, R. K., Blaabjerg, F., Sanjeevikumar, P., & Holm-Nielsen, J. B. (2020). Design and Characteristic Investigation of Novel Dual-Stator V-Shaped Magnetic Pole Six-Phase Permanent Magnet Synchronous Generator for Wind Power Application. Electric Power Components and Systems, 1-16.
- 30. Mahto, S. C., Elavarasan, R. M., Ghosh, S., Saket, R. K., Hossain, E., & Nagar, S. K. (2020). Improved Stability





Criteria for Time-Varying Delay System Using Second and First Order Polynomials. IEEE Access, 8, 210961-210969.

- 31. Bharti, O. P., Sarita, K., Vardhan, A. S. S., Vardhan, A. S. S., & Saket, R. K. (2021). Controller design for DFIGbased WT using gravitational search algorithm for wind power generation. IET Renewable Power Generation, Early access, 2021.
- 32. Sharma, V., Walde, P., Saket, R. K., & Mekhilef, S. (2020). Optimization of distributed generation size based on line sensitivity using transmission congestion cost. International Transactions on Electrical Energy Systems, e12695.
- 33. Kumar, R. R., Singh, S. K., Srivastava, R. K., Vardhan, A. S. S., Elavarasan, R. M., Saket, R. K., & Hossain, E. (2020). Modeling of airgap fluxes and performance analysis of five phase permanent magnet synchronous generator for wind power application. IEEE Access, 8, 195472-195486.
- 34. Sarita, K., Kumar, S., Vardhan, A. S. S., Elavarasan, R. M., Saket, R. K., Shafiullah, G. M., & Hossain, E. (2020). Power enhancement with grid stabilization of renewable energy-based generation system using UPQC-FLC-EVA technique. IEEE Access, 8, 207443-207464.
- Kumar, S., Sarita, K., Vardhan, A. S. S., Elavarasan, R. M., Saket, R. K., & Das, N. (2020). Reliability assessment of wind-solar PV integrated distribution system using electrical loss minimization technique. Energies, 13(21), 5631.
- 36. Kumar, R. R., Devi, P., Chetri, C., Vardhan, A. S. S., Elavarasan, R. M., Mihet-Popa, L., & Saket, R. K. (2020). Design and characteristics investigation of novel dual stator pseudo-pole five-phase permanent magnet synchronous generator for wind power application. IEEE Access, 8, 175788-175804.
- 37. Mahto, S. C., Ghosh, S., Saket, R. K., & Nagar, S. K. (2020). Stability analysis of delayed neural network using new delay-product based functionals. Neurocomputing, 417, 106-113.
- 38. Kumar, S., Saket, R. K., Dheer, D. K., Holm-Nielsen, J., & Sanjeevikumar, P. (2020). Reliability enhancement of electrical power system including impacts of renewable energy sources: a comprehensive review. IET Generation, Transmission & Distribution, 14(10), 1799-1815.
- 39. Kumar, R. R., Singh, S. K., Srivastava, R. K., & Saket, R. K. (2020). Dynamic reluctance air gap modeling and experimental evaluation of electromagnetic characteristics of five-phase permanent magnet synchronous generator for wind power application. Ain Shams Engineering Journal, 11(2), 377-387.
- 40. Sahu, P., & Verma, M. K. (2020). Online monitoring of voltage stability margin using PMU measurements. *International Journal of Electrical and Computer Engineering*, 10(2), 1156-1168.
- 41. Jain, A., & Verma, M. K. (2020). A Communication-assisted Scheme in Radial Distribution Systems Using Phasor Measurement Units. IETE Technical Review, 37(5), 489-503.
- 42. Bhuyan, D., Pandey, R. K., Ojha, S. N., Sastry, G. V. S., Choudhary, H., Sharma, A., & Manna, R. (2021). Recovery of Ductility in Ultrafine-Grained Low Carbon Steel Processed by Electropulsing. Metallurgical and Materials Transactions A, 52(7), 2992-3006.
- 43. Choudhary, P., & Srivastava, R. K. (2020). Techno-economic case study: Bio-fixation of industrial emissions at an Indian oil and gas plant. Journal of Cleaner Production, 266, 121820.
- 44. Gupta, S. K., & Srivastava, R. K. (2020). Performance Comparison of AFDS PMSG During Voltage Regulation by Mechanical Field-weakening in Extended-speed-range. Recent Patents on Engineering, 14(4), 643-654.
- 45. Gupta, T. D., Chaudhary, K., Elavarasan, R. M., Saket, R. K., Khan, I., & Hossain, E. (2021). Design modification in single-tooth winding double-stator switched reluctance motor for torque ripple mitigation. IEEE Access, 9, 19078-19096.





- 46. Gupta, T. D., & Chaudhary, K. (2021). Finite Element Method Based Design and Analysis of a Low Torque Ripple Double-Stator Switched Reluctance Motor. Progress In Electromagnetics Research C, 111, 191-206.
- 47. Singh, K. A., & Chaudhary, K. (2021). Design and development of a new three-phase AC-DC single-stage wind energy conversion system. IET Power Electronics, 14(2), 302-312.
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- 54. Avneet Kumar, Yi Wang, Xuewei Pan, M. Raghuram, Santosh Kumar Singh, Xiaogang Xiong, Abhishek K. Tripathi (2020). Switched-LC Based High Gain Converter with Lower Component Count. IEEE Transactions on Industry Applications, 56(3), 2816-2827.
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- 58. Mahto, S. C., Ghosh, S., Saket, R. K., & Nagar, S. K. (2020). Stability analysis of delayed neural network using new delay-product based functionals. Neurocomputing, 417, 106-113.
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- 62. Soni S. K., Kamal S. and Ghosh S. (2020) Delayed output feedback sliding mode control for uncertain nonlinear systems. IET Control Theory & Applications. 14(15): 2106-2115.





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- 66. Thite, M., Maulik, A., & Das, D. (2021). Performance improvement of an islanded AC microgrid in presence of Plug-in Hybrid Electric vehicles, load and renewable generation uncertainties. *Sustainable Energy, Grids and Networks*, 26, 100469.
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- Shyam Kamal, R. K. Sharma, D. Thach, M. S. Harikrisnan and B. Bandyopadhyay (2021) 'Sliding Mode Control of Uncertain Fractional Order Systems: A Reaching Phase Free Approach', Asian Journal of Control, 23(1),199-208,
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- 74. X. Xiong, Shyam Kamal, Shanhai Jin, and Zhichao Liu , (2020) 'Discrete-Time Super- Twisting Observer with Implicit Euler Method', IEEE Transactions on Circuits and Systems II: Express Briefs, Early Excess,
- 75. Ankit Sachan, Shyam Kamal, S. Olaru, Devender Singh, and Xiangong Xiong, (2020) 'Discrete-Time [K;KL] Sector based Hands-off Control for Nonlinear System', International Journal of Robust and Nonlinear Control, 30(6), 2443-2460.

### **Refereed National Journal**

### **Proceedings of International Conferences**

- Shiluveru, Kharan, Akash Singh, and Rajeev Kumar Singh. "Transformerless Common Ground Quasi-Z-Source Three Phase Inverter for PV Applications." In IECON 2020 The 46th Annual Conference of the IEEE Industrial Electronics Society, pp. 1935-1940. IEEE, 2020.
- Jena, Priyatosh, and Rajeev Kumar Singh. "Mix Energy Source Unified Loop based Dual Active Bridge for Electric Vehicle." In IECON 2020 The 46th Annual Conference of the IEEE Industrial Electronics Society, pp. 2584-2589. IEEE, 2020.
- 3. Motwani, Jayesh Kumar, Abhinandan Routray, Nimish Kumar Chaudhari, Rajeev Kumar Singh, and Ranjit





Mahanty. "Optimized Predictive Control of Hybrid Multilevel PV Inverter with Reduced Leakage Current." In 2020 IEEE Energy Conversion Congress and Exposition (ECCE), pp. 328-333. IEEE, 2020.

- 4. Sonkar, Shri Prakash, V. N. Lal, and R. K. Singh. "Three-Phase Hybrid Multi-Output Converter with Single DC and Multi AC Outputs for Hybrid Microgrid Application." In 2020 IEEE Energy Conversion Congress and Exposition (ECCE), pp. 1938-1944. IEEE, 2020.
- 5. Routray, Abhinandan, Shri Prakash Sonkar, Rajeev Kumar Singh, and Ranjit Mahanty. "Scalable Thirteen-Level Hybrid Multilevel Inverter Using Reduced Components." In 2020 IEEE Energy Conversion Congress and Exposition (ECCE), pp. 1822-1827. IEEE, 2020.
- 6. Karan Pande, Akshay Kumar Rathore, Rajeev Kumar Singh, Santanu Mishra and Jose Rodriguez, "Design and Development of Bridgeless Buck-Boost Derived PFC Converter for On-Board Charging Application" accepted for publication in IEEE ECCE, Detroit, USA Oct. 11-15, 2020.
- Pawan Kumar, Rajeev Kumar Singh, and R.Mahanty, "Performance Analyses of a Proposed Minimum Phase Bipolar Converter for Solar Photovoltaic Applications" accepted for publication in IET PEMD, Nottingham, UK, 21 - 23 April 2020.
- 8. Abhinandan Routray, Akash Singh, Kharan Shiluveru, Rajeev Kumar Singh, and R. Mahanty, "Reduced voltage stress extendable seventeen-level multilevel inverter using single voltage source" accepted for publication in IET PEMD, Nottingham, UK, 21 23 April 2020.
- 9. M. Hamdy, M.A. Attia, A.Y. Abdelaziz, S. Kumar, K. Sarita, R.K. Saket (2021), Performance Enhancement of STATCOM Integrated Wind Farm for Harmonics Mitigation Using Optimization Techniques, ICT Analysis and Applications, Springer NATURE, pp: 507-516, 2021.
- R. K. Pandey and B. U. Kumar, "Performance Analysis of Grid Connected Solar Photovoltaic System Under Network Faults," 2020 IEEE 7th Uttar Pradesh Section International Conference on Electrical, Electronics and Computer Engineering (UPCON), 2020, pp. 1-6.
- R. R. Kumar, A. Saxena, A. Kumari and R. K. Srivastava, "Design and Thermal Investigation of a Dual Rotor De-Coupled Stator Multi-phase Permanent Magnet Synchronous Generator for Wind power Application," 2020 IEEE International Conference on Power Electronics, Drives and Energy Systems (PEDES), 2020, pp. 1-6.
- P. Kumar, L. B. Xaxa and R. K. Srivastava, "Design Modifications for Cogging Force Reduction in Linear Permanent Magnet Machines," 2020 IEEE International Conference on Power and Energy (PECon), 2020, pp. 392-397
- 13. Mukesh Kumar, Kunal Kumar and Kalpana Chaudhary, 2020. Modified Non Isolated Bidirectional DC-DC Converter for Regenerative Braking For Electric Vehicle Application", Symposium on Power Electronics and Renewable Energy Systems Control (PERESC-2020), 4th -5th December 2020, IIIT Bhubaneswar.
- 14. Kalpana Chaudhary, Kumar Abhishek Singh, Sayantan Roy Chowdhury, Mukesh Kumar, 2021. A Moodified Compact Multiple Output Synchronous Buck Converter for Vehicular Application", International Conference on Nascent Technologies in Engineering", 15th -16th January 2021, Fr.CRIT, Vashi, Navi Mumbai.
- 15. Avneet Kumar, Yi Wang, Xiaogang Xiong, Xuewei Pan, Santosh Kumar Singh, 2020. A Switched Capacitor Based DC-DC Converter with Common Grounding for Fuel Cell Vehicle, 46th Annual conference of the IEEE Industrial Electronic Society (IECON 2020), Singapore
- 16. Tannistha Malakar, Vulavakayala Siva and Santosh K Singh, 2020. FPGA Based Modulation Technique for Five-to-Three-Phase Ultra Sparse Matrix Converter, 3rd International conference on VLSI, Communication and Signal processing (VCAS 2020), MNNIT Allahabad, India
- 17. M. K. Mishra and V. N. Lal, "Modified Proportional Resonant Current Controller with MPPT for Three Phase





Single Stage Grid Integrated PV System," 2020 IEEE Applied Power Electronics Conference and Exposition (APEC), 2020, pp. 3293-3297.

- 18. A. Singh, A. Maulik and D. Das, "Stochastic impact assessment of PHEV charger levels in a microgrid," 2021 Innovations in Energy Management and Renewable Resources(52042), 2021, pp 1-6
- 19. Yogita Choudhary, Nidhi Malhotra, Pratyush Kumar Sahoo and Shyam Kamal (2021), "Data-Driven Modeling of a Track-based Stair-Climbing Wheelchair", 2021 IEEE/ASME International Conference on Advanced Intelligent Mechatronics (AIM)
- 20. Yogita Choudhary, Bhawana Singh, Shyam kamal and Sandip Ghosh (2021), "Arbitrary Time Attitude Stabilization and Tracking of Rigid Body on SO(3)" 2021 29th Mediterranean Conference on Control and Automation (MED)

### **Proceedings of National Conferences**

- 1. E. Purwar and S. P. Singh, (2020) "A Novel Online Protection Scheme based on Hybrid Grading technique for variable Active Distribution Systems," 2020 21st National Power Systems Conference (NPSC), 2020, pp. 1-6
- D. Shukla, S. Jaiswal, S. P. Singh, Vijay Babu Pamshetti, (2020) near real time forecasting in power system. 21st National Power System Conference (NPSC 2020) Dec.17-Dec.19, 2020, Indian Institute of Technology, Gandhinagar, India.

### 6. Other activities

### International collaboration/achievements by the Department/School

- 1. Horizon 2020 Member Expert Review Committee India-EU call: DST- EU Collaboration 2020, India-EU joint call on "Integrated Local Energy Systems".
- 2. Chairman DST SERD Expert Panel Meeting of Affordable Solar Innovation Stream, 2020
- 3. Expert Member Mission Innovation DST Committee



# **12. Department of Electronics Engineering**

#### Year of Establishment: 1971

Head of the Department: Prof. V. N. Mishra w.e.f.: 9 May, 2018

#### 1. Brief Introduction of the Department

The Department of Electronics Engineering came into existence as an offshoot of Electrical Engineering Department in the year 1971 with a great effort from Prof. S.S. Banerjee. In the same year the erstwhile Banaras Engineering College (BENCO), College of Mining and Metallurgy and College of Technology were amalgamated to form the Institute of Technology-Banaras Hindu University (IT-BHU). The Department offers Bachelor, Master and Doctoral programs in Electronics Engineering with the major thrust areas of Microelectronics, Microwave Engineering, Digital Techniques & Instrumentations and Communication Systems. The Department has been actively engaged in research since its inception as evidenced by the research publications. The first major financial support from the Department of Electronics (DoE), Govt. of India in the tune of Rs.1.0 Crore was received by the Department in 1980 to carry out research for development of High Power Microwave Tubes. Subsequently, in recognition of excellent research contribution, the University Grants Commission (UGC) identified the Department to provide financial support under Special Assistance Program (SAP) in 1983 for five years. During this period, the department established three independent research centers e.g., Centre of Research in Microwave Tubes (CRMT), Centre for Research in Microelectronics (CRME) and Centre for Research in Microprocessor Applications (CRMA) supported by UGC/MHRD. The Department was further recognized as a Centre of Advanced Studies (CAS) by the UGC in 1989. The Department successfully completed three phases of CAS in the year 2009. The Department is also one of the DRDO centers for M.Tech. in Electronics Engineering. In addition to this, the Department has been actively pursuing manpower training and collaborative research programs in specialized areas to meet the national manpower requirement in R&D laboratories, academic institutions and industries. The Department has a close interaction with many reputed national R&D laboratories such as DRDO, CSIR, Bharat Electronics Ltd. and leading software companies as well as foreign Universities.

#### **Major areas of Research**

- Communication System Engineering
- Digital Techniques & Instrumentation
- Microwave Engineering
- Microelectronics Engineering

#### Area of the Department (in square meters): 77.25 m x 46.10 m = 3561.22 m<sup>2</sup>

#### Infrastructure

S. No.	Particulars	Number
1	No. of Classrooms	08
2	No. of Lecture Halls	01
3	No. of Laboratory	16
4	No. of Computers available for students in the Department/ School	25

#### 2. Academic Programmes offered

#### Students on Roll

S. No.	Programme	I Year	II Year	III Year	IV Year	V Year & above
1.	B. Tech	129	124	99	88	
2.	M. Tech	34	41			





S. No.	Programme	I Year	II Year	III Year	IV Year	V Year & above
3.	Ph. D (Under Institute Fellowship)	4	3	9	19	2
4.	Ph. D (Under Project Fellowship)	1				
5.	Ph. D (Under Sponsored Category)	1				
6.	Ph. D (Under QIP)		4	2	2	
7.	Ph. D (Others)		2			4

### Names of students/scholars who attended conferences/workshops/seminars and symposia abroad or in India

S. No.	Name of Student	Roll No.	Conference/Seminar/ Symposia/Workshop	Date & Venue	Financial Assistance From
ÌNDIA					
1	Rishibrind Kumar Upadhyay	17091005	International Submit on Catalysis- Energy and Environment	July 9-14, 2020, Sathyabama Institute of Science and Technology, Chennai.	Self
2	Rishibrind Kumar Upadhyay	17091005	Online Workshop on Advanced Physics Tools and Techniques for materials Characterization APTTMC-2020	28 July -3 August 2020 Mahatma Gandhi Central University, Motihari, Bihar.	Self
3	Rishibrind Kumar Upadhyay	17091005	Online Workshop on Recent Trends in Innovative CMOS- MEMS Technology and Application	11-15, September 2020, National Institute of Technology,Silchar,	Self
4	Rishibrind Kumar Upadhyay	17091005	Online Workshop Research Challenges in Advanced Power Converters for Electrical Engineering Applications – RCAPCEEA - 2020	October 27- 29, 2020, New Horizon College of Engineering, Bengaluru	Self
5	Rishibrind Kumar Upadhyay	17091005	Online Workshop Emerging Trends in Research Methodology in Condensed Matter, Materials Science and Nanoscience 2020 [ETRMCMMSN 2020]	December 01-07, 2020, The Neotia University and Department of Physics, Sukumar Sengupta Mahavidyalaya kolkatta	Self
6	Rishibrind Kumar Upadhyay	17091005	IEEE International Conference on Computing, Power and Communication Technologies (GUCON 2020	October 2-4, 2020, Greater Noida New Delhi.	Self
7	Rishibrind Kumar Upadhyay	17091005	Online Workshop on Future Perspectives of Research in Chemical Science and Technology	October 20-24, 2020, Dr B. R. Ambedkar National Institute of Technology Jalandhar.	Self





S. No.	Name of Student	Roll No.	Conference/Seminar/ Symposia/Workshop	Date & Venue	Financial Assistance From
			by mpoora, normonop		
8	Rishibrind Kumar Upadhyay	17091005	Online FDP Micro- electromechanical Systems	November 23-27, 2020, SARDAR PATEL COLLEGE OF ENGINEERING India.	Self
9	Rishibrind Kumar Upadhyay	17091005	Online FDP Recent Trends in Photonics Technology	28 <sup>th</sup> December 2020 to 2 <sup>nd</sup> January 2021, Jaypee Institute of Information Technology, Noida.	Self
10	Rishibrind Kumar Upadhyay	17091005	Online Workshop on Research Trends in Integrated Circuits and Applications	January 11- 15, 2021, Dr B R Ambedkar National Institute of Technology, Jalandhar.	Self
11	Ashish Kumar Singh	17091009	Symposium, workshop	10/04/2021, BITs Pilani	NO
12	Ashish Kumar Singh	17091009	ICONN21,conference	February 01- 03, 2021 SRMIST	Self
13	Ashish Kumar Singh	17091009	EDA tool-based Workshop	February 24- 28, 2021 IIIT Bhagalpur	Self
14	Ashish Kumar Singh	17091009	AMND-2021, Workshop	February 5-8, 2021 VIT Chennai	NO
15	Ashish Kumar Singh	17091009	TEQIP Sponsored online workshop	November 26- 30, 2020 MNIT Jaipur	Self
16	Ashish Kumar Singh	17091009	Journey from vacuum tube to carbon nanotube	27 th Feb. 2021 IIEST, Shibpur	NO
17	Deep Chandra Upadhyay	17091024	Symposium, workshop	10/04/2021, BITs Pilani	NO
18	Manas Ranjan Tripathy	17091026	CONECCT 2020	2-4 July, Bangalore	Self
19	Manas Ranjan Tripathy	17091026	INDICON 2020	11-13 Dec., New Delhi	Self
20	Jogendra Singh Rana	18091506	Next-Generation Nano- electronics Devices, Circuits, and its Applications using EDA tools	24-28 Feb. 2021 IIIT Bhagalpur	Self
21	Jogendra Singh Rana	18091506	Webinar on "Optoelectronics: History of Electronics Leading to Infrared Detectors and Applications" by Prof. A. G. Unil Parera	18th March 2021	No





S. No.	Name of Student	Roll No.	Conference/Semina Symposia/Worksho	nr/ op	Date & Venue	Financial Assistance From
22	Prashant Kumar	18091002	Next generation semiconductor devices high end applications	for	22-28 June 2020 NIT Patna	Ministry of electronics and information technology
ABROAD						
1	Rishibrind Kumar Upadhyay	17091005	EDTM 2020 Conference	Apr	il 6-21, 2020 Malaysia	Institute
2	Ashish Kumar Singh	17091009	EDTM 2020, Conference	Apr	il 6-21, 2020 Malaysia	Institute
3	Manas Ranjan Tripathy	17091026	EDTM 2020, Conference	Apr	il 6-21, 2020 Malaysia	Institute
4	Tanushree Meena	17091501	IEEE Region 10 Conference TENCON 2020	Osa 19, 1	ka, Japan, November 16 - 2020	Online
5	Sumit Kr. Yadav	17091012	IEEE Region 10 Conference TENCON 2020	Osa 19, 1	ka, Japan, November 16 - 2020	Online

### Names of students/scholars who got prizes and awards outside the Institute

S. No.	Name of Student	Roll No.	Name of Prize	Date & Venue	Prize awarded by
1	Rishibrind Kumar Upadhyay	17091005	Dr. A.P.J. Abdul Kalam Award	30th July 2020, NCN- SNT, University of Madras, Chennai	NCNSNT, University of Madras, Chennai
2	Manas Ranjan Tripathy	17091026	Best paper award (Academia) in IEEE CONNECT 2020 with prize money of INR 20, 000	4th July, Bangalore	IEEE Bangalore Section
3	Sumit Kr. Yadav	17091012	Student and Early Re- searcher Conference Fund (SERCF) 2020	Osaka, Japan, Novem- ber 16 - 19, 2020	IEEE R10 Industry Relations Committee

# 3. Faculty & their Activity

### Faculty and their areas of specialisation

S. No.	Name, Qualifications, Employee No.	Date of award of PhD Degree	Major Areas of Specialization (Max. 3 Areas)		
PROF	ESSORS				
1	<b>Prof. P. Chakrabarti</b> (On Deputation) Ph.D Employee ID: 13803	1988	High Speed Semiconductor Devices, Optoelectronic Devices, Optical Communication		
2	<b>Prof. P. K. Jain</b> (On Deputation) Ph.D Employee ID: 13802	1988	Microwave Engineering		
3	<b>Prof. V. N. Mishra</b> Ph.D Employee ID: 10389	1996	Microelectronics		





S. No.	Name, Qualifications, Employee No.	Date of award of PhD Degree	Major Areas of Specialization (Max. 3 Areas)
4	<b>Prof. Satyabrata Jit</b> Ph.D Employee ID: 13804	2002	Advanced CMOS Devices, Thin Film Based Nanoelectronic Devices for Electronic, Gas Sensing and Optoelectronic Applications
5	<b>Dr. Manoj Kumar Meshram</b> Ph.D Employee ID: 16628	2001	Microwave antennas, Artificial materials, Microwave passive devices
ASSO	CIATE PROFESSORS		
1	<b>Dr. N. S. Rajput</b> Ph.D Employee ID: 16800	July 2011	Digital Techniques & Instrumentation
2	<b>Dr. Amit Kumar Singh</b> Ph.D Employee ID: 18299	June 2010	Microwave Engineering
3	<b>Dr. Amritanshu Pandey</b> Ph.D Employee ID: 18360	2016	Communication System Engineering, Microelectronics
4	<b>Dr. M. Thottappan</b> Ph.D Employee ID: 18358	15 May, 2014	Microwave Engineering
ASSI	STANT PROFESSORS		
1	<b>Mr. M. K. Singh</b> M.Tech. Employee No. 13806	N. A.	Communication System Engineering
2	<b>Kishor P Sarawadekar</b> Ph.D. Employee No. 19847	5 July, 2012	VLSI Architectures, VLSI based Signal and Image Processing, Image Coding and Image Compression
3	<b>Dr. Somak Bhattacharyya</b> Ph.D. Employee No. 50074	30 April, 2015	RF & Microwave Engineering, Metasurfaces, Terahertz Modelling
4	<b>Dr. Smrity Dwivedi</b> Ph.D. Employee No. 50101	29 December, 2012	RF & Microwave Engineering
5	<b>Dr. Shivam Verma</b> Ph.D. Employee No. 50231	4 January, 2017	Spintronics, Devices and Circuits for VLSI, Non- volatile memory and logic circuits
6	<b>Dr. Sanjeev Sharma</b> Ph.D. Employee No. 50236	17 November, 2018	Wireless Communication, Signal Processing, Machine Learning-based Wireless Communication Systems Design
7	<b>Dr. Priya Ranjan Muduli</b> Ph.D. Employee No. 50246	23 August, 2019	Sparse Signal Processing, Machine Learning, Image Processing, Inverse Problems, Wireless Communication, VLSI Digital Signal Processing Systems, and Instrumentation
8	<b>Dr. Sushant Mittal</b> Ph.D. Employee No. 50247	7 January, 2017	Semiconductor logic and memory devices, Design Technology Co-optimization (DTCO), Variability modeling of devices
INST	ITUTE PROFESSORS		
1	Dr. Anand Mohan Ph.D., FAC-IP03	1994	Digital Techniques & Instrumentation
SENI	OR SCIENTIFIC OFFICER		
1	Dr. Ashok Kumar Sharma M.Sc, Ph.D Employee ID: 17019	4 October, 1989	Microelectronics, Photovoltaics

### Technical and Non-Teaching Staff

Sl. No.	Name, Qualifications	Designation, Employee No.	Date of Appointment in the department
1	Dr. Vinod Kumar Singh, Ph.D	Senior Technical Superintendent (GrII), 14165	16.01.1990



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Sl. No.	Name, Qualifications	Designation, Employee No.	Date of Appointment in the department
2	Sri. Tarun Kumar Singh, M.Sc. (Electronics)	Sr. Technical Superintendent (GrI), 16564	15.02.1995
3	Sri. Lal Bahadur Vishwakarma, B.A.	Sr. Technical Superintendent, 14166	11.03.1988
4	Sri. Krishna Kumar Srivastava, Intermediate	Sr. Technical Superintendent, 14167	16.01.1990
5	<b>Sri. Lalji Prasad</b> , Intermediate, Diploma	Sr. Technical Superintendent, 18022	18.01.2007
6	Sri. Mohan, High School	Technical Superintendent, 14170	11.03.1988
7	Sri. Rajesh Kumar Rai, Intermediate, ITI	Technical Superintendent, 16566	11.03.1988
8	Sri. Jay Ram, High School	Technical Superintendent, 14014	07.02.1995
9	Sri. Sanjiv Kumar Srivastava, B.A., ITI	Jr. Technical Superintendent, 18056	20.02.2007
10	Sri. Shyam Narayan, Intermediate, ITI	Jr. Technical Superintendent, 18087	26.02.2007
11	Sri. Bahadur Lal, B.A.	Senior Technician, 18660	05.08.2008
12	<b>Sri. Vinod Kumar Verma</b> , Intermediate, ITI Diploma	Senior Technician, 18653	05.08.2008
13	Sri. Dinesh Kumar, Intermediate, ITI Diploma	Senior Technician, 18673	06.08.2008
14	Sri. Vinay Kumar Srivastava, B.Sc.	Senior Technician, 18907	18.01.2010
15	Sri. Gyan Chand Vishwakarma, High School	Senior Technician, 18904	18.01.2010
16	Sri. Amit Kumar Srivastava, B.A.	Senior Technician, 18609	05.08.2008
17	Sri. Ravindra Nath Ram, Intermediate	Senior Technician, 14016	01.04.1990
18	Sri. Ajit Kumar Singh, Intermediate, ITI	Senior Technician, 19270	09.02.2011
19	Sri. Sanjay Kumar Vishwakarma, M.Sc.	Senior Technician, 19594	11.07.2012
20	Dr. Sudha Misha, M.Sc., Ph.D.	Junior Superintendent, 17436	08.03.2019
21	<b>Sri. Ashish Kumar Vishwakarma</b> , B.Tech. (E&C)	Jr. Assistant, 50081	20.05.2017
22	<b>Sri</b> . <b>J. K. Sinha</b> Diploma in Computer Sc. & Engg., BCA, B.Tech in Electronic & Telecommunications PG & MPA	Jr. Assistant, 50016	25.09.2020
23	Sri. Ved Prakash Yadav, M.A.	MTS	16.12.2016
24	Sri. Pavan Singh, B.A., ITI	MTS	16.12.2016
25	Sri. Ankit Kumar Rai, M.A., B.Ed	MTS	01.11.2019

# Short-term courses/workshops/seminars/symposia/conferences organised by faculty members

S. No.	Cordinator	Title	Period
1	Dr. Manoj Kumar Meshram	Online Workshop on Electromagnetics and Antennas Design (WEAD 2020)	25-29 January, 2021
2	Dr. N. S. Rajput	Next Generation Networks (NGN) & Artificial Intelligence (AI) for Data Analytics and Predictive Technology Applications (NGN & AI for DAPT)	One Week Online Short-term Course With live hands-on (22-27 March, 2021)
3	Dr. N. S. Rajput	Live interaction on Swami Vivekananda for Me: How I have seen him on the occasion of National Youth Day Celebration	12 January, 2021





S. No.	Cordinator	Title	Period
4	Dr. Kishor Sarawadekar	AICTE Training and Learning (ATAL) Academy sponsored one week FDP on "Internet of Things and Real Time Applications,"	21-25 September, 2020
5	Dr. Somak Bhattacharyya	Webinar on "Probing the Universe via Radio waves: From the Perspective of Microwave Engineering" by Prof. Yashwant Gupta, Director, NCRA-TIFR	4 July, 2020
6	Dr. Somak Bhattacharyya	Webinar on "Antennas, RF Electronics, and Signal Transport Systems in building a Radio Telescope" by Mr. S. Sureshkumar, Engineer-F, GMRT, NCRA-TIFR	16 July, 2020
7	Dr. Somak Bhattacharyya	Webinar on "Millimeter-wave and sub-millimeter wave beam scanning" by Dr. Anirban Sarkar, Post-Doctoral fellow, Chung-Ang University, Seoul, South Korea8 August, 2020	
8	Dr. Somak Bhattacharyya	Webinar on "Substrate integrated Circuit- Microwave and millimeter-wave application" by Dr. Soumava Mukherjee, Indian Institute of Technology Jodhpur	22 August, 2020
9	Dr. Somak Bhattacharyya	Webinar on "MIMO Antenna: Design, Analysis and extension to channel Modeling" by Dr. Debdeep Sarkar, Indian Institute of Science Bangalore29 August, 202	
10	Dr. Somak Bhattacharyya	Webinar on "Design of Antenna Array: An Overview" by Prof. Bhaskar Gupta, Jadavpur University, West Bengal, India	5 September, 2020
11	Dr. Somak Bhattacharyya	Webinar on "Design and Development of High- performance Microwave and Millimeter Wave Components Utilizing Suspended Substrate Transmission Line" by Prof. Shiban K. Koul, Mentor Deputy Director (Strategy & Components), Integration Affairs) IIT Jammu, India	6 October, 2020
12	Dr. Somak Bhattacharyya	Webinar on "Towards Universally Programmable Chip- Scale THz Source, Sensors and Systems: Bridging the THz and Application Gap in the Next Decade" by Dr. Kaushik Sengupta, Princeton University, USA	5 November, 2020
13	Dr. Somak Bhattacharyya and Dr. Amritanshu Pandey	Webinar on "Raman effect, the story of its discovery and its recent applications in Electronics, Photonics and Communication" by Prof. P. K. Basu, Institute of Radio Physics & Electronics, University of Calcutta	28 February, 2020
14	Dr. Somak Bhattacharyya, Dr. Santanu Das (Ceramic Engineering) and Prof. Satyabrata Jit	Webinar on "Optoelectronics: History of Electronics Leading to Infrared Detectors & Applications" by Prof. A. G. Unil Perera, Georgia State University, USA	18 March, 2021
15	Dr. Shivam Verma, Dr. Sushant Mittal and Shrawan Kumar Mishra (SMST)	Nanoelectronics devices and circuits sponsored by AICTE, QIP centre IIT BHU	4-9 January, 2021





# Short-term courses/workshops/seminars/symposia/conferences/training programmes attended by faculty members in academic institutions and public sector undertakings

S. No.	Name of Faculty Member	Title	Period and Venue
Semin	ars/Symposia/Conferences		
1	Dr. N. S. Rajput	10th International Conference on Sensor Networks (SENSORNETS 2021) organised by Institute for Systems and Technologies of Information, Control and Communication (INSTICC)	Held online from February 9 - 10, 2021 and organised at Vienna, Austria.
2	Dr. N. S. Rajput	IEEE International India Geoscience and Remote Sensing Symposium (InGARSS) 2020	Held online from Dec. 1 - 4, 2020 and organised at Ahmedabad, Gujrat, India.
3	Dr. Somak Bhattacharyya	Innovation: What, Why and How?	19 July, 2020 by IEEE Bangalore Section and IEEE India Council
4	Dr. Somak Bhattacharyya	Art and Challenges for Writing Papers in IEEE Transactions	8 June, 2020 by IEEE Bangalore Section
5	Dr. Somak Bhattacharyya	Microwave Antennas Measurements: Yesterday, Today & Tomorrow	18 June, 2020 by Mizoram University
6	Dr. Somak Bhattacharyya	Electromagnetic Aspects of 5G Massive MIMO Systems: Antenna Design and Channel Modelling	16 June, 2020 by IEEE Bangalore Section and its AP-MTT Joint Chapter
7	Dr. Somak Bhattacharyya	Phased Array Antennas: Space Applications and Challenges	17 July, 2020 by Mizoram University
8	Dr. Somak Bhattacharyya	Nanoplasmonics: Quantum, Non-linear and Single Molecule Regimes	9 August, 2020 by IEEE PSIT Kanpur Student Branch Chapter
9	Dr. Somak Bhattacharyya	Flexible Wearable Disposable Wireless Communication and Sensing Systems Through Additive Manufacturing	29 August, 2020 by IEEE AP-S and MTT-S Kerala Section and IEEE APS and MTT-S Student Branch Chapters, Govt. Engineering College, Barton Hill, Thiruvananthapuram
10	Dr. Somak Bhattacharyya	Role of MTT-S Volunteer in shaping future of engineering students post Covid-19	17 September, 2020 by IEEE MTT-S Kerala Section, IEEE MTT-S Student Branch Chapter, IIST, Trivandrum with IEEE APS and MTT-S Student Branch Chapters, Govt. Engineering College, Barton Hill, Thiruvananthapuram
11	Dr. Shivam Verma	IEEE India Council International Conference (INDICON) 2020, New Delhi, India	Virtual Conference through Cisco Webex from $10^{\text{th}}$ to $13^{\text{th}}$ Dec. 2020.
12	Dr. Sushant Mittal	Simulation of Semiconductor Processes and Devices (SISPAD) 2020	Virtual Conference from 23 September – 6 October, 2020
	Meetings		
1	Dr. N. S. Rajput	Member, MHRD PAN-IIT VIRTUAL RESEARCH GROUP on Pedagogical Aspects of Classroom vs E-Learning	Held online 23.04.2020, 08.05.2020, 29.06.2020 01.07.2020, 15.07.2020 06.09.2020





S. No.	Name of Faculty Member	Title	Period and Venue
2	Dr. N. S. Rajput	Group Coordinator (Telecomm.), Technology Incubation Hub under National Mission on ICPS @ IDAPT Hub Foundation, IIT(BHU)	Held online 18.09.2021 and multiple meetings are being held on weekly basis as well.
4	Dr. Somak Bhattacharyya	SERB Meeting of Progress of the Sponsored Project	Held online on 29 January, 2021

# Special lectures delivered by faculty members in other institutions

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S. No.	Name of faculty Member	Topic of Lecture	Institution	Date
1	Dr. Satyabrata Jit	Introduction to Organic Thin Film Solar Cells	International Seminar on Electronics and Computing Technology (ISECT -2021) organized by the Department of Electronics, Sambalpur University Institute of Information Technology (SUIIT), Burla , Odisha	28.03.2021
2	Dr. Satyabrata Jit	Metal Oxide Nanostructures ETL Based Organic Thin Film Solar Cells	Next-Generation Nano-electronics Devices, Circuits and its Applications using EDA Tools" organized by the Department of Electronics and Communication Engineering, IIIT Bhagalpur	24.02.2021
3	Dr. Satyabrata Jit	Nanostructured Metal Oxides for Sensing Applications	Faculty Development Program on Advanced Materials for New Generation Nanoelectronic Devices (AMND 2021)" organized by the School of Electronics Vellore Institute of Technology, Chenna	06.02.2021
4	Dr. Satyabrata Jit	Colloidal ZnO Quantum Dots Based Spectrum Selective Photodetectors	"Webinar on Materials Science" organized by the Endeavor Research Pvt. Limited, USA	04.12.2020
5	Dr. Satyabrata Jit	Organic Thin Film Solar Cell Technology	7th Foundation Anniversary Celebration of the Madan Mohan Malviya University of Technology (MMMTU), Gorakhpur	01.12.2020
6	Dr. Satyabrata Jit	PCDTBT:PCBM and CH3NH3PbI3 Perovskite Based Organic Solar Cells	Thakur College of Engineering and Technology, Mumbai	26.09.2020
7	Dr. Satyabrata Jit	ZnO and CdSe Colloidal Quantum Dots Based Photodetectors	Webinar on material science & nanotechnology" organized by the Innovinc, Santa Clara, USA	21.10.2020
8	Dr. Satyabrata Jit	Terahertz Technology: An Overview	Research Oriented International Webinar Series (ROIWS-2K20) organized by the Government Engineering College, Jagdalpur, Chhattisgarh	11.09.2020
9	Dr. Satyabrata Jit	Metal Oxide Nanostructures: Properties and Applications	National Conference on Electronics, Communication and Computation- NCECC-2020	06.09.2020



S. No.	Name of faculty Member	Topic of Lecture	Institution	Date
10	Dr. Satyabrata Jit	Introduction to Metal Oxide Nanostructures for Sensing Applications	Faculty Development Program on Recent Research Trends in Electronics and Communication Engineering organized by the G B Pant Institute of Engineering and Technology, Pauri-Garhwal, Uttarakhand	18.08.2020
11	Dr. Satyabrata Jit	ZnO Nanostructures Based Photodetectors using Low Cost Techniques	IEEE Photonics Society Student Chapter, Mangalam College of Engineering, Kottayam, Kerala	01.07.2020
12	Dr. Satyabrata Jit	Introduction to Metal Oxide Nano Structures for Sensing Applications	Centre for Nanoscience and Nanotechnology, Sathyam Institute of Science and Technology	15.06.2020
13	Dr. Satyabrata Jit	Introduction to Terahertz Technology	Amity University, Lucknow	01.05.2020
14	Dr. Manoj Kumar Meshram	Recent research trends in Microstrip Antennas	Yeshwantrao Chavan College of Engineering, Nagpur	23.12.2020
15	Dr. Manoj Kumar Meshram	Design and Characterisation of Microwave Components and antennas	Thapar Institute of Engg., Thapar University, Patiala	18.11.2020
16	Dr. Manoj Kumar Meshram	Recent research trends in Printed Antennas	Jabalpur Engineering College, Jabalpur	20.09.2020
17	Dr. Manoj Kumar Meshram	MIMO/Diversity Antennas for 5G applications	Veer Surendra Sai University of Technology Burla, Odisha	11.09.2020
18	Dr. Manoj Kumar Meshram	Reconfigurable microstrip antennas	G B Pant Institute of Engineering & Technology Pauri Garhwal, Uttarakhand	28.05.2020
19	Dr. M. Thottappan	Millimeter Waves for 5G Wireless Communication	ICCSSS 2020: First International Conference on Circuits, Signals, Systems and Securities at Bannari Amman Institute of Technology Sathyamangalam, Tamilnadu (Online)	11.12.2020
20	Dr. Kishor Sarawadekar	Writing Documents in LaTeX	MES Pillai College of Engineering, New Panvel, Navi Mumbai	30.04.2020
21	Dr. Kishor Sarawadekar	Webinar, "Career Opportunities in EDA Industry"	Ramrao Adik Institute of Technology, Nerul, Navi Mumbai	13.07.2020
22	Dr. Kishor Sarawadekar	"Career Opportunities in EDA Industry"	KIT's College of Engineering, Kolhapur	15.09.2020
23	Dr. Kishor Sarawadekar	National Level workshop on "HDL Coding, Simulation and Career Opportunities in VLSI"	University College of Engineering, Kakatiya University, Kothagudem	23-24 December, 2020
24	Dr. Somak Bhattacharyya	Webinar on "Recent Trends in High Frequency Applications"	Swami Vivekananda Institute of Technology (SVIST), Kolkata	08.06.2020





S. No.	Name of faculty Member	Topic of Lecture	Institution	Date
25	Dr. Somak Bhattacharyya	Webinar on "Recent Trends in High Frequency Applications"	IEEE Microwave Theory & Techniques Society (MTT-S) Student Branch Chapter and IEEE Antenna Propagation Society (AP-S) Student Branch Chapter of Department of Electronics and Communication Engineering, Manipal Univeristy Jaipur Campus	25.06.2020
26	Dr. Somak Bhattacharyya	Webinar on "Recent Advanced High Frequency Applications"	Workshop entitled, "National Workshop on Advance Antenna Technology 2020" in Department of Electronics and Communication Engineering, Indian Institute of Information Technology Allahabad	14.07.2020
27	Dr. Somak Bhattacharyya	Webinar on "High Frequency Applications of Communication"	Pailan Technological Campus, Kolkata	21.07.2020
28	Dr. Somak Bhattacharyya	Webinar on "Introduction to metasurfaces at high frequencies"	Workshop on "Recent trends and research scope in Antenna Domain" in Department of Electronics and Communication Engineering, Vignan's Institute of Information Technology, Visakhapatnam	30.07.2020
29	Dr. Somak Bhattacharyya	Webinar on "Recent High Frequency Applications of Metasurfaces"	International Workshop on "Metamaterials and its applications" in IEEE Antennas and Propagation Society Chapter Jaipur in association with IEEE Rajasthan Subsection, Department of Electronics and Communication Engineering, Malaviya National Institute of Technology, Jaipur and Department of Electronics and Communication Engineering, Government Women Engineering College, Jaipur	31.07.2020
30	Dr. Somak Bhattacharyya	Webinar on "Metasurface Based Designs for High Frequency Applications"	AICTE-sponsored Short Term Training Program on "Antenna Design and Analysis using Mathematical Solvers" in Department of Electronics and Communication Engineering, Aditya Institute of Technology And Management, Srikakulam	08.09.2020





S. No.	Name of faculty Member	Topic of Lecture	Institution	Date
31	Dr. Somak Bhattacharyya	Webinar on "Metasurface for IoT"	AICTE Training and Learning (ATAL) sponsored Online One week Faculty Development Program on "Recent Trends and Advances in IoT" in Department of Electronics and Communication Engineering, Dr. Shyama Prasad Mukherjee International Institute of Information Technology, Naya Raipur	03.10.2020
32	Dr. Somak Bhattacharyya	Webinar on "Recent Advancements of Research in Metasurface for High Frequency Applications"	Indian Institute of Technology Palakkad and IEEE Antennas and Propagation Society (APS) Kerala Chapter	11.10.2020
33	Dr. Somak Bhattacharyya	Webinar on "Recent Advancement in High Frequency Communication"	"Front-end Communication" by Department of Instrumentation and USIC, Gauhati University	01.12.2020
34	Dr. Somak Bhattacharyya	Webinar on "Metasurface for High Frequency Applications"	"Emerging Trends in Antenna Design" (ETAD-20) by Yeshwantrao Chavan College of Engineering, Nagpur	24.12.2020
35	Dr. Somak Bhattacharyya	Webinar on "Recent Trends in Microwave Communications"	"Webinar Series: Advancement in Signal Processing and Communication for futuristic application/product" by Sikkim Manipal Institute of Technology (SMIT) in association with IEEE Student branch, SMIT	07.02.2021
36	Dr. Somak Bhattacharyya	Webinar on "Recent Advancements of Metasurfaces at High Frequencies"	The 13 <sup>th</sup> Annual International Conference Antenna Test and Measurement Society (ATMS) 2021 Virtual Conference	20.02.2021
37	Dr. Somak Bhattacharyya	Webinar on "Electromagnetic Characterization at High Frequencies"	TEQIP-III Sponsored one-week workshop on "Modern Wireless Communication Systems and Antenna Engineering with Experimental Learning" in NIT Sikkim, 15-21 March, 2021	18.03.2021
38	Dr. Shivam Verma	Spintronic Devices and Nonvolatile Logic	TEQIP-III sponsored Short Term Training Program on "Emerging Trends in VLSI Design" from September 12 to September 16, 2020 conducted in virtual mode by the Department of Electronics Engineering, Sardar Vallabhbhai National Institute of Technology Surat.	12.09.2020





S. No.	Name of faculty Member	Topic of Lecture	Institution	Date
39	Dr. Shivam Verma	Thin film spintronic devices for sensing applications	QIP workshop on Thin film devices for sensor applications 25-29, Jan 2021 with support from IIT BHU and AICTE, Gov. India	25.01.2021
40	Dr. Shivam Verma	Spintronic Devices and Nonvolatile Logic	5 Day FDP on Nanoscale device modeling and simulation - March 22 to 26 , 2021, Vellore Institute of Technology, Vellore, Tamilnadu	22.03.21
41	Dr. Sanjeev Sharma	Deep Learning in wireless communications	IIT Indore	14.02.21
42	Dr. Sanjeev Sharma	Non-orthogonal multiple access techniques for 5G and beyond	NIT Andhra Pradesh	26.12.20
43	Dr. Priya Ranjan Muduli	Recent Advancements in Signal Processing and Machine Learning	North Eastern Regional Institute of Science andTechnology (NERIST), Nirjuli, Arunachal Pradesh, India	28.01.21

#### Honours and awards

S. No.	Name of Faculty Member	Details of Award
1	Prof. V. N. Mishra	Uttar Pradesh Sangeet Natak Akademi Award
2	Prof. Manoj Kumar Meshram	Elected as Fellow from IETE, India since 2021
3	Dr. N. S. Rajput	"Best Faculty in All Rounder Performance 2021" under Global Teaching Excellence Awards 2021 (GETA 2021) organised by GETA Global.
4	Dr. N. S. Rajput	"Star Faculty in Electronics Engineering 2021" under Golden AIM Conference and Awards for Excellence and Leadership in Education organised by Dynergic Business Solutions
5	Dr. Kishor Sarawadekar	Elevated to Senior Member, IEEE, February 2021
6	Dr. Somak Bhattacharyya	Elected as Fellow from IETE, India since 2021
7	Dr. Somak Bhattacharyya	Elected as Associate Fellow from West Bengal Academy of Science and Technology since 2020
8	Dr. Somak Bhattacharyya	Elected as Life Fellow Member from The Optical Society of India since 2020
9	Dr. Smrity Dwivedi	Elected as Fellow from IETE, India since 2021
10	Dr. Priya Ranjan Muduli	Elected as Associate Editor of IEEE Transactions on Instrumentation and Measurements

# Fellowships of academic and professional societies

S. No.	Name of Faculty Member	Details of Fellowship
1	Prof. Manoj Kumar Meshram	Fellow from IETE, India since 2021
2	Dr. Somak Bhattacharyya	Fellow from IETE, India since 2021
3	Dr. Somak Bhattacharyya	Associate Fellow from West Bengal Academy of Science and Technology since 2020
4	Dr. Somak Bhattacharyya	Life Fellow Member from The Optical Society of India since 2020
5	Dr. Smrity Dwivedi	Fellow from IETE, India since 2021





S. No.	Name of Author/Co- Author	Title	Publisher
1	Dr. Somak Bhattacharyya	URSI-RCRS 2020 Report	IEEE Antennas and Propagation Magazine, vol. 62, issue 5, pp. 13-15, October 2020. (https://ieeexplore. ieee.org/document/9214935)
2	Meghna Mishra, Lavesh Nama, Sambit Kumar Ghosh, and Somak Bhattacharyya	A wideband transmittive- type cross polarization converter for terahertz waves	Computers and Devices for Communication, Springer Lecture Notes in Networks and Systems 147, pp. 233-237, 2021. (https://link.springer.com/ book/10.1007/978-981-15-8366-7)
3	Lavesh Nama, Nilotpal, Somak Bhattacharyya, and P. K. Jain	An ultra-thin X-band metasurface-based transmittive-type linear to circular polarization converter	Computers and Devices for Communication, Springer Lecture Notes in Networks and Systems 147, pp. 238-243, 2021. (https://link.springer.com/ book/10.1007/978-981-15-8366-7)
4	Apratim Chatterjee, Dweepayan Sen Sharma, Diptiranjan Samantaray, Chittajit Sarkar, Chinmoy Saha, and Somak Bhattacharyya	Design of a bident-shaped metamaterial embedded triple band microstrip printed antenna with defected ground structure	Computers and Devices for Communication, Springer Lecture Notes in Networks and Systems 147, pp. 250-256, 2021. (https://link.springer.com/ book/10.1007/978-981-15-8366-7)
5	Anand Krishnan MJ, Dipthiranjan Samantray, Anu Mohamed, Chinmoy Saha, and Somak Bhattacharyya	Dual band FSS backed printed antenna with fractal geometry for wearable applications	Computers and Devices for Communication, Springer Lecture Notes in Networks and Systems 147, pp. 294-301, 2021. (https://link.springer.com/ book/10.1007/978-981-15-8366-7)
6	Nikhil N B, Bhavana R Nair, Ancilla Philip, Nilotpal, Anu Mohamed, Chinmoy Saha, and Somak Bhattacharyya	A tunable dual band metamaterial absorber for terahertz applica	Computers and Devices for Communication, Springer Lecture Notes in Networks and Systems 147, pp. 288-293, 2021. (https://link.springer.com/ book/10.1007/978-981-15-8366-7)
7	Manikant Jha, Dipthiranjan Samantray, and Somak Bhattacharyya	A metasurface inspired terahertz antenna for multiband applications	Computers and Devices for Communication, Springer Lecture Notes in Networks and Systems 147, pp. 315-320, 2021. (https://link.springer.com/ book/10.1007/978-981-15-8366-7)
8	Pankaj Kumar, Smriti Rai, Somak Bhattacharyya, Akhlesh Lakhtakia, and Pradip Kumar Jain	Progress towards bioin- spired multicontrollable and multifunctional meta- surfaces	Proceeding of SPIE, Bioinspiration, Biomimetics, and Bioreplication XI, Vol. 11586, Article No.115860H, 2021. (https://www.spiedigitallibrary.org/conference- proceedings-of-spie/11586/115860H/Progress- towards-bioinspired-multicontrollable-and- multifunctional-metasurfaces/10.1117/12.2582091. short?SSO=1)
9	Dr. Somak Bhattacharyya	Metamaterials and Meta- surfaces for High Frequen- cy Applications (In Com- pendia)	Photonics, Plasmonics and Information Optics: Research and Technological Advances, CRC Press, chapter 3, pp. 31-65, 2021. (Print ISBN: 978-0-367- 49952-5) (https://www.taylorfrancis.com/chapters/ edit/10.1201/9781003047193-3/metamaterials- metasurfaces-high-frequency-applications-somak- bhattacharwa)

# Books, monographs authored/co-authored





#### Editorial boards of journals

S. No.	Name of Faculty Member	Position (Editor/ member)	Name of Journal
1	Dr. Satyabrata Jit	Associate Editor	IETE Journal of Research
2	Dr. Satyabrata Jit	Associate Editor	Journal of Electronics Materials (SCI) of the Springer publications
3	Dr. Manoj Kumar Meshram	Managing Editor	International Journal of Advances in Microwave Technology (ISSN : 2456-4346)
4	Dr. Sanjeev Sharma	Review Editor	Frontiers in Communications and Networks
5	Dr. Priya Ranjan Muduli	Associate Editor	IEEE Transactions on Instrumentation and Measurements

# 4. Design and Development Activities

### New facilities added

S. No.	Details (Infrastructure, Equipments, etc.)	Value (in Lakhs of INR)
1	IOT enabled Advanced Gas Sensing System for Air Pollution Monitoring (CO, NOx, SOx) in ppb concentration ranges at ambient temperature in real time along with discrete sensors	11.75

### **Patents** filed

S. No.	Name of Faculty Member	Title of Patent		
1	Dr. N. S. Rajput	System And Method For Rendering Germs Free Breathable Air (Ref. No. 202011023431 - TEMP/E-1/25908/2020-DEL		

# 5. Research and Consultancy

#### Sponsored research projects

S. No.	Title	Period	Funding Agency	Amount (in lakhs of Rs.)	Co- ordinator
1	Integrative Environment View (IEV) for Sustainable HyperLocal Temporal & Spatial Environmental Pollution Monitoring: Case of Air Quality in Varanasi City (Project Code - R&D/SA/Google/ Humanistic/20-21/01 FY 2020- 2021)	One Year (Pilot Phase)	Google USA	\$30,000 (~INR 21 Lacs)	Dr. N. S. Rajput P.I. (Sensors & IOT) (Interdisciplinary Project with Three Departments – ECE, CIV, MIN)
2	Analysis and Design of Sub-Mil- limetre Wave Tuneable Gyrotron for DNP-NMR Spectroscopy Application	April 2021 - April 2024	SERB, DST, India under <b>Core Research Grant</b>	50.16	Dr. M. Thottappan
3	Electromagnetic Analysis, Design and Simulation of Dual-frequency (S- and C-band) Relativistic Backward Wave Oscillator – A HPM Source	Sep. 2019 - Sep. 2022	Defense Research and Development Centre ( <b>DRDO</b> ), <b>Ministry of</b> <b>Defense, GoI,</b> <b>New Delhi.</b>	46.85	Dr. M. Thottappan





S. No.	Title	Period	Funding Agency	Amount (in lakhs of Rs.)	Co- ordinator
4	Study, Design and Implementation of Frequency Selective Metasurfaces for Microwave Application	August 2018 – August 2021	SERB, DST, India under <b>Early</b> Career Research Award	46.70	Dr. Somak Bhattacharyya
5	Design, Development and Characterization of Low- Loss, Frequency-Selective Metamaterial Waveguide, Coupler and Antenna for 5G Applications	Jan 2020-Jan 2023	SERB, DST, India	6.60	Dr. Smrity Dwivedi

#### **Research Publications**

#### **Refereed International Journals**

- 1. A. K. Singh, N. K. Chourasia, B. N. Pal, A. Pandey, and P. Chakrabarti, "A Proposed All ZnO Based Thin Film Transistor For UV-B Detection," *IEEE Photonics Technology Letters*, vol. 32, no. 24, pp. 1548-1551, 15 Dec.15, 2020.
- A. K. Singh, A. Pandey, and P. Chakrabarti, "Fabrication, Characterization, and Application of CuO Nano Wires as Electrode for Ammonia Sensing in Aqueous Environment Using Extended Gate-FET," *IEEE Sensors Journal*, vol. 21, no. 5, pp. 5779-5786, 1 March1, 2021.
- A. K. Dikshit, P. Banerjee, N. Mukherjee, P. Chakrabarti, "Theoretical optimization of double dielectric back reflector layer for thin c-Si based advanced solar cells with notable enhancement in MAPD," *Superlattice and Microstructures*, vol.191, pp.106747 (1-13), 2021.
- 4. V. Devarakonda, A. D. Dhar Dwivedi, A. Pandey, P. Chakrabarti, "Performance analysis of N+-CdTe /n0-Hg0.824675Cd0.175325Te/ p+-Hg0.824675 Cd0.175325Te n-i-p photodetector operating at 30 μm wavelength for terahertz applications," Optical and Quantum Electronics, vol. 52, pp. 1-19, 2020.
- N. K. Chourasia, A. K. Singh, S. Rai, A. Sharma, A. Srivastava, P. Chakrabarti, "A Lithography-Free Fabrication of Low-Operating Voltage-Driven, Very Large Channel Length Graphene Field-Effect Transistor With NH3 Sensing Application," *IEEE Transactions on Electron Devices*, vol. 67, no. 10, pp. 4385-4391, Oct. 2020.
- A. K. Singh, A. Pandey, and P. Chakrabarti, "A Green Light Sensitive Au/PBTTT-C14/OTS/SiO2/Si/Ag MOS Capacitor," IEEE Photonics Technology Letters, vol. 32, no. 17, pp. 1045-1048, 1 Sept.1, 2020.
- A. K. Singh, A. Pandey, and P. Chakrabarti, "Poly[2,5-bis(3-tetradecylthiophen-2-yl) thieno [3,2-b] thiophene] Organic Polymer Based-Interdigitated Channel Enabled Thin Film Transistor for Detection of Selective Low ppm Ammonia Sensing at 25°C," *IEEE Sensors Journal*, vol. 20, no. 8, pp. 4047-4055, 15 April15, 2020.
- A. K. Singh, N. K. Chourasia, B. N. Pal, A. Pandey, and P. Chakrabarti, "Low Operating Voltage Solution Processed (Li2ZnO2) Dielectric and (SnO2) channel based Medium Wave UV-B Phototransistor for Application in Phototherapy," *IEEE Transactions on Electron Devices*, vol. 67, pp. 2028-2034, 2020.
- 9. P. Tripathi, A. Kumar, S. Dwivedi, and P. K. Jain, "Equivalent Circuit Analysis of the Side-Coupled Cavity Structure", *IEEE Transactions in Plasma Science*, pp. 3501 3509, September 2020.
- A. Kumar, P. Tripathi, S. Dwivedi, and P. K. Jain, "Analysis of Azimuthal Partition Periodic Disk-Loaded Coaxial Structure for Bifrequency MILO Using Equivalent Circuit Approach", *IEEE Transactions in Plasma Science*, pp. 3030 - 3039, August 2020.
- 11. A. Kumar, S. Dwivedi, and P. K. Jain, "Beam-Wave interaction analysis of an azimuthally partitioned axially periodic disc loaded coaxial structure for bi-frequency MILO," accepted for publication in *IEEE Transactions in Plasma Science*.





- 12. V. Singh, S. Bhattacharyya, and P. K. Jain, "Micro-Doppler Classification of Human Movements using Spectrogram Spatial Features and Support Vector Machine (SVM)," *Wiley International Journal of RF and Microwave Computer-Aided Engineering*, vol. 30, issue 8, Article No. e22264, August 2020.
- A. K. Mishra, D. K. Jarwal, B. Mukherjee, A. Kumar, S. Ratan, M. R. Tripathy and S. Jit, "Au nanoparticles modified CuO nanowireelectrode based non-enzymatic glucose detection with improved linearity," *Nature Scientific Reports*, Vol. 10, pp.11451:1-10, July 2020.
- 14. A. Srivastava, S. Jit and S. Tripathi, "High-Performance Pentacene/ZnO UV-Visible Photodetector Using Solution Method," accepted for publication in *IEEE Transactions on Electron Devices*.
- 15. U. Kasiviswanathan, C. Kumar, S. Poddar, S. Jit, N. Sharma, and S. K. Mahto, "Extended Large Area Si/ZnO Heterojunction Biosensor for Assessing Functional Behaviour of Primary Cortical Neuronal Cells," accepted for publication in *IEEE* Sensors Journal.
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#### **Proceedings of International Conferences**

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- R. K. Upadhyay, A. P. Singh, D. Upadhyay, S. Ratan and S. Jit, "Fabrication and Characterization of SnO2/CH3NH3PbI3 based Photodetector," 2020 4th IEEE Electron Devices Technology & Manufacturing Conference (EDTM), 2020, pp. 1-4, doi: 10.1109/EDTM47692.2020.9117808.
- P. Singh, R. K. Upadhyay, D. C. Upadhyay and S. Jit, "Low-Cost Ag/PEDOT: PSS/ZnO Quantum Dot/ITO p-n junction based Photodetector," 2020 4th International Conference on Electronics, Materials Engineering & Nano-Technology (IEMENTech), 2020, pp. 1-4, doi: 10.1109/IEMENTech51367.2020.9270121.
- M. R. Tripathy, A. K. Singh and S. Jit, "TCAD Assessment Based Device to Circuit-Level Performance Comparison Study of Source Pocket Engineered All-Si Vertical Tunnel FET and GaSb/Si Heterojunction Vertical Tunnel FET," 2020 IEEE 17th India Council International Conference (INDICON), 2020, pp. 1-5, doi: 10.1109/INDICON49873.2020.9342569.
- M. R. Tripathy, A. Samad, A. Kumar Singh, P. Kumar Singh, K. Baral and S. Jit, "Device and Circuit-Level Performance Comparison of Vertically Grown All-Si and Ge/Si Hetero-Junction TFET," 2020 IEEE International Conference on Electronics, Computing and Communication Technologies (CONECCT), 2020, pp. 1-6, doi: 10.1109/ CONECCT50063.2020.9198657.
- M. R. Tripathy, A. K. Singh, A. Samad, K. Baral, P. K. Singh and S. Jit, "Performance Comparison of Ge/Si Hetero-Junction Vertical Tunnel FET with and Without Gate-Drain Underlapped Structure with Application to Digital Inverter," 2020 4th IEEE Electron Devices Technology & Manufacturing Conference (EDTM), 2020, pp. 1-4, doi: 10.1109/ EDTM47692.2020.9117840.
- K. Singh, M. R. Tripathy, K. Baral, P. K. Singh and S. Jit, "Ferroelectric Gate Heterojunction TFET on Selective Buried Oxide (SELBOX) Substrate for Distortionless and Low Power Applications," 2020 4th IEEE Electron Devices Technology & Manufacturing Conference (EDTM), 2020, pp. 1-4, doi: 10.1109/EDTM47692.2020.9117858.
- T. Gayatri, G. Srinivasu, M. K. Meshram, V. K. Sharma, "Analysis and Design of a Planar UWB Antenna for Spectrum Sensing in 3.1-10.6 GHz," 11th International Conference on Computing, Communication and Networking Technologies (ICCCNT), 1-3 July 2020.
- G. Srinivasu, T. Gayatri, M. K. Meshram, V. K. Sharma, "Design Analysis of an Ultra-Wideband Antenna for RF Energy Harvesting in 1.71-12GHz.," 11th International Conference on Computing, Communication and Networking Technologies (ICCCNT), 1-3 July 2020.
- S. Chaudhuri, and N. Rajput, "Mirror Mosaicking: A Novel Approach to Achieve High-performance Classification of Gases Leveraging Convolutional Neural Network," (2021) In Proceedings of the 10th International Conference on Sensor Networks - Volume 1: SENSORNETS, ISBN 978-989-758-489-3, pp. 86-91, DOI: 10.5220/0010251500860091.
- 11. S. N. Chaudhuri, N. S. Rajput, and K. P. Singh, "The Novel Camouflaged False Color Composites for the Vegetation Verified by Novel Sample Level Mirror Mosaicking Based Convolutional Neural Network," 2020 IEEE India Geoscience and Remote Sensing Symposium (InGARSS), 2020, pp. 237-240, doi: 10.1109/InGARSS48198.2020.9358926.





- 12. A. S. Singh, and M. Thottappan, "Broadening, Tuning, and Tailoring of Pass bands in RF Window for Multi-Frequency Vacuum Electron Devices," 2020 IEEE Microwave Theory and Techniques in Wireless Communications (MTTW), online from Riga, Lativa, 1-2 Oct. 2020.
- 13. M. Hemanta Kumar, S. Sharma, and M. Thottappan, "Downlink Index Modulation aided NOMA for MIMO Transmission," 2020 IEEE 3rd 5G World Forum (5GWF), Virtual Event, 10-12th Sep. 2020.
- Akash and M. Thottappan, "Design Studies of Two-Stage Depressed Collector for Millimeter Wave Gyro-TWT Using "MAGIC"," 2020 IEEE International Conference on Electronics, Computing and Communication Technologies (CONECCT), Bangalore, India, 2-4 July, 2020.
- 15. V V. Reddy, M. A. Ansari and M. Thottappan, "PIC Simulation Studies of High Power RBWO with Trapezoidal Resonant Reflector at Low Guiding Magnetic Field", 2020 IEEE International Conference on Electronics, Computing and Communication Technologies (CONECCT), Bangalore, India, 2-4 July, 2020.
- 16. T. Meena and K. Sarawadekar, "Gender Recognition using in-built Inertial Sensors of Smartphone," in IEEE Region 10 Conference TENCON 2020, Osaka, Japan, November 16 - 19, 2020.
- 17. S. K. Yadav and K. Sarawadekar, "Steering Kernel-Based Guided Image Filter for Single Image Dehazing," in IEEE Region 10 Conference TENCON 2020, Osaka, Japan, November 16 19, 2020.
- H. Srivastava and K. Sarawadekar, "A Depthwise Separable Convolution Architecture for CNN Accelerator," in 2<sup>nd</sup> IEEE Conference on Applied Signal Processing (ASPCON 2020), October 7-9, 2020, pp. 1-5.
- 19. S. Verma, "Multilayer Micromagnetic Models for All Spin Logic," in Proc. 17th IEEE India Council International Conference (INDICON) 2020, New Delhi, India, 10-13 December, 2020.
- 20. S. Mittal, A. Pal, M. Saremi, E. M. Bazizi, B. Alexander, B. Ayyagiri, "Via Size Optimization for Optimum Circuit Performance at 3 nm node," 25th International Conference on Simulation of Semiconductor Processes and Devices (SISPAD), September 2020, Japan.
- 21. B. Ayyagiri, A. B. Sachid, B. Alexander, E. M. Bazizi, V. Reddy, A. Low, J. Ferrell, A. Pal, S. Mittal and M. Saremi "Improving PPAC Through Materials-to-Systems (M2S) Co-Optimization for Emerging Technologies," 57th Design Automation Conference (DAC), 2020, San Francisco, USA.
- 22. R. Hung, X. Cen, Y. Xu, Y. Lei, K. Wu, W. Lei, S. Mittal, A. Pal, E. M. Bazizi, B. Alexander, T. H. Ha, X. Tang, K. Kashefizadeh, S. Kesapragada, Z. Chen, N. Kim, M. Naik, "Material Innovation for MOL Contact Resistance Reduction with Selective Tungsten," 23rd IEEE International Interconnect Technology Conference, 2020.

#### **Any other Information**

- Mr. Sambit Kumar Ghosh (Roll No. 17091021) has served as member of IEEE UP Section Student Activity Committee.
- Prof. M. K. Meshram has been serving as Secretary of IEEE UP Section Antennas and Propagation Society.
- Dr. Somak Bhattacharyya has been serving as the co-ordinator of IEEE Region 10 Microwave Theory & Techniques Society (MTT-S) Young Professional Committee.





# **13. Department of Mechanical Engineering**

#### Year of Establishment: 1919

#### Head of the Department: Prof. A. P. Harsha w.e.f. 02.08.2018

#### 1. Brief Introduction of the Department:

The Department of Mechanical Engineering came into existence in 1919 under the leadership of Professor Charles A. King, the first Head of the Department and Principal of the erstwhile Banaras Engineering College. Over the last century, the department has grown four folds to become the largest department in IIT (BHU), Varanasi. The post-graduate and doctoral program in the department is well-established and infrastructural facilities exist for studies and research for a range of specialisations such as Machine Design, Thermal and Fluid Engineering, Production Engineering and Industrial Management.

#### **Major areas of Research**

Fracture mechanics, Vibrations and dynamic analysis, Smart materials, Tribology, Heat Transfer, Fluid dynamics, Metal forming/joining, Machining, Micro-Machining, Welding engineering, Operations Research, Logistics & Supply Chain Management.

#### Infrastructure

S. No.	Particulars	Number
1	No. of Classrooms	04
2	No. of Lecture Halls	04
3	No. of Laboratory	20
4	No. of Computers available for students in the Department/ School	273

#### 2. Academic Programmes offered

#### **New Courses Introduced**

S. No.	Course Code	Course name	Course credit
1	ME-444	Wind Power Meteorology	9

#### **Students on Roll**

S. No.	Programme	I Year	II Year	III Year	IV Year	V Year & above
1.	B. Tech	142	139	123	111	
2.	Dual Degree	29	31	24	21	22
3.	M. Tech	60	56			
4.	Ph. D (Under Institute Fellowship)	11	07	10	17	29
5.	Ph. D (Under Project Fellowship)	05	02	00	00	02
6.	Ph. D (Under Sponsored Category)	02	02	03	00	00





# Names of students/scholars who attended conferences/workshops/seminars and symposia abroad or in India

S. No.	Name of Stu- dent	Roll No.	Conference/Seminar/Symposia/ Workshop	Date & Venue	Financial As- sistance From
ÌNDL	A				
1	Ajeet Kumar Yadav	17101001	Advanced Statistical Modelling and Data Science	Sept. 18-20, 2020 IMT Gaziabad	Self
2	Ajeet Kumar Yadav	17101001	Recent trends in thermo fluids	Feb. 22-26, 2021. NIT Sikkim	Self
3	Abhishek Raj	17101501	Organized Health Care Waste Collection and Route Optimization: A case Study	Oct 2020, NIT Jalandhar	Institute + self
4	Jitendra Kumar Singh	16131004	International webinar on "Metallic Glasses for Engineering and Biomedical Applications" Jointly Organized by E. G. S. Pillay Engineering College- India, Multimedia University- Malaysia and South Eastern University of Sri Lanka- Sri Lanka	31st July, 2020 Online	No fee
5	Ashutosh Roushan	15131504	International Conference on Mechatronics and Artificial Intelligence	Feb 26th – 27th, 2021 SGT University Gurugram	Dean (R & D) office and Mechanical Engineering Department
6	Basudeb Rajak	17131007	ONLINE webinar on 'Accelerated development of high-performance magnetic materials for emerging technologies' conducted by the Department of Metallurgical and Materials Engineering, National Institute of Technology, Durgapur in association with IIM Students' Chapter, NIT Durgapur	6th Nov, 2020, Online	No Fee
7	Basudeb Rajak	17131007	TEQIP- short - term course on "Condition Monitoring of Rotating Machines using Advanced Signal Processing Techniques" by Department of ME, IIT Indore	21st - 23rd Dec, 2020 Online	Self
8	Abhishek Siingh Yadav	M. Tech. (2018-2020)	International conference on Futuristic Technologies 2021	22-24 January 2021, IIT Delhi	MHRD
9	Nistha Dubey	18101501	Society of Operations Management Doctoral Colloquium SOM-2020	XLRI Jamshedpur, 14-15 December 2020	Self
10	Niteesh Yadav	19101002	Society of Operations Management Doctoral Colloquium SOM-2020	XLRI Jamshedpur, 14-15 December 2020	Self





S. No.	Name of Student	Roll No.	Name of Prize	Prize awarded by
1	Vinay Kumar Yadav	18132027	I.I.T.(B.H.U.) Varanasi Medal or standing First at the M.Tech. in Mechanical Engineering Examination, 2020	Institute
2	Vinay Kumar Yadav	18132027	Prof. (Dr.) Mahendra Kumar Jain Nyayacharya Gold Medal for securing highest CPI at the M.Tech. in Mechanical Engineering Examination, 2020.	Institute
3	Nikhil Pandey	18132006	S.K. Memorial Gold Medal for standing First position at the M.Tech. in Mechanical Engineering (Machine Design) Examination, 2020	Institute
4	Shivam Kumar	15134016	I.I.T.(B.H.U.) Varanasi Medal for standing First at the 5- Year I.D.D. (B.TechM.Tech.) in Mechanical Engineering Examination, 2020	Institute
5	Prashant Baghel	16135058	I.I.T.(B.H.U.) Varanasi Medal for standing First at the B.Tech. in Mechanical Engineering Examination, 2020	Institute
6	Prashant Baghel	16135058	The Prince of Wales Medal for standing First at the B.Tech. in Mechanical Engineering Examination, 2020	Institute
7	Prashant Baghel	16135058	Sudhir Kumar Sharma Memorial Gold Medal for securing highest marks in B.Tech. Mechanical Engineering Examination, 2020	Institute
8	Prashant Baghel	16135058	CRS Iyengar Memorial Gold Medal for securing highest marks in B.Tech. 4-Year Mechanical Engineering Examination, 2020	Institute
9	Prashant Baghel	16135058	Late Prof. Manoranjan Sengupta Platinum Jubilee Merit Award Rs. 1000/= cash for securing highest marks in B.Tech.in Mechanical Engineering Examination, 2020	Institute
10	Yavnika Chauhan	16135110	Smt. Indira Tripathi Gold Medal for securing highest CPI among the girl students at the B.Tech. in Mechanical Engineering Examination, 2020	Institute

# Names of scholars/students who won Convocation/Institute Day prizes

## 3. Faculty & their Activity Faculty and their areas of specialisation

S. No.	Name, Qualifications, Employ- ee No.	Date of award of PhD Degree	Major Areas of Specialization (Max. 3 Areas)
	PROFESSORS		
1	Prof. V.P.Singh Ph.D 13818	27.8.1987	Vibrations, Solid Mechanics
2	Prof. A.K.Agrawal Ph.D 13819	1990	Quality Control, Six Sigma, Optimization, Industrial Engineering, Operation Management, Supply Chain Management
3	Prof. V.K.Srivastava Ph.D 13811	1987	NDT of Composites, Delaminating of Fibre Composites, Fracture, Toughness and interface of Fibre Composites, Metal-Matrix Composites, Ceramic Fibre Composites, Biocomposites, Glass Composites,NanoComposites.





Indian Institute of Technology (BHU) Varanasi

S. No.	Name, Qualifications, Employ- ee No.	Date of award of PhD Degree	f Major Areas of Specialization (Max. 3 Areas)	
4	Prof. Santosh Kumar Ph.D 13831	Feb 12, 2000	Metal Forming, Additive Manufacturing, Unconventinal Mfg.	
5	Prof. A.P.Harsha Ph.D 16722	2004	Tribology, Material Tribology and Design	
6	Prof. Sandeep Kumar Ph.D 17343	1999	Computational Mechanics(Wavelets, FEM, Meshless)	
7	Prof. K.S.Tripathi Ph.D 13821	1992	Mechanisms, Vibrations	
8	Prof. S.K.Sinha Ph.D. 17364	1993	CNC	
9	Prof. Rajesh Kumar Ph.D. 17318	2002	Tribology, MEMS Reliability, Optimization	
10	Prof. Prasant Shukla Ph.D. 16723	3 <sup>rd</sup> May 2000	Fluid mechanics and heat transfer	
11	Prof. Pradyumna Ghosh Ph.D. 16801	Oct 2007	Microgravity fluid physics, heat transfer, CFD	
12	Prof. S.K.Shukla Ph.D. 18130	2005	Thermal Engineering, Renewable Energy, Alternate Fuels	
13	Prof. Rajnesh Tyagi Ph.D. 17341	Dec 2001	Solid Lubricating Composites and Tribology, Surface Modification for Wear reduction, High Temperature Wear of Composites and Coatings	
14	Prof. S.K.Panda Ph.D. 17390	29 <sup>th</sup> June, 2005	FailureAnalysisAndReliabilityDesign,FiniteElementAnalysis,ImpactDynamicsandBallistics,AdvancedCompositeStructures, Rolling Element Bearings	
15	Prof. P. Bhardwaj Ph.D. 16720	24 <sup>th</sup> May, 2006	Cellular Manufacturing System, Supply Chain Management, Production Systems	
16	Prof. Rakesh Kumar Gautam Ph.D 18239	May 22, 2009	Composite Materials, Tribological properties of composite materials and alloys, Bio-Tribology	
ASSOC	IATE PROFESSORS			
1	Dr. Mohd Zaheer Khan Yusufzai, Ph.D. 16657	13 <sup>th</sup> September 2012	Welding, Materials Engineering, Grinding	
2	Dr. Meghanshu Vashista Ph.D. 16721	22 <sup>nd</sup> Feb., 2010	Machining, Grinding, Welding	
3	Dr. S.S. Mondal Ph.D. 17339	13 August, 2005	Thermal and Fluid Sciences	
4	Dr. Jahar Sarkar Ph.D. 17388	2006	Heat transfer, Thermodynamics, Airconditioning	
5	Dr. Arnab Sarkar, Ph.D. 17252	11.5.2012	Wind Climatology, Renewable Energy, Microfluidics	
6	Dr. Debashis Khan Ph.D. 18139	December, 2007	Solid Mechanics, Fracture Mechanics, Finite Element Method	
7	Dr. Om Prakash Singh Ph.D. 50061	16 December 2006	CFD, Heat and mass transfer	
8	Dr. J.V.Tirkey Ph.D. 16724	2008	1. SI and CI Engine Design simulation 2. Alternate fuel	
9	Dr. Cherian Samuel PhD 16798	May 2005	Industrial Management, Operations and Supply Chain Management,	
10	Dr. N. Mallik Ph.D. 17253	13.08.2005	Smart Materials and Structures, Structural Health Monitoring, Energy Harvesting	
11	Dr. Amit Tyagi Ph.D. 17268	November 2011	Machine Design	
12	Dr. U. S. Rao, Ph.D. 17269	23.12.2013	Modeling and Simulation, Micro-machining, Machining,	
13	Dr. R. R. Sahoo Ph.D. 17335	3/10/2017	IC Engine, Alternate fuels, nanofluid & hybrid nanofluid applications	





S. No.	Name, Qualifications, Employ- ee No.	Date of award of PhD Degree	Major Areas of Specialization (Max. 3 Areas)
14	Dr. Laltu Chandra Ph.D. 50223	7 <sup>th</sup> July 2005	Fluid Flow and Heat Transfer; Solar Energy; Nuclear Reactor Thermal-hydraulics
ASSIST	ANT PROFESSORS		
1	Shri P.C.Mani 18214		Tribology and Maintenance Engineering
2	Dr. Amitesh Kumar Ph.D. 50073	30/09/2010	Cryotherapy, Fluid Flow and Heat Transfer, Computational Fluid Dynamics
3	Ajinkya Nandkumar Tanksale Ph.D. 50225	20 July 2018	Operations Research Facility Location Supply Chain Management
4	Dr. Anubhav Sinha Ph.D. 50239	12-Mar-2016	Atomization and Spray Gas Turbine Combustion Hydrogen Safety
5	Dr. Binita Pathak Ph.D. 50238	2/1/2018	Fluid instabilities, biofluid dynamics
6	Dr. Amit Subhash Shedbale PhD. 50241	24 September 2017	Solid Mechanics Damage Mechanics Finite Element Analysis
7	Dr. Saurabh Pratap Ph.D. 50255	July 2016	Maritime Logistics, E-commerce platform, Blockchain, IoT
8	Dr. Joy Prakash Misra Ph.D. 50256	27/08/2014	Machining Science, Advanced & Hybrid Machining Processes, Advanced Joining Techniques
9	Dr. Akhilendra Pratap Singh Ph.D. 50260	27th January 2017	Advanced low temperature combustion; Optical diagnostics with special reference to engine endoscopy and PIV; Combustion diagnostics; Engine emission measurement; Particulate characterization and their control; Alternative fuels

## Technical and Non-Teaching Staff

Sl. No.	Name, Qualifications	Designation, Employee No.	Date of Appointment in the department
1	Sri Akash Mishra, M.Com. & B.Com.	Junior Assistant,50079	08/05/2017
2	Sri Rajeev Ratan Sahaya, MBA	Junior Assistant,50186	06/03/2018
3	Sri Satya Prakash	Sr. Tech. Superintendent, 18017	20/01/2007
5	Sri Rajendra Prasad, Intermediate, ITI	Sr. Tech. Superintendent, 13904	29/09/1986
6	Sri Ram Adhar Yadav, Intermediate, Diploma in Mechanical Engg.	Technical Superintendent, 13981	05/05/1988
7	Sri Barmeshwar Rai, Graduation	Technical Superintendent, 13975	12/10/1988
8	Sri Dhaniram Shankar Singh, Intermediate (Sci.)	Technical Superintendent, 13967	04/06/1991
9	Sri Hari Shankar, 12 <sup>th</sup> , Diploma in Computer in Off. Management	Technical Superintendent, 13982	08/01/1997
9	Sri D.P. Sharma, Intermediate (Sci.)	Technical Superintendent, 13984	15/10/1998
10	Sri V.P. Srivastava, Graduation (B.Sc.)	Technical Superintendent, 13983	15/10/1998
11	Sri S.P. Singh, High School, ITC	Jr. Tech. Superintendent, 13985	12/10/1998
12	Sri Ranjeet Sharma, High School	Jr. Tech. Superintendent, 13986	12/10/1998
13	Sri Rajendra Kumar, Intermediate (Sci.)	Jr. Tech. Superintendent, 18062	22/02/2007
14	Sri Nand Lal, Intermediate, ITI	Jr. Tech. Superintendent, 18055	21/02/2007
15	Sri Anil Kr. Singh, Graduaion (B.A.), ITI	Jr. Tech. Superintendent, 18060	20/02/2007
16	Sri Surendra P. Yadav, Intermediate (Sci.)	Sr. Technician 18610	05/08/2008





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Sl. No.	Name, Qualifications	Designation, Employee No.	Date of Appointment in the department
17	Sri Dinesh Kumar, Graduation (B.Sc.)	Sr. Technician, 18614	11/08/2008
18	Sri Sunil Kr. Bardhan, 12 <sup>th</sup> , ITI, Diploma in Mechanical Engg.	Sr. Technician, 18613	05/08/2008
19	Sri Shambhu Prasad, Post Graduation (M.P.Ed.)	Sr. Technician, 18611	05/08/2008
20	Sri Ravi Prakash Singh, Intermediate, ITI (Draftsman)	Sr. Technician, 18612	06/08/2008
21	Ms. Saroj K. Patel, M.A. (Sociology), ITI	Sr. Technician, 19271	09/02/2011
22	Sri Mool Chand, Intermediate (Sci.)	Sr. Technician, 13974	16/09/1987
23	Sri Barmeshwar Prasad, Intermediate	Sr. Technician, 19597	11/07/2012
24	Sri Anupam Mishra, Graduation (B.Sc.), ADCA	Sr. Technician, 19600	11/07/2012

## Short-term courses/workshops/seminars/symposia/conferences organised by faculty members

S. No.	Coordinator	Title	Period
1	Prof. Santosh Kumar	ATAL FDP on 3D Printing & Design	5 October 2020 to 9 October 2020
2	Prof. P. Ghosh, Co-Cordinator	AICTE, Short Term Course; "Decoding the flow behaviour of multiphase flow reactor through experimental and numerical tools"	Jan 18 -23, 2021, IIT(BHU), Chemical Engineering
3	Prof. S.K.Shukla	Online Interactive Course Under CST UP Incubation Centre at Department of Mechanical Engineering, IIT (BHU) Varanasi with collaboration of Skill Age Foundation, Pune	13th July 2020
4	Dr. Arnab Sarkar (Co- coordinator)	Mechanics of Advanced Composite Materials	9.2.2021-13.2.2021 (Jointly with Civil Engineering)
5	Dr. Debashis Khan	"Method of Analysis of Smart Structures - Nonlocal Mechanics"	Department of Mechanical Engineering, IIT (BHU) Varanasi, February 01 – 13, 2021
6	Jeewan V Tirkey	AICTE-QIP-short term course on "Energy & Environment Management for Sustainable Development	7th to 12th Dec 2020
7	Dr. Nilanjan Mallik	Analysis of Smart Structures-Nonlocal Mechanics	01-13 February, 2021
8	Dr. Amit Tyagi	Advances in Vibration Analysis (AICTE sponsored short term course)	December 28, 2020 to January 2, 2021
9	Dr. U. S. Rao	AICTE - Short Term Course on Advances in Machining and Processing Technology	February 01, 2021 to February 06, 2021
10	Dr. Rashmi Rekha Sahoo	Waste Heat Recovery and Utilisation	17-23 January 2021
11	Dr. Ajinkya N. Tanksale (Jointly with Department of Computer Science & Engineering, IIT(BHU) Varanasi)	AICTE Sponsored Online QIP Short Term Course On "IoT and Its Applications"	25th-31st December 2020





Short-term courses/workshops/seminars/symposia/conferences/training programmes attended by faculty members in academic institutions and public sector undertakings

S. No.	Name of Faculty Member	Title	Period and Venue
Semina	ars/Symposia/Conferences		
1	Prof. Santosh Kumar	Laser matter interaction	18-23 January 2021, IIT Kanpur
2	Prof. Santosh Kumar	Engineering education & the Industry: A post COVID 19 perspective	Rajeev Gandhi Institute of Technology Mumbai, 1 June 2020 – 5 June 2020
3	Prof. Santosh Kumar	Advance research & funding scope in the emerging areas of Engineering, Science and Technology	Engineering Staff College of India, 24 July 2020
4	Prof. S.K. Shukla	One day National Webinar on Solar Thermal Energy Storage Systems	08.01.2021 from 03:00 PM to 04:30 PM under TEQIP-III, Rewa Engineering College
5	Dr. Laltu Chandra	SERB – Accelerate Vigyan sponsored "Karyashala – a highend workshop on thermal energy Storage for building applications	25-29 January 2021, NIT Rourkela
6	Dr. Ajinkya N. Tanksale	Ripple effect in Supply Chains at different Pandemic Stages: How Simulation and Optimization Can Help Predicting the Impacts of and Recovering from the COVID-19 Pandemic	Prof. Dmitry Ivanov organized by INFORMS May 15, 2020 online
7	Dr. Ajinkya N. Tanksale	How Birchbox Transformed its Operations With Mathematical Optimization	GUROBI optimization July 29, 2020, Online
8	Dr. Ajinkya N. Tanksale	How Interpretable AI Uses MIP To Develop More Accurate Machine Learning Models	GUROBI optimization September 30, 2020, Online
9	Dr. Ajinkya N. Tanksale	How Vodafone Uses Optimization To Tackle The Telecommunication Industry's Toughest Problems	GUROBI optimization Oct 28, 2020
10	Dr. Ajinkya N. Tanksale	Scenario-Based Strategic Sourcing with anyLogistix	anyLogistix, December 10, 2020, online
11	Dr. Ajinkya N. Tanksale	Global Online Certification course on Supply Chain Digitization and Management	National Institute of Industrial Engineering, 16 January 2021 to 21 March 2021
12	Dr. Anubhav Sinha	8th International & 47th National Conference on Fluid Mechanics and Fluid Power (FMFP)	Dec 2020, IIT Guwahati (online mode)
13	Dr. Binita Pathak	8th International & 47th National Conference on Fluid Mechanics and Fluid Power (FMFP)	8-11 December,2020 IIT Guwahati
14	Dr. Saurabh Pratap	Global Online Certification course on Supply Chain Digitization and Management	National Institute of Industrial Engineering, 16 January 2021 to 21 March 2021
15	Dr. Akhilendra Pratap Singh	Vth International Conference on Sustainable Energy and Environment Chalanges	19th Dec. to 21st Dec. 2020 (Online)





S. No.	Name of faculty Member	Topic of Lecture	Institution	Date
1	Prof. V.K. Srivastava	Roll of Carbonization and Multi walled Carbon Nanotubes on Plyacrylonitrile short Cabon Fibre Polymer Composites	International Conference on advanced Thermostructural Materials & Thermal Protection Systems (ADTHERM 20), Thiruvananthapuram	19-21, January (2020)
2	Prof. Santosh Kumar	3D Printing and design	NIT Patna	7 December 2020
3	Prof. A. P. Harsha	Some Fundamental Aspects of Tribology	Six day Online STTP on "Recent Advances in Tribology and Surface Engineering: Series 1 of 4, Introduction to Tribology and Surface Engineering" organized during August 17-22, 2020, Saintgits College of Engineering, Kottayam, Sponsored by All India Council for Technical Education (AICTE), New Delhi,	18/08/2020
4	Prof. A. P. Harsha	Galling resistance evaluation of steel pairs	Six day Online STTP on "Recent Advances in Tribology and Surface Engineering: Series 2 of 4 - Tribology of Machine Components and Applied Tribology" organized during September 14-19, 2020, Saintgits College of Engineering, Kottayam, Sponsored by All India Council for Technical Education (AICTE), New Delhi,	18/09/2020
5	Prof. A. P. Harsha	The fundamentals of biotribology and its application to total joint replacement	Six day Online STTP on "Recent Advances in Tribology and Surface Engineering: Series 3 of 4 - Introduction to Special Topics like Nanotribology, Biotribology, Space Tribology, Biomimetics and Tribology in Industry" organized during October 12-17, 2020, held at Saintgits College of Engineering, Kottayam, Sponsored by All India Council for Technical Education (AICTE), New Delhi,	13/10/2020

## Special lectures delivered by faculty members in other institutions





S. No.	Name of faculty Member	Topic of Lecture	Institution	Date
6	Prof. A. P. Harsha	Role of surface Topography and its effects in Tribology Six day Online STTP on "Recent Advances in Tribology and Surface Engineering: Series 4 of 4 - "Surface Characterization and Treatments in Tribology" organized during December 23-28, 2020, held at Saintgits College of Engineering, Kottayam, Sponsored by All India Council for Technical Education (AICTE), New Delhi,		24/11/2020
7	Prof. A. P. Harsha	Bio-Tribology	5 days International Short Term Course On "Tribology & Sustainability"24th August to 28th August 2020, SRM Institute of Science and Technology, Chennai.	27/08/2020
8	Prof. A. P. Harsha	Galling evaluation of steel pairs	Virtual International Tribology Research Symposium 2020, 5th – 7th November 2020, SRM Institute of Science and Technology, Chennai.	05/11/2020
9	Prof. A. P. Harsha	Challenges associated with wear testing of biopolymers for total joint replacement application	es associated with AICTE-ATAL sponsored Faculty ting of biopolymers Development Program on "Green tribology and sustainability engineering" 22 February – 26 February 2021, Canara Engineering College, Bantwal, Karnataka	
10	Prof. A. P. Harsha	Fundamentals of Tribology and its Application in the Biomedical Field	lamentals of Tribology One Week Online Workshop on Interdisciplinary Approach of Tribology in Engineering and Biomedical Research" Department of Mechanical Engineering, National Institute of Technology Silchar, Assam under the aegis of TEQIP-III during 04- 08 August 2020	
11	Prof. Sandeep Kumar	Wavelet Transform	IIT (BHU) Varanasi	Dec 31, 2020
12	Prof. Sandeep Kumar	Time-Frequency Analysis	IIT (BHU) Varanasi	Jan 02, 2021
13	Prof. Sandeep Kumar	Sobolev Spaces for FEM	IIT (BHU) Varanasi	Feb 3, 2021
14	Prof. Sandeep Kumar	Operator Adapted FEM	ВНИ	Feb 7, 2021
15	Prof. Sandeep Kumar	Error Estimation in FEM	IIT (BHU)	Feb 10, 2021
16	Prof. Sandeep Kumar	Sustainable Development	SMVDU, Jammu Mar 24, 2021	





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S. No.	Name of faculty Member	Topic of Lecture	Institution	Date
17	Prof. Rajesh Kumar	Contact Temperature	AICTE sponsored STC on Method of Analysis of Smart Structures - Nonlocal Mechanics, IIT(BHU)	06.02.2021
18	Prof. Rajesh Kumar	Boundary Lubrication	AICTE sponsored STC on Method of Analysis of Smart Structures - Nonlocal Mechanics, IIT(BHU)	13.02.2021
19	Prof. Pradyumna Ghosh	Introduction to CFD simulation-I & II	IIT(BHU), AICTE, Short term course	18th and 19th Jan,2021
20	Prof. Pradyumna Ghosh	Issues and Concerns in HVAC Industry for COVID	Samsung Electronics	10th Sep, 2020
21	Prof. Pradyumna Ghosh	Introduction to CFD	AICTETrainingandLearning(ATAL)AcademySponsoredonlineFacultyDevelopmentProgramon"AdvancedComputationalFluid Dynamics"@IET, Lucknow	23rd Nov,2020
22	Prof. Pradyumna Ghosh	Development of an advanced solar-hybrid adsorption cooling system for decentralized storage of agricultural products in India	IIT(BHU), AICTE, Short term course	21st Jan,2021
23	Prof. S.K.Shukla	Building Integrated Energy Storage System	Nagoya Institute of Technlogy, Japan	31st August 2020
24	Prof. S.K.Shukla	Transforming Culture of Assessment " for a webinar titled " Reflection on National Education Policy -2020'	S.N.D.T. University, Mumbai	10th Sept. 2020
25	Prof. S.K.Shukla	De-carbonization: Exploring the Hydrogen Prospects and Innovative Technologies	Organized by Embassy of India, Tokyo, in association with the Department of Science and Technology (DST), GoI; The Energy and Resources Institute (TERI), India; and The Institute for Global Environmental Strategies (IGES),Japan	19th April, 2021
26	Prof. S. K. Panda	Bimodular Elasticity in Nuclear Graphite Components	TEQIP III STC at Department of Mechanical Engineering, Indira Gandhi Institute of Technology (Institute of Govt. of Odisha), Sarang	2nd Feb 2021
27	Prof. S. K. Panda	Analysis of sandwich structures	AICTE STC IIT (BHU)	04/02/2021
28	Prof. S. K. Panda	Design and development of Smart MR damper	AICTE STC IIT (BHU)	08/02/2021
29	Prof. S. K. Panda	Fracture behaviour of polymeric nanocomposites	AICTE STC IIT (BHU)	09/02/2021





S. No.	Name of faculty Member	Topic of Lecture	Institution	Date
30	Dr. Mohd Zaheer Khan Yusufzai	Friction Stir Cladding of copper on aluminum and steel substrates	"India-UK SPARC Webinar" Jointly organised by IIT-Patna, IIT Hyderabad, University of Manchester, and University of Surrey,	16th September 2020
31	Dr. Mohd Zaheer Khan Yusufzai	Friction Stir Welding	IIT-Indore (online mode)	18th October 2020
32	Dr. Mohd Zaheer Khan Yusufzai	Friction stir Cladding	MMMUT, Gorakhpur (online mode)	26th October 2020
33	Dr. Mohd. Zaheer Khan Yusufzai	BestPractices/BenchmarkinginMaintenanceandOperations: Repair Welding	Northern Coalfields limited Singrauli	18th February 2021
34	Dr. Arnab Sarkar	Wind Resources Assessment and Identification of Optimum Wind Turbine Parameters	Bhagalpur College of Engineering, Bhagalpur, Bihar	1.10.2020
35	Dr. Arnab Sarkar	Development of a Low Cost POC Device for Early Diagnosis of Prostate Cancer through Liquid Biopsy Integrated with Radiotherapy Dose Prediction using Machine Learning	Ashoka Institute Technology & Management, Varanasi	27.1.2021- 31.1.2021
36	Dr. Arnab Sarkar	Industry 4.0 Renewable Energy with Special Emphasis on Solar, Wind, Biomass and Microfluidics	dustry 4.0 Renewable Techno India, Salt Lake, Kolkata ergy with Special and NIT, Patna phasis on Solar, Wind, omass and Microfluidics	
37	Dr. Arnab Sarkar	Multiscale Air Modeling on Renewable Energy Harvesting and Energy Efficient POC Diagnostics	Institute of Engineering and Management, Kolkata	5.2.2021-7.2.2021
38	Dr. Arnab Sarkar	Development of a Portable POC Device for Anemia and Leukomia Detection using PMMA	IIT (BHU), Varanasi	9.2.2021-13.2.2021
39	Prof. R.K.Gautam	'Composite Materials: An Overview and Recent Advances	Indian Institute of Metals, India, IIT Mumbai Chapters	Dec. 14-16 ,2020
40	Prof. R.K.Gautam	Sustainable Tribology	Mechanical Engineering Department, Amity University, Gwalior, Madhya Pradesh	October 15-16, 2020
41	Prof. R.K.Gautam	Energy Conservation Through Better Process Design	Mechanical Engineering Rajkiya Engineering College, Azamgarh	September 22-26, 2020
42	Prof. R.K.Gautam	Copper based metal matrix composites: Its Mechanical and Tribological Properties	Mechanical Engineering Department, GBPIET Pauri- Garhwal Uttarakhand	Sept 07-11, 2020





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S. No.	Name of faculty Member	Topic of Lecture	Institution	Date
43	Dr. Om Prakash Singh	Building design for Energy conservation	School of Management Sciences	14th Dec 2020
44	Dr. Jeewan V Tirkey	Biomass Gasification	TEQIP (III) SPONSORED ONE WEEK SHORT TERM TRAINING PROGRAM ON "Flow, Energy and Combustion" Organizing by: Department of Mechanical Engineering, SVNIT Surat, Gujarat	December 21-25, 2020)
45	Dr. Jeewan V.Tirkey	Renewable Energy and Biomass Gasification	International Conference on Sustainable Innovation in Mechanical Engineering ICSIME- 2K21, Faculty of Engineering & Technology, Rama University Uttar Pradesh, Kanpur	28-29 May 2021
46	Dr. Jeewan V. Tirkey	ALTERNATE FUELS: AICTE-ATAL-FDP on ALTERNATE BIOFUELS Gasification FUELS: BIOFUELS at Dept. of Mechanical Engineering Faculty of Engg. & Tech. Gurukul Kangri University, Haridwar		21-25 Sept,2020
47	Dr. Laltu Chandra	Concentrated Solar Thermal SERB-sponsored workshop, NIT Rourkela		25-29 January 2021, NIT Rourkela
48	Dr. Ajinkya N. Tanksale	Introduction to Multi- SKN Sinhgad College Of Objective Optimization Engineering, Korti, Pandharpur (online)		26 May 2020
49	Dr. Ajinkya N. Tanksale	Supply Chain and IoT	IoT and Its Applications	27 December 2020
50	Dr. Amit Subhash Shedbale	Experimental and Numerical Methods for Mechanical Engineers	G. B. Pant Institute of Engineering and Technology Pauri- Garhwal	17–28 August, 2020
51	Dr. Joy Prakash Misra	Green Machining of Ti Alloy	Poornima College of Engineering	25.12.2020
52	Dr. Joy Prakash Misra	Application of Machine Learning Approaches in FSW	NIT Patna	26.12.2020
53	Dr. Joy Prakash Misra	Advanced Joining Technique for Aerospace Alloys	NIT Patna	12.02.2021
54	Dr. Joy Prakash Misra	Processing of MMCs	NIT Uttarakhand	24.02.2021
55	Dr. Joy Prakash Misra	Tips for Better Presentation	NIT Uttarakhand	27.02.2021
56	Dr. Joy Prakash Misra	Evolution of Machining Processes	NIT Sikkim	19.03.2021
57	Dr. Joy Prakash Misra	Evolution of Machining Processes	Maharishi Markandeshwar University	23.03.2021
58	Dr. Joy Prakash Misra	Evolution of Machining Processes	NITTTR Chandigarh	13.05.2021





#### Honours and awards

S. No.	Name of Faculty Member	Details of Award
1	Dr. Arnab Sarkar	Complete blood count (CBC) on a portable spinning disc, developed by Dr. Arnab Sarkar and others, has been covered by most of the leading newspapers and media channels such as Financial Express, Times Now, Economic Times, The Hitavada, The Week, Amar Ujala, Sakshi, Business Standard, Millennium Post, Express Healthcare, Anandabazar Patrika, Zee News
2	Dr. Arnab Sarkar	Certificate of Outstanding Contribution in Reviewing has been awarded to Dr. Arnab Sarkar on April, 2020 in recognition of the contributions made to the quality of the journal, Energy (Elsevier)
3	Dr. Laltu Chandra	Advisory Member, Int. Sym. Fluid and Thermal Engineering (FLUTE 2021), Amity University

## Books, monographs authored/co-authored

S. No.	Name of Author/Co- Au- thor	Title	Publisher
1	S.K. Sinha	Probing on CNC Machines ISBN-13 : 979-8577916558	Amazon platform, USA
2	S.K. Sinha	Macro Programming Fundamentals ISBN-13 : 979-8593433732	Amazon platform, USA
3	Harshita Sawarn, Pushpendra Kumar Singh Rathore, and Shailendra Kumar Shukla	Techno-Economic Feasibility Analysis of Parabolic Solar Cooker in Tropical Environment of India	Advances in Fluid and Thermal Engineering, Lecture Notes in Mechanical Engineering, https:// doi.org/10.1007/978-981-16- 0159-0_20, Springer Nature
4	Akhilendra Pratap Singh	Alternative Fuels and Advanced Combustion Techniques as Sustainable Solutions for Internal Combustion Engines	Springer
5	Akhilendra Pratap Singh	Novel Internal Combustion Engine Technologies for Performance Improvement and Emission Reduction	Springer

## Editorial boards of journals

S. No.	Name of Faculty Member	Position (Editor/ member)	Name of Journal
1	Prof. S.K.Shukla	Editorial Board Member	International Journal of Petroleum Technology, Université de Lorraine, Nancy, France
2	Dr. Arnab Sarkar	Editor	Fontiers in Built Environment
3	Dr. Debashis Khan	Editorial Board Member	International Journal of Materials Research in Science & Technology
4	Dr. Ajinkya N. Tanksale	Associate Editor	OPSEARCH – The journal of Indian OR Society, Springer publications
5	Dr Saurabh Pratap	Associate Editor	Opsearch Journal, Springer





# 4. Design and Development Activities

## New facilities added

S. No.	Details (Infrastructure, Equipments, etc.)	Value (in Lakhs of Rupees)
1	Fluid control test rig	2.5 Lakhs
2	Inverted Fluorescence Microscope	16
3	Bio-Tribometer	30 Lacs

## Patents filed

S. No.	Name of Faculty Member	Title of Patent
1	Prof. S.K.Shukla	An Improved Solar Still Assembly for purification of raw water, TEMP/E-1/1138/2021-DEL
2	Prof. S.K.Shukla	An Improved Organic Ranking Cycle system with coupled diffusion absorption refrigeration effect, TEMP/E-1/928/2021-DEL
3	Dr. Om Prakash Singh	Title: AN IMPROVED HIGH FLOW SOLAR CHIMNEY POWER PLANT Application No.: 202011033120
4	Dr. Amitesh Kumar	Development of highly efficient multi-hole nozzle for the cryospray process

## 5. Research and Consultancy Sponsored research projects

S. No.	Title	Period	Funding Agency	Amount (in lakhs of Rs.)	Co- ordinator
1	Development Of Complex Aluminum Shell Part Using High Pressure Die Casting	2 years	DRDL HYDERABAD	24.8	Prof. Santosh Kumar
2	Pathology on a Spinning Disc	3 years	MHRD (STARS)	94.10	Dr. Arnab Sarkar
3	AssessmentofStructuralVulnerabilitythroughCharacterisationofTornado for aNPP Site	3 years	BRNS	32.37	Dr. Arnab Sarkar
4	Assessment of Vulnerability of Structures in Regard to Cyclonic Wind Loads	2 years	BIS	16.76	Dr. Arnab Sarkar
5	"Development of Ti alloy based composites by mechanical alloying and stirrer casting route for dental applications"	2018-2021	DST, SERB	50.21	Prof. R. K. Gautam
6	Experimental study of turbulent jet	April, 2018 onwards	IIT(BHU), Seed Grant	10.00	Dr. Amitesh Kumar
7	Effective necrosis of skin tumour using cryospray	June, 2018 onwards	IIT(BHU), DIC	5.00	Dr. Amitesh Kumar
8	Jet in Crossflow	2020-22	DST (SERB)	32	Dr. Anubhav Sinha
9	Impact of a spray on a bio-mimicking surface	1/1/2021- 1/1/2023	SERB India	31	Dr. Binita Pathak



#### Faculty members' participation with other universities under MoUs

- 1. MOU with SNDT Women's University Mumbai , Coordinator: Prof.S.K.Shukla
- 2. MOU with CMET Pune, Coordinator: Prof.S.K.Shukla

#### **Research Publications**

#### **Refereed International Journals**

- 1. Srivastava V.K., Jain P.K., Kumar P., Pegoretti A. and Boven C.R. (2020) Smart manufacturing process of Carbon-based low dimensional structures an fiber Rainforced polymer composites for engineering application. Journal of Materials Engineering and Performance. 22: July 2020.
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- 135. Yadav C. and Sahoo R.R. (2020) Thermal performance analysis of MWCNT-based capric acid PCM thermal energy storage system. Journal of Thermal Analysis and Calorimetry (In Press).
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- 138. Karana D.R. and Sahoo R.R. (2020) Thermohydraulic performance of a new internal twisted ribs automobile exhaust heat exchanger for waste heat recovery applications. International Journal of Energy Research. 44(14): 11417-11433.
- 139. Sahoo R.R. (2020) Thermo-hydraulic characteristics of radiator with various shape nanoparticle-based ternary hybrid nanofluid. Powder Technology. 370(1): 19-28.
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#### **Proceedings of International Conferences**

- 1. Proc. 6th International Conference on Recent Advances in Composite Materials. Guest Editors, V.K. Srivastava, Walter Krenkel, Alessandro Pegoretti and Chris Bowen. Vol. 21, Part (2020), 1031-1402. MATERIALS TODAY PROCEEDING, ELSEVIER Publisher, UK.
- Sawarn H., S.K. Shukla and Rathore P.K.S.. (2020) Development in Solar Cooking Technology in the Last Decade: A Comprehensive Review. International Conference on Futuristic and Sustainable Aspects in Engineering and Technology (FSAET-2020), GLA University. Selected for publication in IOP Conference Series materials science and engineering. Scopus Indexed proceeding pp.219-229.





- Singh S. K. and Panda S. K. 2020. An Analytical Approach to Study Performance Parameters of 1-3 Piezoelectric Composite. (ICMSS 2020), American Institute of Physics (AIP) Conference Proceedings 2327, 020020 (2021); doi.org/10.1063/5.0039468. October 15-16 Erode, Tamilnadu
- 4. Vivek Krishna, Ramraj Singh, Uditanshu Shukla, Vikas Bansal, Navneet Kumar Pandey and Debashis Khan (2020) Effect of Stress Ratio on Fatigue Crack Propagation in Plastically Compressible Solids: A Review, International Conference on Intelligent Control and Computation for Smart Energy and Mechatronic Systems (ICCSEMS-2020), September 25 – 26, 2020, JSS Academy of Technical Education, Noida, India
- 5. Prakhar Bandil, Rahul Goswami, Shivansh Kaul, Pakshal Shah and Debashis Khan (2020), Numerical simulation of void growth ahead of a moving crack tip in plastically compressible solids, 1st Online International Conference on Recent Advances in Computational and Experimental Mechanics, September 4-6, 2020, IIT Kharagpur, India
- Deepak kumar singh, J.V Tirkey, Ambesh Pandey, Deepak mittal "Experimental Investigation of Gasifier Integrated with IC Engine Fuelled With Jamun (Syzygium Cumini) Biomass". (Paper accepted) ICOMS 2020 NCL Singrauli M.P.
- Abhishek Raj and Cherian Samuel. 2020. Organized Health Care Waste Collection and Route Optimization: A case Study. 23, International Conference on Industrial and Manufacturing Systems (CIMS-2020), NIT Jalandhar, India, October 2020.
- 8. Anand Jaiswal and Cherian Samuel 2021. Change in research trends in sustainable supply chain management with emergence of Covid-19, Online International conference on Emerging business, management and Sustainability paradigm beyond 2020, March 2021
- 9. Abhishek Singh Yadav, Laltu Chandra , Jahar Sarkar. A comprehensive, one dimensional, steady, heat transfer analysis for the receiver as in parabolic trough collector, Int. Conf. Futuristic Technologies 2021, 22-24 January 2021, IIT Delhi.
- 10. Parasuram IVLN, Sinha, A (2020) Investigating Wake Structures in Flow Past Configuration of Cylinders Using Proper Orthogonal Decomposition, 8th International and 47th National Conference on Fluid Mechanics and Fluid Power (FMFP)At: IIT Guwahati.
- Amit S. Shedbale, Sun Gang and Leong Hien Poh. 2020. Gradient Enhanced Isotropic Damage Model for the Mixed-mode Fracture of Concrete, Proceedings of the Ist Online International Conference on Recent Advances in Computational and Experimental Mechanics (ICRACEM), IIT Kharagpur, India, September 4–6, 2020.

## 6. Other activities

## International collaboration/achievements by the Department

Dr. Arnab Sarkar is collaborating with Prof. Christophe Ley of Ghent University, Belgium. Out of their collaborations, two articles have been published in Renewable Energy.

#### Any other Information

Under **CST UP Incubation Centre for Grass Root Innovators**, **Department of Mechanical Engineering**, **Indian Institute of Technology (BHU)**, **Varanasi- 221005**, the following working prototypes have been developed and run successfully by value addition of grass root innovators projects funded by CST UP Lucknow





- I. Development of e Bike
- II. Garbage collection rickshaw
- III. High-Speed Cycle



Photograph of 4-speed e Bike



Photograph of Garbage collection Rickshaw





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Photograph of auxiliary axle-based compound train sprocket bicycle

- Dr. Arnab Sarkar acted as the paper setter and examiner of UPSC Engg. Services Examinations as well as paper setter of UPSC Civil Services Examination.
- Dr. Arnab Sarkar has acted as the Reviewer in Applied Energy (Elsevier), Scientific Reports (Nature), Physics of Fluids (AIP), Energy Conversion and Management (Elsevier), Energy (Elsevier), Wind Energy (Wiely), Quarterly Journal of Royal Meteorological Society, Journal of King Saud Arabia (Elsevier), International Journal of Sediment Research (Elsevier), International Journal of Civil Engineering (Springer), International Journal of Advanced Structural Engineering (Springer), International Journal of Green Energy (Taylor & Francis), International Journal of Energy Research (Wiely), International Journal of Ambient Research (Taylor & Francis), Defense Science Journal, IEEE Sensor, Journal of Renewable and Sustainable Energy (AIP), International Journal of Energy and Water Resources (Springer), International Journal of Exergy (Inderscience)
- > Dr. Arnab Sarkar reviewed 8 project proposals submitted to MHRD under SPARC scheme.





**Maximum two** photographs (Soft Copy) of Laboratory / Best Laboratory Equipment of your Department with footnote details. High resolution image also needs to be uploaded



100 KN Servo –Hydraulic UTM with Shaker arrangement (SOM Lab)



Wind Tunnel for Visualisation of Streamlines



# 14. Department of Metallurgical Engineering

#### Year of Establishment: 1923

Head of the Department: Prof. Sunil Mohan (from January 2021)

## 1. Brief Introduction of the Department

The Department of Metallurgical Engineering, established in the year 1923 has pioneered metallurgical education and research in the country. The far-sighted vision of Mahamana Pandit Madan Mohan Malaviyaji has helped this Department to attain such a distinction. This is now a part of IIT (BHU). The UG programme began in the year 1923 itself and the first ever undergraduate and doctoral degrees in metallurgy in the country were awarded by this Department in the years 1927 and 1955 respectively. This is also one of the first two Departments in the country to confer a postgraduate degree in metallurgy in the year 1959. The undergraduate programme was set on a firm foundation by the first Head of the Department, Professor Nagardas Purushottam Gandhi. The postgraduate programme was nurtured by the second Head of the Department, Professor Daya Swarup. Professor Tanjore Ramachandra Anantharaman, the third Head of the Department, established a fine research school of metallurgy, firmly rooted in exemplary traditions and ensured all-round growth and high profile image of the Department. Subsequently, illustrious successive Heads of the Department have continued to do their utmost to enhance the levels of excellence that the Department is known for. The Department celebrated its Golden Jubilee in the year 1973, Diamond Jubilee in 1983 and Platinum Jubilee in the year 1998 in a befitting manner.

The current faculty strength consists of 7 Professors, 9 Associate Professors and 5 Assistant Professors. In addition, we continue to have the services of Prof. S. Lele as Visiting Faculty and Distinguished Professor. Prof. O.P. Sinha is continuing his services as Guest Faculty.

#### Major areas of Research of the department

- 1. Microstructural, Structural and Chemical Characterization
- 2. Mechanical Behavior, Deformation Processing and Failure Analysis
- 3. Phase Equilibria and Phase Transformation
- 4. Non-Equilibrium Processing of Advanced Materials
- 5. Ultra-Fine Grained and Nano-Structured Material
- 6. Recycling of Metallurgical and E-Waste
- 7. Design and Development of Advanced Steels
- 8. Tribology and Surface Engineering
- 9. Thermodynamics and Kinetics of Metallurgical Processes
- 10. Advanced Structural and Functional Materials

#### Infrastructure

S. No.	Particulars	Number
1	No. of Classrooms	04
2	No. of Lecture Halls	03
3	No. of Laboratory	10 labs + 1 workshop + 1 Centre
4	No. of Computers available for students in the Department/ School	40
5	Conference Hall	01





#### Unique Achievement / Preposition of the Department

The Department of Metallurgical Engineering has so far produced 2738 graduates, 635 postgraduates (including M.Tech dual degree) and 191 Ph.D. degree holders. The first one is a record for any Metallurgy Department in the country. The outstanding research contributions of the Department culminated in its recognition as a Centre of Advanced Study (CAS) in Metallurgy by the UGC in 1980, the first-ever Engineering Department to be so recognized in the country and the first one in our University. The Department is also recognized as a Centre for Quality Improvement Programme of MHRD/AICTE from the year 1981. The Department has received special assistance under the COSIST programmes of UGC and also as a National Electron Microscopy Facility (NELMIF) from DST in 1982. The Department has a unique distinction of receiving special assistance under CAS for four consecutive phases. The Ministry of Steel, Govt. of India approved setting up Advanced Research Centre for Iron and Steel, in the Department in project mode (2016-2021). Ministry of Railways, Govt. of India has also sanctioned Rs. 5 Crore for setting up Malaviya Chair for Railways Technology with Department as its nodal centre.

Members of the staff, research scholars and students have won a very large number of awards and distinctions in recognition of their outstanding contributions. These include Medals, Prizes, Awards and Fellowships from many prestigious national and international professional societies and other organizations. Some of the above recognitions include to John Taylor Gold Medal, Henry C. Sorby Award, Henry Marion Howe Medal, Alexander von Humboldt Fellowships, Al Kharazmi Award, S.S. Bhatnagar Prizes of CSIR, S.S. Bhatnagar Medal of INSA, Platinum Medal, Tata Gold Medal and Prizes, G.D. Birla Award, National Metallurgists' Day Awards of IIM, MRSI Medals, Young Metallurgists' Awards, INSA Medals for Young Scientists, ISCA Young Scientist Awards, Young Engineer Award of IE(I), Dr. R.H. Kulkarni Memorial Fellowships, Prof C.N.R. Rao Award, ASM-IIM visiting lectureship award, besides several best paper Awards. The faculty members have the distinction of receiving Fellowships of various professional societies such as Indian National Science Academy (INSA), International Academy of Sciences (IASc), The National Academy of Sciences, India (NASI), The Indian National Academy of Engineering (INAE), Asia Pacific Academy of Materials (APAM), The Indian Institute of Metals (IIM), The Institution of Engineers India-IE(I), The Electron Microscope Society of India (EMSI), West Bengal Academy of Science and Technology (AScT).

#### 2. Academic Programmes offered

#### Students on Roll:

S. No.	Programme	I Year	II Year	III Year	IV Year	V Year & above
1.	B. Tech/B.Arch	96	78	55	57	
2.	Dual Degree	26	22	15	23	18
3.	M. Tech/ M. Pharm	21	38			
4.	Ph. D (Under Institute Fellowship)	7	7	13	15	5
5.	Ph. D (Under Project Fellowship)	1				
6.	Ph. D (Under Sponsored Category)	2	1			

#### Names of scholars/students who won Convocation/Institute Day prizes

S. No.	Name of Student	Roll No.	Name of Prize	Prize awarded by
1	Shri Sadhu Munidhileep Kumar	18142027	IIT(BHU) Varanasi Medal	IIT (BHU)
2	Shri Shukla Shivank Sanjay	15144011	IIT(BHU) Varanasi Medal	IIT (BHU)
3	Ms. Anoushka Pal	16145011	IIT(BHU) Varanasi Medal	IIT (BHU)
4	Ms. Anoushka Pal	16145011	Late Dr. R.N. Singh and Mrs. Uma Singh Medal	IIT (BHU)
5	Ms. Anoushka Pal	16145011	Swarnamma Memorial Gold Medal	IIT (BHU)



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S. No.	Name of Student	Roll No.	Name of Prize	Prize awarded by
6	Ms. Anoushka Pal	16145011	Smt. Indira Tripathi Gold Medal	IIT (BHU)
7	Ms. Anoushka Pal	16145011	The Bishan Das Basil Medal	IIT (BHU)
8	Shri Vatsal Jain	16145060	Ms. Indira Ananthachari Endowment Fund Prize	IIT (BHU)
9	Shri Harsha Vardhan Saragadam	16145022	Ms. Indira Ananthachari Endowment Fund Prize	IIT (BHU)
10	Shri Devank Singhai	16145017	Ms. Indira Ananthachari Endowment Fund Prize	IIT (BHU)

# 3. Faculty & their Activity

## Faculty and their areas of specialisation

S. No.	Name, Qualifications, Employee No.	Date of award of PhD Degree	Major Areas of Specialization (Max. 3 Areas)	
Professors				
1	Prof. R.K. Mandal (Ph.D.) (13849)	1990	Quasicrystals, Nanostructured Materials, Phase Transformations, Microstructural Evolution	
2	Prof. N.K. Mukhopadhyay (Ph.D.) (13853)	1990	Physical Metallurgy of Complex Metallic Alloys, Nanomaterials, Mechanical Alloying, Electron Microscopy, Nanoindentation.	
3	Prof. Sunil Mohan (Ph.D.) (13857)	1990	Metal-Matrix Composites, Tribology of composites, Erosion in steels, Transport processes	
4	Prof. (Smt.) N.C. Santhi Srinivas (Ph.D.) (13851)	1999	Physical and mechanical metallurgy: Phase Transformations, Deformation behaviour, Low cycle fatigue, Failure Analysis. Advanced steels and Addtive Manufacturing.	
5	Prof. B.N. Sarma (Ph.D.) (13852)	2001	Computational Thermodynamics, Integrated Computational Materials Engineering	
6	Prof. K.K. Singh (Ph.D.) (18188)	2010	Extractive Metallurgy, Recycling of electronic waste, aluminium dross	
7	Prof. O.P. Sinha (Ph.D.) (18218)	1992	Ferrous Process Metallurgy, N <sub>2</sub> bearing Special Steels, Industrial wastes utilization, Plasma Technology	
8	Prof. I. Chakrabarty (Ph.D. (18242)	1990	Foundry Metallurgy, Phase Transformations, Wear of metals, Metal Matrix composite	
Associa	ate Professors			
9	Dr. C.K. Behera (Ph.D.) (16732)	2007	Extractive Metallurgy, Experimental Thermo-lead free solder, nitrogen steel	
10	Dr. R. Manna (Ph.D.) (16805)	2008	Heat Treatments of Metals, Ultra Fine Grained Metals, Severe Plastic Deformation, Phase Transformation, Design and Development of Advanced Steels, and Crystallographic Texture	
11	Dr. Kausik Chattopadhyay (Ph.D.) (18241)	2008	Mechanical Metallurgy, Structure-Property Relationship of Materials, Oxidation of Metals and Alloys, Powder Metallurgy, Fatigue & Fracture	
12	Dr. G.S. Mahobia (Ph.D.) (18287)	2013	Welding Engineering, Heat-Treatment, Ferrous Metallurgy, Corrosion Fatigue & Fracture, Hot Corrosion	





S. No.	Name, Qualifications, Employee No.	Date of award of PhD Degree	Major Areas of Specialization (Max. 3 Areas)	
13	Dr. Joysurya Basu (Ph.D.) (50054)	2005	Electron Microscopy, Energy and Electronic Materials, Complex Structures and Phase Transformation in Metals and Ceramics	
14	Dr. Vikas Jindal (Ph.D.) (18229)	2014	Computational Thermodynamics, Advanced Materials	
15	Dr. J.K. Singh (Ph.D.) (18194)	2015	Foundry Metallurgy, Transport Phenomena	
16	Dr. N.K. Prasad (Ph.D.) (18221)	2007	Physical Metallurgy, Magnetic Materials, Nanomaterials and Biomaterials	
Assista	ant Professors			
1.	Dr. Bratindranath Mukherjee (Ph.D.) (50180)	2010	Nanomaterials for Energy Applications	
2.	Dr. Randhir Singh (Ph.D.) (50214)	2009	Extractive/Electro-Metallurgy, Fuel Cells and Batteries, Hydrogen Production	
3.	Dr. Ashok Kumar Mondal (Ph.D.) (50218)	2009	Mechanical behaviour of materials, Light metals, alloys (mostly magnesium alloys) and composites - Processing, microstructural characterization and evaluation of mechanical behaviour, High temperature deformation behaviour (Creep)	
4.	Dr. Surya Deo Yadav (Ph.D.) (50230)	2016	Development of new steels. Modelling the microstructural evolution during creep and hot deformation, Flow stress and Creep strain modelling	
5.	Dr. Subhasis Sinha (Ph.D.) (50232)	2017	Microstructure, crystallographic texture, mechanical behaviour and thermo-mechanical processing of metals and alloys	
6.	Dr. Sudipta Patra (PhD) (50251)	2019	Stainless Steel, Industrial processing of metals, Alloy steel development, Structure-Property correlation, Thermomechanical Processing, Microstructure & texture, Industrial failure analysis, Steel making, Waste utilization	
Visiting Faculty & Distinguished Professor				
1	Prof. S. Lele (Ph.D.)	1967	Physical Metallurgy and Materials Engineering	
Emerit	us Professor			
1	Prof. Vakil Singh (Ph.D.)	1974	Mechanical Behaviour of Metals and Alloys Fatigue, Fracture, and Environmental Effects Bio-implant Materials	

# Technical and Non-Teaching Staff

Sl. No.	Name, Qualifications	Designation, Employee No.	Date of Appointment in the department
1	Shri Lalit Kr. Singh (B.E.)	Sr. Technical Superintendent (19262)	14/02/2011
2	Shri Arun Prakash (M.A.)	Sr. Technical Superintendent (14047)	18/02/1995
3	Shri A.K. Vishwakarma (B.A.)	Sr. Technical Superintendent (14099)	27/05/1987
4	Dr. Ashutosh Dubey (M.sc. , Ph.D.)	Technical Superintendent (18754)	22/12/2008
5	Shri Mohd. Sharaj (B.A.)	Technical Superintendent (18621)	06/08/2008
6	Shri J.P. Minz (Intermediate)	Technical Superintendent (14109)	26/05/1990




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Sl. No.	Name, Qualifications	Designation, Employee No.	Date of Appointment in the department
7	Shri Kamala Prasad (Intermediate)	Technical Superintendent (14116)	15/10/1998
8	Shri Rana Pratap Yadav (Intermediate)	Technical Superintendent (14117)	16/10/1998
9	Shri Chhote Lal (ITI)	Jr. Technical Superintendent (18053)	21/02/2007
10	Shri Setu Prasad (High School)	Jr. Technical Superintendent (14222)	16/05/2007
11	Shri Ashok Kr. Mishra (B.A.)	Jr. Technical Superintendent (10227)	16/05/2007
12	Shri Binod Kr. Pathak (ITI)	Jr. Technical Superintendent (12492)	18/05/2015
13	Shri Bal Govind Singh (ITI)	Sr. Technician (16253)	13/04/2012
14	Shri Rajendra Prasad Yadav (B.A.)	Sr. Technician (18618)	05/08/2008
15	Shri Shashi Kant Pandey (M.Sc.)	Sr. Technician (18619)	05/08/2008
16	Shri Samish Kr. Singh (M.A.)	Sr. Technician (18620)	05/08/2008
17	Shri Sunil Kumar (Intermediate)	Sr. Technician (18616)	06/08/2008
18	Shri Anjani Kr. Singh (B.A.)	Sr. Technician (18638)	06/08/2008
19	Shri Mahendra Narain Mishra (ITI)	Sr. Technician (18639)	05/08/2008
20	Shri Kamlesh Mishra (Intermediate)	Sr. Technician (18617)	12/08/2008
21	Shri Balwant Singh (ITI)	Sr. Technician (19273)	10/02/2011
22	Shri Ram Ashre (Intermediate)	Sr. Technician (14109)	10/09/1996
23	Shri Sushil Kumar (B.Sc.)	Sr. Technician (19604)	13/07/2012
24	Shri Rishabh Tiwari (B.Tech, MBA)	Junior Assistant (50092)	08/05/2017

# Short-term courses/workshops/seminars/symposia/conferences/training programmes attended by faculty members in academic institutions and public sector undertakings

S. No.	Name of Faculty Member	Title	Period and Venue
Semina	rs/Symposia/Conferences		
1	Prof. R.K. Mandal	Key-note address on "Phase transformation at the interface of Au- Cu deposited layers"	Sant-Longowal Institute of Engg. and Tech., Punjab, November 10, 2020
2	Prof. N.K. Mukhopadhyay	Delivered an Invited Lecture in Materials Science & Technology (MS&T 20 Virtual)	November 02-06, 2020, USA
3	Prof. N.K. Mukhopadhyay	Delivered an Invited Lecture in International e-Conference on Structural Materials for Nuclear and Space Applications (SNSA20)	December 3-6, 2020, BARC, Mumbai, India.
4	Prof. B. Nageswara Sarma	Invited Panellist in the "Vaishwik Bharatiya Vaigyanic Summit" (VAIBHAV), a GoI Initiative	October 2 – 31, 2020.





S. No.	Name of Faculty Member	Title	Period and Venue
5	Prof. B. Nageswara Sarma	Delivered Two Invited Lectures on Computational Design of Materials in AICTE Sponsored STTP ATMA#3 on"Advanced Techniques in Modelling and Analysis for Materials and Manufacturing Processes"	VNR Vignana Jyothy Institute of Technology and Engineering, Hyderabad. December 14 – 19, 2020.
6	Dr. R. Manna	Effect of Electropulsing on Retained Austenite and Nanostructured Bainite,	58th NMD and 74rd ATM at Mumbai, 23rd – 26th February 2021
7	Dr. R. Manna	Optimization of Melting Process for Manganese Containing Bainitic Steel,	58th NMD and 74rd ATM at Mumbai, 23rd – 26th February 2021
8	Dr. R. Manna	Characterization of Materials by Scanning Electron Microscopy	Short Term Course on Engineering Materials and Characterization (EMC 2020), TEQIP3, 13-12-2020, Government College of Engineering, Kalahandi, Odisha,
9	Dr. R. Manna	Scanning Electron Microscopy for Characterization of Materials	Short Term Course on Advanced Materials Testing and Characterization (AMTC 2021), 11-01-2021, National Institute of Technology, Hamirpur, Himachal Pradesh
10	Dr. R. Manna	Electron Back Scattered Diffraction Characterization of Metallic Materials	Short Term Course on Advanced Materials Testing and Characterization (AMTC 2021), 12-01-2021, National Institute of Technology, Hamirpur, H.P.
11	Dr. K. Chattopadhyay	Thermo-mechanical processing of materials	QIP sponsored short-term course titled Theoretical and Practical Perspective on Materials Manufacturing Technology (TPPMMT-2021) at IIT Kanpur between 8-13 March 2021.
12	Dr. K. Chattopadhyay	Surface modification and its effect on microstructure, low cycle fatigue, and corrosion behavior of Al-7075 alloy	TEQIP-III sponsored FDP Webinar on "Advanced Materials Processing, Characterization, and Application (AMPCA-2020)", from 8th-12th September 2020, Department of Metallurgical & Materials Engineering, VSSUT, Burla
13	Dr. G.S. Mahobia	Hot corrosion : Mechanism and its effect on mechanical properties	Institute Sponsored 5-Days Short Term Training Program on - Advances in Corrosion Engineering and Electrochemical Characterization NIT Raipur Techniques, 2-6 January, 2021
14	Dr. G.S. Mahobia	Nickel free austenitic stainless steel for biomedical applications in india	BV Raju Institute of Technology Narsapur, Medak, Telangana state October 10, 2020
15	Dr. Nand Kishore Prasad	Delivered an Invited talk on "Fe <sub>3</sub> C based nanoparticles for bioapplications" in	Inanonlinewebinar/(workshop)entitled "ADVANCED NANOMATERIALS & THEIR APPLICATIONS-(I, II, III, IV)" NIT Manipur, 2 <sup>nd</sup> -21 <sup>st</sup> November, 2020





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S. No.	Name of Faculty Member	Title	Period and Venue
16	Dr. A. K. Mondal	Delivered an Invited Lecture on 'Impression creep and its application to magnesium alloys and magnesium composites' under TS03: Creep and High Temperature Failure in 3 <sup>rd</sup> Structural Integrity Conference and Exhibition (SICE 2020 e-Conference)	11-13 and 18-20 December 2020, IIT Bombay, Mumbai, India
17	Dr. Surya Deo Yadav	A physical based approach to model the creep curves of 9-12% Cr steels	58th National Metallurgists Day and 74th Annual Technical Meeting (NMD- ATM 2020)
18	Dr. Surya Deo Yadav	Modeling the flow behaviour of a 64.7Ni-31.96Cu alloy employing a dislocation density based approach	58th National Metallurgists Day and 74th Annual Technical Meeting (NMD- ATM 2020)

# Special lectures delivered by faculty members in other institutions

S. No.	Name of faculty Member	Topic of Lecture	Institution	Date
1	Prof. R.K. Mandal	The Idea of Higher Education and Way Forward	NIT Jamshedpur	5 September 2020
2	Prof. R.K. Mandal	Human Values, Physical Fitness, and Creative Practice: The Triad of Induction Program	ATAL FDP at Central University Jharkhand	20 January 2021

#### Honours and awards

S. No.	Name of Faculty Member	Details of Award		
1	Prof. Mukhopadhyay	Sectional Committee Member (Section VIII) of Indian National Academy of Engineering (2021)		
2	Prof. N.C. Santhi Srinivas	Expert Member, DRDS Assessment of Scientists (B-E), DRDO, New Delhi, July and August, 2020.		
3	Prof. N.C. Santhi Srinivas	Member, Technical Committee, 7th International Conference on Mechanical, Materials and Manufacturing (ICMMM 2020), Washington, USA, September 25-27, 2020.		

# Fellowships of academic and professional societies

S. No.	Name of Faculty Member	Details of Fellowship			
1	Prof. N.K. Mukhopadhyay	Fellow of the National Academy of Sciences, India (NASI) (FNASc, 2020)			
2	Prof. N.C. Santhi Srinivas	Fellow, Indian Institute of Metals, Kolkata, India (FIIM, 2021)			

# Editorial boards of journals

S. No.	Name of Faculty Member	Position Name of Journal (Editor/ member)		
1	Prof. R.K. Mandal	Member	CMC-Transtech.	
2	Prof. N.K. Mukhopadhyay	Key-Reader Metallurgical and Materials Transactions A		
3	Prof. N.K. Mukhopadhyay	Editor Journal of Institution of Engineers, Me and Materials: Series D: (Springer)		





S. No.	Name of Faculty Member	Position (Editor/ member)	Name of Journal
4	Prof. N.K. Mukhopadhyay	Guest Editor	Special Issue of Journal of Alloys and Compounds (Elsevier).
5	Prof. Sunil Mohan	Member	International Journal of Metals

# 4. Design and Development Activities

# New facilities added

S. No.	Details (Infrastructure, Equipments, etc.)	Value (in Lakhs of Rupees)
1	Single/Double Tilt Holder	42.50
2	Corrosion Testing Equipment	7.15

# 5. Research and Consultancy

# Sponsored research projects

S. No.	Title	Period	Funding Agency	Amount (in lakhs of Rs.)	Coordinator
1	Setting up of Advanced Research Center for Iron and Steel at IIT(BHU), Steel Development Fund	2016-2021	Ministry of Steel, Govt. of India	3098.00	Dr. R. Manna (Coordinator) & all teachers of the Dept.
2	Malaviya Chair For Railways Technology	2015-2020	Ministry of Railways, Govt. of India	500.00 (Corpus Fund)	Prof. R.K. Mandal (Coordinator)
3	Mechanical behaviour of advanced high strength steel processed by additive manufacturing	2019-2022	SERB, DST, Govt. of India	39.84	Prof. N.C. Santhi Srinivas (PI), Dr. K. Chattopadhyay
4	In-situ electron microscopy at atomic scale for understanding nucleation growth and interfaces of omega phase.	2017-2020	SERB, DST, Govt. of India	81.50	Dr. Joysurya Basu (PI) Prof. N. K. Mukhopadhyay, Prof. R. K. Mandal, Dr. Imteyaz Ahmad (Cer.)
5	Development and structural characterization of Bi2xMxO3+x(y-3)/2 (M=Fe, Cr, Mn) coating for protection against liquid coolant and sensors	2017-2020	UGC-DAE-CSIR, Govt. of India	18.00	Dr. Joysurya Basu (PI) Dr. N. K. Prasad
6	Development of Ni-Free Austenitic Stainless Steel for Biomedical Application	2017-2021	Ministry of Steel, Govt. of India	284.00	Dr. G.S. Mahobia (PI), Prof. N.C. Santhi Srinivas, Prof OP Sinha, Dr. K. Chattopadhyay, Prof. Vakil Singh
7	Role of short-range ordering in designing High Entropy Alloys	2019-2022	SERB, DST, DST, Govt. of India	34.00	Dr. Vikas Jindal (PI), Prof. N. K. Mulhopdhyay (Co-PI)
8	Development of Functionally Graded Armour Composites (FGACs) Materials	2020-2023	ARMREB, DRDO	91.66	Dr. Vikas Jindal (PI), Dr. Kausik Chattopadhyay





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S. No.	Title	Period	Funding Agency	Amount (in lakhs of Rs.)	Coordinator
9	Cyclic Thermochemical fuel generation	2019-2022	SERB, DST, DST, Govt. of India	51.00	Dr. Randhir Singh (PI)
10	Optimization of recovery of valuable metal from waste printed circuit boards by modified hydrometallurgical route	2018-2020	UGC-UKIERI	GBP 29000.00	Dr. K.K. Singh (PI), Prof. Jason Love, Dr. Carole Morrison
11	Processing, microstructural characterization and evaluation of mechanical properties of creep resistant magnesium alloy-based nanocomposites	2019-2021	Seed grant for new faculty, IIT (BHU) Varanasi	10.0	Dr. Ashok Kumar Mondal (PI)
12	High Performance Rare Earth Free Nanocomposite Permanent Magnets for Advanced Motors and Alternative Energy Applications	2020-2023	SERB, DST, DST, Govt. of India	56.90	Dr. N.K. Prasad (PI), Dr. C. Upadhyay (SMST, IIT- BHU)
13	In-situ microscopy study of age hardening in dispersion strengthened cast magnesium alloys and its ex-situ correlation with mechanical properties.	2020-2023	SERB, DST, DST, Govt. of India	37. 36	Dr. A.K. Mondal (PI), Prof. N.K. Mukhopadhyay, Dr. Joysurya Basu
14	Creep and corrosion behaviour of novel MRI230D magnesium alloy with nanoparticles additions	2020-2023	CSIR, New Delhi, India	18.08	Dr. Ashok Kumar Mondal (PI), Dr. Kausik Chattopadhyay
15	Atomic Scale Electron Microscopy, FIST Engineering Sciences (Level III)	2020-2025	SERB, DST, DST, Govt. of India	990	Dr. J. Basu (PI), Prof. R.K. Mandal, Prof. N.K. Mukhopadhyay, Dr. R. Manna, Dr. A.K. Mondal and Dr. B. Mukherjee
16	Development of low-modulus β-Ti alloys for biomedical applications	2019-2022	SERB, DST, DST, Govt. of India	41.08	Dr. Kausik Chattopadhyay (PI), Dr. Vikas Jindal
17	Durability aspects of air electrode in high-temperature solid oxide electrolysis cell (SOEC) for hydrogen production from water	2019-2021	Institute Seed Grant, IIT(BHU), India	10.00	Dr. Randhir Singh (PI)
18	Development of a unified physical model for hot deformation and creep to support the development of high temperature materials	2019-2024	DST (Inspire)	35.00	Dr. Surya Deo Yadav (PI)
19	Zone wise investigation of creep behaviour of tempered martensitic steel weld joints employing impression creep testing technique	2019-2021	Seed Grant IIT(BHU)	10.00	Dr. Surya Deo Yadav (PI)
20	Development of Mesoscale models to describe hot deformation and creep of low SFE materials	2020-2022	Indo-Austrian project	21.66	Dr. Surya Deo Yadav (PI)





S. No.	Title	Period	Funding Agency	Amount (in lakhs of Rs.)	Coordinator
21	Tunable Surface Plasmon Optical Sensing Behaviour of M-MoS2 (M= Cu,Ag,Au) Alloy Nanostructures	2020-2022	SERB, DST	44.65	Dr. B Mukherjee (PI) and Prof. R.K. Mandal
22	Quantification of the texture dependence of cyclic deformation mechanisms in single-phase and dual-phase alloys with FCC and HCP crystal structures	2019-2021	IIT (BHU) Seed Grant	10.00	Dr. S. Sinha (PI)
23	Stability of nanostructure and residual stress developed through ultrasonic shot peening in superalloy IN718 at elevated temperatures	2020-2022	NRB, DRDO	28.868	Dr. Kausik Chattopadhyay (PI)
24	Additive Manufactured Aerospace Alloys	2021	Raytheon Intelligence & Space, USA	\$25000	Prof Mukhopadhyay (PI), Prof. N.C. Santhi Srinivas, Prof. R.K. Mandal, Dr. R. Manna, Dr. K. Chattopadhyay, Dr. J. Basu

### Industrial consultancy projects

The Department maintains a close interaction with major private sector industries of the region, with public sector undertakings and national R&D laboratories. Major beneficiaries of consultancy, testing services as well as Refresher Courses for executives, include DMRL, DRDL, VSSC, BHEL, HINDALCO, Tata Steel, JAMIPOL, Northern Coalfields Ltd, NTPC, Railways etc. and the small scale industries of Varanasi region.

S. No.	Name of Faculty Member	Title	Industry	Amount (in lakhs of Rs.)
1	Prof. O.P. Sinha & Dr. J.K. Singh	Assisting NCL in short listing of vendors under – Make in India, for import substitution and establishing an indigenous supply chain for replacement of HEMM spares and reduce the reliance on overseas sources for supply of high value HEMM spares	NCL, Singrauli	20.40

#### **Research Publications**

#### **Refereed International Journals**

- 1 L Sherpa, A Tripathi, M Singh, RK Mandal, A Tiwari (2020) Self-assembly of arsenic nanoparticles into magnetic nanotubules and their SERS activity. Applied Physics A 126 (7), 1-8
- 2 SK Alla, SS Meena, N Gupta, RK Mandal, NK Prasad (2020) Ferromagnetic Bismuth-Substituted CeO2 Nanostructures and Prevalence of Antiferromagnetic Clusters. Journal of Superconductivity and Novel Magnetism, 1-7
- 3 K Alla, A Gangwar, SK Shaw, MK Viswanadh, K Neogi, MS Muthu, Nidhi Gupta, Sher Singh Meena, P Kollu, RK Mandal, NK Prasad (2021) Physical and in-vitro evaluation of pure and substituted MxCe1-xO2 (M= Co, Fe or Ti and x = 0.05) magnetic nanoparticles. Ceramics International 47 (7), 8812-8819



- 4 R Tandon, KK Mehta, R Manna, RK Mandal (2021) Microstructure and Mechanical Properties of the AA7075T7352 Aluminum Alloy. Transactions of the Indian Institute of Metals, 1-12
- 5 A Verma, S Pal, J Kuntail, N Kamal, RK Mandal, I Sinha (2021) Visible light enhanced p-nitrophenol reduction by glycerol over Ag/Cu core-shell bimetallic nanocatalysts. Journal of Environmental Chemical Engineering, 105655.
- 6 S Mukherjee, RK Mandal (2021) Four-dimensional structural description of phase transformations in titanium alloys. Journal of Materials Science 56 (19), 11529-11540
- 7 SS Mishra, TP Yadav, SP Singh, AK Singh, MA Shaz, NK Mukhopadhyay, (2020). Evolution of porous structure on Al–Cu–Fe quasicrystalline alloy surface and its catalytic activities, Journal of Alloys and Compounds, 834 155162.
- 8 Y Shadangi, V Shivam, S Varalakshmi, J Basu, K Chattopadhyay, N.K. Mukhopadhyay, (2020) Mechanically driven structural transformation in Sn reinforced Al–Cu–Fe quasicrystalline matrix nanocompositeJournal of Alloys and Compounds, 834 155065.
- 9 H Jain, Y Shadangi, V Shivam, D Chakravarty, NK Mukhopadhyay, (2020) Phase evolution and mechanical properties of non-equiatomic Fe–Mn–Ni–Cr–Al–Si–C high entropy steel, Journal of Alloys and Compounds, 834 155013.
- 10 V Shivam, Y Shadangi, J Basu, NK Mukhopadhyay, (2020) Evolution of phases, hardness and magnetic properties of AlCoCrFeNi high entropy alloy processed by mechanical alloying, Journal of Alloys and Compounds, 832 154826.
- 11 Nandini Singh, Y Shadangi, NK Mukhopadhyay, (2020) Phase Evolution and Thermal Stability of Low-Density MgAlSiCrFe High-Entropy Alloy Processed Through Mechanical Alloying, Transactions of the Indian Institute of Metals, 73 2377 (https://doi.org/10.1007/s12666-020-02039-y).
- 12 SS Mishra, TP Yadav, NK Mukhopadhyay, ON Srivastava, (2020) Synthesis of fine skeletal structure of Al-Co-Cu decagonal quasicrystals for hydrogen production through steam reforming of methanol, International Journal of Hydrogen Energy, 45 24491-24501.
- 13 Vikas Shivam, Debabrata Bhuyan, N.K. Mukhopadhyay and R. Manna, (2020) Microstructural Refinement and Mechanical Properties of Ferritic Stainless Steel Processed by Equal-Channel Angular Pressing, Journal of Materials Engineering and Performance, 29 6818-6830.
- 14 R. Rawat, A. Tiwari, N. Arun, S. V. S. Nageswara Rao, A. P. Pathak, Yagnesh Shadangi, N. K., Mukhopadhyay, S. Venugopal Rao, A. Tripathi, (2020) Dealloying of Al-Cu-Fe Quasicrystalline Material using Pulsed Laser Ablation: Effects of Solvent and Fluence, Journal of Alloys and Compounds, 859 157871.
- 15 Vivek Kumar Pandey, Yagnesh Shadangi, Vikas Shivam, Joysurya Basu, Kausik Chattopadhyay, Bhaskar Majumdar, B. N. Sarma, N. K. Mukhopadhyay, (2020) Synthesis, Characterization and Thermal Stability of Nanocrystalline MgAlMnFeCu Low-Density High-Entropy Alloy, Transaction of the Indian Institute of Metals, 74 33-44.
- 16 Anil Kumar, Santosh Kumar, N K Mukhopadhyay, Anshul Yadav, Jerzy Winczek, (2020) Effect of SiC Reinforcement and its variation on Mechanical Characteristics of AZ91 Composites, Materials,13 4913.
- 17 Saptarshi Mukherjee, Shivank Shukla, Chanchal Ghosh, N.K. Mukhopadhyay and Joysurya Basu (2020) Phase Stability and Microstructural Evolution in Vanadium-Titanium Alloys with Oxygen Dissolution and Varying Titanium-content, Microscopy and Microanalysis, 26 2086-88.
- 18 Vikas Shivam, Joysurya Basu, R. Manna and N.K Mukhopadhyay, (2021) Local Composition Migration Induced Microstructural Evolution and Mechanical Properties of Non-Equiatomic Fe<sub>40</sub>Cr<sub>25</sub>Ni<sub>15</sub> Al<sub>15</sub>Co<sub>5</sub> Medium-Entropy Alloy, Metallurgical and Materials Transactions A, 52 1777-1789.





- 19 SS Mishra, TP Yadav, RM Yadav, Liangzi Puthirath, Anand B., Liangzi Deng, Moein Adnani, Ching-Wu Chu, Robert Vajtai, PM Ajayan, Krishanu Biswas, N.K. Mukhopadhyay, ON Srivastava (2021) "Effect of Ga substitution on structural and magnetic properties of Fe50Mn25Al25-xGax Heusler alloys", Journal of Alloys and Compounds,854 156756.
- 20 Anil Kumar, Santosh Kumar, N K Mukhopadhyay, Anshul Yadav, Virendra Kumar, Jerzy Winczek, (2021) Effect of variation of SiC Reinforcement on wear behaviour of AZ91 Alloy Composites, Materials,14 990.
- 21 A Mohan, G Gautam, N Kumar, S Mohan (2020) Sustainable Materials for Tribological Applications. Elsevier 880-897
- 22 A Mishra, CK Behera, S Mohan, A Mohan, D Pradhan (2020) High temperature erosion behaviour of Type AISI 446 stainless steel under the combined effect of surface modification and pre hot-corrosion. Engineering Failure Analysis 118, 104873
- 23 V Kumar, A Mishra, S Mohan, A Mohan (2020) Utilization of waste graphite crucible for the fabrication of ex-situ AA1100/Graphite composite via stir casting route. Materials Today: Proceedings
- 24 Ch. Visweswara Rao, N.C. Santhi Srinivas, G.V.S. Sastry, Vakil Singh, (2020) Low cycle fatigue behavior of salt coated and pre-exposed IN-617 alloy, Materials Characterization, Volume 169, 110645, ISSN 1044-5803, https://doi.org/10.1016/j.matchar.2020.110645
- 25 JaydeepVishwakarma, K. Chattopadhyay, N.C. Santhi Srinivas, (2020) Effect of build orientation on microstructure and tensile behaviour of selectively laser melted M300 maraging steel, Materials Science and Engineering: A, Volume 798,140130, ISSN 0921-5093, https://doi.org/10.1016/j.msea.2020.140130
- 26 Vaibhav Pandey, Manish Kumar Singh, Joysurya Basu, K. Chattopadhyay, N.C. Santhi Srinivas, Vakil Singh, (2020) Effect of surface nanostructuring in solution treated and thermally aged condition on LCF life of AA7075, Surface and Coatings Technology, Volume 404,126431,ISSN 0257-8972,https://doi.org/10.1016/j. surfcoat.2020.126431
- 27 P. Mishra, , N.C. Santhi Srinivas, , G.V.S. Sastry, et al. (2021) Influence of Pre-Ratcheting Fatigue on Tensile Behavior of Modified 9Cr-1Mo Steel at Ambient Temperature. Transactions of Indian Institute of Metals https://doi.org/10.1007/s12666-021-02211-y
- 28 Ch. Visweswara Rao, N.C. Santhi Srinivas, G.V.S. Sastry, Vakil Singh, (2020) Effect of microstructure on work hardening behaviour of IN-617 alloy, Materials Science and Engineering: A, Volume 800, 2021, 140317, ISSN 0921-5093, https://doi.org/10.1016/j.msea.2020.140317
- 29 MD Rao, KK Singh, CA Morrison, JB Love (2020) Challenges and opportunities in the recovery of gold from electronic waste. RSC Advances 10 (8), 4300-4309
- 30 R Jha, MD Rao, A Meshram, HR Verma, KK Singh (2020) Potential of polymer inclusion membrane process for selective recovery of metal values from waste printed circuit boards: A review. Journal of Cleaner Production, 121621
- 31 A Meshram, D Gautam, KK Singh (2020) Recycling of White Aluminium Dross: Production of Potash Alum. Transactions of Indian institute of metals 2020
- 32 MD Rao, A Meshram, HR Verma, KK Singh, TR Mankhand (2020) Study to enhance cementation of impurities from zinc leach liquor by modifying the shape and size of zinc dust. Hydrometallurgy 195, 105352
- 33 G Mishra, R Jha, MD Rao, A Meshram, KK Singh (2021) Recovery of Silver from Waste Printed Circuit Boards (WPCBs) through Hydrometallurgical Route: A Review. Environmental Challenges, 100073
- 34 MD Rao, KK Singh, CA Morrison, JB Love (2021) Recycling copper and gold from e-waste by a two-stage leaching and solvent extraction process. Separation and Purification Technology 263, 118400





- 35 Pramod Kumar, GS Mahobia, V Singh, Kausik Chattopadhyay (2020) Lowering of elastic modulus in the near-beta Ti–13Nb–13Zr alloy through heat treatment. Materials Science and Technology, 36(6), 717-725
- 36 Rahul Kumar Agrawal, Vaibhav Pandey, Amruta Barhanpurkar-Naik, Mohan R Wani, Kausik Chattopadhyay, Vakil Singh (2020) Effect of ultrasonic shot peening duration on microstructure, corrosion behavior and cell response of cp-Ti. Ultrasonics, 104, 106110,
- 37 Deepsovan Mondal, Kausik Chattopadhyay, Vakil Singh (2020) Effect of Ultrasonic Shot Peening on Oxidation Behavior of T91 and SS347 Steels in Air and Steam at 650° C, , Journal of Materials Engineering and Performance, 29(9), 5854-5870
- 38 Chandra Shekhar Kumar, Kausik Chattopadhyay, Vakil Singh, Girija Shankar Mahobia (2020) Enhancement of low-cycle fatigue life of high-nitrogen austenitic stainless steel at low strain amplitude through ultrasonic shot peening, Materials Today Communications, 25, 101576
- 39 Yagnesh Shadangi, Kausik Chattopadhyay, Vakil Singh (2020) Microstructural Modification and Tensile Behavior of IF Steel Processed through Surface Mechanical Attrition Treatment, JOM, 72(12), 4330-4339
- 40 Sanjeev Kumar, K Chattopadhyay, Z Alam, Vakil Singh, DV V Satyanarayana, Vikas Kumar (2021) Corrosion Behavior of Surface Nanostructured IN718 Superalloy at 650° C. Materials Performance and Characterization, 11(2)
- 41 P Kumar, GS Mahobia, S Mandal, V Singh, K Chattopadhyay (2021) Enhanced corrosion resistance of the surface modified Ti-13Nb-13Zr alloy by ultrasonic shot peening. Corrosion Science, 109597
- 42 Manish Deo, S P Tewari, Girija Shankar Mohobia (2020) Optimization Of GMAW Welding Parameters for Micro-Alloyed A572 Gr.50 Steel, International journal of mechanical and production engineering research and Development, 3(10).
- 43 Manish Deo, S P Tewari, Girija Shankar Mohobia (2020) Behaviour Of HAZ and Weld Bead Under Different Welding Condition for A572 Gr 50 Steel, International Journal of Advanced Research in Engineering and Technology, 6(11) 646-655.
- 44 Sharvan Kumar and GS Mahobia (2020) The features of metal dusting process in the extremely low nickel austenitic stainless steel (18Cr-21Mn-0.65N-Fe), Corrosion Science, 176, 108926 1-14.
- 45 Sharvan Kumar and GS Mahobia (2020) Cyclic oxidation of Fe-Fe-18Cr-21Mn-0.65N Austenitic stainless steel at 400 to 700°C, Transactions of the Indian Institute of Metals (TIIMS), 1-14.
- 46 M.K.K. Singh, S. Kumar, O.P. Sinha, Vakil Singh & G.S. Mahobia (2020) Cyclic Oxidation Behavior of the Super Austenitic Stainless Steel 904L in Air at 500–650 °C, Transaction of the Indian Institute of Metals
- 47 A Ranjan, R Tyagi, V Jindal, KSR Chandran (2020) Investigation on Wear Characteristics of TiBFe Composites Containing 10 at.% Boron and 10-30 at.% Iron. Journal of Materials Engineering and Performance 29 (10), 6333-6342
- 48 RP Gorrey, V Jindal, BN Sarma, S Lele (2020) Analytical solutions for the correlation functions of perfectly ordered binary phases based on bcc, fcc and cph structures using cluster variation method. Calphad 71, 101773
- 49 RP Gorrey, V Jindal, BN Sarma, S Lele (2020) Polynomial functions for configurational correlation functions in Gibbs energies of solid solutions using cluster variation method Computational Materials Science 186, 109746
- 50 RP Gorrey, V Jindal, BN Sarma, S Lele (2021) Modification of Cluster Variation Method Entropy Functional for Binary fcc Phases using Tetrahedron Approximation. Transactions of the Indian Institute of Metals 74 (1), 129-136





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- 52 MS Pradeepkumar, HV Singh, S Kumar, J Basu, MI Ahmad (2020) Low thermal budget processing of CdS thin films. Materials Letters 280, 128560
- 53 S Sinha, VK Sahu, V Beura, R Sonkusare, R Kalsar, AKL Das, J Basu et. Al. (2021) Initial texture dependence of nanocrystalline omega phase formation during high pressure torsion of commercially pure titanium. Materials Science and Engineering: A 802, 140687
- 54 A. Gangwar, S. S. Varghese, Sher Singh Meena, M. K. Viswanadh, K. Neogi, M. S. Muthu and N. K. Prasad (2020) Physical and in-vitro evaluation of ultra-fine cohenite particles for the prospective magnetic hyperthermia application, J. Mater Sci: Mater Electron 31, 10772–10782
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### 6. Other activities

#### International collaboration/achievements by the Department

Prof. N.K. Mukhopadhyay (as PI) with Prof. N.C. Santhi Srinivas, Prof. R.K. Mandal, Dr. R. Manna, Dr. K. Chattopadhyay and Dr. J. Basu was awarded a prestigious International Project from Raytheon Intelligence & Space, USA to work on additive manufactured aerospace alloys. (\$25000/-) (2021).



# **15. Department of Mining Engineering**

#### Year of Establishment: 1923

Head of the Department: Prof. Piyush Rai w.e.f.: 23.04.2019

## 1. Introduction of the Department:

The Department of Mining Engineering a well-conceived dream of the founder of this university Pandit Madan Mohan Malviyaji and the oldest Mining Engineering Department in the country, came into existence as early as 1923, as a section of the Department of Geology, Mining and Metallurgy. Later, in the year 1944, separate departments of Mining and Metallurgy were constituted under the College of Mining and Metallurgy.

The first Ph.D. degree in Mining Engineering in the country was awarded from this department in the year 1964. This lead was further strengthened by introducing the First Post- Graduate course in 1966 leading to M.Sc. degree in Mining Engineering n Metal Mining and Coal Mining, respectively and later the M.Sc. degree in Mine Planning was introduced in 1972. Since 1995-96 the department offers M.Tech. degree in Mine Environment, Mine Planning and Rock Mechanics.

The Department of Mining Engineering, BHU was one of the first in the country to receive UGC Assistance under COSIST and SAP Programme in 1984. Subsequently, the Department was upgraded as a Centre of Advanced Study in the area of Rock Mechanics and Ground Control in 1984.

The Department of Mining Engineering, IIT (BHU) occupies a pioneering position in the field of mining education and research. It has many firsts to its credit. The first Bachelor, Postgraduate and Doctoral degrees in mining engineering in India have been awarded by this department. Today's Mineral Industry is being run by many of its illustrious alumni who are holding key positions within the country and abroad. Senior faculty members have been recognized by the mining and allied industries as experts in the respective fields and are members of the important decision making bodies associated with CIMFR, NIRM, UGC, ISMU, NCL, CCL, SCCL, CIL, HZL, UCIL etc. The Department received generous grants to accelerate its research and developmental activities.

The Department is divided into six divisions with laboratories that are well equipped with the conventional and modern facilities. Facilities have also been developed for research in collaboration with the mining industry to deal with their practical problems, these laboratories are also equipped to undertake fundamental research in the field of mining.

The above divisions consist of 19 laboratories. The Department is also provided with an Underground Experimental Model Mine well equipped for demonstration, experimental and research purposes particularly in the field of underground mechanised transport systems, mine ventilation and mine surveying experiments.

#### **Major areas of Research**

Rock Mechanics & Ground Control and numerical modelling

Mine Environment, Mine Ventilation, Mine Safety, Water Soluble Polymer

Mining Geology, Mine Water Management & Environmental Pollution

Mining Methods, Production and Productivity analysis of Mining Machines

Design of Structure in Rock, Mine Planning, Mine Environment

Reliability Analysis and and Slope stability

Environmental Economic, GIS and Remote Sensing, Operations Research

Mine Surveying, Mine economics, Mine legislation and Computer Applications in Mining

Mine Safety, Risk Analysis, Reliability and Rock Cutting Technology





Rock Fragmentation Engineering, Rock Mechanics, Surveying

Coal Analysis, Mineral Beneficiation

#### Area of the Department (in square meters):

Ground floor (including Model Experimental of Underground Mine) = 5815.0826 m<sup>2</sup>

Ground Floor Open Space & Workshop & Laboratories = 1829.179 m<sup>2</sup>

First Floor =  $3219.4264 \text{ m}^2$ 

Second Floor = 505.3867  $m^2$ 

#### Infrastructure

S. No.	Particulars	Number
1	No. of Classrooms	03
2	No. of Lecture Halls	01
3	No. of Laboratory	07
4	No. of Computers available for students in the Department/ School	32

#### Unique Achievement / Preposition of the Department

Special Assistance Programme

#### COSIST

FIST Assistance

#### MODROB

Centre of Advanced Study in the area of Rock Mechanics & Ground Control and Geo-Environment

#### 2. Academic Programmes offered and students on roll

S. No.	Programme	I Year	II Year	III Year	IV Year	V Year & above
1.	B. Tech/B.Arch	117	98	73	84	-
2.	Dual Degree	23	21	12	19	21
3.	M. Tech/ M. Pharm	30	27			
4.	Ph. D (Under Institute Fellowship)	01	10	06	07	25
5.	Ph. D (Under Project Fellowship)	-	01	-	-	-
6.	Ph. D (Under Sponsored Category)	02	02 (JRF)	-	-	04(JRF)

# Names of students/scholars who attended conferences/workshops/seminars and symposia abroad or in India

S. No.	Name of Student	Roll No.	Conference/Seminar/Symposia/Workshop	Date & Venue	Financial Assistance From
			ÌNDIA		
1	Kshitij Jaiswal	18154011	10th Annual Global TechMining Conference(GTM2020)	Nov 11-13, 2020 (Virtual mode)	-
2	Prashant Modi	-	"Frontiers in Mining & Geosciences" by NIT, Rourkela, Odisha	Nov 7-8, 2020	-





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S. No.	Name of Student	Roll No.	Conference/Seminar/Symposia/Workshop	Date & Venue	Financial Assistance From
3	Prashant Modi	-	ICOMS 2020 (3rd International Conferences on OpenCastMiningTechnology & Sustainability) by NCL	Jan 22-23, 2021 NCL, Singrauli.	-
4	Khane Jithendar Singh	19151501	ICOMS 2020 (3rd International Conferences on OpenCast MiningTechnology & Sustainability) by NCL	Jan 22-23, 2021 NCL, Singrauli.	-
5	Deepak Kumar	-	International conference on technological Innovations in Mechanical Engineering(TIME-2021)	April 16- 17,2021	-

### Names of scholars/students who won Convocation/Institute Day prizes

S. No.	Name of Student	Roll No.	Name of Prize	Prize awarded by
1	Shri Kapil Beniwal	?	First at the M.Tech. in Mining Engineering Examination, 2020	?
2	Shri Abhishek Singh	?	First at the 5-Year I.D.D. (B.TechM.Tech.) in Mining Engineering Examination, 2020	?
3	Shri Shubham Kumar Mahato	?	First at the B.Tech. in Mining Engineering Examination, 2020 Dr. B.S. Verma Memorial Gold Medal for securing highest marks in B.Tech. Mining Engineering Examination, 2020	?

# 3. Faculty & their activity

#### Faculty and their areas of specialisation

S. No.	Name, Qualifications, Employee No.	Date of award of PhD Degree	Major Areas of Specialization (Max. 3 Areas)
PROFE	SSORS		
1	Dr. Piyush Rai, B.E., M.Tech., Ph.D. ( all in Mining Engineering), Professor & Head 13868	2002	Mining methods (both surface and underground); Rock fragmentation by blasting; Performance assessment and planning for enhanced production & productivity aspects of equipment; Advanced mechanization; Applied rock mechanics.
2	Dr. B.K. Shrivastava	-	Mining Machinery, Rock Mechanics & Ground Control
3	Dr. N.C. Karmakar	-	Mine Environment, Mine Ventilation, Mine Safety, Water Soluble Polymer
4	Dr. A. Jamal		Mining Geology, Mine Water Management & Enviromental Pollution
5	Dr. S.K. Sharma		Design of Structure in Rock, Mine Planning, Mine Environment
6	Dr. S. Gupta		Reliability Analysis, Mine Ventilation
ASSOC	IATE PROFESSORS		
1	Dr. R. P. Singh		Mine fire, Mine mechanization & Planning
2	Dr. Ashok Jaiswal	2007	Strata Control, Stability analysis, Numerical Simulation





S. No.	Name, Qualifications, Employee No.	Date of award of PhD Degree	Major Areas of Specialization (Max. 3 Areas)	
3	Dr. Rajesh Rai	2009	Rock Mechanics, Slope stability, Machine learning	
4	Dr. A Kumar	2014	Environmental Economics, Mine Optimisation	
5	Dr. G.S.P. Singh		Rock Mechanics and Ground Control	
6	Dr. S. K. Palei	15 Sept 2007	Mine Safety Engineering, Reliability Analysis of HEMM, Occupational Health & Safety	
7	Dr. Amit Kumar Verma	2012	Slope stability, Landslide, Rock Mechanics, Numerical Modelling, AI	
ASSIST	ANT PROFESSORS			
1	Dr. Tarun Verma		Mine Environment, Mine Ventilation, Mine Surveying, Mine economics	
2	Dr. Suresh Kumar		Rock Fragmentation Engineering, Rock Mechanics, Surveying	
3	Dr. Nawal Kishore	2004	Mine Planning, Surface Mining Operations	

## **Research Staff:**

S. No.	Name & Qualification Major Areas of Specialization (Max. 3	
1	Dr. A.K. Singh	Mine Environment
2.	Dr. C.S. Singh	Rock Mechanics

# 4. Technical and Non-Teaching Staff

Sl. No.	Name, Qualifications	Designation, Employee No.	Date of Appointment in the department
1	Shri Mithilesh Kumar Gupta, B.A. & Polytechnic in Mechanical Automobile Engineering	Senior Technical Superintendent, 18023	29.01.2007
2.	Shri Lalmani, Intermediate and Diploma in Mechanical Engineering	Technical Superintendent, 18650	12.08.2008
4.	Shri Kanhaiya Lal, Intermediate (Science)	Senior Technical Superintendent, 14080	27.05.1987
5.	Shri Anupam Kumar Debey, M.Sc (Biochemistry), PG (Envi. Science.) & M.A. (Social Science)	Technical Superintendent, 18751	16.12.2008
6.	Shri A.K.Pandey, M.A. (Hindi)	Technical Superintendent, 14085	13.04.1989
7.	Shri Rajendra Prasad, B.A.	Technical Superintendent, 14086	20.04.1989
8.	Shri C.B.Singh, M.Sc. Ag (Entomology and Agricultural Zoology)	Technical Superintendent, 14087	21.12.1990(Retired on 31.12.2020)
9.	Shri Bindresh Yadav, High School Science	Technical Superintendent, 14088	22.12.1990
10.	Shri Indu Bhusan Pal, Intermediate (Science)	Technical Superintendent, 14089	01.02.1991
11.	Shri Ramdhani Prasad, Intermediate (Science)	Technical Superintendent, 14090	01.06.1994
12.	Shri Ram Sewak Singh, Intermediate (Science)	Technical Superintendent, 14091	07.01.1997
13.	Shri Mahendra Yadav, Intermediate (Science)	Senior Technician, 18644	05.08.2008
14.	Shri Vijay Prakash Shrivastava, Intermediate (Science)	Senior Technician, 18642	05.08.2008





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Sl. No.	Name, Qualifications	Designation, Employee No.	Date of Appointment in the department
15.	Shri Ajay Kumar Patel, M.Sc. (Geology)	Senior Technician, 18641	06.08.2008
16.	Shri Sunil Kumar Mishra, B.A. & ITI Degree	Senior Technician, 18643	05.08.2008
17.	Shri Bansh Narayan Pal, Intermediate (Science)	Junior Technician, 10111	02.06.1980
18.	Shri Rajkumar Singh, Intermediate (Science)	Junior Technician, 16963	23.04.2004
19.	Shri Pyarelal, Intermediate & ITI Degree	Junior Technician, 19601	11.07.2012
Non-Te	aching Staff		
1	Shri Ashish Shankar Gupta, M.A. in Sociology from IGNOU	Junior Assistant, 50082	08.05.2017
2	Ms. Neha Gautam, Master in Mass Communication & Journalism	Junior Assistant, 50120	27.07.2017

## Short-term courses/workshops/seminars/symposia/conferences organised by faculty members

S. No.	Cordinator	Title	Period
1	Prof. Piyush Rai as	International Conference on Opencast Mining Technology &	Jan., 22-23, 2021,
	Conference Convenor	Sustainability (ICOMS-2020) organized by the Northern Coalfields	NCL, Singrauli
	from IIT (BHU) side	Limited, Singrauli in association with IIT (BHU) Varanasi, under	
		the existing MoU between the IIT (BHU) and NCL.	

# Short-term courses/workshops/seminars/symposia/conferences/training programmes attended by faculty members in academic institutions and public sector undertakings

S. No.	Name of Faculty Member	Title	Period and Venue
Semina	rs/Symposia/Conferences		
1	Prof. Piyush Rai	International Conference on Opencast Mining Technology & Sustainability (ICOMS-2020) organized by the Northern Coalfields Limited, Singrauli in association with IIT (BHU) Varanasi, under the existing MoU between the IIT (BHU) and NCL.	Jan.22- 23, 2021, NCL, Singrauli.
2	Prof. Piyush Rai	International Conference on Safe Mining & Advanced Resources Technology (SMART) by IIT Kharagpur,	16-18 Dec, 2020, IIT Kharagpur, India. (Virtual mode)
3	Dr A K Verma	International Conference on Opencast Mining Technology & amp; Sustainability (ICOMS-2020) organized by the Northern Coalfields Limited, Singrauli in association with IIT (BHU) Varanasi.	Jan.22- 23, 2021, NCL, Singrauli.
Meeting	ļs		
1.	Prof. Piyush Rai as the Member, Apex SSRC, MoC	57 <sup>th</sup> meeting of SSRC held under the Chairmanship of Secretary (Coal), Ministry of Coal, for consideration of 6 S&T proposals and approval of new S& T guidelines (recommended by the Technical Sub-committee under Chairmanship of Prof. Piyush Rai)	02.02.21 (Virtual Mode)
2.	Prof. Piyush Rai, as the Chairman Technical Sub- Committee	21 <sup>st</sup> .meeting of Technical Sub-committee of SSRC to discuss 20 new project proposals, 5 completed projects and time extension/ cost revision of 8 ongoing S&T projects. New S&T guidelines were also discussed.	22/12/2020, CMPDI, Ranchi (Physical Mode)





S. No.	Name of Faculty Member	Title	Period and Venue
3.	Prof. Piyush Rai, as the Chairman Technical Sub- Committee	3 <sup>rd</sup> meeting of Technical Sub-committee of SSRC to discuss. New S&T guidelines	1/12/20, CMPDI, Ranchi (Virtual Mode)
4.	Prof. Piyush Rai, as the Chairman Technical Sub- Committee	2 <sup>nd</sup> meeting of Technical Sub-committee of SSRC to discuss. New S&T guidelines	18/11/20, CMPDI, Ranchi (Virtual Mode)
5.	Prof. Piyush Rai as the Member, Apex SSRC, MoC	56 <sup>th</sup> meeting of SSRC held under the Chairmanship of Secretary (Coal), Ministry of Coal, for consideration of 5 new S&T proposals recommended by previous Technical Sub-committee	09/10/20 (Virtual Mode)
6.	Prof. Piyush Rai	Joint meeting of HODs of all the Dept. of IIT (BHU) with NCL officials to announce the decision of holding $3^{\rm rd}.$ ICOMS-2020	28/12/20
7.	Dr.A.K.Verma	Member Expert committee on Geological Disaster constituted by Indian National Academy of Engineering and NITI Aayog	17/02/2021

# Special lectures delivered by faculty members in other institutions

S. No.	Name of faculty Member	Topic of 1	Institution	Date		
1	Dr Rajesh Rai	Types of slope failures and Major slope failures in Mining Industry	NITK- Surathkal	08-02-2021 (online Mode)		
2	Prof. Piyush Rai	"Recent Technologies and Gadgets to Enhance Blasting Performance in Surface Mines", Procs. International Conference on Safe Mining & amp; Advanced Resources Technology (SMART) by IIT Kharagpur,	IIT Kharagpur	16-18 Dec, 2020, IIT Kharagpur, India. (Virtual mode)		
3	Dr A K Verma	International Conference on Opencast Mining Technology & Sustainability (ICOMS-2020) organized by the Northern Coalfields Limited, Singrauli in association with IIT (BHU) Varanasi.	NCL, Singrauli	Jan.22- 23, 2021		

#### Honours and awards

S. No.	Name of Faculty Member	Details of Award
1.	Prof. Piyush Rai	Nominated as Member, Board of Governors, Valliamai Engineering College, Anna University, Chennai, as UGC Nominee for 5-years
2.	Prof. Piyush Rai	Nominated as Member, Apex Standing Scientific Research Committee, Ministry of Coal, New Delhi.
3.	Prof. Piyush Rai	Nominated as Chairman, Technical Sub-committee, Ministry of Coal, New Delhi.
4.	Prof. Piyush Rai	Chaired a Technical Session in the International Conference on Safe Mining and advanced Resources Technology(SMART-2020), Org. by I.I.T., Kharagpur, 16-18 , Dec. 2020 (Virtual Mode)
5.	Dr A.K.Verma	Member Expert committee on Geological Disaster constituted by Indian National Academy of Engineering and NITI Aayog





# Books, monographs authored/co-authored

S. No.	Name of Author/Co- Author	Title	Publisher
1	Kushwaha, P. K., Maurya, S. P., and <b>Rai, Piyush</b> and Singh, N.P.	Book Chapter: "Prediction of Petrophysical Parameters Using Probabilistic Neural Network Technique" in the Book	Elsevier, Netherlands
		entitled "Basics of Computational Geophysics", 1st.Edition.	

# Editorial boards of journals

S. No.	Name of Faculty Member	Position (Editor/ member)	Name of Journal
1	Dr. Piyush Rai	Member, panel of reviewers in SCI/SCI-E and Scopus Journals	(i) Int. Jl. Measurement (ii) Engineering with Computers (iii) International Journal of Rock Mechanics and Mining Sciences (iv) Int. Jl.Rock Mechanics and Rock Engineering (v) Acta Montanistiska (vi) Int. Jl. Neural Computing and applications (vii) Journal of Scientific & amp; Industrial Research (CSIR publication), (viii) Int.Journal of Sustainable Mining (ix) Int. Journal of Mining Science and Technology (x) Int. Journal of Geomechanics for Energy and Environment (xi) Powder Technology Jl., (xii) Mining, Metallurgy and Exploration Jl.(xiii) Jl. of Institution of Engineers (India) (xiv) Int. Jl. Geo-technical and Geological Engg. etc.

## ?. Design and Development Activities

#### New facilities added

S. No.	Details (Infrastructure, Equipment, etc.)	Value (in Lakhs of Rupees)
1	Rock Creep testing	2.0
2	Creation of Virtual Conference facility for online meetings, lectures, seminars	_
	etc. in the committee room of the Department.	

# 5. Research and Consultancy

# Sponsored research projects

S. No.	Title	Period	Funding Agency	Amount (in lakhs of Rs.)	Co- ordinator
1	Developing Slope Stability Models for Design of Long Term Stable Dump Slopes through proper benching and vegetation- Part A	3 years	NCL, Coal India	68	Dr Rajesh Rai
2	Whole Body Vibration Exposure on HEMM Operators in Surface Coal Mines – An Assessment of Various Contributing Factors	3 years	SERB, New Delhi	40.03	Dr. S K Palei
3	Development and Adoption of Software for 3D Balancing Diagram for Effective Operation of Draglines in Mines of NCL Singrauli	2 Years	NCL, Singrauli, CIL	28.5	Dr.N.Kishore
4.	Design and Development of Micro Seismic based technique for monitoring and prediction of slope failure in Pandoh, Himachal Pradesh, India	3 years	SERB	49.77	Dr A K Verma



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S. No.	Title	Period	Funding Agency	Amount (in lakhs of Rs.)	Co- ordinator
5.	Forewarning System for Landslide Prediction along Mangan and Chungthang road, Sikkim, India	3 years	DST	45.65	Dr A K Verma
6.	Design and Development of Drone Mounted Optical Sensor for Continuous Monitoring of PM 2.5 and PM 10 at Railway Siding Before, during and After Loading Operation	1 year 6 months	S&T, Ministry of Coal	36.84	First ever Student Project alloted to IDD student as P.I., under Supervision of Prof.Piyush Rai and Co- Supervision of Dr. Rakesh Kumar Singh

#### Industrial consultancy projects

S. No.	Name of Faculty Member	Title	Industry	Amount (in lakhs of Rs.)
1	Prof. B.K.Shrivastva Dr. Rajesh Rai, Dr Ashok Jasiwal	Slope stability of Amelia OCP, Jaiprakash Industries	JPCL	7.0
2	Prof. Sanjay K Sharma, Dr.C.S.Singh, Dr.G.S.P.Singh and Dr.Nawal Kishore	Preparation of Safety Management Plan for Khanak Stone Mine of HSIIDC ,Haryana	HSIIDC ,Haryana	12.00
3	Prof.Sanjay K Sharma, Dr.G.S.P.Singh and Dr. Nawal Kishore	Technical evaluation of safe and sustainable underground operation at Gare Palma IV-5 Coal Mine of HIL,	Hindalco Industries Ltd.	12.00
4.	Prof. Piyush Rai and Dr. Suresh Kr. Sharma	Scientific study as per regulation 196(3) of the CMR 2017 for controlled deep hole blasting beyond 100 m and within 500 m at Amrapali OCP	Central Coal Fields Ltd., Ranchi	9.44 Lac
5.	Dr. Suresh Kr. Sharma and Prof. Piyush Rai	Scientific study for the blast design parameter optimization in Khadia project	Northern Coal Fields, Singrauli	7.08 Lac
6.	Prof. Piyush Rai and Dr. Amit Kr. Verma	Scientific Study of Mechanized opencast working over the developed working of Rajhara bottom seam	Central Coal Fields Ltd., Ranchi	14.75 Lac
7.	Dr. A.K. Verma	Scientific study of Dump Slope stability of Topa RO-OCP(A) Mine, Kuju Area, Central Coalfields Limited.	Central Coal Fields Ltd., Ranchi	5.00 Lac

#### **Research Publications**

#### **Refereed International Journals**

- 1. Ray, A., Kumar, R. C., Rai, R., & Gupta, S. (2020). Risk chart for identification of potential landslide due to the presence of residual soil. *Natural Hazards*, *103*(3), 3479-3498.
- 2. Sahoo, B. R. & Palei, S. K. (2020). Application of risk-based maintenance using analytic hierarchy process for selection of maintenance policy of dragline. Journal of Mining Science, 56(4): 616-630.
- 3. Atal, M.K., Palei, S. K., Chaudhary, D. K., Kumar, V. & Karmakar, N. C. (2020). Occupational exposure of dumper operators to whole-body vibration in opencast coal mines–An approach for risk assessment using



Bayesian network. International Journal of Occupational Safety and Ergonomics. (Accepted) https://doi.org /10.1080/10803548.2020.1828551

- 4. Sahu, A. R. & Palei, S.K., (2020). Real-time fault diagnosis of HEMM using Bayesian Network: A case study on drag system of dragline. Engineering Failure Analysis, Vol. 118: 1-14.
- Chaudhary, D. K., Palei, S. K., Kumar, V. & Karmakar, N. C. (2020). Whole-body vibration exposure of heavy earthmoving machine operators in surface coal mines – a comparative assessment of transport and nontransport earthmoving equipment operators. International Journal of Occupational Safety and Ergonomics. (Accepted). https://doi.org/10.1080/10803548.2020.1785154
- 6. Mishra, A., Palei, S.K. & Gupta, S. (2020). Reliability analysis of dragline using equivalent aging model. Arabian Journal for Science and Engineering. 45:6975-84.
- 7. Palei, S.K., Das, S., Chatterjee, S. (2020). Reliability-centered maintenance of rapier dragline for optimizing replacement interval of dragline components. Mining, Metallurgy & Exploration. 37: 1121–1136
- 8. Sahu, A. R. & Palei, S.K., (2020). Fault prediction of drag system using artificial neural network for prevention of dragline failure. Engineering Failure Analysis. 113: 1-12.
- 9. PK Gautam, R Dwivedi, A Kumar, A Kumar, AK Verma, KH Singh (2021) Damage characteristics of jalore granitic rocks after thermal cycling effect for nuclear waste repository, Rock Mechanics and Rock Engineering 54 (1), 235-254
- 10. P Sharma, AK Verma, P Gautam(2020)Stability analysis of underground pillar in the presence of overlying dump: a case studyArabian Journal of Geosciences 13 (5), 1-13
- 11. PK Gautam, MK Jha, AK Verma, TN Singh (2020) Experimental study of thermal damage under compression and tension of Makrana marble, Journal of Thermal Analysis and Calorimetry 139 (1), 609-627
- Shah Izhar Ahmed, Nawal Kishore and D.C. Jhariya (2021), Evaluation of Groundwater Quality in Jampali Coal Mine, Raigarh, Environmental Quality Management, Article DOI:10.1002/tqem 21767, Internal Article ID: 17100785 Scopus (Elsevier).
- 13. Paurush P, Rai P, Sharma SK. "Selection of Blasting Design Parameters Affecting Peak Particle Velocity—a Case Study". Mining, Metallurgy & Exploration. 2021 Mar 1:1-13. (SCI)
- 14. Yadav, P.K., Gupta, S. and Kumar, D. (2020) "Measurement and analysis of performance of mining dump trucks", International Journal of Vehicle Performance, Vol. 6, No. 2, pp.129–150,

## **Refereed National Journal**

- 1. Bharati, A. K., Ray, A., Rai, R., & Shrivastava, B. K. (2020). Safety Chart for the Identification of Stability of Internal Dragline Dumps. *Journal of The Institution of Engineers (India): Series D*, 101(2), 173-186.
- 2. Bharati, A. K., Ray, A., Rai, R., & Shrivastava, B. K. (2020). Effect of cracks on the stability of dump slope. *Journal of Mines, Metals & Fuels, 68*(7), 237-242
- 3. Ray, A., Bharati, A. K., Rai, R., & Singh, T. N. (2021). Landslide occurrences in Himalayan residual soil: a review. *Himalayan Geology*, 42(1), 189-204.
- 4. Chawla S, Jaiswal A and Shrivastva B K (2021), Design Of Remnant Pillar in Mechanized Depillaring Using Continuous Miner, Journal of Mine metals and fuels. Pp 45-52
- 5. Patel, M. P., Palei, S. K., and Choudhury, S. (2020). Production scheduling of an iron deposit under ore grade uncertainty. Journal of Mines, Metals & Fuels. Vol. 68(3): 85-90.
- Sahu, A. R. and Palei, S.K., (2020). Failure mode, effects and criticality analysis of dragline components and evaluation of risk priority number for effective maintenance planning, Journal of Mines, Metals & Fuels. Vol. 68(5): 166-172.





- 7. Kumar, V., Palei, S. K., and Karmakar, N. C. (2020). Investigation on whole-body vibration exposure of various heavy earth moving machinery operators in opencast coal mines. Journal of Critical Reviews, 7(10): 403-411.
- 8. Anand Kumar, Sunil Kumar, Sanjay Kumar Sharma, Nawal Kishore, C. S. Singh(2020), Assessment of Blast-Induced Ground Vibration Frequency in Opencast Coal Mine: a Multivariate Statistical Regression Model,International Journal of Recent Technology and Engineering (IJRTE) ISSN: 2277-3878, Volume-8 Issue-5, 2020 (Elsevier Scopus Indexed).
- 9. Anand Kumar, Sanjay Kumar Sharma, and Nawal Kishore(2021),Prediction of Blast-Induced Ground Vibration Using Multivariate Regression Analysis in an Opencast Mine, Journal of Mines, Metals & Fuels,ISSN 00222755 (Accepted).
- Hemant Lahuriya, B.S.Choudhary and Nawal Kishore(2021), Investigation into the Effect of Haul Road Conditions on the Productivity of an Open Cast Mine - A Case Study, Journal of Mines, Metals & Fuels, ISSN 00222755(Accepted).
- Paurush, Punit, Rai, Piyush and Sharma, Suresh Kumar, 2020. "Influence of Blast Size on the relation between Peak Particle Velocity and Scaled Distance in Open Pit Limestone Mines – a Case Study, Journal of Mines, Metals & Fuels, Vol.68, No.11 & 12, Nov-Dec 20, pp: 354-361. (Scopus)
- 12. Kushwaha, P. K., Maurya, S. P., Rai, Piyush Singh, N. P., (2020). Prediction of Petrophysical Parameters using Probabilistic Neural Network Technique, Basics of Computational Geophysics 1st Edition, Elsevier, Netherlands. https://www.elsevier.com/books/basics-of-computational-geophysics/samui/978-0-12-820513-6. (Scopus)
- 13. Kushwaha, P. K., Maurya, S. P., Rai, Piyush and Singh, N. P. (2020). Estimation of subsurface rock properties from seismic inversion and Geo-statistical methods over F3-Block, Netherland. Exploration Geophysics. (SCI-E)
- Kushwaha, P. K., Maurya, S. P., Rai, Piyush and Singh, N. P. (2020). Porosity prediction from offshore seismic data of F3 Block, Netherland using multilayer feed-forward neural network (MLFN). Current Science, 119(10):1652-1662.205. (SCI)
- 15. Rai, Piyush, (2020) "A comparative Investigation of Inter-row Delay Timing Vis-à-vis Some Rock Properties on High sandstone Benches", Indian Journal of Engg. and Material Sciences, NISCAIR, Vol.27, No. 1, pp:112-119.(SCI)
- 16. Azam, Shah Fateh and Rai, Piyush, (2020) Influence of rake angle, bucket width, teeth depth of dragline bucket on the resistive force in different rock types, Current Science, Vol.118, No.1., pp:26-28. (SCI)
- 17. Paurush, Punit, Rai, Piyush and Sharma, Suresh Kumar (2021) "Comprehensive Evaluation of Ground Vibrations Induced by Blasting in a Limestone Quarry" Current Science (Communicated). (SCI)
- Paurush, Punit, Rai, Piyush and Sharma, Suresh Kumar (2021) "Identification of blasting design parameters influencing the powder factor - a case study" The Journal of Inst. of Engineers (India): Series-D, (Springer) (Communicated). (Scopus)
- 19. Yadav P.K., Gupta S. And Kumar D., "Search for a comprehensive performance measurement for mining equipment a review", Journal of Mines, Metals and Fuels, Vol. 68 No. 8, pp. 264-269, August 2020, (SCOPUS Indexed)
- 20. Deepak Kumar, Suprakash Gupta and Pawan Kumar Yadav, Reliability, availability and maintainability (RAM) analysis of a dragline, Journal of Mines, Metals & Fuels, Vol. 68, No. 2, February 2020, pp 68-77.

#### **Proceedings of International Conferences**

1. Dharmendra Kumar Singh, Dr. Nawal Kishore.2021.Numerical Approach to Solve Approximation of Zoeppritz Equation Using Least square Method And Genetic Algorithm.International Conference on Opencast Mining Technology & Sustainability, ICOMS -2021, 22-23 January 2021,Singrauli, M.P.





- Dharmendra Kumar Singh ,Nawal Kishore, Vijayendra Pratap Dheeraj.2021.Use of Genetic algorithm and Least Square method for inversion of Aki-Richard and Yanghua Wang approximation of Zoeppritz equation. International Conference On Recent Advances in Science & Engineering (RASE 2K21), Rajkiya Engineering College, Sonbhadra,
- 3. Mohammadi, Mousa and Rai, Piyush, and Gupta, S. (2021) Performance Evaluation of Mining Equipment, A Benchmarking Tool, International Conference on Opencast Mining Technology & Sustainability (ICOMS-2020) organized by the Northern Coalfields Limited, Singrauli in association with IIT (BHU) Varanasi. Jan.22-23, 2021, NCL, Singrauli. (Keynote paper).
- Kushwaha, P. K., Richa, Maurya, S. P., Singh, N. P., & Rai, Piyush. (2020). Comparison of Band-limited and Colored Seismic inversion methods to estimate acoustic impedance of F3 block Netherlands - A case study, 13th Biennial International Conference and Exhibition, Society of Petroleum Geophysicists, Kochi, India.

### 6. Any other Information

#### List of Equipment under OH-35 (F.Y. 2020-2021)

Sl. No.	List of Equipment	Total Cost (in Rs.)	Targeted User
1	UPS for energising internet switches 5 x1 KVA with 40 minute backup	1,69,929/-	UG & PG Students
2	Wiring & Installation of UPS	99,916/-	UG & PG Students
3	PS Wave (Sonic Viewer) – Ultrasonic Pulse Velocity Tester	4,17,900/-	UG & PG Students
4	Laptop 16 Piece (Centrally purchase)	10,36,560/-	UG & PG Students
5	Desktop Computer 04 Piece	2,23,342/-	UG & PG Students
6	Resistive Strain gauge with readout unit	86,520/-	UG & PG Students
7	Wip Frag Software System (01 unit)	2,99,250/-	UG & PG Students
8	Table top mic (09 piece), Wireless mic (02 piece), 30 watt Speaker (04 piece), Amplifier (01), Mixer (16 Channel) (01),Webcam (01), Tripod for Webcam, Wiring & connector Inverter (01 piece)	1,58,290/-	UG & PG Students





# 16. Department of Pharmaceutical Engineering & Technology

### Year of Establishment: 1932

Head of the Department: Professor Sushant Kumar Shrivastava

# 1. Introduction of the Department

Department of Pharmaceutical Engineering & Technology is a pioneer in Pharmaceutical education in India at University level and established in July 1932 by Prof. Mahadev Lal Schroff under the auspicious guidance of Mahamana Madan Mohan Malaviya Ji. Initially, a two-year programme was introduced in 1934 for the degree of B.Sc. (Pharmaceutical Chemistry). Later, the department has expanded academically by the inception of B.Pharm. (1937), M.Pharm. (1941), Ph.D. (1945) and integrated dual degree (2006) as its regular programmes. In the year 2014, the UG and IDD programmes were restructured and renamed as 4-year B Tech Programme in Pharmaceutical Engineering and Technology and 5-year IDD (B Tech & M Tech) programme in Pharmaceutical Engineering and Technology, respectively.

The Department has produced over 2150 B.Pharm., 1240 M.Pharm., 65 M.Pharm.(Integrated Dual Degree) and 142 Ph.D. students who enjoy leading positions in industry, academia, drug administration, research institutes and contemporary pharmacy practice worldwide. The Department has hosted many national and international events and to name a few are the 17<sup>th</sup>, 34<sup>th</sup> & 59<sup>th</sup> editions of Indian Pharmaceutical Congress in the year 1965, 1982 & 2007 in conjunction with Silver Jubilee, Golden Jubilee and Platinum Jubilee of the Department, respectively.

#### **Major areas of Research**

The department is actively engaged in the following broad areas of drug discovery research.

Drug discovery – Identification and optimization of new chemical agents from natural and synthetic origin for the treatment of diabetes, epilepsy, depression, pain, Alzheimer's disease, cancer, tuberculosis and other infectious and neurological diseases.

Drug formulation design and development – Design and development of new drug delivery systems with improved pharmacokinetic and pharmacodynamic profiles.

## Area of the Department (in square meters):

The department is spread over an area of 5823  $m^2$ . The department has 26 laboratories, 2 lecture halls and 6 classrooms.

#### Infrastructure

S. No.	Particulars	Number
1	No. of Classrooms	06
2	No. of Lecture Halls	02
3	No. of Laboratory	26
4	No. of Computers available for students in the Department	40

#### Unique Achievement /Preposition of the Department

The Department of Pharmaceutical Engineering & Technology is the pioneer department to start the degree level pharmacy education in the Country and in South-east Asia. This department is known for its enormous contribution to the growth and expansion of pharmaceutical education and research across the country. In pursuit of achieving its goal, the department has been continuously imparting quality education to produce pharmacists befitting to the requirements of industry and society. Recently the department introduced a research based undergraduate and integrated dual degree curriculum to impart innovative research skills and expertise among the students.





Recent the department has proposed to start a new M Pharm programme; Quality Control in Pharmaceuticals and Medical Devices and is currently under review at the Institute level. The new M Pharm programme is aimed to provide the students in-depth knowledge of the quality methods for pharmaceutical substances and drug products prescribed in Indian Pharmacopoeia (IP) and enable them to gain extensive practical training on such products (including medical devices) in collaboration with Indian Pharmacopoeia Commission (IPC).

The department as National Resource Centre in Pharmacy discipline has been hosting *Advances in Drug Discovery and formulation development* course under the Annual Refresher Programme in Teaching (ARPIT 2019) programme of AICTE, New Delhi for the last two years. Over four thousand teachers of Pharmacy and Allied disciplines has been trained through this online outreach teaching programme

On the research front, the department has been actively engaged in the cutting edge research areas of drug discovery and development. The R & D expertise available in the department includes; (a) New drug target identification and validation; (b) Discovery of natural and synthetic lead compounds and their optimization; (c) Development of novel drug delivery systems including nano-formulations for synthetic and herbal drugs; (d) Authentication and standardization of herbal products; (e) Preclinical evaluation of drug candidates; (f) Analytical method development for drugs and drug formulations.

Apart from institute funded research projects, extramural research funding to the tune of about two crores has been generated during the last two years. Recently the department has been recognised as a DST FIST Sponsored Department to establish state of the art research facilities and has been granted an amount of Rs. 58.00 lakh. To date, nearly 1600 peer-reviewed research papers have been documented by the department. Approximately ~700 research communications have been registered with Scopus alone. During the last five years, the department has published over 350 peer-reviewed research papers. Besides this, a dozen of patents have been filed by the faculty members during the last five years. The high order research credits of faculty members viz., total citations ~26000, further corroborates the research strength of the department of Pharmaceutical Engineering & Technology.

Some of the key research accomplishments of the department in the area of drug discovery and development include; (a) discovered of some potential multifunctional anti-Alzheimer's and anticancer lead compounds, active at nanomolar to micromolar concentration, (b) enhancement of bioavailability and efficacy of drugs through nanoformulations and target-directed carrier systems, (c) identified newer cellular and molecular mechanisms involved in neuropathic pain,(d) developed a bioactive glass based formulation for the treatment of cerebral ischemia, and(e) created a well characterized natural product library of over hundred compounds from plants and microbial origin.

On an average the faculty members of the department publish around 60-70 peer-reviewed research papers annually. Over 25 patent applications have been filed by the faculty members so far.

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# 2. Academic Programmes offered and Students on Roll:

S. No.	Programme	I Year	II Year	III Year	IV Year	V Year & ab
1.	B. Tech	68	36	33	42	
2.	Integrated Dual Degree	14	12	09	25	13
3.	M. Pharm	25	44			
4.	Ph. D (Under Institute Fellowship)	04	15	16	05	12
5.	Ph. D (Under Project Fellowship)	05	02	00	00	
6.	Ph. D (Under Sponsored Category)		01	03	03	

#### **Students on Roll**





# Names of students/scholars who attended conferences/workshops/seminars and symposia abroad or in India

S. No.	Name of Student	Roll No.	Conference/Seminar/Symposia/ Workshop	Date & Venue	Financial Assistance From
ÌNDIA					
1	Anup Kumar Ray	19162046	SPARC sponsored Indo-Us Workshop on Pain Mechanisms & Therapeutics, The Department of Pharmaceutical Engineering & Technology, IIT-BHU	06 May 2021 to 10 May 2021 & venue- online	NA
2	Anup Kumar Ray	19162046	National Online Workshop on28th & 29th Augus"Generating the Highest Level of2020Evidence through Systematic Review2020and Meta-analysis:8Best Alternative for Hospital Based9Projects During the Current Pandemic10Situation", The Department of PharmacyPractice,9National Institute of PharmaceuticalEducation and Research (NIPER),Guwahati		NA
3	Anup Kumar Ray	19162046	National Webinar on Corona and Humanity, Society of Pharmaceutical Sciences and Research (SPSR)	6th September 2020	NA
4	Anup Kumar Ray	19162046	International Webinar on "Application of Deep Learning for COVID 19 Diagnosis and Treatment", Jamia Hamdard	30 May, 2020	NA
5	Akash Verma	19161012	"Trends in Publishing" Organized by Springer Nature	16 June, 2020; Online Mode	NA
6	Akash Verma	19161012	"Opportunities & Challenges during COVID-19 – A Medical Perspective" Organized by Bhavdiya Institute of Pharmaceutical Sciences & Research, Ayodhya(U.P.).	1 July, 2020; Online Mode	NA
7	Akash Verma	19161012	International Conference of International Academy of Physical Sciences on (Advances in Chemistry and Chemical Technology) held at (Indian Institute of Technology BHU Varanasi)	18-20 Dec, 2020; Online Mode	NA
8	Rakesh Kumar Sahu	20162020	Advance in literature review with artificial intelligence.	20th march 2021(virtually at IITBHU	NA
9	Rakesh Kumar Sahu	20162020	Brain storming session 2021	23rd Jan 2021 (Virtual - IITBHU)	NA
10	Rakesh Kumar Sahu	20162020	Recent trend in research and development in pharmaceutical science	15th oct 2020 (Bhopal virtually)	NA
11	Rakesh Kumar Sahu	20162020	Workshop on SBDD & LBDD	12th Feb 2021(Virtually)	NA
12	Rakesh Kumar Sahu	20162020	Workshop on Chemdraw	16th Sep 2020 (virtually)	NA





Indian Institute of Technology (BHU) Varanasi

S. No.	Name of Student	Roll No.	Conference/Seminar/Symposia/ Workshop	Date & Venue	Financial Assistance From
13	Shloka Negi	18165045	SPARK, Best Presentation Award	20 <sup>th</sup> July, 2020 at SPARK, IIT-Roorkee	SPARK, IIT- Roorkee
14	Rangan Mitra	19161013	Online Workshop on Intellectual Property Rights, organized by Teaching Learning Centre, IIT (BHU)	15/01/2021, online	NA
15	Rangan Mitra	19161013	Online Workshop on Intellectual Property Rights, organized by Teaching Learning Centre, IIT (BHU)	29/01/2021, online	NA
16	Bhagwati Bhardwaj	19161011	International Virtual Conference on Drug Discovery and Delivery	6-7 Nov 2020, Department of Pharmacy, BITS Pilani, Pilani campus	NA
17	Bhagwati Bhardwaj	19161011	26th International Conference of International Academy Of Physical Sciences On Advances In Chemistry & Chemical Technology	18-20 Dec 2020 IIT(BHU), Varanasi	NA
18	Landage Avadhut Mohan	20162038	SPARC Sponsored INDO-US Workshop on "Pain Mechanisms And Therapeutics" organized by IIT BHU.	6 may 2021 - 10 may 2021	NA
19	Landage Avadhut Mohan	20162038	SPARC Sponsored Online Course.	2 april 2021	NA
20	Amit kumar	20165009	Art of smart work Success at your fingertips	28/11/20 Online at zoom	Niranjan pendharkar
21	Korra Ramesh	20162012	INDO-US Workshop on "Pain Mechanisms And Therapeutics "	06 May -10 ,2021	NA
22	Korra Ramesh	20162012	Webinar on steps towards complex mater: chemistry, by Nobel Laurate Prof.jean _Marie LEHN, SIS, University of Strasbourg Institute for Advanced study jointly organised by the National Academy of Sciences, India (NASI)-Delhi chapter &MHRD -Institute Innovation Council (IIC), Deen Dayal Upadhaya college chapter (University of Delhi) under the aegis of DBT star college program	21st September 2020 & Online	NA
23	Korra Ramesh	20162012	Online workshop on Intellectual Property Rights organized by Teaching learning centre, IIT BHU, Varanasi.	29 <sup>th</sup> January 2021& online	NA
24	Powsali Ghosh	19162021	"Online Training Programme on HPLC, LCMS and NMR Basics and Practical Problems" organized by National Institute of Pharmaceutical Education and Research (NIPER), Kolkata conducted through 'online mode'.	From 12th-20th October, 2020	NA





S. No.	Name of Student	Roll No.	Conference/Seminar/Symposia/ Workshop	Date & Venue	Financial Assistance From
25	Susanta Kumar Rout	20162014	National E-Conference on "Impact of COVID-19 on Advancements in Pharmaceutical Sciences" organised by Y BLACKBOARD.	25 <sup>th</sup> July 2020 & Online	NA
26	Susanta Kumar Rout	20162014	Webinar on "Steps Towards Complex Matter: Chemistry! By Nobel Laurate Prof. Jean-Marie LEHN, SIS, University of Strasbourg Institute for Advanced Study" jointly organised by The National Academy of Sciences, India(NASI)- Delhi Chapter & MHRD-Institute Innovation Council(IIC), Deen Dayal Upadhyaya College Chapter(University of Delhi) under the aegis of DBT Star College Program.	21st September 2020 & Online	NA
27	Susanta Kumar Rout	20162014	"IAPST Live Webinar 2020" on the topic of "Development to Commercial, Birth of a Pharmaceutical Product" organised by Indian Association of Pharmaceutical Scientist & Technologists.	3 <sup>rd</sup> October 2020 & Online	NA
28	Susanta Kumar Rout	20162014	Webinar on: 'Battling COVID-19: Challenges&Opportunities in Healthcare & Bio-Pharma Sector' presented by CIIE - BITS Pilani, Pilani Campus in association with the Department of Pharmacy and Department of Biological Sciences, BITS Pilani - Pilani Campus.	4 <sup>th</sup> October 2020 & Online	NA
29	Susanta Kumar Rout	20162014	Online workshop on Intellectual Property Rights organised by Teaching Learning Centre, IIT(BHU), Varanasi	29 <sup>th</sup> January 2021 & Online	NA
30	Susanta Kumar Rout	20162014	'Global Bio-India Roadshow 2021' organised by Bio-NEST, NIPER- Guwahati Incubation Center	19 <sup>th</sup> February 2021 & Online	NA
31	Susanta Kumar Rout	20162014	The 11 <sup>th</sup> Annual United Nations Changemakers Conclave 2021 themed on 21 <sup>st</sup> Century Workplace Skills.	20 <sup>th</sup> February 2021	NA
32	Susanta Kumar Rout	20162014	Refresher program on "Implementation of QbD/DoE paradigms for pharmaceutical research" organised by Research Journal of Pharmacy & Life Sciences (RJPLS), India	14 <sup>th</sup> March 2021 & Online	NA
33	Susanta Kumar Rout	20162014	INDIA CHEM 2021 (11 <sup>th</sup> Biennial International Exhibition & Conference) themed on "India: Global Manufacturing Hub for Chemicals & Petrochemicals" organised by Federation of Indian Chambers of Commerce & Industry(FICCI) & Department of Chemicals & Petrochemicals, Govt. of India	17 <sup>th</sup> – 19 <sup>th</sup> March 2021 & Online	NA





– Indian Institute of Technology (BHU) Varanasi

S. No.	Name of Student	Roll No.	Conference/Seminar/Symposia/ Workshop	Date & Venue	Financial Assistance From
34	Susanta Kumar Rout	20162014	A short-term course on "Preclinical Models in Drug Discovery & Development" organised by Indian Institute of Technology (Banaras Hindu University), Varanasi, India	30 <sup>th</sup> March 2021 – 3 <sup>rd</sup> April 2021 & Online	NA

#### Names of scholars/students who won Convocation/Institute Day prizes

S. No.	Name of Student	Roll No.	Name of Prize	Prize awarded by
1	Nilesh Vithoba Khapre	16164009	Certification of Merit	IIT B.H.U Gymkhana

#### Names of Students/Scholars who went for foreign Internship

S. No.	Name of Student	Roll No.	Name of the Organization	Place of Internship	Country	Duration
1	Prabha Rajput	17161007	SERB OVDF	Purdue University,	USA	02.03.2021-
				West Lafayette, Indiana		28.02.2022

## 3. Faculty & their Activity

#### Faculty and their areas of specialisation

S. No.	Name, Qualifications, Em- ployee No.	Date of award of PhD Degree	Major Areas of Specialization (Max. 3 Areas)	
PROFE	SSORS			
1	Brahmeshwar Mishra (M.Pharm., PhD.)	10.08.1988	Pharmaceutics –Rate Controlled Novel Drug Delivery Systems, Nanotechnology based drug formulations Pharmacokinetics and Pharmacodynamics	
2	Sushil Kumar Singh (M.Pharm., PhD.)	21.02.1989	Pharmaceutical Chemistry –Chemistry of Natural Drug Products, Synthetic Analogues and Evaluation of their Biological Activity	
3	Sanjay Singh (M.Pharm., PhD.)- on deputation	03.04.1993	Pharmacology – Nanomedicine, PK/PD Modeling, Stress and Diabetic Pharmacology	
4	Sushant Kumar Shrivastava (M.Pharm., PhD.)	19.06.2000	Pharmaceutical Chemistry – Rational Drug Design and Molecular Modeling	
5	S. Hemalatha (M.Pharm., PhD.)	29.07.2005	Pharmacognosy – Pharmacognostical and Pharmacological Evaluation of Indian Medicinal Plants	
6	Sairam K (M.Pharm., PhD.)	05.04.2003	Pharmacology – Neuropharmacology, Mitochondrial Medicine, New Drug Discovery, Organelle Targeted Drug Development	
ASSOC	IATE PROFESSORS			
1	Senthil Raja A (M.Pharm., PhD.)	18.07.2009	Pharmaceutical Chemistry – Synthetic Medicinal Chemistry, Computational Chemistry, Lead identification and Optimization	
2	Alakh Niranjan Sahu (M.Pharm., PhD.)	08.12.2014	Pharmacognosy –Quality control studies and standardization of medicinal plants and herbal formulations	





S. No.	Name, Qualifications, Em- ployee No.	Date of award of PhD Degree	Major Areas of Specialization (Max. 3 Areas)	
3	Ruchi Chawla (M.Pharm., PhD)	17.10.2016	Pharmaceutics – Nano-drug Delivery System and Pharmacokinetics	
4	M.S. Muthu (MS., Ph.D.)	02.01.2010	Pharmaceutics –Cancer Nanotechnology, Theranostics, Anti-psychotic nanomedicine	
ASSIST	ANT PROFESSORS			
1	Sunil Kumar Mishra (M.Pharm., Ph.D.)	02.11.2013	Pharmacognosy – Medicinal & Aromatic Plants (MAP) Research, MAP Tissue Culture, Natural Drugs	
2	Prasanta Kumar Nayak (M.Pharm., Ph.D.)	25.05.2013	Pharmacology –Brain injury; Memory impairment; Breast cancer; Gallbladder cancer	
3	Gyan Prakash Modi (M.Pharm., Ph.D.)	14.12.2013	Pharmaceutical Chemistry – Design, Development of Novel Drugs to Treat Infections and CNS Disorders	
4	Shreyans Kumar Jain (MS, PhD)	15.09.2015	Medicinal Chemistry of Natural Products	
5	Vinod Tiwari (MS, PhD)	19.06.2012	Pharmacology: Cellular molecular mechanisms driving Neuropathic Pain, Role of reward circuitry in Chronic Pain, Targeting Kinesins for the treatment of neuropathic pain	
6	Ashish Kumar Agrawal (M Pharm, PhD)	15.06.2015	Pharmaceutical Nanotechnology and drug delivery	
7	Rajnish (MPharm, Ph.D)	07.03.2014	Pharmaceutical and Medicinal Chemistry	
8	Deepak Kumar (MPharm, Ph.D) Ramalinga Swami Fellow	09.11.2016	Medicinal Chemistry, natural product chemistry, bioluminescent chemistry	
9	Dinesh Kumar (MPharm, Ph.D)	03.02.2017	Crystal engineering of APIs, Solid state pharmaceutical research, Understanding of pharmaceutical APIs, formulations and their processing	
SENIO	R RESEARCH OFFICER			
1	Ashok Kumar (M.Sc., Ph.D.)	1993	Pharmaceutical Chemistry – Synthesis and Characterization of Novel Compounds	
DST IN	SPIRE/Ramalinga Swami Faculty			
1.	Arun Khattri, PhD	2010	Cancer Biology, bioinformatics and human genetics	

# Technical and Non-Teaching Staff

Sl. No.	Name, Qualifications	Designation & Employee No.	Date of Appointment in the department
Office	Staff		
1	Sh. Atul Kumar Gupta, B.Tech. (Electrical)	Junior Assistant, 50109	21.05.2017
2	Sh. Yashwant Singh, M.A.	Skilled Clerical Staff	27.04.2015
3	Sh. Anand Kumar, B.A.	Caretaker cum Clerk	06.12.2016
4	Sh. Surya Pratap Singh, Intermediate	Multitasking Staff	01.05.2019
Librar	y Staff		
1	Km. Shyamali Ghosal, B. Lib.	Ex-Semi Professional Assistant, 14073	01.08.1987
Labora	ntory Staff		
1	Sh. Kapil Dev Rai, M.A.	Technical Superintendent, 14179	02.02.1987
2	Smt. Archana Singh, M.Sc	Technical Superintendent,18747	15.12.2008

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– Indian Institute of Technology (BHU) Varanasi

Sl. No.	Name, Qualifications	Designation & Employee No.	Date of Appointment in the department
3	Sh. Madan Lal, M.A.	Technical Superintendent, 14185	12.08.1995
4	Sh. Virendra Kumar, I Sc.	Technical Superintendent, 14187	15.10.1998
5	Sh. Sunil Kumar Singh, Dip. In Electrical Engg	Senior Technician, 19269	20.12.2013
6	Sh. Akhila Nand Upadhyay, B. Sc., D. Pharm.	Senior Technician, 18628	07.08.2008
7	Sh. Arun Kumar, Intermediate	Senior Technician, 18624	02.07.1996
8	Sh. Mohd. Jameel, Intermediate	Senior Technician, 18633	02.07.1996
9	Sh. Amit Kumar, Intermediate	Senior Technician, 17371	03.12.2015

## 4. Faculty Information

## Short-term courses/workshops/seminars/symposia/conferences organised by faculty members

S. No.	Coordinator	Title	Period
1	Alakh Niranjan Sahu	Natural Products in Holistic Healthcare-Recent Trends & Future Prospects (NPH2)	21 – 26 December 2020 AICTE Sponsored QIP Short Term Course
2	Vinod Tiwari	SPARC (MHRD) grant sponsored Short-term Course on "Pre-clinical Models in Drug Discovery & Development" with Prof. S.N. Raja, Johns Hopkins University, Baltimore, MD, U.S.A	March 30- April 03, 2021
3	Sushant Kumar Shrivastava	Online Annual Refresher Programme in Teaching-Pharmacy (ARPIT-2020)	December 01,2020 to April 30,2021
4	Sushant Kumar Shrivastava	26 <sup>th</sup> International Conference of International Academy of Physical Sciences on Advances in Chemistry and Chemical Technology	December 18-20, 2021

# Short-term courses/workshops/seminars/symposia/conferences/training programmes attended by faculty members in academic institutions and public sector undertakings

S. No.	Name of Faculty Member	Title	Period and Venue
Semi	nars/Symposia/Conferer	nces/Workshops	
1	Mishra B, Panellists member	The SPARC sponsored workshop on Pain Mechanisms & Therapeutics	IIT (BHU) Varanasi, from 06 May 2021 to 10 May 2021.
2	Mishra B	Current research trends in Pharmaceutical and Biotechnology during an online National Conference on Post COVID-19 Challenges and Opportunities held at New Delhi, Organised by PHARMALOK	14th March 2021, New Delhi
3	Mishra B, Guest of Honour and delivered an inaugural talk	Focussed areas of Research in recent years in the Pharmaceutical field, online during 3 days national Conference organised by Devsthali Vidyapeeth College of Pharmacy From Feb .11-13, 2021.	11th Feb 2021, Rudrapur, Uttarakhand
4	Mishra B, Delivered Presidential address during inaugural session	"Career Perspective and Opportunity for Pharma Students- Current Challenges and Significance of Skill Development" Online SPER Student Congress 2020, Organised by Society of Pharmaceutical Education and Research	27 <sup>th</sup> Dec 2020., Noida, UP

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S. No.	Name of Faculty Member	Title	Period and Venue
5	Mishra B	Quality publications expected from Publishers during one day International online conference (SPER-SPRINGER 2020) jointly Organised by SPER and SPRINGER (Nature) on a theme Adding value in academic book publishing: Role of learned societies and international publishers.	August 1, 2020 New Delhi
6	Mishra B (Was invited as one of the panellist)	Panel Discussion on Role of scholarly books in advancing discovery. International Online Conference (SPER- SPRINGER 2020) on Adding Value in Academic Book Publishing: Role of Learned Societies and International Publisher	August 1, 2020., New Delhi
7	Mishra B	<i>"Ethics in Research",</i> Webinar organised for one week (May 11-16, 2020) by R&D Cell, UKA Tarsadia University, Surat.	11th May 2020., Tarsadia University, Surat
8	S.K. Singh IQAC & Lab India.	Recent Advances in Analysis of Elements in Pharmaceuticals Webinar- 4	July 16,2020
9	S.K. Singh India Alliance	Webinar on the Response to the Start-up community to Covid-19	July 16,2020
10	S.K. Singh ACS Science Talk, Virtual Lecture Series	Why Alzheimer's is a Tough Disease to Crack?	24 July, 2020
11	S.K. Singh ACS Science Talk, Virtual	A Chemical Approach to Addressing Questions in Biology and Human Health	29 July, 2020
12	S.K. Singh ACS Science Talk, Virtual Lecture Series	Drug repositioning/repurposing: Promising strategy to develop therapy against viral infections	31 July, 2020
13	S.K. Singh India Alliance	Webinar on the Response to the DBT's autonomous institutes on Covid-19 - Part -I	August 21, 2020
14	S.K. Singh Royal Society of Chemistry Webinars	What does trustworthy peer review look like?	September 23,2020
15	S.K. Singh RSC Publishing Webinars	RSC Medicinal Chemistry Desktop Seminar Series	October 14,2020
16	S.K. Singh India Alliance	IRMI Webinar: Managing funded programs	October 16,2020
17	Sushant Kumar Shrivastava	UGC Expert Committee Meeting at Udaipur	March 01-02,2021
18	Sushant Kumar Shrivastava	Selection Committee Meeting, Indira Ghandhi National Tribal University, Amarkantak (M.P)	March12-13,2021
19	Sushant Kumar Shrivastava	Major Research Project Screening Committee Meeting, Nirma University, Ahemdabad,(Gujrat)	March 24,2021
20	Senthil Raja A	Virtual Pharma Conference - Online E Poster Competition	CL Baid Mehta College of Pharmacy, Chennai, July 11, 2020
21	Shreyans K. Jain	Advances in Chemistry and Chemical Technology	December 18-20, 2020; IIT-BHU
22	Vinod Tiwari	Natural Products in Holistic Healthcare – Recent Trends & Future Prospects	21-26 December 2020
23	Ashish Kumar Agrawal	Natural Products in Holistic Healthcare –Recent Trends & Future Prospects (NPH2)	Dec 21-26, 2020, Online





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S. No.	Name of Faculty Member	Title	Period and Venue
Meetings			
1	S.K. Singh	Tripura Central University Board of Post Graduate Studies meeting	September30,2020
2	S.K. Singh	GNDU, Amritsar Resh Degree Committee meeting	November19,2020
3	S.K. Singh	NIPER, Hyderabad Faculty Selection Committee	November 21,27 & 28,2020
4	S.K. Singh	Tripura Central University Board of Post Graduate Studies meeting	November11,2020
5	S.K. Singh	DIPSAR, New Delhi PhD Thesis Board meeting	February 17,2021
6	S.K. Singh	Aryabhata Knowledge University, Patna Syllabus Draft Committee meeting	March 9,2021

# Special lectures delivered by faculty members in other institutions

S. No.	Name of facul- ty Member	Topic of Lecture	Institution	Date
1	B. Mishra	Pastillation Technology-a new concept for developing Drug Delivery Systems, during AICTE sponsored Short Term Training Programme from April 5-10,2021	Columbia Institute of Pharmacy,Raipur	5th April 2021
2	B. Mishra	Two Lectures on Effective Health Management during Third/Fourth Faculty Induction Programme through virtual mode from Feb.26 till March 25,2021	UGC-Human Resource 5th Ma Development Centre, BHU 2021	
3	B. Mishra	Pastillation Technology- a novel drug delivery platorm lecture series during Feb 22- 27,2021 in Virtual Mode.	UGC Resource Networking Centre,UIPS, Chandigarh	22nd Feb 2021
4	B. Mishra	"Risk Management for Effective Medication", AICTE sponsored online QIP short term course on Natural Products in Holistic Healthcare- Recent trends and Future Prospects Dec 21-26, 2020	IIT (BHU)	22 <sup>nd</sup> Dec 2020.
5	B. Mishra	Inaugurated the scientific sessions and delivered inaugural lecture on the theme: <i>"Pharmacist:</i> <i>Frontline Health Professionals"</i> , Online 59th National Pharmacy Week Celebration	School of Pharmaceutical Sciences, VISTAS, Chennai	24th November 2020
6	B. Mishra	<i>"Shelf Life and Effective Medication"</i> , Online short term course on Advances in Pharmacy Education for Pharmacy Teachers Organised between Sep 14-18, 2020	National Institute of Technical Teachers Training and Research, Chandigarh	16th September 2020.
7	B. Mishra	Risk Management for Effective Medication during Online Short Term Course on Advances in "Pharmacy Education" from 14-18 Sep 2020	National Institute of Technical Teachers Training and Research (NITTTR), Chandigarh	16th September 2020
8	B. Mishra	Chaired a scientific session and delivered a brief Chairman Speech during a 3 days e-FDP	SIRTS Pharmacy, Bhopal.	20th June 2020
9	B. Mishra	Chaired a Plenary Lecture in a scientific session of a Medicinal Mega Plants and Exhibition Conference held in virtual Mode	Gurukul Kangri Vishwavidyalaya, Haridwar.	Feb 27, 2021





S. No.	Name of facul- ty Member	Topic of Lecture	Institution	Date
10	Sushant Kumar Shrivastava	Macrolide Antibiotics	STTP,ISF College of Pharmacy, Moga(PU)	April 30,2020
11	Sushant Kumar Shrivastava	Chemistry and Clinical Significance of Macrolide Antibiotics in COVID 19Treatment Mathura		August 22,2020
12	Senthil Raja A	Role of in silico methods in lead compound discovery & optimization	University of Madras, Chennai	18 August 2020
13	Senthil Raja A	Computational tools for CDDD - A primer	IIT BHU & JKKNCOPS	18, 20 & 22, May 2020
14	Senthil Raja A	Computational drug discovery – Principles & Applications	Vishnu College of Pharmacy, Bhimavaram	28 January 2021.
15	Alakh Niranjan Sahu	Transforming Global Health	Department of Pharmacy, Tripura University	25.09.2020
16	Shreyans K. Jain	Computational Resources and Natural Product Dereplication. In AICTE sponsored Short Term Training Program on Computer Aided Drug Design: A customized and Innovative Solution to the Greastest Challanges in Chemistry	ASBSJSM-COP-Bela (online)	May 12, 2021
17	Shreyans K. Jain	Natural Product and Drug Discovery in young researchers summit	Eminent College of Pharmaceutical Technology West Bengal on (online)	July 28, 2020
18	Shreyans K. Jain	Drug Discovery Approaches: Recent Trends, in a National Level Virtual Workshop on The Role of Chemistry in Modern Healthcare at	Mahatma Gandhi Institute of technology Hyderabad	July 3, 2020
19	Vinod Tiwari	Natural Products in Neurodegenerative Diseases: Implications & Challenges.	Gurukula Kangri University, Haridwar, India	April 08, 2021
20	Vinod Tiwari	Targeting PAIN Before It Reaches BRAIN	CSIR-Central Drug Research Institute, Lucknow, India	October 23, 2020
21	Vinod Tiwari	PAINS You Feel are Messengers: Listen to Them"	Shri Vishnu College of Pharmacy, Kovvada, Andhra Pradesh, India	April 13, 2020
22	Ashish Kumar Agrawal	Drug Delivery Systems in Ayush Management Education Research Innovation	Yamini Innovations LLP	March 14, 2021
23	Rajnish	Machine learning based tools for prediction of Blood-Brain-Barrier permeation of lead compounds: application and boundaries	AICTE Sponsored STTP at Amar Shaheed Baba Ajit Singh Jujhar Singh Memorial College of Pharmacy, Bela, Rupnagar-140111 (Punjab) India	16/01/2021
24	Rajnish	Machine learning based tools for prediction of Blood-Brain-Barrier permeation: application in CNS drug discovery	AICTE Sponsored STTP at Roland Institute of Pharmaceutical Sciences (Biju Patnaik University of Technology Nodal Centre of Research) Berhampur-760010, Odisha, India	19/03/2021

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S. No.	Name of Faculty Member	Details of Award
1	B. Mishra	Pharma Legend Award, on 27 <sup>th</sup> September 2020 during a Virtual Conference on Pharma Vision 2K25 at New Delhi, Organised by Balaji Book Distributor.
2	B.Mishra	Elected unopposed PRESIDENT of the Society of Pharmaceutical & Education Research, HQ Noida.
3	Sushant Kumar Shrivastava	UGC Nominee, Governing Body, Seven Hills College of Pharmacy, Tirupati(A.P), Member, Governing Body,Seven Hills Autonomous College of Pharmacy
4	Vinod Tiwari	Travel Award by International Association for the Study of Pain (IASP) to attend "2020 IASP World Congress on Pain" held in Amsterdam, Netherlands from August 4-8, 2020.

#### Honours and awards

# Books, monographs authored/co-authored

S. No.	Name of Author/Co- Author	Title	Publisher
1	Mishra, B., & Singh, J. (2020).	Novel drug delivery systems and significance in respiratory diseases. In <i>Targeting Chronic</i> <i>Inflammatory Lung Diseases Using Advanced Drug</i> <i>Delivery Systems</i>	Academic Press (an imprint of Elsevier), USA
2	Mishra B and Upadhyay M	Drug delivery systems in pulmonary diseases: role of microparticles. In: "Targeting Chronic Inflammatory Lung Diseases using Advanced Drug Delivery Systems"	Academic Press (an imprint of Elsevier), USA
3	Mishra B and Bonde GV	Transdermal Drug Delivery. In "Controlled Drug Delivery Systems"	CRC Press, Taylor and Francis Group, Florida USA.
4	Mishra B, Upadhyay M, Bakde B	pH Sensed Interpenetrating Polymeric Network: Application in Drug Delivery. In "Interpenetrating Polymer Network: Biomedical Applications"	Springer, Singapore
5	Mishra B, Chandewar AV, Hedau-Bakade BA	MCQs on Physical Pharmaceutics: First Edition	Pharma Career Publication, Nashik (Maharashtra).
6	Ganeshpurkar, A., Makar, S., Kumar, D., Jana, S., & Singh, S. K.	Aspartic proteases: Potential drug targets for anticancer drug development. In <i>Cancer-Leading Proteases</i>	Academic press
7	Sharma P, Tripathi MK, Shrivastava SK.	Cholinesterase as a Target for Drug Development in Alzheimer's Disease. In: Labrou N. (eds.) Targeting Enzymes for Pharmaceutical Development. Methods in Molecular Biology, vol. 2089.	Humana, New York, NY 2020.
8	Tarkeshwar Dubey, Shreyans Kumar Jain, & Siva Hemalatha.	Blumea lacera (Asteraceae), a Potential Herb of Medicinal Value in Modern Aspects	New India Publishing Agency
9	Bharat Goel, Bharat Sahu, & Shreyans Kumar Jain.	Plant-Derived Drug Discovery: Introduction to Recent Approaches	Springer Singapore
10	Vinod Tiwari	Sodium Channels: As an Eye of the Storm in Various Clinical Pathologies	Frontiers in Pharmacology of Neurotransmitters, 619-634
11	Sanyog Jain, Kaisar Raza, Ashish Kumar Agrawal, Ankur Vaidya	Nanotechnology Applications for Cancer Chemotherapy	Elsevier





S. No.	Name of Author/Co- Author	Title	Publisher
12	Krishna Kumar Patel, Ashish Kumar Agrawal	Preformulation Challenges: The Concept Behind the Selection, Design and Preparation of	Springer Link
	Sanjay Singh	Nanoformulations	

# Editorial boards of journals

S. No.	Name of Faculty Member	Position (Editor/ member)	Name of Journal
1	M.S. Muthu	Editor-in-Chief	Research and Reviews: Pharmacology and Toxicology Studies
2	Prasanta Kumar Nayak	Editorial Board Member	Journal Of Research Innovation And Management Science (http://www.jrim.net/editorial-board)
3	Prasanta Kumar Nayak	Managing Editor	The Pharmstudent (https://www.thepharmstudent.com/ editorial_board.html)
4	Vinod Tiwari	Associate Editor	Frontiers in Endocrinology
5	Vinod Tiwari	Associate Editor	Frontiers in Behavioral Neuroscience

# 4. Design and Development Activities

# New facilities added

S. No.	Details (Infrastructure, Equipments, etc.)	Value (in Lakhs of Ru- pees)
1	Chiller & Controller for Rotavap (Buchi)	2.20
2	6 Carousel synthetic station	5.20
3	MOE Software	2.10
4	Established and renovated Animal House Facility in the department.	10
5	Established Behavioral and Pain Pharmacology Facility in the department	10
6	Cell Culture Lab Facility (Biosafety cabinet, Co2 Incubator, Bright field microscope, Centrifuge)	13
7	Dissolution Apparatus	5.00

## **Patents** filed

S. No.	Name of Faculty Member	Title of Patent	
1	Sushil Kumar Singh	Multitarget-directed triazole bridged cycloaryl analogues for treatment of Alzheimer's disease (Application No. 202011047641 Date of filing: 31/10/2020)	
2	Alakh Niranjan Sahu	An instrument for thin layer chromatography spot application	
3	Vinod Tiwari	Targeting Peripheral Neurons Using Opioid-Encapsulated Pegylated Albumin Nanoparticles for Safe and Effective Antinociceptive Activity	
4	Vinod Tiwari	Analgesic activity of Dermorphin [D-Arg2, Lys4] (1–4) amide (DALDA) Nanoformulation in Chronic Constriction Injury Induced Neuropathic Pain.	




# 5. Research and Consultancy

## Sponsored research projects

S. No.	Title	Period	Funding Agency	Amount (in lakhs of Rs.)	Co- ordinator
1	Molecular and Genetic level Biological Studies of Designed and Developed Preclinical Candidates for the Management of Alzheimer's Disease.	2019-2022	TARE-SERB	15.00	Sushil Kumar Singh (Mentor)
2	DST-FIST, Level-1	2020-25	DST FIST	58.00	Sushant Kumar Shrivastava
3	$\begin{array}{llllllllllllllllllllllllllllllllllll$	April 2020-March 2022	ICMR	65.00	Sushant Kumar Shrivastava
4	Synthesis and evaluation of diverse n-functionalized hybrids as muti-target directed ligands for neuroprotective and neurorestorative therapies	2019-2022	MoE, STARS	75.30	Senthil Raja A (PI)
5	Phytochemical and pharmacological evaluations of bioactivity guided fractions of medicinal plants of Tripura	2018-2021	DBT-NER, New Delhi	26.00	Alakh Niranjan Sahu
6	Defining the amr burden of antimicrobial manufacturing waste in Puducherry and Chennai	36 months	DBT (BT/1N/Indo-UK/ AMR-Env/02/ JS/2020-21)	31.22280	M.S. Muthu
7	Development of Novel Therapeutics for the Redemption from Frostbite and Burn Injury-induced Chronic Pain in Military Veterans	December 2020 to December 2023	Science & Engineering Research Board (SERB)	40.81	Vinod Tiwari
8	Safety and pharmacokinetic property of novel inhibitors of CD6-CD166 interaction in animal model as well as assessment of their efficacy to inhibit activation of synovial T cells in rheumatoid arthritis patients.	September 2020-August 2021	Indian Council of Medical Research	20.00	Vinod Tiwari Co- PI Dr. Ambak Rai, MNIT, Allahabad
9	Development of Transient Receptor Potential Ankyrin -1 (TRPA1) Nociceptor Based siRNA Nanotherapeutics for the Treatment of Chemotherapy- Induced Neuropathic Pain	March 2020 to April 2023	Indian Council of Medical Research	15.21	Vinod Tiwari
10	Targeting Kinesins Mediated Regulation of Nociceptors for the Treatment of Neuropathic Pain	September 2019-August 2021	Ministry of Human Resource & Development (MHRD)	47.53	Vinod Tiwari, Prof. S.N Raja





S. No.	Title	Period	Funding Agency	Amount (in lakhs of Rs.)	Co- ordinator
11	Development of Multifunctional Dendrimer Stabilized Green Nano- Therapeutics for the Treatment of Drugs and Alcohol Addiction	March 2019 to April 2022	Indian Council of Medical Research	13.20	Vinod Tiwari
12	Novel Milk Exosomes for the Combination Therapy by using Selected Natural Medicine (Paclitaxel & Colchicine) for the Efficient Management of Breast Cancer	Dec 2019- Dec 2021	Science and Engineering Research Board, Govt. of India	31.38 Lakhs	A.K. Agrawal
13	Bioluminescence based monitoring of tumor progression and treatment by apoptotic pathway	2019-2024	DBT	42.50	Deepak Kumar
14	Pharmacology of Natural Drugs in Obesity and Eating Disorders" sponsored by Industry	2018-2020	Industry	26.546	Sairam K.
15	Pharmacological evaluation of anti- diabetic effects of some natural drugs sponsored by Industry	2020-21	Industry	28.875	Sairam K.
16	Design, Synthesis and Biological Evaluation of O- and C-Derivatives of Phenylethanoid Glycosides as a Multi- targeting Neuroprotective Disease Modifying Agents for Alzheimer's Disease	2019-2022	SERB-DST	48.07	Sairam K. Co-PI
17	Natural Template Based Novel Neuroprotective Molecules for The Management of Alzheimer's Disease	2018-2022 /003490	SERB-CRG	40.00	G.P. Modi
18	Development of novel near infrared fluorescence imaging probes for detecting amyloid beta species in eyes of Alzheimer's disease animal model	2019-2022	Extramural ICMR	40.00	G.P. Modi

# Industrial consultancy projects

S. No.	Name of Faculty Member	Title	Industry	Amount (in lakhs of Rs.)
1	Sushant Kumar Shrivastava & Shreyans Kumar Jain	Analysis of Nicotine and Magnesium Carbonate in Panmasala and Some Harbal Materials as per FSSAI Guideline	Dharmpal Satyapal Ltd.	18.00
2	Vinod Tiwari	Study of Anti diabetic activity of the samples	SANAT Products Ltd.	2.22
3	Sairam K	Retainer Consultancy	Natreon Inc, Kolkata	60000 per month





### Faculty members' participation with other universities under MoUs

Dr. Sushant Kumar Shrivastava, Purdue University, West Lafayette, IN, USA

### **Research Publications**

### **Refereed International Journals**

- 1. DR, M., Jha, A., Kumar, M., Ajmal, G., Bonde, G. V., & Mishra, B. (2020). Electrospun nanofiber-based drug delivery platform: advances in diabetic foot ulcer management. *Expert Opinion on Drug Delivery*, 1-18.
- 2. Kumar, M., Jha, A., Dr, M., & Mishra, B. (2020). Targeted drug nanocrystals for pulmonary delivery: a potential strategy for lung cancer therapy. *Expert Opinion on Drug Delivery*, 17(10), 1459-1472.
- 3. Dhedage, N., Khan, G., Ajmal, G., Kumar, M., Jha, A., & Mishra, B. (2021). Metronidazole Loaded Polycaprolactone-Carbopol Blends Based Biodegradable Intrapocket Dental Film for Local Treatment of Periodontitis. *Drug Delivery Letters*, 11(1), 34-43.
- 4. Kommana, N., Bharti, K., Surekha, D. B., Thokala, S., & Mishra, B. (2020). Development, optimization and evaluation of losartan potassium loaded Self Emulsifying Drug Delivery System. *Journal of Drug Delivery Science and Technology*, 60, 102026.
- 5. Bonde, G. V., Ajmal, G., Yadav, S. K., Mittal, P., & Mishra, B. (2020). Lapatinib-loaded nanocolloidal polymeric micelles for the efficient treatment of breast cancer.
- Tripathi,M.K., Sharma,P., Tripathi,A., Tripathi,P.N., Srivastava,P.,Seth,A. Shrivastava,S.K.(2020) Computational exploration and experimental validation to identify dual inhibitor of cholinesterase and amyloid beta for the treatment of Alzheimer's Disease, *Journal of Computer-Aided Molecular Design* 34(9): 983-1002
- Chikhale,R.V., Gurav,S.S.,Patil, R.B., Sinha, S.K., Prasad,S.K., Shakya,A., Shrivastava,S.K., Gurav,N.S., Prasad,R.S.(2020) Sars-cov-2 host entry and replication inhibitors form Indian ginseng an in-silico approach(2020) Journal of Biomolecular Structure and Dynamics. https://doi.org/10.1080/07391102.2020.1 778539
- 8. Lam,B.Q., Shrivastava,S.K., Shrivastava,A., Shankar,S., Srivastava, R (2020) The impact of obesity and diabetes mellitus on pancreatic cancer Molecular mechanism and clinical perspective. 24 (14):7706-7716
- 9. Choubey, P.K., Tripathi, A., Sharma, P. and Shrivastava, S.K. (2020) Design, synthesis and multitargeted profiling of N-benzylpyrrolidine derivatives for the treatment of Alzheimer's Disease. 28 (22): 115721
- 10. Ganeshpurkar, A., Singh, R., Gore, P. G., Kumar, D., Gutti, G., Kumar, A., & Singh, S. K. (2020). Structure-based screening and molecular dynamics simulation studies for the identification of potential acetylcholinesterase inhibitors. Molecular Simulation, 46(3), 169-185.
- Ganeshpurkar, A., Singh, R., Kumar, D., Divya, Shivhare, S., Kumar, A., & Singh, S. K. (2020). Computational binding study with 7 nicotinic acetylcholine receptor of Anvylic-3288: an allosteric modulator. Molecular Simulation, 46(13), 975-986.
- 12. Jana, S., & Singh, S. K. (2020). Identification of human tau-tubulin kinase 1 inhibitors: An integrated e-pharmacophore-based virtual screening and molecular dynamics simulation. Journal of Biomolecular Structure and Dynamics, 38(3), 886-900.
- 13. Makar, S., Ghosh, A., Kumar, A., & Singh, S. K. (2020). Recent Studies on Aromatase and Sulfatase Involved in Breast Cancer and their Inhibitors. Current Enzyme Inhibition, 16(1), 20-44.
- 14. Makar, S., Saha, T., Swetha, R., Gutti, G., Kumar, A., & Singh, S. K. (2020). Rational approaches of drug design for the development of selective estrogen receptor modulators (SERMs), implicated in breast cancer. Bioorganic chemistry, 94, 103380.





- 15. Modi, A., Singh, M., Gutti, G., Shanker, O. R., Singh, V. K., Singh, S., Narayan, G. (2020). Benzothiazole derivative bearing amide moiety induces p53-mediated apoptosis in HPV16 positive cervical cancer cells. Investigational new drugs, 38(4), 934-945.
- 16. Singh, R., Ganeshpurkar, A., Kumar, D., Kumar, D., Kumar, A., & Singh, S. K. (2020). Identifying potential GluN2B subunit containing N-Methyl-D-aspartate receptor inhibitors: an integrative in silico and molecular modeling approach. Journal of Biomolecular Structure and Dynamics, 38(9), 2533-2545.
- Singh, R. B., Das, N., Singh, G. K., Singh, S. K., & Zaman, K. (2020). Synthesis and pharmacological evaluation of 3-[5-(aryl-[1, 3, 4] oxadiazole-2-yl]-piperidine derivatives as anticonvulsant and antidepressant agents. Arabian Journal of Chemistry, 13(5), 5299-5311.
- 18. Mitra R and Ayyannan S.R. (2020) Small-Molecule Inhibitors of Shp2 Phosphatase as Potential Chemotherapeutic Agents for Glioblastoma: A Minireview, ChemMedChem, 16(5), 777-787
- 19. Tripathi R.K.P and Ayyannan SR, (2020), Emerging chemical scaffolds with potential SHP2 phosphatase inhibitory capabilities–A comprehensive review, Chemical Biology & Drug Design, 97(3), 721-773
- 20. Gaurav Gopal Naik, Md. Bayazeed Alam, Vivek Pandey, Pawan K. Dubey & Avanish S. Parmar & Alakh N. Sahu (17 June 2020) Pink Fluorescent Carbon Dots Derived from the Phytomedicine for Breast Cancer Cell Imaging, Chemistry Select, 5: 6954 –6960.
- 21. Gaurav Gopal Naik , Jainam Shah, Arun Kumar Balasubramaniam & Alakh N Sahu (2021) Applications of natural product-derived carbon dots in cancer biology, Nanomedicine 16(7): 587-608.
- 22. Mehata, A. K., Viswanadh, M. K., Priya, V., Vikas and Muthu, M. S., (2020) Dendritic cell-targeted theranostic nanomedicine: advanced cancer nanotechnology for diagnosis and therapy. Nanomedicine (Lond). 15(10):947-949.
- 23. Gangwar, A., Kumar, S., Meena, S. S., Sharma, A., Viswanadh, M. K., Neogi, K., Muthu M.S. and Prasad, N. K (2020) Structural and in-vitro assessment of ZnxFe3– xC (0≤ x≤ 1) nanoparticles as magnetic biomaterials. Applied Surface Science.15;509:144891.
- 24. Jha, A., Viswanadh, M.K., Burande, A.S., Mehata, A.K., Poddar, S., Yadav, K., Mahto, S.K., Parmar, A.S. and Muthu, M.S., (2020) DNA biodots based targeted theranostic nanomedicine for the imaging and treatment of non-small cell lung cancer. International journal of biological macromolecules. 150:413-25.
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### **Review** articles

- 73. Goel B., Tripathi N., Mukherjee B. and Jain S.K. (2021) Glycorandomization: A promising diversification strategy for the drug development. European Journal of Medicinal Chemistry. 213, 113156.
- 74. Goel B., Bhardwaj N., Tripathi N., and Jain S.K. (2021) Drug discovery of small molecules for the treatment of COVID-19: A review on clinical studies. Mini-Reviews in Medicinal Chemistry 21 (12): 1431 1456.
- 75. Bhardwaj N., Tripathi N., Goel B. and Jain S. K. (2021) Anticancer Activity of Diosgenin and its Semi-synthetic Derivatives: Role in Autophagy Mediated Cell Death and Induction of Apoptosis. Mini-Reviews in Medicinal Chemistry. 21 (13): 1646 – 1665.
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- 77. Goel B., Tripathi N., Bhardwaj N., and Jain S.K. (2020) Small Molecule CDK Inhibitors for the Therapeutic Management of Cancer. Current Topics in Medicinal Chemistry. 20 (17): 1535 1563

### **Refereed National Journal**

- Reshma Chatterjee, Swapnil Patil, Alakh N Sahu\* (2020) Phytochemical estimation and anti- hemorrhoidal activity of Ficus benghalensis linn. prop root extract, Research Journal of Pharmacy and Life Sciences, 1(1): 10-21.
- Smriti Gupta and Alakh N. Sahu (2020) Glutathione: Induction of Apoptosis and Autophagy in Cancer, IJPSR, 11(8): 3608-3618.
- 3. Sonam Sharma, Priya Dixit, K Sairam & Alakh N Sahu (2020) Amelioration of cisplatin induced nephrotoxicity by Phyla nodiflora (L.) Greene, Indian Journal of Experimental Biology 58: 691-698.





# **17. Department of Humanistic Studies**

### Year of Establishment: 2015

Head/Coordinator of the Department/School: Prof. Rakesh K. Misra

# 1. Brief Introduction of the Department/School:

The Department of Humanistic Studies was initiated in the year 2015. Prior to its inception, Technical Writing Section was looking after the language and communication needs of the students of the institute for a little more than two decades. This department as an academic entity envisages to enhance the power of science and technology with an inspiring touch of human sensibility that our world urgently needs in the present civilizational crisis pertaining to the mindless development in the form of three dimensional projections as the hallmarks of growth. It will be an interdisciplinary platform to develop finer sensibilities in the students of engineering and technology to creatively engage themselves in the development of a society which upholds values our heritage has provided us with its multifarious sources.

This department comprises faculty in many disciplines such as History, Philosophy, Sociology, Psychology, Language, Linguistics, Literature and culture, but not limited to these only. As and when a worthwhile academic proposition that evidently indicates a civilizational change will be considered worthy to be included in its curriculum for teaching and research in this department.

### Major areas of Research

- 1. **English** (Literature, Cultural Studies, Gender Studies, Film Studies and Visual Culture, Narrative Studies, Professional Communication, Creative writing, Literary Theory)
- 2. **Philosophy** (Indian and Western Logic, Gandhian Philosophy, Peace and Ahimsa Studies, Indian Philosophy-Sanskrit- Navya Nyaya and Bharatiya Tarka)
- 3. **Linguistics** (Computational Linguistics, MT, CALL, Computational Semantics, Grammar Formalism, Cognitive Linguistics, Sanskrit Computational Linguistics, Sociolinguistics, Lexicography)
- 4. **Psychology** (Integrative Intelligence, Macro Organizational Behavior, Social Psychology)
- 5. **Sociology** (Environmental Sociology, Sustainable Urbanization, Smart Cities, Gender Studies, Science, Technology and Society, Social Anthropology in India, Ethnography of Performance, Post-colonialism and the Inter-disciplinary Dialogues on Caste and Literature in India, Critical Dance Studies )
- 6. History

### 7. Political Science

### Area of the Department/School (in square meters):

#### Infrastructure

S. No.	Particulars	Number
1	No. of Classrooms	0
2	No. of Lecture Halls	1
3	No. of Laboratory	0
4	No. of Computers available for students in the Department/School/ School	32





# Unique Achievement / Preposition of the Department/School

# 2. Academic Programmes offered

### **New Courses Introduced**

S. No.	Course Code	Course name	Course credit
1	H-7210	Advanced Paninian Grammar Formalism	11

### **Students on Roll**

(*Please give No. of students only in respective years*)

S. No.	Programme	I Year	II Year	III Year	IV Year	V Year & above
1.	B. Tech/B.Arch	Nil	Nil	Nil	Nil	Nil
2.	Dual Degree	Nil	Nil	Nil	Nil	Nil
3.	M. Tech/ M. Pharm	Nil	Nil	Nil	Nil	Nil
4.	Ph. D (Under Institute Fellowship)	05	01	06	01	04
5.	Ph. D (Under Project Fellowship)	Nil	Nil	Nil	Nil	Nil
6.	Ph. D (Under Sponsored Category)	Nil	Nil	Nil	01	Nil

# Names of students/scholars who attended conferences/workshops/seminars and symposia abroad or in India

S. No.	Name of Student	Roll No.	C	Conference/Seminar/Symposia/ Workshop	Date & Venue	Financial Assistance From
India	ı					
1.	Akanksha Yadav	19191001	1.	Gender Sensitive Education: A necessity to eradicate Gender Discrimination in India	Date-8th February, 2020. National University of Study and Research in Law, Ranchi(Centre for Human Rights and Subaltern Studies, NUSRL, RANCHI	
			2.	COVID -19 Pandemic: Emerging Challenges and Perspectives.	May 29,2020 Harsh Vidya Mandir, Uttarakhand India.	
			3.	The Matrix of Indian Folk Literature.	24th May, 2020. Shri Jai Narayan Misra PG College, Lucknow	
			4.	A Sustainable Response to COVID-19- The New Normal.	Date- May 27, 2020. Jain Centre for Management Studies.	
			5.	Healing Populations: Approaching Life in a Mass Milieu.	Date-17th -18th December 2020. Department of Humanistic Studies IIT(BHU)	
2.	Pursotam Kumar	19191504	1.	Short Training on Artificial Intelligence (AI), Machine Learning, Deep Learning & its applications.	Date- 20th July to 30th july, 2020. EduxLabs New Delhi (Esoir Business Solution LLP)	





S. No.	Name of Student	Roll No.	C	onference/Seminar/Symposia/ Workshop	Date & Venue	Financial Assistance From
			2.	Online Technical Workshop on Python.	Date- 10th & 11th September, 2020 E-Cell IIT Bombay.	
			3.	Online Faculty Development Program on "Contemporary Research Methods in Linguistics and Literature: Sampling and Analytical Methods of Scientific Perspectives".	Date- 15 to 21 July, 2020 Venue- Department of Linguistics, Bharathiar University, Coimbatore.	
			4.	Online International Faculty Development Program on "Advanced English for Academic Delivery in Specific Stream".	Date- 8-12 June, 2020 Venue- Amity Institute of English Studies and Research, Amity University, Patna	
			5.	Attended Lecture on 'Sentence Novelty and Recursion'.	22nd July, 2020 Venue- Centre for Applied Linguistics and Translation Studies, University of Hyderabad.	
			6.	International E-Workshop on Language Translation Skills.	Date- August 8 to 12, 2020. Venue- Higher Education Department(H.E.D) Govt. of Jammu and Kashmir(UT)	
			7.	International Virtual Conference on 'Language Teaching Beyond the Classroom: Issues and Perspectives.	Date- 21 & 22 August, 2020. Venue- Jawaharlal Nehru University, New Delhi.	
			8.	International webinar on Recent Trends in Phonetic and Phonological Research.	Date- 10th August, 2020 Venue- Department of Linguistics and Contrastive Study of Tribal languages, Indira Gandhi National Tribal University, Amarkantak, Madhya Pradesh.	
			9.	CALTS' WebTalk Series-1 (Talk 5) on the Theme "Syntax Semantics: Theoretical Insights and Applications for Indian Languages" by Prof. Gautam Sengupta on <b>Parsing with Logic.</b>	Date- 12th August, 2020. Venue- Centre for Applied Linguistics and Translation Studies (CALTS) University of Hyderabad	
			10.	[Virtual] Workshop on Python Programming for Linguists(PyLing-2020)	Date- December 14-26, 2020. Venue- Centre for Transdisciplinary Studies, Dr. Bhimrao Ambedkar University, Agra	
3.	Samapika Roy	19151003	1.	Four Days Webinar on "An effective Research Paper Writing Skills"	Date- April 13-16, 2020 Venue- Bhagwan Mahavir University, Surat Gujrat	





S. No.	Name of Student	Roll No.	Co	nference/Seminar/Symposia/ Workshop	Date & Venue	Financial Assistance From
			2.	Two Days Online Course on "RESEARCH METHODOLOGY"- An Overview	Date- 5th - 6th May, 2020 Venue- S.S.S. SAMITI'S M.P. MIRJI COLLEGE OF COMMERCE, M.COM DEPARTMENT, NEHRU NAGAR BELAGAVI	
			3.	NATIONAL WEBINAR On Technology And Methods For Online Sanskrit Teaching	Date- 22nd May, 2020 Venue- JANKI DEVI MEMORIAL COLLEGE (University of Delhi)	
			4.	Webinar on Discourse Analysis: Research and Literacy in the Language Classroom	Date- 5th June, 2020 Venue- GITAM School of Gandhian Studies & Directorate of Research and Consultancy In collaboration with ELTAI, Visakhapatnam Chapter	
			5.	Five Days Faculty Development Programme on "Looking Beyond the Boundary: Practices in Literature and language Studies"	Date- 29th June to 3rd July, 2020 Venue- Amity Institute of English Studies and Research, Amity University Kolkata.	
			6.	CALTS' WebTalk Series-1 on the Theme: "Syntax- Semantics: Theoretical Insights and Applications for Indian Languages" By Prof. Tanmay Bhattachariya on ' <b>Syntactic</b> <b>Roots of/ Routes to Case and</b> <b>Agreement</b> '	Date- 15th July, 2020 Venue-Centre for Applied Linguistics and Translation Studies (CALTS) University of Hyderabad	
			7.	CALTS' WebTalk Series-1 on the Theme: "Syntax- Semantics: Theoretical Insights and Applications for Indian Languages" By Prof. Tanmay Bhattachariya on ' <b>Syntactic</b> <b>Roots of/ Routes to Case and</b> <b>Agreement</b> '	Date- 15th July, 2020 Venue-Centre for Applied Linguistics and Translation Studies (CALTS) University of Hyderabad	
			8.	CALTS' WebTalk Series-1 on the Theme"Syntax-Semantics: Theoretical Insights and Applications for Indian Languages" By Probal Dasgupta on ' <b>Sentence Novelty and</b> <b>Recursion</b> '	Date- 22th July, 2020 Venue-Centre for Applied Linguistics and Translation Studies (CALTS) University of Hyderabad	
			9.	National Webinar on Language Technology and Role of Literature Departments in India	Date-02 July, 2020 Venue- ATMA RAM SANATAN DHARMA COLLEGE (UNIVERSITY OF DELHI)	





S. No.	Name of Student	Roll No.	С	onference/Seminar/Symposia/ Workshop	Date & Venue	Financial Assistance From
			10.	National Webinar on the theme "Indian Language and Culture ''भारतीय भाषाएँ एवम् संस्कृत"	Date- 27 June 2020 Venue- Govt. P. G. College, Bilaspur, Rampur, U.P.	
			11.	One Week Online National Workshop on Digitization & Development of e-Resources for Sanskrit	Date- May 27–June 02, 2020 Venue-School of Sanskrit & Indic Studies, Jawaharlal Nehru University & Department of Sanskrit, University of Delhi	
			12.	CALTS' WebTalk Series-1 (talk-5) on the Theme "Syntax- Semantics: Theoretical Insights and Applications for Indian Languages" by Prof. Gautam Sengupta on ' <b>Parsing with Logic</b> '	Date- 15th July, 2020 Venue-Centre for Applied Linguistics and Translation Studies (CALTS) University of Hyderabad	
			13.	[Virtual] Workshop on Python Programming for Linguists (PyLing-2020).	Date- December 14-26, 2020. Venue- Centre for Transdisciplinary Studies, Dr. Bhimrao Ambedkar University, Agra	
			14.	Presented paper in 17th International Conference on Natural Language Processing	Date- 18-21 December, 2020 Venue- IIT Patna, India	
			15.	Three-Day International Webinar On Language, Data and Knowledge Extraction	Date- 22nd - 24th March 2021 Venue- Department of Computer Science and Department of Linguistics, University of Kerala, India	
			16.	INTERNATIONAL LINGUISTICS SYMPOSIUM On Recent Theories in Linguistics and Their Application	Date-17 March, 2021 Venue- DEPARTMENT OF LINGUISTICS, SCHOOL OF HUMANITIES AND LANGUAGES CENTRAL UNIVERSITY OF RAJASTHAN, INDIA	
4.	Shreya Katyayani	19191007	1.	10 days online value added course on international relations, law and politics.	Vivekanand School of Law and Legal Studies. GSSIP University. Delhi. Date-8th -18th June 2020.	
			2.	GRFDT International e-seminar on -Gulf Migration: During and Aftermath COVID-19.	GRFDT, New Delhi. Date-27th May 2020.	
			3.	GRFDT International e-seminar on -Livelihood of Migrants During COVID-19 and future challenges.	GRFDT, New Delhi. Date-2 June 2020.	





S. No.	Name of Student	Roll No.	Conference/Seminar/Symposia/ Workshop	Date & Venue	Financial Assistance From
			4. GRFDT International e-Seminar on - Return and Integration Challenges of Migrants during and post-COVID-19.	Global Research Forum On Diaspora and Transnationalism.New Delhi Date-9th June,2020.	
			5. 7 day National Workshop on Research Methodology.	N.A.S P.G College Meerut in collaboration with IGNOU Regional Centre,Noida. Date-9th June to 15th June 2020.	
			<ol> <li>National webinar on - Social Security Measures for Workers in Unorganised Sector in India:During and post-COVID.</li> </ol>	B.R Ambedkar University,Agra. Date-10th June 2020.	
			7. National webinar on - Social Security Measures for Workers in Unorganised Sector in India: During and post-COVID.	B.R Ambedkar University,Agra. Date-10th June 2020.	
			8. 7 day Faculty Development Programme on Tools and Trends in Contemporary Research.	N.A.S (P.G college) ,International Roma Cultural University, Serbia and ASDF International, London, UK. 17th July-23rd July 2020.	
			9. Problematic of Indian untouchability.	Osmania University, Hyderabad.10th October 2020.	
			10. Healing Populations: Approaching Life in a Mass Milieu.	Department of Humanistic Studies and Teaching Learning centre, Varanasi. Date-17th -18th December 2020.	
5.	Suman Rawat	19191507	<ol> <li>National Webinar Series on 'Research Methodology'</li> </ol>	Date: 12th and 13th June, 2020 Venue: Loyola College, Chennai, Tamil Nadu	
			2. Webinar Presentation on 'Towards a Pandemic Shift in Ethnography Amidst the Pandemic'	Date: 6th July, 2020 Venue: Department of Anthropology and IQAC, New Alipore College, Kolkata	
			3. Workshop on "The Craft of Research Methodology: Advances and Applications"	Date: 27th-29th July, 2020 Venue: Department of Anthropology, University of Delhi	





S. No.	Name of Student	Roll No.	C	onference/Seminar/Symposia/ Workshop	Date & Venue	Financial Assistance From
			4.	International Seminar on 'Healing Populations: Approaching Life in a Mass Milieu'	Date: 17th and 18th December, 2020 Venue: Department of Humanistic Studies, Indian Institute of Technology (BHU)	
			5.	Presented a paper during Indian Anthropology Congress, 2021 titled 'Reproductive Health of Females of an Urban Slum: From Menarche to Menopause'	Date: 21st-23rd February, 2021 Venue: Department of Anthropology, University of Delhi	
6.	Abhijeet Satsangi	19191501	1.	Attended the International Virtual Conference on 'LANGUAGE TEACHING BEYOND THE CLASSROOM : ISSUES AND PERSPECTIVE (LATEBECIP 2020)	DATE: 21st August 2020 - 22nd August 2020 VENUE: Jawaharlal Nehru University, New Delhi, India	
			2.	Participated in the CONTINUING EDUCATION PROGRAMME (CEP) course on Educational Technology and Language Class	DATE: 1st June 2020 - 2nd June 2020 VENUE: Indian Institute of Technology Patna	
			3.	Participated in <b>Online</b> International Faculty Development Programme on "Advanced English for Academic Delivery in Specific stream"	DATE: 8th June 2020 - 12th June 2020 VENUE: Amity Institute of English Studies & Research, Amity University Patna	
			4.	Attended the lecture on "Doubling Back: Santali Pronominal Incor- poration and Clitic Doubling" by Prof. Ayesha Kidwai as part of the CALTS' WebTalk Series - 1 (talk-7) on the Theme: "Syntax-Semantics: Theoretical Insights and applica- tions for Indian Languages"	DATE: 26 August 2020 VENUE: Centre for Applied Linguistics and Translation Studies (CALTS), University of Hyderabad	
			5.	Participated in an Online National Seminar on <b>'Potential and</b> <b>Possibilities of Hindi'</b>	DATE: 7th of August 2020 VENUE: Indian Institute of Technology Roorkee	
			6.	Attended the lecture on <b>'What</b> causes micro-variation in language?' by Prof. Pritha Chandra as part of the CALTS' WebTalk Series - 1 (talk-6) on the Theme: "Syntax-Semantics: Theoretical Insights and applications for Indian Languages	DATE: 19th August 2020 VENUE: Centre for Applied Linguistics and Translation Studies (CALTS), University of Hyderabad	





S. No.	Name of Student	Roll No.	Conference/Seminar/Symposia/ Workshop	Date & Venue	Financial Assistance From
			<ol> <li>Attended the lecture on 'Generative Lexicon: Where Lexicon meets Syntax and Semantics' by Dr. Sanjukta Ghosh as part of the CALTS' WebTalk Series - 1 (talk-4) on the Theme: "Syntax-Semantics: Theoretical Insights and applications for Indian Languages"</li> </ol>	DATE: 5th August 2020 VENUE: Centre for Applied Linguistics and Translation Studies (CALTS), University of Hyderabad	
			8. Attended the lecture on 'Parsing with Logic" by Prof. Gautam Sengupta as part of the CALTS' WebTalk Series - 1 (talk-4) on the Theme: "Syntax-Semantics: Theoretical Insights and applications for Indian Languages"	DATE: 12th August 2020 VENUE: Centre for Applied Linguistics and Translation Studies (CALTS), University of Hyderabad	
			9. Successfully completed the course: <b>'Subhasitam Samskritam</b> <b>Course-1 (Spoken part)'</b> and se- cured: <b>Distinction;</b> organized by Sanskrit club, IIT Roorkee in asso- ciation with Samskrita Bharati	DATE: 5th July 2020 - 16th July 2020 VENUE: <b>Indian Institute</b> of Technology Roorkee	
			<ol> <li>Succesfully completed 7 Days National Faculty Development Programme (FDP) on "Emerging Trends of Pedagogy in Language, Literature and Social Sciences"</li> </ol>	DATE: 13th July 2020 - 19th July 2020 VENUE: Teaching Learning Centre, Ramanujan College (University of Delhi) & Shyama Prasad Mukherji College For Women (University of Delhi)	
			11. Short Training Course on "Artificial Intelligence(AI), Machine Learning, Deep Learning & its applications."	DATE: 20th July to 30th july, 2020. VENUE: EduxLabs New Delhi (Esoir Business Solution LLP)	
			12. Attended the lecture on 'Postsyntactic Movements in Mundari' by Dr. Gurujegan Murugesan as part of the CALTS' WebTalk Series-1 on the Theme: "Syntax-Semantics: Theoretical Insights and applications for Indian Languages"	DATE: 29th July 2020 VENUE: Centre for Applied Linguistics and Translation Studies (CALTS), University of Hyderabad	
			13. Participated in the "Science Academies' Science Leadership Workshop"	DATE: 22nd June 2020 to 28th June 2020 VENUE: Central University of Punjab, Bhatinda, India	
			14. Participated in the Webinar on "Text, Textuality and Discourse"	DATE: 2nd June 2020 VENUE: Government Arts & Commerce College, Gujrat, India	





S. No.	Name of Student	Roll No.	C	onference/Seminar/Symposia/ Workshop	Date & Venue	Financial Assistance From
			15.	Participated in Webinar on topic "Language Technology and Role of Literature Departments in India"	DATE: 2nd June 2020 VENUE: Atma Ram Sanatan Dharma College <b>(University</b> <b>of Delhi)</b>	
			16.	Participated in the National Webinar entitled <b>"Technology</b> And Methods for Online Sanskrit Teaching"	DATE: 22nd May, 2020 VENUE: Department of Sanskrit, Janki Devi Memorial College <b>(University of Delhi)</b>	
			17.	Participated virtually in One Week National Workshop on <b>"Digitization &amp; Development</b> of e-Resources for sanskrit"	DATE: 27 <sup>th</sup> May 2020 - 2nd June 2022 VENUE: School of Sanskrit & Indic Studies, <b>Jawahar Lal</b> <b>University</b> & Department of Sanskrit, <b>University of</b> <b>Delhi</b>	
7.	Siddharth Chauhan	19191505	1.	Two-Day Online Course on Research Methodology	Date- 5th and 6th May 2020 Venue- S.S.S Samiti, M.P. Mirji College of Commerce. Nehru Nagar, Belagavi	
			2.	Webinar on Research in English Language Teaching	Date- 15-22 June, 2020 Venue- GITAM School of Humanities and Social Sciences, Hyderabad.	
			3.	Short Training on Artificial Intelligence (AI), Machine Learning, Deep Learning & its applications.	Date- 20th July to 30th july, 2020. Venue- EduxLabs New Delhi (Esoir Business Solution LLP)	
			4.	Participated in the CONTINUING EDUCATION PROGRAMME (CEP) course on Educational Technology and Language Class	DATE: 1st June to 2nd June 2020 VENUE: Indian Institute of Technology Patna	
			5.	Attended the lecture on 'Generative Lexicon: Where Lexicon meets Syntax and Semantics' by Dr. Sanjukta Ghosh	DATE: 5th August 2020 VENUE: Centre for Applied Linguistics and Translation Studies (CALTS), University of Hyderabad	
			6.	Attended the lecture on "What Causes micro-variation in Language" by Prof. Pritha Chndra	DATE: 19th August 2020 VENUE: Centre for Applied Linguistics and Translation Studies (CALTS), University of Hyderabad	
			7.	Attended Lecture on "Parsing with Logic" by Prof. Gautam Sengupta	DATE: 12th August 2020 VENUE: Centre for Applied Linguistics and Translation Studies (CALTS), University of Hyderabad	





S. No.	Name of Student	Roll No.	C	onference/Seminar/Symposia/ Workshop	Date & Venue	Financial Assistance From
8.	Babita Chatterjee	19191003	1.	Participated in International Webinar on <b>"Contemporary</b> <b>Urban Scene"</b>	DATE: August 01, 2020. VENUE: Post Graduate Dept. of Geography in collaboration with IQAC, Krishnagar Govt. College, West Bengal.	
			2.	Attended a <b>"Ten- Day Research</b> <b>Methodology Course in Social</b> <b>Sciences"</b> sponsored by the Indian Council of Social Science Research (ICSSR), New Delhi India.	DATE:14-23rd December 2020 (virtual mode) VENUE: Sardar Patel Institute of Economic and Social Research, Ahmedabad, Gujrat.	
			3.	Attended a Webinar on " <b>Sustainable Urbanism</b> ".	DATE: 25th July, 2020 . VENUE: Xavier School of Human Settlements, Xavier University, Bhubaneswer	
			4.	Participated in a webinar on "COVID-19 AND GENDER- BASED VIOLENCE IN INDIA: A FEMINIST PERSPECTIVE"	DATE: 7th August, 2020.	
9.	Mahua Bhattacharyya		1.	Participated in an International webinar on "Postcolonial Negotia- tions: History, Literature and Cul- ture", organized by Department of English, Sidho-Kanho-Birsha University, Purulia, West Bengal and BBTM College, Purulia, West Bengal.	Date- 3 <sup>rd</sup> -5 <sup>th</sup> June, 2020 (A virtual experience)	
			2.	Participated in an International webinar series on "Epidemics, Body and Medicines: Inquiries through Literary and Cultural Texts", organized by The Department of English, Gokhale Memorial Girls' College, Kolkata.	Date- 13 <sup>th</sup> – 15 <sup>th</sup> June, 2020	
			3.	Participated in a Two-Day Interna- tional Seminar on "Revisiting Hul- The Santal Rebellion of 1855" organized by Jadavpur University under RUSA 2.0 project "Resource Mapping the Early Recordings of Traditional Santali Songs".	Date- 29 <sup>th</sup> and 30 <sup>th</sup> June, 2020 (A virtual experience)	
			4.	Participated in five days' Faculty Development Programme (FDP) on "Looking Beyond the Bound- ary: Practices in Literature and Language Studies" organized by Amity Institute of English Studies and Research, Amity University, Kolkata.	Date- from 29 <sup>th</sup> June to 3 <sup>rd</sup> July, 2020 (A virtual experience)	





S. No.	Name of Student	Roll No.	Conference/Seminar/Symposia/ Workshop	Date & Venue	Financial Assistance From
			5. Participated in an International Webinar on "Apocalypse Nar- ratives: Literature and Popular Culture" organized by the Depart- ment of English and IQAC, Praful- la Chandra College, Kolkata.	Date- 4 <sup>th</sup> and 5 <sup>th</sup> July, 2020 (A virtual experience)	
			<ol> <li>Participated in a Two-Day International Webinar on "The Postcolonial Perspective" organized by the Department of English, Kamaraj College, Tamil Nadu.</li> </ol>	Date- 6 <sup>th</sup> and 7 <sup>th</sup> July, 2020 (A virtual experience)	
			7. Participated in One-Day Inter- national Teachers' Workshop on "Forced Migration: Humanity at the Crossroads" organized by the Department of History and Politi- cal Science, Sivnath Sastri College and the Mahanirban Calcutta Re- search Group.	Date- 9 <sup>th</sup> July, 2020. (A virtual experience)	
			8. Participated in Three Days' International Webinar on "United by Pens, Divided by Fence: Perspectives on Partition Literature" organized by the Department of English, Netaji Subhash Mahavidyalaya, Udaipur.	Date- July 10-12, 2020 (A virtual experience)	
			<ol> <li>Participated in One Week Faculty Development Programme (FDP) on "Futuristic Trends of Language and Literature – Impact on 21<sup>st</sup> Century Learners" organized by the Department of English and other Foreign Languages, SRM Institute of Science and Technolo- gy, Chennai.</li> </ol>	Date- on 9 <sup>th</sup> July, 2020. (A virtual experience)	
			<ol> <li>Participated in UGC (Paramarsh) Faculty Development Programme (FDP) on "ICT in Teaching &amp; Evaluation" organized by MSP Mandal's Shri Shivaji College, Maharashtra.</li> </ol>	Date- July 13-18, 2020 (A virtual experience)	
			11. Participated in 7-Day International level Online FDP on Gender Sensitization organized by the Women's cell and the Department of English, Barabazar Bikram Tudu Memorial College, Purulia, West Bengal.	Date- on 9 <sup>th</sup> July, 2020. (A virtual experience)	





S. No.	Name of Student	Roll No.	Conference/Seminar/Symposia/ Workshop	Date & Venue	Financial Assistance From
			12. Participated in the One Week Faculty Development Programme (FDP) on "Literary Criticism" for Faculty and Research Scholars, Organised by the PG Department of English,TVUCAS,Kallakurichi 606202.	Date- July 10-12, 2020 (A virtual experience)	
			13. Attended the online certificate course "Readings from Indian Aesthetics" offered by NIAS Con- sciousness Studies Programme, School of Humanities, National Institute of Advanced Studies, Bangalore.	Date- July 13-18, 2020 (A virtual experience)	
			14. Participated in the MHRD-SPARC sponsored International online lecture Series on "Emerging Trends in Digital Humanities" organized by the Department of English, Pondicherry University, Puducherry.	Date- from 30th July to 5th August, 2020 (A virtual experience)	
10.	Milan Chauhan		1. Charlesworth Author Services Webinar	Date- July 13-18, 2020 (A virtual experience)	
			2. Communication Mastery Webinar	Date- July 25-31, 2020 (A virtual experience)	
			3. Participated in the National Webinar in English on the "The Language of Literature: Role of Modern Linguistics in Literary Interpretation" organized by the department of English 'Jawaharlal Nehru Smriti Govt. P.G. College, Shujalpur, Madhya Pradesh, India	Date- from 30th July to 5th August, 2020 (A virtual experience)	
			4. Completed the certificate course "How to Write a Literature Review- Module 4	Date- 17th August-20th August, 2020. (A virtual experience)	
			5. Attended a series of lectures titled Bhasha-Cintan International Webinar series	Date- June 06- July 25, 2020 (A virtual experience)	
			ABROAD		
1	Akanksha Yadav	19191001	International Conference on COVID -19 Studies. ( Video Conferencing)	Date- June 21-23 ,2020. Venue- Ankara,Turkey	
2	Elham Malik	19191004	Western Academy of Management Conference (Western Academy of Management Doctoral Consortium)	April 21-24, 2021 (A virtual experience)	N/A





S. No.	Name of Student	Roll No.	C	onference/Seminar/Symposia/ Workshop	Date & Venue	Financial Assistance From
3	Shreya Katyayani	19191007	1. 2. 3.	Emergence of New World Order post COVID-19- Prof Noam Chomsky. Phagwa in the Global Village: Traditions, Innovations and future developments. Slavery and Indentureship: concept of Coolitude.	19th June 2020.NIICE(Ne- pal) 30th January 2021. Ameena Gafoor Institute for the study of indenture- ship and it's legacies. Lon- don(U.K). 22nd March 2021. Ameena Gafoor Institute for the study of indenture- ship and it's legacies.Lon- don(U.K).	N/A
4	Ashish Ranjan					
5	Babita Chatterjee	19191003	1.	Attended a 15weeks E- Learning course on ' <b>Global Perspectives</b> <b>for Climate and Health'.</b> In collaboration with Center for Environmental Health Foundation of India, University of Calabar, Nigeria,Villanova University.She scored 96.50 %.	Date:25 <sup>th</sup> January to 30 <sup>th</sup> April, 2021. Venue: Villanova University, USA.	
6	Milan Chauhan	19191008	1.	Published an article in OM RISE Magazine titled as <b>"Kāśī Lābha</b> <b>Mukti Bhavana: A Place for</b> <b>Salvation"</b>	Date- October 2nd, 2020 Venue- Nederlands (Nether- lands)	

# Names of Students/Scholars who went for foreign Internship

Note: Individual faculty members should provide the data

S. No.	Name of Student	Roll No.	Name of the Organization	Place of Internship	Country	Duration
1	Mr. Prashant Priyadarshi	17191002	FULBRIGHT	Brown University, Rhode Island, USA	USA	24/08/2020 to 03/06/2021
2						
n						

# Names of students/scholars who published research paper(s)- ISSN/ISBN

# 3. Faculty & their Activity

## Faculty and their areas of specialisation

S. No.	Name, Qualifications, Employee No.	Year of award of PhD Degree	Major Areas of Specialization (Max. 3 Areas)
PROFESSORS			
1	Prasanta Kumar Panda	1998	Literary Theory, Technical Communication, Creative Writing,





S. No.	Name, Qualifications, Employee No.	Year of award of PhD Degree	Major Areas of Specialization (Max. 3 Areas)
ASSO	CIATE PROFESSORS		
1	Dr. Sanjukta Ghosh	March, 2004	Cognitive semantics, syntax-pragmatics interface, Computational lexical semantics, Cognitive Linguistics, Historical Linguistics, Grammar Formalism, Natural Language Processing
2	Dr. Anil Kumar Thakur	August, 2005	Language teaching and language technology, syntax, descriptive grammar, Linguistics, Education
3	Dr. Ajit Kumar Mishra	2003	Critical Narrative Studies, Visual Culture, Precarity Studies (Gerontology, Ecosophy, Grievable Life), Humanistic Communication
4	Dr. Nirmalya Guha	May, 2009	Logic, Semantics, Epistemology
5	Dr. Vinita Chandra	March 4, 2009	History, Gender Studies; Disability Studies
6	Dr. K V Cybil	2003	Sociology and Social Anthropology in India, Political Sociology, Ethnography of Performance, Post- colonialism and Dalit Literature
ASSIS	TANT PROFESSORS		
1	Dr. Shail Shankar	February, 2011	Group dynamic, Identity, Health and Wellbeing
2	Dr. Swasti Mishra	December 31, 2006	Sociolinguistics, Language Culture & Society, lexicon and Lexicography, lexical semantics, Computational Lexicography, Applied Linguistics, Computational Linguistics
3	Dr. Amrita Dwivedi	2009	Environmental Studies including Sanitation & Human Health, Solid Waste Management, Drainage & Sewerage System, Slums, Yoga & Meditation.
4	Dr. Sukhada	August 12, 2017	Computational Linguistics, Machine Translation, Natural Language Processing, Sanskrit Grammar
5	Dr. Manhar Charan	March 15, 2012	Humanistic Philosophy & Research, Gandhian Philosophy, Peace & Non-violence
6	Dr. Kavya Krishna K. R.	April 24, 2015	Gender Studies, Cultural Studies, Postcolonial Literature, Regional Indian Literatures, Film and Media Studies, Critical Dance Studies.
7	Dr. Vishwanath Dhital	December 8, 2011	Bhāratīya tarkaśāstra , Indian Philosophy, Navya Nyaya & pāramparika śāstra adhyayana
8	Dr. Satish Kanaujia	2013	Physical-Education, Sports- Administration, Fitness and Wellbeing, Sports-Psychology
Instit	ute Professors		
1			
Distir	guished Professors		
1			
Emeri	tus Professors		
1			





S. No.	Name, Qualifications, Employee No.	Year of award of PhD Degree	Major Areas of Specialization (Max. 3 Areas)		
Guest	Faculty				
1					
Visitir	ng Faculty				
1	Dr. Sanjaya Kumar Lenka		Morphosyntax, Language & Communication, Academic Writing & Speaking		
2	Dr. Arvind Gupta		Data and Digital Economy		
3	Deepak Gandotra		Data and Digital Economy		
4	Arun Anant		Media Environment		
5	Bharath Ganapati		Media Environment		
6	S Krishna Kumar		Quality Management and Business Strategy		
7	Vineet Suri		Quality Management and Business Strategy		
8	Anurag Singh		Finance		
9	Vipul Prasad		Finance		
10	Ashish Khattri		Economics		
DST IN	ISPIRE Faculty				
1					

# **Technical and Non-Teaching Staff**

<b>Sl.</b> No.	Name, Qualifications	Designation, Employee No.	Date of Appointment in the department
1	Vinay Prakash Singh, BA (Sociology), MA (Sociology), B.Lib., M.Lib	Junior Assistant	22.05.2017
2	Amit Kumar Prajapati	Multi Tasking Staff	13.12.2016

# Short-term courses/workshops/seminars/symposia/conferences organised by faculty members

S. No.	Coordinator/s	Title	Period
1	K.V.Cybil	Healing Populations: Approaching Life in a Mass Milieu (Online International Seminar)	Two Days (December 17-18)
2	Ajit K Mishra	Online Workshop on Research Paper Writing	11-13 May 2020
3	Ajit K Mishra & Prashant Shukla	Online FDP on Transformational Experiences in Higher Education	8-12 June 2020
4	Ajit K Mishra & Prashant Shukla	One Week FDP on "Management of Online Teaching and Learning Systems with MOOCs"	17-21 August 2020
5	Ajit K Mishra & Prasanta Kumar Panda	Online FDP on Life skills for Educators	2-6 November 2020
6	Ajit K Mishra	Soft Skills Workshop	9 January 2021
7	Ajit K Mishra	Online IPR workshop	15 January 2021
8	Ajit K Mishra	Online IPR workshop	29 January 2021
9	Swasti Mishra (Co-organizer)	"Bhasha Chintan" International Webinar Series on Linguistics	06-Jun2020 - 25- Jul- 2020
10			





S. No.	Name of Faculty Member	Title Period	l and Venue
Seminars/Symposia/ Conferences			
1.	Prasanta Kumar	TLC IIT(BHU) Webinar on IPR 23 <sup>rd</sup> Ja	an 2021 (Online)
	Panda	Webinar of the International Conference on 'Online Teaching and Testing of English Language: Janua Challenges and Solutions" David Cristal SSN college of engineering.	ry 15, 2021 (Online)
		Roadmap for Humanities and Social <sub>19-20</sub> Sciences in STEM Higher Education, IIT Jammu,	March 2021 (Online)
		Participated in curriculum development workshop of IIIT Kota(Online),{ As a subject expert)	March 2021 ne)
		Participated in IIT2020 The Future is Now PanIIT USA & Team IIT2020.	5 2020 ne)
2	Kavya Krishna	esented paper titled Inerna	tional Virtual
	K.R.	ne Experience in/of Cinema: Gender, Confer litics and the Question ofRepresentation Recent Malayalam Films'	ence, 11-12 March
		'owards New Visions: Women in Films, edia and Beyond	
		rganised by IIT Madras, University of uelph and Indo canadian Institute	

Short-term courses/workshops/seminars/symposia/conferences/training programmes attended by faculty members in academic institutions and public sector undertakings





S. No.	Name of Faculty Member	Title	Period and Venue
3	Vinita Chandra	1. Presented paper titled 'Religious Transformation and Gender: Death Rites for the Transgender', in the Conference on Religious Transformation and Gender: Contestations in/ and the Study of Religion, Gender and Sexuality	Utrecht University, 10-12 March 2021. (online)
		<ol> <li>(i) Presented paper titled 'Claiming Religious and Ritual Landscape: A Case Study of Pāņinī Kanyā Mahāvidyālaya', in the Workshop on Female Religious Leaders and Dynamics of Female Agency in Religious Settings in South Asia</li> </ol>	2. South Asia Institute, Heidelberg University. August 3-14, 2020 (online)
		(ii) Respondent to the session "Biographies and Hagiographies", the Workshop on <i>Female Religious Leaders</i> and Dynamics of Female Agency in Religious Settings in South Asia	
		3. Course on 'Qualitative Research Methods: Conversational Interviewing', offered by MITx, an online learning initiative of the Massachusetts Institute of Technology	3. EdX (online)
		4. Certificate Course in Sanskrit Language, Central Sanskrit University	
4	Sanjukta Ghosh	Presented a paper titled "Hedging in Hindi Newspaper Editorials" jointly with Dr Anil Thakur in 42nd International Conference of Linguistic Society of India, GLA, Mathura	10th to 12th December, 2020
		Attended a Web Lecture on "Dance, Illocution and Discourse representation" by Tista Bagchi organized by Neubauer Collegium, University of Chicago	Feb 19, 2021
		Attended "Roadmap for Humanities And Social Sciences in STEM Higher Education", IIT. Jammu	19-20 March 2021
		Attended International Sanskrit online Lecture series titled "Sanskrit Language and Its Traditions: A Journey through its History and Contemporaneity", organised by the NIAS Consciousness Studies Programme of the National Institute of Advanced Studies, Bangalore	from 20 January to 28 April 2021
		Attended CALTS Webtalk Series 1 organized by CALTS, University of Hyderabad	





<b>S.</b> No.	Name of Faculty Member	Title	Period and Venue	
5	Vishwanath Dhital	<ol> <li>Analysing a Discourse from Mimamsa Perspective (Short term course), Online</li> <li>International Web-Workshop on Navya-Nyaya</li> <li>Pancha Mithyatva Vichara in Advaita Siddhi (Web-Workshop on Vedanta)</li> <li>Lecture series on Bharatiya Darshan an Introduction to Indian Philosophical Systems.</li> </ol>	<ol> <li>1. 11-04-2020 to 31-05- 2020</li> <li>2. MIT School of Vedic Sciences, MIT-ADT University, Pune</li> <li>25-May-2020 - 31- May2020</li> <li>SSVV, Varanasi (Online)</li> <li>3. 03-Jun-2020 - 09- Jun2020 SSVV, Varana- si (Online)</li> <li>4. 27 June to 26 July 2020 Chinmaya Vishwa Vidy- apeeth (Online)</li> </ol>	
6	Ajit K Mishra	1st Rupkatha International Open Conference on Recent Advances in Interdisciplinary Humanities (Virtual <b>)</b>	20-22 August 2020 IIT Patna & SoA Bhubaneswar	
7.				
Meetin	gs			
1	Vinita Chandra	Meeting of the Coordination Committees, two projects with South Asia Institute, Heidelberg University and the Chair of Indology, Würzburg University; under the DAAD program Program- 'A New Passage to India: German- Indian Higher Education Cooperations (2019-2023)'	14th January 2021	
2	Ajit K Mishra	ASEAN- APFP-Executive Committee	6 September 2020	
		meeting of IITs	IIT Delhi (Online)	
		ASEAN PhD Fellowship Programme Coordinators		
2				

# Special lectures delivered by faculty members in other institutions

S. No.	Name of faculty Member	Topic of Lecture	Institution	Date
1	Dr. Sukhada	Image, Video, and Textual Data Analytics: Current and Future Trends	VAIBHAV SUMMIT INDIA	02nd - 31st Oct 2020
2	Dr. Sukhada	Proficiency Module on Literary	Babu Banarasi Das Institute of Technology and Management, Lucknow	02nd-16th Dec. 2020
3	Dr. Sukhada	Language Proficiency Module	Babu Banarasi Das Engineering College, Lucknow	22nd & 23rd January 2021





S. No.	Name of faculty Member	Topic of Lecture	Institution	Date
4	Dr. Sukhada	Language and Sanskrit	All India Council for Technical Education (AICTE)	18th Nov. 2020
5	Dr. Sukhada	Karaka Relations in Paninian Grammar	All India Council for Technical Education (AICTE)	18th Nov. 2020
6	K.V.Cybil (Keynote Speaker)	Covid 19 : Impact on Society and Strategies to Cope With It	Netaji Subhash Chandra Bose Government Girls PG College, Lucknow	27th May
7	K.V.Cybil (Plenary Speaker)	Anna Bhau Sathe: A Versatile Personality: (Webinar Commemorating his Birth Centenary)	English Educator's Society, Ambajogai, Maharashtra	2nd August
8	K.V.Cybil (Resource Person for Rethinking the Postcolonial- Texts and Contexts - Online International Seminar)	Body or Life? Assemblages in the Age of Mass Healing	Department of English, Assam University, Silchar and New Literaria Journal	25th September
9	K.V.Cybil (Resource Person in Political Science and Public Administration Refresher Course )	Problematic of Indian Untouchability	UGC Human Resource Centre, Osmania University, Hyderabad	10th October
10	Shail Shankar (Resource Person)	Qualitative Research Methods and Analysis: A comprehensive overview	Institute of Behavioural Science, Gujarat Forensic Sciences University, GandhiNagar Gujarat	5th-6th June, 2020
11	Dr. Kavya Krishna K.R.	'Reinvention of Arts in South India: Rukmini Devi Arundale and the Making of Bharatanatyam'	National Webinar on Cultural Studies Providence Women's College, Kozhikode, Kerala.	6 October 2020
12	Dr.Kavya Krishna K.R.	Reading Mohiniyattam from a Gender Perspective	YouTube release as part of International Talk series- Mohiniyattam on Wider Canvas, Moham School of Dance, Hyderabad	11 September 2020
13	Dr. Kavya Krishna K.R.	Reading Kumbalangi Nights	Online Talking Films Online- Film Club	22 August 2020
14	Dr. Kavya Krishna K.R.	Doing Research in Cultural Studies	Online Arya Mahila PG College/Vasanta College for Women, BHU. One day National Interdisciplinary webinar on New Perspectives and Approaches to Research	7 February 2021
15	Amrita Dwivedi	Education & Environment (Invited Talk)	MLR Institute of Technology, Dundigal, Hyderabad,	28 November 2020
16	Manhar Charan	Actual meaning of Teacher and Student: Challenges and Future	Arya Mahila Teachers Training College (AMTTC), Alwar	23.9.2020
17	Manhar Charan	IIITM, Gwalier	Prosperity and Destiny	202.2021





S. No.	Name of faculty Member	Topic of Lecture	Institution	Date
18	Manhar Charan	IIITM, Gwalier	Value of Svadhan	21.2.2021
19	Vinita Chandra (Resource Person in FIP/ Orientation Program)	Creating an Inclusive Teaching-Learning Environment	UGC- Human Resource Development Centre, DDU Gorakhpur University	23.02.2021
20	Sanjukta Ghosh	Generative Lexicon: Where lexicon meets Syntax and Semantics	Invited Talk delivered in the Webtalk Series (Talk 4) organized by CALTS, University of Hyderabad	5th August 2020
21	Vishwanath Dhital	न्यायशास्त्रपरिचयः	organized by Sanskrit Bharati, Kashi (Online)	Lecture Series 11/05/2020- 17/05/2020 Per Day
22	Vishwanath Dhital	वैशेषिक दर्शन	Invited Talk delivered in the Dr. Vedavyas Memorial Online Lecture Series organized by Vedavyasa Bharati Trust, Bangalore	10-10-2020
23	Vishwanath Dhital	लोकभाषा हि संस्कृतम् Invited as a Keynote Speaker	लोकभाषाप्रचारसमितिः, सिक्किमशाखा (Online Seminar)	23-12-2020
24	Vishwanath Dhital	मानव जीवन में संस्कृत Special lecture in a Online seminar	शासकीय संस्कृत महाविद्यालय, मध्यप्रदेश,	27/01/2021
25	Nirmalya Guha	Indian Cognitive Science (A Short Course)	Swayamprabha (Available Online)	April, 2020
26	Ajit K Mishra	Towards a Pedagogy of the Stressed	Amity Institute of English Studies and Research, Amity University, Noida	11 May 2020
27	Ajit K Mishra	Research Writing Strategies	Academic Research Group, Kolar	14-15 May 2020
28	Ajit K Mishra	Crisis Communication Harnessing the Literary Turn in Management	MMM University of Technology, Gorakhpur	21-22 June 2020
29	Ajit K Mishra	Research Tools and Techniques	MMM University of Technology, Gorakhpur	24-29 June 2020.
30	Ajit K Mishra	<ol> <li>Reading, Note Making and Gap Analysis</li> <li>Research Strategies</li> </ol>	NIT Jalandhar	10-14 August 2020
31	Ajit K Mishra	Literary Studies and Computing	Vasant Kanya Mahavidyalaya, Varanasi	20 August 2020
32	Ajit K Mishra	<ol> <li>1. Narrative Analysis</li> <li>2. Narrative Analysis</li> </ol>	NIT Jalandhar	21-25 August 2020
33	Ajit K Mishra	Building Blocks of Research Writing: Title, Abstract and Key-Words"	NIT-UK in association with the Department of HSS, IIT- Roorkee	August 27-31, 2020





S. No.	Name of faculty Member	Topic of Lecture	Institution	Date
34	Ajit K Mishra	<ol> <li>Building Blocks of Research Writing</li> <li>Research Writing: Title Abstract and Keywords</li> </ol>	Rajiv Gandhi (Central) University, Arunachal Pradesh.	2-6 September 2020
35	Ajit K Mishra	Design Thinking for Educators	GGDC, Sewapuri, Varanasi	2 September 2020
36	Ajit K Mishra	<ol> <li>Why Research</li> <li>Communication?</li> <li>The Need to Tell:</li> <li>Research Storytelling</li> </ol>	NIT Jalandhar	25-29 September 2020
37	Ajit K Mishra	Get, Set Digital Pedagogy	IIT Roorkee	18-22 November 2020
38	Ajit K Mishra	English Language Skills	AICTE, New Delhi	19 November 2020
39	Ajit K Mishra	Academic Leadership	NIT Allahabad	23 January 2020

# Fellowships of academic and professional societies

S. No.	Name of Faculty Member	Details of Fellowship
1	K.V.Cybil	Indian National Trust for Art Culture and Heritage (INTACH) Thrissur Chapter(Life Member)
2	Kavya Krishna K.R.	EASAS-European Conference on South Asian Studies
3	Dr. Sukhada	Akshar Bharati (life member)
4	Dr. Sukhada	Transactions on Asian and Low-Resource Language Information Processing (life member)
5	Dr. Sukhada	OM RISE (An online magazine from the Chair of Hindu Spirituality and Society Vrije Universiteit Amsterdam, The Netherlands) (life member)
6	Dr. Sukhada	Natural Language Processing Association, India (NLPAI) (life member)
7	Vinita Chandra	EASAS (European Association for South Asian Studies) (Member)
8	Swasti Mishra	Global Association for Humanities and Social Science Research (GAHSSR) (life member)
9	Swasti Mishra	The Asiatic Society (life member)

# Books, monographs authored/co-authored

S. No.	Name of Author/Co- Author	Title	Publisher
1	Nirmalya Guha (1st Author), Mathew Dasti (2nd), Stephen Phillips (3rd)	God and the World's Arrangement	Hackett, USA
2			

# Editorial boards of journals

S. No	. Name of Faculty Member	Position (Editor/ member)	Name of Journal
1	K.V.Cybil	Contributing Editor	JMC Review, Jesus and Mary College, New Delhi, ISSN: 2456-9550





S. No.	Name of Faculty Member	Position (Editor/ member)	Name of Journal
2	Prasanta Kumar Panda	1. Editor-in- Chief	Nuances: A Journal of Humanistic Inquiry
		2. In the editorial board of 3 In the advisory Board	(ISSN NO 2395-0943) Journal of Research and Innovation in Social Sciences(ISSN -2394-0123) Platform: A Bi-Lingual Magazine Based on Literature and Culture (ISSN- 2347-5242)

### 4. Research and Consultancy

### **Sponsored research projects** (Ongoing only)

Note: Sponsored project name is to be given only in case a faculty member is Project Incharge

S. No.	Title	Period	Funding Agency	Amount (in lakhs of Rs.)	Co- ordinator
1	'Literature and Coping Skills'	6 months	NPTEL MOOC Project, Ministry of Education, GOI,	8 lacs	Ajit K Mishra
2	'Essential Life'	6 months	CEMCA Common Wealth of Learning (Canada)	6.14 lacs	Ajit K Mishra
n					

### Industrial consultancy projects (Ongoing only)

S. No.	Name of Faculty Mem- ber	Title	Industry	Amount (in lakhs of Rs.)
1	Dr. Shail Shankar (Principal Investigator)	Impact Assessment Report on CSR activities by Northern Coalfields Limited (NCL) for the period 2014-15 to 2019-20	Northern Coalfields Limited	9.03 Lakhs
2	Dr. Shail Shankar (Principal Investigator)	Impact Assessment of toilets constructed by NCL under Swachh Vidyalaya Abhiyaan	Northern Coalfields Limited	46.00 lakhs
3.	Dr. Manhar Charan (Co-Principal Investigator)	Impact Assessment of toilets constructed by NCL under Swachh Vidyalaya Abhiyan	Northern Coalfields Limited	46.00 lakhs
4.	Dr. Amrita Dwivedi (Co-Principal Investigator)	Impact Assessment of toilets constructed by NCL under Swachh Vidyalaya Abhiyaan	Northern Coalfields Limited	46.00 lakhs

### Faculty members' participation with other universities under MoUs (Ongoing only)

### Ongoing

Puneet K. Bindlish. Research Collaboration with Faculty of Religion and Theology, Beliefs and Practices under an MoU with Vrije University, Amsterdam, Netherlands

Vinita Chandra. Member, Core Project Coordination Committee, DAAD sponsored project- Exploring Cultures of Learning in India and Germany, South Asia Institute, Heidelberg University, Germany

Vinita Chandra. Member, Core Project Coordination Committee, DAAD sponsored project- Cultures of Learning in Academic and Non-academic Institutions in India and Germany, Chair of Indology, Würzburg University, Germany

Nirmalya Guha. Research Collaboration with School of Philosophy, Fudan University, China

Ajit K Mishra, MOOC Development Project with CEMCA, Commonwealth of Learning, British Columbia, Canada





## Applied

K V Cybil. Applied for MHRD-sponsored SPARC Fellowship in collaboration with Anthropology Department, UC Berkeley.

### **Research Publications**

S. No.		No.
1	Total Number of Papers Published in Refereed National Journals	
2	Total Number of Papers Published in Refereed International Journals	08
3	Total Number of Papers Presented in National Conferences	
4	Total Number of Papers Presented in International Conferences	04

### **Refereed International Journals/ Book chapters**

[**Example :** Prasad M.S. and Manivannan M. (2019) Isometric force matching error of index finger and laparoscopic instrument. Indian Journal of Biomechanics 4(1): 15–26]

Cybil.K.V (2021) Desire, Body and Capitalism : Dalit Literature and Becoming Political in a Postcolonial World, in, Ian Buchanan, George Varghese K and Manoj N Y (ed) Deleuze, Guattari and India : Exploring a Post-Postcolonial Multiplicity, Routledge India.

Cybil.K.V (2020) Transgressive Force of Desecration : Transference of Devotion in Kavu Tindal Songs, The Sociological Review, July 13, 2020, available at https://www.thesociologicalreview.com/transgressive-force-of-desecration-transference-of-devotion-in-kavu-tindal-songs/

Guha, N. The Identity That Doesn't Deny Difference: A Non-dualist Argument. J Indian Philos (2021).

Reicher, S., Hopkins, N., Stevenson, C., Pandey, K., Shankar, S., and Shruti Tewari (2021). *Identity enactment as collective accomplishment: Religious identity enactment at home and at a festival, british Journal of Social Psychology* 60(2), 678-699

Venu, A.N., Sigroha, S., and, Shankar, S. (2021). *Dynamics of Social Networks and Collective Behavior: A Social Identity Approach. Frontiers in Human Dynamics* 3:676190. doi: 10.3389/fhumd.2021.676190

Panda P. K. (2020) Some functions of literature in enhancing the power of academic discussions of philosophy as a part of literary culture The Journal of Odisha Association of English Studies. 10(1) 81-90.

Rathore D., Dubey R., Dwivedi, A. (2021). *Advances in mycormediation of emerging potential toxic effluents,* Pages 301-329. https://doi.org/10.1016/B978-0-12-821925-6.00014-9

Mishra, A.K. (2020). Rethinking the India-Bharat Divide vis-à-vis COVID-19: Implications for a Sociolinguistics of Health Communication, DOI: https://dx.doi.org/10.21659/rupkatha.v12n5.rioc1s8n1

### **Refereed National Journal**

[**Example:** Maniam K.K. and Chetty R. (2019) Electrodeposited palladium nanoflowers for electro catalytic applications. Fuel Cells 13: 1196–1204.] Please provide it strictly in the suggested format.

### **Proceedings of International Conferences**

[ **Example** : Vincy Verghese, Shankar C. Subramanian and Lelitha Vanajakshi. 2019. Model based traffic control in Indian conditions. Procedia-Social and Behavioral Sciences 104: 516–525, 2nd Conference of Transportation Research Group of India (CTRG), Agra, India, December 2019.] Please provide it strictly in the suggested format.

### **Proceedings of National Conferences**

[**Example**: Gandhi S.R. (2019) Difficulties in construction of marine piles in area with high tidal range super PILE 2013 at Minneapolis (14–17 May 2013), USA organized by DFI] Please provide it strictly in the suggested format.





## 5. Other activities

### International collaboration/achievements by the Department/School

Prof Lawrence Cohen, Department of Anthropology, University of California presented a paper titled 'Geropolitics : Pandemic Reflections on the Question of Old Age in India and the United States' on 18th December, 2020 for Humanistic Studies Symposium Seminar 'Healing Populations : Approaching Life in a Mass Milieu' organized in collaboration with Pandit Madan Mohan Malaviya National Mission on Teachers and Teaching under the aegis of Department of Humanistic Studies and Teaching Learning Centre, IIT BHU.

Prof Brett Nielson, Institute for Culture and Society, University of Western Sydney, presented a paper titled 'Beyond Renationalization : Borders and Logistics in a World Emerging from the Pandemic' on 17th December, 2020 for Humanistic Studies Symposium Seminar 'Healing Populations : Approaching Life in a Mass Milieu' organized in collaboration with Pandit Madan Mohan Malaviya National Mission on Teachers and Teaching under the aegis of Department of Humanistic Studies and Teaching Learning Centre, IIT BHU.

### Indian Faculty visits in the Department/School/School (From 1st April 2019 to 31st March 2020)

S. No.	Name of Faculty Member	Purpose of Visit	Date and Venue
1	Dr Soumyabrata Choudhury, Associate Professor, School of Arts and Aesthetics, JNU, New Delhi	Presented Paper - Immunisation of Humans and Humanisation of Immunity: State of the Problem	Online seminar 'Healing Populations: Approaching Life in a Mass Milieu' Dec. 18
2	Dr Anirban Das, Associate Professor, Centre for Studies in Social Sciences, Kolkata	Presented Paper -Death and the Virus: In/Calculabilities	Online seminar 'Healing Populations: Approaching Life in a Mass Milieu' Dec. 18
3	Dr Roshni Babu (former) Assistant Professor, Philosophy, Manipal University, Jaipur	Presented Paper- Therapeutics: Philosophy of Medicine and Philosophical Modernity	Online seminar 'Healing Populations: Approaching Life in a Mass Milieu' Dec. 17
4	Dr Manushi Srivastava, Professor, Community Medicine, IMS, BHU	Presented Paper - Challenge of Covid'19: Stigma Spreads Faster Than the Disease	Online seminar 'Healing Populations: Approaching Life in a Mass Milieu' Dec. 17
5	Dr Arun Kumar Dubey, Assistant Professor, Community Medicine, IMS, BHU	Film Screening and Discussion	Online seminar 'Healing Populations: Approaching Life in a Mass Milieu' Dec. 17

#### Any other Information:

Three photographs (Soft Copy) of Laboratory / Best Laboratory Equipment of your Department/School with footnote details.





# **18. School of Biochemical Engineering**

### Year of Establishment: 1986

Head/Coordinator of the Department/School: Prof. Vikash Kumar Dubey (18/02/2020 onwards)

# 1. Brief Introduction of the Department/School:

The school was established for achieving several benchmarks in teaching and research in the modern field of Bioengineering. It has kept on modernizing its programmes to impart education in upcoming areas of Biochemical Engineering. The school presently offers courses leading to IDD, MTech., and Ph.D. degrees in Biochemical Engineering. The school also offers courses to undergraduate students of Department of Chemical Engineering, Department of Pharmaceutics, and postgraduate students of School of Materials Science & Technology, School of Biomedical Engineering, Department of Civil Engineering, Department of Food Science & Technology, Institute of Agriculture Sciences, and School of Biotechnology, Faculty of Science. In the new undergraduate curriculum, the school has been entrusted to offer a number of institute level courses either independently or jointly with other departments. The research facilities of the school are utilized not only by other departments of the institute and BHU but also by other teaching institutions and research laboratories. The faculty also guides.

The floor area of the new school building of School is 10,000 sq. feet. The school has 12 laboratories, 06 lecture theatres, 1 lecture hall, a 100-seat conference room and a library with textbook bank.

**Major areas of Research:** Bioprocess and Bioreactor Engineering, Enzyme Engineering & Tissue Engineering, Molecular Biology and Genetic Engineering, Cell Death Pathways and Diseases; Protein Biochemistry; Protein Engineering, Biochemical Parasitology, Biosensors, Nanotechnology, Wearable Sensing Devices

### Area of the Department/School (in square meters): 950 square meters

### Infrastructure

S. No.	Particulars	Number
1	No. of Classrooms	6
2	No. of Lecture Halls	1
3	No. of Laboratory	12
4	No. of Computers available for students in the Department/School/School	20

### Unique Achievement / Preposition of the Department/School

### 2. Students on Roll

S. No.	Programme	I Year	II Year	III Year	IV Year	V Year& above
1.	B. Tech/B.Arch.					
2.	Dual Degree	21	12	13	13	14
3.	M. Tech/ M. Pharm	8	9			
4.	Ph. D (Under Institute Fellowship)	Ph. D : 33 Total 1. TA Institute Fellowship : 23				
5.	Ph. D (Under Project Fellowship)	2. UGC Fellowship : 02 3. CSIR - : 04 4. DBT JRF : 3 5. DST Inspire : 1				





S. No.	Name of Student	Roll No.	Conference/Seminar/Symposia/ Workshop	Date & Venue	Financial Assistance From
ÌNDIA	<b>\</b>				
1	Debanjan Kundu	18011003	Short-Term Course on Computer-Aided Drug Design and Protein Analysis	Feb- 22-26, 2021; IIT (BHU)	IIT (BHU)
			Advances in Medical Imaging	March-15-19 <sup>th</sup> , 2021; IIT (BHU)	
2	Kumari Prerna	18011009	Short-Term Course on Computer-Aided Drug Design and Protein Analysis	Feb- 22-26, 2021 ; IIT (BHU)	IIT (BHU)
			2. Advances in Medical Imaging	March-15-19 <sup>th</sup> , 2021 ; IIT (BHU)	
3	Preeti Ranjan	19011008	Short-Term Course on Computer-Aided Drug Design and Protein Analysis	Feb- 22-26, 2021 ; IIT (BHU)	IIT (BHU)
			2. Advances in Medical Imaging	March-15-19 <sup>th</sup> , 2021 ; IIT (BHU)	
4	Veer Singh	17011507	National web conference on "Challenges and opportunities in Life science for self-sustaining life security"	Department of Environmental Science, AKS University, Satna, M.P., 18-19 August 2020	-
5	Jyoti Singh	18011004	4 <sup>th</sup> International conference on 'Recent trends in Bioengineering' (ICRTB-2021)	MIT School of Bioengineering Sciences & Research at MIT-ADT University, Pune, India on February 12- 13, 2021	-
6	Jyoti Singh	18011004	Two-day workshop on 'LaTeX'	IEEE Student branch NIT Warangal during 11-12 June 2020	-
7	Jyoti Singh	18011004	Five-Day Online Faculty Development Program on "Recent Innovations in Chemical Engineering (RICE)"	Department of Chemical Engineering, BKIT BHALKI held during 29th June to 3rd July 2020	-
8	Jyoti Singh	18011004	Water challenges during and post COVID-19	Conducted jointly by IIT Madras and ICCW from 7-28 May 2020	-
9	Jyoti Singh	18011004	AWWA webinar on "Process Optimization for Your Water Treatment Plant"	American Water Works Association, 28 <sup>th</sup> July 2020	-

Names of students/scholars who attended conferences/workshops/seminars and symposia abroad or in India





S. No.	Name of Student	Roll No.	Conference/Seminar/Symposia/ Workshop	Date & Venue	Financial Assistance From
10	Jyoti Singh	18011004	Integrated Approach to Monitor Taste and Odour Producing Cyanobacteria	American Water Works Association, 25 <sup>th</sup> August 2020	-
11	Yukti Jangra	16014016	4 <sup>th</sup> International conference on 'Recent trends in Bioengineering' (ICRTB-2021)	MIT School of Bioen- gineering Sciences & Research at MIT-ADT University, Pune, India on February 12- 13, 2021	-
12	Aditi Sammi	19014002	Introduction to Genetics and Evolution Programming for Everybody (Getting Started with Python) Fundamentals of Graphic Design	<ol> <li>1)July 30, 2020, Coursera</li> <li>2) Apr 06, 2020, Coursera Sep 23, 2020, Coursera</li> </ol>	-
13	Bhavya Jain	19014005	ShrushtiSeva Samiti, Udaipur,India MediPort Association of IIT BHU Alumni (AIBA), India Programming for Everybody (Getting Started with Python) Build Your Portfolio Website with HTML and CSS Use Canva toCreate Social Media Marketing Designs	<ol> <li>April 2020 - June 2020, WFH</li> <li>June 2020 - August 2020, WFH</li> <li>Dec 2020 - January 2021, WFH</li> <li>Mar 15, 2021, Coursera</li> <li>Jun 13, 2020, Coursera</li> <li>Jun 11 2020, Coursera</li> </ol>	-
14	Kushal Chandra Swargiary	19014007	Web development in my captain app	3 Months, WFH	-
15	Neeraj Mauthiya	19014008	Algorithms-Part I Coursera Algorithms-Part II Coursera	6 weeks for both, WFH	-
16	Ravi Mehra	19014010	Data structure in python, University of Michigan- Coursera	1 month, Coursera	-
17	Sweata Bhadra	19014015	Introduction to genetics and evolution Edx - Cell biology: transport mechanisms Ib hubs - C, Python, Frontend	Coursera	-





S. No.	Name of Student	Roll No.	Conference/Seminar/Symposia/ Workshop	Date & Venue	Financial Assistance From
18	Shreyansh Verma	20014017	Complete Python Bootcampy from Zero to Hero in Python - By Jose Portila; Platform- Udemy Graphic Design Masterclass- Learn Great Design - By Lindsay Marsh; Platform- Udemy GlobalFreeSchool-Content Writing	Udemy Udemy WFH, 3 Months	-

## Names of Students/Scholars who went for foreign Internship

Note: Individual faculty members should provide the data

S. No.	Name of Student	Roll No.	Name of the Organization	Place of Internship	Country	Duration
1	Jitu Moni Das	18014007	Tamkang University	Taiwan (Virtual)	Taiwan	April 2020 - May 2020
2	Mihir Anand	1601400	Australian National University, Canberra, Australia	Canberra,	Australia	April-July 2020

# 3. Faculty & their Activity

# Faculty and their areas of specialisation

S. No.	Name, Qualifications, Employee No.	Date of award of PhD Degree	Major Areas of Specialization (Max. 3 Areas)
PROF	ESSORS		
1	Prof. Rathindra Mohan Banik, PhD, 13887	1992	Microbial Biotechnology, Environmental Biotechnology, Biopolymer
2	Prof. Pradeep Srivastava, PhD, 16831	1998	Microbial Engineering, Bioreactor Kinetics, Modelling & Scaleup
3	Prof. Vikash Kumar Dubey, PhD, 50211	2003	Biochemical Parasitology, Protein Engineering and Protein Biochemistry
ASSO	CIATE PROFESSORS		
1	Dr. Abha Mishra, PhD, 16830	2001	Protein Chemistry, fermentation technology and Intellectual property rights (IPR)
ASSIS	TANT PROFESSORS		
1	Dr. Vishal Mishra, PhD, 50064	2012	Separation Process and Bioreactor Design
2	Dr. Ashish Kumar Singh, PhD, 50066	2009	Molecular Microbiology, Genetic Engineering and Biochemistry
3	Dr. Sanjay Kumar, PhD, 50067	2011	Algal Biofuel Research, Therapeutic Enzyme Bioprocess Development
4	Dr. Pranjal Chandra, PhD, 50237	2013	Bio-Physio Sensors, Nano bioengineering, Device Designs
5	Dr. Prodyut Dhar, PhD, 50249	2017	Biochemical Engineering, Biomaterials, Biodegradable polymers,




– Indian Institute of Technology (BHU) Varanasi

S.	Name, Qualifications,	Date of award	Major Areas of Specialization
No.	Employee No.	of PhD Degree	(Max. 3 Areas)
6	Dr. Abhishek Suresh Dhoble, PhD, 50264	2016	Biogas Technology, Prime Products from Indigenous Cows ( <i>Panchgavya</i> ), Microbiome Dynamics

#### **Technical and Non-Teaching Staff**

Sl. No.	Name, Qualifications	Designation, Employee No.	Date of Appointment in the department
1	Shri Rama Shankar Singh	Senior Technician	1991
2	Mrs. Usha Yadav	Laboratory Attendant	2011
3	Shri Dinesh Kumar	Laboratory Attendant	2012
4	Mr. Amit Kumar Srivastava	Junior Assistant	2020

# Short-term courses/workshops/seminars/symposia/conferences organised by faculty members

S. No.	Coordinator	Title	Period
1	Prof. Vikash Kumar Dubey	Short-Term Course on Computer-Aided Drug Design and Protein Analysis Organised through IDAPT-HUB Foundation	February, 22-26, 2021
2	Dr. Pranjal Chandra	Nano - Advances in the Literature Review with Artificial Intelligence	20:03:2021

# Special lectures delivered by faculty members in other institutions (From 1st April 202- to 31st March 2021)

S. No.	Name of faculty Member	Topic of Lecture	Institution	Date
1	Dr. Sanjay Kumar	Bioprocess developments for microalgae and cyanobacterial biofuel	B. T. K. I. T. Dwarahat, UK	26.09.2020
2	Dr. Pranjal Chandra	Nanobioengineered Sensing Systems and Their Prospects in COVID-19 Diagnosis	Assam University	27.08.2020
3	Dr. Pranjal Chandra	Application of nanotechnology in Biosensing Devices	Biotechnology Industry Research Assistance Council (BIRAC), Department of Biotechnology, Govt. of India	10.10.2020
4	Dr. Pranjal Chandra	Nanoengineered 3D Dendrites and their Composites for Biomedical Applications	National Cheng Kung University Hospital, Taiwan, North Eastern Hill University, Shillong, Meghalaya, India and Royal Global University, Guwahati (Jointly)	14.10.2020
5	Dr. Pranjal Chandra	Nano-Engineered Surfaces and biosensors for clinical bioanalysis	Vellore Institute of Technology (VIT), Vellore	27.11.2020
6	Dr. Pranjal Chandra	Paper Based Diagnostics: Emerging Technologies and Commercial Aspects	Biotechnology Industry Research Assistance Council (BIRAC), Department of Biotechnology, Govt. of India	09.02.2021





#### Honours and awards

S. No.	Name of Faculty Member	Details of Award
1	Dr. Pranjal Chandra	Member of the National Academy of Science (MNASc)
2	Dr. Pranjal Chandra (Mentor)	Gandhian Young Technology Innovation (GYTI) Award
3	Dr. Pranjal Chandra	'Young Scientist Award - 2019' of the Society for Bioinformatics and Biological Sciences.

# Fellowships of academic and professional societies

S. No.	Name of Faculty Member	Details of Fellowship
1	Dr. Prodyut Dhar	Ramalingaswami Fellowship

# Books, monographs authored/co-authored

S. No.	Name of Author/Co- Author	Title	Publisher
1	Manisha Verma and Vishal Mishra	An Introduction to Algal Biofuels	Springer
2	Vishal Singh, Gyanendra Tripathi, and Vishal Mishra (Book Chapter)	Biological Treatment Advancements for the Remediation of Selenium from Wastewater	Wiley Blackwell
3	Veer Singh, Ritesh Tiwari, Vivek Kumar Chaturvedi, Nidhi Singh, and Vishal Mishra (Book Chapter)	Microbiological Aspects of Bioenergy Production: Recent Update and Future Directions	Springer
4	Pranjal Chandra and Lalit M Pandey (Editor)	Biointerface Engineering: Prospects in Medical Diagnostics and Drug Delivery <b>(Book)</b>	Springer
5	Pankaj Suman and Pranjal Chandra (Editor)	Immunodiagnostic technologies from laboratory to point-of-care testing <b>(Book)</b>	Springer
6	Pranjal Chandra and Sharmili Roy (Editor)	Diagnostic Strategies for (COVID-19) and other Coronaviruses <b>(Book)</b>	Springer
7	Anupriya Baranwal, Supratim Mahapatra, Buddhadev Purohit, Sharmili Roy, Pranjal Chandra (Book Chapter)	Insights into novel Coronavirus and COVID-19 outbreak	Springer
8	Supratim Mahapatra, Anupriya Baranwal, Buddhadev Purohit, Sharmili Roy, Sanjeev K Mahto, Pranjal Chandra (Book Chapter)	Advanced Biosensing Methodologies for Ultrasensitive Detection of Human Coronaviruses	Springer
9	Kuldeep Mahato, Buddhadev Purohit, Ashutosh Kumar, Ananya Srivastava, Pranjal Chandra (Book Chapter)	Next-generation immunosensing technologies based on Nano-bio- Engineered paper matrices	Springer
10	Ashutosh Kumar, Buddhadev Purohit, Kuldeep Mahato, Supratim Mahapatra, Ananya Srivastava, Pranjal Chandra (Book Chapter)	Nanomaterial Functionalization Strategies in Bio-Interface Development for Modern Diagnostic Devices	Springer
11	Kuldeep Mahato, Buddhadev Purohit, Ashutosh Kumar, Pranjal Chandra (Book Chapter)	Paper-based Biosensors for Clinical and Biomedical Applications: Emerging Engineering Concepts and Challenges	Elsevier





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S. No.	Name of Author/Co- Author	Title	Publisher
12	Nagaraj P Shetti, Shweta J Malode, Sharmili Roy, Pranjal Chandra, Kakarla R Reddy, Sanghamitra Chatterjee (Book Chapter)	Electroanalytical techniques for investigating biofilms: Application in biosensing and biomolecular interfacing	Elsevier
13	Supratim Mahapatra, Buddhadev Purohit, Mahesh M Shanbhag, Nagaraj P Shetti, Sanjeev K Mahto, Rajiv Prakash, Pranjal Chandra (Book Chapter)	Diagnostic Strategies for Early and Point-of-Care Detection of COVID-19 in clinical and personalized settings	Royal Society of Chemistry

# Editorial boards of journals

S. No.	Name of Faculty Member	Position (Editor/ member)	Name of Journal
1	Prof. Vikash Kumar Dubey	Associate Editor	Scientific Report (Publisher: Nature Publishing Group)
2	Prof. Vikash Kumar Dubey	Associate Editor	Journal of Protein and Proteomics Publisher: Springer
3	Prof. Vikash Kumar Dubey	Editorial Board Member	Protein and Peptide letters Publisher: Bentham
4	Prof. Vikash Kumar Dubey	Editor-in-chief	Current Metabolomics and Systems Biology Publisher: Bentham
5	Prof. R. M. Banik	Editor	Vivechan International Journal of Research
6	Prof. R. M. Banik	Editor	The Open Biotechnology, Bentham Science
7	Dr. Sanjay Kumar	Editor	Systematic Bioscience and Engineering Universal Wiser Publisher, Singapore.
8	Dr. Pranjal Chandra	Associate Editor	Frontiers in Bioengineering and Biotechnology, Lausanne, Switzerland
9	Dr. Pranjal Chandra	Associate Editor	Sensors International, CAS-Elsevier Science
10	Dr. Pranjal Chandra	Guest Editor	MDPI Molecules, Basel, Switzerland Special Issue "Recent Advances of Nanoparticles in Biomedical Applications"
11	Dr. Pranjal Chandra	Editorial Board Member	Frontiers in Sensors, Lausanne, Switzerland
12	Dr. Pranjal Chandra	Editorial Board Member	Material Science for Energy Technologies, CAS- Elsevier Science

# 4. Design and Development Activities

# New facilities added

S. No.	Details (Infrastructure, Equipments, etc.)	Value (in Lakhs of Rupees) (approx)
1	3D printer	3.5
2	Potentiostat	4.9
3	UV- Vis Spectrophotometer	4
4	CO2 incubator	2.0
5	Biosafety Cabinet	1.0
6	Electrochemical Bioanalyser	8.5
7	Spray Dryer	6.4





S. No.	Details (Infrastructure, Equipments, etc.)	Value (in Lakhs of Rupees) (approx)
8	Centrifuge	4.4
10	Ice flake machine	1.0

# **Patents** filed

S. No.	Name of Faculty Member	Title of Patent
1	Dr. Vishal Mishra	A method of demineralization of scales, shells and bones
2	Dr. Vishal Mishra	A method for preparation of waste bacterial culture media
		based fluorescent security ink

# 5. Research and Consultancy

# **Sponsored research projects**(Ongoing only)

Sr. No.	Title of Project	Name of Funding agency	Total cost of Project in Rs	Name of the PI/CoPI		
Proje	ects initiated in 2020-21					
1	Re-purposing of approved drugs from Drug Bank database for possible treatment for COVID-19 by targeting SARS- CoV-2 main purpose	SERB	15,44,664.00	Prof. Vikash Kumar Dubey		
2	Development of bi-functional electrochemical nanobiosensors for bacterial exotoxin detection: Implication towards screening of toxin producing bacterial isolates	SERB	38,00,000.00	Dr.Pranjal Chandra		
3	Validation of Glutathione synthetase from Leishmania donovani as new drug target or discovery of new drug candidate	ICMR	41,42,000.00	Prof. Vikash Kumar Dubey		
Othe	Other Projects					
4	How Beclin 1 mediates cross-talk between apoptosis and autophagy via ITS C-Terminal Fragment?	CSIR	32,61,600.00	Prof. Vikash Kumar Dubey		
5	Strategies towards generation of functional tissue engineered construct for orthopedic application	SPARC-MHRD	23,25,950.00	Prof. Pradip Srivastav		
6	Development and evaluation of an innovative poly herbal Bi layer wound dressing material	DRDO	32,03,200.00	Dr. Pradeep Srivastava		
7	Construction of Cold Inducible Expression System	DBT	36,10,300.00	Dr. Ashish Kumar Singh		
8	Enhancement of Lipid Content in Microalge Scenedesmus Obliquus Using Genetic Engineering Tool: a step towards biodiesel	CST	4,50,000.00	Dr. Ashish Kumar Singh		
9	Screening of novel antibiotics from the metagenome of Himalayan glacial soil	DRDO	39,87,500.00	Dr. Ashish Kumar Singh		
10	Identification of Gene Responsible for Degradation of Poly (Ethylene Terephthalate) in Ideonellasakaiensis	DBT	40,43,200.00	Dr. Ashish Kumar Singh		
11	Screening of Novel Psychrophilic alkaline Protace from the metagenoime of Antartic soil	SERB	19,04,410.00	Dr. Ashish Kumar Singh		
12	Flow and segregation of granular materials out of hoppers and two & three dimensional devices	CST-UP	10,44,000.00	Dr. Vishal Mishra		
13	Targeted drug delivery of methotrexate/gallic acid- folate conjugated Poly L-Lysine nanoparticles	DBT	34,61,200.00	Dr.Abha Mishra		





- Indian Institute of Technology (BHU) Varanasi

#### **Research Publications**

S. No.		No.
1	Total Number of Papers Published in Refereed National Journals	2
2	Total Number of Papers Published in Refereed International Journals	42

#### **Refereed International Journals**

- Yadav, S., Prakash, J., Singh, O. P., Gedda, M. R., Chauhan, S. B., Sundar, S., and Dubey, V. K. (2021) IFN-γ+ CD4+T cell-driven prophylactic potential of recombinant LDBPK\_252400 hypothetical protein of Leishmania donovani against visceral leishmaniasis. Cellular Immunology, 361, 104272.
- 2. Borkotoky, S., Banerjee, M., Modi, G. P., and Dubey, V. K. (2021) Identification of high affinity and low molecular alternatives of boceprevir against SARS-CoV-2 main protease: A virtual screening approach. Chemical Physics Letters, 770, 138446.
- 3. Prerna, K., and Dubey, V. K. (2021) Repurposing of FDA-approved drugs as autophagy inhibitors in tumor cells. Journal of Biomolecular Structure and Dynamics, 1–12.
- 4. Umesh, Prerna, K., and Dubey, V. K. (2021) Virtual screening and repurposing of FDA-approved drugs from ZINC database to identify potential autophagy inhibitors exploiting autophagy related 4A cysteine peptidase as a target: potential as novel anti-cancer molecule. Journal of Biomolecular Structure and Dynamics, 1–17.
- Rai, H., Barik, A., Singh, Y. P., Suresh, A., Singh, L., Singh, G., Nayak, U. Y., Dubey, V. K., and Modi, G. (2021) Molecular docking, binding mode analysis, molecular dynamics, and prediction of ADMET/toxicity properties of selective potential antiviral agents against SARS-CoV-2 main protease: an effort toward drug repurposing to combat COVID-19. Molecular Diversity.
- Mishra, R., Joshi, V., Upadhyay, A., Amanullah, A., Dubey, A. R., Singh, S., Dubey, V. K., Poluri, K. M., Jana, N. R., and Mishra, A. (2021) LRSAM1 E3 ubiquitin ligase promotes proteasomal clearance of E6-AP protein. Cellular Signalling, 77, 109836.
- 7. Kundu, D., and Dubey, V. K. (2021) Purines and Pyrimidines: Metabolism, Function and Potential as Therapeutic Options in Neurodegenerative Diseases. Current Protein and Peptide Science, 22(2), 170–189.
- 8. Saha, G., Chiranjivi, A. K., Khamar, B. M., Prerna, K., Kumar, M., and Dubey, V. K. (2020) BLIMP-1 Mediated Downregulation of TAK1 and p53 Molecules Is Crucial in the Pathogenesis of Kala-Azar. Frontiers in Cellular and Infection Microbiology, 10.
- Yadav, S., Prakash, J., Shukla, H., Das, K. C., Tripathi, T., and Dubey, V. K. (2020)Design of a multi-epitope subunit vaccine for immune-protection against Leishmania parasite. Pathogens and Global Health, 114(8), 471–481.
- Chiranjivi, A. K., Prakash, J., Saha, G., Chandra, P., and Dubey, V. K. (2020) Mutational studies on Leishmania donovani dihydrolipoamide dehydrogenase (LdBPK291950.1) indicates that the enzyme may not be classical class-I pyridine nucleotide-disulfide oxidoreductase. International Journal of Biological Macromolecules, 164, 2141–2150.
- 11. Umesh, Kundu, D., Selvaraj, C., Singh, S. K., and Dubey, V. K. (2020). Identification of new anti-nCoV drug chemical compounds from Indian spices exploiting SARS-CoV-2 main protease as target. Journal of Biomolecular Structure and Dynamics, 1–9.
- Selvaraj, C., Panwar, U., Dinesh, D. C., Boura, E., Singh, P., Dubey, V. K., and Singh, S. K. (2021) Microsecond MD Simulation and Multiple-Conformation Virtual Screening to Identify Potential Anti-COVID-19 Inhibitors Against SARS-CoV-2 Main Protease. Frontiers in Chemistry, 8.





- Raj, S., Sasidharan, S., Balaji, S. N., Dubey, V. K., and Saudagar, P. (2020) Review on natural products as an alternative to contemporary anti-leishmanial therapeutics. Journal of Proteins and Proteomics, 11(2), 135–158.
- 14. Sasidharan, S., Selvaraj, C., Singh, S. K., Dubey, V. K., Kumar, S., Fialho, A. M., and Saudagar, P. (2020) Bacterial protein azurin and derived peptides as potential anti-SARS-CoV-2 agents: insights from molecular docking and molecular dynamics simulations. Journal of Biomolecular Structure and Dynamics, 1–16.
- 15. Kundu, D., Prerna, K., Chaurasia, R., Bharty, M. K., and Dubey, V. K. (2020) Advances in protein misfolding, amyloidosis and its correlation with human diseases. 3 Biotech, 10(5).
- 16. Kundu, D., Umesh, and Dubey, V. K. (2020) Interaction of selected biomolecules and metabolites with amyloidogenic proteins. Journal of Biomolecular Structure and Dynamics, 1–10.
- 17. Pandey, D. K., Kaur, P., Kumar, V., Banik, R. M., Malik, T., and Dey, A. (2021) Screening the elite chemotypes of Gloriosa superba L. in India for the production of anticancer colchicine: simultaneous microwave-assisted extraction and HPTLC studies. BMC Plant Biology, 21(1).
- Shera, S. S., and Banik, R. M. (2021) Development of Tunable Silk Fibroin/Xanthan Biopolymeric Scaffold for Skin Tissue Engineering Using L929 Fibroblast Cells. Journal of Bionic Engineering, 18(1), 103–117.
- 19. Tripathi, S., Singh, B. N., Divakar, S., Kumar, G., Mallick, S. P., and Srivastava, P. (2021) Design and evaluation of ciprofloxacin loaded collagen chitosan oxygenating scaffold for skin tissue engineering. Biomedical Materials, 16(2), 025021.
- 20. Tripathi, S., Singh, B. N., Singh, D., kumar, G., and Srivastava, P. (2021). Optimization and evaluation of ciprofloxacin-loaded collagen/chitosan scaffolds for skin tissue engineering. 3 Biotech, 11(4).
- 21. Singh, A., and Mishra, A. (2020) Leucoefdin a potential inhibitor against SARS CoV-2 Mpro. Journal of Biomolecular Structure and Dynamics, 1–6.
- 22. Singh, A., and Mishra, A. (2020) Molecular dynamics simulation and free energy calculation studies of Coagulin L as dipeptidyl peptidase-4 inhibitor. Journal of Biomolecular Structure and Dynamics, 1–11.
- 23. Mishra, A., Kaur, U., and Singh, A. (2020) Fisetin 8-C-glucoside as entry inhibitor in SARS CoV-2 infection: molecular modelling study. Journal of Biomolecular Structure and Dynamics, 1–10.
- 24. Mashraqi, M. M., Chaturvedi, N., Alam, Q., Alshamrani, S., Bahnass, M. M., Ahmad, K., Alqosaibi, A. I., Alnamshan, M. M., Ahmad, S. S., Beg, M. M., Mishra, A., Shaikh, S., and Rizvi, S. M. (2021) Biocomputational Prediction Approach Targeting FimH by Natural SGLT2 Inhibitors: A Possible Way to Overcome the Uropathogenic Effect of SGLT2 Inhibitor Drugs. Molecules, 26(3), 582.
- 25. Singh J, and Mishra V. (2021) Development of sustainable and ecofriendly metal ion scavenger for adsorbing Cu2+, Ni2+ and Zn2+ ions from the aqueous phase. Separation Science and Technology.1-8.
- 26. Singh V, Singh J, and Mishra V. (2021) Sorption kinetics of an eco-friendly and sustainable Cr (VI) ion scavenger in a batch reactor. Journal of Environmental Chemical Engineering. 9(2):105125.
- 27. Singh V, Singh J, and Mishra V. (2021) Development of a cost-effective, recyclable and viable metal ion doped adsorbent for simultaneous adsorption and reduction of toxic Cr (VI) ions. Journal of Environmental Chemical Engineering. 9(2):105124.
- 28. Singh J, and Mishra V. (2021) Synthesis and characterization of activated carbon derived from Tectona grandis sawdust via green route. Environmental Progress & Sustainable Energy. 40(2):e13525.
- 29. Singh J, and Mishra V. (2020) Simultaneous removal of Cu2+, Ni2+ and Zn2+ ions using leftover Azadirachta indica twig ash. Bioremediation Journal. 1-24.
- 30. Gupta A, and Mishra V. (2020) Using Recycled Bacterial Culture Media to Demonstrate Anti-Counterfeiting





Measures and Ninhydrin Tests with "Turn Off Fluorescence" to High School Students. Journal of Chemical Education. 97(12):4425-9.

- 31. Singh V, Yadav P, and Mishra V. (2020) Recent Advances on Classification, Properties, Synthesis, and Characterization of Nanomaterials. Green Synthesis of Nanomaterials for Bioenergy Applications. 83-97.
- 32. Singh J, and Mishra V. (2020) Modeling of adsorption flux in nickel-contaminated synthetic simulated wastewater in the batch reactor. Journal of Environmental Science and Health, Part A. 55(9):1059-69.
- 33. Gupta A, and Mishra V. (2020) Zinc oxide nanoparticles decorated fluorescent and antibacterial glass fiber pre-filter paper. Nano Express. 1(1):010048.
- 34. Das P., Rani J., Rawat S., Kumar S. (2021) Microalgal co-cultivation for biofuel production and bioremediation: Current status and benefits. BioEnergy Research.
- 35. Geetanjali, Rani R., Kumar S. (2021)Microbial community dynamics of microbial fuel cell in response to NiWO4/rGO nanocomposites as electrocatalyst and its correlation with electrochemical properties. Journal of Environmental and Chemical Engineering. 9(1):104668.
- 36. Kumar P., Rautela A., Kesari A., Szlag D., Westrick J., Kumar S. (2020) Recent developments in the methods of quantitative analysis of microcystins. Journal of Biochemical and Molecular Toxicology. 34(12):e22582.
- 37. Pandey A., Srivastava S., and Kumar S. (2020) Development and cost-benefit analysis of a novel process for biofuel production from microalgae using pre-treated high strength fresh cheese whey wastewater. Environmental Science and Pollution Research. 27:23963–23980.
- 38. Vernekar, P. R., Purohit, B., Shetti, N. P., and Chandra, P. (2021) Glucose modified carbon paste sensor in the presence of cationic surfactant for mefenamic acid detection in urine and pharmaceutical samples. Microchemical Journal, 160, 105599.
- 39. Mahapatra, S., and Chandra, P. (2020)Clinically practiced and commercially viable nanobio engineered analytical methods for COVID-19 diagnosis. Biosensors and Bioelectronics, 165, 112361.
- 40. Purohit, B., Vernekar, P. R., Shetti, N. P., and Chandra, P. (2020) Biosensor nanoengineering: Design, operation, and implementation for biomolecular analysis. Sensors International, 1, 100040.
- 41. Chandra, P. (2020)Miniaturized label-free smartphone assisted electrochemical sensing approach for personalized COVID-19 diagnosis. Sensors International, 1, 100019.
- 42. Shanbhag, M. M., Shetti, N. P., Kulkarni, R. M., and Chandra, P. (2020) Nanostructured Ba/ZnO modified electrode as a sensor material for detection of organosulfur thiosalicylic acid. Microchemical Journal, 159, 105409.

#### **Refereed National Journal**

- Pandey A, Kumar S, Srivastava S. (2020) Algal Biomass Harvesting for Biofuel Production. In Algal Biofuel: Sustainable Solution Eds Richa Kothari, VV Pathak, and VV Tyagi. TERI Publication (TERI Press), New Delhi India ISBN 978-93-8653-094-3
- Veeresh, V., Sinha, S., Manjhi, B., Singh, B. N., Rastogi, A., and Srivastava, P. (2021)How is Biodegradable Scaffold Effective in Gap Non-union? Insights from an Experiment. Indian Journal of Orthopaedics, 55(3), 741-748.

# Kindly Provide Brief Details of 5 Articles from the Department/School with maximum no. of Citations in last 5 years

 Kushwaha, A., Hans, N., Kumar, S., and Rani, R. (2018) A critical review on speciation, mobilization and toxicity of lead in soil-microbe-plant system and bioremediation strategies. Ecotoxicology and Environmental Safety, 147, 1035–1045. (*Citation: 174*)





- Umesh, Kundu, D., Selvaraj, C., Singh, S. K., and Dubey, V. K. (2020) Identification of new anti-nCoV drug chemical compounds from Indian spices exploiting SARS-CoV-2 main protease as target. Journal of Biomolecular Structure and Dynamics, 1–9. (Citation: 82)
- 3. Verma, D. K., Hasan, S. H., and Banik, R. M. (2016) Photo-catalyzed and phyto-mediated rapid green synthesis of silver nanoparticles using herbal extract of Salvinia molesta and its antimicrobial efficacy. Journal of Photochemistry and Photobiology B: Biology, 155, 51–59. *(Citation: 51)*
- 4. Mahapatra, S., and Chandra, P. (2020) Clinically practiced and commercially viable nanobio engineered analytical methods for COVID-19 diagnosis. Biosensors and Bioelectronics, 165, 112361. *(Citation: 39)*
- Kanaga, K., Pandey, A., Kumar, S., and Geetanjali. (2016) Multi-objective optimization of media nutrients for enhanced production of algae biomass and fatty acid biosynthesis from Chlorella pyrenoidosa NCIM 2738. Bioresource Technology, 200, 940–950. (*Citation: 29*)

#### 6. Other activities

#### International collaboration/achievements by the Department/School

- 1. Dr. Andrea Ilari, Dept. of Biochemical Sciences, Sapienza University of Rome: Collaborative work with Prof. Vikash Kumar Dubey resulted in joint publication (Amino acid, 2020,52, 247-259). Based on these results, joint project submission for external funding is planned.
- 2. Florida International University through SPARC project to Prof. Pradeep Srivastava
- 3. Dr. Robert Hovarth, Senior Scientist, Head, Nanobiosensorics Laboratory, Centre for Energy Research, Institute of Technical Physics and Materials Science, Budapest, Hungary is working collaboratively with Dr. Pranjal Chandra
- 4. Dr. Werasak Surareungchai, Director/Co-founder of the Futuristic Research Cluster of Thailand, is working collaboratively with Dr. Pranjal Chandra. He is also Professor in-charge, School of Bioresources and Technology, Nanoscience and Nanotechnology Graduate Program Faculty of Science King Mongkut's University of Technology, Thon Buri, Bangkok, Thailand
- 5. Dr. Yen Nee Tan, Faculty of Science, Agriculture and Engineering, Newcastle Research and Innovation Institute, Newcastle University Singapore is working collaboratively with Dr. Pranjal Chandra. Joint publications are under process and external funding is planned.





# **19. School of Biomedical Engineering**

#### Year of Establishment: 1978

#### Head/Coordinator of the Department/School: Prof. PK.Roy.

# 1. Brief Introduction of the Department/School:

Biomedical Engineering (BME) is a most interdisciplinary and frontier field of technology, endeavouring to converge the three uniquely diverge scientific fields: Biology, Engineering and Medicine. The School of Biomedical Engineering is involved in Teaching, Outreach, Research, Translation and Entrepreneurship, in collaboration with Institute of Medical Sciences (BHU), Tata Cancer Centre (BHU campus), in-campus Innovation centre, and other Departments of IIT(BHU). The School has been a pioneer of nation building in the BME sector for about 40 years, being set up by UGC during the 5th Five Year Plan in 1978, with the appointment of regular faculty in 1985.

The School runs the following programs:

- (1) A five-year Integrated Dual Degree (IDD) program that conjointly offers B.Tech in Bioengineering and M.Tech in Biomedical Technology,
- (2) A two-year M.Tech program in Biomedical Engineering,
- (3) A rigorous PhD program, both for young scholars as well as QIP-based engineering college teachers
- (4) An intensive research setting for Post-doctoral Fellows and Faculty Fellows (as 'Inspire' candidates).

The Banaras Hindu University ecosystem is a seminal paradigm of an Institute of Technology and an Institute of Medical Sciences thriving in the same campus. This results in excellent collaborative work in Healthcare Technologies and Medically-oriented product or process development, Incubation of start-ups, and innovative entrepreneurships.

#### **Major areas of Research**

- Biomedical signal and image processing
- Brain-Computer Interfacing based on Motor Imagery and Visual Evoked Potential.
- Stem cell therapy, Tissue engineering and Regenerative medicine
- Nanocomposites and Bio-devices
- Stem cell technology, Tissue engineering and Regenerative medicine,
- Biomicrofluidics, Neuroengineering and Nanotoxicology
- BioMEMS and Biosensors.
- Brain Circulation, Autoregulation, Its Disturbance and Neuroprotection
- Bio-effects of electromagnetic radiation, specially the biohazards of Microwave radiation
- Design and fabrication of low cost diagnostic and therapeutic instruments
- Functionally graded materials & conducting IPN composites and their medical application
- Control system modelling, analysis and simulation in health and diseases.
- Molecular pathogenesis and nanomedicine based therapeutics for infectious diseases
- Computational Biomechanics (Design and modelling of Orthopaedics implants: Hip Joint, Knee Joint, Spine spacers, Bone Plates and Screws, Dental implants).





- Cardiovascular Blood flow dynamics study, Stent and Heart valve design and development; FEA/CFD Simulation). Energy harvesting for biomedical applications.
- Improved Cancer Diagnostics, Radiation Oncology, Chemotherapy enhancement.
- Neurotechnology, Brain Research, Cognitive Science, and Affordable Mental Health Care.

#### Area of the Department/School (in square meters):

#### Infrastructure

S. No.	Particulars	Number
1	No. of Classrooms	03
2	No. of Lecture Halls	01
3	No. of Laboratory	09
4	No. of Computers available for students in the Department/School/ School	20

#### Unique Achievement / Preposition of the Department/School

The world is facing a pandemic due to Covid-19 and the School's faculty has initiated intensive avenues to well contribute to the national efforts. Some of faculty initiatives are on development of disinfectants, mask filters, antiviral coatings for protective equipment, portable affordable diagnostics, multimodal therapeutic interventions, or automated anti-viral drug discovery. This is over and above the individual attainments of the faculty members which are separately enumerated below.

#### Development of Artificial Human Pancreas on Chip for Glycemic Control

The lab of Dr Marshal, has developed artificial human pancreas-on-chip by transdifferentiation of human hepatic progenitor cells into insulin producing cells. Further, this procedure have been used without encapsulation for transplantation into diabetic mice. This first study of its kind provides a new way of diabetic treatment by controlling immunological response while reversing the Hyperglycemia.

#### Development of Isabgol husk-based Polysaccharidic Scaffolds for Tissue Regeneration

A team under the supervision of Dr. Sanjeev Kumar Mahto has fabricated and characterized a macroporous threedimensional (3D) composite scaffold using isabgol (psyllium husk) powder and gelatin. The fabricated scaffolds exhibited enhanced structural stability, remarkable swelling capacity, and escalated cell growth and proliferation.

#### Cerebro-vascular Imaging for Diagnostic and Interventional procedures:

The research unit led by Prof. Neeraj Sharma has developed an incisive ultrasound imaging analysis technique to localize the vital common carotid artery supplying the brain, the applications ranging from diagnostic radiology to screen sclerotic arteries at risk for cerebral ischemia, as well as interventional radiology for thrombosis or stroke.

#### Industrial collaboration for Hand Prosthesis for Amputee Patients:

Using myoelectric signal, Dr Shiru Sharma's unit has developed a hand prosthesis with 3D mobility, and joint collaboration with a company has been undertaken with aim for making the prosthesis available to patients widely, so as to deal with a critical unmet need in corn-threshing farm population

#### Polymer-based Therapy Delivery System in Malignant Melanoma and Breast Cancer

The group of Dr Paik has harnessed an innovative technology for designing polymer-based nanoformulation of anti-tumour drugs for therapy of malignant melanoma and triple negative breast cancer, the latter being especially difficult to treat as it is not amenable to hormone-based agents,

#### Company Incubation in Patient Mobility and Rehabilitation sector:

The unit of Dr Sanjay Rai has catalysed insightful industry-oriented incubation and entrepreneurship business,





with particular application to locomotor or movement abnormalities and muscular dysfunction, thus enabling mobility restoration and health maintenance.

#### Advanced Human Resource development on Healthcare Engg., Biodesign, Neurotechnology

A lecture cum hands-on course on "Neuro & Cognitive Technology" has been started by Prof P K Roy's team for BTech, IDD or PhD students from Engg., Science or Humanistics (psychology, linguistics). Students learn Neurocomputation, Brain Modulation and Mental wellness in HealthTech sector for process discovery/ commercialization.

#### 2. Academic Programmes offered

#### New Courses Introduced

S. No.	Course Code	Course name	Course credit
1	BM-322	Introduction to Neuro & Cognitive Technology	9
2	BM-533	Non-Destructive Testing (with Practicals)	12 (3 credit Practicals)
3			
n			

#### **Students on Roll**

(Please give No. of students only in respective years)

S. No.	Programme	I Year	II Year	III Year	IV Year	V Year & above
1.	B. Tech/B.Arch					
2.	Dual Degree	18	12	13	15	19
3.	M. Tech/ M. Pharm	07	08			
4.	Ph. D (Under Institute Fellowship)	31 [24 + 5* (completed five years)+2* (on professional leave)]. Not eligible for Institute fellowship *				
5.	Ph. D (Under Project Fellowship)	01				
6.	Ph. D (Under Sponsored Category)	17 {06 (QIP) + 10 (CSIR/UGC JRF) +1 (Part-Time, Institute Staff)}				

Names of students/scholars who attended conferences/workshops/seminars and symposia abroad or in India

S. No.	Name of Student	Roll No.	Conference/Seminar/ Symposia/Workshop	Date & Venue	Financial Assistance From
ÌNDIA					
1	Bindu Kumari	17021508	Human Systems Dynamics	18.3.21. IISc- Bangalore	Online
2	Pratik Purohit	17021501	Advances in Medical Imaging	15-19.5.21. IIT-BHU	Self





S. No.	Name of Student	Roll No.	Conference/Seminar/ Symposia/Workshop	Date & Venue	Financial Assistance From
3	Sourav Chaudhury	19022006	Advances in Medical Imaging	15-19.5.21. IIT-BHU	Self
4	Ranjitha Ruttala	20022004	Advances in Medical Imaging	15-19.5.21. IIT-BHU	Self
5	Gokul Manoj	18024005	Advances in Medical Imaging	15-19.5.21. IIT-BHU	Self
6	Dakpin Bam	17024004	Advances in Medical Imaging	15-19.5.21. IIT-BHU	Self
7	Anindita Bhatcharya	18021003	Advances in Medical Imaging	15-19.5.21. IIT-BHU	Self
8	Ravi Krishnan	15024007	Advances in Medical Imaging	15-19.5.21. IIT-BHU	Self
9	Brijesh Baghel	19021002	Advances in Medical Imaging	15-19.5.21. IIT-BHU	Self
10	Sachin Negi	18021008	Conference ICACCM	21-22 August, Dehradun, Uttara- khand	Self
11	Sachin Negi	18021008	Conference IIENC	5-7 September, Gopeshwar, Ut- tarakhand	Self
12	Pranshu CBS Negi	19021004	Conference IIENC 5-7 September, Gopeshwar, Uttarakhand		Self
13	Sumit Tripathi	17021003	Conference IEEE-ISSSC 2020	16- 17 Dec., Odhisha	Self
14	Juhi Jaiswal	17021001	Short Term Training Program (STTP) cum Workshop on "In- telligent Biomedical Micro-Elec- tro-Mechanical Systems", organised by IIIT-Allahabad	22-28.09.2020	Online
15	Juhi Jaiswal	17021001	AICTE Training And Learning (ATAL) Academy Online FDP on "3D Printing & Design", organised by NIT Patna	07-11.12.2020	Online
16	Anand Mohan	19022001	Granular Mining, Uncertainty Modelling and Data Science: Concepts, Models and Challenges, organised by National Academy of Sciences; MHRD-Institution Innovation Council (IIC), Deen Dayal Upadhyaya College (Uni- versity of Delhi)	26.09.2020	Online





Indian Institute of Technology (BHU) Varanasi

S. No.	Name of Student	Roll No.	Conference/Seminar/ Symposia/Workshop	Date & Venue	Financial Assistance From
17	Anand Mohan	19022001	Optical coatings for gravita- tional wave interferometers, organised by National Academy of Sciences; MHRD-Institution Innovation Council (IIC), Deen Dayal Upadhyaya College (Uni- versity of Delhi)	22.09.2020	Online
ABRO	AD				
1	Anindita Bhattacharjee	18021003	Bernstein Conference on Neuro- science	29-30.9.20. Lud- wig Maximilian University, Mu- nich, Germany	Online
2	Bindu Kumari	17021508	International Conference on Computational Neuroscience	13-31.7.20. Neuromatch Acad- emy, University of Pennsylvania, USA	Online
3	Pratik Purohit	17021501	International Conference on Computational Neuroscience	13-31.7.20. Neuromatch Acad- emy, University of Pennsylvania, USA	Online
4	Mahatim Singh	19021009	International Conference on Computational Neuroscience	13-31.7.20. Neuromatch Acad- emy, University of Pennsylvania, USA	Online
5	Bhattacharjee R.	15021006	27th IEEE International Confer- ence on Image Processing (IEEE ICIP 2020	2020 UAE	NA (Free/Online)
6	Bhattacharjee R.	15021006	IEEE International Workshop on Machine Learning for Signal Processing,IEEE MLSP	2020, ESPOO, Finland	NA (Free/Online)
7	Bhattacharjee R.	15021006	IEEE World Congress on Com- putational Intelligence (IEEE WCCI 2020) By IEEE Computa- tional Intelligence Society	2020 Glasgow, UK	NA (Free/Online)
8	Bhattacharjee R.	15021006	Applied AI: Virtual Event; By Open Data Science Conference; Webinars: Predicting Covid-19, Tackling AI Bias, MLOps.	2020	NA (Free/Online)
9	Sharan, T.S	16021005	Evaluation of Deep Learning Methods (DnCNN and U-Net) for Denoising of Heart Aus- cultation Signals(Accepted Conference paper). In 2020 3rd International Conference on Communication System, Computing and IT Applications (CSCITA) (pp. 151-155). IEEE.	2020	NA (Free/Online)

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S. No.	Name of Student	Roll No.	Conference/Seminar/ Symposia/Workshop	Date & Venue	Financial Assistance From
10	Shubhangi	19021007	Understanding Genomics and Genetic Testing in Cancer Immunotherapy, by the Cancer Research Institute	24.6.2020	Online
11	Shubhangi	19021007	Deciphering the cell cycle: The role of cell cycle control in cancer. By the Science/AAAS Custom Publishing Office	08.7.2020	Online
12	Shubhangi	19021007	Exploring and Preventing cell culture contamination, By the Thermofischer Scientific	15.7.2020	Online
13	Shubhangi	19021007	Immuno-Oncology & Cancer Biology Virtual Conference, Global Event	29.7.2020	Online
14	Juhi Jaiswal	17021001	UV-Vis/NIR & FL Spectroscopy solution for diversified research applications, organised by Perki- nElmer	10.7.2020	Online
15	Juhi Jaiswal	17021001	Exploring and Preventing cell culture contamination, By the Thermofischer Scientific	15.7.2020	Online
16	Juhi Jaiswal	17021001	CliniMACS Prodigy® Adherent Cell Culture System: Pluripotent stem cell expansion & differen- tiation in an automated, closed system, organised by labroots	16.8.2020	Online

# Names of students/scholars who got prizes and awards outside the Institute

S. No.	Name of Student	Roll No.	Name of Prize	Date & Venue	Prize awarded by
1	Anindita Bhattacharjee	18021003	Teaching Assistantship Award, Neuromatch Academy	13-30.7.20. Neuromatch Academy, Univ. of Pennsylvania (online workshop)	Neuromatch Academy, University of Pennsylvania, USA
2	Mahatim Singh	19021009	Workshop Scholarship Award, Neuromatch Academy	13-30.7.20. Neuromatch Academy, Univ. of Pennsylvania (online workshop)	Neuromatch Academy, University of Pennsylvania, USA
3	Pratik Purohit	17021501	Workshop Scholarship Award, Neuromatch Academy	13-30.7.20. Neuromatch Academy, Univ. of Pennsylvania (online workshop)	Neuromatch Academy, University of Pennsylvania, USA
4.	Rohan Kandhari	16024014	Summer Intern at BioZentrum University of Basel, Switzerland	June-July,2020	Institute Stipend
5	Kazi Arshad Aslam	16024008	Summer Intern, Philips Research, Bangalore	14.04.2020-20.06.2020	Company Funding

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S. No.	Name of Student	Roll No.	Name of Prize	Date & Venue	Prize awarded by
6	Arvind Thomas	16024004	Summer Intern,LifeSignals, Bangalore	01.06.2020-03.08.2020	Company Funding

# Names of scholars/students who won Convocation/Institute Day prizes

S. No.	Name of Student	Roll No.	Name of Prize	Prize awarded by
1	Rahul Chaudhry (IDD thesis student)	15024002	Gold Medal (IDD final year)	IIT-BHU
2	Sharukh Khan (MTech thesis student)	18022007	Gold Medal (MTech final year)	IIT-BHU
n				

# 3. Faculty & their Activity

# Faculty and their areas of specialisation

<b>S. No.</b>	Name, Qualifications, Em- ployee No.	Date of award of PhD Degree	Major Areas of Specialization (Max. 3 Areas)
PROFE	SSORS		
1	Prof. Prasun Kumar Roy. MBBS, FRSM, PhD., 50143.	2003	Neurotechnology/Brain Disorders; Affordable Healthcare; Cancer Radiology/Radiotherapy.
2	Prof Neeraj Sharma	2008	Bioinstrumentation Biomedical signal and image processing
ASSOC	IATE PROFESSORS		
1	Dr. Sanjay Kumar Rai	1998	Computational Biomechanics (Design and modelling, FEA/CFD Simulation). Energy Harvesting for biomedical applications.
2	Dr. Shiru Sharma	2009	Bio Instrumentation, Mathematical Modeling And Simulation
3	Dr. Marshal	2004	Biophysics, Biomaterials and Tissue Engineering, Stem Cell Reprogramming, Biosensors, Bio-MEMS, Nano- medicine, Plasma Physics
4	Dr. Pradip Paik	2008	Materials for Health Care and Therapeutic Applications: New designing and synthesis of Polymers, Ceramic, Composites, other Nanoscale Materials of Health care and Nanomedicine, in-plantable materials, Drug Delivery, Cancer Therapy, Nano vaccination, invitro and in-vivo studies
ASSIST	ANT PROFESSORS		
1	Dr. Sanjeev Kumar Mahto	2011	Tissue Engineering, Microfluidics Devices, Scaffold Designing
2	Jac Fredo A.R. Ph.D., 50253	2016	Bio-Medical Signal and Image Processing, Bio-Medical Instrumentation, Computational Neuroscience, Developmental Psychology, Neuro-Informatics, Machine Learning, Composite Science





S1. No.	Name, Qualifications	Designation, Employee No.	Date of Appointment in the department
1	Mr. Ajay Kumar, Diploma in Mechanical Engineering	Senior Technical Superintendent	17.02.1992
2	Mr. Bhuwaneshwari Sharan, Intermediate (Science)	Technical Superintendent	06.06.1988
3	Dr. Anuj Srivastava, D.M.L.T., B.Sc. MLT, M.Sc. (Microbiology), Ph.D	Senior Technician	06.08.2008
4	Mr. Bharat Kumar Vishwakarma, B.Sc., B.Ed., P.G.D.C.A.	Senior Technician	12.07.2012
5	Mr. Divyanshu Singh, M.A. (Journalism & Mass Communication), D.C.A. (Diploma in Computer Application)	Junior Assistant	20.05.2017
6	Mr. Vipin Kumar Verma, B.Tech (Electronics & Communication Engg.)	Junior Assistant	01.08.2017

# Short-term courses/workshops/seminars/symposia/conferences organised by faculty members

S. No.	Coordinator	Title	Period
1	Prasun Kumar Roy	Advances in Medical Imaging, with Hands-on Practical	15.3.21 - 19.3.21
		Training	
2			

# Short-term courses/workshops/seminars/symposia/conferences/training programmes attended by faculty members in academic institutions and public sector undertakings

S. No.	Name of Faculty Member	Title	Period and Venue
Seminars/Symposia/Conferences			
1	Prasun Kumar Roy	Symposium on Digital Health (online)	Indian Institute of Science (IISc), Bangalore, 16-17.3.21.
2	Prasun Kumar Roy	Advances in Medical Imaging, with hands-on Practical Training	Indian Institute of Technology (BHU). 15.3.21 – 17.3.21
3.	Prasun Kumar Roy	National Conference on A.I. and Perception Engg. (online)	CSIR-CEERI, New Delhi, 30.7.20
Meeting	s		
1			
2			

#### Special lectures delivered by faculty members in other institutions

S. No.	Name of faculty Member	Topic of Lecture	Institution	Date
1	Prof Neeraj Sharma	Role of Biomedical engineering in precision medicines	School of Biotechnology and Bioinformatics, D Y Patil Deemed to be University, Navi Mumbai.	23.01.2021
2	Prof Neeraj Sharma	EMG based hand prosthetic	Department of ECE, G,Narayanamma Institute of Technology &Science (For Women), Hyderabad	01.02.2021- 05.02.2021



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S. No.	Name of faculty Member	Topic of Lecture	Institution	Date
3	Prof Neeraj Sharma	Sensors for IoT Healthcare	VNR Vignana Jyothi Institute of Engineering and Technology	29.12.2020
4	Dr. Marshal	Covid-19 and future trends in biomedical engineering	Science E Talk webinar organised by Vivekananda Global University Jaipur.	13.05.2020
5	Dr. Marshal	The role of biomedical technologies in current scenario and future challenges	Three Day Faculty Development Programme On Nano-Materials and its Applications in Science and Technology Organised By Rajasthan Technical University, Kota Vivekananda Institute of Technology, Jaipur.	07.09.2020
6	Dr. Marshal	Importance of BioMEMS in current pandemic situation	Delivering an expert talk for PG Students of Nanotechnology Department, Centre for Nano Science & Technology (CNST), Jawaharlal Nehru Technological University Hyderabad	07.09.2020
7	Dr. Marshal	Introduction to Biomedical Engineering	Orientation programme, SRM University, Sonepat	16.09.2020
8	Dr. Marshal	Multi-Array Microfluidics System for Developing Optical Biosensors.	Short Term Training Program (STTP) cum Workshop on "Intelligent Biomedical Micro-Electro-Mechanical Systems", organised by IIIT-Allahabad	22.09.2020
9	Dr. Marshal	Thin film techniques for Applications in Engineering 2D Materials	Five-Day Faculty Development Programme on "Recent Advances in Material Characterization Techniques" Organised By Rajasthan Technical University, Kota Vivekananda Institute of Technology, Jaipur	19.02.2021
10.	Prof Prasun K. Roy	Exploring the 3-D Cartesian Geometry of the Human Brain using MRI signatures of migrating cancer cells and neural sheathing	CSIR-CEERI, New Delhi (online)	30.7.20
11.	Prof Prasun K. Roy	Radiomics: Tensor Imaging for Personalized Medicine". Short term course on Advances in Medical Imaging	Technology Innovation Hub - TIH, IIT- BHU (online)	18.3.21
12.	Prof Prasun K. Roy	Spontaneous Arrest of Cancer in Half of Population: Replication of the Process in Animals and Patients	IISc, Bangalore (online)	17.3.21

# Honours and awards

S. No.	Name of Faculty Member	Details of Award/Honours
1	Prasun K. Roy	Keynote Lecture. National Conference on A.I. and Perception Engg; Session- A.I. in Health Care. CSIR-CEERI, New Delhi, July 2020.
2	Prasun K. Roy	Invited Speaker. Symposium on Digital Health. Indian Institute of Science (IISc), Bangalore, March 2021.





S. No.	Name of Faculty Member	Details of Award/Honours
3.	Prasun K. Roy	Membership of Review Committee on Brain Map, Office of Principal Scientific Adviser, Govt. of India.
4		

# Fellowships of academic and professional societies

S. No.	Name of Faculty Member	Details of Fellowship
1	Prasun K. Roy	National Academy of Sciences, India: Council of Academy.
2		
n		

# Books, monographs authored/co-authored

S. No.	Name of Author/Co-Author	Title	Publisher
1	Prasun Kumar Roy	Pattern Formation and Neuronal Dynamics	Quantum Physics and Brain Function. (IIWC, New Delhi). (Accepted).
2	Sahi, A. K., Varshney, N., Sidu, R. K., Poddar, S., Singh, K., & amp; Mahto, S. K. (2020).	Clinical Implications of Cortisol and Bioanalytical Methods for Their Determination in Various Biological Matrices. In Immunodiagnostic Technologies from Laboratory to Point-Of-Care Testing (pp. 195-221)	Springer, Singapore.

# Editorial boards of journals

S. No.	Name of Faculty Member	Position (Editor/ member)	Name of Journal
1	Prasun K. Roy	Editorial member	International Journal of Artificial Intelligence & Soft Computing
2	Prasun K. Roy	Reviewing member	New Ideas in Psychology
3	Prasun K. Roy	Editorial member	INAE Letters: Indian National Academy of Engineering

# 4. Design and Development Activities

# New facilities added

S. No.	Details (Infrastructure, Equipments, etc.)	Value (in Lakhs of Rupees)
1	Medical Imaging Laboratory	Rs 3 lakhs
2	3D Non-invasive Mapping Laboratory	Rs 2 lakhs
3	Systems Biology Laboratory	Rs 2 lakhs
4	3 D printing Machine	Rs 1.6 lakhs





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#### **Patents filed**

S. No.	Name of Faculty Member	Title of Patent			
1	Prasun K. Roy	Medical Image Enhancement Technique based on Image Transform Resonance (re-filing amendment)			
2	Sanjeev Kumar Mahto, Neelima Varshney, Ajay Kumar Sahi.	'Soy-based Electrospun Nanofibrous Sheet and Method of Electrospinning Thereof". Application No.202011018560 April 20, 2020, Indian Patent.			
3	Saini V, Pradhan S, Sahi A.K., and Mahto S.K	A three dimensionally(3d) printed phantom for commissioning of gynaecological brachytherapy applicators Application no.: 202011045297; Oct. 17, 2021, Indian patent			
4	Marshal Dhayal and Juhi Jaiswal	An Anti-Microbial Multi-Layer Face Mask and a Method of Preparation Thereof, Indian Patent Application Number – 202011017291, 22.04.2020			
5	Marshal Dhayal, Ashish Kumar Singh and Juhi Jaiswal	Three electrode system for inactivation of bacterial Cells, Indian Patent Application Number- 202011015621, 09.04.2020			
6	Marshal Dhayal and Taresh Sharvesh Sharan	An improved digital stethoscope, Indian Patent Application Number- 202011030025, 15.07.2020			
n					

# 5. Research and Consultancy

# **Sponsored research projects** (Ongoing only)

Note: Sponsored project name is to be given only in case a faculty member is Project Incharge

S. No.	Title	Period	Funding Agency	Amount (in lakhs of Rs.)	Co- ordinator
1	Design and Development of Affordable Myoelectric prosthetic hand	2019-2022	SERB DST	Rs. 10 lakhs	Dr Shiru Sharma
2	Developing Psyllium Husk Based Polysaccharide Hydrogel into Electrospinable and 3D Printable Materials: Towards Fabrication and Comparative Evaluation of Lyophilized, Electrospun and 3D- Bioplotted Scaffolds for Liver Tissue Engineering	2021- 2024	Scheme of Science and Engineering Research Board (SERB)-2020. CRG/2020/000235	Rs. 42,52,512	Dr. Sanjeev Kumar Mahto
3	Development of brain/Liver-on-a- Chi Models for Understanding the Role of Liver in the Progression of Alzheimer's Disease During Diabetes.	2020-2022	Department of Science And Technology (DST), Government of India	Rs. 39,43,750	Dr. Sanjeev Kumar Mahto
4	Portable smart in vitro diagnostic platform for monitoring thyroid disorders	2021-2024	UPCST (Council of Science And Technology)	Rs. 11,94,000	Dr. Sanjeev Kumar Mahto
5	Early stage detection of non-small cell lung cancer by developing aptamer graphene microarray	2021-2024	ICMR	Rs. 50 lakhs	Dr. Marshal





S. No.	Title	Period	Funding Agency	Amount (in lakhs of Rs.)	Co- ordinator
6	National Mission on Data Analytics & Predictive Technology: Healthcare domain	2020-25	Dept. of Science & Technology, Govt. of India	Rs 150 lakhs	Prasun K. Roy
7	Spatiotemporal Dynamics of the Neural System: Information Flux Imaging with clinical applicability	2015-20	Ministry of Electronics & Information Technology, New Delhi.	Rs. 68 lakhs	Prasun K. Roy

#### Industrial consultancy projects (Ongoing only)

S. No.	Name of Faculty Member	Title	Industry	Amount (in lakhs of Rs.)
1				
2				
n				

#### Faculty members' participation with other universities under MoUs (Ongoing only)

#### **Prasun Kumar Roy:**

Participation in joint initiatives under three MOUs of IIT-BHU with the following organizations:

(i) Indian Space Research Organization (ISRO) & BHU:

Application of Autonomic Neural Performance Index in Aerospace Medicine, jointly by IIT (BHU) and Institute of Medical Sciences, BHU.

- (ii) Tata Cancer Institute, GOI (under Homi Bhabha National Institute: Deemed University).
  - a) Academic course on Medical Imaging by IIT (BHU) with contribution by Tata faculty.
  - b) Facilitation of developing joint patent on Medical Device for Radiation Oncology, collaboratively between IIT (BHU) and Tata Centre.
- (iv) Integrated Cyber-Physical Systems, DST, GOI.

Joint work initiated with faculty of BHU Institute of Medical Sciences on Predictive Therapy Planning in Oncology

#### **Research Publications**

S. No.		No.
1	Total Number of Papers Published in Refereed National Journals	
2	Total Number of Papers Published in Refereed International Journals	34
3	Total Number of Papers Presented in National Conferences	3
4	Total Number of Papers Presented in International Conferences	3

#### **Refereed International Journals**

[**Example** Agarwal N. and Verma A.K. (2019) Measurement of Bubble Size, Gas holdup and Interfacial Area in Bubble Columns using Image Processing Techniques. International Journal of Innovative Technology and Exploring Engineering. 9(1): 2278-3075.] *Please provide it strictly in the suggested format.* 





#### Before sanding nodal member should ensure that the Publications should be strictly in this format.

- Shakya H., Sharma S. (2020) Quantitative Analysis of Paraspinal Muscle strain during Cervical Traction Using Wireless EMG Sensor. International Journal of Biomedical Engineering and Technology (IJBET), Vol. 34, no. 02, pp. 189-203, [Scopus].
- 2. Shakya H., Sharma S., Sharma N. (2020) The Efficacy of Mechanical Cervical Traction for Cervical Spondylosis Patients. International Journal of Medical Engineering and Informatics (IJMEI), Vol. 12, no.06, pp. 591-598, [Scopus].
- Prakash A., Sahi A.K., Sharma N., and Sharma S. (2020) Force Myography Controlled Multifunctional Hand Prosthesis for Upper-Limb Amputees. Biomedical Signal Processing and Control 62 (September): 102122. https://doi.org/10.1016/j.bspc.2020.102122.
- Prakash A., Sharma N., and Sharma S. (2020) Novel Force Myography Sensor to Measure Muscle Contractions for Controlling Hand Prostheses. Instrumentation Science & Technology 48 (1): 43-62. https://doi.org/10.1 080/10739149.2019.1655441.
- Sharma N., Prakash A., Sahi A.K., Sharma N., and Sharma S. (2020). "Multimodal Sensor to Measure the Concurrent Electrical and Mechanical Activity of Muscles for Controlling a Hand Prosthesis." Instrumentation Science & Technology, August, 1-18. https://doi.org/10.1080/10739149.2020.1804932.
- Prakash A. and Sharma S. (2020) A Low-Cost System to Control Prehension Force of a Custom-Made Myoelectric Hand Prosthesis. Research on Biomedical Engineering 36 (3): 237-47. https://doi.org/10.1007/ s42600-020-00064-w.
- Prakash A. and Sharma S. (2020) Development of an Affordable Myoelectric Hand for Transradial Amputees: International Journal of Biomedical and Clinical Engineering 9 (1): 1-15. https://doi.org/10.4018/ IJBCE.2020010101.
- Prakash A. and Sharma S. (2021) A Low-Cost Transradial Prosthesis Controlled by the Intention of Muscular Contraction. Physical and Engineering Sciences in Medicine, January 19, 2021. https://doi.org/10.1007/ s13246-021-00972-w.
- 9. Prakash A. and Sharma S. (2020) Single-channel surface electromyography (sEMG) based control of a multifunctional prosthetic hand. Instrumentation Science & Technology, (Accepted).
- 10. Prakash A., Sharma N., Sharma N., and Sharma S.(2020) An affordable transradial prosthesis based on Force myography sensor. Sensors and Actuators: A. Physical (Under minor revision).
- 11. Malan, N.S. and Sharma, S.(2021) Motor imagery EEG spectral-spatial feature optimization using Dual-Tree Complex Wavelet and Neighbourhood Component Analysis. Innovation and Research in BioMedical Engineering (IF=1.022).
- 12. Malan, N.S. and Sharma, S. (2021) Time window and frequency band optimization using regularized neighbourhood component analysis for Multi-View Motor Imagery EEG classification. Biomedical Signal Processing and Control, 67, p.102550. (IF = 3.137).
- Prakash, P.S., Sharan, T.S., Pawar, S.J., Tewari, R.P. and Sharma, S.(2020) Wavelet-Based Noise Removal from Raman Signal to Study PLD Coated Forsterite-Hydroxyapatite Thin Film on Stainless Steel 316l Substrate. Journal of Applied Spectroscopy, 87(3), pp.545-552.
- 14. Sharan, T.S., Sharma, S. and Sharma, N., (2021) Denoising and Spike Removal from Raman Spectra using Double Density Dual-Tree Complex Wavelet Transform. Journal of Applied Spectroscopy, 88(1), pp.117-124.
- 15. Bhattacharjee R., Heitz F., Noblet V., Sharma S., Sharma N(2021) Evaluation of a Learning-based Deformable Registration Method on Abdominal CT Images. Innovation and Research in BioMedical Engineering (IRBM) Journal [SCI Expanded, Scopus indexed, IF: 1.022]. DOI: https://doi.org/10.1016/j.irbm.2020.04.002.





- 16. Negi, S., CBS Negi, P. and Sharma, S., 2020. Electromyographic and Acceleration Signals-Based Gait Phase Analysis for Multiple Terrain Classification Using Deep Learning. International Journal of Advanced Research in Engineering and Technology, 11(6).
- 17. Negi, S., Negi, P.C., Sharma, S. and Sharma, N., 2020. Human Locomotion Classification for Different Terrains Using Machine Learning Techniques. Critical Reviews<sup>™</sup> in Biomedical Engineering, 48(4).
- 18. Sharma, N., Prakash, A., Sahi, A.K., Sharma, N. and Sharma, S., 2020. Multimodal sensor to measure the concurrent electrical and mechanical activity of muscles for controlling a hand prosthesis. Instrumentation Science & Technology, pp.1-18.
- 19. Kasiviswanathan, U., Balavigneswaran, C.K., Kumar, C., Poddar, S., Jit, S., Sharma, N. and Mahto, S.K., 2021. Aluminium Oxide Thin-Film based in vitro Cell-Substrate Sensing Device for Monitoring Proliferation of Myoblast Cells. IEEE Transactions on NanoBioscience.
- 20. Kasiviswanathan, U., Kumar, C., Poddar, S., Jit, S., Sharma, N. and Mahto, S.K., 2021. Functional Behavior of the Primary Cortical Neuronal Cells on the Large Surface of TiO<sub>2</sub> and SnO<sub>2</sub> Based Biosensing Device. IEEE Transactions on NanoBioscience, 20(2), pp.138-145.
- 21. Kasiviswanathan, U., Poddar, S., Kumar, C., Jit, S., Mahto, S.K. and Sharma, N., 2020. A portable standalone wireless electric cell-substrate impedance sensing (ECIS) system for assessing dynamic behavior of mammalian cells. Journal of Analytical Science and Technology, 11(1), pp.1-12.
- 22. Kasiviswanathan, U., Kumar, C., Poddar, S., Jit, S., Mahto, S.K. and Sharma, N., 2020. Fabrication of MSM-Based Biosensing Device for Assessing Dynamic Behavior of Adherent Mammalian Cells. IEEE Sensors Journal, 20(17), pp.9652-9659.
- 23. Varshney N., Sahi A. K., Poddar S. & Mahto S. K. (2020) Soy protein isolate supplemented silk fibroin nanofibers for skin tissue regeneration: Fabrication and characterization. International Journal of Biological Macromolecules, 160, 112-127.
- 24. Jha, A., Viswanadh, M.K., Burande, A.S., Mehata, A.K., Poddar, S., Yadav, K., Mahto, S.K., Parmar, A.S. and Muthu, M.S., 2020. DNA biodots based targeted theranostic nanomedicine for the imaging and treatment of non-small cell lung cancer. International journal of biological macromolecules, 150, pp.413-425.
- 25. Poddar S., Agarwal P.S., Sahi A. K., Varshney N., Vajanthri K. Y. & Mahto S. K. (2021) "Fabrication and characterization of electrospun psyllium husk?based nanofibers for tissue regeneration." Journal of Applied Polymer Science 138.24 (2021): 50569.
- 26. Sahi, A.K., Varshney, N., Poddar, S. & Mahto S. K. (2020) Comparative behaviour of electrospun nanofibers fabricated from acid and alkaline hydrolysed gelatin: towards corneal tissue engineering. J Polym Res 27, 344. https://doi.org/10.1007/s10965-020-02307-x
- Burande, A. S., Viswanadh, M. K., Jha, A., Mehata A. K., Shaik A, Agrawal N., Poddar S., Mahto S. K. & Muthu M. S. (2020) EGFR Targeted Paclitaxel and Piperine Co-loaded Liposomes for the Treatment of Triple Negative Breast Cancer. AAPS PharmSciTech, 21, 151.
- Balavigneswaran C K, Kumar G, Kumar C V, Sellamuthu S., Uvanesh K., Ray B., Muthuvijayan V., Mahto S. K. & Misra N. (2020) Gelatin grafted poly (D,L-lactide) as an inhibitor of protein aggregation: An in vitro case study. Biopolymers, 111 (8).
- 29. Agarwal PS, Poddar S, Varshney N, & Mahto S. K. (2021) Printability assessment of psyllium husk (isabgol)/gelatin blends using rheological and mechanical properties. Journal of Biomaterials Applications. Apr;35(9):1132-1142. DOI: 10.1177/0885328220979473.
- 30. Sahi, A. K., Varshney N, Poddar S, and Mahto, S. K., (2021). Fabrication and Characterisation of Silk Fibroin Based Nanofibrous Scaffolds Supplemented with Gelatin for Corneal Tissue Engineering. Cells Tissues Organs, 2021





- 31. Pawde DM, Viswanadh MK, Mehata AK, Sonkar R, Narendra, Poddar S, Burande AS, Jha A, Vajanthri KY, Mahto SK, Azger Dustakeer VN, Muthu MS. Mannose receptor targeted bioadhesive chitosan nanoparticles of clofazimine for effective therapy of tuberculosis. Saudi Pharm J. 2020 Dec;28(12):1616-1625. doi: 10.1016/j. jsps.2020.10.008. Epub 2020 Oct 24. PMID: 33424254; PMCID: PMC7783224.
- 32. Pareek V, Pal S, Roy P. K. (2021). Corpus Callosum Remodeling in Glioma Tumour: Constancy of Fiber Density and Anisotropy in MRI. *Canadian Journal of Neurological Sciences*. 48, 2021 CJN-BC-2020-0389 (in print).
- 33. Pal S, Arora A, Midha R, Vu D, Roy P K, Belmonte M (2020). Autistic Traits and Individual Brain Differences: Functional Network Efficiency reflects Attentional and Social impairments, structural nodal efficiencies index systemising and Theory-Of-Mind skills, *Molecular Autism : Journal of Autism and Neurodevelopment Disorders*, 12(1:3), 1-21.
- 34. Abrams M, Bjaalie J, Das S, Egan G, Ghosh S, Goskinski W, Grethe J, Ho E, Lanyon L, Poline J, Roy PK, Tang T, Wachtler T, Wojcik D, Martone M (2021), A Standards Organization for Open and FAIR Neuroscience. *Neuroinformatics*. 19, 1-8.

#### **Refereed National Journal**

- 1. A Kalra, D Choudhary, A Dipani, A Bhattacharjee, A Urai (2020). Classifying fMRI data for Language Tasks. Proc. School on Computational Neuroscience, Neuromatch Academy, University of Pennsylvania, Philadelphia, USA, July 2020.
- P. Purohit, R Panda, S Marathe. Decoding image feature representation at Visual Cortex using fMRI (2020). Proc. School on Computational Neuroscience, Neuromatch Academy, University of Pennsylvania, Philadelphia, USA, July 2020.
- 3. A Kalra, D Choudhary, A Dipani, A Bhattacharjee, A Urai (2020). Classifying fMRI data for context-dependent and context-independent Language Tasks. Proc. Bernstein Conference on Neuroscience, Ludwig Maximilian University, Munich, Germany. Sept. 2020.
- Somnath, Negi, S., Negi, P.C. and Sharma, N., 2020, August. Tumor Segmentation in Brain MRI using Fully Convolutional Network. In 2020 International Conference on Advances in Computing, Communication & Materials (ICACCM) (pp. 158-161). IEEE.

#### **Proceedings of National Conferences**

[**Example**: Gandhi S.R. (2019) Difficulties in construction of marine piles in area with high tidal range super PILE 2013 at Minneapolis (14–17 May 2013), USA organized by DFI] Please provide it strictly in the suggested format.

- Roy P K (2020). Exploring the 3-D Cartesian Geometry of the Human Brain using MRI signatures of migrating cancer cells and neural sheathing. National Conference on Artificial Intelligence and Perception Engineering. CSIR Central Electronics Engineering Research Institute (CEERI), New Delhi, July 2020.
- (2) Roy P K (2020). Radiomics: Tensor Imaging for Personalized Medicine. Workshop on Advances in Medical Imaging, Indian Institute of Technology (Banaras Hindu University), Varanasi, March, 2021.
- (3) Roy P K (2020). Spontaneous Arrest of Cancer in Half of Population: Replication of the Process in Animals and Patients. Symposium on Digital Health. Indian Institute of Science (IISc), Bangalore, March 2021.

# Kindly Provide Brief Details of 5 Articles from the Department/School with maximum no. of Citations in last 5 years

#### **Distinguished Visitors**

S. No.	Name of the visitor & Designation	Date of Visit	Purpose of Visit
1	Prof. Satyajit Pradhan, Director, Tata Cancer Institute, Govt. of India.	16.7.20	Collaboration





S. No.	Name of the visitor & Designation	Date of Visit	Purpose of Visit
2	Dr Anupam Srivastava, Director, National Academy of Ayurveda, Govt. of India	12.1.21	Academic Training

# 6. Other activities

#### International collaboration/achievements by the Department/School

The Hands on Training course on Medical Imaging was organized by Prof. Prasun Roy, involving faculty members from constituent institutions of the U.K. Australian and Indian Nodes of International Neuroinformatics Coordination Facilty (INCF), Karolinska Institute, Stockholm, Sweden. Using MRI, PET, CAT, and EEG imaging, this course is a pioneering radiological / medical imaging short curriculum in India, training about 150 researchers/ engineers/doctors across the country.

Prof. Prasun K Roy has collaboration with Clinical Neuroscience Division, University of Cambridge, U.K. on Microglia Dynamics and its Modulation in Traumatic Brain Injury (sponsorship by Royal Society - London).

Further, there is cooperation between Prof Roy's lab members with members of Free University of Amsterdam, Netherlands, on Cerebral Blood Flow Analysis in Neurodegenerative Disease.

Lab members also taught and trained students, and mentored projects, on Functional Neuro-Imaging, through School of Computational Neuroscience, Neuromatch Academy, University of Pennsylvania, USA.

Indian Faculty visits in the Department/School/School (1st April 2020 to 31st March 2021)

S. No.	Name of Faculty Member	Purpose of Visit	Date and Venue
1	Prof. Rajnish Giri, IIT, Mandi	Academic	4.1.21. At the School
2	Dr. D D Lal, National Brain Research Centre, Gurgaon	Clinical	30.11.20. At the School
3	Dr , Lokendra Gupta, Tata Cancer Institute	Collaboration	5.8.20. At the School

# **Any other Information**

- Prof. Prasun Roy is Area Coordinator, Healthcare domain, ICPS National Mission on Interdisciplinary Data Analytics & Predictive Technology, organized at Technology Innovation Hub, IIT (BHU), under sponsorship of DST, Govt. of India.
- Dr. Roy has been selected as Member of Restructuring Committee, Indian National Academy of Engineering (INAE), New Delhi, as also Member of Young Engineer Award Committee, INAE.
- Prof. Roy is Expert Member for Bio-Medical Engineering Programs at (i) IIT Mandi, (ii) NIT-Raipur, (iii) Central University of Rajasthan (CURAJ).
- Dr. Marshal with his team developed products during current Covid-19 pandemic to help the institute and society which included:
- 1. Developed anti-microbial multilayer face masks to provide protection against COVID-19 and halt secondary infections in the pandemic situation. This work has been acknowledged by Press Information Bureau, Govt. of India and health minister Dr. Harsh Vardhan and following digital platforms:
- a. Press Information Bureau, Govt. of India (https://pib.gov.in/PressReleasePage.aspx?PRID=1630720)
- b. Times of India (https://timesofindia.indiatimes.com/home/education/news/iit-bhu-develops-anti-microbial-mask/articleshow/76211555.cms); (https://timesofindia.indiatimes.com/city/varanasi/iit-bhu-makes-anti-microbial-multilayer-mask/articleshow/76184791.cms)
- c. Biotechnika (https://www.biotecnika.org/2020/06/multilayered-antimicrobial-mask-developed-to-prevent-covid-19-infection/)





- d. https://www.outlookindia.com/newsscroll/iitbhu-develops-antimicrobial-mask/1856547
- e. https://www.newindianexpress.com/nation/2020/jun/05/covid-19-iit-banaras-hindu-university-develops-anti-microbial-mask-2152592.html
- f. https://www.medicircle.in/antimicrobial-multi-layer-face-mask-deflect-pathogenic-microorganisms
- g. https://www.socialnews.xyz/2020/06/04/iit-bhu-develops-anti-microbial-mask/
- h. https://www.risingmagadh.com/post/iit-bhu-develops-5m-face-masks-automatically-kills-virus
- i. https://theindianpractitioner.com/2020/06/05/iit-bhu-develops-anti-microbial-multilayer-face-mask-to-limit-infections/
- j. https://www.tellyupdates.tv/corona-rust-iit-bhu-first-masks-with-antibacterial-coating/
- k. https://www.sakshieducation.com/CurrentAffairs/Story.aspx?cid=1&sid=298&chid=0&tid=267958
- l. https://collegedunia.com/news/covid-19-india-iit-bhu-comes-up-with-antimicrobial-face-masks-alertid-23177
- m. https://www.jagran.com/uttar-pradesh/varanasi-city-this-mask-made-in-iit-bhu-will-not-allow-virus-to-flourish-there-is-antibacterial-coating-on-outer-surface-20347965.html?utm\_expid=.
  EV9lrgB0QnKoaDL62\_wZVQ.0&utm\_referrer=https%3A%2F%2Fwww.google.com%2F
- 2. Developed a rapid three electrode system to disinfect and sterilize Personal Protective Equipment (PPE) kits, masks and other protective gears recognised by:
- a. https://www.livehindustan.com/health/story-iit-bhu-scientist-claims-ppe-kit-can-be-reused-be-sterilization-technique-3163009.html
- b. https://navbharattimes.indiatimes.com/state/uttar-pradesh/varanasi/bhu-iit-scientist-claims-ppe-kit-canbe-used-again-but-do-this work/articleshow/75253229.cms
- c. https://hindi.latestly.com/india/scientist-claims-that-ppe-kit-can-be-reused-against-corona-virus-508969. html
- e. https://nationaldunia.com/national/news/50829/
- 3. Provided training to make high quality sanitizers to medical technical staffs of hospitals and common people in need of hour of COVID-19 pandemic. Distributed sanitizers to military and security officers as a social responsibility. The Education Minister Shri Ramesh Pokhriyal has praised the work done by our team members by posting about the efforts on digital platform. Made and uploaded video on You Tube to create national awareness about making sanitizers at home.
- a. https://www.youtube.com/watch?v=AwDPlLU5MG8
- b. https://timesofindia.indiatimes.com/city/varanasi/to-beat-sanitiser-crisis-make-your-own-at-home/ articleshow/74718149.cms
- c. https://hwnews.in/news/national-news/iit-bhu-makes-high-quality-sanitizer-in-the-war-against-corona/129397
- d. https://news.careers360.com/covid-19-iit-bhu-video-shows-how-make-your-own-hand-sanitiser
- e. https://www.amarujala.com/uttar-pradesh/varanasi/iit-bhu-set-up-sanitizer-to-prevent-corona-infection
- f. http://www.uniindia.com/up-bhu-iit-produce-high-quality-sanitizers/north/news/1929546.html
- g. https://www.bhaskarhindi.com/health/news/coronavirus-iit-bhu-made-sanitizer-at-home-115714





# 20. School of Materials Science and Technology

#### Year of Establishment: 1978

Coordinator of the School: Dr. (Mrs.) Chandana Rath, w.e.f. 1th January 2021.

#### **1.1.1 Brief Introduction of the Department/School:**

The School of Materials Science and Technology is an internationally renowned Centre of Materials Research and Education. It was established in 1978 following the recommendations of the V Plan Visiting Committee of the UGC. It serves as the Institute's nodal center for fostering interdisciplinary teaching and research in the field of materials science and technology. School runs successful Ph.D., M.Tech. and Integrated Dual Degree (IDD) programmes since 1982, 1984 and 2005, respectively. All these students are gainfully employed, several of them in premier Research and Development organizations, industry and teaching institutions. The syllabi of different programs are revised periodically to include topics of current significance in the field. Integrated 5-year dual degree programme is leading to combined B.Tech. & M.Tech. degrees. This program has been initiated from the session 2005-06 through JEE.

The School has a modest four floor building. The laboratories are equipped with modern and sophisticated equipment for materials preparation, characterization, processing and phase transformation studies. Working in these frontiers areas the faculty members of the School have generated more than Rs. 15 crores during the last five years through various projects/schemes funded by agencies like DST, SERB, DBT, IMPRINT, DST-Nanomission, BRNS, SPARC, DRDO, UGC-DAE-CSR, etc. and have published more than 250 research papers in reputed journals such as Nature Comm., Signal Transduct Target Therapy, Appl. Phys. Lett., Phys. Rev. B, J. Phys. Cond. Matter, J. Appl. Phys., Macromolecules, Dalton Trans., J. Controlled Release, J. Mater. Chem, J. Phys Chem., Nanoscale, RSC Advances, Langmuir, Sensors and Actuators B., Electrochimica Acta, Scientific Report etc.

#### 1.1.2 Major areas of Research

- Nanomaterials for Energy, Health and Electronics
- Magnetic materials and Nanomagnetism
- X-ray and Neutron Crystallography
- Ferroics and Multiferroics
- Metals, alloys and multifunctional materials
- Functional Materials and Devices
- Biopolymers for drug delivery
- Polymer nanocomposites
- Sensors and Biosensors
- Thin film devices and organic electronics
- Advanced Ceramics
- Ion Irradiation

#### **1.1.3 Area of the Department/School (in square meters):**

The School has a modest building of about 16,000 sq. ft. floor area.





#### 1.1.4 Infrastructure

S. No.	Particulars	Number
1	No. of Classrooms	One
2	No. of Lecture Halls	One
3	No. of Laboratory	Nineteen
4	No. of Computers available for students in the Department/School/School	Thirtyfive

#### Unique Achievement / Preposition of the Department/School

#### **1.2Academic Programmes offered**

Ph.D., M. Tech and Integrated Dual Degree (B.Tech+M.Tech.)

#### **1.2.1 New Courses Introduced**

New course has been introduced in this academic year.

S. No.	Course Code	Course name	Course credit
1.	MS-304	Synthesis and processing of materials	9

#### **Students on Roll**

(Please give No. of students only in respective years)

S. No.	Programme	Programme	I Year	II Year	III Year	IV Year	V Year& above
1.	B. Tech/B. Pharma	B. Tech/B. Pharm		N/A	N/A	N/A	N/A
2.	Dual Degree	Dual Degree	22	23	16	19	16
3.	M. Tech/ M. Pharm	M. Tech/ M. Pharm	14	15			
4.	Ph. D (Under Institute Fellowship)	Ph. D (Under Institute Fellowship)=30	11	4	4	6	5
5.	Ph. D (Under Project Fellowship)	Ph. D (Under Project Fellowship)=6	3	1	2	-	-
6.	Ph. D (Under Sponsored Category)	Ph. D (Under Sponsored/ external fellowship)=30	7	5	8	5	5

#### **Postdoctoral students in School: 03**

# Names of students/scholars who attended conferences/workshops/seminars and symposia abroad or in India

S. No.	Name of Student	Roll No.	Conference/Seminar/ Symposia/Workshop	Date & Venue	Financial Assistance From
			ÌNDIA		
1	Shanu Mishra	17111012	6th International Conference on Nanoscience and Nanotechnology(ICONN-2021) (Virtual Conference).	1st-3rdFebruary2021DepartmentofPhysics&Nanotechnology,SRMInstituteofScienceandTechnology,India	No financial assistance required





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S. No.	Name of Student	Roll No.	Conference/Seminar/ Symposia/Workshop	Date & Venue	Financial Assistance From
2	Prince Kumar Maurya	18111014	6th International Conference on Nanoscience and Nanotechnology (ICONN-2021) (Virtual Conference).	1 <sup>st</sup> -3 <sup>rd</sup> February 2021 Department of Physics & Nanotechnology, SRM Institute of Science and	No financial assistance required
3	Prince Kumar Maurya	18111014	Virtual Conference on Materials for Energy Harvesting and Catalysis(Virtual Conference).	May 2020 TIFR, Mumbai, India.	No financial assistance required
4	Ankita Singh	18111002	6th International Conference on Nanoscience and Nanotechnology(ICONN-2021) (Virtual Conference).	1st-3rdFebruary2021DepartmentofPhysics&Nanotechnology,SRMInstituteofScienceandTechnology,India	No financial assistance required
5	Jay Deep Gupta	20111506	FDP on Spectroscopical Studies in structural Analysis -Modern era Applications(Virtual Conference).	25 <sup>th</sup> -29 <sup>th</sup> January, 2021, Department of Science and Humanities, Hyderabad Institute of Technology and Management, India.	No financial assistance required
6	Jay Deep Gupta	20111506	International Conference on Multifunctional Electronic Materials and Processing (MEMP-2021) (Virtual Conference)	8 <sup>th</sup> -10 <sup>th</sup> March 2021, Centre for Materials for Electronics Technology (C-MET) Pune, India.	No financial assistance required
7	Jai Prakash	19111501	FDP on Spectroscopical Studies in structural Analysis -Modern era Applications(Virtual Conference).	25 <sup>th</sup> -29 <sup>th</sup> January, 2021, Department of Science and Humanities, Hyderabad Institute of Technology and Management, India.	No financial assistance required
8	Sandeep Kumar	14111011	ICONN-2021, SRM IST (Conference)	03-02-2021 Virtual	NA
9	Taranga Dehury	18111012	ICONN-2021, SRM IST (Conference)	02-02-2021 Virtual	NA
10	Taranga Dehury	18111012	International Virtual SchoolonIon Beams in Material Science, IUAC, New Delhi	01-12-2020 to 05-12-2020 Virtual	NA
11	Raman Hissariya	18111009	Online national workshop on "Introduction to ceramic Science, Technology & Manufacturing"	December 07-09,2020	Nil
12	Rajnandini Sharma	18111007	Experimental and Computational Tools for Materials research2020	June 01-08, 2020	Nil
13	Pawan Kumar Ojha	18111503	Introduction to Ceramic Science, Technology & Manufacturing. & Learning to Experiment, Innovate and Diffuse Solutions.	07-09-2020 & 30-5-2020 (Online)	Nil
14	Mr. Anupam Kumar Singh	16111003	International Webinar on Materials Characterization and the Analysis (IWMCA-2020)	May 25-31, 2020, Online Mode	Nil
15	Mr. Anupam Kumar Singh	16111003	Indus Synchrotrons User' Meeting (ISUM-2)	July 28-29, 2020, Online Mode	Nil



Indian Institute of Technology (BHU) Varanasi

S. No.	Name of Student	Roll No.	Conference/Seminar/ Symposia/Workshop	Date & Venue	Financial Assistance From
16	Mr. Krishna Kant Dubey	18111003	International Webinar on Materials Characterization and the Analysis (IWMCA-2020)	May 25-31, 2020, Online Mode	Nil
17	Mr. Krishna Kant Dubey	18111003	Role of Science, Technology and Innovation in the Current Scenario	May, 26-29, 2020 Online mode	Nil
18	Ms. Nisha Shahi	18111005	International Webinar on Materials Characterization and the Analysis (IWMCA-2020)	May 25-31, 2020, Online Mode	Nil
19	Ms. Nisha Shahi	18111005	Workshop on Research Paper Writing	June 01-05, 2020, Online Mode	Nil
20	Mr. Gaurav Kumar Shukla	18111 502	International Webinar on Materials Characterization and the Analysis (IWMCA-2020)	May 25-31, 2020, Online Mode	Nil
21	Mr. Gaurav Kumar Shukla	18111 502	Advanced Physical Tools and Techniques for Materials Characterization (APTTMC-2020)	July 28-August 03, 2020, Online Mode	Nil
22	Mr. Vishal Kumar	19111009	International Webinar on Materials Characterization and the Analysis (IWMCA-2020)	May 25-31, 2020, Online Mode	Nil
23	Mr. Vishal Kumar	19111009	Webinar on Century of Quantum Mechanics and Still Going Strong	May 15-17, 2020, Online Mode	Nil
23	Dr. Monika Srivastava	PDF	International e-Conference on Advanced Functional Materials and Optoelectronic Devices	June 13-15, 2020 (Online)	NA
25	Dr. Monika Srivastava	PDF	2nd International Workshop on Smart Materials Sensors and Devices (SMSED -2020)	May 25-30, 2020 (Online)	NA
26	Ravi Prakash Ojha	16111009	Workshop on material characterization techniques	July 20-22, 2020 (Online)	NA
27	Aniruddha Jaiswal	16111502	Current Trends and Future Prospective of Chemistry in Pandemic-Era	September 28-29, 2020; DDU Gorakhpur University	Self
28	Aniruddha Jaiswal	16111502	Wiley Author Webinar Series "Learn to Publish" online Workshop	June-July 2020 (Online)	NA
29	Shweta Pal	17111014	Workshop on material characterization techniques	July 20-22, 2020 (Online)	NA
30	Shweta Pal	17111014	International web conference on Advanced Materials Science and Nanotechnology (NANOMAT-2020)	June 20-21,2020 (Online)	Self
31	Priya Singh	17111010	Workshop on material characterization techniques	July 20-22, 2020 (Online)	NA





S. No.	Name of Student	Roll No.	Conference/Seminar/ Symposia/Workshop	Date & Venue	Financial Assistance From
32	Shipra Gupta	18111010	Workshop on "Material Characterization Techniques and Uses"	July 20-22, 2020 (Online)	NA
33	Saurabh Kumar	18111506	International workshop on "SMART MATERIALS SENSOR AND ENERGY DEVICES (SMSED 2020)"	May 25-30, 2020, (Online)	NA
34	Saurabh Kumar	18111506	Springer nature workshop on "Trends in Publishing"	June 16, 2020, (Online)	NA
35	Nupur kumari	19111003	Webinar on Identification of Microplastics using FTIR & RAMAN Microscopy	May 5,2020 (online)	NA
36	Nupur kumari	19111003	Webinar on Electrochemical Biosensor- COVID-19 detection	june 16,2020 (online)	NA
37	Mrs. Krishna Prajapati	17111006	6th International Conference on Nanoscience and Nanotechnology (ICONN), SRM, Chennai.	Jan. 31-Feb. 2,2021 Online Mode	NA
38	Mrs. Krishna Prajapati	17111006	Online workshop on Rietveld Refinement Methods by UGC- DAE Consortium of Scientific Research, Indore.	Sept. 22-24,2020 Online Mode	NA

#### ABROAD (online mode)

1	Manish Yadav	17111012	MAGSTR 2020, ORNL, USA (Workshop)	28-09-2020 to 02-10-2020 Virtual	NA
2	Subhajit Jana	17111015	The $67^{\text{th}}$ JSAP Spring Meeting 2020	March 12-15, 2020, Sophia University, Tokyo Japan	INSPIRE Contingency
3	Subhajit Jana	17111015	The 30 <sup>th</sup> Annual Meeting of MRS-J 2020	December 9-11, 2020, Japan (Online)	INSPIRE Contingency
4	Shweta Pal	17111014	The 30 <sup>th</sup> Annual Meeting of MRS-J 2020	December 9-11, 2020, Japan (Online)	Pending

# Names of students/scholars who got prizes and awards outside the Institute

S. No.	Name of Student	Roll No.	Name of Prize	Date & Venue	Prize awarded by
1.	SHYAM BABU	16111010	CSIR SRF	16/03/2021 Delhi (Online)	CSIR

#### Names of scholars/students who won Convocation/Institute Day prizes

S. No.	Name of Student	Roll No.	Name of Prize	Prize awarded by
1.				

#### Names of Students/Scholars who went for foreign Internship

S. No.	Name of Student	Roll No.	Name of the Organization	Place of Internship	Country	Duration
1						



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# 1. Faculty & their Activity

# Faculty and their areas of specialisation

S. No.	Name, Qualifications, Employ- ee No.	Date of award of PhD Degree	Major Areas of Specialization (Max. 3 Areas)
PROFE	SSORS		
1	Rajiv Prakash(Ph.D.) 17100	January, 2000	Organic Conducting Polymers; Organic Electronics and Sensors/Biosensors
2	Pralay Maiti(Ph.D.) 17337	1996	Biomaterials; Energy materials; Drug delivery
ASSOCI	ATE PROFESSORS		
1	Dr. (Mrs.) Chandana Rath (Ph.D.) 17280	December, 2000	Nanostructured materials, Magnetism, Ion Irradiation
2	Akhilesh Kumar Singh(Ph.D.) 17387	2006	Smart Materials, Structural Phase Transitions in Electroceramics, Synthesis and Characterization of Novel Electroceramics,
3.	Chandan Upadhyay(Ph.D.) 18433	2004	Quantum Materials, Multifunctional Materials, Nano-Bio Technology
4.	Bhola Nath Pal (Ph.D.) 19817	November, 2005	Solution processed thin film devices, Optoelectronics devices, Nanoelectronics
ASSIST	ANT PROFESSORS		
1	Dr. Ashish Kumar Mishra, (Ph.D.) 50065	July, 2011	Synthesis and properties of Carbon and 2D nanomaterials, Optoelectronics applications, Energy and Environmental applications
2	Dr. Shrawan Kumar Mishra, (Ph.D.) 50071	March, 2010	Magnetism, condensed matter, memory and spintronics devices
3	Sanjay Singh (Ph.D.) 50072	2013	Heusler alloys, X-ray & Neutron Diffraction, Quantum Transport & Quantum Materials
4.	Dr. Nikhil Kumar,(PhD), 50250	2017	Mechanical Behaviour of Materials, Additive Manufacturing, Steel Making
Institu	te Professors		
1	Prof. Dhananjai Pandey (Ph.D.) FAC-IP11		Ferroics and Multiferroics, Functional Materials, X-ray and Neutron Crystallography
Visiting	g Faculty		
1			
DST IN	SPIRE Faculty		
1			





#### Technical and Non-Teaching Staff

Sl. No.	Name, Qualifications	Designation, Employee No.	Date of Appointment in the department
1.	<b>Ankit Jain</b> MCA	Junior Assistant (50140)	10/01/2020
2.	<b>Samir Kumar Dubey B.A., M.A.</b> (Sociology), Diploma in Electrical Engg.	Senior Technician (18632)	06/08/2008
3.	<b>Sitaram Tiwari</b> Diploma in Mechanical Engg. (Pursuing)	Senior Technician(19592)	04/09/2012
4.	Mahendra Kumar Patel B.A., COPA and B.Sc. (Physics, Chemistry, Mathematics)	Senior Technician (19599)	04/09/2012

#### Short-term courses/workshops/seminars/symposia/conferences organised by faculty members

S. No.	Coordinator	Title	Period
1	Dr. Shrawan Mishra (Coordinator), Dr. B.N. Pal (Co-Coordinator), Dr. P.K. Rai (Co-Coordinator)	Thin-film devices for sensor applications	25-29 January, 2021
2	Dr.Shivam Verma (Coordinator) Dr. Shrawan Mishra (Co- coordinator) Dr. Sushant Mittal (Co-coordinator)	Nanoelectronic Devices and Circuits	04-09 January 2021
3	Prof. Rajiv Prakash	"Leadership for Academicians Programme (LEAP)" organized by IIT (BHU) and Cambridge University UK	At Cambridge University UK 20th Jan to 24th Jan 2020
4	Dr. J. C. Pandey, Dept. of Electrical Engineering and Dr. Akhilesh Kumar Singh, SMST	QIP Short Term Training on "Challenges, Opportunities, and Emerging Trend in the Field of High Voltage and Electrical Insulation"	1 <sup>st-</sup> 6 <sup>th</sup> Feb. 2021, IIT(BHU)

# Short-term courses/workshops/seminars/symposia/conferences/training programmes attended by faculty members in academic institutions and public sector undertakings

S. No.	Name of Faculty Member	Title	Period and Venue
Seminars/Symposia/ Conferences			
1	Prof. Rajiv Prakash	Invited talk on " Research Writing, Publishing, and Presentation"	FDP under Pandit Madan Mohan Malviya National Mission on Teachers and Teaching (PMMMNMTT) Indian Institute of Technology (BHU) Varanasi
2	Shrawan. K. Mishra	GMR memory devises (Thin-film devices for sensor applications)	29/01/2021
3	Shrawan	TMR storage devices (Nanoelectronic Devices and Circuits)	07-09/2021
4	Dr. Ashish Kumar Mishra	FDP on Spectroscopical studies in structural analysis- modern era applications	January 25- 29, 2021, Hyderabad Institute of Technology & Management, Hyderabad
5	Dr. Ashish Kumar Mishra	STTP on Emerging tools and technologies in material science and engineering	September 21-25, 2020, Jabalpur Engineering College, Jabalpur, M.P.



S. No.	Name of Faculty Member	Title	Period and Venue
6	Dr. Ashish Kumar Mishra	STTP on Recent progress in materials science and engineering	August 24-28, 2020, Jabalpur Engineering College, Jabalpur, M.P.
7	Dr. Ashish Kumar Mishra	Webinar on nanoscience and nano technology in the present scenario	June 9-10, 2020, Jawaharlal Nehru University, New Delhi
8	Dr. Bhola Nath Pal	Electrical and Optical characterization of Thin Film Devices	QIP short term course: Advanced Materials Characterizations: From fundamentals toward applications", 13- 15th December, 2020
9	Dr. Bhola Nath Pal	Colour selective photodetector and their application as image sensor	QIP short term course: QIP short term course, on "Thin film devices for sensor applications"

# Special lectures delivered by faculty members in other institutions

S. No.	Name of faculty Member	Topic of Lecture	Institution	Date
1.	Prof. Rajiv Prakash	Invited talk on "Exotic Materials and Devices"	at MMV, Banaras Hindu University, Varanasi	January 08-09, 2019.
2.	Prof. Rajiv Prakash	Invited talk in the International Conference on Smart Materials for Sustainable Technology (SMST-2020)	International Organized by IIT (BHU) Materials for IIT Delhi, SINP-Kolkata MST-2020) and IIT Goa.	
3.	Prof. Rajiv Prakash	Invited talk on "Functional polymers and nanocomposites: Organic devices"	Department of Materials Science & Engineering (DoMSE), NIT, Hamirpur	2nd March 2020.
5.	Dr. Chandana Rath	Magnetic Properties of Hydrothermally Synthesized $\delta$ -MnO <sub>2</sub> Nanowhiskers	STEMIO's Magnetism and Magnetic Materials Online Summit (SMMM-2021)	07.05.2021
6.	Dr. Chandana Rath	Structure dependent Magnetic properties in Hydrothermally Synthesized Functional Oxides"	From Tiny Atoms to Solid to Cosmos: The Quantum Aspects" IOP and CET, Bhubaneswar	05.12.2020
7.	Dr. Chandana Rath	ath Synthesis and Properties of Department o Nanostructured Materials Synergy Instit Engineering & Dhenkanal, Od		24.07.2020
8.	Dr. Akhilesh Kumar Singh	Structure-Property Correlations in Piezoelectric Materials for Energy Harvesting	Jabalpur Engineering College, Jabalpur, M.P.	24 <sup>th</sup> September 2020
9.	Dr. Akhilesh Kumar Singh	Characterization of Perovskite Materials Using X-Ray Powder Diffraction	Hyderabad Institute of Technology And Management Hyderabad, Telangana	25 <sup>th</sup> August 2020
10.	Dr. Akhilesh Kumar Singh	Crystal Structure Characterization of Piezoelectric Smart Ceramics	C.V. Raman Global University (CGU); Bhubaneswar	21 <sup>st</sup> January 2021
11.	Dr. Akhilesh Kumar Singh	ımar Crystal Structure Analysis of Guru Ghasidas Nanocrystalline Perovskites Using Vishwavidyalaya Rietveld Method Bilaspur (C.G.).		18 <sup>th</sup> February 2021





S. No.	Name of faculty Member	Topic of Lecture	Institution	Date
12.	Dr. Ashish Kumar Mishra	$\begin{array}{llllllllllllllllllllllllllllllllllll$	Jawaharlal Nehru University, New Delhi	10-06-2020
13.	Dr. Ashish Kumar Mishra	Raman spectroscopy: An advanced materials characterization tool	Jabalpur Engineering College, Jabalpur, M.P.	26-08-2020
14.	Dr. Ashish Kumar Mishra	$MoS_2$ nanostructures for optoelectronics applications	Jabalpur Engineering College, Jabalpur, M.P.	21-09-2020
15.	Dr. Bhola Nath Pal	Colloidal quantum dot: Basic concept, synthesis and optoelectronics application	Department of Physics, SRM University-AP	14-09-2020

#### Honours and awards

S. No.	Name of Faculty Member	Details of Award	
1	Dr. Sanjay Singh	Indian National Young Academy of Sciences (INYAS) membership (2021)	

#### Fellowships of academic and professional societies

S. No.	Name of Faculty Member	Details of Fellowship
1	Prof. Pralay Maiti	Fellow of West Bengal Academy of Science and Technology
2	Dr. Chandana Rath	Council Member of MRSI, India 2019-2022
3	Dr. A. K. Singh	Joint Secretary of the Indian Crystallographic Association (ICA) for the period 2019-2022.
4	Dr. Sanjay Singh	Indian National Young Academy of Sciences (INYAS) membership (2021)

# In past Fellowships are listed below.

S. No.	Name of Faculty Member	Details of Fellowship
1	Prof.Dhananjai Pandey	J C Bose Fellow
2	Prof.Dhananjai Pandey	Asia Pacific Academy of Materials
3.	Prof. Dhananjai Pandey	INSA
4.	Prof. Rajiv Prakash	Asia Pacific Academy of Materials

#### Books, monographs authored/co-authored

S. No.	Name of Author/ Co- Author	Title	Publisher
1	Editors: Chandra, Pranjal, Rajiv Prakash	Nanobiomaterial Engineering-Concepts and Their Applications in Biomedicine and Diagnostics https:// www.springer.com/us/book/9789813298392	Springer(2019)
2	Authors: Ashish Kumar, Priya Singh, Rajiv Prakash	Enzymatic Electrode–Electrolyte Interface Study During Electrochemical Sensing of Biomolecules https://doi.org/10.1002/9781119611103.ch23	John Wiley & Son, Inc, USA (2020)
3	Anupama Gaur and Pralay Maiti	"Reinforced Polymers for Electroactive Devices" in "Reactive and Functional Polymers" Volume 2	<b>Springer</b> ISBN: 978-3-030- 45134-9; Pg. 325-347 (2020)





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S. No.	Name of Author/ Co- Author	Title	Publisher
4	B. P.Majee and A. K. Mishra.	Chapter: Fundamentals and Applications of Surface Enhanced Raman Spectroscopy, <b>Book:</b> Modern Techniques of Spectroscopy: Basics, Instrumentation, and Applications	<b>Springer Nature</b> Singapore ISBN 978-981-33-6083-9; Pg. 185-208.
5	Nitesh K Chourasia and Bhola N Pal	Chapter: Solution-processed photodetectors, Book: Chemical Solution Synthesis for Materials Design and Thin Film Device Applications, 2021, Pages 649-664	<b>Elsevier Inc.</b> ISBN: 978-0- 12-819718-9 DOI: https://doi.org/10.1016/ C2019-0-00309-3
6	Nila Pal and Bhola N Pal	Chapter: Solution-processed light-emitting devices, Book: Chemical Solution Synthesis for Materials Design and Thin Film Device Applications, 2021, Pages 623-647	<b>Elsevier Inc.</b> ISBN: 978-0- 12-819718-9 DOI: https://doi.org/10.1016/ C2019-0-00309-3
7	D. Kumar, R.S. Yadav, Monika, A.K. Singh, and S.B. Rai	Synthesis Techniques and Applications of Perovskite Materials (Book Chapter)	IntechOpen, USA (2020), DOI:10.5772/ intechopen.86794.

# Editorial boards of journals

S. No.	Name of Faculty Member	Position (Editor/ member)	Name of Journal
1	Prof. Rajiv Prakash	Editor-in-Chief of Frontiers in Sensors (FS), Science and Engineering Publ. Company, USA. ISSN Print: 2327-7297 In Editorial Board German Journal of Materials Engineering (GJME) Editorial Board,Biosensors Journal, OMICS International Journals.	Frontiers in Sensors (FS) German Journal of Materials Engineering Biosensors Journal
2	Prof. Pralay Maiti	Associate Editor, Editorial Board member	Signal Transduction and Targeted Therapy; Springet Nature MedComm; Wiley
3	Ashish Kumar Mishra	Associate Editor	Mapana Journal of Sciences

# 4. Design and Development Activities

#### New facilities added

S. No.	Details (Infrastructure, Equipments, etc.)	Value (in Lakhs of Rupees)
1	Glove Box with arc melting furnace setup	~20 Lacs
2	Resistivity and Hall measurement setup	~27 Lacs
3	Setup of Gas Sensor	~15 lacs (under project)
4	Setup for Li/Na ion battery fabrication and characterization (including Glove Box)	~30 Lacs (under project)

# **Patents** filed

S. No.	Name of Faculty Member	Title of Patent
1	Reshu Bhardwaj, Preeti Maiti, Om Prakash, Ram Kumar Singh and Pralay Maiti	A Nanoherbicidal Composition and a Method for its Preparation and Uses Thereof, Indian Patent Application No. 202111002570 filed on Junuary 19, 2021





S. No.	Name of Faculty Member	Title of Patent		
2	Pralay Maiti, Om Prakash, Amol M. Mhatre, Rahul Tripathi and Ashok K. Pandey	Development of Multifunctional Porous Polymeric Membrane usin Accelerator for Separation of F-Block Elements Indian Patent Applicatio No. 202011023201 filed on June 02, 2020		
3	Prof. Rajiv Prakash et al.	Method for Fabricating a gas Sensor by Developing thin Solid Polymeric Film Patent Application No.202011005745, 2020		
4	Prof. Rajiv Prakash et al.	A Method and A Kit for Detecting Concentration of Anti-tuberculosis Drug in a Biological Sample, 2021		
5	Prof. Rajiv Prakash	Nanomaterials and low electric field based multi-layer face masks and a process of fabrication thereof Patent Application No. 202011016350, 2020		
6	A.K. Mishra, S. Mishra and S.S. Jaiswal,	Electrochemical device for hydrogen production, Indian Patent Application No. 202011018312, 2020.		
7	A.K. Mishra, S. Mishra and S.S. Jaiswal,	A method of preparing multiwalled carbon nanotubes, Indian Patent Application No. 202011017647, 2020.		

#### 5. Research and Consultancy

# **Sponsored research projects** (Ongoing only)

<u>Note:</u> Sponsored project name is to be given only in case a faculty member is Project Incharge

S. No.	Title	Period	Funding Agency	Amount (in lakhs of Rs.)	Co- ordina- tor
1	"Low cost ammonia gas sensor based on polymer/polymer nanocomposite device formed by novel floating film transfer (FTM) technique"	(2018-2020)	IMPRINT-2 (SERB)	(Rs. 36 lakhs) (10% Industry support).	Rajiv Prakash (PI)
2	"Development of low cost sodium-ion battery: Fabrication and application of NASICON based electrodes" (DST/TMD/ MES/2k17/78 Dt. 05-10-2017)	2018- 2021	DST sponsored project in collaboration with Renault – Nissan Technology and Business Centre	(~85 lakhs) (Industry support).	Rajiv Prakash (PI)
3	Joint project with Tokyo Institute of Technology and KIT, Japan on Harnessing the synergy of low band gap organic semiconductors and highly facile floating film transfer method for low cost efficient organic electronic devices	2019-20 (PI).	SPARC (SERB)	(~45 lakhs)	Rajiv Prakash (PI)
4	"Impact of Carbon Nanomaterial based Photocatalyst on Microalgae Growth and Lipid for improved Biodiesel" (BT/ PR31218/PBD/26/771/2019) (Inter Institute Project under IC#4	2019-2022	DBT	(~ 51 Lakhs)	PI at IIT (BHU) Rajiv Prakash
5	Photonic radiative cooler for passive sub-ambient cooling (Co-PI)	2019-	IMPRINT-II (SERB)	41.88	Prof. Pralay Maiti
6	Aging studies and estimation of thermal properties of liner materials (PI)	2019-2021	DRDO	156.85	Prof. Pralay Maiti




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S. No.	Title	Period	Funding Agency	Amount (in lakhs of Rs.)	Co- ordina- tor
7	3D Bio-Stereolithography for Engineering Functional Tissues (CCPI)	2020-2025	SERB	37.2464	Prof. Pralay Maiti
8	Multifunctional Nanostructured Mn/ Fe doped CeCrO3 for Photocatalyst and Magnetic Switching	2020-2023	Core Research Grant-SERB, India	49 Lakhs INR	Dr. Chandana Rath
9	Investigation of structural phase transformations in HfO2 thin films using X-ray Absorption Spectroscopy	2020-2023	UGC-DAE, CSR, Indore	1.35 Lakhs INR	Dr. Chandana Rath
12	Development of High Tc Lead Free Piezoelectric Materials for Energy Harvesting	March, 2020-February -2023	SERB	49.4 lakhs	Dr. Akhilesh Kumar Singh
13	Development of high performance, CMOS compatible and colour selective narrow-band photodetector for high- resolution imaging application	February, 2020-January -2023	SERB	67.1	Dr. Bhola Nath Pal
14	Mott transistors basedNeuromorphic memory devices	03 years started in 2018	DST	101.0	Dr. Shrawan Kumar Mishra
15	Nanoscale interfacial magnetic skyrmions and its applications in memory devices	03 years started in 2019	Nanomission DST	103.0	Dr. Shrawan Kumar Mishra
16	Investigation of two dimensional transition metal dichalcogenides nanostructures as effective SERS substrates	December 2020- December 2023	SERB, India	43.82	Dr. Ashish Kumar Mishra
17	Minimizing hysteresis in magnetic shapememory Heusler alloys for reversiblemagnetocaloric effect	03 years started in 2018	SERB	48.5	Dr. Sanjay Singh
18	Mutifunctional Properties of Heusler alloys	05 years started in 2017	SERB	35.0	Dr. Sanjay Singh
19	Elastocaloric effect measurement setup to study caloric effect in shape memory alloys	03 years started in 2018	UGC-DAE CSR	11.0	Dr. Sanjay Singh
20	DST-FIST Level-II Project	2019-2024	DST	~Rs. 395 lakhs	All faculty members

#### Total=1357.1 Lacks

## Industrial consultancy projects(Ongoing only)

S. No.	Name of Faculty Member	Title	Industry	Amount (in lakhs of Rs.)
1	Sanjay Singh		Indo-Korea	14.75

## Faculty members' participation with other universities under MoUs(Ongoing only)

Dr. Sanjay Singh has been nominated for fulfilling the contract of MOUs between University of West Bohemia (UWB) and Indian Institute of Technology (Banaras Hindu University) (IIT(BHU)).





#### **Research Publications**

S. No.		No.
1	Total Number of Papers Published in Refereed National Journals	0
2	Total Number of Papers Published in Refereed International Journals	79
3	Total Number of Papers Presented in National Conferences	4
4	Total Number of Papers Presented in International Conferences	5

#### **Refereed International Journals**

- 1. Arun Kumar, Preetam Singh, Ram Janay Choudhary, Dhananjai Pandey (2020), Effect of Mn-doping on the low temperature magnetic phase transitions of BiFeO3, J. Alloys Compd. 825, 154148
- 2. Arun Kumar, Dhananjai Pandey (2020), Study of magnetic relaxation, memory and rejuvenation effects in the cluster spin-glass phase of B-site disordered Ca(Fe1/2Nb1/2)O3 perovskite: Experimental evidence for hierarchical model, J. Magn. Magn. Mater.511, 166964
- Keshav Kumar, Shrawan Kumar Mishra, Ivan Baev, Michael Martins, &Dhananjai Pandey (2020), "Evidence for the coexistence of spin-glass and ferrimagnetic phases in BaFe<sub>12</sub>O<sub>19</sub> due to basal plane freezing", Chem. Commun., 1359-7345 (2020)
- K. Kumar, S. K. Mishra, Sanjay Singh, I. Baev, M. Martins, F. Orlandi, P. Manuel, D. Pandey (2021) Evidence for Conical Magnetic Structure in M-Type BaFe<sub>12</sub>O<sub>19</sub> Hexaferrite: A Combined Single-Crystal X-ray Magnetic Circular Dichroism and Neutron Diffraction Study. Physica Status Solidi (RRL), 2000506.
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- Pandey, R.K., Bisht, H., Yadav, S.K., Singh, A.K., Prakash, R., & Mishra, H. (2020) Surface driven nanomorphology of poly 3-hexylthiophene film, and their photophysical, spectral and electronic traits, Mater Sci Eng B Solid State Mater Adv Technol260, 114622,
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- 12. Pal, S., Ji, G., Lgaz, H., Chung, I.M., and Prakash, R. (2020). Lemon seeds as green coating material for mitigation of mild steel corrosion in acid media: Molecular dynamics simulations, quantum chemical calculations and electrochemical studies. *J Mol Liq*, 316, 113797.





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- 42. DeeptiGangwar, Chandana Rath (2020) Spin dynamics of hydrothermally synthesized  $\delta$ -MnO2 nanowhiskers. Phys. Chem. Chem. Phys. 22(25): 14236-14245
- 43. G. C. Pandey, K. Nemkovski, Y. Su and ChandanaRath (2020) Evidence of anomalous conventional and spontaneous exchange bias, high coercivity in Fe doped NiCr2O4 spinel, Dalton Trans. 49 (14): 4502-4517





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- 69. Mishra S., Mishra A.K. (2020) Hydrothermally synthesized MoS<sub>2</sub> nanoclusters for hydrogen evolution reaction, Electroanalysis, 32, 2564-2570.
- 70. Mishra S., Maurya P.K., Mishra A.K (2020) 2H–MoS<sub>2</sub>nanoflowers based high energy density solid state supercapacitor, Mater. Chem. Phys., 255:123551-123558.
- 71. Majee B.P, Mishra A.K. (2020) Recent advances in photodetection applications of two dimensional  $MoS_2$  nanostructure, Journal of Metallurgy and Materials Science 62:103-126.
- 72. Georgios Araizi-Kanoutas, JaapGeessinck, Nicolas Gauquelin, Steef Smit, Xanthe H. Verbeek, Shrawan K. Mishra, Peter Bencok, Christoph Schlueter, Tien-Lin Lee, Dileep Krishnan, JarmoFatermans, Jo Verbeeck, GuusRijnders, GertjanKoster, and Mark S. Golden (2020), "Co valence transformation in isopolar LaCoO<sub>3</sub>/LaTiO<sub>3</sub> perovskite heterostructures via interfacial engineering", Phys. Rev. Mater. 4, 026001 (2020).
- 73. K. Chen, C. Luo, B. B. Chen, R. M. Abrudan, G. Koster, S. K. Mishra, and F. Radu (2020), "Charge-transferinduced interfacial ferromagnetism in La<sub>0.7</sub>Sr<sub>0.3</sub>MnO<sub>3</sub>/NdNiO<sub>3</sub>", Phys. Rev. Mater. 4, 054408 (2020).
- 74. S. Babu, B. K. Singh, & S. K. Mishra (2020), "Site-substitution effect on skyrmion phases of Cd<sup>2+</sup>-Cu<sub>2</sub>OSeO<sub>3</sub> nanocrystallites", Mater. Res. Express 7, 105002.
- 75. R. D. dos Reis, M. GhorbaniZavareh, M. O. Ajeesh, L. O. Kutelak, A. S. Sukhanov, Sanjay Singh, J. Noky, Y. Sun, J. E. Fischer, K. Manna, C. Felser, and M. Nicklas (2020) Pressure tuning of the anomalous Hall effect in the chiral antiferromagnet Mn3Ge. Phys. Rev. Mater. 4, 051401(R).
- 76. P. Sivaprakash, S.E. Muthu, A.K. Singh, K.K. Dubey, M. Kannan, S. Muthukumaran, S. Guha, M. Kar, Sanjay Singh, S. Arumugam (2020) Effect of chemical and external hydrostatic pressure on magnetic and





magnetocaloric properties of Pt doped Ni2MnGa shape memory Heusler alloys. J. Magn. Magn. Mater. 514, 167136.

- 77. Avirup De, Anupam K. Singh, Sanjay Singh, and Sunil Nair (2021) Temperature dependence of the anomalous Nernst effect in Ni2MnGa shape memory alloy. Phys. Rev. B 103, L020404.
- 78. G. Lingannan, Anupam K. Singh, B. Joseph, Sanjay Singh (2021) High-Pressure Structural Investigation of Anomalous Hall Effect Compound Mn<sub>3</sub>Sn up to 9 GPa, Phys. Status Solidi (RRL) 15, Iss. 4, 2000605.
- 79. Nikhil Kumar (2021). An exploration of microstructural in-homogeneity in the 6082 Al alloy processed through room temperature multi-axial forging. Mater. Charact. 176, 111134.

## **Refereed National Journal**

Not any. All publications from School are in international journals.

## **Proceedings of International Conferences**

- ShubhamMaurya, AniruddhaJaiswal, Gopal Ji, &Rajiv Prakash (2020) Waste Solanummelongena stem extract for corrosion inhibition of mild steel in 1M NaCl, Materials Today: Proceedings 44(5) 10.1016/j. matpr.2020.12.691
- Chandra Shekhar, AniruddhaJaiswal, Gopal Ji, &Rajiv Prakash (2020) Ethanol extract of waste potato peels for corrosion inhibition of low carbon steel in chloride medium, Materials Today: Proceedings 44, 10.1016/j. matpr.2020.12.368
- 3. Vijayeta Pal, Monika Singh, Akhilesh Kumar Singh, O.P. Thakur, R.K. Dwivedi (2020); Structural and large electric field-induced bipolar strain study of lead free Bi0.5Na0.5TiO3: Gd piezoceramics Materials Today: Proceedings, 28, Part 1, Pages 328-331
- Monika Singh, Vijayeta pal, Akhilesh Kumar Singh (2020); Investigation of Dielectric Relaxation and ion Dynamics of Ce<sub>0.76</sub>Pr<sub>0.08</sub>Sm<sub>0.08</sub>Gd<sub>0.08</sub>O<sub>2-x</sub> nanocrystalline Solid Electrolyte ion conductor Material Today Proceedings. 28, Part 1, Pages 317-319.
- Dinesh Kumar, P. Prajapati, P. Jena and Akhilesh Kumar Singh, (2020); Size and Composition Dependent Structural Investigations on Nd<sub>1-x</sub>Ba<sub>x</sub>CoO<sub>3</sub> (x = 0.2, 0.3 and 0.4) Perovskite Cobaltites using X-ray Diffraction Mater. Today: Proc. 26, 3492-3496.

## **Proceedings of National Conferences**

- Anupam K Singh, Vikas Singh, Satadeep Bhattacharjee, Seung-Cheol Lee, Sanjay Singh, Dhananjai Pandey (2020), Effect of heat treatment on the phase purity of Fe2P powder, AIP Conference Proceedings, 2265, 030021
- 2. Deepti Gangwar,Chandana Rath (2020) Enhanced electrochemical property of Dydoped -MnO2 nanorods, AIP conference proceedings 2265, 030616, DAE solid state physics symposium (18-22 Dec 2019)
- Gaurav Chandra Pandey, Chandana Rath (2020) Stabilization of high-temperature cubic phase at RT in NiCr<sub>2-</sub> <sub>x</sub>Fe<sub>x</sub>O<sub>4</sub> (x = 0-0.2) nanoparticles: Structural and optical studies, AIP conference proceedings2265, 030145, DAE solid state physics symposium (18-22 Dec 2019)
- B Bharati, Chandana Rath (2020) Study of structure, surface morphology and magnetic properties of 500 keV Ar<sup>2+</sup> ion irradiated TiO<sub>2</sub> thin films, AIP Conference Proceedings 2265, 030336, DAE solid state physics symposium (18-22 Dec 2019)





# Kindly Provide Brief Details of 5 Articles from the Department/School with maximum no. of Citations in last 5 years

1. Gopal Ji, Shadma Anjum, Shanthi Sundaram, Rajiv Prakash (2015), Musa paradisica peel extract as green corrosion inhibitor for mild steel in HCl solution, *Corrosion Science*, 90, 2015, p 107-117

#### Citation: 295

Description: The inhibition and adsorption effects of the aqueous extracts of *Musa paradisica* (Banana) peels on mild steel corrosion in 1 M HCl as well as change in inhibition efficiency with ripening of the peels are investigated by weight loss measurement, electrochemical impedance spectroscopy (EIS), Tafel polarization and atomic force microscopy (AFM) techniques. Inhibition ability of the extracts decreases with the maturity stages. Furthermore, the extracts are characterized by FTIR spectroscopy, UV–visible spectroscopy and high performance liquid chromatography (HPLC) techniques. Adsorption behavior of the extracts is also studied, which suggest Langmuir isotherm model as a most suitable adsorption mechanism.

2. Sudipta Senapati, Mahanta Arun Kumar, Kumar Sunil, Maiti Pralay (2018), Controlled drug delivery vehicles for cancer treatment and their performance, *Signal Transduction and Targeted Therapy* (2018) 3:7

#### Citation: 600

Description: Although conventional chemotherapy has been successful to some extent, the main drawbacks of chemotherapy are its poor bioavailability, high-dose requirements, adverse side effects, low therapeutic indices, development of multiple drug resistance, and non-specific targeting. The main aim in the development of drug delivery vehicles is to successfully address these delivery-related problems and carry drugs to the desired sites of therapeutic action while reducing adverse side effects. In this review, we will discuss the different types of materials used as delivery vehicles for chemotherapeutic agents and their structural characteristics that improve the therapeutic efficacy of their drugs and will describe recent scientific advances in the area of chemotherapy, emphasizing challenges in cancer treatments

 Sudipta Senapati, Ravi Thakur, Shiv Prakash Verma, Shivali Duggal, Durga Prasad Mishra, Parimal Das, T Shripathi, Mohan Kumar, Dipak Rana, Pralay Maiti (2016), Layered double hydroxides as effective carrier for anticancer drugs and tailoring of release rate through interlayer anions, *Journal of Controlled Release* 224 (2016) 186–198

## Citation: 92

Description: Hydrophobic anticancer drug, raloxifene hydrochloride (RH) is intercalated into a series of magnesium aluminum layered double hydroxides (LDHs) with various charge density anions through ion exchange technique for controlled drug delivery. The particle nature of the LDH in presence of drug is determined through electron microscopy and surface morphology. The release of drug from the RH intercalated LDHs was made very fast or sustained by altering the exchangeable anions followed by the modified Freundlich and parabolic diffusion models. The drug release rate is explained from the interactions between the drug and LDHs along with order-disorder structure of drug intercalated LDHs. Nitrate bound LDH exhibits greater interaction with drug and sustained drug delivery against the loosely interacted phosphate bound LDH-drug, which shows fast release. Cell viability through MTT assay suggests drug intercalated LDHs as better drug delivery vehicle for cancer cell line against poor bioavailability of the pure drug. In vivo study with mice indicates the differential tumor healing which becomes fast for greater drug release system but the body weight index clearly hints at damaged organ in the case of fast release system. Histopathological experiment confirms the damaged liver of the mice treated either with pure drug or phosphate bound LDH-drug, fast release system, vis-à-vis normal liver cell morphology for sluggish drug release system with steady healing rate of tumor. These observations clearly demonstrate that nitrate bound LDH nanoparticle is a potential drug delivery vehicle for anticancer drugs without any side effect.





4. Health benefits of resveratrol: Evidence from clinical studies AP Singh, R Singh, SS Verma, V Rai, CH Kaschula, P Maiti, SC Gupta, Medicinal research reviews 2019, 39 (5), 1851-1891

#### Citation: 106

Description: Resveratrol is a polyphenolic nutraceutical that exhibits pleiotropic activities in human subjects. The efficacy, safety, and pharmacokinetics of resveratrol have been documented in over 244 clinical trials, with an additional 27 clinical trials currently ongoing. Resveretrol is reported to potentially improve the therapeutic outcome in patients suffering from diabetes mellitus, obesity, colorectal cancer, breast cancer, multiple myeloma, metabolic syndrome, hypertension, Alzheimer's disease, stroke, cardiovascular diseases, kidney diseases, inflammatory diseases, and rhinopharyngitis. The polyphenol is reported to be safe at doses up to 5 g/d, when used either alone or as a combination therapy. The molecular basis for the pleiotropic activities of resveratrol are based on its ability to modulate multiple cell signaling molecules such as cytokines, caspases, matrix metalloproteinases, Wnt, nuclear factor-κB, Notch, 5'-AMP-activated protein kinase, intercellular adhesion molecule, vascular cell adhesion molecule, sirtuin type 1, peroxisome proliferatoractivated receptor-γ coactivator 1α, insulin-like growth factor 1, insulin-like growth factor-binding protein 3, Ras association domain family  $1\alpha$ , pAkt, vascular endothelial growth factor, cyclooxygenase 2, nuclear factor erythroid 2 like 2, and Kelch-like ECH-associated protein 1. Although the clinical utility of resveratrol is well documented, the rapid metabolism and poor bioavailability have limited its therapeutic use. In this regard, the recently produced micronized resveratrol formulation called SRT501, shows promise. This review discusses the currently available clinical data on resveratrol in the prevention, management, and treatment of various diseases and disorders. Based on the current evidence, the potential utility of this molecule in the clinic is discussed.

5. Targeted therapy in chronic diseases using nanomaterial-based drug delivery vehicles AP Singh, A Biswas, A Shukla, P Maiti, Signal transduction and targeted therapy, 2019, 4 (1), 1-21

Citation: 118

Description: The paper describes the application of nanomedicines which is increasing rapidly with the promise of targeted and efficient drug delivery. Nanomedicines address the shortcomings of conventional therapy, as evidenced by several preclinical and clinical investigations indicating site-specific drug delivery, reduced side effects, and better treatment outcome. The development of suitable and biocompatible drug delivery vehicles is a prerequisite that has been successfully achieved by using simple and functionalized liposomes, nanoparticles, hydrogels, micelles, dendrimers, and mesoporous particles. A variety of drug delivery vehicles have been established for the targeted and controlled delivery of therapeutic agents in a wide range of chronic diseases, such as diabetes, cancer, atherosclerosis, myocardial ischemia, asthma, pulmonary tuberculosis, Parkinson's disease, and Alzheimer's disease. After successful outcomes in preclinical and clinical trials, many of these drugs have been marketed for human use, such as Abraxane®, Caelyx<sup>®</sup>, Mepact<sup>®</sup>, Myocet<sup>®</sup>, Emend<sup>®</sup>, and Rapamune<sup>®</sup>. Apart from drugs/compounds, novel therapeutic agents, such as peptides, nucleic acids (DNA and RNA), and genes have also shown potential to be used as nanomedicines for the treatment of several chronic ailments. However, a large number of extensive clinical trials are still needed to ensure the short-term and long-term effects of nanomedicines in humans. This review discusses the advantages of various drug delivery vehicles for better understanding of their utility in terms of current medical needs. Furthermore, the application of a wide range of nanomedicines is also described in the context of major chronic diseases.

#### **Distinguished Visitors**

Due to covid-19 restriction, we were unable to invite distinguished visitor to visit our school during the period of April 2020 to March 2021.



## 6. Other activities

## International collaboration/achievements by the Department/School:

- Kyushu Inst. of Tech, (Japan)
- Univ. of Girona (Spain)
- KAIST (S. Korea)
- Univ. Appl. Sci. (Russelsheim, Germany)
- Universität Mainz (Germany)
- Max Planck Institute for Chemical Physics of Solids, Dresden (Germany)
- Institute of Laue Langevin , Grenoble (France)
- Technical University of Munich (Germany)
- Max Planck Institute for Iron Research, Düsseldorf (Germany)
- Technical University Dresden (Germany)
- IMEM-CNR, Parma (Italy)
- Institute of Physics, Praha (Czech Republic)
- European Synchrotron Radiation Facility, Grenoble (France)
- Ming Chi University of Technology (Taiwan)

## Foreign Faculty Visits in the Department/School/School

Due to covid-19 restriction, we were unable to invite distinguished visitor to visit our school during the period of April 2020 to March 2021.

## Indian Faculty visits in the Department/School/School

Due to covid-19 restriction, we were unable to invite distinguished visitor to visit our school during the period of April 2020 to March 2021.

## Foreign Students Visits in the Department/School/School

No foreign students have been visited during that period.

## **Any other Information**

Three photographs (Soft Copy) of Laboratory / Best Laboratory Equipment of your Department/School with footnote details.

#### 1. Physical Property Measurement System (PPMS)









2. Electron beam with thermal vapour deposition system



3. 7 Tesla Cryogen free Magnet, Magnetoresistance measurement set-up



4. 18KWRotatingAnodeX-RayDiffractometer:







## 21 Department of Chemistry

Complete Name of Department/School	:	Chemistry
Year of Establishment	:	1985
Head/Coordinator of the Department/School	:	Prof. Dhanesh Tiwary (w.e.f. $10^{\rm th}$ May, 2018)

## 1. Brief Introduction of the Department/School:

The Department of Chemistry, IIT-BHU, previously known as Department of Applied Chemistry (Institute of Technology), was established in the year of 1985. Earlier this Department was functioning as a Section in the School of Basic Sciences in Banaras Hindu University-Varanasi. This Department currently constitutes 15 faculty members including 07 Professors, 1 Institute professor, 3 Associate Professors and 4 Assistant Professors. The prime responsibility of the department is to organize the teaching of chemistry courses in various B. Tech and integrated M. Tech programs. In addition, this department is also providing an excellent research platform to the students in various thrust areas of chemistry.

The Department of Chemistry offers a five-year Dual Degree M. Tech program in Industrial Chemistry and Ph. D programs in Organic, Inorganic, Physical and Analytical chemistry. More than 100 PhD's have been awarded from this department and about 50 students are currently pursuing their research. Research programs in the department have been supported by DST, CSIR, BRNS, UGC and AICTE. The department has received 85 lakhs from DST-FIST for the establishment of research and teaching facilities. The department is presently equipped with primary instruments including AAS, AFM, LC MS & GC MS, UV-Vis spectrophotometers, FTIR, and powder-XRD, Particle size analyser, NMR, etc.

## (1.A) Major areas of Research

Computational Chemistry, Nanoparticles for adsorption and catalytic applications; Composite materials Organic synthesis, Carbohydrate chemistry; Photocatalytic digradatation Corrosion Inhibitors, Ant wear/Extreme Pressure Lubricant Additives, Sensors, Energy materials.

## (1.B) Area of the Department/School (in square meters):

503 square meter (Total Plinth Area)

## (1.C) Infrastructure

S. No.	Particulars	Number
1	No. of Classrooms	03
2	No. of Lecture Halls	03
3	No. of Laboratory	03
4	No. of Computers available for students in the Department/School/ School	15+10*=25

## (1.D) Unique Achievement / Preposition of the Department/School

Nil

## 2. Academic Programmes offered

## (2.A) New Courses Introduced

S. No.	Course Code	Course name	Course credit
1	Nil	Nil	Nil





#### (2.B) Students on Roll

S. No.	Programme	I Year	II Year	III Year	IV Year	V Year & above
1	B. Tech/B.Arch	NA	NA	NA	NA	NA
2	Dual Degree	16	13	10	18	16
3	M. Tech/ M. Pharm	NA	NA	NA	NA	NA
4	Ph. D (Under Institute Fellowship)	40 Fellows	hips			
5	Ph. D (Under Project Fellowship)	22 (Project	: 04 + UGC:	08 + CSIR: 10	Fellowships)	
6	Ph. D (Under Sponsored Category)	NA	NA	NA	NA	NA

## (2.C) Names of students/scholars who attended conferences/workshops/seminars and symposia abroad or in India

S. No.	Name of Student	Roll No.	Conference/Seminar/ Symposia/Workshop	Date & Venue	Financial Assistance From
ÌNDIA					
1	Nil	Nil	Nil	Nil	Nil
ABROA	D				
1	Nil	Nil	Nil	Nil	Nil

#### (2.D) Names of students/scholars who got prizes and awards outside the Institute

S. No.	Name of Student	Roll No.	Name of Prize	Date & Venue	Prize awarded by
1	Nil	Nil	Nil	Nil	Nil

#### (2.E) Names of scholars/students who won Convocation/Institute Day prizes

S. No.	Name of Student	Roll No.	Name of Prize	Prize awarded by
1	Nil	Nil	Nil	Nil

#### (2.F) Names of Students/Scholars who went for foreign Internship

S. No.	Name of Student	Roll No.	Name of the Organization	Place of Internship	Country	Duration
1	Danish Khan	16053006	University of Manchester, Manchester, U.K.	Manchester	U.K.	12 May 2020 to 17 August 2020

## 3. Faculty & their Activity

## (3.A) Faculty and their areas of specialisation

S. No.	Name, Qualifications, Employee No.	Date of award of PhD Degree	Major Areas of Specialization (Max. 3 Areas)
	PROFESSORS		
1	Prof. P. C. Pandey, M. Sc., <b>Ph.D,</b> Empl. ID. 12106	1986	Sensors Technology, bio electrochemistry, Organically modified silicate based Nanomaterial and opt electrochemistry
2	Prof. S. H. Hasan, M. Sc., <b>Ph.,</b> Empl. ID. 13674	1989	Nanomaterials, Nuclear Materials, Water Remediation





S. No.	Name, Qualifications, Employee No.	Date of award of PhD Degree	Major Areas of Specialization (Max. 3 Areas)
3	Prof. V. Srivastava, M. Sc., <b>Ph.D.,</b> Empl. ID. 17040	1985	Synthetic Organic and Green Chemistry
4	Prof. Y. C. Sharma, M. Sc., <b>Ph.D and D.Sc,</b> <b>Empl. ID. 17326</b>	1984-1991	Renewable Energy and Bio-fuels, Development and characterization of heterogenous catalysts, Synthesis and application of nanoadsorbents, Macrophytes for Uptake of Metallic Species from industrial effluents.
5	Prof. Dhanesh Tiwary M. Sc., <b>Ph.D,</b> <b>Empl. ID. 17328</b>	1992	Bioremediation, composites for photoderadation, Development of surface functionalized iron oxide and mesoporous silica
6	Prof. K. D. Mandal, M.Sc., Ph.D Empl.No. 17327	1989	Electro -Ceramics, Nano-materials, Materials Chemistry, Solid State Chemistry
	<b>ASSOCIATE PROFE</b>	SSORS	
1	Dr. Sundaram Singh, M. Sc., <b>Ph.D, Empl.</b> <b>ID. 18364</b>	1994-1999	Synthetic Organic Chemistry, Microwave Assisted Organic Synthesis
2	Dr. Indrajit Sinha, M. Sc., <b>Ph.D and</b> <b>Postdoc, Empl. ID.</b> <b>17329</b>	2000	Chemistry of nanomaterials and Computational Chemistry
3	Dr. Jeyakumar Kandasamy, M. Sc., <b>Ph.D and</b> <b>Postdoc, Empl. ID.</b> <b>19849</b>	31 July 2008	Organic Synthesis, Carbohydrate Chemistry
	ASSISTANT PROFE	SSORS	
1	Dr. Manisha Malviya M. Sc., <b>Ph.D,</b> <b>Empl. ID. 18365</b>	2008	Synthesis of Metal oxide nanoparticles, renewable energy, photo electrochemistry, bio electrochemistry, alkaline fuel cell
2	Dr. Asha Gupta M. Sc., <b>Ph.D and</b> <b>Postdoc, Empl. ID.</b> <b>50169</b>	2010	Energy Storage devices (Lithium-ion, Sodium Ion battery, Super capacitors), Heterogeneous Catalysis, Electrochemistry, Photocatalysis, Catalyst for green and renewable energy, First- Principles Density Functional Calculations
3	Dr. Arindam Indra M. Sc., <b>Ph.D and</b> <b>Postdoc, Empl. ID.</b> <b>50172</b>	18 <sup>th</sup> August 2012	Artificial photosynthesis, Bioinspired energy conversion, Metal Organic Framework (MOF) derived catalysts for the water splitting, Photocatalytic organic reaction, Catalysis, Energy Conversion
4	Dr. V. Ramanathan M. Sc., <b>Ph.D,</b> <b>Empl. ID. 50208</b>	May 2009	Laser Spectroscopy, Raman Spectroscopy and Imaging, Computational chemistry
5	Dr. Pandeeswar Makam M. Sc., <b>Ph.D and</b> <b>Postdoc, Empl. ID.</b> <b>50259</b>	29 <sup>th</sup> September 2011	Bio-inorganic chemistry, Supramolecular chemistry and Bio-organic chemistry





— Indian Institute of Technology (BHU) Varanasi

S. No.	Name, Qualifications, Employee No.	Date of award of PhD Degree	Major Areas of Specialization (Max. 3 Areas)
6	Dr. Samya Banerjee M. Sc., <b>Ph.D and Postdoc, Empl. ID. 50262</b>	20 <sup>th</sup> June 2015	Bio-inorganic, Organometallic chemistry, Co-ordination chemistry
7	Dr. Rosy M. Sc., <b>Ph.D and</b> <b>Postdoc, Empl. ID.</b> <b>50266</b>	14 <sup>th</sup> Feb. 2017	Electrochemistry, Electroanalytical Chemistry, Volta metric Sensors, Electrochemical Energy Storage, Atomic Layer Deposition, Nano materials

## (3.B) Technical and Non-Teaching Staff

S1. No.	Name, Qualifications	Designation, Employee No.	Date of Appointment in the department
1	Mr. Param Hans Ram, B.Sc.(Hons) & LLB	Technical Superintendent	15.12.2008
2	Mr. Prakash Narayan Pandey, Post Graduate	Technical Superintendent	22.12.1990
3	Mr. Sundip Kumar, Intermediate (Science)	Jr. Tech. Superintendent	26.02.2007
4	Mr. Rajesh Kumar, Intermediate (Science)	Senior Technician	06.08.2008
5	Mr. Jagdish Kumar, B.Sc.(Hons)	Senior Technician	06.08.2008
6	Mr. Pooran Singh Rana, Intermediate (Science)	Senior Technician	25.07.2014
7	Mr. Chhote Lal, High School	Senior Technician	25.07.2014
8	Ms. Anshu Kaushal, M.Sc. (Computer Science)	Junior Assistant	20.05.2017
9	Mr. Rambish Gond, M.A (Sociology)	Junior Assistant	07.06.2017
10	Mr. Lakhan Chand Jana, (9 <sup>th</sup> Pass)	Ex. Peon	24.06.2000
11	Mr. Amit Anand Singh, B.A. (Hons), B. Lib. I. Sc. & M. Lib. I. Sc.	Care Taker Cum-Clerk	02.08.2017
12	Mr. Niraj Kumar, Intermediate	MTS	19.01.2017

## (3.C) Short-term courses/workshops/seminars/symposia/conferences organised by faculty members

S. No.	Cordinator	Title	Period
1	Prof. Yogesh Chandra Sharma	26th International Conference of international academy of physical sciences (CONIAPS XXVI) on Advances in Chemistry & Chemical Technology	December 18-20, 2020 (online),
2	Prof. Yogesh Chandra Sharma	Online AICTE Approved Quality Improvement Program-Short Term Course, Bio energy: A Hope for Future for Global Energy Security	March 01-06, 2021





S. No.	Name of Faculty Member	Title	Period and Venue
Seminars	/Symposia/Conferences		
1	Prof. Yogesh Chandra. Sharma	One Day Webinar on "Contemporary Environmental Issues: Concepts, Tools and Practices", 24thJuly 2020. Nanoadsorbents: the wonderful materials for water remediation	24 July 2020, SVNIT Jaipur
		TEQIP-III Sponsored ONLINE FACULTY DEVELOPMENT PROGRAM (FDP), "Interdisciplinary Approaches to Promote Sustainability Using Green Technologies (IASGT-2020)", "Renewable Energy: The future of Global Energy Security	September 16-20, 2020. University College of Engineering & Technology, Bikaner,
		School of physical and Decision Sciences,	27-29 September 2020. Babasaheb Bhimrao Ambedkar Universit, Lucknow,
2	Dr. Pandeeswar Makam	Conference, 8th Indian Peptide Symposium, 2021 (IPS-2021)	March 24 - 26, 2021, held virtually at Indian Institute of Science, Bangalore
3	Dr. Rosy	Presented a lecture titled "Electrochemical Energy Storage: An inevitable system to establish synergism between renewables and efficiency." In Online AICTE Approved Quality Improvement Program-Short Term Course on "Bioenergy: A Hope for Future for Global Energy	01 – 06 March 2021
Meetings			
1	Prof. Yogesh Chandra Sharma	AICTE sponsored STP on "Bioenergy: A Hope for Future for Global Energy Security",	March 01-06, 2021. IIT BHU, Varanasi

# (3.D) Short-term courses/workshops/seminars/symposia/conferences/training programmes attended by faculty members in academic institutions and public sector undertakings

**(3.E) Special lectures delivered by faculty members in other institutions** (From 1st April 202- to 31st March 2021)

S. No.	Name of faculty Member	Topic of Lecture	Institution	Date
1	Prof. Yogesh Chandra Sharma	"Nanoadsorbents: the wonderful materials for water remediation", at One Day Webinar on "Contemporary Environmental Issues: Concepts, Tools and Practices",.	NIT Jaipur	24thJuly 2020
		Guest Speaker at TEQIP-III Sponsored ONLINE FACULTY DEVELOPMENT PROGRAM (FDP), "Interdisciplinary Approaches to Promote Sustainability Using Green Technologies (IASGT-2020)", "Renewable Energy: The future of Global Energy Security	University College of Engineering & Technology, Bikaner	September 16-20, 2020.





— Indian Institute of Technology (BHU) Varanasi

S. No.	Name of faculty Member	Topic of Lecture	Institution	Date
		Nanofluids: Application in water remediation	School of physical and Decision Sciences, Babasaheb Bhimrao Ambedkar Universit, Lucknow,	27-29 September 2020.
		Invited lecture at the International Conference, 'Nano adsorbents for purification of drinking water'	'Molecules to Materials, MTM - 2020', SVNIT Surat	17th – 18th Dec. 2020
		Delivered invited lecture on the topic "Wind Energy: the clean renewable energy' at the AICTE sponsored STP on "Bioenergy: A Hope for Future for Global Energy Security",	Department of Chemistry, IIT BHU Varanasi,	March 01-06, 2021.
2	Dr. Indrajit Sinha	Keynote lecture entitled, "Computational and experimental studies on interfacial phenomena"	Webinar on "Recent contributions of chemical science to modern society" organized by Govt. Girls P.G. college Satna [M.P.] and AKS University, Satna [M.P.]	2 <sup>nd</sup> March 2021.
3	Dr. V. Ramanathan	Indian Contribution to Chemistry	TIFR	Nov 4, 2020
4	Dr. Pandeeswar Makam	Lecture title: Single amino acid nanozymes shining light on the prebiotic catalyst	8th Indian Peptide Symposium, 2021 (IPS-2021), held virtually at Indian Institute of Science, Bangalore	March 25, 2021

## (3.F) Visits abroad by faculty members

S. No.	Name of Faculty Member	Country Visited	Date of Leaving india	Date of Returning India	Purpose of Visit	Funding from
1	Nil	Nil	Nil	Nil	Nil	Nil

## (3.G) Honours and awards

S. No.	Name of Faculty Member	Details of Award	
1	Prof. Yogesh Chandra Sharma	Was elected Board member for three years (2021-2023) of the prestigious	
	-	"Biotech Research Society of India(BRSI), March 2021	

#### (3.H) Fellowships of academic and professional societies (From 1st April 2019 to 31st March 2020)

S. No.	Name of Faculty Member	Details of Fellowship		
1	Prof. Yogesh Chandra Sharma	Fellow, International Society of Energy & Environmental Sciences (ISEES), Dec 2020		
2	Dr. Samya Banerjee	INSPIRE Faculty Fellowship from DST, Government of India [DST/ INSPIRE/04/2019/000492]		





S. No.	Name of Author/ Co- Author	Title	Publisher
1	Prof. Yogesh Chandra Sharma	Alternative Fuels and their Utilization Strategies in Internal Combustion Engines", ISSN 2522-8366, ISBN 978-981-15-0417-4,	Springer Nature Singapore Pte. Ltd. 2020 (Dec 2020)
2	Avishek Saha, <b>Arindam Indra</b>	Nanomaterials for Solar Hydrogen Production by photo electrochemical Water Splitting: Theory, Practice and Materials Advances	Springer
3	<b>Arindam Indra</b> and Prashanth W. Menezes	Nanomaterials for Sustainable Energy and Environmental Remediation from	Elsevier

## (3.I) Books, monographs authored/co-authored

## (3.J) Editorial boards of journals

S. No.	Name of Faculty Member	Position (Editor/ member)	Name of Journal
1	Prof. Yogesh Chandra Sharma	Editorial Board Member	Energy Conversion (Elsevier)
		Editorial Board Member	Indian Journal of Chemical Technology, IJCT, NISCAIR, India
		Associate Editor	Sadhna, Springer
2	Dr. V. Ramanathan	Guest Editor	Proceedings of Indian National Science Academy

## 4. Design and Development Activities

## (4.A) New facilities added

S. No.	Details (Infrastructure, Equipments, etc.)	Value (in Lakhs of Rupees)
1	Nordson Precision Dispensor	24 lakh

## (4.B) Patents filed

S. No.	Name of Faculty Member	Title of Patent
1	Prof. Yogesh Chandra Sharma	Removal Of Chromium And Orange G From Aqueous Solutions Using Nano Crystalline Zirconia As An Adsorbent; Tempe-1/12426/2021-Del
		A Process Of Making A New Green Nano adsorbent For The Removal Of A Hazardous Cationic Dye (Methylene Blue) From Aqueous Solutions; Tempe-1/12201/2021-Del
2	Prof P C Pandey, Indian Patent no. 202011014527	A process on amine functionalized alkoxysilane derived silver nanoparticles spray as potential antibacterial and antiviral agent
3	Prof P C Pandey, Indian Patent no. 202011028801	A process for making metal hexacyanoferrate nanoparticles modified screen printed electrode for selective recognition of caesium ion and arsenic (III) and thereafter removal of the same
4	Prof P C Pandey, Indian Patent no. 202011041905	A process on amine functionalized noble metal nanoparticles mediated non- enzymatic sensing of clinically significant analyst using resonance Rayleigh scattering spectroscopy
5	Prof P C Pandey, Indian Patent no. 202011051899	A process for making functional nanoparticles for selective sensing of hydrazine resonance based on Rayleigh scattering spectroscopy and selective deco position of the same for hydrogen evolution





## (4.C) Patents Granted

S. No.	Name of Faculty Member	Title of Patent
1	Prof P C Pandey, Indian Patent no. 335722	A process on organic hydroperoxide mediated synthesis of noble metal nanoparticles, bimetallic nanoparticles and Prussian blue nanoparticles therefrom
2	Prof P C Pandey, Indian Patent no. 340262	A process for polyethylenimine and organic reducing agent mediated synthesis of noble metal nanoparticles and Prussian blue nanoparticles therefrom/
3	Prof P C Pandey, Indian Patent no. 341050	A process for making porous silica beads encapsulated functionalized palladium nanocrystallitefor hydrogen evolution therefrom
4	Prof P C Pandey, Indian Patent no. 343403	A process for making self-assembled siloxane-polyindole-gold nanoparticles
5	Prof P C Pandey, Indian Patent no. 343222	A process for polyethylenimine and organic reducing agent mediated synthetic insertion of gold nanoparticles within mesoporous slica nanoparticles and their biomedical application.
6	Prof P C Pandey, Indian Patent no. 361156	A process for making improved glucose sensor strips and glucose biosensor therefrom .

## 5. Research and Consultancy

## (5.A) Sponsored research projects (Ongoing only)

S. No.	Title	Period	Funding Agency	Amount (in lakhs of Rs.)	Co- ordinator
1	Development of magnetically recyclable visible light photocatalysts for H <sub>2</sub> O <sub>2</sub> production.	23 <sup>rd</sup> August 2019-2022	Sanction Letter No. 58/14/18/2019-BRNS	Rs. 34.05	Principal Investigator Dr. Indrajit Sinha
2	"Photolabile Protected Monosaccharides: Synthesis and Application to Oligosaccharides Synthesis Using a Continuous Flow Photoreactor	2016-2021	Indo-German DST-MPI	Rs. 95.00	Dr. Jeyakumar kandasamy
3	Design, Synthesis and Biological Evaluation of O-and C-Derivatives of Phenylethanoid Glycosides as a Multi- targeting Neuroprotective Disease Modifying Agents for Alzheimer's Disease	2020-2023	SERB-DST	Rs. 48.07264	Dr. Jeyakumar kandasamy
4	Noble Metal-free Oxygen Evolution Catalyst for Electrochemical Water Oxidation & Metal-Air Battery	11/11/2019- 11/11/2021	SERB	Rs. 25,00,000/-	Dr. Asha Gupta
5	Promoting water oxidation reaction with electrochemically synthesized ultrathin layered double hydroxide nanosheets	2 years	DST-SERB	Rs. 26,51,000/-	Dr. Arindam Indra
6	Development of transition metal based nanocatalysts for bio- inspired water splitting	3 years	CSIR	Rs. 16,00,000/-	Dr. Arindam Indra





S. No.	Title	Period	Funding Agency	Amount (in lakhs of Rs.)	Co- ordinator
7	Development of photo-activated transfer hydrogenation catalysis for next generation cancer therapy	January 2021- December 2025	DST, Government of India [DST/INSPIRE /04/2019/000492]	Rs. 35 lakhs	Dr. Samya Banerjee

## (5.B) Industrial consultancy projects (Ongoing only)

S. No.	Name of Faculty Member	Title	Industry	Amount (in lakhs of Rs.)
1	Nil	Nil	Nil	Nil

#### (5.C) Faculty members' participation with other universities under MoUs (Ongoing only)

- Agreement for Academic Cooperation between University of Porto, Porto, Portugal and Indian Institute of Technology (Banaras Hindu University), Varanasi, India, Signed in January 2020. Coordinator: Dr. Indrajit Sinha
- Agreement for Academic Cooperation between The Institute of Inorganic Chemistry, University of Cologne, Cologne, Germany and Indian Institute of Technology (Banaras Hindu University), Varanasi, India, Signed in August 2017. Coordinator: Dr. Indrajit Sinha

#### (5.D) Research Publications

S. No.		No.
1	Total Number of Papers Published in Refereed National Journals	1
2	Total Number of Papers Published in Refereed International Journals	108
3	Total Number of Papers Presented in National Conferences	NIL
4	Total Number of Papers Presented in International Conferences	NIL

## (5.E) Refereed International Journals

- P C Pandey, G. Pandey and Roger J. Narayan, Microneedle-based transdermal electrochemical biosensors based on Prussian blue-gold nanohybrid modified screen printed electrodes, J Biomed Mater Res. 2021;109:33–49, DOI: 10.1002/jbm.b.34678. 10 (cxlv)
- 2. **P C Pandey,** G. Pandey and Roger J. Narayan Solid-state ion sensor for on-chip determination of potassium ion in body fluid, Med Devices Sens. 2020;00: e10110, https://doi.org/10.1002/mds3.10110. (cxlvi)
- A. K Tiwari, G. Pandey, M. Gupta, Roger J. Narayan. P C Pandey. Molecular weight of polyethyleniminedependent transfusion and selective antimicrobial activity of functional silver nanoparticles, Journal of Materials Research, 35 (2020)2405- 2415, DOI: 10.1557/jmr.2020.183. (cxlvii)
- 4. **P C Pandey,** S. Shukla, G. Pandey and Roger J. Narayan Organotrialkoxysilane-mediated controlled synthesis of noble metal nanoparticles and their impact on selective fluorescence enhancement and quenching, J. Vac. Sci. Technol. B 38, 052801 (2020); https://doi.org/10.1116/6.0000334. (cxlviii)
- P C Pandey, N. Katiyal, G. Pandey and Roger J. Narayan Synthesis of self-assembled siloxane- polyindolegold nanoparticle polymeric nanofluid for biomedical membranes, MRS Communications 10, 482–486 (2020). https://doi.org/10.1557/mrc.2020.50. (cxlix)
- P C Pandey, A. K. Tiwari, G. Pandey and Roger J. Narayan Effect of the Organic Functionality on the Synthesis and Antimicrobial Activity of Silver Nanoparticles, Nano LIFE 10, No. 3 (2020) 2050002, DOI: 10.1142/S1793984420500026. (cl)





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- 9. **P C Pandey,** G. Pandey and Roger J. Narayan.Polyethylenimine-mediated controlled synthesis of Prussian blue-gold nanohybrids for biomedical applications. (cliii)
- P C Pandey, P. Pandey Synthesis and Applications of Processable Prussian Blue Nanoparticles. Nanoarchitectonics [Internet]. 2020Jul.17 [cited 2021May13];2(1):1-17. Available from: http://ojs. wiserpub.com/index.php/NAT/article/view/443 (cliv)
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- 12. **P C Pandey,** G. Pandey and Roger J. Narayan. Nanostructured diamond for biomedical applications, Nanotechnology 32 (2021) 132001(22pp),
- P C Pandey, M.D.Mitra, A.K Pandey and R. J. Narayan. Organotrialkoxysilane Mediated Rapid and Controlled Synthesis Metal Nanoparticles in Both Homogeneous and Heterogeneous Phase and Their Catalytic Applications, MRS Advances 6, 43–53 (2021). https://doi.org/10.1557/s43580-021-00011-6
- P C Pandey, M.D.Mitra, S. Shukla and R. J. Narayan Organotrialkoxysilane-Functionalized Noble Metal Monometallic, Bimetallic, and Trimetallic Nanoparticle Mediated Non-Enzymatic Sensing of Glucose by Resonance Rayleigh Scattering. Biosensors 2021, 11, 122. https://doi.org/10.1557/s43580-021-00011-6
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- 85. Singh B. and **Indra A.** (2020) Surface and interface engineering in transition metal-based catalysts for electrochemical water oxidation. Materials Today Chemistry 16: 100239. **(Invited paper)**
- 86. Singh B. and **Indra A.** (2020) Prussian blue-and Prussian blue analogue-derived materials: progress and prospects for electrochemical energy conversion. Materials Today Energy 16: 100404.
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- 106. **S. Banerjee**<sup>\*</sup>, Polypyridyl Ruthenium(II) Complexes with Red-Shifted Absorption: New Promises in Photodynamic Therapy, *ChemBioChem*, 2021, doi.org/10.1002/cbic.202100102
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108. Shira Haber, **Rosy**, Arka Saha, Olga Brontvein, Raanan Carmieli, Arava Zohar, Malachi Noked, and Michal Leskes, Structure and Functionality of an Alkylated LixSiyOz Interphase for High-Energy Cathodes from DNP-ssNMR Spectroscopy, J. Am. Chem. Soc. 2021, 143, 12, 4694–4704 (Impact Factor: 14.695; ISSN: 1520-5126)

## (5.F) Refereed National Journal

1. **V Ramanathan** and R Venketeswara **Pai (2020)** Decoding the Miscoded Raga Names in Carnatic Music. Proceedings of Indian National Science Academy 86(3): 1135-1138

## (5.G) Proceedings of International Conferences

Nil

## (5.H) Proceedings of National Conferences

Nil

(5.I) Kindly Provide Brief Details of 5 Articles from the Department/School with maximum no. of Citations in last 5 years

Nil

## (5.J) Distinguished Visitors

S. No.	Name of the visitor & Designation	Date of Visit	Purpose of Visit
1	Nil	Nil	Nil

## 6. Other activities

## (6.A) International collaboration/achievements by the Department/School

Nil

## (6.B) Indian Faculty visits in the Department/School/School (1st April 2020 to 31st March 2021)

S. No.	Name of Faculty Member	Purpose of Visit	Date and Venue
1	Nil	Nil	Nil

## (6.C) Foreign Faculty Visits in the Department/School/School

S. No.	Name of Faculty Member	Purpose of Visit	Date and Venue
1	Nil	Nil	Nil

#### (6.D) Foreign Students Visits in the Department/School/School

S. No.	Name of Faculty Member	Purpose of Visit	Date and Venue
1	Nil	Nil	Nil

## 7. Any other Information

Nil





## 22. Department of Mathematical Sciences

#### Year of Establishment: 1985

#### Head/Coordinator of the Department/School: Prof. Tanmoy Som w.e.f. 04/11/2018

## 1. Brief Introduction of the Department/School:

Department of Mathematical Sciences began its journey in the year 1968 as a section to assist engineering departments of the institute which, in the true sense, pioneered engineering education in the nation. It soon acquired the status of a full-fledged department in 1985. The department caters to the needs of the undergraduate as well as post-graduate students of the Institute. It runs a five years' Integrated Dual Degree program in Mathematics & Computing since 2005. This is one of the most sought courses offered by the institute. The top jobs in terms of the annual package by reputed MNCs are offered to the students for this course which indicates the popularity and usefulness of the course for the industrial growth in general and software industry, in particular, under present circumstances.

The department aims to emphasize research in analysis, algebra, topology, number theory, mathematical modelling, and other applied areas of mathematics. Be it functional analysis, algebra, numerical optimization, harmonic analysis, fracture mechanics, solid mechanics, fluid dynamics, heat and mass transfer, biomathematics, digital image processing, graph theory, parallel computing, queuing theory and many more fields of applied nature, the department's contribution is enormous in terms of numerous research papers published in reputed international journals over the past few decades. Computing is the glamour of the department. It annexes several dimensions in terms of new and growing areas of research and further facilitates the simulation of mathematical models constructed for interdisciplinary areas.

#### **Major areas of Research**

Functional Analysis, Fuzzy & Rough Set Theory, Soft Computing, Fuzzy Topology, Number Theory, Modular Forms, Heat and Mass Transfer, Mathematical Modelling, Nonlinear Waves, Nonlinear Dynamics, Pseudo-Differential Operators, Wavelet Analysis and Distribution Theory, Fractional Calculus, Numerical analysis, Parallel Computing, Theoretical & Numerical Optimization, Harmonic analysis, Differential geometry, Mathematical modeling on Solid Mechanics, Fracture Mechanics, Coupled Thermomechanics, Bio-Transport Processes, Biomechanics, Free Boundary Problems, Fluid dynamics, Image Processing, Graph Theory and Network Sciences, Queuing theory.

## Area of the Department/School (in square meters):

1- New Building = 1080 Sq-meter

## 2- Old Building = 585 Sq-meter

#### Infrastructure

S. No.	Particulars	Number
1	No. of Classrooms	04
2	No. of Lecture Halls/Seminar Halls	02
3	No. of Laboratory(Computer Labs)	02
4	Students Reading Room	01
5	Research Labs (including Mathematical Modelling Lab)	03
6	No. of Computers available for students in the Department	80





## Unique Achievement / Preposition of the Department/School

The department has major goal to become a Centre of Excellence in teaching, learning and quality oriented research in Mathematical Sciences so that it can contribute to the development of the nation and take the department to a greater height and make it recognized globally through fundamental research work in mathematics.

#### Major achievement of the department includes

- Commencement of Integrated five year post graduate program since 2005.
- Many IDD students are offered top jobs with the highest packages in the institute by MNCs.
- Many Ph.D. alumni have served/been serving organizations/Institutes of National Importance.
- Department was awarded the Special Assistance Program (SAP) in 2010 by UGC.
- Two faculties have been elected Fellow of Royal Astronomical Society, London.
- Some IMD alumni have gone to prestigious universities in the US for higher studies.
- One alumni of the Department has received FNA, FNASc.
- More than 320 Ph. D.'s are produced by the department.
- Department has published more that 400 research papers in reputed national/international journals in the last five years.

## 2. Academic Programmes offered

- Integrated Dual Degree in Mathematics and Computing
- Ph.D.

#### **Students on Roll**

(Please give No. of students only in respective years)

S. No.	Programme	I Year	II Year	III Year	IV Year	V Year & above
1.	Dual Degree	52	48	23	22	22
2.	Ph. D (Under Institute Fellowship)	4	14	19	3	5
3.	Ph. D (Under Project Fellowship)	0	3	1	0	1
4.	Ph. D (Under Sponsored Category)	12	9	24	20	12
5.	Ph.D.(Part time)	0	3	1	1	0

## Names of students/scholars who attended conferences/workshops/seminars and symposia abroad or in India

S. No.	Name of Student	Roll No.	Conference/Seminar/ Symposia/Workshop	Date & Venue	Financial Assistance From
ÌNDIA					
1	Shiv Kumar	17121501	Online workshop on Numerical Linear Algebra	Aug 31-Sept 05, 2020, Assam Univ.	None
2	Shiv Kumar	17121501	Online workshop on Algebraic Number Theory	Sept 19-25, 2020, Assam University	None
3	Shiv Kumar	17121501	One week online workshop on Algebra and Optimization 2020	November 23-27, 2020, NIT-Nagaland	None
4	Kaushal Gupta	18121522	International webinar on recent developments in number theory	August 17-20, KIIT, Bhubneshwar	None





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S. No.	Name of Student	Roll No.	Conference/Seminar/ Symposia/Workshop	Date & Venue	Financial Assistance From
5	Kaushal Gupta	18121522	International workshop on Recent trends in Applied Mathematics and research Methodology	March 4-5, 2021, Govt MGMPG College Itarsi	None
6	Pradeep Rai	19121005	Webinar on Recent Trends in Cryptography	May 23, 2020, Easwari Engg. College	None
7	Pradeep Rai	19121005	National Webinar on Python Programming and Computer Vision	May 25-26, 2020, Holkar Science College, Indore	None
8	Pradeep Rai	19121005	International webinar on MATLAB Applications in Sciences and Engineering	May 29, 2020, Baba Farid College	None
9	Pradeep Rai	19121005	National Workshop on Analysis and Linear Algebra	July 23-24, 2020, DHSK College, Dibrugarh	None
10	Pradeep Rai	19121005	Online workshop on Algebraic Number Theory	Aug 31-Sept 05, 2020, Assam Univ.	None
11	Pooja Gupta	16121501	International Conference on Mathematical Sciences and Computational Intelligence	December 21-22, 2020, Shri Mata Vaishno Devi University Katra,	None
12	Pooja Gupta	16121501	2nd International Conference on Mathematical Modeling, Computational Intelligence Techniques and Renewable Energy	February 06-08, 2021, PDPU, Gandhinagar	None
13	Shweta	19121009	An Introductory Course on Fluid Dynamics	August 17-20 and 24-28, 2020, CHRIST Bangalore	None
14	Shweta	19121009	Web Workshop on Metric Space	July 18-31, 2020, Kaushambi, U.P.	None
15	Abhay Rajpoot	17121013	Virtual Workshop on Domination Theory & Topological Indices	February 4-6,2020, Mangalore University	None
16	Abhay Rajpoot	17121013	Virtual International Conference on Discrete Mathematics-2020	February 8-10, 2020, Mangalore University	None
17	Abhay Rajpoot	17121013	International Conference on Graph Connection	August 6-8, 2020, Bishop Chulaparamb -il Memorial College, Kottayam	None
18	Abhay Rajpoot	17121013	International Workshop on Recent Trends in Applied Mathematics and Research Methodology	March 04-05, 2021, Govt. MGM PG College, Itarsi	None
19	Jesmina Pervin	18121018	International Conference on graph connections	August 6-8, 2020, Bishop Chulaparamb -il Memorial College, Kottayam	None
20	Jesmina Pervin	18121018	Short term course on Matrix Analysis and its Application	September 23-27, 2020, NIT Jalandhar	None
21	Jsmina Pervin	18121018	Symposium in Mathematics (pi-day)	March 14, 2021 IIT(BHU), Varanasi	None



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S. No.	Name of Student	Roll No.	Conference/Seminar/ Symposia/Workshop	Date & Venue	Financial Assistance From
22	Ajay Kumar	17121008	Two day online national seminar on Recent Research Topics in Mathematics	May 28-29, 2020, Auxilium College, Vellore	None
23	Ajay Kumar	17121008	Online Quiz on Graph Theory	June 05-06, 2020, Govt. Arts College, Melur	None
24	Nikhil Srivastava	18121007	International Workshop on Recent Trends in Applied Mathematics and Research Methodology	Mar 04-05, 2021, Govt. MGM PG College Itarasi	None
25	Nikhil Srivastava	18121007	Workshop on Advanced Numerical Techniques in Science and Engineering	Feb. 26-28, 2021 PDPU Gandhinagar	None
26	Nikhil Srivastava	18121007	International workshop on Numerical And Analytical TechniquesIn Engineering Problems	Nov. 12-13, 2020 SRM Institute of Science and Technology, Chennai	None
27	Pankhuri Jain	18121023	International conference FMAACM 2021	Feb17-19,2021PondicherryUniv.& presented a paper"Intuitionisticfuzzyrough set model basedon k-means and itsapplication to enhanceprediction of aptamer-protein interacting pairs"	None
28	Pankhuri Jain	18121023	Short term course organised by DST funded I-DAPT HUB FOUNDATION, IIT (BHU)	March 15-19, 2021, online	None
29	Pankhuri Jain	18121023	International conference on Computational Management Webinar organised by IRNet and IIMT	Dec 19, 2020, online also presented paper Improving Financial Bankruptcy Prediction Using Oversampling Followed by Fuzzy Rough Feature Selection via Evolutionary Search	None
30	Priyanka Rajput	19121014	International workshop on Numerical And Analytical Techniques in Engineering Problems	Nov. 12-13, 2020 SRM Institute of Science and Technology, Chennai	None
31	Deeksha Singh	18121516	Online International Symposium on Recent Trends in Differential Equations: Theory, Computation and Application	March 19-22, 2021, IIT Kanpur	None
32	Eti Goel	19121012	Differential Equations: Solution Techniques and Applications	September 7-12,2020, IIT Guwahati	None
33	Eti Goel	19121012	Training Program on Latex Learning	June 06-08, 2020 P Kalika Maths Team	None





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S. No.	Name of Student	Roll No.	Conference/Seminar/ Symposia/Workshop	Date & Venue	Financial Assistance From
34	Eti Goel	19121012	National Level five day program on Scilab	June 15-19,2020 St. Peters Engg college	None
35	Eti Goel	19121012	Symosium in Mathematics	March 14, 2021 Dept of Mathematical, IIT (BHU), Varanasi	None
36	Lipi Jain	19121505	Webinar on Modelling and Simulation	December 22, 2020, HBTU, Kanpur	None
37	Lipi Jain	19121505	DETAAMP-2021	Feb 26-27, 2020, BHU, Varanasi	None
38	Lipi Jain	19121505	International Workshop on Recent Trends in Applied Mathematics and Research Methodology	March 04-05,2021, MGM PG College, Itarsi	None
39	Lipi Jain	19121505	Annual Conference 2020- 2021 Indian Women and Mathematics	March 27-28,2021, IIT Dharwad	None
40	Lipi Jain	19121505	Symposium in Mathematics	March 14, 2021, IIT (BHU), Varanasi	None
41	Priti Lata	20121508	International Workshop on Cryptography and Coding Theory	March 8-12, 2021, held online	None
42	Aakansha	18121016	International Workshop on Recent Trends in Applied Mathematics and Research Methodology	Nov. 12-13, 2020 SRM Institute of Science and Technology, Chennai	None
43	Aakansha	18121016	International workshop on Numerical And Analytical Techniques In Engineering Problems	Aug 10-14, 2020 Manipal University, Jairpur	None
44	Ashutosh Upadhayay	18121514	Five Says e-Workshop on Stochastic Modelling, Optimization and soft Computing	Aug 10-14, 2020 Manipal University, Jairpur	None
45	Ashutosh Upadhayay	18121514	Symposium in Mathematics	March 14, 2021, IIT (BHU), Varanasi	None
46	Ashutosh Upadhayay	18121514	International Workshop on Recent Trends in Applied Mathematics and Research Methodology	March 04-05,2021, MGM PG College, Itarsi	None
47	Ashutosh Upadhayay	18121514	Virtual International Conference on Soft Computing, Optimization Theory and Applications	March 26-27, Birla Institute of Technology, Mesra	None
48	Sunny Singh	18121504	International Workshop on Recent Trends in Applied Mathematics and Research Methodology	March 04-05,2021, MGM PG College, Itarsi	None



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S. No.	Name of Student	Roll No.	Conference/Seminar/ Symposia/Workshop	Date & Venue	Financial Assistance From
49	Sunny Singh	18121504	Workshop on Differential Equations: Theory, Analysis and Application with Matlab Programming	Feb 26-27,2021, BHU, Varanasi	None
50	Harshita Tiwari	17121006	26th International Conference of the International Academy of Physical Sciences on Advances in Topology and Differential Geometry	Dec 18-20, 2020, Guru Ghasidas University, Bilaspur	None
51	Harshita Tiwari	17121006	2nd International Conference on Mathematical Modeling, Computational Intelligence Techniques and Renewable Energy	February 06 - 08, 2021, Pandit Deendayal Petro- leum Univ., Gandhinagar	None
52	Harshita Tiwari	17121006	Online Two Days International Conference on Mathematical Sciences and Computational Intelligence	Dec 21-22, 2020, Shri Mata Vaishno Devi University Katra	None
53	Ritika Singh	19121008	NCM Virtual Annual Foundation School-I (VAFS-I)	April 28- May 31, 2020, SGGSIE&T, Nanded	None
54	Ritika Singh	19121008	TIMC Summer School on Mathematics	Jun 12-Jul12, 2020, Kalna College	None
55	Ritika Singh	19121008	Virtual Math Fest 2020	July 20-26, 2020, India	None
56	Ritika Singh	19121008	India International Science Festival 2020	December 22-25, 2020, India	None
57	Umesh Kumar	18121014	International Workshop on Recent Trends in Applied Mathematics and Research Methodology	March 04-05,2021, MGM PG College, Itarsi	None
58	Umesh Kumar	18121014	Workshop on Differential Equations: Theory, Analysis and Application with Matlab Programming	Feb 26-27,2021, BHU, Varanasi	None
59	Anshika Tanwar	19121502	Online Summer School-2020 on Mathematics	June 27- 06 July 2020, Presidency University Kolkata	None
60	Anshika Tanwar	19121502	One week online workshop on Learn Latex for research using Overleaf	August 24-30, 2020, Overleaf Advisor programme	None
61	Anshika Tanwar	19121502	One Day International webinar on MATLAB Applications in Sciences and Engineering	May 29, 2020, Baba Farid College	None
1	Pankhuri Jain	18121023	25th International Information Technology Conference IT 2021	February 17-19, 2021 in Žabljak (held online)	None



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S. No.	Name of Student	Roll No.	Conference/Seminar/ Symposia/Workshop	Date & Venue	Financial Assistance From
2	Ritika Singh	19121008	First Virtual European Summer School (VESS1)	July 6-31, 2020, ESIS, Italy	None

## Names of Students/Scholars who went for foreign Internship

Note: Individual faculty members should provide the data

S. No.	Name of Student	Roll No.	Name of the Organization	Place of Internship	Country	Duration
1	Akash Aggarwal	15123001	BISITE group University of Salamanca	Salamanca	Spain	April 2020
2	Phanideep Ghampa	15123004	University of Montreal	Montreal	Canada	April to May 2020
3	Rajat Mittal	15123014	Nanyang Technological University	Singapore	Singapore	April 2020

## 3. Faculty & their Activity

## Faculty and their areas of specialisation

<b>S. No.</b>	Name, Qualifications, Employee No.	Date of award of Ph D Degree	Major Areas of Specialization (Max. 3 Areas)
PROFESSORS			
1	Tanmoy Som, Ph. D. Emp. No. 18386	1986	Functional Analysis, Mathematical Modelling, Fuzzy- Rough Set Theory, Soft Computing & Image/Data Processing
2	R Srivastava, Ph.D. Emp. No.13662	1984	Fuzzy Topology
3	L P Singh, Ph.D. Emp. No.17162	1987	Nonlinear Waves, Hyperbolic Partial Differential Equations, Computational Fluid Dynamics
4	S K Pandey, Ph.D., Emp. No. 17315	1998	Biomechanics, Viscous Fluid Dynamics, Graph Theory, Digital Image Processing
5	S Mukhopadhyay, Ph.D., Emp. No. 17180	1998	Mathematical Modelling on Coupled Thermomechanical problems, Non-Fourier Heat Conduction, Fractional order Thermoelasticity.
6	Subir Das, Ph.D. Emp. No.18373	1999	Fracture Mechanics, Mathematical Modelling, Nonlinear Dynamics
7	S K Upadhyay, Ph.D. Emp. No 18409	1993	Wavelet Analysis, Distribution Theory, Pseudo- Differential Operator
8	Murali Krishna Vemuri, Ph.D. Emp. No.50167	1997	Harmonic Analysis, Differential Geometry.
ASSOCIATE PR	OFESSORS		
1	Ashok Ji Gupta, Ph.D. Emp. No17179	2003	Theory of Rings and Modules
2	Rajeev, Ph.D. Emp. No. 17745	2009	Moving Boundary Problems
3	Vineet Kumar Singh, Ph.D. Emp. No.19772	2009	Numerical Methods for integral and Differential Equations, Wavelets, Operational Matrix Schemes
4	Rajesh Kumar Pandey, Ph.D Emp. No.19846	2009	Numerical Methods for Integro-differential equations; Image Processing



<b>S</b> . No.	Name, Qualifications, Employee No.	Date of award of Ph D Degree	Major Areas of Specialization (Max. 3 Areas)
ASSISTANT P	PROFESSORS		
1	Anuradha Banerjee, Ph.D. Emp. No. 19773	2012	Stochastic Modelling in Queuing Theory
2	Sunil Kumar, Ph.D. Emp. No. 50069	2012	Numerical analysis, Image Processing, Artificial Intelligence
3	Debdas Ghosh, Ph.D Emp. No.50068	2014	Multiobjective Optimization, Interval Optimization, Fuzzy Geometry
4	Lavanya Selvaganesh, PhD, Emp. No. 50070	2008	Graph Theory, Network Sciences, Analysis of Complex Networks
5	Dr. Abhash Kumar Jha, Ph.D., Emp. No. 50242	2017	Number Theory, Elliptic and Siegel modular forms.
Visiting Facu	ılty		
1		2018	Applied Probability
DST INSPIRE	Faculty		

## Technical and Non-Teaching Staff

Sl. No.	Name, Qualifications	Designation, Employee No.	Date of Appointment in the department
1	Shri. Som Deo Keshari B.Com (Hons), M.Lib.I.Sc.	Junior Assistant	24.05.2017
2	Shri. Anil Kumar Mishra B.A.	Junior Technical Superintendent	19.02.2007
3	Dr. Piush Kumar Singh Ph.D.(Mathematics)	Senior Tech.	06.08.2008
4	Shri. Amod Kumar Patel B.Tech (Mechanical)	Office Assistant	30.05.2014
5	Pintu Kumar Mahto	MTS	13.04.2018

## Short-term courses/workshops/seminars/symposia/conferences organised by faculty members

S. No.	Coordinator	Title	Period
1	Dr. Abhash Kumar Jha, Prof. T Som, Dr. Lavanya Selvaganesh	International Conference on Number Theory and Algebra	December 22-23, 2020 (on the occasion of National Mathematics Day)
2	Prof. T. Som and Dr. Abhash Kumar Jha	Pi-Day Symposium	March 14, 2021 (on the occasion of International Mathematics Day)
3	Dr. Lavanya Selvaganesh, Member, Organizing Committee. (Institute event)	One day workshop on Role of Teachers in National Education Policy (NEP 2020)	March 16 2021.




# Short-term courses/workshops/seminars/symposia/conferences/training programmes attended by faculty members in academic institutions and public sector undertakings

S. No.	Name of Faculty Member	Title	Period and Venue
Semina	ars/Symposia/Conferences		
1	Dr. Abhash Kumar Jha	Virtual Math Fest 2020	July 20-26, 2020, online (IMSc.)
2	Dr. Abhash Kumar Jha	Annual Math Symposium	March 25-26, 2021 at IISER Bhopal
3	Dr. Lavanya Selvaganesh	One-day National Level webinar on Mathematics in Machine Learning	May 20, 2020, SSN College of Engineering, Chennai
4	Dr. Lavanya Selvaganesh	International Webinar on Graph Theory	August 19, 2020 Thiyagarajar College of Engg. Madurai
5	Dr. Lavanya Selvaganesh	International Conference on Number Theory and Discrete Mathematics (ICNTDM 2020)	Dec 11-14, 2020, Rajagiri School of Engineering and Technology, Kerala
6	Dr. Lavanya Selvaganesh	Virtual - International Conference on Discrete Mathematics 2021	February 8-10, 2021, Mangalore University, Karnataka
7	Dr. Lavanya Selvaganesh	Role of Teachers in National Education Policy (NEP 2020)	March 16, 2021, IIT(BHU) Varanasi
8	Dr. Lavanya Selvaganesh	Research Discussion on Graphs and Groups	March 24-25 , 2021 and March 31, 2021 , Cochin Univ. Science and Tech., Kerala
9	Dr. Lavanya Selvaganesh	Workshop on "An Insight into Mathematical Modelling in Informtion and Communication Engg.	March 26-27, 2021 SSN College of Engineering, Chennai
10	Prof. T Som	Online International Conference on Intelligent and Fuzzy Systems	July 21-23, 2020 Katip Celebi University Çiğli. Izmir, Turkey
11	Prof. T Som	International Webinar on Mathematics and Applications	Sept 25-27, 2020, The Univ. of Burdwan
12	Prof. T Som	International conference on Computational Management	Dec 19-20, 2020 IIMT, Bhubaneswar
13	Prof. T Som	International conference FMAACM 2021	Feb 17-19, 2021 Pondicherry Univ.
14	Prof. T Som	Online Short time course on Medical Image Processing	March 15-19, 2021, School of Bio-medical Engg., IIT (BHU)
15	Prof. T Som, Prof. S Mukhopadhyay, Dr. A K Jha	Online Lecture on "Mathematics Genius Srinivasa Ramanujan" by Prof. Manjul Bhargava, USA	Dec 22, 2020, Vigyan Prasar, India
Meetin	gs		
1	Prof. T Som	Council Meetings of Calcutta Mathematical Society	Calcutta Mathematical Society, Salt Lake, Kolkata

#### Special lectures delivered by faculty members in other institutions

S. No.	Name of faculty Member	Topic of Lecture	Institution	Date
1	Abhash Kumar Jha	Fourier coefficients of modular forms	TIFR Mumbai	Aug 04, 2020





S. No.	Name of faculty Member	Topic of Lecture	Institution	Date
2	Abhash Kumar Jha	Identities for partition function	IISER Bhopal	Mar 25, 2021
3	Ashok Ji Gupta	Semisimple ring (Webinar Lecture)	Ajay Kumar Garg Engg College, Ghaziabad	Sept 12, 2020
4	Debdas Ghosh	Unconstrained Optimization Techniques	NIT Andhra Pradesh	Sept 24, 2020
5	Debdas Ghosh	Nonlinear optimization	Dept. of Electrical Engg., MMMUT, Gorakhpur	Oct 20, 2020
6	Debdas Ghosh	A modern method of optimization	Vardhaman College of Engg., Hyderabad	Oct 31, 2020
7	Debdas Ghosh	Interior point methods in continuous optimization	Dept. of Mathemati -cs & Statistics, King Fahd Univ. of Petroleum and Minerals, Saudi Arabia	Nov 08, 11, 2020
8	T Som	Mathematical Modelling in General Sense	Rabindranath Tagore Univ., Bhopal	Jun 4-5, 2020
9	T Som	A Brief Survey of Fixed Point Theory with some latest results and Few Applications	Vaishnavi Institute of Technology & Science, Bhopal	Jun 12-14, 2020.
10	T Som	A Short Survey of Fixed Point Theory with Some Applications	The University of Burdwan, WB	Sept 25-27, 2020
11	T Som	Fuzzy Numbers and their few Applications	GITAM University, Visakhapatnam	Dec 23, 2020
12	Lavanya Selvaganesh	Statistical Methods for Machine Learning	SSN College of Engg., Chennai, TN	May 20 , 2020
13	Lavanya Selvaganesh	Dominator Sequences in Hypercubes and the Forcing Set Conjecture	Thiyagarajar College of Engg., Madurai, TN	Aug 19, 2020
14	Lavanya Selvaganesh	Resistance Networks and Topological Indices	Mangalore Univ., Karnataka	Feb 10, 2021
15	Lavanya Selvaganesh	Role of Algebraic Graph Theory in Network Engg. and Network Sciences	SSN College of Engg., Chennai, Tamilnadu	Mar 26, 2021
16	Santwana Mukhopadhyay	Applications of PDE in coupled thermomechanics and analysis of some heat conduction models	NIT Andhrapradesh	Jun 05&06, 2020
17	S K Pandey	Mathematical modelling	Dr SPM IIIT, Naya Raipur	Oct 01, 2020
18	S K Pandey	Introduction to Finite Element Method with special reference to Galerkin's method	Govt Women's College, Ajmer	Oct 24-28, 2020
19	S K Pandey	Fluid transport in a tube by peristaltic waves of dilating amplitude: application to hiatus hernia	Manipal University, Jaipur	Dec 18-20, 2021
20	S K Pandey	The beauty of the queen that loved unyielding principles	DIAT, Pune	Jan 29, 2021
21	S K Pandey	A mathematical model for investigating impact of hiatus hernia on swallowing	NIT, Uttarakhand	Feb 12, 2021
22	M. K. Vemuri	Inductive Algebras	University of Delaware	Oct 16, 2020
23	L. P. Singh	Hyperbolic System of Conserva- tion Laws and Weak Solutions	SVNIT Surat	Mar 08-12, 2021





S. No.	Name of faculty Member	Topic of Lecture	Institution	Date
24	L. P. Singh	Number Systems	Raja Harpal Singh, Post Graduate College	Mar 04-07, 2021
25	S.K.Upadhyay	Asymptotic Series of a General Symbol and Pseudo Differential Operators Involving the Kontor -ovich-Lebedev Transform	International Academy of Physical Sciences	Dec18-20, 2020
26	S.K.Upadhyay	Characterizations of certain Hankel transform involving Riemann–Liouville fractional derivatives	SVNIT, Surat	Dec 29-30, 2020
27	Rajesh Kumar Pandey	Fractional Calculus in Image Processing Applications	NIT Manipur	Nov 28, 2020
28	Rajesh Kumar Pandey	Fractional Calculus and its Applications	Bhilai Institute of Technology, Durg	Nov 20,2020
29	Rajesh Kumar Pandey	Fractional Calculus for Image Processing Applications	IIT Indore	Nov 17, 2020
30	Rajesh Kumar Pandey	Fractional Signal Processing for Medical Applications	IIT Indore	Nov 09, 2020
31	Rajesh Kumar Pandey	Fractional Filters for Medical Image Processing	IIT Indore	22 Oct 2020
32	Rajesh Kumar Pandey	Fractional Filters for Image Processing Applications	Jabalpur Engg. College, Jabalpur	Sept 18, 2020
33	Rajesh Kumar Pandey	Numerical Schemes for Fraction -al Isoperimetric Problems	BKBIET Pilani	Aug 23-27, 2020
34	Rajesh Kumar Pandey	Fractional Calculus and Image Denoising	JECRC, Jaipur	Aug7-9, 2020
35	Rajesh Kumar Pandey	Newly Introduced Fractional Filters for Image Denoising	VIT, Jaipur	July 27, 2020

# Visits abroad by faculty members

S. No.	Name of Faculty	Country	Date of	Date of	Purpose of	Funding
	Member	Visited	Leaving India	Returning India	Visit	from
1	M. K. Vemuri	USA	October 4, 2020	October 30, 2020	Research discussion	CPDA

# Books, monographs authored/co-authored

S. No.	Name of Author/Co- Author	Title	Publisher
1	Tanmoy Som, Shivam Shreevastava, Anoop Kumar Tiwari and Shivani Singh	Fuzzy Rough Set Theory-Based Feature Selection: A Review	John Wiley & Sons, Inc
2	Tanmoy Som, Pankaj Gautam, Avinash Dixit and D. R. Sahu	Different Techniques to Solve Monotone Inclusion Problems	John Wiley & Sons, Inc.
3	Tanmoy Som, Pankhuri Jain and Anoop Kumar Tiwari	Analysis of Credit Card Fraud Detection Using Fuzzy Rough and Intuitionistic Fuzzy Rough Feature Selection Techniques	Walter De Gruyter, Germany





S. No.	Name of Author/Co- Author	Title	Publisher
4	Tanmoy Som, Tuli Bakshi, Arindam Sinharay	Fuzzy Informative Evidence Theory & Application in Project Selection Problem	Walter De Gruyter, Germany
5	Pankhuri Jain, Anoop Kumar Tiwari, Tanmoy Som	Improving Financial Bankruptcy Prediction Using Oversampling Followed by Fuzzy Rough Feature Selection via Evolutionary Search	Springer Verlag, Germany, MOST Vol 18, 2021, doi. org/10.1007/978-3-030- 72929-5
6	P. Upadhyay, S.K. Upadhyay and K.K. Shukla	ECG Signal Denoising Using a novel solutions to the heat equations through wavelet transform	Springer

# Editorial boards of journals

S. No.	Name of Faculty Member	Position (Editor/ member)	Name of Journal
1	Prof. T. Som	Guest Editor	i) International J. of Fuzzy Computation and Modelling
		Member, Editorial Board	ii) Indian Academy of Mathematics
		Reviewer	<ul><li>i) Transactions on Fuzzy Systems</li><li>ii) Expert System &amp; Applications, AMS Math Reviews, USA and few other reputed journals</li></ul>
3	Prof. L. P. Singh	Reviewer	Many Internationally reputed Journals
4	Prof. Sanjay Kumar Pandey	Associate Editor	International Journal of Energy and Thermal Fluids
		Member, Editorial Board	ISST Journal of Mathematics and Computer Systems, Ghaziabad, INDIA
5	Prof S. Mukhopadhyay	Member, Editorial Board	Journal of Thermal Stresses Computational Methods in Science & Technology Mathematics and Mechanics of Solids
		Reviewer	AMS Math Reviews, USA and Several Internationally reputed Journals
6	Prof. S. Das	Reviewer	Many Internationally reputed Journals
7	Prof. S. K Upadhyay	Assistant Editor	Journal of Progress of Mathematics.
8.	Dr. Lavanya Selvaganesh	Reviewer	National Academy Science Letters (Physica A) Discrete Applied Mathematics (Elsevier) Transactions on Combinatorics Proceedings of the National Academy of Sciences, India Section A: Physical Sciences AMS Math Reviews, USA South East Asian Journal of Mathematics and Mathematical Sciences





## 4. Design and Development Activities

#### New facilities added

S. No.	Details (Infrastructure, Equipments, etc.)	Value (in Lakhs of Rupees)
1	Laptops -16	10.40 Lakhs
2	Systems -6	2.71 Lakhs
3	UPS -1 with Batteries	2.47 Lakhs
4	Pentabs - 20	1.74 Lakhs
5	View Board software with Visualiger	0.70 Lakhs

#### 5. Research and Consultancy

## **Sponsored research projects** (Ongoing only)

Note: Sponsored project name is to be given only in case a faculty member is Project Incharge

S. No.	Title	Period	Funding Agency	Amount (in lakhs of Rs.)	Co- ordinator
1	Study and Analysis of Mathematical Models of Moving Boundary Problems	2019-2022	SERB, India	22.44	Rajeev
2	Approximation Methods For Problems In Fractional Calculus Of Variations	2019-2022	SERB, India	21.56	Rajesh Kumar Pandey
3	Robust Adaptive Mesh Methods for Singularly Perturbed Problems in Ordinary and Partial Differential Equations	2018-2021	SERB, India	20.95	Sunil Kumar
4.	Schwarz Waveform Relaxation Methods for Singularly Perturbed Parabolic Problems	2018-2021	SERB, India	6.60	Sunil Kumar
5	Applications of Spectral Graph Theory in Analyzing the Structural Properties of Large Scale Networks	2019 - 2022	SERB, India	6.60	Lavanya Selvaganesh
6	Existence and Stability analysis of periodic solutions of variable time impulsive neural networks	2021-2024	SERB, India	6.60	Subir Das

## Faculty members' participation with other universities under MoUs (Ongoing only)

Nil

## **Research Publications**

S. No.		No.
1	Total Number of Papers Published in Refereed National Journals	7
2	Total Number of Papers Published in Refereed International Journals	65
3	Total Number of Papers Presented in National Conferences	0
4	Total Number of Papers Presented in International Conferences	7





#### **Refereed International Journals**

- 1. Jha A. K. (2020) Determining Siegel modular forms of half-integral weight by their fundamental Fourier coefficients. Acta Arithmetica. 195(3): 269-279.
- Jha A. K. and Vaishya L. (2020) Estimates of shifted convolution sums involving Fourier coefficients of Hecke-Maass eigenforms, International Journal of Number Theory, (published online) doi.org/10.1142/ S1793042121500524.
- Singla M., Ghosh D., and Shukla K. K. (2020) Improved Sparsity of Support Vector Machine with Robustness Towards Label Noise Based on Rescaled -Hinge Loss with Non-smooth Regularizer Neural Processing Letters. 52: 2211—2239.
- 4. Ghosh D., Gupta D., and Som T. (2020) Analytical Fuzzy Space Geometry, Fuzzy Sets and Systems, DOI: 10.1016/j.fss.2020.10.001.
- 5. Singla M., Ghosh D., Shukla K. K, and Pedrycz W. (2020) Robust Twin Support Vector Regression Based on Rescaled Hinge Loss, Pattern Recognition, 105. doi.org/10.1016/j.patcog.2020.107395.
- Chauhan R.S. and Ghosh, D. (2021) An erratum to "Extended Karush-Kuhn-Tucker Condition for Constrained Interval Optimization Problems and its Application in Support Vector Machines" Information Sciences, 559: 309–313.
- 7. Karunakaran S. and Selvaganesh L. (2021), A unique and novel graph matrix for efficient extraction of structural information of networks, Electronic Journal of Graph Theory and Applications 9 (1), 39–51.
- 8. Rajpoot A. and Selvaganesh L. (2021), Extension of M-Polynomial and Degree Based Topological Indices for Nanotube, TWMS J. App. and Eng. Math. 11: Special Issue, 268-279.
- Rajpoot A. and Selvaganesh L. (2020), Bounds of the Symmetric Division Deg Index For Trees And Unicyclic Graphs With A Perfect Matching, Iranian J. Math Chem., 11:3, 141-159. doi: 10.22052/ IJMC.2020.214829.1481
- 10. Karunakaran S. and Selvaganesh L. (2020), A Novel Graph Matrix Representation: Sequence of Neighbourhood matrices with an application, SN Appl. Sci. 2, 944, 2020. doi:10.1007/s42452-020-2635-1.
- 11. Shivay O.N. and Mukhopadhyay S. (2020), A complete Galerkin's type approach of finite element for the solution of a problem on modified Green–Lindsay thermoelasticity for a functionally graded hollow disk, European Journal of Mechanics-A/Solids 80, 103914.
- 12. Gupta M. and Mukhopadhyay S. (2021). On the reflection of thermoelastic waves under an exact heat conduction model with a delay and temperature-dependent elastic parameters", Waves in Random and Complex Media. https://doi.org/10.1080/17455030.2021.1925174.
- 13. Kumar H. and Mukhopadhyay S. (2020). Thermoelastic damping analysis for size-dependent microplate resonators utilizing the modified couple stress theory and the three-phase-lag heat conduction model, International Journal of Heat and Mass Transfer 148, 118997.
- 14. Kumar H. and Mukhopadhyay S. (2021). Response of deflection and thermal moment of Timoshenko microbeams considering modified couple stress theory and dual-phase-lag heat conduction model. Composite Structures. 263: 113620.
- 15. Singh B. and Mukhopadhyay S. (2021). Galerkin-type solution for the Moore–Gibson–Thompson thermoelasticity theory, Acta Mechanica. 232(4): 1273-1283.
- 16. Singh R. V. and Mukhopadhyay S. (2021). Relaxation effects on thermoelastic interactions for time-dependent moving heat source under a recent model of thermoelasticity. Zeitschrift für Angewandte Mathematik und Physik, 72(1): 1-13.





- 17. Jangid, K. and Mukhopadhyay S. (2021) A domain of influence theorem under MGT thermoelasticity theory. Mathematics and Mechanics of Solids. 26(2): 285-295.
- 18. Jangid K. and Mukhopadhyay S. (2021). A domain of influence theorem for a natural stress-heat-flux problem in the Moore–Gibson–Thompson thermoelasticity theory. Acta Mechanica. 232(1): 177-187.
- 19. Jangid K. and Mukhopadhyay S. (2020). Variational and reciprocal principles on the temperature-rate dependent two-temperature thermoelasticity theory. Journal of Thermal Stresses: 43(7): 816-828.
- 20. Kumar H. and Mukhopadhyay S. (2020). Thermoelastic damping analysis in microbeam resonators based on Moore–Gibson–Thompson generalized thermoelasticity theory. Acta Mechanica. 231: 3003-3015.
- 21. Singh B., Gupta M. and Mukhopadhyay S. (2020). On the fundamental solutions for the strain and temperature rate-dependent generalized thermoelasticity theory. Journal of Thermal Stresses. 43(5): 650-664.
- 22. Gupta M. and Mukhopadhyay S. (2020). Analysis of harmonic plane wave propagation predicted by strain and temperature-rate-dependent thermoelastic model. Waves in Random and Complex Media: 1-18.
- 23. Gautam, P., Dixit, A., Sahu, D. R., and Som, T. (2020). Application of new strongly convergent iterative methods to split equality problems. Computational and Applied Mathematics, 39, 1-28.
- 24. Som, T., Gautam, P., Dixit, A., and Sahu, D. R. (2020). Different Techniques to Solve Monotone Inclusion Problems. Mathematical Methods in Interdisciplinary Sciences, 413-431.
- 25. Jain P. Tiwari A.K., and Som T. (2020) Enhanced Prediction of Anti-tubercular Peptides from Sequence Information using Divergence Measure based Intuitionistic Fuzzy-Rough Feature Selection, Soft Computing, 1-22.
- 26. Chodhury B.S., Tiwari V., Som T, and Saha P. (2021). Probabilistic contraction under a control function, Random Operators and Stochastic Equations, 29 (1), 1-10.
- 27. Dixit, A., Sahu, D. R., Gautam, P., Som, T. and Yao, J.C. (2021). An accelerated forward-backward splitting algorithm for solving inclusion problems with applications to regression and link prediction problems, Jour. Nonlinear Var. Anal. 5(1), 79-101.
- 28. Singh R. and Das S. (2020), Investigation of interactions among collinear Griffith cracks situated in a functionally graded medium under thermo-mechanical loading, Journal of Thermal Stresses, 1-23.
- 29. Kumar S., Pandey P. and Das S. (2020), Operational matrix method for solving nonlinear space-time fractional order reaction-diffusion equation based on Genocchi polynomial, Special Topics & Reviews in Porous Media, V. 11, 33-47
- 30. Dwivedi KD, Rajeev, Das S, and Gomez-Aguilar J. F. (2020)., Finite difference/collocation method to solve multi term variable-order fractional reaction–advection–diffusion equation in heterogeneous medium, Numer Methods Partial Differential Eq., 37 (3), 2031-2045.
- Singh M., Das S., Rajeev and Craciun E-M. (2020), Numerical solution of two-dimensional nonlinear fractional order reaction-advection diffusion equation by using collocation method, Analele Stiintifice ale UOC, Seria Matematica, 29(2),2021, 211–230.
- 32. Pandey P., Das S., Craciun E-M. and Sadowski T. (2021), Two-dimensional nonlinear time fractional reaction-diffusion equation in application to sub-diffusion process of the multicomponent fluid in porous media, Meccanica, 56 (1), 99-115.
- 33. Kumar U, Das S, Cao J. D. (2020), Fixed time synchronization of quaternion-valued neural networks with time varying delay, Proceedings of the Royal Society, London, Series A 476, 20200324
- 34. Kumar R., Kumar U, Das S., Qiu J., and Lu J. (2020), Effects of heterogeneous impulses on synchronization of complex-valued neural networks with mixed time-varying delays, Information Sciences, 551, 228-244.





- 35. Mishra A. K., Das S., and Yadav V. K. (2020), Finite-time synchronization of multi-scroll chaotic systems with sigmoid non-linearity and uncertain terms, Chinese Journal of Physics, Accepted.
- 36. Kumar A., Yadav, V.K., Das, S. and Rajeev (2021). Global Exponential Stability of Takagi-Sugeno Fuzzy Cohen-Grossberg Neural Network with Time-varying Delays, IEEE Control Systems Letters, Accepted.
- 37. Pandey S.K. and Chandra S. (2020) Transportation of micro-polar fluid by dilating peristaltic waves, Journal of King Saud University-Science 32 (7), 2939-2949.
- 38. Pandey S.K. and Singh A. (2020) Peristaltic transport in an elastic tube under the influence of dilating forcing amplitudes, International Journal of Biomathematics 13 (4), 2050027.
- 39. Pandey S.K. and Tiwari S.K. (2020) Fluid Transport with Suspended particles by means of Dilating Peristaltic Waves SN Applied Sciences, 2, 853.
- 40. Upadhyay S.K. and Shukla P (2021), -spectra of pseudo-differential operators associated with the Bessel operator, Bull. Des Sci. Math., (168)
- 41. Upadhyay P, Upadhyay S.K. and Shukla K.K. (2021), Magnetic resonance image denoising using a wavelet solution to Laplace equation associated with a new variational model, Applied Mathematics and Computation, (400)
- 42. Upadhyay S.K., Maurya J.S (2020), Continuous Bessel Wavelet Transform of Distributions, Rocky Mountain journal of Mathematics
- 43. Srivastava H.M., Singh, MC, and Upadhyay, S.K, (2020), -boundedness of the pseudo-differential operators associated with the Kontorovich-Lebedev transform, RACSAM.
- 44. Upadhyay P, Upadhyay S.K., and Shukla K.K. (2020), Denoising 1D Signal using Wavelets, Int. J. Intelligent Systems Technologies & Applicatins 19 (6), 516-522.
- 45. Pandey P. K., Pandey R. K., Yadav S, Agrawal OP (2021)., Variational Approach for Tempered Fractional Sturm–Liouville Problem. International Journal of Applied and Computational Mathematics, 7, 51.
- 46. Kumar K, Pandey R K, Sultana F (2021), Numerical schemes with convergence for generalized fractional integro-differential equations, Journal of Computational and Applied Mathematics 388 (1), 113318.
- 47. Yadav S., Pandey R. K., Pandey P. K. (2021), Numerical Approximation of Tempered Fractional Sturm Liouville Problem with Application in Fractional Diffusion Equation, International Journal for Numerical Methods in Fluids, 93 (3) 610-627.
- 48. Singh H., Pandey R. K., Kumar D. (2020), A reliable numerical approach for nonlinear fractional optimal control problems, International Journal of Nonlinear Sciences and Numerical Simulations. doi.org/10.1515/ ijnsns-2019-0272.
- 49. Pandey P. K., Pandey R. K., Agrawal O. P., (2020), Variational Approximation for Fractional Sturm-Liouville Problem, Fractional Calculus and Applied Analysis, 23(3) 861-874.
- 50. Shukla A K, Pandey R K, Yadav S (2020), Adaptive Fractional Masks and Super Resolution Based Approach for Image Enhancement, Multimedia Tools and Applications, doi.org/10.1007/s11042-020-08968-6.
- 51. Shukla A K, Pandey R K, Pachori R B (2020), A fractional filter based efficient algorithm for retinal blood vessel segmentation, Biomedical Signal Processing and Control, 59, 101883-15.
- 52. Yadav S, Pandey R K (2020), Numerical Approximation of Fractional Burgers Equation with Atangana Baleanu Derivative in Caputo Sense, Chaos Solitons & Fractals, 133, 109630-8.
- 53. Kumar S, Sumit, Ramos H. (2020), Parameter-uniform approximation on equidistributed meshes for singularly perturbed parabolic reaction-diffusion problems with Robin boundary conditions, Applied Mathematics and Computation, doi: 10.1016/j.amc.2020.125677





- 54. Kumar S, Kumar S., Sumit. (2020), High-order convergent methods for singularly perturbed quasilinear problems with integral boundary conditions, Mathematical Methods in the Applied Sciences, (2020) doi: 10.1002/mma.6854
- 55. Sumit, Kumar S., Kumar M., Kuldeep (2020) A robust numerical method for a two-parameter singularly perturbed time delay parabolic problem, Computational and Applied Mathematics, 39, 239
- 56. Patel A., Rani K., Kumar S., Figueiredo IN, Figueiredo PN (2020), Automated bleeding detection in wireless capsule endoscopy images based on sparse coding, Multimedia Tools and Application, doi: 10.1007/s11042-020-09605-y
- 57. Kumar M., Singh J., Kumar S., Aakansha (2020), A robust numerical method for a coupled system of singularly perturbed parabolic delay problems, Engineering Computation, 38,2
- 58. Devi V., Kumar R, Maurya, Singh S, Singh VK (2020), Lagrange's operational approach for the approximate solution of two-dimensional hyperbolic telegraph equation subject to Dirichlet boundary conditions, Applied Mathematics and Computation, 367, 124717
- 59. Singh S, Devi V, Tohidi E, Singh VK (2020), An efficient matrix approach for two dimensional diffusion and telegraph equations with Dirichlet boundary conditions, Physica A 545 123784.
- 60. Maurya RK, Devi V., Srivastava N., Singh V.K. (2020), An efficient and stable Lagrangian matrix approach to Abel Integral and Integro-Differential equations, Applied Mathematics and Computation 374, 125005.
- 61. Maurya RK, Devi V, Singh VK (2020), Multistep schemes for one and two dimensional electromagnetic wave models based on fractional derivative approximation, Journal of Computational and Applied Mathematics, Vol 380, 112985.
- 62. Kumar Y, Singh S, Srivastava N, Singh A, Singh VK (2020), Wavelet approximation scheme for distributed order fractional differential equations, Computers and Mathematics with Applications 80, 1985–2017.
- 63. Patel VK, Singh S, Singh VK (2020), Numerical wavelets scheme to complex partial differential equation arising from Morlet continuous wavelet transform, DOI: 10.1002/num.22572.
- 64. Maurya RK, Devi V, Singh VK (2021), Stability and convergence of multistep schemes for 1D and 2D fractional model with nonlinear source term, Applied Mathematical Modelling 89, 1721–1746.
- 65. Srivastava N, Singh A, Kumar Y, Singh VK (2020), Efficient numerical algorithms for Riesz-space fractional partial differential equations based on finite difference/operational matrix, Applied Numerical Mathematics-DOI: 10.1016/j.apnum.2020.10.032.

#### **Refereed National Journal**

- 1. Chaturvedi R.K., Singh L. P. (2020) Riemann solutions to the logotropic system with a Coulomb-type friction, Ricerche di Matematica. https://doi.org/10.1007/s11587-020-00526-4
- Chaudhary J. P., Singh L. P. (2020) Analytical Study of Weak Shock Waves in Gas with dust particles, Natl. Acad. Sci. Lett., 43(7):643-646.
- 3. Chaturvedi R.K., Gupta P., Srivastava S.K., Singh L. P. (2020) Evolution of C1-wave and its collision with the blast wave in one-dimensional non-ideal gas dynamics, Computational and Applied Mathematics 39:247.
- 4. Gupta P., Chaturvedi R.K., Singh L.P. (2021) Interaction of waves in one-dimensional dusty gas flow, Zeitschrift für Naturforschung *A* 76(3)a:201-208.
- Chaturvedi R.K. Singh L.P., and Zeidan D. (2020) Delta Shock Wave Solution of the Riemann Problem for the Non-homogeneous Modified Chaplygin Gasdynamics. Journal of Dynamics and Differential Equations, 33:1-18.





- 6. Dubey J.K., Pandey P.K., and Upadhyay S.K. (2021), Characterization of Product of Pseudo-Differential Operators Involving Fractional Fourier Transform, Journal of the Indian Math. Soc., vol. 88, nos. (1–2), 60–71
- 7. Rout, Deepak and Som, T. (2020), Coupled fixed point on Modular space, Ganita, 70(1), 25-32.

## Proceedings of International Conferences

- 1. Debnath, A.K. and Ghosh, D. 2021, Characterizations and Generating Efficient Solutions to Interval Optimization Problems, V. Laha et al. (eds.), Optimization, Variational Analysis and Applications, 2021, Springer Proceedings in Mathematics & Statistics, Vol. 355, Chapter 7.
- Pankhuri Jain, Anoop Kumar Tiwari, and Tanmoy Som 2020, Enhanced Prediction of Animal Toxins using Intuitionistic Fuzzy Rough Feature Selection Technique followed by SMOTE, **IEEE Xplore** 2021/2/16, 2021, 1-4, 25th International Conference on Information Technology (ICIT) 2020.

# Kindly Provide Brief Details of 5 Articles from the Department/School with maximum no. of Citations in last 5 years

S. No.	Publication Details	No. of citations
1.	A K Tiwari, S Shreevastava, T Som, K K Shukla (2018) Tolerance-based intuitionistic fuzzy-rough set approach for attribute reduction, Expert Systems with Applications 101, 205-212.	45
2.	H Rajput, T Som, S Kar (2015), An Automated Vehicle License Plate Recognition System, IEEE Computers 48 (8), 56-61.	43
3.	K Kumar, RK Pandey, S Sharma (2017), Comparative study of three numerical schemes for fractional integro-differential equations, Journal of Computational and Applied Mathematics 315, 287-302	41
4.	V K Yadav, S Das, B S Bhadauria, A K Singh, M Srivastava (2017). Stability analysis, chaos control of a fractional order chaotic chemical reactor system and its function projective synchronization with parametric uncertainties, Chinese Journal of Physics 55 (3), 594-605.	40
5.	AK Singh, VK Yadav, S Das (2017), Dual combination synchronization of the fractional order complex chaotic systems, Journal of Computational and Nonlinear Dynamics 12 (1)	34

## 6. Other activities

#### International collaboration/achievements by the Department/School

- 1. Radko Mesiar, Professor, Slovak University of Technology in Bratislava, Bratislava, Slovakia
- 2. Oscar Castillo, Professor, Tijuana Institute of Technology, Tomas Aquino, Maxico
- 3. Witold Predycz, Professor, Department of Electrical and Computer Engineering, University of Alberta, Edmonton, Canada

#### Indian Faculty visits in the Department/School/School (1st April 2020 to 31st March 2021)

S. No.	Name of Faculty Member	Purpose of Visit	Date and Venue
1	Dr. Saurabh Kumar Singh	For collaborative work with Dr. Abhash	Feb 26-28, 2021
	IIT Kanpur	Kumar Jha	





## Foreign Faculty Visits in the Department/School/School

S. No.	Name of Faculty Member	Purpose of Visit	Date and Venue
1			

## Any other Information

# i) Colloquium talks organised in the departments

S. No.	Expert Name and affiliation	Title of the talk	Date of talk (online)	
1	Dr. D Datta, Ex Scientist, BARC, Mumbai	Risk Assessment in Supply Chain Management during Covid19 using Neutrosophic TOPSIS	Sept 23, 2020	
2	Prof. Malay Banerjee IIT Kanpur	rjee Mathematical Modelling of COVID-19		
3	Ex-Professor Aloknath Chakrabarti, IISc, Bangalore	abarti, The Analysis of Linear Integral Equations by the Aid of Over determined Systems of Linear Algebraic Equations with Application		
4	Prof. Joydeep Dutta IIT Kanpur	Convex Optimization for Data Sciences	Feb 15, 2021	
5	Professor Jaqueline Mesquita, University of Brasilia, Brazil	Kurzweil Integral, Generalized ODEs and their Relations with Functional Differential Equations	March 23, 2021	

#### ii) Talks on Pi-day

S. No.	Expert Name and affiliation	Title of the talk
1	Prof. V Krishnakumar, NISER, Kerala	The Arzela-Ascoli Theorem and the Existence Theorem for the Cauchy's Initial Value Problem.
2	Prof. D K Ganguly, Kolkata	Integral from antiquity to generalized Riemann: Historical notes.
3	Prof. D R Sahu, BHU, Varanasi	Inverse problems versus optimization problems.
4	Prof. B Tiwari, CIMS, BHU, Varanasi	Topology and Geometry of surfaces.

#### iii) Member in External Bodies

S. No.	Name of the Faculty Member	Relevant Details					
1	Prof. T. Som	External member of the Board of Post Graduate Studies, Dept. of					
		Mathematics, Tripura University					

S. No.	Faculty Member	Membership of Society (Life Member)		
1	Prof. T. Som	Indian Mathematical Society, Calcutta Mathematical Society, Bharata Ganita Parisad, Assam Academy of Mathematics		
2	Prof. M. K. Vemuri	American Mathematical Society		
3	Dr. Lavanya Selvaganesh	Academy of Discrete Mathematics and Applications, India. Indian Mathematical Society, Ramanujan Mathematical Society. Indian Science Congress Association, <i>Member</i> : American Mathematical Society, European Mathematical Society, Canadian Mathematical Society, Society for Industrial and Applied Mathematics and International Linear Algebra Society		





# 23. Department of Physics

<b>Complete Name of Department</b>	:	Department of Physics, IIT(BHU), Varanasi		
Year of Establishment	:	1985 (Formerly Department of Applied Physics, IT, BHU, Applied Physics Section 1968)		
Head of the Department	:	Dr. Sandip Chatterjee w.e.f. 01.01.2021		

#### 1. Brief Introduction of the Department/School:

#### **1.1 Introduction**

Department of Physics (formerly Department of Applied Physics, IT, BHU / Applied Physics Section, 1968) established in 1985, is a center of excellence for quality research and teaching in Physics & Applied Physics. The evolution of Department of Physics in its present form took over nine decades. Since its inception, physics teaching was both integral and essential part of the technical education to enable young minds having good grinding in physical sciences. Therefore, initially all the three colleges (BENCO, TECHNO & MINMET) had their own faculty members in Physics to do the job. A turning point came in 1968 when BENCO, TECHNO & MINMET were merged under one umbrella of Institute of Technology, Banaras Hindu University (IT-BHU). This then made it meaningful to have all the physics teachers from these three colleges to join hands together to form an Applied Physics Section as a part of newly formed School of Applied Sciences. Finally, we became a Department of Applied Physics of IT-BHU in 1985. At long last, we became a Department of Physics in 2012 soon after the conversion of IT-BHU into IIT (BHU) on 29 June 2012. Faculties of the department have been pursuing cutting edge front line research in various areas and in collaboration with prestigious national and international institutes. The Department currently offers research programmes in the field of Solar Physics & Space Physics, Astrophysics, Cosmology, High Energy Physics, Nuclear & Particle Physics, Optics and Optical Instrumentation, Fibre Optics, Photonics & Optoelectronics, Condensed Matter Physics & Materials physics, Microwave Remote Sensing, Bio-physics and Composite Materials, Energy Studies & Solid State Ionics, Quantum statistical mechanics and dynamics, Quantum entanglement and quantum information theory etc.

#### 1.2 Major areas of Research

The department has a rich heritage and history of scientific research in space physics including theoretical study of the planetary atmosphere and solar magnetic field. In the mid 1970s, the whistler wave at low latitude were recorded for the first time and published in the prestigious "Nature" by the group of our department. (SP)<sup>2</sup>RG has been making significant contributions to the theory and modeling of solar plasma in optical, ultraviolet, X-ray, gamma-ray, and in the atomic spectroscopy – especially in the field of diagnostics of electron and proton beams and of the plasmas they heat. This group has been making seminal contributions in the areas of 'MHD waves and transients in the solar atmosphere' and also in 'science communication'. Theoretical calculations related to pitch-angle, cross-sections, scattering are also being carried out. Another group is actively working on the origin of the solar magnetic field, its dynamics using magnetohydrodynamics and the mysterious solar cycle using a novel theoretical (dynamo) model. The SP<sup>2</sup>RG has equipped with VLF-Antenna for upper Earth atmospheric measurements; Advanced Solar Computation and Analyses Laboratory (ASCAL) to analyse the large-scale solar observational data and model its magnetic atmosphere. SP2RG has global collaborations (e.g., UK, Poland, Russia, China, Austria, Spain, USA, Belgium, etc.) as well as participation in international (e.g., Royal Society; Polish National Science Foundation etc.), and national (e.g., 2m- National Large Solar Telescope; Aditya-I) projects. In year 2021, a MoU is signed between the IIT (BHU) and Bar Ilan University Israel with the help of an initiative from a colleague from the Department of Physics and this MoU includes collaborative work and student/research scholars exchange.





The department has now several strong theoretical physics groups (Astrophysics & Astronomy, High Energy Physics, Nuclear & Particle Physics etc.) who are actively working on Structures and Dynamics of the Interstellar Medium, Large-scale gas fragmentation and star formation in galaxies, and Gravitational Lensing as an Astrophysical Probe, Cosmology / Cosmic Microwave background - Statistical Isotropy, Component separation, Low energy QCD at high precision, flavour physics, phenomenology of top, Higgs, vector-like fermions and singlet scalar fields, and model building, Nuclear Physics (Gamma Ray Spectroscopy, Nuclear structure model calculations - cranked Nilsson Strutinsky Model, Shell Model calculations).

The Department carries out a wide range of frontier research activities related to magnetism and superconductivity and semiconductors, nanostructures, thin films and nano-materials and is backed by many sophisticated equipment and measurement techniques. Though the main emphasis of these works is on fundamental aspects, many of the results have a potential for application in industries. In the materials science, we study the electronic, physical, mechanical, optical, and chemical properties of materials, most often in relation to their structure, and use this knowledge to understand and optimize their properties and create new, improved materials and devices. Work in Soft Condensed Matter and Bio-physics is also a front-line research area of the department. "Soft" condensed matter research explores areas like adhesion, friction, wetting, the movement of fluids in porous media, Modelling self-assembly and phase separation kinetics in the complex soft materials, understanding recent single molecule force spectroscopy experiments on biopolymers, Polymers under shear flow, etc. Biophysics and nanotechnology group aim is to investigate the interaction between 2D, 1D, and 0D materials with proteins and DNA. The main focus of this group is to develop sustainable technologies using green synthesis method utilizing medicinal plants and biopolymers for biomedical, energy and environmental applications like biosensors, drug delivery, OLED, bioelectronics and other nanotechnology applications using various experimental techniques and computational methods. Another theoretical physics group is also involved in understanding non-equilibrium dynamics of quantum many body systems with long range interaction.

Optics, Photonics and Fiber optics is emerging new field of research in our country. We establish a research lab with essential facilities to pursue the theoretical, experimental and computations researches in the field of Photonics. We are engaged in the theoretical analysis of photonic crystals and quasi photonic crystals composed of graded, dispersive and negative index materials. These works would be useful in study of the photonic crystals having such type of materials for various applications. It will open new window to design several photonic crystal devices like sensors, reflectors, switches etc. Research works on the Optical Instrumentation, Non-Destructive Imaging testing and optical instrumentation for biology and medicine, Computational Optics and Imaging through random complex media have also been initiated in our department. Such works has variety of practical applications in underwater imaging, bio-medical optics, space applications etc.

Research on remote sensing is also one of the frontline research areas in the Department. In this field, the growth of agricultural crops are monitored, classification of crops and the recognition of shape/size of buried objects are done by scatterometer measurements and satellite image analysis. Such studies are useful in designing of sensors, urban planning, crop classification, crop-yield and soil moisture estimation for agricultural planning.

Moreover, one of the groups is actively engaged in different types of luminescent materials, particularly inorganic nanostructures/phosphors having potential applications in the area of energy harvesting, bio-imaging and for advance lighting applications, etc. Composite material studies are also pursued at the Department and the lab for such studies is in development.

Research in the field of Green Energy and Solid State Ionics is also carried out in this Department. The energy studies explore the various fuel cells, materials, etc. to optimize the renewable energy sources. In the Green Energy area, the work on anode, cathode and electrolyte materials of Solid Oxide Fuel Cells (SOFC) is in focus. Also, preliminary establishment of lab towards the fabrication and characterization for Solar cells has been done. In addition to it, some work on hydrogen energy has also been started. Towards Solid State Ionics, the ion dynamics of the structurally disordered and crystalline materials is being studied. This study is not only restricted





to the amorphous materials but also has been extended to the various materials of SOFC. Also, the work has also been started in the field of materials for nano piezo- pyro energy harvesters.

1.3 Area of the Department/School	(in square meters):	1844 Square Meters
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### 1.4 Infrastructure

S. No.	Particulars	Number
1	No. of Classrooms	01
2	No. of Lecture Halls	01
3	No. of Laboratory	16
4	No. of Computers available for students in the Department/School/ School	~60

## 1.5 Unique Achievement / Preposition of the Department/School

Department's vision is to promote new ideas and innovations in physical sciences. Our mission is to offer world class education, research guidance and also leadership in physical sciences. Our aim is to become a high ranking in Physics Department globally in terms of teaching quality, research contributions and academic leadership.

Under new curriculum process (which Institute has started in 2014) Department offers two physics courses at B. Tech-Part-I level as an institute science course and two physics courses to preparatory students. We also offer several electives and open electives under this new flexible project based curriculum. Our 5-year Integrated M. Tech. programme (IMD) in Engineering Physics which started in 2005 has been converted to Integrated Dual Degree (IDD) Programme from 2014 and is running successfully. Main objective of this course is to impart knowledge of various core technical disciplines without compromising on the basic physics and mathematics courses. The course gives an insight to the disciplines of engineering as well as science, and practical working experience through industrial training / summer internship, project / dissertation work to enhance the working skills of the students. Department has started the M.Sc. Programme in Physics from 2019 and students are admitted through JAM.

Students of IMD/IDD (Engineering physics) are awarded with several fellowships to go abroad to pursue higher studies, involved in several project works in both science and technology, present their research works in different workshop/conference/symposia. They also pursue summer internship in industries and reputed institutions/ universities in India and abroad. Many of these students are also recruited by reputed national and multinational companies.

The Department offers research programmes in the field of Solar Physics & Space Physics, Fibre Optics, Photonics & Optoelectronics, Condensed Matter Physics & Materials physics, Microwave Remote Sensing, Bio-physics and Composite Materials, Energy Studies & Solid State Ionics. About 90 Ph.D. students have received their PhD degree so far from the department. Many of our alumni (Ph.D., IMD) are well placed in reputed Institutes / University in India and abroad.

Department has a strong component to deliver popular science lecture and publish articles in magazines like Scientific American and newspapers.

Faculty members in the Department working in the frontier areas of research have published in International journals of high impact factor (e.g. Nature Comm., JACS, PRL, PRE, Astrophysical Journal, Solar Physics, Astronomy & Astrophysics, MNRAS, J. Mat. Chem., PCCP, SSI, RSC Adv. etc.), published book and authored book chapters.

Department successfully organized several National (RTCMP, NCTP), International workshop / Conferences (DYNAMIC SUN-I, THERMANS-2016, ABSMSNW-2017, ICFNM-2019), GIAN Course Work, and Ishan Vikas Programme of MHRD for school students from North East Students, student's convention 'JIGYASA' (2015, 2016, 2017), Institute Day, etc. in recent years.





Several Indian and Foreign distinguished faculty members visited the Department to deliver seminar, colloquium.

Dr. Anil Bharadwaj, an alumnus of the Department received Shanti Swarup Bhatnagar award in 2007 for outstanding contribution in the field of Earth, Atmosphere, Ocean, and Planetary Sciences. He also received Infosys Science Foundation award-2016 in Physical Sciences category.

Faculty Members & Alumni of the Department have received several fellowships, senior membership and lifetime memberships of various academic and professional societies like Royal Astronomical Society (FRAS), Astronomical Society of India (ASI), Optical Society of India (OSI), Optical Society of America (OSA), International Academy of Physical Sciences (at Allahabad, India), Materials Research Society of India (MRSI), Indian Physics Association (IPA), Indian Thermal Analysis Society (ITAS), Indian society for Materials Chemistry (ISMC) (at BARC, Mumbai), International Astronomical Union (IAU), International Academy of Astronautics (IAA) on Comparative Climatology - Studying Planetary Climate to Understand our Planet, Max-Planck Society fellowship, Japanese Society of Promotion of Science (JSPS) fellowship, National Science Foundation (NSF-China) young scientist award, NASA/NRC Associate, Commonwealth Academic Staff Fellow: Glasgow, Cambridge and Oxford universities (1990-91), Indian National Science Academy (INSA), New Delhi etc.

Faculty members have received several awards/honours like e.g. Indira Gandhi Prize for Popularization of Science-2011 (Science Communications) by Indian National Science Academy (INSA), NATIONAL AWARD of 1,00,000/- for Outstanding Efforts in Science and Technology Communication through Books and Magazines for 2005, 2004 Award for Popular Writing on Solar Physics (American Astronomical Society/Solar Physics Division), 'MPAE Gold Pin' Award (1999) by Max-Planck-Institut für Aeronomie (MPAE) Germany in recognition of the outstanding contributions to the SUMER/SoHO science, D.Sc. *Honoris Causa* etc.

The department has enriched with many excellent faculties and faculty strength has increased to 22. Currently, in the department major research activities are going in theoretical as well as in experimental physics. The Department has been granted DST-FIST support and many other projects funded by national and International agencies namely DST, Department of Bio Technology (DBT), BRNS, DRDO, CSIR etc. Faculty members have several National, International Research collaboration, MOU, VLF-Global-Network Project etc.

## 2. Academic Programmes offered

S. No.	Course Code	Course name	Course credit
1	PHY332	Fourier Optics	6
2	РНҮ332.О	Fourier Optics & Imaging	9
3	PYM501	Nuclear and Particle Physics	11
4	PYM502	Atomic and Molecular Physics	11
5	PYM512	Quantum Field Theory	9
6	PYM517	Simulation Methods in Statistical Physics	9
7	PYM521	Space and Solar Physics	9
8	РҮМ523	Astronomy and Astrophysics	9
9	PYM527	Advanced Nuclear Physics	9
10	PYM531	Condensed Matter Physics-II	9
11	РҮМ532	Advanced Condensed Matter Physics	9
12	PYM534	Materials and Characterization Techniques	9
13	PYM541	Laser Physics	9
14	PYM542	Optics and Photonics	9

#### 2.1 New Courses Introduced New Courses Introduced





S. No.	Course Code	Course name	Course credit
15	PYM543	Fibre and Integrated Optics	9
16	PYM591	Physics Lab-IV (Spectroscopy Lab)	3
17	PYM592	Physics Lab-V (Nuclear Physics Lab)	3

### 2.2 Students on Roll

(*Please give No. of students only in respective years*)

S. No.	Programme		II Year	III Year	IV Year	V Year & above
1.	B. Tech/B.Arch					
2.	Dual Degree		25	22	19	18
3.	M. Tech/ M. Pharm/M.Sc.		19	-	-	-
4.	Ph. D (Under Institute Fellowship)	4	4	13	17	5
5.	A. Ph. D (Under Project Fellowship) B. Other Funding Agency	 7	 23	 6	 10	1 5
6.	A. Ph. D (Under Sponsored Category) B. Ph. D (Under Full time External & Part Time Category)	 2	 1			 1

# 2.3 Names of students/scholars who attended conferences/workshops/seminars and symposia abroad or in India

S. No.	Name of Student	Roll No.	Conference/Seminar/Symposia/ Workshop	Date & Venue	Financial Assistance From
ÌNDIA					
1	Vani Pawar	14171003	Young Scientist Meet up on Photo- physics of Metal Halide Perovskites: (Online mode) From Material to Devices PMHP-2020 by Department of Physics, Indian Institute of Technology, Roorkee		Self-financed
2	Vani Pawar	14171003	nternational E-Conference on Advanced Functional Materials and Optoelectronic Devices-ICAFMOD-2020 by Centre for Renewable Energy, VBS Purvanchal Jniv., Jaunpur (U.P.), India		Self-financed
3	Vani Pawar	14171003	Univ., Jaunpur (U.P.), India003NationalWebinarSerieson"Experimental & Computational Tools for Materials Research-ECTMR-2020 by Discipline of Natural Sciences, PDPM Indian Institute of Information Technology, Design & Manufacturing Jabalpur, and Department of Physics, Central Univ. of Rajasthan, India.June 01-08, 2020 (Online mode)		Self-financed
4	Ajay Shankar Bangwal	16171004	International e-conference on Advanced Functional Materials and optoelectronic Devices.	June 13-15 2020 (Online)	Self





S. No.	Name of Student	Roll No.	Conference/Seminar/Symposia/ Workshop	Date & Venue	Financial Assistance From
5	Ajay Shankar Bangwal	16171004	National Webinar series on Experimental and computational Tools for Materials Research	June 01-08, 2020 (Online)	Self
6	Ajay Shankar Bangwal	16171004	International Virtual conference on Modern Instrumental and Characterization techniques in Applied Science	July 05-06, 2020 (Online)	Self
7	Ajay Shankar Bangwal	16171004	Online workshop on Rietveld refinement method	September 22-24, 2020 (Online)	Self
8	Ajay Shankar Bangwal	16171004	Indo-Italian workshop on Solid oxide fuel cell: evolving trends on electrode materials	March 24-25 <sup>th</sup> , 2021 (online)	Self
9	Manish Kumar	16171005	WORKSHOP	September 22- 24,2020, Mumbai centre in association with Indore centre	UGC-DAE Consortium for Scientific Research.
10	Vandna Tomar	16171006	National Webinar Experimental & Computational Tools for Materials Research (ECTMR 2020)	June 01 – 08, 2020	Self
11	Vandna Tomar	16171006	Virtual Workshop on X-ray Diffraction	July 23rd, 2020	Self
12	Vandna Tomar	16171006	National Workshop Advanced Physical Tools and Techniques for Materials Characterization (APTTMC-2020)	28th July – 03rd August 2020	Sel
13	Vandna Tomar	16171006	Online Workshop on Rietveld Refinement Method	September 22-24, 2020	Self
14	Pragati Singh	16171007	International Conference on Materials, Processing and Characterizations	15-17 <sup>th</sup> December, IIT Indore	Institute
15	Pragati Singh	16171007	National Conference on Functional Materials	25-26 July, 2020, Greater Noida	Self
16	Mahima Singh	16171009	Synthesis and Characterization of Smart Materials and Their Potential Applications.	14-17 June(2020) e-seminar	
17	Mahima Singh	16171009	Advances in Materials Science and Technology (WSAMST-2020).	22-26 June(2020) e-seminar	
18	Mahima Singh	16171009	Advanced Physical Tools and TechniquesforMaterialsCharacterization(APTTMC-2020).	28 july-3Aug (2020) e-seminar	
19	Jais Kumar	16171010	SKA Science 2021	15-19th march 2021 (Online)	
20	Jais Kumar	16171010	The 21-cm Signal from Cosmic Dawn and the Epoch of Reionisation	29th January 2021 (Online)	





S. No.	Name of Student	Roll No.	Conference/Seminar/Symposia/ Workshop	/ Date & Venue Fina Assis Fre	
21	Urvashi	17171001	ASI conference 2021	18 -20 feb, 2021 (Virtual)	
22	Debarati Pal	17171003	QMAT 2020	7/9/2020 -11/09/2020	Self
23	Debarati Pal	17171003	RAFM 2020	5/11/2020-6/11/2020	Self
24	Debarati Pal	17171003	Material Tech 2021	9/1/2021-10/1/2021	Self
25	Debarati Pal	17171003	ICONN 2021	1/2/2021-3/2/2021	Self
26	Mohd.alam	17171004	WSAMST	22-26 June, 2020,online	NA
27	Prashant Kumar Pandey	17171005	International Webinar on Sample June 30, 2020 Preparation for TEM and Data Analysis, Department of Material Science, School of Chemistry, Madurai Kamraj University, Madurai, Tamil Nadu		
28	Prashant Kumar Pandey	17171005	Stable organic-inorganic hybrid halide perovskite nanocrystals for LEDs, PG and Research Department of Physics, Thiagarajar college, Madurai	3 <sup>rd</sup> July 2020	
29	Prashant Kumar Pandey	17171005	International virtual conference on "Modern instrumentation and characterization techniques in Applied Sciences (MICTAS-2020)", organized by MIET Kumaon Haldwani & Department of Chemistry, H.N.B. Govt. P. G. College, Khatima, Uttarakhand in collaboration with USERC DST Dehradun & Department of Chemistry, R.H. Govt. P. G. College, Kashipur, Uttarakhand	July 5-6, 2020	
30	Prashant Kumar Pandey	17171005	International Webinar on "Role of advance materials for optoelectronic devices (RAM-OD 2020)", VVM's S G patil Arts, Science and Commerce college, Sakri, Maharashtra	12 <sup>th</sup> July 2020	
31	Prashant Kumar Pandey	17171005	Nanostructured metal oxide thin films for sensor technology, Depaertment of Physics, Saveetha Engineering college	16 <sup>th</sup> July 2020	
32	Prashant Kumar Pandey	17171005	Nanomaterials- A multidisciplinary approach, Depaertment of Physics, Saveetha Engineering college	16 <sup>th</sup> July 2020	
33	Prashant Kumar Pandey	17171005	Important aspects in writing Research Articles and Research Proposals, E.G.S. Pillay Arts & Science College, Nagapattinam	18 <sup>th</sup> July 2020	





S. No.	Name of Student	Roll No.	Conference/Seminar/Symposia/ Date & Venue Workshop		Financial Assistance From
34	Prashant Kumar Pandey	17171005	One Day National e-Conference on 22 <sup>nd</sup> July 2020 "Emerging Trends in Physical Sciences NCETPS-2020", Arts, Science and Commerce college Ramanandnagar (Burli), Maharashtra		
35	Prashant Kumar Pandey	17171005	Online One-week National Workshop on Advanced Physical Tools and Techniques28th July to 03rd Aug 2020forMaterialsCharacterization (APTTMC-2020), Department of Physics Mahatma Gandhi Central University, Motihari-845401, Bihar		
36	Prashant Kumar Pandey	17171005	Internation webinar on Quantum materials and nanoparticles for advanced applications, Department of Physics, Kamaraj college, Thoothukudi	06 <sup>th</sup> Aug 2020	
37	Prashant Kumar Pandey	17171005	Recent Trends in Photonics Technology, Department of Electronics and Communication, Jaypee Institute of Information Technology, Noida	28 <sup>th</sup> December 2020 to 2 <sup>nd</sup> January 2021	
38	Khyati Anand	17171008	Online Workshop on Reitveld Refinement method	September 22-24, 2020, Online	
39	Khyati Anand	17171008	Characterziation Techaniques in Materials Science,CTMS-2020	July 11,2020, Online	
40	Khyati Anand	17171008	Webinar series on Advances in materials Science and Technology	June 22-26, 2020, Online	
41	Khyati Anand	17171008	E-Internationa Symposium On Synthesis and Characterization of Smart Materials and Their Potential Applications	June 14-17 2020, Online	
42	Manisha Chauhan	17171014	International e-conference on Advanced Functional Materials and optoelectronic Devices.	June 13-15 2020 (Online)	Self
43	Manisha Chauhan	17171014	National Webinar series on Experimental and computational Tools for Materials Research	June 01-08, 2020 (Online)	Self
44	Manisha Chauhan	17171014	International Virtual conference on Modern Instrumental and Characterization techniques in Applied Science	July 05-06, 2020 (Online)	Self
45	Manisha Chauhan	17171014	Online workshop on Rietveld refinement method	September 22-24, 2020 (Online)	Self





S. No.	Name of Student	Roll No.	Conference/Seminar/Symposia/ Date & Venue Workshop		Financial Assistance From
46	Jyoti Sharma	17171016	Training Program on Forestry Application – QGIS Course	20 Sep 2020 (Virtual)	Self
47	Meera Nandakumar	17171018	ASI conference 2021	18-20 feb 2021 (Online)	
48	Meera Nandakumar	17171018	VLA Data Analysis workshop	March 15 - April 1 2021 (Online)	
49	Vaibhav Chauhan	17171022	Synthesis and Characterization of Nano- materials and their Novel Applications, Department of Physics, R.K.Valley, Rajiv Gandhi University Of Knowledge Technologies, A.P. (RGUKT-AP)17th to 19th Augu 2020		
50	Vaibhav Chauhan	17171022	Material Characterizations using X-rays as Probes, Department of 1st Year Engineering and School of Applied Sciences, Gyan Vihar University	29 August 2020	
51	Vaibhav Chauhan	17171022	Modern Approach on Magnetism and Material Science in Engineering, IEEE RAS Chapter, MIT Mysore	15th to 18th September 2020	
52	Vaibhav Chauhan	17171022	2 Innovative Data Analytics Tools For 20 September, Chemical And Life Sciences Research, Jharkhand Chemical Society, Ranchi		
53	Vaibhav Chauhan	17171022	1 <sup>st</sup> National students conference on Spectroscopy, Guru Nanak Dev university, Amritsar and Chemical research society of India (Local chapter, Chandigarh/Amritsar)	16 <sup>th</sup> -17 <sup>th</sup> October, 2020	
54	Vaibhav Chauhan	17171022	Recent Trends in Photonics Technology, Department of Electronics and Communication, Jaypee Institute of Information Technology, Noida	28 <sup>th</sup> December 2020 to 2 <sup>nd</sup> January 2021	
55	Raj Kumar	17171023	17 <sup>th</sup> IEEE INDICON CONFERENCE, Netaji Subhas University of Technology, New Delhi Published Conference Paper: Study of gallium arsenide based perfect metamaterial absorber in the broadband region	11 <sup>th</sup> to 13 <sup>th</sup> December 2020	
56	Raj Kumar	17171023	Physics of Nanomaterials Synthesis and Characterization with Practical Examples, Department of Physics and Physics Alumni Association (PAA), St. John's College, Agra	20 <sup>th</sup> June 2020	





S. No.	Name of Student	Roll No.	Conference/Seminar/Symposia/ Date & Venue Workshop		Financial Assistance From
57	Raj Kumar	17171023	FDP on "Advances in Materials Science and Technology (WSAMST-2020)", Department of Applied Sciences and Humanities (Physics), School of Engineering, University of Petroleum and Energy Studies, Dehradun.	22-26 June 2020	
58	Raj Kumar	17171023	FDP on Recent Innovations in Chemical Engineering (RICE), Department of Chemical Engineering, Bheemanna Khandre Institute of Technology, Bhalki	29th June to 3rd July 2020.	
59	Raj Kumar	17171023	International virtual conference on "Modern instrumentation and characterization techniques in Applied Sciences (MICTAS-2020)", organized by MIET Kumaon Haldwani & Department of Chemistry, H.N.B. Govt. P. G. College, Khatima, Uttarakhand in collaboration with USERC DST Dehradun & Department of Chemistry, R.H. Govt. P. G. College, Kashipur, Uttarakhand	July 5-6, 2020	
60	Raj Kumar	17171023	Advanced Materials Synthesis, Characterization and Photovoltaic Application, IMPS College of Engineering & Technology, Malda	9 <sup>th</sup> July 2020	
61	Raj Kumar	17171023	The Art and Challenges in Designing Printed Antenna Arrays, IMPS College of Engineering & Technology, Malda	14 <sup>th</sup> July 2020	
62	Raj Kumar	17171023	Solar Photovoltaic as Emerging Technology for Sustainable & Some Studies on Advance Material for Solar Cell Application, IMPS College of Engineering & Technology, Malda	16 <sup>th</sup> July 2020	
63	Raj Kumar	17171023	Antennas, RF Electronics and Signal Transport System in Building a Radio Telescope, IEEE Microwave Theory & Techniques Society Student Branch Chapter, IIT (BHU), Varanasi	16 <sup>th</sup> July 2020	
64	Raj Kumar	17171023	Online One-week National Workshop on Advanced Physical Tools and Techniques for Materials Characterization (APTTMC-2020), Department of Physics Mahatma Gandhi Central University, Motihari-845401, Bihar	28 <sup>th</sup> July to 03 <sup>rd</sup> August 2020	



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S. No.	Name of Student	Roll No.	Conference/Seminar/Symposia/ Workshop	a/ Date & Venue Finan Assist Fro	
65	Raj Kumar	17171023	International webinar on Quantum materials and nanoparticles for advanced applications, Department of Physics, Kamaraj college, Thoothukudi	06 <sup>th</sup> Aug 2020	
66	Raj Kumar	17171023	Recent Trends in Photonics Technology, Department of Electronics and Communication, Jaypee Institute of Information Technology, Noida	; 28 <sup>th</sup> December 2020 to 1 2 <sup>nd</sup> January 2021 f	
67	Hemant Kumar	17171024	Recent Trends in Photonics Technology, Department of Electronics and Communication, Jaypee Institute of Information Technology, Noida	28 <sup>th</sup> December 2020 to 2 <sup>nd</sup> January 2021	
68	Umang Ramani	17171025	Webinar on "Physics of Nanomaterials Synthesis and Characterization with Practical Examples" jointly organised by the Department of Physics and Physics Alumni Association (PAA), St. John's College, Agra.	20 <sup>th</sup> June 2020	
69	Umang Ramani	17171025	International virtual conference on "Modern instrumentation and characterization techniques in Applied Sciences (MICTAS-2020)", organized by MIET Kumaon Haldwani & Department of Chemistry, H.N.B. Govt. P. G. College, Khatima, Uttarakhand in collaboration with USERC DST Dehradun & Department of Chemistry, R.H. Govt. P. G. College, Kashipur, Uttarakhand.	5 <sup>th</sup> – 6 <sup>th</sup> July 2020	
70	Bhagyashree Verma	17171502	Webinar Training- Forestry Special QGIS Course	20 September 2020 (online)	Self
71	Prem Chandra Bharti	17171504	National webinar series on experimental and computational tools for material research, (ICTMR 2020), Central University of Rajasthan	June 1 – 8, 2020 Online	
72	Prem Chandra Bharti	17171504	International e-Conference on Advanced Functional Materials and Optoelectronic Devices,Centre for Renewable Energy, RBIPS, VBS Purvanchal University, Jaunpur (Poster Presentation)	June 13-15, 2020 Online	
73	Prem Chandra Bharti	17171504	E- international symposium on synthesis and characterization of smart materials and their potential applications, Guru Govind Singh Indraprastha University, New Delhi	June 14 -17, 2020 Online	



S. No.	Name of Student	Roll No.	Conference/Seminar/Symposia/ Workshop	Date & Venue	Financial Assistance From
74	Prem Chandra Bharti	17171504	TwodaysInternationalVirtualJuly 5-6, 2020ConferenceonModernInstrumentalOnlineandCharacterizationTechniquesinAppliedSciences-2020, MIETKumaonHaldwani,UttarakhandUttarakhand		
75	Prem Chandra Bharti	17171504	e –workshop on "Art of Writing Research Paper" from 12th to 14th September, 2020 organized by ResearchSmiths.	Sep 12-14, 2020 Online	
76	Prem Chandra Bharti	17171504	Online Workshop on Rietveld Refinement Method, organized by UGC- DAE Consortium for Scientific Research, Mumbai Centre in association with Indore Centre	Sep 22-24,2020 Online	
77	Labanya Ghosh	17171505	WSAMST-2020	22-26 June, 2020, Online	
78	Labanya Ghosh	17171505	IC-RAPMS-2020	9-10 July, 2020, Online	
79	Labanya Ghosh	17171505	IWMSC-2020	11-13 July, 2020, Online	
80	Labanya Ghosh	17171505	RTMS-2020	19-21 August, 2020, Online	
81	Labanya Ghosh	17171505	SAMA-2020	15-19 October, 2020, Online	
82	Sanjeet Kumar Patel	18171001	BeyondPlanck Release Conference	18-20 Nov 2020, University of Oslo, Norway	Online
83	Srishti Dixit	18171006	WSAMST-2020	22-26 June, 2020, Online	NA
84	Srishti Dixit	18171006	IC-RAPMS-2020	9-10 July, 2020, Online	NA
85	Srishti Dixit	18171006	IWMSC-2020	11-13 July, 2020, Online	NA
86	Uma Sharma	18171010	National webinar series on experimental and computational tools for material research, (ICTMR 2020), Central University of Rajasthan	June 1 – 8, 2020 Online	Self-financed
87	Uma Sharma	18171010	International e-Conference on Advanced Functional Materials and Optoelectronic Devices,Centre for Renewable Energy, RBIPS, VBS Purvanchal University, Jaunpur (Poster Presentation)	June 13-15, 2020 Online	Self-financed





S. No.	Name of Student	Roll No.	Conference/Seminar/Symposia/ Date & Venue Workshop		Financial Assistance From
88	Uma Sharma	18171010	E- international symposium on synthesis and characterization of smart materials and their potential applications, Guru Govind Singh Indraprastha University, New Delhi		Self-financed
89	Uma Sharma	18171010	Two days International Virtual July 5-6, 2020 Conference on Modern Instrumental Online and Characterization Techniques in Applied Sciences -2020, MIET Kumaon Haldwani, Uttarakhand		Self-financed
90	Uma Sharma	18171010	OnlineWorkshoponRietveldSep 22-24, 2020RefinementMethod, organized by UGC- DAE Consortium for Scientific Research, MumbaiOnlineMumbaiCentrein associationwithIndore CentreIndore CentreIndore Centre		Self-financed
91	Satya Vijay Kumar	18171012	WSAMST-2020	22-26 June 2020 (Online)	NA
92	Satya Vijay Kumar	18171012	.2 IQAC-MST2020 9-10 Oct 2020 (Online)		NA
93	Satya Vijay Kumar	18171012	2 NLW-RAN 2020 05 Dec. 2020 (Online)		NA
94	Satya Vijay Kumar	18171012	2 IC-RAPM 2020 9-10 July 2020 (Online)		NA
95	Satya Vijay Kumar	18171012	IWMSC 2020	11-13 July 2020 (Online)	NA
96	Ashish Kumar Ranjan	18171501	Online workshop on Rietveld Refinement Method organised by UGC- DAE Consortium for Scientific Research, Mumbai	September 22- 24,2020, Mumbai (Online mode)	Self
97	Neha Patel	19171005	5 Online workshop on Rietveld refinement method. 22-24 sep 2020 UGC-DAE Consortiur for Scientific Research Mumbai		NA
98	Neha Patel	19171005	<ul> <li>Short Term Course on "Materials 7-11 September, 5 jointly organiss and Characterization Techniques"</li> <li>NIT Uttarakha Department of Ph SLIET Longowal Department of Ph HNBGU Srinagar Garhy</li> </ul>		NA
99	Neha Patel	19171005	Short term course on "Current trends in condensed matter physics"	25-29 Sept. 2020 NIT Jalandhar, Punjab	NA





S. No.	Name of Student	Roll No.	Conference/Seminar/Symposia/ Workshop	Date & Venue	Financial Assistance From
100	Vindya Vashishth	19171018	Astronomical Society of India	18-23 Feb, TIFR Bengaluru	Ramanujan Fellowship
101	Sanjeev Sanyal	19171501	BeyondPlanck Release Conference	18-20 Nov. 2020, University of Oslo, Norway	Online
102	Anshul Verma	19171502	BeyondPlanck Release Conference	18-20 Nov 2020, University of Oslo, Norway	Online
103	Swayangsiddha Ghosh	19171504	"Material characterization using X-ray as probes"	29 <sup>th</sup> August 2020 (online) ,organised by Suresh Gyan Bihar University, Jaipur	
104	Swayangsiddha Ghosh	19171504	"Modern Approach on Magnetism and Material science in Engineering	15 <sup>th</sup> to 18 <sup>th</sup> September 2020 (online) organised by Maharaja Institute of Technology Mysore	
105	Pawan Kumar	19171507	Astronomical Society of India	18-23 Feb, TIFR Bengaluru	Ramanujan Fellowship
			ABROAD		
1	Astha Jain	15173020	The Undergraduate Summer School	25th May- 5th June 2020 Perimeter Institute for Theoretical Physics, Canada	
2	Ishaan Dhyani	18173005	Beyond Planck Release Conference	18-20 Nov 2020, University of Oslo, Norway	Online

## 2.4 Names of students/scholars who got prizes and awards outside the Institute

S. No.	Name of Student	Roll No.	Name of Prize	Date & Venue	Prize awarded by
1	Vani Pawar	14171003	Best Poster Award	July 6, 2020 (Online Mode)	Department of Physics, Indian Institute of Technology, Roorkee

# 3. Faculty & their Activity

#### 3.1 Faculty and their areas of specialisation

S. No.	Name, Qualification, Employee No.	Date of Award of PhD Degree	Major Areas of Specialization (Max. 3 Areas)
PROFE	SSORS		
1	Prof. Debaprasad Giri, Ph.D., 17048	January 1997	Statistical Physics; Soft Condensed Matter Physics; Computational Bio-Physics
2	Prof. Prabhakar Singh, M.Tech., Ph.D., 18366	16 <sup>th</sup> June 2005	Condensed matter physics Materials Science and Technology





S. No.	Name, Qualification, Employee No.	Date of Award of PhD Degree	Major Areas of Specialization (Max. 3 Areas)
3	Prof. Sandip Chatterjee, Ph.D., 18478	May 1997	Topological Insulators, Multiferroic Materials, Magnetism.
4	Prof. Rajendra Prasad, Ph.D., 17276	1998	Remote Sensing, Satellite image analysis, crop growth variables and soil moisture retrieval algorithms development for their monitoring
ASSOC	IATE PROFESSORS		
1	Dr Anita Mohan PhD, 17041	1996	Physics and Diagnostics of Solar, EUV and X-Ray Emission Processes; Synthesis of composites; Tribology
2	Dr. Praveen Chandra Pandey, Ph.D., 18359	2001	Fiber Optics & Photonic Crystal Fibers, PBG and Metamaterials, Photonic materials.
3	Dr. (Mrs.) Shail Upadhyay, Ph.D., 18536	March 2000	Experimental Condensed Matter; Electro ceramic
4	Dr. Abhishek Kr. Srivastava, Ph.D., 19771	2006	Solar Physics
5	Dr. Rakesh Kumar Singh, Ph.D., 50222	8 <sup>th</sup> August 2009	Optics: Experiment, Theory & Computation
ASSIST	ANT PROFESSORS		
1	Dr. Sunil Kumar Mishra, Ph.D., 50020	2 <sup>nd</sup> June 2012	Quantum Infomation, Quantum Spins systems, Frustrated Magnets
2	Dr. Avanish Singh Parmar, Ph.D., 50021	7 <sup>th</sup> August 2009	Biophysics, Nanotechnology, Hybrid Materials
3	Dr. Saurabh Tripathi, Ph.D., 50028	2012	Structural Phase Transitions in ferroics, Short and long range ordering in functional materials, Experimental Condensed Matter & Materials Science
4	Dr. Swapnil Patil, Ph.D., 50029	30 <sup>th</sup> July 2010	Experimental Condensed Matter Physics; ARPES investigations of the electronic structure of materials
5	Dr. Shradha Mishra, Ph.D, 50033	February 2009	Condensed matter theory, soft matter and statistical physics
6	Dr. Prasun Dutta, Ph.D., 50036	2011	Physics of Interstellar Medium Radio Astronomy Observations and Interpretations, Statistical astrophysics and cosmology
7	Dr. Rajeev Singh, Ph.D., 50170	21 <sup>st</sup> December 2013	Quantum Computing, Quantum Optics, Condensed Matter Theory
8	Dr. Somnath Nag, Ph.D., 50173	20 <sup>th</sup> July 2014	Nuclear Physics (Gamma Ray Spectroscopy, Nuclear structure model calculations - cranked Nilsson Strutinsky Model, Shell Model calculations )
9	Dr. Sunil Kumar Singh, Ph.D, 50182	28 <sup>th</sup> September 2011	Spectroscopy Lasers Nanophotonics
10	Dr. Gauhar Abbas, Ph.D., 50199	14 <sup>th</sup> December 2012	Theoretical High Energy Physics
11	Dr. Awaneesh Kumar Singh, Ph.D.; 50213	11 <sup>th</sup> October 2011	Soft Matter Physics, Statistical Physics, Physical Chemistry
12	Dr. Bidya Binay Karak, 50217	August 2013	Solar Physics; Magnetohydrodynamics (MHD) and its application in Sun and other stars; Astrophysical Fluids, Turbulence, and Convection; Dynamo Theory, Sunspot and Solar Cycle, Chaotic behaviours of Astrophysical Objects
13	Dr. Pavan Kumar Aluri, Ph.D., 50219	5 <sup>th</sup> June 2013	Cosmology - Cosmic Microwave Background - Statistical isotropy



S. No.	Name, Qualification, Employee No.	Date of Award of PhD Degree	Major Areas of Specialization (Max. 3 Areas)
Institu	te Professors		
1	Prof. Bhola Nath Dwivedi, Ph.D., FAC-IP04	1978	Physics and Diagnostics of Solar EUV and X-ray Emission Processes; MHD Waves and Oscillations in the Solar Atmosphere; Science Communication
Disting	guished Professors		
Emerit	us Professors		
1	Prof. R. P. Singhal, Ph.D., 13664	1971	Nuclear & Atomic Physics, Planetary and Space Sciences, Space Weather.
		Guest	Faculty
Visitin	g Faculty		
1	Dr. Arvind Kumar Tripathi, FAC-VF-17	2000	Planetary & Space Sciences, Planetary Space Weather

# 3.2 Technical and Non-Teaching Staff

Sl. No.	Name, Qualifications	Designation, Employee No.	Date of Appoint- ment in the depart- ment
1	Rahul Kant Chaudhary, M. Tech.	Jr. Assistant	13.05.2017
2	Awadhesh Kumar Srivastava, B.Com & B. Lib	Skilled Clerical Staff	10.06.2016
3	Vikash Singh, B.Sc.	Skilled Staff	21.12.2010
4	Ramji Ram, High School & Agricultural Diploma	Technical Superintendent	30.05.1987
5	Manjul Tiwari, B.Sc. & Diploma in Applied Videography	Technical Superintendent	15.12.2008
6	Bhanu Pratap Prasad, Intermediate Science	Technical Superintendent	19.11.1990
7	Sujeet Kumar Bose, BA & Diploma in Electrical Engineering	Jr. Technical Superintendent	22.02.2007
8	Pankaj Kumar Asthana, B.Sc.	Senior Technician	06.08.2008
9	Upendra Prasad, M.Sc.& M.Ed.	Senior Technician	16.08.2008
10	Kumar Vikram, Intermediate Commerce & DCA+Tally	Senior Technician	27.08.2004
11	Uma Shankar Pandey, Intermediate	Multi Tasking Staff	16.12.2016
12	Anil Pal, BA & ITI Diploma	Multi Tasking Staff	05.05.2017

# 3.3 Short-term courses/workshops/seminars/symposia/conferences organised by faculty members

S. No.	Cordinator	Title	Period
1	Department of Physics IIT (BHU)	High-Performance Optical Systems for Indian	19.09.2020
		Space Missions: Developmental Aspects and	
		Challenges in Realization" by Dr. K. V. Sriram,	
		Director, Laboratory for Electro-Optics Systems	
		(LEOS) Indian Space Research Organization,	
		Peenya Industrial Estates, Bengaluru	





S. No.	Cordinator	Title	Period
2	Department of Physics IIT (BHU)	Hundred years of the Saha Equation and Astrophysics by Prof. Gautam Gangopadhyay, Dept. of Physics, University of Calcutta	24.09.2020
3	Department of Physics IIT (BHU)	Do the Fundamental Constants change with Time? By Prof. Nissim Kanekar, NCRA-TIFR	08.10.2020
4	Department of Physics IIT (BHU)	FROM NANO TO ATTO "Subtitle : The amazing world of elementary particles "Prof. Sreerup Raychaudhuri, TIFR	10.10.2020
5	Department of Physics IIT (BHU)	Integrable $\pi$ -rational billiards: From classical periodic orbits to quantum energy spectrum by Prof. S. P. Prof. S. P. Khastgir, IIT Kharagpur	03.11.2020
6	Department of Physics IIT (BHU)	The MHD Seismology of the Coronae of the Sun and Sun-like Stars by Prof. Valery M. Nakariakov, Senior professor at CFSA, The University of Warwick, UK.	27.01.2021
7	Department of Physics IIT (BHU)	Stellar Flares and Superflares and Their Planetary Impacts by Prof. K. Shibata, Kwasan and Hida Observatories, Kyoto University, Japan	12.03.2021
8	Bidya Binay Karak	Recent Insights into Solar Active Region Dynamics: Workshop, ASI 2021	Feb 18, 2021

## 3.4 Short-term courses/workshops/seminars/symposia/conferences/training programmes attended by faculty members in academic institutions and public sector undertakings

S. No.	Name of Faculty Member	Title	Period and Venue
Semina	rs/Symposia/Conferences		
1	Prof Prabhakar Singh	LEAP-2020	18 February to 04 March 2021, Leela Palace, New Delhi
2	Prof Prabhakar Singh	ICACC-2021 Virtual	February, 8-12, 2021
3	Dr. Shail Upadhyay	Science leadership workshop (Online)	22-28 June 2020 organized by Central University of Punjab, Bhathinda,Punjab
4	Dr. A.K. Srivastava	13th January 2021, 2nd SUIT Science Meeting	IUCAA, Pune, 11-13 January 2021
5	Dr. A.K. Srivastava	Coronal Seismology (CS-2020)	Warwick University, UK, 8-11 December 2020
6	Dr. A.K. Srivastava	IIA-50: Advances in Observations and Modelling of Solar Magnetim and Variability	Indian Institute of Astrophysics, 1-4 March 2021
7	Dr. A.K. Srivastava	High-End Workshop on "Solar Activities and their Influences in the Heliosphere and Planetary Atmospheres"	NIT Calicut, 8-14 March 2021.
8	Dr. A.K. Srivastava	39th Annual Meeting of the Astronomical Society of India	18-23 February 2021
9	Dr. Rakesh Kumar Singh	Quantum Foundations, Technology and Applications 2020 (QFTA 2020)	4-9 December 2020





10	Dr. Rakesh Kumar Singh	JIIT Students Conference on Optics and Photonics (JSCOP-2021)	13th-14thMarch 2021 (Online) JIIT-OSA, Department of Physics & Materials & Engineering, JIIT Noida
11	Dr. Avanish Singh Parmar	4th International Conference on Soft Materials (ICSM-2021)	MNIT Jaipur, INDIA, 13-18 December 2020
12	Dr. Prasun Dutta	SKA Science 2021	15-19th march (Online)
13	Dr. Rajeev Singh	Conference on Quantum Foundations, Technology, and Applications 2020 (QFTA-2020)	December 04-09, 2020, IISER Mohali (Online)
14	Dr. Gauhar Abbas	The BSM-2021	March 29-April 02, 2021, online, CFP, Cairo, Egypt
15	Dr. Gauhar Abbas	ICHEP 2020	28 July-06 August, 2020, online, Prague, the Czech Republic
16	Dr. Bidya Binay Karak	Astronomical Society of India	18-23 Feb 2021, TIFR Bengaluru
17	Dr. Bidya Binay Karak	IIA 50: "Advances in Observation and Modelling of Solar Magnetism and Variability"	1-4 Mar 2021, IIA Bengaluru
18	Dr. Pavan Kumar Aluri	Beyond Planck Release Conference	18-20 Nov 2020, University of Oslo, Norway (Online)

# 3.5 Special lectures delivered by faculty members in other institutions

S. No.	Name of faculty Member	Topic of Lecture	Institution	Date
1	Prof. Prabhakar Singh	Photovoltaics and Hysteric photo-conduction	INTERNATIONAL E-CONFERENCE ON RECENT ADVANCES IN PHYSICS Department of Physics Government P.G. College Bazpur, Uttarakhand India	25.06.2020
2	Prof. Prabhakar Singh	Photovoltaics: A Hope of Future Energy	Department of Applied Science, IEC College of Engineering & Technology, Greater Noida	17.07.2020
3	Dr. Praveen Chandra Pandey	Future of STI: Impacts on Education, Skills and Work	KV Allahabad	28.02.2021
4	Dr. Praveen Chandra Pandey	One Dimensional Photonic Crystals Composed of Graded and Dispersive Materials Session – IV(02:30 PM-03:15 PM	Teerthankar Mahaveer University Moradabad	16.06.2020
5	Dr. Shail Upadhyay	Perovskite oxides and their applications	SAGE University, Indore, M.P.	28 <sup>th</sup> July 2020 (Online)
6	Dr. Abhishek Kumar Srivastava	On probing the solar and stellar atmospheres by magnetohydrodynamic (MHD) waves	Coronal Seismology (CS-2020), Warwick University, UK, 8-11 December 2020	Online Invited Talk on in the international conference on 11 <sup>th</sup> December 2020





S. No.	Name of faculty Member	Topic of Lecture	Institution	Date
7	Dr. Abhishek Kumar Srivastava	Chromospheric Heating by MHD Waves and Instabilities	2nd SUIT Science Meeting, IUCAA, Pune, 11-13 January 2021	Online Invited Talk, 13 <sup>th</sup> January 2021
8	Dr. Abhishek Kumar Srivastava	Waves and Flows in the Sun's Atmosphere	National Science Week at VIT Bhopal	Online Invited Lecture on 27 <sup>th</sup> February 2021
9	Dr. Abhishek Kumar Srivastava	Instabilities in the Solar Chromosphere	IIA-50: International Conference on the Advances in Observations and Modelling of Solar Magnetim and Variability, IIA, Bangalire	1 <sup>st</sup> March 2021; Online Invited Solicited Talk
10	Dr. Abhishek Kumar Srivastava	The Mass and Energy Transport Processes Coupling the Sun's Atmosphere	High-End Workshop on "Solar Activities and their Influences in the Heliosphere and Planetary Atmospheres" – 2021, NIT, Calicut	11 <sup>th</sup> March 2021; Online Invited Talk
11	Dr. Rakesh Kumar Singh	Phase recovery in the Ghost Imaging: Invited	IISER Mohali	4-9 December 2020
12	Dr. Rakesh Kumar Singh	Developing quantitative imaging Microscope with Chaotic light-Invited	Jaypee Institute of Technology , Noida	13 March 2021
13	Dr. Shradha Mishra	Dynamic of particle on a Lorentz Lattice Gas	ICTS, Bangalore	5 <sup>th</sup> Nov. 2020
14	Dr. Prasun Dutta	Science of Raman Effect	Mrinalini Dutta Maha Bidyapith, Birati, Online mode	28th Feb, 2021
15	Dr. Prasun Dutta	An Invitation to AstroPhysics	Dhirendra Mahila PG College	10th March, 2021

#### 3.6 Honours and awards

S. No.	Name of Faculty Member	Details of Award
1	Prof Prabhakar Singh	Global Star Award-2021 From American Ceramic Society
2	Dr. Bidya Binay Karak	Became a member of Member of International Astronomical Union (IAU)

## 3.7 Fellowships of academic and professional societies

S. No.	Name of Faculty Member	Details of Fellowship
1	Prof Prabhakar Singh	Annual membership of American Ceramic Society (2021-22)
2	Dr. Rakesh Kumar Singh	Life member , Optical Society of India





## 3.8 Books, monographs authored/co-authored

S. No.	Name of Author/Co- Author	Title	Publisher
1	Priyam Singh, P Singh, SK Singh	Photon Upconversion Spectroscopy InModern Techniques of Spectroscopy: Basics, Instrumentation and Applications	Springer Nature ISBN 9789813360839
2	AK Singh, SK Singh	Optical Properties of ZnO In Nanostructured Zinc Oxide, Synthesis, Properties and Applications	Elsevier ISBN: 9780128189009

#### 3.9 Editorial boards of journals

S. No.	Name of Faculty Member	Position (Editor/ member)	Name of Journal
1	Dr. A.K. Srivastava	Editor	Journal of Astrophysics and Astronomy
2	Dr. A.K. Srivastava	Editors: Dr. A.K. Srivastava; Prof. R. Erdelyi; Prof. Stefaan Poedts; Prof. Peng-Fei Chen; Prof. Yihua Yan.	Topical Issue: Data-driven MHD: Novel Applications to the Solar Atmosphere, in Frontiers in Astronomy & Space sciences

## 4. Design and Development Activities

## 4.1 New facilities added

S. No.	Details (Infrastructure, Equipments, etc.)	Value (in Lakhs of Rupees)
1	Dynamic Light Scattering with Zeta Potential	~27 Lakhs
2	Gamma Ray Spectroscopy using NaI	~ 11.40
3	Babinet Compensator, Faradey Effect, Zeeman Effect and Pockel Effect	6.97
4	Prism Spec – HD (Emission Spectra)	~ 5.00
5	Nuclear Magnetic Resonance (NMR) in polystering Glycerine and Teflon	4.41
6	Berry Phase Experiment (He Ne laser, Laser mount, Beam splitter, Quartz wave, Half wave plate, Rotation mount polarizer, special filter assembly)	4.10
7	Fourier Optics	1.89
8	Michelson Interferometer using Sodium lamp source	1.39
9	Single slit diffraction laser light setup	0.60
10	Geiger Counting System (GM Counter Setup)	0.72
11	Contamination Monitor (Digital)	0.40

## 5. Research and Consultancy

### **5.1** Sponsored research projects (Ongoing only)

Note: Sponsored project name is to be given only in case a faculty member is Project Incharge

S. No.	Title	Period	Funding Agency	Amount (in lakhs of Rs.)	Co- ordinator
1	Investigations of new lead free perovskite materials for solar cell	12 <sup>th</sup> March, 2019- 31 <sup>st</sup> march, 2022	DST-SERB	38,09,391	Prof. Prabhakar Singh
2	Fabrication of Cathode materials and SOFC for energy applications	Sanctioned but yet to be started	UP-CST	11,44,000	Prof. Prabhakar Singh





S. No.	Title	Period	Funding Agency	Amount (in lakhs of Rs.)	Co- ordinator
3	Study of polarimetric parameters from laser speckle	2020-2023	CSIR	29.73 Lakhs	Dr. Rakesh Kumar Singh
4	Scattering assisted imaging- exploiting randomness of the light	2020-2023	SERB	34.21	Dr. Rakesh Kumar Singh
5	Spatially resolved digital hologra- phy polarization microscope for diagnosis applications	2021-2024	DBT	41.44	Dr. Rakesh Kumar Singh
6	Tuning Self-assembly of Fluorescent Protein Nanodots for Melanoma Skin Cancer	31 <sup>st</sup> December 2019 – 30 <sup>th</sup> December 2022	DST-SERB	36,68,522	Dr. A. S. Parmar
7	Protein folding, unfolding and aggregation	2016-2021	DST-SERB via Ramanujan Fellowship	38 Lakh	Dr. Avanish Singh Parmar
8	Electronic structure evolution across quantum critical points in $Li(Ti_{1,x}V_{x})_{2}O_{4}$ and $(Li_{1,x}Zn_{x})V_{2}O_{4}$	15 <sup>th</sup> March 2018- 14 <sup>th</sup> March 2021	DST-SERB	5500000/-	Dr. Swapnil Patil
9	Thermalization and Non- Equilibrium Dynamics in Quantum Systems	2016-2021	DST-SERB via Ramanujan Fellowship	38 Lakhs	Dr. Rajeev Singh
10	Modeling self-assembly and phase separation kinetics in the complex soft materials	Project starts from 5 <sup>th</sup> Nov 2018 for the next 3 Years	SERB through Early Career Research Award (ECRA)	46,54,375.00	Dr. Awaneesh Kumar Singh
11	Ramanujan Fellowship	2018-2023	DST/SERB	38 Lakhs	Dr. B.B. Karak
12	On understanding the solar activity and preparing for space weather prediction using a state-of-art dynamo model	2020-2022	ISRO	30.99 Lakhs	Dr. B.B. Karak
13	Multiple reversals of the Sun's polar-fields and their physical causes	2020-2022	Indo-Russian DST	10.45 Lakhs	Dr. B.B. Karak
14	Study of Aurora on Jupiter and Airglow, Plasma densities and conductivities on Europa	2020-2023	ISRO Project	Project Granted	Dr. A.K. Tripathi

## **5.2 Faculty members' participation with other universities under MoUs** (Ongoing only)

#### **5.3 Research Publications**

S. No.		No.
1	Total Number of Papers Published in Refereed National Journals	01
2	Total Number of Papers Published in Refereed International Journals	97
3	Total Number of Papers Presented in National Conferences	04
4	Total Number of Papers Presented in International Conferences	05

#### 5.4 Refereed International Journals

[ **Example :** Prasad M.S. and Manivannan M. (2019) Isometric force matching error of index finger and laparoscopic instrument. Indian Journal of Biomechanics 4(1): 15–26]



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# **5.5 Refereed National Journal**

[**Example:** Maniam K.K. and Chetty R. (2019) Electrodeposited palladium nanoflowers for electro catalytic applications. Fuel Cells 13: 1196–1204.] Please provide it strictly in the suggested format.

1. Mishra V.N, Kumar Vivek, Prasad R, Punia M (2021), Geographically Weighted Method Integrated with Logistic Regression for Analyzing Spatially Varying Accuracy Measures of Remote Sensing Image Classification, Journal of the Indian Society of Remote Sensing, 49(5):1189–1199.

# **5.6 Proceedings of International Conferences**

[ **Example** : Vincy Verghese, Shankar C. Subramanian and Lelitha Vanajakshi. 2019. Model based traffic control in Indian conditions. Procedia-Social and Behavioral Sciences 104: 516–525, 2nd Conference of Transportation Research Group of India (CTRG), Agra, India, December 2019.] Please provide it strictly in the suggested format.

1. Singh Pragati, Pandey R and Singh P 2021. Tailoring the electrical and structural properties of sodium bismuth titanate with sintering temperature. Material today proceedings 44: 166-169, International Confrence on Materials, Processing and Characterizations (ICMPC), Indore, India, December 2020.





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# 5.7 Proceedings of National Conferences

[**Example**: Gandhi S.R. (2019) Difficulties in construction of marine piles in area with high tidal range super PILE 2013 at Minneapolis (14–17 May 2013), USA organized by DFI] Please provide it strictly in the suggested format.

- 1. Pal D, Dan S, Gangwar VK, Ghosh S, Singh RK, Patil S and Chatterjee S 2020, Structural magnetic and vibrational properties of BSTS topological insulator November 2020, AIP Conference Proceedings 2265(1):030419,: DAE SOLID STATE PHYSICS SYMPOSIUM 2019, IIT Jodhpur, India
- Alam M, Pal A, Singh P, Ghosh S and Chatterjee S 2020, Study of spin-freezing transition in pyrochlore Eu<sub>1.9</sub>Ce<sub>0.1</sub>Ti<sub>2</sub>O<sub>7</sub> from AC- susceptibility measurement November 2020 AIP Conference Proceedings 2265(1), DAE SOLID STATE PHYSICS SYMPOSIUM 2019, IIT Jodhpur, India
- Singh P, Gangwar VK, Alam M and Chatterjee S 2020, Structure and Magneto transport study of la deficient La<sub>1.7</sub>Pr<sub>0.2</sub>CoFeO<sub>6</sub> double perovskite November 2020 AIP Conference Proceedings 2265(1), DAE SOLID STATE PHYSICS SYMPOSIUM 2019, IIT Jodhpur, India
- 4. Pal D., Patil S. and Chatterji S. (2021). First-principles calculation of Sb2Te3 Topological Insulator under pressure. Materials Today: Proceedings, Ref. No: MATPR-D-21-01806R1, RAFM 2020, online mode, 5-6th November, 2020.

# 5.8 Kindly Provide Brief Details of 5 Articles from the Department/School with maximum no. of Citations in last 5 years

- Srivastava Abhishek Kumar, Shetye, Juie, Murawski, Krzysztof, Doyle, John Gerard, Stangalini, Marco, Scullion, Eamon, Ray, Tom, Wójcik, Dariusz Patryk, Dwivedi, Bhola N. (2017), High-frequency torsional Alfvén waves as an energy source for coronal heating, Nature Scientific Reports, Volume 7, id. 43147. [Citations 64]
- Prajapati B., Kumar Shiv, Kumar M., Chatterjee S., Ghosh A.K. (2017), Investigation of the physical properties of Fe:TiO<sub>2</sub>-diluted magnetic semiconductor nanoparticles, J. Mater. Chem. C, 5, 4257-4267 [Citations 53]
- S Patil, A Generalov, M Güttler, P Kushwaha, A Chikina, K Kummer, TC Rödel, AF Santander-Syro, N Caroca-Canales, C Geibel, S Danzenbächer, Yu Kucherenko, C Laubschat, JW Allen, DV Vyalikh, ARPES view on surface and bulk hybridization phenomena in the antiferromagnetic Kondo lattice CeRh2Si2, Nature communications 7, 1-8 (2016).
- PK Shahi, P Singh, AK Singh, SK Singh, SB Rai, R Prakash, A strategy to achieve efficient dual-mode luminescence in lanthanide-based magnetic hybrid nanostructure and its demonstration for the detection of latent fingerprints, Journal of colloid and interface science 491 (2017) 199-206 [Citations 31]
- Doyle J.G., Shetye J., Antonova A.E., Kolotkov D.Y., Srivastava A.K., Stangalini M., Gupta G.R., Avramova A., Mathioudakis M. (2018), Stellar flare oscillations: evidence for oscillatory reconnection and evolution of MHD modes, Monthly Notices of the Royal Astronomical Society, Volume 475, Issue 2, p.2842-2851 [Citations 28]





 Kathryn Drzewiecki, Daniel Grisham, Avanish Parmar, Vikas Nanda, and David Shreiber (2016) "Monitoring Collagen Fibrillogenesis Using Circular Dichroism Spectroscopy: A New Use for an Old Technique" Biophysical Journal, 111 (11), 2377-2386.

# 6. Other activities

1. Dr. Rakesh Kumar Singh along with a student Aditya C Mandel from Department of Minining Engineering, IIT(BHU) and Prof. S. Rai, IIT (BHU) awarded a R & D project from Coal India of cost 36.84 Lakhs

# Any other Information

- 1. Dr. A.K. Srivastava has been appointed as a Member on ISRO's National Level Committee titled "Aditya-L1 Space Weather Monitoring and Predictions Plan (ASWMP)".
- 2. Dr. A.K. Srivastava has been appointed as Member on SUIT Science Management Panel (SSMP) national committee for Aditya-L1 Space Mission.'
- 3. Dr. A.K. Srivastava has been served on NASA Review Panel to review the project proposals in Solar and Heliospheric Physics.
- 4. Dr. A.K. Srivastava has been served as a SOC Member in (i) IIA-50: Advances in Observations and Modelling of Solar Magnetism and Variability, 1-4 March 2021; and (ii) High-End Workshop on "Solar Activities and their Influences in the Heliosphere and Planetary Atmospheres" 2021, NIT Calicut, 8-14 March 2021.
- 5. Dr. A.K. Srivastava has chaired various scientific sessions in the conferences (i) 39th Annual Meeting of the Astronomical Society of India, 18-23 February 2021; (ii) "IIA-50: Advances in Observations and Modelling of Solar Magnetism and Variability", Online International Conference, 1-4 March 2021; (iii) "Solar Activities and their Influences in the Heliosphere and Planetary Atmospheres", NIT Calicut, 8-14 March 2021.



# 24. Centre for Computing and Information Services

#### Year of Establishment: April, 2017

**Head/Coordinator of the Department/School during the year 2020-21:** Prof. Rajeev Srivastava w.e.f. 01 August 2017

# 1. Background:

Centre for Computing and Information Services inaugurated on 6<sup>th</sup> April 2017 has been established as a central facility to provide 24x7 digital backbone to the Computing, Web, Email and Network services of the institute. Centre for Computing and Information Services offers high-end computational servers, high availability web servers, network services and provides a robust platform for various academic and research importunities of the institute. Licensed software, email services and in-house software development for the institute needs are also managed by the Centre. CCIS is one of the growing unit and projects are in early stage for developing it into a facility centre poised horizontally to meet the crescent demand of computerization and software solution required for scientific and research infrastructure of the institute.

# 2. Services Offered

#### 2.1 Computing

#### Services:

Management of the user login and authentication to all the compute nodes. Running multiple software and their license servers.

We have licenses of following software running on our servers:

- MATLAB Suite of solutions 50 User licenses with appropriate numbers of toolboxes.
- Mathematica Software (Perpetual software, network version): 30 User licenses
- CST Studio Software (Perpetual) with basic components: 01 No each.
- Origin Lab Software (100, Network version, Perpetual license)
- MedeA VASP 01 User (MedeA core GUI, Job/Task Server, VASP, VASP GUI, LAMMPS GUI, Infomatica, COD & COD GUI)
- ANSYS- Existing academic multiphysics solution (10/100) has been upgraded with following licenses and TECS upto- 02/03/2022:
  - » ANSYS Academic Multiphysics Campus 50/500
  - » ANSYS Academic Research Chemical Kinetics (5 Tasks)
  - » ANSYS Academic Research Scade Suite (1 Tasks)
  - » ANSYS Academic Teaching Scade Suite (25 Tasks)
  - » ANSYS Academic Ensight Post Processing tool (5 Tasks)
  - » ANSYS Additive Suite (5 tasks)
  - » ANSYS Discovery Ultimate Enterprise (5 Tasks)
  - » ANSYS Academic Spaceclaim tool (25 Tasks)
  - » ANSYS Academic Research Ls-Dyna (25 Tasks)
  - » CasaXPS Unlimited Pack (Windows desktop)





- Statistica Ultimate Academic Pack software: 50 users network for 5 years licenses.
- Simulia ABAQUS- 2 Users license ( Research Edition)
- Gaussian, GaussView and TCP Linda Software: Site License for Linux Platform.

User can login to the compute nodes and run their application using available purchased licensed software or open source software.

# Hardware:

Three Compute Servers are available for providing the computing facility to all the students and faculty members of the Institute. Server are having following configuration:

- 1x Dell R-930 Server: Populated with 4x18 core of Intel Xeon E7-8870 v3 @ 2.10 GHz processor with 45MB L3 Cache, 256GB DDR4 RAM, 8 x 1.2TB 15K hot plug SAS, 01 NVIDIA Tesla P4 GPU
- 3xDell R-730 Server: Populated with 2x10 core of Intel<sup>®</sup> Xeon<sup>®</sup> processor E5- 2660v3 @ 2.60 GHz with 25MB L3 Cache, 2U Form factor, 128 GB DDR4 RAM, 3 X 600GB 15K hot plug SAS, 01 NVIDIA Tesla K 40C
- 1xDell R-540 Server: 2 X Intel<sup>®</sup> Xeon<sup>®</sup> Silver 4114 2.2G, 10C/20T, 9.6GT/s, 96GB RAM, 3 X 600GB 10K RPM SAS 12Gbps HDD
- 1xDell R-440 Server: 2 X Intel<sup>®</sup> Xeon<sup>®</sup> Gold 6132 2.6G,14C/28T,10.4GT/s, 12 X 16GB RAM, 3 X 600GB 10K RPM SAS 12Gbps HDD
- GPU Computer Server: Populated with 2 x Intel Xeon E5-2609 v4 (8 Cores,20M Cache, 1.70 GHz), 128GB DDR4 RAM, 8 Nos. NVIDIA GeForce GTX-1080Ti 11GB GDDR5x, 3584 CUDA cores.

# 2.2 Storage:

# Services:

Providing space for the storage requirement for running scientific and research applications of the faculty and students. It is integrated with webservers to provide space for Institute website and other portals, network Servers/ Switches over NAS, being managed by CCIS.

# Hardware:

• **Dell SC4020 Storage with FS8600 NAS:** Two controllers running in an active-active mode with automatic failover to each other in case of one controller failure with 20 TB on SAS 10K RPM drives and 100 TB on NL-SAS drives with 105 TB raw capacity (Approx. 70TB usable considering the RAID overhead).

# 2.3 Web Services

# Services:

Two primary web servers are running in High Availability for hosting our Institute website. These servers are configured with RHEL Operating System. Institute's website is built in-house and it has replaced several small websites running earlier on different domain and servers making it a truly one website of IIT(BHU). It incorporates all the departments, school, units, offices and covers all the activities governed by the institute placing a uniform structure throughout. In addition, it has decentralized access for website content modification and individual login for all the faculties to maintain their profile. In the session 2018-19, two more web servers has been installed and configured with Centos and Windows Server Operating Systems.

There are multiple web servers running on virtual and physical servers catering the needs of web hosting facilities for various portals of the institute. Apart from institute website few of the many websites hosted on these servers are – Faculty appraisal portal, Guest housing booking system, Non faculty recruitment portal, Admin information management System, ERP IIT BHU, their test and backup servers.





#### Hardware:

- 2xDell R-730 Server: Populated with 2x10 core of Intel<sup>®</sup> Xeon<sup>®</sup> processor E5- 2660v3 @ 2.60 GHz with 25MB L3 Cache, 2U Form factor, 128 GB DDR4 RAM, 3 X 600GB 15K hot plug SAS
- 2xDell R-440 Server: 2 X Intel<sup>®</sup> Xeon<sup>®</sup> Silver 4114 2.2G, 10C/20T, 9.6GT/s, 96GB RAM, 3 X 600GB 10K hot plug SAS

#### 2.4. Email Services

Facilitating with email services to the all faculty members, students and staff of the institute using G Suite for Higher Academic Institution. Services includes email services, classroom, unlimited google drive space etc. The entire users are allocated in various groups as per their department, section, offices, and designation, restricting them access over individual groups for sending emails.

# 3. People at CCIS

S. No.	Name	Designation
1	Prof. Rajeev Srivastava	Professor & Head of the Department
2	Dr. Roshan Singh	System Analyst
3	Mr. Mahesh Pandey	System Analyst
4	Mr. Ritesh Singh	Junior Assistant

# 4. Conclusion

As per the available statistics, the students, faculty members and other research staff of the Institute are heavily using the software facilities hosted on the servers. After establishment of the unit, further, an extended server area has been created for hosting more servers. More compute nodes from various departments have been added this year to enhance the compute facilities at CCIS. We are continuously in process of enhancing the services available at CCIS to meet the compute and web hosting facilities available at CCIS.





# 25. Main Library

# **1. Introduction**

The Indian Institute of Technology (Banaras Hindu University), Varanasi library system consists of the Main Library and five departmental libraries, which collectively support teaching, research, and extension programs of the institute. All students, faculty members, and employees of the institute are entitled to make use of the library facilities on taking library membership. The library, besides having an excellent print collection of over 1,42,000 volumes of books, journals, theses, reports, standards, pamphlets, it also provides access to over 15,000 electronic journals and more than 3,000 to electronic books and databases in science, engineering, and technology. The library offers various facilities to the users like collaboration learning space, Document delivery service, Remote Access facility, e-library, Modern reading room, etc. The library opens on weekdays 08:00 am to 11.00 pm, including Saturday and Sunday. It opens 9:30 am to 6:00 pm on government holidays.

#### 2. Manpower

Sl. No	Name	Designation
01	Dr. Navin Upadhyay	Deputy Librarian
02	Shri. Kanu Chakraborty	Assistant Librarian
03.	Shri Maneesh Kumar Singh	Semi-Professional Assistant
04.	Smt. Bhargavi Tiwari	Semi-Professional Assistant (Relieved to BHU)
05	Smt. Archana Rani	Semi-Professional Assistant
06	Shri Abhishek Shukla	Junior Assistant (Office)
07	Shri Mahendra Yadava	Semi-Professional Assistant ( <b>Relieved to BHU)</b>
08	Shri Dharmraj	Semi-Professional Assistant
09	Shri Kumar Karn	Senior Technician (Deputed from workshop)

# **3. Library collection**

Collection building is one of the vital work of the library that supports the academic and research work of the students, faculty, staff, and other users. Library collection comprising of books, journals, theses, reports, standards, pamphlets and other reading material in science, engineering, technology, humanities, social sciences, and management is considered one of the best in the country and is its greatest asset. The total collection of the library as in 31<sup>st</sup> March 2021 stands as follows:

Sl No	Category	Number
1	Books (Reference and General)	92,504
2	Text Book Bank	23,274
3	ST/SC Book Bank	8,740
4	Bound Volume of periodicals	17,738
5	Theses	774
6	Dissertation	995
7	Compact Disc	1420





The library added 247 books under reference and general collection, including 64 books received as donation during the financial year 2020-2021.

#### 4. Journals/Databases/Standards/E-books

Periodical section procures and maintains print and online journals for the academic need of the Institute. In this financial year, the library added more than 350 selective titles of e-books (Textbooks and Reference Books) of publishers Elsevier, Taylor & Francis, McGraw Hill, Wiley and Springer. Some new e-journals, Magazines & Database has been added like Begell House, Derwent World Patents Database, PressReader, Bloomsbury Architecture Library, Springer e-books, The Indian Institute of Architects (IIA) and Project MUSE. Also added Sage - Urban Studies & Planning Collection all titles inn this financial year. The following databases, Standards, e-books and e-journals are accessible.

#### Database

- » Begell House
- » Derwent World Patents Database
- » MathSciNet
- » PressReader

#### Standards

- » ACI MCP
- » Indian Standards(BIS)
- » ASTM Standards

# **E-Books**

- » ASM Handbook Online
- » Begell House
- » Bloomsbury Architecture Library
- » Elsevier (38 titles)
- » Taylor & Francis (113 titles)

- » SciFinder Scholar
- » Scopus
- » Springer Materials
- » Web of Science

- » McGraw Hill (22 Text and Reference books)
- » Springer
- » Wiley Online (172 titles)
- » Royal Society of Chemistry (All e-books published upto 2016).

The Main Library provides web-based access to more than 15,000 full- text journals 24x7 on the institute-wide network and remotely as follows:

#### **Online e-Journal**

Publisher	Description		
ACM Digital Library	ACM journals (42+), conference proceedings, magazines, newsletters, and multimedia titles.		
Actapress	International Journal of Power and Energy Systems		
American Concrete Institute	Materials, Structural, Concrete International & Symposium Volume ACI MCP, Materials Journals, ACI Structural Journal, ACI Concrete International, ACI Symposium Volumes		
American Chemical Society	49 journals with Legacy Archive for Universities.		
American Institute of Physics	It provides access to 19 full-text journals in the area of physics. Backfiles Access: 1997 onward		





Publisher	Description	
American Mathematical Society	The AMS journals package includes 15 online journals published by AMS, including 6 open access journals. Backfiles Access: 1999 onwards	
American Physical Society	The current collection includes access to 13 leading peer-reviewed research journals. Backfiles Access: All	
American Society of Civil Engineers (ASCE)	It publishes 33 journals, contains over 1, 70,000 bibliographic records of everything ASCE has published since 1970.	
American Society of Mechanical Engineers (ASME)	ASME collection provides access to 29 journals, including a complete package for ASME journals + AMR.	
ASTM Journals	Full package of ASTM journals.	
Begell House (Engineering Research Collection) (newly added)	Begell House is a STM academic publisher of medical and scientific journals and books, with a concentration on engineering and biomedical sciences. Engineering Research Collection has access of 29 e-Journals, 3 Databases, 3 Reference titles, 1 e-book & 2 Proceedings titles.	
Bentham Science	Bentham Life science collection 59 titles.	
Bloomsbury Architecture Library (newly added)	Bloomsbury Architecture Library is a leading digital resource for the study of architecture, urbanism, and interior design. Its dynamic digital platform offers access to wide-ranging collections of text and image content, from architectural history to cutting-edge design guidance.	
Canadian Science Publishing	Canadian Journal of Civil Engineering Backfiles access: 1996 onward	
Cambridge University Press	Journal of Fluid Mechanics, Backfiles Access: 2000 Onwards (Newly Added)	
CIM Magazine	The Canadian Institute of Mining, Metallurgy and Petroleum (CIM) is an association for minerals industry professionals	
De Gruyter	1.International Journal of Nonlinear Sciences and Numerical Simulation 2. Functional calculus and Applied Analysis	
Economic and Political Weekly	The Economic and Political Weekly, published from Mumbai, is an Indian institution which enjoys a global reputation for excellence in independent scholarship and critical inquiry.	
Emerald Engineering Collection	59 Journals of Engineering collection. Backfiles Access: 1994 Onwards	
Foundry Trade Journal	Foundry Trade Journal	
IEEE - IEEE/IET Electronic Library (IEL)	The IEEE Xplore digital library provides access if more than 467 journals, 72 magazines, more than 8000 conference proceedings and standards.	
IET	IET Journals offers a range of over 30 research titles, 3 letters journals and a gold open access mega journal (Including Conferences) Backfiles Access: 10 years back files	
Inderscience	1. International Journal of Exergy 2. International Journal of Nanomanufacturing	
Indian Geotechnical Society	Indian Geotechnical Journal	
Informa Healthcare	<ol> <li>Drug Development and Industrial Pharmacy</li> <li>Pharmaceutical Biology</li> <li>Expert Opinion on Drug Delivery</li> </ol>	
Institute of Materials, Minerals and Mining	Advances in Applied Ceramics: Structural, Functional and Bioceramics	
Informs	The entire 16-journal INFORMS PubsOnLine Suite package (newly added)	
IOP	It provides access to 76 full-text journals in the area of physics. Backfiles Access: 10 years rolling back	
Jove	1. Jove Bio-Engineering 2. Jove Engineering	
JSTOR	JSTOR Archive provides access to more than 2500 journals and primary content on an access fee basis.	





Publisher	Description	
Microwave Journals	Microwave Journals	
NACE International	Corrosion	
Nature	Nature	
PNAS	Proceedings the National Academy of Sciences of the United States of America publishes more than 3200 paper annually.	
Project MUSE (newly added)	Project MUSE promotes the creation and dissemination of essential humanities and social science resources through collaboration with libraries, publishers, and scholars worldwide. More than 733+ journal access. Backfiles Access: All access	
Royal Society of Chemistry	It provides access to RSC Gold 2018 Excluding Archives with 51 full-text journals/ magazines/alerting services. Backfiles Access: 2008	
SAGE	Imech collection 17 titles. Urban Studies & Planning Collection all titles	
ScienceDirectNine Subject collections (Access to 1233 titles) Chemical Engineering Chemistry Computer Science Engineering Environmental Science Material Science Mathematics Pharmacology, Toxicology and Pharmaceutics Physics and Astronomy Energy (Newly added)		
Science Online	Only Science Magazine	
SIAM	SIAM publishes 17 peer-reviewed journals. Backfile Access: 1997 onwards	
SPIE Digital Library	Journal of Applied Remote Sensing	
Springer	Springer: 1700 titles	
Springer Nature	Access of 17 selected titles.	
Taylor & Francis	Access of 57 selected titles	
The Indian Institute of Architects (IIA) (newly added)	The Indian Institute of Architects (IIA) is the National body of Architects in the country. IIA is represented on various national and international committees connected with architecture, art and the building industry and is also actively associated with International Union of Architects (UIA) Commonwealth Association of Architects (CAA) and South Asian Association for Regional Co-operation of Architects (SAARCH).	
The Optical Society of America	17 flagship, partnered, and co-published journals; OSA's magazine, Optics & Photonics News; and the conference proceedings from all of OSA's Topical Meetings Backfiles Access: Vol 1. Issue 1	
Wiley Online Library	Access of 144 selected titles.	

# Print Journal

Title	Subjects	Publisher
Aluminium International Today	Raw materials, Energy suppliers, Extrusion	Quartz Business Media Ltd
Architectural Digest	Interior, style, design, art & architecture	Conde Nast
Coal International	Mining, Coal, Power Installation	Tradelink publication Ltd





Title	Subjects	Publisher
Foundry Trade Jl. (Formally British Foundry)	Cast metals industry	Foundry Trade Journal
Mineral And Metal Review	Steel, Mineral & Metal	Binani Metals Pvt. Ltd.
Modern Costing	Waste Stream	American Foundry Society
Nano Trends: A Journal Of Nano Technology & Its Application	Nanoscience and technology	STM Journal
Welding Journals	Metal fabrication and construction.	American Welding Society

# 5. Details of software available (Research Support Tools)

The library provides several Research Support Tools and software to support the research activities. We have also implemented a remote access (Remotex) facility to access all the e-resources from outside the campus network. Grammarly, Turnitin, <u>Ouriginal</u>, and EndNote are the most popular research tools among the faculty and research scholars. There are more than 3850 regular users of Grammarly, We have Instructors and student's accounts of Turnitin for all faculty and Research Scholars, and 250 users are currently using another Plagiarism detection software Ouriginal. At present more than 1800 users are availing remote access facilities to access e-resources outside the campus. The research support tools and software available are as follows:

- » Grammarly (Writing Enhancement Tools)
- » Turnitin (Anti-Plagiarism Software)
- » <u>Ourigina</u>l (Anti-Plagiarism Software)
- » Endnote (Reference Tool)
- » RemotXs (Remote Access platform)

# 6. Infrastructure/Services/Facilities added

The ground floor of library has recently renovated, and now the complete library is fully Air-conditioned, Wi-Fi enabled, under CCTV surveillance and equipped with an alarming fire system. After the renovation, some new sections have been created.

#### Collaboration learning space:

The Library has created Collaborative Learning Space on the ground floor. The collaborative learning space has been created to facilitate space to the user, s who wants to learn/discuss together/in a group to solve problems, work on a project, or have a meaningful discussion. In this space, we provided comfortable furniture and other facilities for the users.

#### > Meeting/presentation space:

The library has created a meeting/presentation space on the first floor. This space can be used by the faculty/ Research Scholar/Students for presentation or academics meetings among groups of students. Space has more than 25 sitting capacity with comfortable furniture and other facilities like a White board, projector, sound systems, computer, etc for the users.

Apart from this, the library has created a separate property counter for depositing student's belongings a capacity of 500 bags at a time.

#### > e-Library:

In this space, 50 PC is meant for users to access, e-books, e-databases, e-journals, and other e-resources installed in the e-Library section. All systems are highly configured modern systems with high -speed LAN





connection. Some of the systems are dedicated for software testing and project implementation. In this space, the library provided comfortable furniture and other facilities to the users.

# Computer-Aided Reference Service

Until date, we are not able to develop a computer-aided reference service unit. However, an email **"libraryservies@iitbhu.ac.in"** and **"Ask the Librarian**" link on the library website is dedicated to all types of ready reference services. The library an average responds more than 25 queries daily to users related to plagiarism check, article request and other library and research -related issues.

# 7. Creation of Scholarly Profile of faculty and maintenance of Institutional Digital Repository

The library recently created Scholars Profile IRINS (Indian Research Information Network System) and added more than 165 faculty publications on this platform, which is being regularly added and updated. The library is also enriching the IDR (Institutional Digital repository), which have currently 303 PhD thesis, 933 articles, 10 videos, etc. which is linked to the National Digital Library and accessible from anywhere.



# 8. Any Other Information/Activities/participation in conferences/lecture delivered

# Seminar /Conference/Workshop Organized by the Main Library

- Virtual Authorship Workshop for Researchers in India: "How to Publish a Quality Technical Paper with IEEE" Thursday, 15 October 2020, Time: 4:30 to 6:00 PM.
- Elsevier Webinar, 2-Day Elsevier National Open Workshop on «Getting Aligned to the Publishing Process». Friday, 25th September 2020 Time: 2:00 PM IST to 4:00 PM IST and Monday, 28th September 2020 Time: 2:00PM IST to 4:00 PM IST.





- The Royal Society of Chemistry (RSC) has partnered with the CSIR to deliver lectures at the latter's initiative Summer Research Training Programme (SRTP) online on August 13<sup>th</sup> & 14<sup>th</sup> 2020. "How to publish dos and don'ts when writing a research article" by Dr Michaela Muehlberg, Executive Editor and "New molecular precursors for the selective growth of thin film metal chalcogenide semiconductors for thermoelectric applications", Professor Gill Reid, University of Southampton and President Elect, Royal Society of Chemistry
- ACS On Campus webinar on "Peer Review & Publishing Ethics" on Monday, August 10, 2020, at 5 PM (IST)
- Webinar on "IEEE Xplore: Search vs. Research" organized by Main Library, IIT BHU, Varanasi in collaboration with IEEE on Wednesday, August 5, 2020, 11:30 AM 12:30 PM
- Webinar on "The Humanities & Social Sciences: why they are critical to our understanding of today's complex and challenging world" by David Bull, Vice President, Journals, Humanities & Social Sciences, Springer Nature, on 30th June 2020, Tuesday, 2.30 PM – 4.00 PM IST.
- Webinar on "Publishing Ethics: the role of publishers, journals, researchers and institutions", by Dr. Maria Kowalczuk, Research Integrity Manager, Springer Nature London on 25th June 2020, Thursday, 2.30 PM – 4.00 PM IST.
- Webinar on "The people and the principles behind Nature the what, the why and the how" by Dr. Magdalena Skipper, Editor in Chief, Nature and Chief Editorial Advisor, Nature Research, on 18th June'2020, Thursday, 2.30 PM 4.00 PM IST.
- Webinar on "Trends in Publishing", by Dr. Harry Blom, Vice President Journals, Development, Policy & Strategy, Springer Nature, New York on 16th June 2020, Tuesday, 4.30 PM 6.00 PM IST.
- Webinar on "How to Write a Great Research Paper, and Get it Accepted by a Good Journal" Recorded Workshop and Q&A webinar with experts on 3rd June 2020 at 11:00 am.
- Elsevier Workshop for Researchers and Faculty on "FINE TUNING RESEARCH PLANNING USING ELSEVIER TOOLS: SCIENCEDIRECT, SCOPUS and MENDELEY", Thursday, 23<sup>rd</sup> April, 2020 @ 11:00 AM.

# Lecture Delivered by Deputy Librarian

- Delivered lecture in the Workshop on Access to E-Resources and Library Cataloguing by the Binova Bhave University, Hazaribagh, Jharkhand 15/03/2021 to 20/03/2021.
- Delivered lecture in the Online Refresher Course on Research Methodology by the UGC-Human Resources Development Center, Ranchi University, 02/09/2020 to 15/09/2020.

# **Research publication by Deputy Librarian**

 Cakraborty, Kanu, Kureshi, Parvin S L, Gajbe, Sagar B. Upadhyay, Navin, & Devi, Dalimi .(2020). Role of LIS Professionals to provide authentic information sources during COVID-19 a Pandemic crisis. Library Philosophy and Practice (e-journal). 4180. https://digitalcommons.unl.edu/libphilprac/4180

# Seminar/Conference/Workshop attended by Deputy Librarian

- Attended a five-day workshop organised by the INFLIBNET, Gandhinagar on "7th Five Days Online Training Programme on Operations of SOUL 2.0" 22 March 2021 to 26th March 2021.
- Attended five-day workshop organised by the INFLIBNET, Gandhinagar on "Research Methodology and Ethics: Plagiarism issues, Reference Management Tools and Altmetrics 15th to 19th June 2020.

# Lecture Delivered/conference attended by Assistant Librarian

• Delivered lecture and presentation to Two Days National Level E-Workshop "On Intellectual property right in digital era: in special reference with plagiarism detection tools", on 27th July, 2020, Jointly Organized





by Department of Library, Research & Guidance Cell and IQAC of Vijaygarh Jyotish Ray College, Kolkata In Technical Collaboration with REFBYTE, Kolkata, India.

• Delivered lecture and presentation on "Open Educational Resources and Supporting Platforms: Important in Higher Education" In webinar for all faculty on 31st May 2020 organized by Dhirendra Mahila P G college, Karmajeetpur, Varanasi, India.

# **Research publication by Assistant Librarian**

- Cakraborty, Kanu, Kureshi, Parvin S L, Gajbe, Sagar B. Upadhyay, Navin, & Devi, Dalimi .(2020). Role of LIS Professionals to provide authentic information sources during COVID-19 a Pandemic crisis. Library Philosophy and Practice (e-journal). 4180. https://digitalcommons.unl.edu/libphilprac/4180
- Sinha PKumar, Sahoo SBhushan, Gajbe SBhimrao, Chakrabory K, Mahato SShankar. Altmetrics Research Progress: A Bibliometric Analysis and Visualization. Journal of Scientometric Research. 2020; 9(3):300-309. doi:10.5530/jscires.9.3.37.

# Seminar/Conference/Workshop attended by Assistant Librarian

- Webinar on Usage Statistics for e-Resources and InfiStats Usage Monitoring Portal organized by e-Shodh Sindhu: Consortium for Higher Education Electronic Resources INFLIBNET Centre, Date: Friday, November 20, 2020, 11:30 am
- Webinar on "IEEE Xplore: Search vs. Research" organized by Main Library, IIT BHU, Varanasi in collaboration with IEEE on Wednesday, August 5, 2020, 11:30 AM 12:30 PM
- Springer Nature & SALIS Webinar on Discovery Services and related aspects, In collaboration with INFLIBNET Centre, 28th July 2020.
- webinar on "Understanding Plagiarism and its Consequences Using URKUND as a Plagiarism Tool" organized by DLA in collaboration with eGlactic, Pune, Maharashtra on 27<sup>th</sup> July 2020.
- Springer Nature Webinar The Humanities & Social Sciences: critical to our understanding of today's complex and challenging world, In collaboration with INFLIBNET Centre, 30th June 2020.
- Springer Nature Webinar on Publishing Ethics: the role of publishers, journals, researchers and institutions, In collaboration with INFLIBNET Centre, 25th June 2020.
- Springer Nature Webinar on Trends in Publishing organized, In collaboration with INFLIBNET Centre, 16th June 2020
- Webinar on "Role of Libraries and LIS Professionals During Pandemic Period" organized by Department of Library and Information Science, University of Jammu in association with central Library, IIT Jammu & Knimbus Pvt. Ltd.3rd to 7th June, 2020.
- Webinar on "Introduction to DATAVERSE for data Sharing" organized by Knowledge Resource Centre, The Energy and Resources Institute (TERI), 27th May 2020.
- Webinar-cum-Lecture on Future Libraries organized by Indian Library Association (ILA) in association with Maharashtra University and College Librarians Association (MUCLA) on May 12, 2020.
- One Week National Faculty Development Program and Online Training on "LaTeX" organised by Sanjay Ghodawat University, Kolhapur in association with Spoken Tutorial Project, IIT-Bombay. duration of FDP (27th April to 2nd May 2020).





Renovated Library Pictures (Reading Hall, e-Library and Periodical Section)



Library Building

Reading hall



e-Library

Magazine section



**Renovated Book Stacks** 



Collaborative Learning Space

# Revenue generated under Overdue/lost books/photocopy/consultancy

In the FY 2020-21 the library collected Rs. 850.00 under overdue charges, Rs. 29,343.00 against lost books, Rs. 61,360.00 under tender fees, Rs. 7,50,000.00 under EMD and Rs. 24,865.00 under sale of scraps.





# 26. Students Life

**Introduction:** The Institute nurtures technical, social, cultural, and sporting activities pursued by the Students' Gymkhana through different councils, Students' Parliament and other student groups. Besides games and sports, the artistic and creative talents of students are encouraged through various activities like dramatics, debates, music, visual arts, etc. and clubs like Radio, Audio, Photography, Automobile, Aero-Modeling, Cine and Computer Club. Students Gymkhana successfully organized its annual techno-management festival Technex, cultural festival Kashi Yatra & games event Spardha. Apart from these, students of IIT (BHU) participated in various IIT meet and brought laurels to the Institute. The students' activities are usually classified in the following councils:

- Council of Social Services.
- Cultural Council
- Science and Technology Council
- Sports Council

# **Achievements of Council for Social Service:**

- 1. The students interacted and were in regular touch with people from nearby *basti* people, enquired about their well-being. They made sure ration and daily requirements are available to them. 'Robinhood Army' helped in Patiya Basti by providing Ration. We provided financial support to the needy with the help of alumni.
- 2. The students helped the underprivileged children from nearby localities in their studies, by creating a database of those who needed help in the form of online teaching, providing worksheets, parent counselling, organizing quiz, storytelling etc. Volunteers were allotted for Navodaya Batch. Database was made on how many students are ready and eligible for preparation of Navodaya this year.
- 3. Students of the four schools in which Sahyog volunteers visited to ask about their knowledge of the pandemic and their well-being. Students formulated a proper dedicated team (Emergency Food Response Team) for providing food etc.. The students were helped by the professors and alumni of the institute. The students also contacted the district administration and helped them in receiving relief materials for these underprivileged people.
- 4. The students created inspirational Facebook posts, brainstorming sessions and discussion sessions to enthuse the student's community of the institute with their social responsibilities
- 5. Mess Worker Relief Movement was initiated in the institute and students participated as volunteers in the relief work being carried out by the institute for helping the casual workers like mess workers, dhobis etc. Their efforts helped in over 61 lakhs being distributed to over 400 mess workers and dhobies.
- 6. The students organized regular events through online mode to celebrate festivals like Diwali Celebrations, Christmas Celebrations, Republic Day Celebrations, Kashi Utsav 2021, Daan Utsav with the underprivileged children. The underprivileged children participated in events like painting, drawing models and reciting poems which were organized and judged by the students of the institute.
- 7. The students organized Ed-TALK an event organised especially for the freshers. The main theme of the talk was "Unlocking Education During Lockdown". The talk started with the question "What is education?". Everyone shared their thoughts on the same(using mettle). It was exciting to hear different points of view of people about education.
- 8. Several other events like Abhipraya '20 A case study event aimed at engaging freshers in studying social problems and presenting ideas along with learning various skills, Webinar on the topic of Mental Health, Plantation drive were organized by the students. A case study event on a problem statement on pollution in





Ganga by the name Vaktavya was also organized where people were to sensitize people on the issue of Ganga pollution and problems associated with it.

9. Jagriti 2021, Institute's annual socio-awareness and celebratory weekend, Jagriti '21, was organised online from March 26th to 28th, 2021, witnessing quality participation and sensitising talks. All the events are available on Jagriti's YouTube channel to witness. (URL: https://youtube.com/channel/UCQRro0vg5F5kaGqm88q2avQ)

# **Achievements of Cultural Council:**

- 1. It's a big feat that even in this online era, a total of 17 Events and 15 Workshops were conducted during the session this year by the students of the institute.. These included 3 major council events: Aagman 2021 (fresher's event), Cultural Week'21 and the IIT BHU Model United Nations 2021. Many other events like Kalakriti Online Fine Arts Competition (Cultural Heritage of Kashi), Vayam Online Poetry Competition (Rashtriya Ekta Diwas) and Utsav- Online Creativity Competition (Connecting Students on Diwali) were organised on club specific levels, to provide students a platform to bring the best of out of their creativity and let them explore their potential.
- 2. The Cultural Week of IIT BHU witnessed an overall 1500+ participation, [including both workshops (nearly 700) and events (nearly 1000)] and took forward the legacy of the Institute with huge participation, coming not only from the IIT BHU students but also the International students of foreign countries like Malaysia, Australia, the Philippines, South Korea, Japan, New Zealand, and other regions of the world. For the IIT BHU MUN, the Prime Minister of India, Shri Narendra Modi, sent his words of encouragement to the organizers through a signed letter. The MUN conference was also endorsed by the United Nations Information Centre (UNIC) for India and Bhutan, New Delhi, and by the United Nations Educational, Scientific and Cultural Organization (UNESCO) through the Indian National Commission for Cooperation with UNESCO (INCCU).
- 3. The students also organized a series of highly interactive workshops that were conducted by the popular artists throughout the session. These included personalities like Mr. Divvyendu (Bollywood and Mirzapur Fame aka Munna bhaiya), Mr. Karn Mehta (Punjabi Films Fame), Mr. Vikram Chandra (Award Winning Writer) and Mr. Sadashiv Sawant (Renowned Sketch Artist). Most of these events also saw events which saw immense participation from the Alumni of the institute, including those living in distant countries. Many other alumni were actively involved in organising workshops for the cultural council club members like Mr Varun Grover, Ms Pooja Shah, Mr Aniket Sachan, Mr Jagjeet Shyamkunwar, etc..

# Achievements of Film and Media Council:

- 1. The council conducted surveys on popular mainstream topics like National Education Policy and directed several Outreach series. It started a special series for the council's official social media handle called Product Photography that featured pictures of simple products in the most unique way. Another contemporary series called Virtuoso was revealed where the life stories and magnum opus of the greatest out of the box creators will be appreciated.
- 2. Apart from these series and the regular features of the prominent digital artists on the social media pages, various clubs under the council also organised photography, writing and B-roll making competitions for the freshers in college. Workshops in the field of Filmmaking, Photography, Journalism, Graphic Designing and Animation were conducted by various renowned artists for a learning experience for the newcomers. In addition to these initiatives, the council members also won prestigious inter-college digital arts events.
- 3. The months January and February saw the Film and Media Council gear up for the long-awaited FMC Weekend's online edition, bringing along with it an amazing opportunity to showcase one's talents in a plethora of events. The theme launch electrified the gloomy online semester giving them each a canvas to paint their dreams on. It was a congregation worth remembering for the attendees.
- 4. The student club released a video of freshers sharing their experiences in online semester and The Media Club continued its series-Weekly Digest, winners of B-roll making, writing and other contests were also released.





Photography and Animation club too continued mesmerising us with fascinating snaps and renders.

# Achievements of Science and Technology Council

- The students under the Science and Technology council took the new initiatives in the institute. Consulting Crew'20, a series of sessions on solving business cases, aimed towards helping the students targeting business profiles for their placements was organized between September to November 2020. They also organized an event InnoSights which was a biweekly infotainment series run across social media handles of the club for sharing innovative breakthroughs and upcoming technologies ie. technologies of the 2020s and 2025s via articles/videos.
- 2. The students also conducted regular online workshops and training programs like GitHub page for Robotics Research Group (RoboReG) and open-sourced the projects done in RoboReG (https://robotics-club-iit-bhu. github.io/RoboReG), CAD course (with course completion certificate) for all the registered students, including a few Ph.D. students and the Research Writing Webinar.
- 3. The students organized Remote Project Camp, which was an online mechanical and technical projects that were taken up by club members of CSI in the various domains of IoT, Web Development and Machine Learning.
- 4. The students launched the following websites, youtube channels and online resources for the students in various areas of science and technology like:-
  - A youtube channel was started by the club of programmers on programming skills (https://www.youtube. com/channel/UC01TZlNfu29QgG4FmUqVsdg).
  - An online platform developed for conducting hackathons Hackalog.
  - Developed an unofficial Gymkhanna App. Lite Hai for Gymkhana
  - Launched an Artificial Intelligence Roadmap for ml enthusiasts.
- 5. The students organized an event by the name iMaze where the participants applied the concepts learned through theoretical workshops for solving real life problems. There were 180 teams(3 members each) registered for the event and around 110 teams were successfully able to complete the task.
- 6. An event by the name of Innovation Express was conducted by the students. The event was conducted on a weekend and was full of hackathons, case studies, workshops, brainstorming sessions, and live networking sessions which aim at strengthening the technical skills and boosting the innovation culture at the institute.
- 7. The Finance, Economics and Business Clubs of the institute in collaboration with IIT-Bombay, IIT-Guwahati, IIT-Delhi and IIT-Roorkee launched FinFest, India's first student festival solely focused on Finance and Economics, containing a plethora of workshops, webinars, competitions and prizes worth INR 1.8 lakhs.
- 8. Other events were conducted through online mode on star gazing, PM School Case Study Challenge, Codeforce, Alumni mentorship programme and PM School Case Study Challenge and image processing event.
- 9. The students won in several inter-institute competitions like Asia level Consulting Competition, IIM Ahmedabad Red Bricks Summit, Decipher Product Development Challenge conducted by Testbook, qualified for the National Finale of Flipkart GRID 2.0 Robotics Challenge. 23 students got selected in Google Summer of Code 2021. One student from the institute got selected in Microsoft Reinforcement Learning Open Source Fest and Two students got accepted as mentees in LFX Mentorship.
- 10. The students also organized guest talks by eminent people like, Mr. Harsh Goela, Mr. Aditya Dhavala, Mr. Piyush Ranjan, Mr Shreyansh Daftry, Prof. Annapurni Subramanian and Mr. Rakshit Sinha.





# 27. Training and Placement

# Overview

The Training and Placement Cell of the Indian Institute of Technology (BHU) was developed as a separate unit in the Institute as early as 1977-78. Since its inception, the Cell has been coordinating the placement of final year students in various industries and research organizations and making arrangements of summer internship for B.Tech./IDD/M.Tech. students every year as part of their academic curriculum. More than 19,000 students of B.Tech./ IDD and M.Tech./M.Pharm./ Ph.D. have been placed through this Cell with lucrative compensation packages in leading industries in the country and abroad.

Large numbers of prestigious companies, both from the public and private sector, have visited our institute and their number has greatly increased from mere 16 in 1977 to 255 in academic session 2020-21. During this session, the recruitment process started on 1st December, 2020. Companies such as Google, Microsoft, Goldman Sachs, Oracle, Intel, Amazon, Apple, Uber, KLa Tencor, Master Card, JPMC, Citibank, American Express, Samsung, Adobe, Bosch, Texas Instrumentation, CISCO, Tata Steel, Qualcomm, Walmart, Citrix, Indian Oil, Mercedes Benz, Larson & Toubro etc. who had been our regular visitors to the Institute, continued to show their faith in our students' performance and made large number of recruitments. There had been the first time visitors to our institute which include companies like Aarti Industries, Appypie, Avalara, Chalo, Dgraph, Fiserv, Games Kraft, Irage Quant, Ides Global, Jungalee Games, Lummus Tech, Microchip Technology, MTX B2B, Networking, Pal Rematerials, Postman, Semut Labs, Siemens Healthneers, SignalChip, Sterlite Technologies, Wells Fargo, Zynga etc.

Apart from this, around 82 students from other institutes were given internships through the Cell.

<b>Sl. No.</b>	Name	Designation
1	Dr. Anil Kumar Agrawal	Professor Incharge
2	Sri. Ghanshyam Gupta	Junior Assistant
3	Sri. Mohit Srivastava	Office Assistant (Highly-Skilled)
4	Ms. Sonali Malviya	Office Assistant (Highly-Skilled)
5	Sri. Surendra Kumar	Attendant (Semi-Skilled)
6	Sri. Jaswant Lal Roshan	Attendant (Semi-Skilled)

2. List of staff members associated with Training and Placement Cell.

3. Number of students who enrolled for the campus placement during 2020-21 : 1379

4. Number of companies that visited for campus recruitment:

2019-20	2020-21
198	255

5. List of top 40 most reputed companies that visited and recruited students. (Annexure – I attached )

6. Number of offers made :

Domestic Offers : 880

International Offers : 03

7. Average CTC Package (in LPA) :

2019-20	2020-21	Increment over the previous Year
16.69	17.93	7.43%



8. Highest (or top few) CTC package offered (Rs.)

- 1. 64,26,578
- 2. 56,26,000
- 3. 51,00,058
- 4. 45,60,048
- 5. 43,31,133

9. Number of paid internships earned by the students :

2019-20	2020-21	Increment over the previous Year
455	554	21.76%

10. Any other achievements or highlights (in a paragraph).

In comparison to the last year, this year (academic session 2021-22) has witnessed percentage increase in

i) Number of visiting companies by 28.78%

ii) Number of paid internship by 21.76%, and

iii) Average CTC by 7.43%





# Annexure-I

<b>Sl. No.</b>	Name of Companies	Number of Students Recruited
1	Alphonso	17
2	Amazon	13
3	American Express	5
4	Axtria	7
5	Bajaj Auto	3
6	BNY	4
7	Cipla	1
8	Cisco	7
9	Citi Bank	10
10	DNJ Infotech	34
11	EXL	7
12	Flipkart	8
13	Goldman Sachs	12
14	Google	8
15	HCL	5
16	HPCL	6
17	HSBC	7
18	ICICI	13
19	Jaguar Landrover	5
20	Jio	12
21	L&T	12
22	Mastercard	13
23	Microsoft	21
24	Myntra	7
25	Nvidia	4
26	Oracle	22
27	ОУО	7
28	Paytm	11
29	Qualcomm	13
30	Societe General	14
31	Sprinklr	8
32	Samsung	10
33	Standard Chartered	14
34	Tata Steel	10
35	Tata Consulting Services	14
36	Texas Instrument	4
37	Uber	4
38	Vedanta	10
39	Wipro	12
40	ZS	13





# 28. Resource & Alumni

Dean (Resource and Alumni Affairs): Prof. Rajeev Srivastava w.e.f. 01.12.2020-till date.

- 1. Introduction: The Resource & Alumni office of the Institute works for the functions as delineated by the Director of the Institute (Vide letter No. IIT (BHU)/2014-15/504/L Dated 9<sup>th</sup> September 2014 and Subsequent modification. The following works/functions are carried out as
  - I. Planning, Allocation and Monitoring of existing infrastructure and reorganization.
  - II. Alumni Processes and Functions [through dedicated office and Student Alumni Interaction Cell (SAIC)]
  - III. Gandhi Technology Alumni Centre-Guest Houses. (Through Coordinator, GTAC).
  - IV. Alumni Interactions: Coordinating with alumni at regional, national, and international level for overall development of the Institute. Identifying and recognizing the alumni and organizing alumni reunions with the help of alumni.
  - V. Seeking and Raising Donations and Endowments for student scholarship/ awards, medals, Faculty chairs and facility development.
  - VI. Newer Dimensions.
- **2. Objectives:** Developing effective mechanism of communication through all alumni by creating complete database, developing and using tools and technologies, websites, portals and keeping them updated with their Alma matters.

Some ongoing activities related to above:

---Alumni Registration portal developed for registration of alumni and collecting their contact details for enriching the database for effective communication.

--- Alumni Newsletter: January 2021 Issue of Alumni Newsletter published and communicated to all alumni groups. Teams have been organized to publish the same on regular monthly basis.

--- Preparation of 100 Years of Digital Alumni Database (Year wise and Batch wise).

--- Regular Communications to alumni through Group Email IDs (~20000), Institute Website, Alumni Website, and Social Media Platforms (LinkedIn, Facebook, Twitter, Instagram etc.).

- Keeping all the alumni updated with their Alma matters through Alumni Newsletters and posting the information on website and social media platform on regular basis.
- Honoring the alumni through distinguished alumnus awards and facilitating them at various occasions.
- Organizing regular meetings/ reunions etc.
- Engaging the alumni for overall development of the Institute fraternity through intellectual talks, seminars, workshops, online classes etc.
- Interacting with alumni groups for:
- --Creation of Scholarships, endowment funds, angel funds etc.
- --Creation of Alumni funded Institute Chair Positions in various Depts./ Schools/ Centers.

--Exploring the possibility for minor/ major donations for Infrastructural development, development of centers, schools, facility etc.





Recently the Institute has signed a MoU with IIT (BHU) Foundation, USA established by the IIT (BHU) Alumni to achieve above goals.

- **3. Student Alumni Interaction Cell (SAIC):** SAIC is dedicated to providing avenues for three-fold interaction among students, alumni, and the Institute to develop a vibrant community, creating opportunities to thrive for the benefit of the commonwealth. Following the appointment of the new Dean of Resource and Alumni Affairs, Prof. Rajeev Srivastava, the new SAIC team for session 2020-2021 was formed in December 2020. The Alumni Visiting Faculty (AVF) Program was continued in the online semesters with renowned alumni from different industries teaching full-credit courses as visiting faculty. The initiative saw 15 alumni faculty teach five different courses in the odd & even semester of 2020-21. The program was a success with 570+ students opting for these alumni-taught courses. In the even semester, a new course on 'Applied Deep Learning' was also added to the program. SAIC strengthened its online presence among alumni and students by launching various online initiatives, including a series of posts covering the history of our Institute, a '100-year journey' video on the occasion of Institute Foundation day and a series of 3-posts around International Women's Day. The recently launched Instagram account of SAIC gained 700+ followers, and the Youtube, and Twitter handles of SAIC were initiated as well. Moving forward, SAIC aims to build more alumni connections and closely knit the Institute's vast alumni network together.
- 4. Alumni Connect: With the mission to strengthen the bond between the alumni and the students, frequent engaging sessions and formal/informal meets were organized in the form of ABBA's chaupaal sessions, SAIC's guidance sessions and the alumni lectures series. The yearly Student-Alumni Mentorship Program, aimed at providing personalized guidance to students from the Alumni, was launched in March this year. The program provided one-on-one mentorship to over 400 students by our accomplished alumni mentors in various career domains. To update our alumni community about the various developments in the Institute, SAIC released three editions of its monthly alumni newsletter Alma Communiqé till March 2021. Covering information related to each section of the Institute, each had an overall readership of 1100+ alumni from across the globe. In the online setting, the Institute has successfully facilitated the delivery of 500+ documents including transcript, copy of migration certificates, etc, to alumni across the world. SAIC's website acted as the single-point platform for all alumni services and updates throughout the year. It hosted 4,012 users and touched a total high of 3900+ new user visits.

# 5. Lecture Series:

Speaker	Affiliation	Topic and Date
Prof. M.D. Srinivas	Director, Center of Policy Reearch, Chennai	Bhadragaṇita: Study of Auspicious Squares of Numbers in India 16th Dec 2020
Mr. Gaurang Rathi	Commissioner of Varanasi	People's Servant: Whats in it to be a career aspirant. 3 <sup>rd</sup> Feb 2021
Mr. Vilas Rao Shinde	Income Tax Commissioner, Bengaluru	The Long Way to Freedom: Streams of India's National Struggle. 12 <sup>th</sup> Mar 2021
Prof. Subhash Kak	Regents Professor of Computer Science Department at Oklahoma State University	The Universe and Consciousness The Indian Synthesis 22 <sup>nd</sup> Mar 2021

#### 6. Endowment Scholarship, Medals, Awards and Other Donations:

S. No.	Name of Person/Trust	Amount of Donation	In favour of	Туре	Purpose
1	Jagmohan and Manju Bansal Scholarship	28,20,275/-	Registrar, IIT (BHU)	Endowment	Scholarship
2	Vinod Ghai Endowment Fund	24,79,402/-	Registrar, IIT (BHU)	Endowment	Scholarship





S. No.	Name of Person/Trust	Amount of Donation	In favour of	Туре	Purpose
3	1970 Batch Project	14,66,801/-	Registrar, IIT (BHU)	Endowment	Scholarship
4	Sanjay Bhargava	45,00,000/-	Registrar, IIT (BHU)	Endowment	Scholarship
5	MEDIA.NET SOFTWARE SERVICES (INDIA) PRIVATE LIMITED	74,42,000/-	Registrar, IIT (BHU)	Endowment	Scholarship
6	KAF-1981 Scholarship	4,79,154/-	Registrar, IIT (BHU)	Endowment	Scholarship
	Total	<b>Rs. 1,91,87,632/-</b> (One Crore Ninety- One Lakh Eighty Seven Thousand Six Hundred Thirty-Two Only)			

# 7. Year- wise funds & Donors:

	Total Funds from Alumnus (in lakhs of Rupees)	Total No. Of Donors
2009-10	NA	NA
2010-11	NA	NA
2012-13	NA	NA
2013-14	NA	NA
2014-15	Approximately Rs. 60 Lakhs	1 (IBGAA)
2015-16	Rs. 524.55 Lakhs	10
2016-17	Rs. 122.14826 Lakhs	9
2017-18	Rs. 60,53,644/-	6
2018-19	Rs. 89,41,317/-	16
2019-20	Rs. 1,04.98,871 Lakh	11
2020-21	Rs. 1,91,87,632/-	6 Groups of donors





# 29. Research and Development Activities

**Introduction:** Institute has a mission to fulfill the needs of the nation through Research and Innovation. Faculty members and students are engaged in cutting edge research under various schemes. To inculcate research culture in the students, the institute has set up Tinkering Labs in various departments. Students are involved in research projects from almost the early stage of their education. The institute gives partial support to the research initiatives of faculty members through grants like Seed Money, Research Support Grant, and R & D Thrust Area Grants. The institute also provides Lab Grants for up-gradation of teaching labs and supports Central Instrument Facility acquisitions. Faculty members of the institute are active in frontier areas of research, and Govt. research sponsoring agencies and many reputed industries have supported their efforts. The list of new and ongoing projects as well as consultancy/testing projects are shown below

Sr No	Title of Project	Duration	Funding agency	Total cost of Project in Rs	Name of the PI/CoPI
Schoo	l of Biochemical Engineering				
1	Re-purposing of approved drugs from Drug Bank database for possible treatment for COVID-19 by targeting SARS-CoV-2 main purpose	1 year	SERB	15,44,664.00	Prof. Vikash Kumar Dubey
2	Development of bi-functional electrochemical nanobiosensors for bacterial exotoxin detection: Implication towards screening of toxin producing bacterial isolates	5 Years	SERB	38,00,000.00	Dr. Pranjal Chandra
3	Validation of Glutathione synthetase from Leishmania donovani as new drug target or discovery of new drug candidate	3 years	ICMR	41,42,000.00	Prof. Vikash Kumar Dubey
Schoo	l of Biochemical Engineering				
4	DevelopingPsylliumHuskBasedPolysaccharideHydrogelintoElectrospinable and 3D Printable Materials: TowardsFabrication and ComparativeEvaluation of Lyophilized, Electrospun and3D BioplottedScaffolds for Liver TissueEngineering	3 years	SERB	42,52,512.00	Dr. Sanjeev Kumar Mahto
Depar	tment of Chemical Engineering & Techno	ology			
5	Novel integrated engineering approch for effective tar decomposition and its last minuts removal to fuel gas reforming in biomass pyro-grasification	03 Years	SERB	35,62,685.00	Prof. M.K. Mondal
6	Design and development of a Membrane reformer protype for production of ultra pure hydrogen from methanol for fuel cell based vehicle and power generators	1 year at IIT(BHU)	DST	1,14,36,150.00	Dr. RK Upadhyaya
Depar	tment of Chemistry				
7	Development of efficient metal free two- dimensional materials for energy and environment: an ab initio investigation		SERB		Dr. Vivek Kumar Yadav

#### 1. New Sponsored Project Sanctioned in FY 2020-21

<u>~</u>



Sr No	Title of Project	Duration	Funding agency	Total cost of Project in Rs	Name of the PI/CoPI
8	Design, Synthesis and Biological evaluation of O- and C- derivatives of Phenylethanoid Glycosides as a Multi-targeting Neuroprotective disease modifying agents for AlZheimer's Disease	03 YRS	SERB	48,07,264.00	Dr. Jeyakumar Kandasamy
9	Noble multimetallics/ZnO photocatalyst for hydrogen production from green sources	1.5 years	NPIU	13,23,000.00	Dr. Indrajit Sinha
Depar	tment of Civil Engineering				
10	Strategic Planning for Water Resources and Implementation of Novel Biotechnical Treatment Solutions and Good Practices (SPRING)	3 years	DBT	71,27,840.00	Prof. Prabhat Kumar Singh
11	Development of guidelines for use of waste reclaimed water in pavement construction	3 years	Ministry of Road Transport & Highway	2,756,160.00	Dr. Nikhil Saboo
12	Development of Performance based mix design process: A re-look at the Marshall Mix design process for the production of strong and durable	3 years	NHAI	91,21,000.00	Dr. Nikhil Saboo & Dr. Ankit Gupta (Co-PI)
13	Factor affecting exhaust emissions of motorized two wheeler in an Indian Tier-II city: A case study of Varanasi	2 years	SERB	19,44,170.00	Dr. Abhisek Mudgal
14	Automatic Map Generation from High Resolution Images Applying Deep Learning Techniques	3 years	SERB	33,22,264.00	Dr. Anurag Ohri
Depar	tment of Computer Science & Engineerin	g			
15	Intelligent system for computer assisted diagnosis (CAD) OF CANINE MAMMARY TUMORS	02 Yrs	DBT	29,44,859.00	Prof Sanjay Kumar Singh
16	Multilingual document summarization in quasi stationary environment	02 Yrs	DRDO	55,56,000.00	Dr. A.K. Singh
17	Resource-optimized fog computing for smart healthcare application in IoT-enable heterogeneous networks	02 Yrs	SERB	29,06,970.00	Dr. Ajay Pratap
18	Developing Improved Algorithms for Intelligent Video Surveillance	03 Yrs	SERB	29,08,345.00	Dr. Pratik Chattopadhyay
19	Development of text based matching algorithms for bartering software	01 Yrs	ASCONSOFTECH	11,62,500.00	Dr. Sukomal Pal
Depar	tment of Electrical Engineering				
20	Design and analysis of linear induction moter drive for electromagnetic aircraft launching system	2.5 Yrs	DRDO	30,00,000.00	Dr. RK Srivastav





Sr No	Title of Project	Duration	Funding agency	Total cost of Project in Rs	Name of the PI/CoPI
21	Development of a standalone solar electric drive system for boats	01 yrs	Ornate Agencies Pvt. Ltd.	5,00,000.00	Dr. Sandip Ghosh (PI), Dr. Shyam Kamal (CoPI), Dr. NKS Naidu (CoPI), Dr. SK Singh (CoPI), Dr. Amitesh Kumar (CoPI), Prof. D. Singh (CoPI)
Depar	tment of Humanities				
22	Integrative Environment View (IEV) for Sustainable Hyper Local Temporal & Spatial Environmental Pollution Monitoring : Case of Air Quality in Varanasi City		Google Asia Pacific Ptv. Ltd	Rs. 14,67,300/- (\$20,000/-)	Dr. Puneet Kumar Bindlish & Dr. N.S. Rajput, Dr. Abhishek Mudgal, Dr. Amit Verma
Depar	tment of Mathmetical Sciences				
23	Existence and Stability analysis of periodic solution of variable time implusive neural network	03 Yrs	SERB	6,60,000.00	Prof. Subir Das
Depar	tment of Mechanical Engineering				
24	Pathology on a Spinning Disc	3 years	MHRD - STARS	94,10,000.00	Dr. Arnab Sarkar
25	Impact of a microspray on a bio-mimicking surface	2 years	SERB	31,73,060.00	Dr. Binita Pathak
26	Effect of Jet Pulsation on Reacting Jet in Crossflow	2 years	SERB	32,01,000.00	Dr. Anubhav Sinha
27	Assessment of Vulnerability of structures in Regard to Cyclonic Wind loads	2 years	Bureau of Indian Standard	16,76,000.00	Dr. Arnab Sarkar
Depar	tment of Metallurgical Engineering				
28	Stability of Nanostucture and Residual Stress Developed through Ultrasonic Shot Peening in Superalloy IN718 at Elevated Temp.	02 Yrs	DRDO	28,86,800.00	Dr. Kaushik Chattopadhyay (PI) Prof. N.C. Shanti Srinivas (CoPI) Dr. G.S. Mahobia (CoPI)
Depar	tment of Mining Engineering				
29	Forewarning System for Landslide Prediction along Mangan and Chungthang road, Sikkim India	3 years	DST	43,78,700/-	Dr. A.K. Verma & Dr. Puneet Kumar Bindlish
Depar	tment of Pharmaceutical Engineering &	Technology			
30	AMWATCH: Defining the AMR Burden of Antimicorbial Manufacturing Waste in Puducherry and Chennai	3 years	DBT	1,06,50,720.00	Dr. M.S. Muthu





Sr No	Title of Project	Duration	Funding agency	Total cost of Project in Rs	Name of the PI/CoPI
31	Development of Novel Therapeutics for the Redemption from Frostbite and Burn Injury induced Chronic Pain in Military Veterans	3 years	SERB	40,81,240.00	Dr. Vinod Tiwari
Depar	tment of Physics				
32	Multiple reversals of the Sun's polar- field and their physical causes	02 yrs	DBT	10,34,680.00	Dr. Bidya Binay Karak
33	Scattering assisted imaging: Exploiting randomness of the light.	03 Years	SERB	34,21,000.00	Dr. R.K. Singh
34	Study of Polarmetric parameters from laser speckle	03 Years	CSIR	29,50,240.00	Dr. R.K. Singh
35	Spatially resolved digital holography plarization microscope for diagnosis applications	03 Yrs	DBT	41,44,840.00	Dr. Rakesh Kumar Singh
Schoo	l of Material Sciences & Technology				
36	Development of High Te Lead Free Piezoelectric Materials for Energy Harvesting	3 years	SERB	52,71,200.00	Dr. Akhilesh Kumar Singh
37	3 D Bio Steeolithography for Enggineering fucntional Tissues	5 Years	SERB	3,724,640.00	Prof. Pralay Maiti
38	Investigation of Structural phase transformation in HfO2 thin films using X-ray absorption spectroscopy	NA	CRS	NA	Dr. Chandana Rath
39	Biodegradable path for faster wound healing including diabetic ulcers using ayurvedic medicine	3 years	DBT	27,00,000.00	Prof. Pralay Maiti
40	Investigation of two dimensional transition metal dichalogenides Nanostructure as Effective SERS Substrate	3 years	SERB	43,82,400.00	Dr. Ashish Kumar Mishra
41	Development of nanoink for anti- counterfeit products and solution	2 years	Industry Kantas Track Pack India Ltd.	1,00,000.00	Prof. Rajiv Prakash
42	Life Line Security & System	3 years	Life Line Security & System	1,00,000.00	Prof. Rajiv Prakash

# 2. Other Ongoing Sponsored Projects

Sr. No.	Title of Project	Duration	Name of Funding agency	Total cost of Project in Rs	Name of the PI/CoPI	
School of Biochemical Engineering						
1	Strategies towards generation of functional tissue engineered construct for orthopedic application	2 Yrs	SPARC- Mhrd	23,25,950.00	Prof. Pradip Srivastav	
2	Development and evaluation of an innovative poly herbal Bi layer wound dressing material	3 years	DRDO	32,03,200.00	Dr. Pradeep Srivastava	
3	Construction of Cold Inducible Expression System	3 years	DBT	36,10,300.00	Dr. Ashish Kumar Singh	





Sr. No.	Title of Project	Duration	Name of Funding agency	Total cost of Project in Rs	Name of the PI/CoPI
4	Enhancement of Lipid Content in Microalge Scenedesmus Obliquus Using Genetic Engineering Tool: a step towards biodiesel	3 years	CST	4,50,000.00	Dr. Ashish Kumar Singh
5	Screening of novel antibiotics from the metage- nome of Himalayan glacial soil	3 years	DRDO	39,87,500.00	Dr. Ashish Kumar Singh
6	Identification of Gene Responsible for Degrada- tion of Poly (Ethylene Terephthalate) in Ideonella sakaiensis	3 years	DBT	40,43,200.00	Dr. Ashish Kumar Singh
7	Screening of Novel Psychrophilic alkaline Protace from the metagenoime of Antartic soil	3 years	SERB	19,04,410.00	Dr. Ashish Kumar Singh
8	Flow and segregation of granular materials out of hoppers and two & three dimensional devices	3 years	CST-UP	10,44,000.00	Dr. Vishal Mishra
9	Targeted drug delivery of methotrexate/gallic acid- folate conjugated Poly L-Lysine nanoparticles	3 years	DBT	34,61,200.00	Dr. Abha Mishra
Scho	ol of Biomedical Engineering				
10	How Beclin 1 mediates cross-talk between apopto- sis and autophagy via ITS C-Terminal Fragment?	3 years	CSIR	32,61,600.00	Prof. Vikash Kumar Dubey
11	Development of Microfluidic tools for neuromus- cular synatogenesis and nanotoxicological studies	5 Years	DST	35,00,000.00	Dr. Sanjeev Kumar Mahto
12	Nanoparticles supported self Assembled Conduct- ing Polymer Monolayer Based Platform for Rapid Detection of Monosodium Glutamate in Food Products	3 Years	DBT	34,92,000.00	Dr. Marshal
13	Neem seed based nanocapsules and nanomedicine for targeted drug delivery and cancer therapy	3 Years	SERB	40,46,000.00	Dr. Pradip Paik
14	Funcional-hollow-porous-bipolymer based Nano- formulations and Interventions for treatment of Cancer and prevention of Tuberculosis, concept of nanomedicine with multiple drugs for multiple diseases	3 Years	DST	52,18,094.00	Dr. Pradip Paik
15	Design and Development of Affordable Myoelec- tric Prosthetic Hand	3 years	SERB-CRG	10,01,000.00	Dr. Shiru Shar- ma
Depa	rtment of Ceramic Engineering				
16	Design Development & characterization of porous Ti/SiO2 composite with tailored microstructure fabricated by powder metallurgy using rice husk and sucrose as space holder for orthopaedic appli- cations	1.5 Yrs	DBT	15,60,000.00	Dr. KalyaniMo- hanta
17	Novel Electrode Materials for Reversible alkali – ion (Li+/Na+) capacitors and Pseudocapacitors	3 Yrs	SERB	36,65,245.00	Dr. Preetam Singh
18	Development of glasses as plant nutrients	03 Yrs	SERB	42,05,520.00	Prof. Ram Pyare (PI) Dr. RK Chaturve- di (CoPI), Dr. Preetam Sing- h(CoPI)



Sr. No.	Title of Project	Duration	Name of Funding agency	Total cost of Project in Rs	Name of the PI/CoPI
19	Development of Hgh Alumina(Al2O3) & DOPED High Alumina materials for Ceramic Catridge Applications	6 months	Yantransh Auto Pvt. Ltd	60,500.00	Dr. Santanu Das
20	Metal Nanostructure assited plasmonic hot elec- tron induced phase transformation in 2D- Transi- tion metal di- chacogenides for hydrogen evolution reaction	03 Yrs	STARS -MHRD	97,90,000.00	Dr. Santanu Das (PI), Dr. Bratindranath Mukherjee (CoPI)
21	Development of high strength ceramic magnet for rotating machine applications	3 years	SERB-IM- PRINT	25,91,600.00	Dr. Pradip Roy
22	Development of high Thorough put Processing route for CIGS PV absorber films by spray pyroly- sis of Pre-synthesised Nanoparticle Ink	3 Years	SERB	46,03,010.00	Dr. M.I. Ah- mad/ Dr. S. Das
23	Cold sintered ferroelectric polymer Ceramic Nano composites for Energy Storage	3 Years	SERB	54,91,695.00	Dr. AkankshaD- wivedi
24	Development of rare earth free ceramic magnet with high energy and curie temperature for motor applications	3Yrs	SERB	45,22,100.00	Dr. Pradip Kr. Roy
25	Combined effect of dynamic electrical stimula- tion and surface charge on cellular functionality of electrovector and piezoelectrically toughened bioceramics	3 YEARS	SERB	43,22,680.00	Dr. Ashutosh Kr. Dubey
Depa	rtment of Chemical Engineering & Technology				
26	A Stack development of untilized regenerative Proton Exchange Memberance Fuel Cell for Large Scale Production of Ultra Pure Hydrogen Fuel, Oxygen using Solar Energy & uninterrupted Power	03 Yrs	SERB	37,61,500.00	Dr. Hiralal Pramanik
27	Controlled synthesis of MoO3 nanoparticles inside mesoporous materials for oxidative dehydrogena- tion of organic moleciles with CO2	03 Yrs	SERB	32,29,430.00	Dr. Vijay Maru- ti Shinde
28	Direct cooling of the Silicon Photovoltaic Module Enabled by an Array of Micro channel built in the backside EVA -Layer	03Yrs	SERB	41,52,280.00	Dr. Ravi Prakash Jaiswal
29	Removal of Benzene, Toluene, Ethylbenzene and Xylene (BTEX) using Adsorption and Bioremedia- tion	02 Yrs	SPARC- MHRD	54,02,420.00	Dr. RS Singh (PI) Prof. BN Rai (CoPI)
30	Modelling & simulation of ultra-high temperature coating on sustrate using CVD/CVI Process	02 Yrs	DRDO	9,81,000.00	Dr. Vijay Maru- ti Shinde
31	Detailed study on the effect of mining as well as Thermal Power Stationss on Natural water bodies in Singrauli Region and Recommendation Thereof	03 Yrs	NCL	58,77,000.00	Prof PK Mishra
32	RKVY-RAFTAAR, Agribusiness Incubators (R-ABI) under RKVY-RAFTAAR Scheme	02Yrs	DACFW	2,33,00,000.00	Prof. P.K.Mish- ra
33	Regional cheracterization of atmosphericx aero- sols at Varanasi Region	INITIALLY FOR 03 YRS	ISRO	NA	Dr. RS Singh (PI), Dr. Tirt- hankar Banrjee (CoPI)





Sr. No.	Title of Project	Duration	Name of Funding agency	Total cost of Project in Rs	Name of the PI/CoPI
34	NOx Removal from Diesel Exhaust by combined NOx storage Reduction and NH3 SCR System	3 Years	SERB	27,35,000.00	Dr. Sweta
35	Development & Evaluation of Infrared Nanoparti- cles for Cellular-wide sensitive E-field Mapping	3 Years	DST Nano Mission	51,52,965.00	Dr. Manoj Kumar
36	Pyrolysis of Biomass for the Producation of Bio- oil: Experimental and Computational Study	3 Years	DST	23,50,000.00 (T/F Case)	Dr. J.P. Chakraborty
37	Fabrication of low-cost High-through out Flow Cytometer using tunable nanolenses.	3 Years	DST, New Delhi	52,09,600.00	Dr. Ankur Verma
Depa	rtment of Chemistry				
38	Evaluation and Optimisation of Biodiesel Produc- tion from Microalgae	3 Years	DST	51,92,400.00	Prof. Yogesh Chandra Shar- ma
39	Photolabile Protected Monosaccharides: Synteh- sis and Application to Oligosaccharides Synthesis Using a Continuous flow Photoreactor	3 year	Germany	44,62,460.00	Dr. Jeyakumar- Kandasamy
40	Photolabile Protected Monosaccharides: Synteh- sis and Application to Oligosaccharides Synthesis Using a Continuous flow	3 year	DST, New Delhi	45,70,400.00	Dr. Jeyakumar- Kandasamy
41	Development of portable electrochemical sensor hydrogen peroxide	3 Yrs	BRNS Mumbai	34,92,750.00	P.C.Pandey
42	Detailed lacture based curriculum development for science subjects as part of Induction Programme in AICTE COLLEGES	2 YRS	AICTE	11,52,000.00	Dr. Indrajit Sinha
43	Metal hexacyanoferrate modified screen printed electrodes for the removal of radio nuclides	03 Yrs	DRDO	41,71,680.00	Prof. P.C. Pan- dey(PI), Prof. Y.C.Sharma (CoPI)
44	Development of magnetically recyclable visible light photocatalysts for H2O2 Production	03Yrs	BRNS	34,05,850.00	Dr. Indrajit Sinha (PI), Prof Rajiv Prakash (CoPI)
45	Development of transition metal based nanocata- lysts for bioinspired water oxidation	03 Yrs	CSIR	16,00,000.00	Dr. Arindam Indra
46	Developing Superior Nobel Metal free Oxygen Evolution Catalyst for Electrochemical Water oxi- dation and Metal -Air Battery	02 Yrs	SERB	24,64,000.00	Dr. Asha Gupta
47	Promoting water Oxidation Reaction with Electro- chemically Synthesized ultrathin Layered double Hydroxide Nanosheets	02 Yrs	SERB	26,51,000.00	Dr. Arindam Indra
Department of Civil Engineering					
48	Propagation & Mitigation model of mixed road traffic noise for planning od mid- sized Indian Cities	3 years	MHRD IMPRINT	3,38,00,000.00	Dr. Brind Ku- mar
49	INSPIRE Faculty Award	5 Years	DST	35,00,000.00	Dr. Manash Chakraboratory





Sr. No.	Title of Project	Duration	Name of Funding agency	Total cost of Project in Rs	Name of the PI/CoPI
50	Smart & Integrated Pedestrian System Design	3 Years	MHRD, MoUD, GMR Air- port Devel- opers (Ltd), Vikram Solar Pvt. LTd	9,33,206.00	Dr.Ankit Gupta (Co- PI)
51	Active Vibration Control of Smart Composite and Sandwich Structures in hydro-thermal Environ- ment	3 years	SERB	19,08,940.00	Dr. Rosalin Sahoo
52	Development and assessment of asphalt mastic from typical Indian and Austrian filler materials with a new test method	2 years	DST	9,50,000.00	Dr. Nikhil Saboo
53	River Aquifer exchanges & hydrogeological study for watershed management of betwa river basin	2 years	NRDMS	24,51,000.00	Dr. Shishir Gaur
54	Assessing the Suitability of warm mix asphalt (WMA) Technology Using Tribological and Perfor- mance Characteristics	3 years	SERB, ECRA	36,70,680.00	Dr. Nikhil Saboo
55	Rheophysics of semi-rigid road building materials and optimization of their composites for the per- ception of heavy transport load	2 years	DST	10,40,000.00	Dr. Nikhil Saboo
56	Safer Roads: Development of Mix Design Method- ology for OGFC Mixes	3 years	CST-UP	11,92,000.00	Dr. Nikhil Saboo
57	Life cycle and performance of Waste Plastic roads	1.5 Years	NRIDA	20,50,000.00	Dr. Nikhil Saboo
58	Life Cycle and performance assessment of cold mix roads	1.5 Years	NRIDA	20,50,000.00	Dr. Nikhil Saboo
59	Understanding the engineering behavior of unsat- urated geomaterials and implementing it in limit analysis for solving geotechnical problems	2 years	SERB	27,28,000/-	Dr. Manash Chakraborty
Depa	rtment of Computer Science & Engineering				
60	A Robust medical image forensics system for smart healthcare	02 Yrs	SERB	14,07,870.00	Dr. Tanima Dutta
61	Research & Experiment in the area of advanced data structures and methodologies to represent and process large terrain datasets for efficient rendering	07 MONTHS	DRDO	9,95,000.00	Prof Rajiv Srivastav (PI), Dr. NS Rajput (CoPI)
62	Incorporating Intelligence in Email System	2 Years	BRNS	13,68,000.00	Dr. Ruchir Gupta
63	Development of an energy –efficient wireless sen- sor networks for precision agriculture	3 Years	DST	34,17,130.00	Dr. H.P. Gupta
Depa	rtment of Electrical Engineering				
64	Mix energy Source Electric Vehicle Charging System Design and its Impact on Indian Smart – distribution - grid	3 Yrs	DST	94,49,500.00	Dr. R.K.Singh





Sr. No.	Title of Project	Duration	Name of Funding agency	Total cost of Project in Rs	Name of the PI/CoPI	
65	Design Modelling and simulation of linear Induc- tion Drive for Propulsion Applications	02 Yrs	CARS, DRDO	10,00,000.00	Prof. R.K.Sri- vastava	
66	Construction of Non-monotonic Lyapunov Function for the Dynamical Systems governed by differential inclusions	03Yrs	SERB	6,60,000.00	Dr. Shyam Kamal	
67	Virtual synchronous generator for microgrid applications	03 Years	SERB	45,54,930.00	Dr. N.Krishna Swami Naidu	
68	Output feed back controller design for linear pa- rameter varying systems	03Yrs	SERB	57,32,760.00	Dr. Sandip Ghosh (PI), Dr. Shyam Kamal (CoPI), Dr. NKS Naidu (CoPI), Dr. SK Singh (CoPI)	
69	Prospects of power converters for integration of electric vehicle charging stations witj the existing distribution system in India	02 YRS	SPARC - Mhrd	49,78,635.00	Dr. Santosh kumar singh (PI),	
Depa	rtment of Electronics Engineering					
70	Analysis, Design and Simulation of an S Band MILO	3 years	DRDO	45,85,000.00	Prof. P.K. Jain	
71	Design and development of miniaturized pattern/ frequency reconfigurable MIMO antennas and its performance improvement using artificial electro- magnetic material	3 years	SERB	42,52,000.00	Dr. Manoj Ku- mar Meshram	
72	Development of Polymer and Quantum Dots Blended Tandem Solar Cells Using Low Cost Solu- tion Processed Method	3 years	SERB	44,86,000.00	Prof. Satyabrata Jit	
73	Physical Layer Security for LTE based Wireless Networks to increase Jamming Margin	1 Year	CRL - BEL	33,60,000.00	Dr. K.V. Srini- vas	
74	Study, Design and Implementation of Frequency Selective Metasurfaces for Microwave Applications	3 years	SERB-ECRA	46,70,620.00	Dr. Somak Bhattacharyya	
75	Electromagnetic Analysis, Design and Simulation of Dual Frequency (S- and C-band ) Relativistic Backward wave Oscillator – A HPM Source	3 years	DRDO	46,85,000.00	Dr. M. Thot- tappan & Dr. Somak Bhattarcharya	
76	Development of Simulation Software for Spintron- ic Device & Circuit Simulation	2 years	SERB	16,13,600.00	Dr. Shivam Verma	
Department of Mathematical Sciences						
77	Schwarz waveform relaxation methods for singu- larly Perturbed Parabolic Problems	03 Years	SERB	6,60,000.00	Dr. Sunil Ku- mar	
78	Study and analysis of Mathematical Models of Moving Boundtry Problems	03 Yrs	SERB	22,44,000.00	Dr. Rajeev	
79	Approximation methods for problems in fractional calculus of variations	03Yrs	SERB	21,56,264.00	Dr. Rajesh Kr. Pandey	
80	RobustAdaptive Mesh Methods for Singularly Perturbed Problems in Ordinary and Partial Differ- ential Equations	03 Yrs	SERB	20,95,279.00	Dr. Sunil Ku- mar	





Sr. No.	Title of Project	Duration	Name of Funding agency	Total cost of Project in Rs	Name of the PI/CoPI
81	Numerical methods for integral equations and differential equations by using Wavelets and oper- ational matrix	3 Years	SERB, New Delhi	6,93,000.00	Dr. Vineet Ku- mar Singh
82	Development of solution methods for Abel's integral equations and generalized Abel's integral equation	3 Years	DAE, Mum- bai	3,32,500.00	Dr.Rajesh Kr. Pandey
83	On characterizing and Obtaining the Complete Efficient Solution Set of an Interval Optimization Problem under a D-Dominance and a variable Dominance Structure	3 Years	SERB, New Delhi	15,02,500.00	Dr. Deb- dasGhosh
84	Applications of Spectral graph theory in analyzing the structural properties of large scale networks	03 Yrs	SERB	6,60,000.00	Dr. Lavanya Silveganeshan
Depa	rtment of Mechanical Engineering				
85	Development of Sheet Hydro-forming Process for missile Components	2 years	DRDO	9,80,000.00	Prof. Santosh Kumar
86	Technology and Fabrication of Tabletop CNC Ma- chine for Micro-Tubular Hydro forming Setup	2 years Ex- tended till FY 17-18	BARC	49,32,000.00	Prof. Santosh Kumar
87	Assessment of residual stress upon friction stir welding of steel	3 years	SERB	45,00,000.00	Dr. Mohd. Zaheer Khan Yusufzai
88	Design of High Temperature Facility for Graphite Dust Formation and Transport.	2 years	BRNS(DAE)	51,84,000.00	Dr. Prashant Shukla
89	Design Development and Fabrication of an Incre- mental Sheet Hydro forming Machine Setup	3 years	SERB	48,00,000.00	Dr. Santosh Kumar
90	Development of a Rubber based sheet Hydro forming setup	2 years ex- tended upto 24.05.2019	DRDL, CARS Hy- derabad	9,84,000.00	Prof. Santosh Kumar
91	Characterization and validation of Schlieren Tech- nique for Capturing Shock Wave	2 years	DRDO	17,84,800.00	Dr. Amitesh Kumar
92	Design & Development of Combined Cooling and Power Generation system	2 Years	CST-UP	9,60,000.00	Dr. S.K. Shukla
93	Development of an intelligent evaporative cooler for composite climate	2 years	DST	8,92,243.00	Dr. Jahar Sarkar
94	Development of Ti alloy based composites by mechanical alloying and stirrer casting route for dental applications	3 YEARS	SERB	50,21,000.00	Dr. Rakesh ku- mar Gautam
95	Photonic radative cooler for passive sub-ambient cooling	3 years	SERB- IM- PRINT	41,88,800.00	Dr. Jahar Sarkar
96	Development of complex Aluminium Shell Part High pressure die-casting	1 year	DRDL Hy- derabad	24,85,000.00	Prof. Santosh Kumar
97	Development of ORC technology for waste heat utilization for the generation of electricity	3 years	BRNS	26,97,175/-	Dr. Jahar Sarkar
98	Assessment of Structural Vulnerability through Characterisation of Tornado for a NPP Site	3 years	BRNS	30,32,275/-	Dr. Arnab Sarkar





Sr. No.	Title of Project	Duration	Name of Funding agency	Total cost of Project in Rs	Name of the PI/CoPI
	Department of Met	allurgical E	ngineering		
99	DST-INSPIRE Fellow	5 Years	DST	67,16,084.00	Breatindranath Mukherji
100	Development of nickel free nitrogen austenitic stainless steel for biomedical applications	3 Years	Min. of Steel, GoI	2,84,44,800.00	Dr G.S. Maho- bia/ Dr. KausikChat- topadhyay/ Prof. Vakil Singh
101	Development and structural characterization of Bi2-xMx3+(y-3)/2 coating for protection against coolant & sensors	3 yrs	UGC DAE- CSR	NA	Dr. Joysury- aBasu
102	Development of Electropulsing Facility for Synthe- sis of Bulk Nanostructured Materials	2 Years	B.R.N.S.	26,48,400.00	Dr. Rampada Manna Prof. G.V.S. Sastry/ Prof. R.K. Pan- dey/ Prof. S.N. Ojha
103	In situ electron microscopy at atomic scale for understanding nucleation growth and interfaces of omega phase	3 Yrs	SERB	65,84,600.00	Dr. Joysury- aBasu
104	Optimization of recovery of valuable metals from waste printed circuit boards (WPCBs) through modified hydrometallurgical route	2 Yrs	UGC	10,16,400.00	K.K.Singh
105	Role of short range ordering in desigining high entropy alloys	03 YRS	SERB	41,36,000.00	Dr. Vikash Jin- dal (PI) Dr. NK. Mukhopadhyay (CoPI)
106	Cyclic thermochemical fuel generation	03Yrs	SERB	52,63,920.00	Dr. Randhir Singh (PI), Dr. Bratindranath Mukherjee (CoPI)
107	INSPIRE Faculty Award	05 Yrs	DST	35,00,000.00	Dr. Suryadeo Yadav
108	Weaer corrosion and biocompatibility of Tantalum (Ta) coated 316 L, Stainless steel fotr Ortopedic Applications	03 Yrs	SERB	44,93,240.00	Dr. CK Behera
109	Development of Functionally Graded Armour Composites (FGACs) Materials	03Yrs	DRDO	91,66,240.00	Dr. Vikas Jindal (PI), Dr. Kau- shik Chattopad- hyay (CoPI)
110	Mechanical behaviour of advanced high strength steel procesed by additive manufacturing	03 Yrs	SERB	39,83,896.00	Dr. NC Santhi Srinivas(PI), Dr. Kaushik Chattopadhyay (CoPI)


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Sr. No.	Title of Project	Duration	Name of Funding agency	Total cost of Project in Rs	Name of the PI/CoPI
111	Tunable surface plasmon optical sensing behaviour of M-MoS2 (M=Cu, Ag, Au) Alloy Nanostructures	03 Yrs	SERB	44,65,000.00	Dr. Bratin- dranath Mukherjee (PI), Dr. RK Mondal (CoPI)
112	Creep and corrosion behaviour of Novel MRI2300 Magnesium Alloy with Nanoparticles Addition	03 Yrs	CSIR	17,22,000.00	Dr. AK Mondal
113	Development of low cost ß-Ti alloy for biomedical applications	03 YRS	SERB	40,50,400.00	Dr. Kaushik Chattopadhyay
114	In -situ microscopy study of age hardeining in dis- persion strengthend cast magnesium alloys and its ex-situ correlation with mechanical propoerties	03Yrs	SERB	37,36,064.00	Dr. Ashok Kumar Mon- dal(PI), Dr. Joysurya Basu (CoPI), Prof NK Mukhopadhyay (CoPI)
115	High performance rare earth free nanocomposites permanent magnet for advanced motor and alter- native energy applications	04 Yrs	SERB	56,90,264.00	Dr. N.K. Prasad (PI), Dr. Chan- dan Upadhyay (CoPI)
Depa	rtment of Mining Engineering				
116	Meter Scale Granite block Smectic clay barriers ex- periment and associated TMH modeling for Indian Pit mode reference geological Disposal System	3 years	BRNS	30,88,900.00	Dr. A.K. Verma
117	INSPIRE Faculty Award	5 + 1 years (Extended)	DST-IN- SPIRE	35,00,000.00	Dr. A.K. Verma
118	Landslide stability analysis in subzero envi- ronment around Kinnaur district of Himachal Pradesh, India	3 years	DST	49,73,200.00	Dr. A.K. Verma
119	Design and development of Micro Seismic based technique for monitoring and prediction of slope failure in Pandoh, Himachal Pradesh, India	3 years	SERB	49,77,040.00	Dr. A.K. Verma
120	Whole body Vibration Exposure on HEMM Oper- ators in Surface Coal Mines – An Assessment of Various Contributing Factors	3 years	SERB	40,03,762.00	Dr. S.K. Palei
121	National Geotechnical Conclave on "Development of Early warning system (EAWS) for Landslide Hazard Mitigation on 21-22 March, 2019	One time grant	DST	5,50,000.00	Dr. A.K. Verma
122	Optimization Of capacity utilization of draglines deployed in NCL through Big data Analytics	3 years	NCL	83,97,000.00	Prof. Suprakash Gupta
123	Study for impact assessment of back filling of fly ash in abandoned gorbi mine and treatment/man- agement of acidic water to avoid contamination of ground water and soil	2.5 years	NCL	1,24,80,000.00	Prof. Aarif Jamal
124	Contribution of Neighboring Industries over the air quality of mining area	3 years	NCL	1,34,00,000.00	Prof. Aarif Jamal



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Sr. No.	Title of Project	Duration	Name of Funding agency	Total cost of Project in Rs	Name of the PI/CoPI
125	Evaluation of ground behaviour in open cart and underground excavations using TDR	2 years	NCL	34,44,000.00	Prof. Sanjay Kuamr Sharma
126	Stability Evaluation of dump slopes & developing slope stability model for design of Long Term Stable Dump Slopes through proper benching & vegetation : Part A	3 years	NCL	66,80,000.00	Dr. Rajesh Rai
127	Stability Evaluation of Dump Slopes and Develop- ing Slope Stability Models for Design of Long Term Stable Sump Slopes through Proper Benching and Vegetation – Part B	3 years	NCL	1,41,13,000.00	Prof. G.S.P. Singh
128	Slope stability monitoring and analysis using hyperspectral imaging	3 years	SERB	47,10,500/-	Dr. Tarun Verma
Depa	rtment of Pharmaceutical Engineering & Techn	ology			
129	Pharmacological evaluation of anti-diabetic effects of some natural drugs	2 years	Natreon Inc.	28,87,500.00	Dr. Sairam Krishnamurthy
130	Synthesis and evaluation of diverse N- function- alized heterocyclic hybrids as multi target direct- ed ligands for neuroprotective neurorestorative therapies	3 years	MHRD STARS	75,39,000.00	Dr. Senthil raja
131	Novel Milk Exosomes for the combination therapy by using selected natural medicine (Paclitaxel & Colchicine) for the efficient management of breast cancer	2 years	SERB	31,38,344.00	Dr. Ashish Ku- mar Agrawal
132	Bioluminescence based monitoring of tumor pro- gression and treatment by apoptotic pathway	5 Years	DBT	42,50,000/-	Dr. Deepak Kumar
133	Design and Synthesis of novel Matrix Metallo Proteinase (MMP-2 & 9)Inhibitors as therapeutic agents for Alzheimer's disease	3 years	DBT	60,52,000.00	Dr. Sushil Ku- mar Singh
134	Evaluation of some compounds in experimental Alzherimer Disease	2 years	Natreon	29,40,000.00	Dr. Sairam Krishnamurthy
135	Experimental Evaluation of Geroprotective Activi- ty of Some Compounds	2 years	Natreon	22,06,800.00	Dr. Sairam Krishnamurthy
136	Pharmacological Effect of novel formulation in experimental allergic encephalomyelitis rodent model	1 year	DISTO	5,04,000.00	Dr. Sairam Krishnamurthy
137	Pharmacology of Natural drugs in obesity and eating disorders	2 years	Natreon	26,54,600.00	Dr. Sairam Krishnamurthy
138	Dissecting brain reward circuitry and CNS comor- bidities in chronic neuropathic pain	3 years	SERB-ECRA	49,09,520.00	Dr. Vinod Tiwari
139	Phytochemical and pharmacological evaluations of bioactivity guided fractions of medicinal plants of Tripura	3 years	DBT	26,55,200.00	Dr. A.N. Sahu
140	Natural Template Based Novel Neuroprotective Molecules for the management of Alzheimer's Disease	3 years	SERB- CRG	37,20,240.00	Dr. G.P. Modi





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Sr. No.	Title of Project	Duration	Name of Funding agency	Total cost of Project in Rs	Name of the PI/CoPI
141	Development of novel near infrared fluroscence imaging probes for detecting amyloid beta species in eyes of Alzheimer's disease animal model	3 years	ICMR	37,00,000.00	Dr. Gyan Prakash Modi
142	Targeting kinesins Mediated regulation of nocicep- tors for the Treatment of Neuropathic Pain	02 yrs	SPARC - MHRD	47,53,775.00	Dr. Vinod Tiwari (PI), Dr. Sanjay Singh (CoPI)
Depa	rtment of Physics				
143	DST/INSPIRE Faculty Award (IFA-12-PH-21)	5 Years	DST	95,00,000.00	Dr. S.K. Singh
144	IFA-12-Ph-22 DST/INSPIRE FACULTY Award/2012 INPIRE FACULTY AWARD	5 Years	DST	76,00,000.00	Shri Sunil Ku- mar Mishra
145	Study of Magnetospheric Wave-Particle inter- action, Aurora, Airglow and Conductivities on Planets and their Satellites	3 Years	ISRO	38,0,3,000.00	Dr. D. Giri/ R.P. Singhal/ O.N. Singh
146	Observations and Modeling of solar transients & space weather candidates	3 Years	SERB	17,76,000.00	Dr. Abhishek Kr. Srivastava
147	Investigation of Glass - Ceramic for Capacitive Energy Storage Applications	3 Yrs	CSIR	NA	Prof .Prabhakar Singh
148	Electronic Structure evolution across quantum critical point in Li(Ti1-xVx)2O4 Li1-x Znx)V2O4	03 Yrs	SERB	55,00,000.00	Dr. Swapnil Patil
149	Collection of self-propelled particles in inhomo- geneous environment : numerical & analytical Studies	03 Yrs	SERB	24,59,600.00	Dr. Shradha Mishra
150	The sun under the microscope – An integrated research activity to maximize the science return from a new generation of missions to study the sun	2 Yrs	UGC	19,28,180.00	Abhishek sri- vastav
151	Modeling self assembly and phase seperation kinetics in the complex soft materials	03 Yrs	SERB	46,54,375.00	Dr. Awaneesh Kumar Singh
152	Ramanujan Fellowship	05 Yrs	SERB	38,00,000.00	Dr. Bidya Binay Karak
153	Investigations of new lead free perovskite materi- als for solar cells	03 Yrs	SERB	38,09,391.00	Prof. Prabhakar Singh
154	Tuning self assembly of fluoresent Protein Nano- dots for Melanoma Skin Cancer	03 Yrs	SERB	36,68,522.00	Dr. Avanish Singh Parmar (PI) Dr. SK Yadav (CoPI)
155	On understanding the solar activity and preparing for space weather prediction using a state of the art dynamo model	03 YRS	ISRO	30,99,000.00	Dr. Bidya Binay Karak(PI), Dr. Dipankar Ba- nerjee(CoPI)
156	DST-INSPIRE Faculty Award (IFA-13 PH 54) understanding structure and dynamics of the Interstelar medium	5 Years	DST, New Delhi	35,00,000.00	Dr. Prasun- Duttta
157	Flow and segregation of granular materials out of hoppers and two & three dimensional devices	3 years	CST-UP	10,44,000.00	Dr. Vishal Mishra





Sr. No.	Title of Project	Duration	Name of Funding agency	Total cost of Project in Rs	Name of the PI/CoPI
Scho	ol of Material Sciences & Technology				
158	Harnessing the synergy of low band gap organ- ic semiconductor and highly facile floating film transfer methofd for low cost efficient organic electronic devices	02 Yrs	SPARC- MHRD	42,85,375.00	prof. Rajiv Prakash (PI) Prof. Praddep Kumar Jain (CoPI -electron- ics Engg.)
159	Synthesis and Characterization of novel segment- ed polyurethane graphene nanocomposites for biomedical applications	3 years	CSIR	18,90,051.00	Prof. Pralay Maiti
160	J.C. Bose Fellowship	5 Years	SERB	68,00,000.00	Prof. Dhanan- jay Pandey
161	Development of low voltage, low power, colloidal quantum dot light-emitting transistors for next generation display technology	3 years	SERB	55,52,323.00	Dr. Bhola Nath Pal
162	Co2 Capture in Carbon nanocomposites	5 Years	DST	35,00,000.00	Dr. Ashish Ku- mar Mishra
163	Design & investigation of thermal conducting two dimensional heterostructures	3 years	SERB	54,80,840.00	Dr. Ashish Ku- mar Mishra
164	Ramanujan Fellow	5 Years	SERB	35,00,000.00	Dr. Sanjay Singh
165	Development of low cost sodium ion battery: Fabrication and application of NASICON based electrodes	3 years	DST	82,89,600.00	Prof. Rajiv Prakash
166	Understanding the mechanism of action through cell biology and upgradation of herbal drug in solution and biodegradable patch for the treat- ment of diabetic foot ulcer	1.5 Years	BIRAC	28,60,000.00	Prof. Pralay Maiti
167	Elastocaloric effect measurement setup to study caloric effect in shape memory alloys	3 years	UGC- DAE	NA	Dr. Sanjay Singh
168	Development of anticorrosive paints	1 Year	Harind chemicals & Pharmaceu- ticals Pvt. LTd	1,20,000.00	Prof. Pralay Maiti
169	Radionuclide sensing platform based on func- tionalized polymer having nanochannels using accelerator	3 years	BRNS - DAE	34,16,000.00	Prof. Pralay Maiti
170	Mott transistors based Neuromorphic memory device	3 years	DST	1,00,98,200.00	Dr. Shrawan Kumar Mishra
171	Minimizing hysteresis in magnetic shape memory Heusler slloys for reversible magnetocaloric effect	3 years	SERB	48,39,838.00	Dr. Sanjay Singh
172	Low cost ammonia gas sensor based on polymer/ polymer nanocomposite device formed by novel floating film transfer (FTM) technique	2 years	IMPRINT- SERB	35,69,376.00	Prof. Rajiv Prakash
173	Nanoscale interfacial magnetic skyrmions and its applications in memory devices	3 years	DST	1,03,50,520.00	Dr. Shrawan Kumar Mishra





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Sr. No.	Title of Project	Duration	Name of Funding agency	Total cost of Project in Rs	Name of the PI/CoPI
174	Chemical modification of Gaur Gum to improve its properties	1 year	Hindustan Gum Pvt. Ltd	7,70,000.00	Prof. Pralay Maiti
175	Aging studies and estimation of thermal proper- ties of Liner Materials	2 years	DRDO	1,56,85,030.00	Prof. Pralay Maiti
176	Impact of Carbon Nanomaterial based Photocata- lyst on Microalgae Growth and Lipid for improved Biodiesel	3 years	DBT	7,30,000.00	Prof. Rajiv Prakash
177	Development of high performance, CMOS compat- ible and color selective narrow-bandphotodetector for high resolution imaging application	3 years	SERB	67,14,400.00	Dr. Bholanath Pal
178	Table Top Sem	One time grant	Advanced Materials Pvt. LTd	17,31,500.00	Prof. Rajiv Prakash
179	NRDC Innovation Facilitation Centre	3 years	National Research Devel- opment Centre	8,00,000 per year	Prof. Rajiv Prakash

# **3. Industrial consultancy projects** (*Major Ongoing only*)

S. No.	Name of Faculty Member	Title	Industry	Amount (in Rs.)
1	Prof. K.K. Pathak	Third party Independent design Audit of RoB and its approaches in lieu of LC 138B at Railways KM 1.450 on NH-21A (New NH-105) at Pinjore in Haryana State	Singla Constructions Ltd., Pinjore Bypass Project, Pinjore, Panchkula	531000.00
2	Prof. K.K. Pathak	Vetting of structural drawing of Govt. Medical College, Siddharthnagar	Unit Incharge, UPRNN, Siddharthnagar Unit, Distt. Hospital Campus, Siddharthnagar	538983.00
3	Prof. K.K. Pathak	Vetting of structural drawings of Govt. medical College Deoria	Unit Incharge UPRNN, Kushinagar Unit Deoria, 100 Bedded Maternity wing, Near Distt. Female Hospital, District Hospital Campus, Deoria	538983.00
4	Prof. K.K. Pathak	Desing of super and sub structures of 72 m Span steel bridge for single lane class A loading in sult consultancy of Almora District	Incherge Exe. Engg. Provincial Division, PWD, Ranikhet Uttarkashi	6,38000.00
5	Prof. K.K. Pathak	Thirt Party Independent desing Audit of RoB	Man Builders SCE No3, II Floor, Sec-11, Panechkula, Haryana	531000.00
6	Prof. V. Kumar	Vetting of structural design and drawing of building type-II dtrs(stz), type-II & III Hrs (s+8) Type IV its(S+3) and Type V altr (S+2)	Executive Engineer (Civil), Amethi Division CPWD Group Centre, CRPF Trishundi, Amethi (UP)	601125 .00





S. No.	Name of Faculty Member	Title	Industry	Amount (in Rs.)
7	Prof. P.K.S. Dikshit	Proof checking of twin tunnels for PIPP 63x64, Proof checking of tunnel lining design of PIPHW-Package No. 65	Max Infra (I) Limited, 4th Floor Plot No. 319&320, Ayyappa Society , Madhapur, Hyderabad	708000.00
8	Prof. S.K. Sharma	Determination of SOR	M/s SECL, Bilaspur, Chattisgarh	1035000.00
9	Dr. G.S.P. Sigh	Scientific study of development of cracks and potholes in the area between edges of water	M/s SECL, Korba Area, SECL (CG)	1950000.00
10	Dr. G.S.P. Sigh	Scientific study for preparation of share control	M/s Mahanai Coalfields Ltd., Sambalpur, Odisha	3672000.00
11	Prof. S.K. Sharma	Scientific study by Gevra OCP, SECL for planning designing and working	M/s Sourth Eastern Coalfields Ltd., Gevra Area, SECL	1184720.00
12	Dr. G.S.P. Sigh	Scientific study in suitability and feasibility dumping	SECL, Gevra, Area	929250.00
13	Prof. B.K. Shrivastava	Slope stability analysis	M/s Jaiprakash Power Ventures Ltd., Singrauli, M.P.	826000.00
14	Dr. A.K. Verma	Thermal and hydraulic based design analysis of rocks	M/s S.M. Consultants, New Delhi	678146.00
15	Dr. C.S. Singh	Safety consultant for mining project of HSIIDC area,	M/s Haryana State Industrial and Inf. Development cop. Ltd., Khanak Mine, Haryana	596490.00
16	Dr. Ashok Jaiswal	Study for the assessment of protective works to be done for ensuring the stability of surface structures	M/s WCL, Chandrapur Area, M.S	649000.00
17	Dr. G.S.P. Sigh	Scientific study of open Pit slopes	M/S CESC Ltd. Sariastoli Coal mine	1298001.00
18	Dr. A.K. Verma	3 D geotechnical analysis of excavation of power complex design/review of rock support	M/s NHPC Ltd., Faridabad, Haryana	2604000.00
19	Prof. Piyush Rai	Scientific study at New Majri open cost- II (A) Expression of Majri Area of WCL	M/s WCL, Majri Area, Kuchana, Chandrapur	944000.00
20	Prof. B.K. Shrivastava	Sized iron ore mining & Limestone, slope	M/s Anil Khirwal, Balaji Iron Ore Mine, Chaibase	708000.00
21	Prof. Piyush Rai	Scientific study & Preparation of scientific study report of Amgaon opencast & Amera open cast mines of SECL	M/s SECL, Office of the heneral. Bishrampur Area, surajpur (C.G.)	944000.00
22	Dr. Ashok Jaiswal	Scientific study for design of minor panel for soil ghosri	M/s Technoblast mining corporation, Raigarh, Chhattisgarh	601250.00
23	Prof. S.K. Sharma	Technical evaluation of safe and sustainable	M/s Hindalco Industries Ltd., Raigarh, Chhattisgarh	1326000.00
24	Prof. B.K. Shrivastava	Scientific Study in cont. mine panel	M/s SCCL, Singaraini	552500.00
25	Prof. B.K. Shrivastava	Scientific Study in Panel A-4 of GDK11 in cline RG1	M/s SCCL, Telangana	614047.00
26	Prof. B.K. Shrivastava	Design of the proposed bund & lighwall stability	M/s SCCL, Telangana	884000.00





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S. No.	Name of Faculty Member	Title	Industry	Amount (in Rs.)
27	Prof. S.K. Sharma	Review/Vetting of the existing SOR and Determination/Formulation of new SoR	M/s SECL, Bilaspur	619500.00
28	Prof. A. Jamal	Study of Pollution load bearing capacity of the Area	M/s SECL, Bhatgaon	555606.00
29	Prof. Piyush Rai	Scientific study as per regulation 106 (2) based on scientific study	M/s CCL, Ranchi	708000.00
30	Prof. V.L. Yadav	Water Testing	CSR, NCL, Singrauli, MP	525555.00
31	Dr. Sanjay Singh	Preparation and characterization of Heister alloy	IKST, Bengalaru	1456250.00

# 4. Faculty members' participation with other universities under MoUs (Ongoing only)

# 4.1. List of National Collaboration of IIT(BHU)

Name of Institutions	Name of Faculty	Signing Date	Duration/ Upto
National Highways Authority of India (NHAI), New Delhi	Dr. Nikhil Saboo, Deptt. Of Civil Engg.	21.07.2020	03 Yrs.
National Highway Authority of India (NHAI), UP- East, Varanasi	Dr. Ankit Gupta, Deptt. Of Civil Engg.	11.08.2020	05 Yrs.
Rashtriya Ayurveda Vidyapeeth (National Academy of Ayurveda) Ministry of AYUSH, New Delhi	Prof. Pradeep Kr. Shrivastava, School of Bio-Chemical Engg.	22.09.2020	05 Yrs.
Ministry of Micro Small & Medium Enterprises (MSME), New Delhi	Dr. Mohd Zaheer Khan Yusufzai, Deptt. Of Mechanical Engg.	06.10.2020	31.03.2021
Indian Institute of Technology Guwahati, Guwahati	Dr. Rajesh Kumar Upadhyay, Chemical Engg. & Tech.	27.11.2020	05 Yrs.
RI Instruments and Innovations and group company RINZTECH, Uttarakhand	Dr. Ashish Kumar Mishra, SMST	23.12.2020	05 Yrs.
Indian Space Research Organisation (ISRO), Bengaluru	Dr. Shishir Gaur, Deptt. Of Civil Engg.	23.12.2020	10Yrs.
Mission Director, Mission Office NM-ICPS, IIT(BHU), Varanasi and I-DAPT-HUB Foundation	Prof. Rajiv Prakash, SMST	30.12.2020	12 Yrs.
Kantas Track-Pack India Limited, Delhi	Prof. Rajiv Prakash, SMST	20.01.2021	02 Yrs.
Ministry of Road Transport & Highway Chair, New Delhi	Dr. Ankit Gupta, Deptt. Of Civil Engg.	03.02.2021	10 Yrs.
Centre for the Development of Glass Industry, Firozabad	Head, Ceramic Engg.	05.02.2021	03 Yrs.
Life Line Security & System, Chhattisgarh	Prof. Rajiv Prakash, SMST	10.03.2021	03 Yrs.
G R Infraprojects Limited, Gujarat	Dr. Nikhil Saboo, Deptt. Of Civil Engg.	23.03.2021	05 Yrs.

# 4.2 List of International Collaboration

Name of Institutions	Name of Faculty	Signing Date	Duration
Raytheon Intelligence and Space Company, USA	Dr. N.K. Mukhopadhyay, Deptt. Of Metallurgical Engg IIT(BHII)	30.07.2020	05 Yrs.
University of West Bohemia (UWB), Europe	Dr. Sanjay Singh, SMST	02.02.2021	05 Yrs.





# **30. Technology Innovation & Incubation Center (TIIC)**

**About:** Technology Innovation and Incubation Center (TIIC), is an umbrella organization at IIT (BHU), Varanasi for fostering entrepreneurial ecosystem and nurturing start-ups in the East UP region.

It administers various units which provide 'Start to Scale' support for entrepreneurship and facilitates research activities to convert into commercial ventures

# Units under TIIC -

- (a) NCL-IIT(BHU) Incubation Centre: NCL-IIT(BHU) Incubation Centre (NIIC) is a joint collaboration of Indian Institute of Technology (Banaras Hindu University) and Northern Coalfields Limited. NCL – IIT (BHU) Incubation Centre, is a Technology Business Incubator for fostering entrepreneurship and nurturing tech start-ups of IIT(BHU) Varanasi. The business incubator provides 'Start to scale' support for technology-based entrepreneurship and facilitates the conversion of research activity into entrepreneurial ventures.
- (b) RKVY-RAFTAAR Agri Business Incubator (R-ABI): R-ABI is a scheme funded by the Ministry of Agriculture and Farmers' Welfare (MoA & FW) which is working in close collaboration with other incubators. This scheme aims at strengthening the infrastructure in agriculture and allied areas in order to promote agripreneurship and agri business by providing financial support and nurturing the incubation ecosystem in and around Uttar Pradesh.
- (c) **CISCO thingQbator Makerspace Program**: As a part of a CSR initiative, Cisco Systems along with NASSCOM Foundation has established a "thingQbator" makerspace at IIT (BHU). This AI and IoT based makerspace program helps to accelerate innovation and entrepreneurship among the student community of IIT (BHU) Varanasi. Students not only playing with the ideas but becoming creative problem solvers and strengthening the start-up ecosystem of India.
- (d) **E-Cell**: Entrepreneurship Cell has been formed to promote the students of IIT (BHU) Varanasi to come up with new ideas and with the help of TIIC the idea can be successfully implemented through ideation Workshop which in turn build start-up eco system in the region.

Major areas of Research: Deep Tech, Clean Tech, Agri Tech, Food Tech and eCommerce.

# Other activities

# (a) NIIC project activities in FY 2020-21:

In spite of Covid-19 pandemic, start-ups executed various skill development programs in the Sigrauli area to create community impact or to improve the social economy. Following start-ups were financially supported by NCL to implement these programs.

Sr No	Start-up Name	Founder Name	Skill Development Program	Funds received by NCL
1.	Sonanchal Aroma Pvt Ltd	Mr. Satyaprakash Dev Pandey	Organic vegetables cultivation & processing	Rs. 4,01,250
2.	Titlis Engg & Projects Pvt Ltd	Dr. Ajay Kumar	Installation of 6 KW Hybrid Solar Tree at NCL Singrauli Community Center integrated with 200 LPD Air Water Generator and Community Communication Center Upgradation with Digital Accessories	Rs. 19,98,990
3.	Manwani's Innovative Pearl Culture LLP	Mr. Ashok Manwani	Pearl farming along with fishery	Rs. 2.96,000
4.	V N Organics Pvt Ltd	Ms. Nisha Niranjan	Mushroom cultivation	Rs. 5.03.000





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# PEARL FARMING

46 Days Pearl Farming Training Programme was conducted from 27<sup>th</sup> December 2020 to 11<sup>th</sup> February 2021. People were surprised to know about pearl farming in freshwater, the water which they are drinking. They were very enthusiastic to know how it was done and participated fully with joy. Their joy, happiness and enthusiasm can be seen in the photographs too. There are offers coming to them for pearl farming. They are confident enough to do pearl farming on their own.

















### **Mushroom Cultivation Training Programme**

- 60 Days MUSHROOM CULTIVATION TRAINING PROGRAMME was conducted from 05th November 2020 to 05th January 2021 at Village Semuaar & CETI-NCL, Singrauli, M.P.
- Mushroom cultivation provides opportunities for improving the sustainability of small farming systems through the recycling of organic matter, which can be used as a growing sub- strate, and then returned to the land as fertilizer.
- Reduce the problem of pollution and carbon emission. Farmer's start utilizing the crop residues for mushroom cultivation instead of burning.
- Farmers are looking forward to adopting Mushroom cultivation as an alternate source of income.





















### **Organic Vegetables Cultivation & Processing Training Program**

- 45 Days Organic Vegetables Cultivation & Processing Training Program was conducted from 25th November 2020 to 10th January 2021 at Birkuniya village.
- Women learned Vegetables Processing, Packaging, Product Cost Calculation & Price List Preparation Activities
- Three SHG were formed for sustainability in Fruits & Vegetables Processing
- Farmer Club was formed at Birkuniya Village



# 3rd International Conference on Opencast Mining Technology & Sustainability ICOMS-2020:

- ICOMS-2020 was held by Northern Coalfields Limited (NCL), Singrauli in association with IIT (BHU) Varanasi. TIIC incubated start-ups got a great opportunity to show case their innovations and entrepreneurial potential to the best minds of the business world.'
- One of the **NIIC** incubated start-ups Pyotam, led by Naveen Kumar (IIT-BHU alumnus, 2014 Batch) raised seed funding from AIC-JKLU in two tranches. Pyotam provides water engineering solutions to industries along with ensuring minimum wastage of water, maximum ROI to the customers and energy saving using IoT integrated system.





# (b) RKVY-RAFTAAR Agri Business Incubator (R-ABI)in FY 2020-21

### COHORT-1 & 2:

- Our 19 CIC recommended start-ups successfully attended the online workshop organized by KP (ICAR-IARI, New Delhi) from 27<sup>th</sup> April to 31<sup>st</sup> May 2020.
- First tranche of around Rs. 97 Lakhs has been successfully disbursed to the 19 start-ups.

### COHORT-3:

- Sessions were organized among students and farmers for outreach of the RKVY-RAFTAAR scheme from May to June 2020.
- Call of proposals was launched. 98 applications for ANKURAN & 55 applications for PRASFUTAN program were received.
- 32 start-ups were selected for AOP and mentoring sessions.
- Based on progress monitoring, 7 start-ups under ANKURAN and 14 start-ups under PRASFUTAN were recommended by the RIC committee.
- 4 start-ups under ANKURAN and 11 start-ups under PRASFUTAN are recommended by the CIC committee for grant-in-aid support.

### COHORT-4:

• Cohort is launched on 19th Feb 2021.

### Sensitization Workshops 2020



31<sup>st</sup> May 2020 - Kisaan Goshti a Sewa Kunj, Babhani, Sonebhadra



1st June 2020 - Kisan Meet at Guru Kripa Ashram, Hathi Nala, Sonebhadra



7<sup>th</sup> June 2020 - Interacted with farmers at Sanjeevani Sewa Sansthan, Soarsot, Nagawa Block, Sonebhadra



14<sup>th</sup> June 2020 - addressed NGP & FPOs in tree plantation ceremony at Ram Nagar





# **COHORT-3 AOP Highlights:**

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- In the online Agri-preneurship Orientation Program (AOP), 24 sessions including technical, legal, finance and business aspects were organized from 19th October till 4th December 2020.
- 6 Sessions were organized on modern Agriculture practices.
- 5 Sessions were organized for the better understanding of finance, legal aspects and company compliances.
- 13 Sessions were organized to provide insight on business, growth and sustainability.
- Interactive sessions with the previous cohort start-ups were also organized for community learning.
- 20 start-ups participated in the online AOP from Uttar Pradesh, Bihar, West Bengal, Uttarakhand, New Delhi, Punjab, and Haryana.
- Various Experts from Industry, IIT BHU, Institute of Agriculture Sciences BHU and Institute of Management Studies BHU shared their knowledge and wisdom with the start-ups.
- The online valedictory of the Agri-preneurship Program was held on 10th December 2020. Prof. Pramod Kumar Jain, Hon'ble Director IIT (BHU) as a chief guest and Prof. Rajiv Prakash, Dean (R&D) IIT (BHU) as a Guest of Honour participated in the Valedictory. They emphasized on role of innovation and technology in the Indian Agriculture

Sr No	Name of the Startup	Founder Name	Tech Brief	RKVY-RAFTAAR Funding in Lakhs
1	Nutriprom LLP	Dr. Abhijit Ganguli	High Proteins nutritional products using soyabean, mushroom and selected spices.	5
2	Nathan's Agro technology	Arpan Singh Rajput	Sahayak - AI & ML based mobile app for detection of plant diseases, indigenous solution, knowledge of local market and local environment will help to establish trust among the farmers.	5
3	Agro-based Adhesive	Shivam Tiwari	Bio adhesive for ceramic tiles using agri / bio waste provides efficient adherence to multi-substrates with better durability, cost- effectiveness and good mechanical strength. Also eco-friendly alternative to reduce usage of cement in construction work.	5
4	Allelopathic Herbicides	Anoop Kumar Devedee	AlleloRas - Allelopathic herbicides, ground level eco-friendly weed management during cultivation which is improving yield by 20 to 30 %.	5
5	Jalodari LLP	Reshu Bhardwaj	Nano herbicides - embedded into bio polymer sticky gel to reduce the dose of toxic agro chemicals applied for weed control. The nanoformulation lowers 20% herbicide use, supplies nutrients to plants and is 30 % cheaper as compared to conventional herbicide.	5
6	INPHITEK AGRO LLP	Dr. Moushumi Ghosh	GuavaProbi - a high-value nutritional supplement comprising of guava powder and probiotic bacterial cultures, providing health benefits in ready to consume attractable food products.	5

Following start-ups are finally recommended by the CIC committee for funding support.



Sr No	Name of the Startup	Founder Name	Tech Brief	RKVY-RAFTAAR Funding in Lakhs
7	TGT Global Development Services PVT LTD	Sanjeev Kumar	Animal feed- Urban green waste is dried and grinded to ensure a low-cost concentrated animal feed.	5
8	Divavi Enterprises	Debika Mukherjee	Divavi - a collaborative platform promoting local production of Jharkhand & Odisha by connecting private individuals, FPOs, farmers, artisans, weavers and rural entrepreneurs.	5
9	Eco char LLP	Dr.Megha Saxena	Biochar and Wood Vinegar - pine needle waste is used to produce Bio char and Wood Vinegar. Reducing cost of irrigation and fertilizers and improving immunity, weight of poultry animals, quality of eggs & milk production.	5
10	Farmisto LLP	Shishir Ranjan	FARMISTO app - one mobile app for all farming needs. Providing curated advisory content, e-diagnostic and personalized consultation and e-Commerce platform for Agri-Input sales and Business to Customer.	16
11	Frenzy Farm LLP	Subodh Kumar Shah	Krishisandhi App - open common platform for Seller (farmers) & Buyer (Food Processing Units), helping to eliminate agents between the famers & the Food Processing Units and providing marketing insights to farmers.	10
12	Kashgro Enterprises Pvt. Ltd.	Mayank Kumar Yadav	PHOSPO – Cost effective phosphorus-based fertilizer from bio degradable municipal waste, will minimize the dependency on non-renewable rock phosphate.	5
13	CAN Analytics Pvt. Ltd.	Nirbhay Khanna	Kissan.co – an interactive platform that connects Farmers with Peers, Traders, Manufacturers, NGOs, Banks, Financial Institutions, SMEs and Govt Agencies.	5
14	Dudh Dhara Pashu Aahar	Sanjeev Kumar Roy	Unique formulation of cattle feed using agri residue, wastage of fruits & vegetables and value added ingredients like Ajwain, Tulsi, Ashwagandha, Alfaalfa & Aquatic Weeds. This highly nutrient, rich feed. increases the quality and yield of milk and improves the cattle health.	20
15	Unnat Krishi Evam Herbal Techno Solutions Pvt. Ltd.	Dharampal Singh Duhun (D. P. Singh)	Equipment for medicinal plant cultivation and processing - providing solutions for problems that are faced by farmers to dig roots and peel & process the medicinal plants like Shatavar & Musli.	25

# Cisco thingQbator activities in FY 2020-21:

The makerspace program organized various workshops and webinars through out the year. This has helped students to work on different project ideas and to come up with out of box solutions. Details of the workshops and seminars are as follows:





- Indian Institute of Technology (BHU) Varanasi

- Webinar on Intellectual Property for Startups on 9th-June- 2020
- Workshop on "Build an application server" on 13th, 14th June 2020
- Workshop on "Computer Vision and Image Processing" on 18th,19th June 2020
- Workshop on "Entrepreneurship for everyone" on 20th June 2020
- Workshop on "GIT Version Control" on 21st June 2020
- Workshop on "Pilot Design Workshop" on 22nd June 2020
- Workshop on "Convolutional Neural Networks Introduction" on 27th , 28th June 2020
- Workshop on "PCB Design for IoT" on 30th June 2020
- Workshop on "MVP to Launch" on 5th July 2020
- Workshop on "Basics of User Experience (UX) Design" on 8th July 2020
- Workshop on "Design and Build physical objects" on 9th July 2020
- Workshop on "Hardware DAQ and IoT" on 15th, 16th July 2020
- Workshop on "PCB Design for IoT" on 19th June 2020
- Workshop on "Industrial IoT" on 24th 25th July 2020
- Workshop on "IoT for smart cities & campuses" on 31st July, 1st Aug 2020
- Workshop on "Convolutional Neural Networks Introduction" on 9th Aug 2020
- Workshop on "Introduction to Robot Operating System (ROS)" on 8th Aug 2020
- Workshop on "Application of Machine Learning in Real time" on 17th, 18th Aug 2020
- Webinar on "Linear Regression for Machine Learning" on 22nd Aug 2020
- Webinar on "Startup sales & Innovating Marketing Channels" on 19th Sept 2020
- Webinar on "Startup sales & Innovating Marketing Channels" on 19th Sept 2020
- Webinar on "Trending domain to establish a successful startup" on 15th Jan-2021
- Webinar on "Trending domain to establish a successful startup" on 15th Jan-2021
- Workshop on "Proteus Simulation" on 26th Jan 2021
- Workshop on "Build a solution that matters" on 26th 28th Feb 2021
- Workshop on "Integration of thingspeak and blynk with proteus" on 3rd March
- Workshop on Design thinking, user research and user validation on 5th to 7th Mar 2021
- Workshop on "Problem statement launch and discussion" on 24th March 2021





# **31. Institute Works Department**

Ever since its inception in the year 2014, Institute Works Department (IWD) in IIT(BHU) shoulders the onus of major/minor repairs, maintenance, retrofitting, renovation and development of infrastructure along with proper operation and sustenance of existing utility lines. The upkeep and functioning of water distribution system, sewerage network, electrical overhead/underground cable lines, distribution substations (DSSs), power substations (PSSs) and SCADA systems also pertain to the prime responsibility of IWD.

In addition to repair and maintenance of the hostels, guest house, faculty apartments/quarters and academic buildings, road side development and maintenance of the pavements/bituminous roads are duly undertaken by IWD. Depending upon the extent and quantum of work, IWD floats online tenders to award work-contracts to various vendors/contractors to execute maintenance/development related works of IIT(BHU) under compliance of GFR and standard practices of Civil/Electrical Engineering.

# Major construction works in progress by CPWD under HEFA-1<sup>st</sup> loan scheme during the period from April' 2020 to March' 2021:-

Sl. No.	Name of work	AA&ES amount (Rs. in Crores)
1.	Construction of Dhanrajgiri Hostel-II (S+7) with Dinning block (G+1) behind Dhanrajgiri Hostel at IIT(BHU), Varanasi	49.66
2.	Construction of Student Activity Centre with Indoor Sport Facilities (G+2) in Rajputana Ground at IIT (BHU), Varanasi	27.80
3.	Construction of Apartments (S+8) for Faculty and Officers behind Vivekanand Hostel at IIT (BHU), Varanasi	40.01
	Total	117.47

# List of works completed/carried out by IWD during the period from April' 2020 to March' 2021:-

<b>S1. No.</b>	Name of work
1.	Construction of light weight structure for (With panel roofing/puff panel wall including internal false ceiling and vitrified tiles flooring on the fluid mechanic building for Architecture Engineering Department, IIT(BHU) Varanasi
2.	Water proofing treatment of roof and repairing of patch plaster in GTAC remaining area of Metallurgical Engi- neering and Some other area required in IIT (BHU) , Varanasi
3.	Providing and fixing Aluminium partition, granite flooring, false ceiling in Electrical Machines and Drive lab in Electrical Engg., IIT(BHU)
4.	Removing of old asbestos sheet and providing & fixing puff panel roofing, false ceiling, tiles flooring and painting work of ID Lab of Main Workshop, IIT (BHU), Varanasi
5.	Water proofing treatment of roof and repairing of patch plaster work in Mining Eng. Deptt. GSC (old) & remain- ing portion of Chemical Engg. Deptt., IIT (BHU) Varanasi
6.	Water proofing treatment of roof and repairing of patch plaster in Mechanical, Architecture Deptt. and C.V. Ra- man Hostel, IIT (BHU,) Varanasi
7.	Special repair of slab and beam (Guniting work) of front & back side corridor and left & right side corridor (at 1st floor) and painting work, Rampur Hall and Control system & Network Lab in Department of Electrical Engineer- ing, IIT (BHU), Varanasi Phase-2
8.	Renovation of 6 nos. of bathrooms in Ground Floor & First Floor of GSC (Old) Hostel & 1 no. of Bathroom in First Floor of Visvesvaraya Hostel, IIT(BHU) Varanasi





<b>Sl. No.</b>	Name of work
9.	Construction of Mezzanine Floor in the existing space, Renovation of Toilet of MCIIE, Department of Chemical Engineering, IIT (BHU) Varanasi
10.	Renovation and modification of E-hall, Department of Chemical Engineering, IIT(BHU), Varanasi
11.	Renovation of Kitchen block including dismantling of old window & door, providing & fixing of uPVC window & panelled door, providing & laying Vitrified tiles, Plastering of Wall, Putty and Distempering in Left Side of Limbdi Hostel, IIT (BHU) Varanasi
12.	Renovation of Kitchen block including dismantling of old window & door, providing & fixing of uPVC window & panelled door, providing & laying Vitrified tiles, Plastering of Wall, Putty and Distempering in Right Side of Limbdi Hostel, IIT (BHU) Varanasi
13.	Renovation of Kitchen block including dismantling of old window & door, providing & fixing of uPVC window & panelled door, providing & laying Vitrified tiles, Plastering of Wall, Putty and Distempering in Ground Floor & First Floor of Vivekanand Hostel, IIT (BHU) Varanasi
14.	Renovation of Kitchen block including dismantling of old window & door, providing & fixing of uPVC window & panelled door, providing & laying Vitrified tiles, Plastering of Wall, Putty and Distempering in C.V Raman Hostel, IIT (BHU) Varanasi
15.	Renovation of 8 nos. of bathrooms in Ground Floor & First Floor of Vishwakarma Hostel & 1 no. of bathrooms in Ground Floor of Limbdi Hostel, IIT(BHU) Varanasi
16.	Renovation of Kitchen block including dismantling of old window & door, providing & fixing of uPVC window & panelled door, providing & laying Vitrified tiles, Plastering of Wall, Putty and Distempering in Rajputana Hostel, IIT (BHU) Varanasi





# 32. Central Instrument Facility (CIF)

### Year of Establishment: 18-04-2015

# Head/Coordinator of the Department/School: Prof. Rajiv Prakash w.e.f. 18-04-2015

**About:** Central Instrument Facility (CIF) is one of the newly formed Specialized Core Facilities at Indian Institute of Technology (Banaras Hindu University), Varanasi.

"Our mission is to provide futuristic research infrastructure and quality education services in support of advanced instrumentation."

The CIF is offering a complement of sophisticated instruments and technical expertise to support faculty/student research and industrial R&D. The CIF is headed by Professor Rajiv Prakash along with full time professional staff / scientists, each with their own specific expertise. PG student assistants are also available for smooth operation of the instruments.

**Major areas of Research:** The CIF is offering a complement of sophisticated instruments and technical expertise to support faculty/student research and industrial R&D in Testing and Characterization of engineering materials.



Surface Area Measurement Facility (BET)



X-ray photoelectron spectroscopy (XPS)



Waiting Room, GTAC



Table Top SEM





# 33. Gandhi Technology Alumni Centre (GTAC)

**About:** Gandhi Technology Alumni Centre (GTAC) was established in 2007 with the help of alumni's of IIT(BHU) for the purpose of providing a stay to guests which includes alumni's, employees, students etc. Since then it has been a long journey till now. It has developed a lot since then.

# **Facilities Available:**

**Total No. of Rooms:** There are a total 72 rooms in GTAC, which includes 4 suites and 68 rooms. All rooms are air conditioned and have basic facilities like TV, telephone, two beds, table and chairs etc.

**Canteen:** A canteen is also there to provide breakfast, lunch, dinner, tea, snacks etc. to the staying guest.

**Waiting Room:** A waiting room is also there so that guests can meet someone or wait for the time being. Also it serves the purpose of meeting rooms in required condition.

**Hall or Conference room:** A large hall is also there for conferences, meetings, seminars etc. for the student or faculty.

# **Programmes & Activities in GTAC:**

- > Provides stay to the Alumni's and guests during alumni meet of IIT (BHU) alumni's.
- Provides stay to the participants of QIP programmes of different departments of IIT (BHU).
- > Provides stay to the participants of IIT festivals like Spardha and KashiYatra, Technex etc..
- > Provides stay to the parents of the students taking admission in IIT(BHU) or parents coming to meet their children.
- > Provides stay to the friends and relatives of the IIT's faculty members and non-faculty members.
- Provides stay for the departmental programmes of IIT (BHU).
- > BOG meetings and faculty recruitment interviews.
- Provided stay to Paramedical/Medical staff deployed in COVID 19 duty during August, 2020 to January, 2021.





GTAC entrance

Inner lawn and rooms of GTAC





Waiting Room, GTAC



Hall or Conference room, GTAC



# 34. Main Workshop

**Introduction:** Malviya ji wanted for a full scale Workshop in this engineering college, which was christened as Banaras Engineering College (BENCO) with vision as

# "To advance and diffuse such scientific, technical and professional knowledge combined with necessary practical training as is best calculated to help in promoting indigenous industries and in developing the material resources of the country.".

IIT(BHU) workshop was used to produce every engineering item that was used in construction of producing machine tools – such as, Lathe and other product like electric fans, etc. This unit was providing technical assistance to Martin Burn Electricity Co. and also Diesel Locomotive Works for the maintenance and fabrication of their several items. It may kindly be noted that for a long time, this unit was a part of teaching department, i.e., the Mechanical Engineering Department with conversion into IIT(BHU), responsibility is to make good use of the resources, both in terms of machines and manpower with the unit, it was providing technical and on the job technical training to less privileged section of the society. This would be making extra manpower available to the IIT for producing useful products and taking various kinds of maintenance work, thereby saving enormous amount of money of the IIT. For example, new challenges of manufacturing and innovation is maintained by this workshop.

# **Activities of Main workshop:**

- Training to B.Tech. Part-I students of all branches and B.Tech. Part-II Mech. Engg. Students to expose them to various manufacturing practice and processes.
- Providing facilities for fabrication involved in project work to all the engineering students.
- Helping students by way of fabricating the models and equipments for research.
- Helping students by way of fabricating the models for Institutional Tech. Fest & Department fest like: Technex, Comet, etc.
- Helping students in shaping the product that comes out of their creative & innovative thinking.
- There are many new initiatives in recent time ago Precision Engineering Hub, Tinker Lab. startup etc.

# **Other activities**

# Activity at the institute level :

- Inspecting the furniture supplied to the different hostels of IIT (BHU).
- Providing technical and support services in the purchase and maintenance of the University vehicles of all types.
- Providing facilities and also the technical know-how for development of industrial and innovative products.

# **Activity To Outsiders :**

- Training to the students of other engineering colleges.
- Providing processing and production facilities to outsiders.
- Providing Summer Training to the undergraduates of different Engineering College.

# Library facilities:

50 Nos. of Video CDs related to Power Hand Tools, Welding, CNC, Foundry, Carpentry, Mechanical Engineering, manufacturing techniques & Safety are available in the Workshop for instruction to the students of B. Tech during workshop practice classes.





# Core team of the main workshop:

- Prof. Santosh Kumar (Prof. Incharge)
- Shri Basudeb Rajak (Senior Technical Officer)

# Technical and Non-Teaching Staff

Sl. No.	Name	Qualification	Designation
1	Shri Basudeb Rajak	M. Tech. (Production Engineering)	Senior Technical Officer
2	Shri Lal Bahadur Singh	High School, ITI Moulder	Senior Technical Superintendent
3	Shri Lakhmi Chand	B.A., Diploma in Mechanical Engg.	Senior Technical Superintendent
4	Shri Shri Kumar	B.A., One year Diploma in Carpentry	Technical Superintendent
5	Shri Bed Prakash Singh	B.A., Diploma in Mechanical Engg.	Technical Superintendent
6	Shri Arvind Kumar Singh	Intermediate, Diplome in Mechanical Engg.	Technical Superintendent
7	Shri Chandra Mohan Singh	HIgh School, Diploma in Mechanical Engg.	Technical Superintendent
8	Shri Ravi Shankar Singh	Intermediate, Diploma in Mechanical Engg.	Technical Superintendent
9	Shri Mahendra Kumar	Intermediate, Two year Diploma in Carpentry & Pattern Making	Technical Superintendent
10	Shri Bhola Nath	High School, ITI Moulder	Technical Superintendent
11	Shri Vikarama Prasad	High School, One year Diploma in Carpentry	Junior Technical Superintendent
12	Shri Jagdish Prasad	High School, One year Diploma in Carpentry	Junior Technical Superintendent
13	Shri Lal Prakash Singh	B.Com., One year Diploma in Moulder	Junior Technical Superintendent
14	Shri Dilip Kumar Sharma	M.A., ITI Welder, ITI Wireman, Diploma in Mechanical Engg.	Junior Technical Superintendent
15	Shri Sunil Kumar	B.A., ITI Machinist	Junior Technical Superintendent
16	Shri Tej Bahadur Singh	Intermediate, ITI Wireman	Junior Technical Superintendent
17	Shri Chandra Bhusan	M.Com., ITI Electronics	Junior Technical Superintendent
18	Shri Vijay Kumar	Intermediate, ITI Motor Mechanic	Junior Technical Superintendent
19	Shri Santosh Kumar Maurya	Intermediate, ITI Electrician	Junior Technical Superintendent
20	Shri Vijay Kumar Singh	Intermediate, ITI Welder, Diploma in Mechanical Engg.	Junior Technical Superintendent
21	Shri Ramkrishna Sharma	Intermediate, Two year Diploma in Fitter	Junior Technical Superintendent
22	Shri Jagdish	High School, ITI Carpentry	Senior Technician
23	Shri Gopal Kumar Kharwar	Intermediate, ITI Electronics	Senior Technician
24	Shri Bilu Guria	High School, ITI Welder	Senior Technician





<b>Sl. No.</b>	Name	Qualification	Designation
25	Shri Brijesh Kumar Sharma	Intermediate, ITI Fitter	Senior Technician
26	Shri Kunwar Bhadur	High School, ITI Wireman	Senior Technician
27	Shri Rajendra P. Vishwakarma	Intermediate, ITI Foundry	Senior Technician
28	Shri Anil Vishwakarma	M.A., ITI Welder, ITI in Electroplating	Senior Technician
29	Shri Ashwani Kumar Tiwari	Intermediate, ITI Machinist, Apprenticeship, Diploma in Mechanical Engg.	Senior Technician
30	Shri Bipin Kumar Rai	Intermediate, ITI Fitter	Senior Technician
31	Shri Vinay Kumar Singh	Intermediate, ITI Fitter, Diploma in Mechanical Engg. Certificate in Adv. CNC & Autocad	Senior Technician
32	Shri Banarasi Rao	Intermediate, ITI Refrigeration & AC	Senior Technician
33	Shri Karun Vishwakarma	Intermediate, ITI Machinist & Grinder	Senior Technician
34	Shri Jitendra Kumar	High School, ITI Turner	Senior Technician
35	Shri Vijay Kumar Singh	Intermediate, ITI Automobile	Senior Technician
36	Shri Ravindra Kumar	Intermediate, ITI in Motor Mechanic	Senior Technician
37	Shri Ajay Kumar Yadav	Intermediate, ITI Turner	Senior Technician
38	Shri Gopal Krishna Shukla	B.ScIT, M.ScCS, ITI Instrumentation	Senior Technician
39	Shri Shivendra Tiwari	High School, Diploma in Mechanical Engg. & Apprenticeship from DLW	Senior Technician
40	Shri Dheelip Kumar B.	High School, ITI Machinist & Apprenticeship	Senior Technician
41	Shri Gopal Rana	Junior High School, Diploma in Electrician & Motor winding	Senior Technician

# New addition to the main workshop:

The new Precision Engineering Hub.has been created and housed in the Main worshop. The following facilities have been added in the Precision Engineering Hub

S. No.	Details (Infrastructure, Equipments, etc.)	Value (in Lakhs of Rupees)
1	High Strength Colour Polymer 3D Printer Model HP-MJF-580	1,27,99,500.00
2	Markforged Model X-7 Fiber Composite 3D Printer	6,650,000.00
3	CNC Lathe Trainer Model & CNC Milling Trainer Model	21,42,000.00
4.	20 KVA online UPS	4,49,500.00
5.	Air Compressor 5HP 280 L	1,08,412.00
6.	Desktop Computer 08 Nos.	3,81,600.00





- Indian Institute of Technology (BHU) Varanasi



CNC Vertical Machining Centre - 3 Axis ( Train Master)



**CNC Turning (Production Type)** 



CNC Vertical Machining Centre -5 Axis (Train Master), CNC Turning (Train Master)



Precession Lathe Machine (Conventional Type)



Markforged Model X-7 Fiber Composite 3D Printer



High Strength Colour Polymer 3D Printer Model HP-MJF-580





# **35. Finance and Accounts**

# INDIAN INSTITUTE OF TECHNOLOGY (BHU), Varanasi BALANCE SHEET AS AT 31.03.2021

### **Amount in Rupees**

SOURCE OF FUNDS	Schedule	Current Year	<b>Previous Year</b>
Corpus/Capital Fund	1	5,992,341,627	4,931,587,801
Designated / Earmarked Funds/Endowment Funds	2	1,360,158,929	1,349,452,208
<b>Current Liabilities &amp; Provisions</b>	3	4,942,846,014	4,428,631,053
TOTAL		12,295,346,570	10,709,671,062

APPLICATION OF FUNDS	Schedule	Current Year	<b>Previous Year</b>
FIXED ASSETS	4		
Tangible Assets		2,233,089,371	2,112,872,142
Intangible Assets		4,401,132	45,796,771
Capital Work-In-Progress		962,820,214	351,474,374
INVESTMENTS FROM EARMARKED / ENDOWMENT	5		
FUNDS			
Long Term		126,579,848	1,267,965,439
Short Term		-	2,330,236,250
INVESTMENTS – OTHERS	6	4,065,745,801	-
CURRENT ASSETS	7	4,017,218,264	3,510,377,374
LOANS, ADVANCES & DEPOSITS	8	885,491,940	1,090,948,712
TOTAL		12,295,346,570	10,709,671,062

SIGNIFICANT ACCOUNTING POLICIES CONTINGENT LIABILITIES AND NOTES TO ACCOUNTS 23 24





# INDIAN INSTITUTE OF TECHNOLOGY (BHU), Varanasi

# INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31st MARCH 2021

### Amount in Rupees

Particulars	Schedule	Current Year	Previous Year
INCOME			
Academic Receipts Grants / Subsidies Income from	9	449,873,300	544,673,818
Investments Interest earned	10	1,968,992,063	2,659,135,000
Other Income	11	106,393,660	123,048,323
Prior Period Income	12	321,737	430,945
	13	768,964,281	330,839,793
	14	-	
TOTAL (A)		3,294,545,041	3,658,127,879
EXPENDITURE			
Staff Payments & Benefits (Establishment exp.) Academic	15	1,628,336,785	1,890,821,875
Expenses	16	423,148,423	559,066,532
Administrative and General Expenses Transportation	17	250,896,292	444,793,721
Repairs & Maintenance Finance Costs Depreciation	18	1,076,094	1,011,434
Other Evnenses	19	73,571,875	50,163,282
Prior Period Expenses	20	8,981,530	999,073
	4	413,781,525	327,117,972
	21	-	-
	22	-	
TOTAL (B)		2,799,792,524	3,273,973,889
Balance being excess of Income over Expenditure			
(A-B) Transfer to/ from Designated fund		494,752,517	384,153,990
Balance being Surplus (Deficit)			384,153,990
Carried to Capital Fund		494,752,517	



Indian Institute of Technology (BHU) Varanasi



# **Institute Orientation**









# Institute Convocation











# INDIAN INSTITUTE OF TECHNOLOGY (BHU) VARANASI

