



॥ त्वं ज्ञानमयो विद्वानमयोऽसि ॥

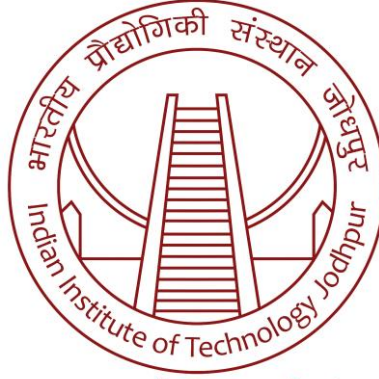
# Indian Institute of Technology Jodhpur

## भारतीय प्रौद्योगिकी संस्थान जोधपुर

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**7** दीक्षान्त समारोह  
**Convocation**  
Sunday, December 19, 2021







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## Seventh Convocation

*December 19, 2021*

# Convocations of IIT Jodhpur

The Institute has hosted six convocations so far. They are:

<i>Convocation</i>	<i>Date</i>	<i>Venue</i>	<i>Chief Guest</i>
First Convocation	July 10, 2013	IIT Jodhpur Permanent Campus premises	<i>Shri Pranab Mukherjee,</i> Former Hon'ble President of India
Second Convocation	July 16, 2014	Town Hall, Jodhpur	<i>Dr. V. K. Saraswat,</i> Former Director General, DRDO
Third Convocation	December 8, 2016	Auditorium, AIIMS, Jodhpur	<i>Dr. Arvind Panagariya,</i> Vice Chairman, NITI Aayog, Government of India
Fourth Convocation	August 25, 2018	Lecture Hall 110, IIT Jodhpur	<i>Dr. Srikumar Banerjee,</i> DAE Homi Bhabha Chair Professor, Bhabha Atomic Research Centre, Mumbai
Fifth Convocation	December 17, 2019	Lecture Hall 110, IIT Jodhpur	<i>Prof. S. C. Dutta Roy</i> INSA Honorary Scientist Formerly Professor and Head, Department of Electrical Engineering, IIT Delhi
Sixth Convocation	December 6, 2020	Lecture Hall 110, IIT Jodhpur	<i>Professor Geoffrey E. Hinton</i> Turing Award Winner Emeritus Distinguished Professor, Department of Computer Science, University of Toronto, Canada



**Shri Dharmendra Pradhan**

Honourable Minister of Education, Government of India

Shri Dharmendra Pradhan is the Cabinet Minister for Education and Skill Development and Entrepreneurship in the Government of India. As a Member of Parliament, Shri Pradhan represents Madhya Pradesh in the Rajya Sabha and was earlier a member of the 14<sup>th</sup> Lok Sabha. Born June 26<sup>th</sup>, 1969, he hails from the city of Talcher in Odisha.

As the Minister of Petroleum & Natural Gas of India, Shri Pradhan is attributed with several progressive reforms & initiatives, including consumer initiatives like PAHAL, which is the world's largest Direct Benefit Transfer Scheme and the #GiveItUp campaign that was ardently supported by the Prime Minister Shri Narendra Modi. The campaign urged affluent citizens to surrender their LPG subsidy for the needy - this received a successful response from about 10 million consumers. In an attempt to empower rural India with the clean fuel of Liquefied Petroleum Gas (LPG), the Pradhan Mantri Ujjwala Yojana was launched by the Ministry of Petroleum & Natural Gas under which over 80 million LPG connections have been provided to women from Below Poverty Line (BPL) families.

Minister Pradhan took some key decisions in the hydrocarbon sector. Supported by the Union Cabinet, he brought in a new Hydrocarbon Exploration & Licensing Policy (HELP), which through its uniform licensing for explorations and production of all forms of hydrocarbon, open acreage policy and marketing and pricing freedom also enhances domestic oil & gas production with substantial investment in the sector and also generating sizable employment.

Minister Pradhan has also undertaken several reforms and initiatives to aid the energy transition efforts of the country, which includes promoting gas as a bridge fuel, ethanol, CBG & biodiesel, implementing the SATAT scheme, promoting hydrogen-blended CNG buses plying the city of Delhi for use as a transport fuel as well as an industrial to refineries, promoting liquefied natural gas (LNG) stations for long-haul trucks among other initiatives.

In his previous tenure as the Minister for Skill Development & Entrepreneurship (2017-19), Shri Pradhan also launched many key initiatives focussing on skilling, reskilling and upskilling the manpower of India and emphasized on bridging the skills gap for the Indian youth.

A post-graduate from Utkal University, Bhubaneswar, in Anthropology, he has actively pursued several issues concerning the youth, such as unemployment, the lack of skill-based education, rehabilitation and resettlement of farmers, and has played a major role in mobilising the youth in Odisha.

Shri Pradhan started as an Akhil Bhartiya Vidyarthi Parishad (ABVP) activist in 1983 and has served in ABVP as Secretary. He has also worked as an election in-charge in Bihar and as an in-charge of party affairs in Karnataka, Uttarakhand, Jharkhand and Odisha.

Following his contribution to society and the party, Pradhan was awarded the 'Best Legislator Award', the *Utkalmani Gopabandhu Pratibha Samman*, 2002-03 and the Odisha Citizens' Award in 2013.

He is married to Mridula Pradhan and has two children, Nishant & Namaisha



**Dr. Rajesh Gokhale**

Secretary, Department of Biotechnology  
Ministry of Science & Technology, Government of India

*Chief Guest, 7<sup>th</sup> Convocation, IIT Jodhpur*

Prof. Rajesh S. Gokhale is the Secretary at Department of Biotechnology in the Ministry of Science & Technology, Government of India. He is presently on deputation from Indian Institute of Science Education & Research (IISER) Pune. Prior to this, he was at National Institute of Immunology (NII) and was also Director of CSIR-Institute of Genomics and Integrative Biology (CSIR-IGIB) for seven-and-half years. During his tenure he established the South Campus of CSIR-IGIB, where he led interdisciplinary initiatives in translational genomics research programs focused in delineating a variety of complex diseases.

Dr. Gokhale is trained as a chemical biologist from Indian Institute of Science (IISc), Bangalore and Stanford University, USA. His significant research contributions are in discovering novel metabolites and their pathways, which dictate pathophysiology of human diseases. Recent work from his laboratory have identified two novel metabolites from infectious pathogen *Mycobacterium tuberculosis*, that are crucial for initiating complex infection process. His group have also significantly contributed to the understanding of autoimmune disease Vitiligo. Studies from his group has elucidated complex interplay between metabolic reprogramming and immune system, to develop novel therapeutic strategies that can tackle the underlying causes, rather than just the symptoms.



Scientific work from his laboratory has been published in prestigious journals like Nature, Nature Chemical Biology, Molecular Cell, The Proceedings of the National Academy of Sciences etc. He has mentored more than 200 students and about 25 students have completed PhD thesis from his group. Dr Gokhale co-founded Vyome Biosciences Pvt. Ltd. (VYOME) in 2010, a biopharmaceutical company developing best in class drugs for dermatology. This company is presently completing Phase IIb clinical trial for drug-resistant acne and has launched OTC products in the market. Dr. Gokhale was a Wellcome Trust Senior Research Fellow, UK and an International HHMI Fellow, USA. He is recipient of several awards, including Infosys Prize, Shanti Swarup Bhatnagar Prize, National Bioscience Award, J C Bose National Fellowship and IIT Bombay Distinguished Alumni Award. He is also Fellow of all the three Indian National Science Academies.

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# Convocation Program

Program	कार्यक्रम
Invocation	09.00 am आवाहन
Arrival of the Academic Procession	09.03 am शैक्षिक शोभा यात्रा का आगमन
Vande Mataram	09.03 am वन्दे मातरम
Declaring the Convocation Open	09.05 am दीक्षांत समारोह के प्रारंभ की घोषणा
Welcome Address and Institute Report	09.06 am स्वागत सम्बोधन एवं संस्थान प्रतिवेदन प्रस्तुति
Award of Degrees	09.25 am उपाधि प्रदान
Signing Register of Degrees	10.13 am उपाधि पंजिका में हस्ताक्षर
Chairman's Address	10.15 am अध्यक्षीय सम्बोधन
Convocation Address	10.25 am दीक्षांत अभिभाषण
Video Address by Hon'ble Minister of Education	10.55 am शिक्षा मंत्री द्वारा विडियो सम्बोधन
Oath Taking by Graduates	11.15 am स्नातक शपथ ग्रहण
Presentation of Medals and Certificates	11.20 am पदक एवं प्रमाणपत्र वितरण
Declaring the Convocation Closed	11.35 am दीक्षांत समारोह के समापन की घोषणा
National Anthem	11.36 am राष्ट्रगान
Departure of Academic Procession	11.37 am शैक्षिक शोभायात्रा का प्रस्थान
Program Ends	11.40 am कार्यक्रम समापन

# Director's Report



**Professor Santanu Chaudhury**  
Director, IIT Jodhpur

Respected Dr. R. Chidambaram, Chairman of Board of Governors, Dr. Rajesh Gokhale, Chief Guest of today's Convocation Ceremony, Members of the Board, and Members of the Senate, Distinguished Guests, Dear Parents & Graduands, my faculty and staff colleagues, members of the press, Ladies & Gentlemen:

IIT Jodhpur has embarked on an ambitious mission to establish itself as one of the top destinations in the country for a wholesome education with the right mix of flexible academics, cutting-edge research, curiosity-driven innovation and a curriculum built on technology foresight. Despite the COVID pandemic, the Institute has progressed on all fronts including infrastructure, academics, research, and technology development. Today, a total of 404 students will graduate from IIT Jodhpur. It is with great pleasure that I congratulate the 180 B.Tech., 67 M.Sc., 130 M.Tech., and 27 Ph.D. students (total 404) who are graduating today. Also, a total of 59 B.Tech. students will also be conferred with *specialization/minor area certificates* in Artificial Intelligence, Internet of Things, Thermofluids Engineering, Robotics and *minors* in Entrepreneurship and Management along with their degrees.

## Vision & Strategic Plan

The Institute has completed more than a decade in its journey in nurturing talent and achieving excellence. The institute has experienced a significant growth in recent times and by 2025 the student strength will reach to close to 5000 from the current strength of 3255. It is important for a technology institute to assess the changing landscape of the technology and other relevant factors to shape and tune its strategy to contribute significantly and meaningfully. There were several factors including New Education Policy, Exponential change in technology, Changing nature of Work and Job, New Financial Model, Expectations from the Society, and, the need for virtual mode of education along with the traditional brick and mortar model necessitate the need to expand the current Vision and Mission of the institute. Furthermore, high-quality education acquires unprecedented importance in improving the lives and future of the people/planet. The arena and scope of technological education also have to expand far beyond the 20th-century concepts. Technology institutes have to increasingly become more and more multi-disciplinary, and also contribute more directly to the application of emerging technologies for responding effectively to ever-changing challenges/opportunities. With this backdrop, an institute crafted its Vision for 2025. Institute vision reflects the proposed nature of the institute; it is envisaged as a future driven knowledge institute, with emphasis on the use of Transformational Technologies/ Interventions with a multidisciplinary approach. All Departments, Schools, Interdisciplinary Research Platforms (IDRPs) and Centres have created their respective vision documents. Vision, mission and goals of all these academic units are broadly aligned to the Institute Vision. Different academic units of the institute also have their respective specific missions and goals based on the path they have charted for their future. I am happy to announce that a comprehensive document consisting of the vision of all academic units and different sections was approved by BoG in March 2021. An of Office of Planning & Resource Generation has also been setup to facilitate the implementation of this vision through a dedicated Vision Coordination Committee. Thus, the institute is working in a coordinated and a planned way to realize the Vision on all fronts.

## Academics

In continuation of repositioning and revamping the under-graduate and post-graduate education along with the research landscape at IIT Jodhpur, UG programmes with unique features, new PG and doctoral programmes have been introduced for the first time. The institute has introduced new programmes and additional features in the curriculum with an appropriate blend of flexibilities and multi-disciplinarity for application-oriented skill sets as required by the industry. The institute has introduced options for multiple exits in many programmes. IIT Jodhpur is offering eight B.Tech. Programmes with a new curriculum for future ready engineers. IIT Jodhpur also completed thorough revision of undergraduate curriculum in August 2020. The new UG curriculum provides opportunity for the students to tailor their programme based upon their interest and capability while remaining anchored in their core branch. With the rapid change in the contours of engineering education due to the emergence of Miniaturization, Parallelism, Smart Materials, Bio-mimetic Systems and AI, IIT Jodhpur has designed a curriculum to enable students to pursue these emerging areas in the broad context of their parent disciplines through specialisation or minor area certification. At the end of seven semesters, a student can also opt for a 5-year B.Tech.-M.Tech./MBA Dual degree.

To kindle the spirit of imagination and creativity IIT Jodhpur has introduced design thinking as a core component in the curriculum from the first year itself. Students can pursue their design ideas and improve upon them as they learn more about engineering. In their final year they can take up these ideas for possible product development by opting for Entrepreneurship as a minor. Furthermore, they can pursue product development at the IITJ incubator and credit relevant courses in their fifth year to get an M.Tech. degree in Entrepreneurship. Students will also have the opportunity to pursue their ideas by opting for Engineering Innovation as a minor through which they are expected to get initiated in Engineering Research in close collaboration with industry or research institutions. Students can also opt for a number of other minor areas and specializations.

The institute is presently offering four M.Sc., two M.Sc.-M.Tech, twelve M.Tech. and fourteen M.Tech.-Ph.D. dual degree programmes. These programmes will not only provide basic foundation

in core branches of the respective disciplines, but also aim to encourage the candidates to develop new technological solutions. The programmes cover a wide range of upcoming topics with strong industry focus and providing industry-oriented career opportunities to the graduates.

In continuation with the rapid growth along with the significant development and improvement in the infrastructural facility, the student strength at IIT Jodhpur has increased from 2360 to 3209 admitted in different 66 undergraduate and postgraduate programmes. Presently we have 1463 B.Tech., 212 M.Sc., 40 M.Sc.-M.Tech., 711 M.Tech., 43 M.Tech.-Ph.D., 563 Ph.D., 148 MBA, 29 Masters and Masters-Ph.D. in Medical Technologies students making a total of 3209, and 46 students of preparatory programme. The institute is presently having 10 Prime Minister's Research Fellows registered in the Ph.D programmes. The institute also has foreign students admitted in M.Tech. and Ph.D. programmes through Study-In-India and ASEAN fellowship schemes.

The institute has successfully admitted the second batch in the flagship MBA-Tech and MBA programme. The unique programme offers a nice blend of international exposure and exceptional learning. Being embedded in the futuristic technology environment of IIT Jodhpur, the School of Management and Entrepreneurship has an adaptive curriculum with a focus to accommodate the advancements in the business landscape. MBA-Tech is a sought-after program, and has generated great interest among students and the industry. The Dual Degree programme with partner institutions abroad is one of the attractive features of the programme. The students in this program would earn an MBA degree from IITJ and a specialized Masters degree from one of the partner B-Schools, thus earning MBA and MS or MA degree in two years. A total of 10 students have opted for the dual degree programme. Full summer and winter placements for students were achieved.

The Institute is offering 13 Ph.D. Programmes by different departments/schools other than the interdisciplinary Ph.D. Programmes. The institute has started a new doctoral programme in Artificial Intelligence and Data Science from the academic year 2021-22. The joint programmes in Medical Technologies, jointly offered by IIT Jodhpur and AIIMS Jodhpur has completed one year since inception and making national footprint towards producing a pool of Medical Technologists in the country who shall develop need based and competitive Medical and Healthcare Technologies to

address the current as well as emerging challenges of the future. The institute is now well equipped with adequate infrastructure to offer online certificate, diploma and postgraduate programmes. In addition to the existing executive M.Tech. programme, the institute has also started a new executive M.Tech. programme in Data and Computational Sciences with 137 working professionals which is being conducted in synchronized online mode. Soon a post graduate diploma in Data Engineering and Cloud Computing will be offered in collaboration with industry partners. The institute also intends to further enhance the presence in this space by offering more programmes jointly with academia/industry partners or independently.

This year IIT Jodhpur has instituted a unique fellowship scheme in remembrance of Prof. Meghnad Saha, an eminent astrophysicist, to provide an option to young Ph.D.'s (belonging to SC /ST/ NCL-OBC/EWS categories) to have rich post-doctoral research and teaching experience at IIT Jodhpur. One can apply for this scheme immediately after submission of the Ph.D. thesis, till completion of three years from Ph.D. defense. The scheme is also open for candidates who are currently employed full-time in teaching institutes across the country. The tenure will be for a maximum of two years and purely a temporary assignment. The fellowship amount is Rs. 75K per month after the defense of the Ph.D. thesis, whereas Rs. 55K per month will be awarded before the defense of the Ph.D. thesis.

Indian Institute of Technology Jodhpur is committed to offer a unique student focused educational experience which encourages self-learning, collaborative and exploratory learning. IIT Jodhpur has been seamlessly continuing the *synchronous online mode* of instructions post-CoVID-19 with *novel pedagogical approaches* exploiting technologically enabled aids. This includes laboratory experiments conducted using online simulators and tinkering tools, and VR enabled walkthroughs of some of the basic laboratories. Moreover, interactive video based flipped classrooms are being explored for collaborative learning. The institute has introduced the *hybrid mode of teaching-learning* in the campus for most of the courses in the last semester and efficiently delivered the contents to complete the curriculum requirement. IIT Jodhpur has been conducting the online proctored examinations to implement the scheduled evaluations of courses as per academic calendar. The

distribution of weightage for the evaluation components of a course assessment has been judiciously made combining continuous assessment and end-semester based examination. Innovative schemes for various evaluation components for continuous evaluations including group assignment, project based assignment etc. have been implemented. In the blended mode of delivery, there were evaluation components which were also conducted in physical mode following COVID-19 norms. IIT Jodhpur has also made special arrangements for scheduling of courses and laboratories for timely completion of the academic year for the UG students who had joined late in the last academic year due to the exceptional situation.

## **Research & Development**

On the research front, IIT Jodhpur continues to pursue cutting-edge research in pertinent areas that are relevant to National and global missions. The Institute has created a robust ecosystem enabling Faculty Members and students to conduct both fundamental and translational research in thrust areas. The research and development framework of the Institute has been streamlined. Through the creation of interdisciplinary research platforms (IDRPs), IIT Jodhpur has enabled the erosion of boundaries between its academic units and led to collaborative and transdisciplinary research initiatives resulting in disruptive innovations. The Institute also organized the industry day 2021 to enhance crosstalk between academia and industry with the thematic areas of Green Technology, Smart Infrastructure, Medical Technology and Drug Discovery.

I am happy to announce that two patents have been granted in the calendar year 2021 for innovations developed at IIT Jodhpur. One of them is for a language independent speech generation system that will enable communication for individuals with speech disabilities. One patent has been published and two are under examination at present. I am also happy to announce that IIT Jodhpur has transferred two technologies to industry in 2021. To further encourage its Faculty and Researchers to pursue innovative and disruptive ideas, a unique platform has been created by the Institute, coordinated by the Office of Planning & Resource Generation. Called 'Moonshot Competition, the



idea is to develop projects that can eventually lead to large-scale solutions to improve health, societal, economic, and environmental issues. The 'Moonshot Competition' was organized for Faculty Members of the Institute. They had to present their ideas through a pre-recorded video pitch; the first edition of the competition awarded four winning teams for different innovative ideas. The Institute continues to build a robust research ecosystem by instituting and providing international research mobility grants for its Faculty Members and Ph.D. students to enable international collaborations. Four Faculty Members have been awarded this grant this year. The Institute has also recognized research excellence in Faculty Members by the institution of research excellence awards. Five Faculty Members won research excellence awards this year. To highlight a few research accomplishments from this year:

- A body fluid and blood repellent "Anti-Stick Coating for Monopolar Cautery in Electrosurgery" was developed to minimize the lateral thermal spread during cauterizing and reduce thermal injuries to tissue during surgery.
- A scalable and thermally stable (up to 500°C) superhydrophobic coating was developed for automobile application.
- A novel multi-tool coating and printing unit was designed and fabricated. This equipment is capable of wire arc additive manufacturing, FDM 3D printing, spray and doctor blade coating within a single platform.
- A lab-scale setup for cascaded latent heat storage device for high temperature application has been designed.
- A Multimodal Transformer framework that seamlessly integrates unstructured background knowledge and visual data has been developed. This framework helps in bringing commonsense reasoning about visual content and opens up avenues for several industrial use cases including industry4.0.
- Under the aegis of RAKSHAK project by DST and supported by iHub-Drishti, our faculty members have contributed to designing the Campus RAKSHAK project to contain the spread of COVID-19 in campuses and provide situational awareness to campus administrators.

- A low cost AIOT based solution for the bed occupancy detection problem in a hospital setup has been developed.
- An online TeleMedicine portal which was used by doctors from Rajasthan, Haryana and Punjab to provide consultancy to more than 400 patients during the lockdown has been upgraded to include a Bangla version, which was deployed in Sundarbans hospital, to enable consultancy by the experts for local residents.
- Solutions to detect spoofing and attacks on face recognition systems have been developed. IIT Jodhpur has one of the most active research groups in the country working on Trustable AI, in partnership with industries like Facebook and user agencies including Ministry of Home Affairs and Delhi Police.
- We are working with government agencies in Rajasthan to perform air quality monitoring, source apportionment and source emission inventory development along with traffic analysis of Kota city and assessment of seasonal variation of water quality in the major reservoirs/water bodies of Kota using geo-spatial technology and water quality parameters. The scope of this project also includes assessment of Kota's Solid Waste Collection, Transport, and Disposal using geo-spatial technology.

Research findings of our Students and Faculty Members have been published in journals of national and international repute. Our Faculty Members have been appointed as editors on reputed international journals. Our students have also presented their work in several national and international research conferences, while our Faculty Members have been invited to give lectures and chair sessions in national and international conferences.

The Institute currently has a total of 163 (projects Started from 07-12-2020 to 14-12-2021: 64) operational projects and 10 consultancy projects including some in partnership with industry and international agencies. In this momentous occasion, I am very happy to announce that we have recently received approval from the Ministry of Ayush to set up a state-of-the-art Center for Excellence in AyurTech that will enable establishment of an Artificial Intelligence based framework for precision

medicine, especially in the Rajasthan area. Such a data and evidence-based approach will allow the globalization of ayurveda like its other contemporaries.

## **New Initiatives**

The Institute has established IIT Jodhpur Marudhara Foundation, a Section 8 Company of the Institute to:

- i. encourage, promote and facilitate education and research and other activities of the Indian Institute of Technology Jodhpur (Institute).
- ii. encourage dialogue with the Industries for research and consulting projects.
- iii. promote interaction amongst the PAN IIT Alumni members and the Institute for facilitating academic, industrial and entrepreneurial support and services.
- iv. establish, construct, equip and maintain or contribute towards establishment, equipment and maintenance of libraries, laboratories and facilities in the Institute and other allied organisations for the promotion and furtherance of its objectives.
- v. subscribe and to become a member of other institutions in any part of world having objectives similar to the objectives of the Company.
- vi. enter into any arrangements/agreements with the Government of India or with any State Government or other authorities, local municipal, IIT Jodhpur or otherwise in pursuance of the objects of this Company and to obtain from any such Government or authority all rights, concessions and privileges that maybe conducive to the objects of the Company.
- vii. apply to the Government, public bodies, urban, local, municipal, district and other bodies, corporations, companies or other persons for and to accept grants or money, equipment, land, buildings, donations, gifts, subscriptions and other assistance with a view to promote and further the objects of the Company.

IIT Jodhpur Marudhara Foundation is taking shape and a task force comprising of senior strategists of National level were constituted to frame the charter of activities towards the set goals of

the company. The efforts towards crowdfunding and CSR Funds from the Industries were also initiated to mobilise fund toward developmental activities of the Institute.

### **Inauguration and work of the Jodhpur City Knowledge and Innovation Cluster (JCKIC)**

It was our privilege and a proud moment for IIT Jodhpur to have Hon'ble Vice President of India Shri M. Venkaiah Naidu to inaugurate the Jodhpur City Knowledge and Innovation Cluster (JCKIC) office at IIT Jodhpur on 28th September, 2021 with the Hon'ble Governor of Rajasthan Shri Kalraj Mishra and Hon'ble Minister of Energy, Govt. of Rajasthan, Shri B. D. Kalla. The cluster has been established under the aegis of the Office of the Principal Scientific Adviser, Government of India. The main focus of the cluster is to provide a necessary platform to create synergy between all the stakeholders to make use of available knowledge as well as to develop advanced technologies, creative skills, state of the art infrastructure, and innovative environment in an organized manner so as to ensure sustainable and systematic development of the city of Jodhpur. The cluster will work towards the effective intervention of knowledge, technology, and innovation for the society at large and industry and governance in particular. Further, the cluster will provide a platform for young entrepreneurs to work on their new and innovative ideas. The cluster at present is looking at the following domains: (1) Medical Technologies, (2) Water and Environment, (3) I-Governance, (4) CRAFT, (5) Thar DESIGNS ((Desert EcoSystem Innovations Guided by Nature & Selection), and (6) AIoT Fab.

The main focus of the cluster is to provide a necessary platform to create synergy between all the stakeholders to make use of available knowledge as well as to develop advanced technologies, creative skills, state of the art infrastructure and innovative environment in an organized manner so as to ensure sustainable and systematic development of city of Jodhpur. The cluster will work towards effective intervention of knowledge, technology and innovation for the society at large and industry and governance in particular. Further, the cluster will provide a platform to the young entrepreneurs to work on their new and innovative ideas. In the long run the cluster is going to be a self-sustaining unit. The initial focus of the cluster will be in the following areas:

- To provide Innovation-driven impetus to Healthcare and Medical Technology industry in the city
- To design and implement digital technologies for value addition to local handicrafts and handlooms
- To develop and implement a prototype wastewater management system dealing with pollutions from the textile industry
- To roll out an AI driven initiative for increasing efficiency of traffic and crime management system of the city of Jodhpur
- To design and develop an integrated real time data management system for the city of Jodhpur, on top of forthcoming 5G network

The cluster is a collaborative network of a large pool of institutes dealing with academics (covering different domains including science & technology, healthcare, fashion design, footwear design, law, police, ayurveda, agriculture, fine arts, engineering, social science, humanities, etc.), R&D institutes affiliated to all major organizations of the country including DRDO, ICAR, ISRO, ISRO, ICMR, Forest Research, etc., and highly skill oriented MSMEs having strong elements of innovation and entrepreneurship. The Jodhpur region is very rich in handicrafts, handloom and traditional art. A large number of industries and artisans are engaged in these activities. The cluster will work towards exploiting the rich traditional heritage and art existing in the city of Jodhpur and around for the betterment of the artisans and help them in improving the financial condition. Further, the cluster will also aim to preserve the city's heritage and traditional art and take it forward to coming generations, however, with value addition. All these features make Jodhpur as one of the ideal cities to host a multi-institute platform viz. Jodhpur City Knowledge and Innovation Cluster (JCKIC).

The cluster has already started work on different projects that hope to directly improve living and working conditions of villagers, artisans and craftsmen in Rajasthan through technical interventions in medicine, governance, arts and crafts and other livelihood projects. On behalf of the cluster, four Need Assessment Workshops were conducted with different craft clusters to understand and analyze the current condition of crafts and livelihood in the region. Workshops were conducted

with the craftsmen involved in *Durry* manufacturing and printing, Block Printing, Leather *Mojari* producers and handicrafts and handloom producers. Initial connections were built with the craftsmen and a road map for further interventions was discussed and laid out.

### **Technology Innovation & Start-up Centre**

IITJ TISC the umbrella incubation center of IITJ has also been incorporated as Section-8 Company, with a mandate to incubate Deep-Tech startups along with the aim of developing a vibrant entrepreneurship ecosystem in the institute and the larger region in the state of Rajasthan.

IITJ TISC launched its preliminary webpage <http://tisc.iitj.ac.in> in the month of February 2021, with an aim to attract potential incubates and launch new programs.

IITJ TISC received the coveted BioNEST grant from Biotechnology Industry Research Assistant Council (BIRAC) to set up a Bio Incubator which gained the distinction of becoming the first instance of a Bio Incubator in the state of Rajasthan.

IITJ TISC hired its full time CEO and Manager and resumed its offline operations with appropriate CoVID-19 protocol in the month of October 2021. Furthermore, in the month of December 2021, TISC hired a consultant towards managing the Corporate Relation/Endowment and Corporate Affairs function, with a special focus on reaching out to corporates for CSR funds that can be employed towards various activities related to promotion of innovation and entrepreneurship

A total of 4 proposals from IIT J received Ministry of Micro, Small and Medium Enterprises (MSME) grant during the year and one proposal from IIT J received Biotechnology Ignition Grant (BIG) during the year. The following resultant projects were incubated at TISC:

- Power efficient CMOS image sensors (MSME Grant)
- Blood Oxygen Saturation Measurements (MSME Grant)
- Self-cleaning of Endoscope (MSME Grant)
- Small-scale Milk Disinfection System (MSME Grant)
- Endoscopic camera system (BIG Grant)

Among others, the following notable programs related to outreach and training aimed at entrepreneurship ecosystem development were conducted by TISC:

1. In collaboration with the Department of Science and Technology, Govt. of Rajasthan TISC offered an online classroom based professional development program titled 'Entrepreneurship Development Program' (EDP) for various stakeholders (Faculty members, budding entrepreneurs, trainers, policy makers, students etc.) in the Medium Small and Micro Enterprises domain (MSME). This two-week online program was offered twice, once in the month of February (15 - 27 February) and once in the month of March 2021 (1<sup>st</sup> - 13<sup>th</sup> March). A total of 173 candidates (48 Female, 125 Male) registered for the program while a total of 104 candidates (22 Female, 82 Male) attended the program.
2. IITJ TISC started Advanced Certificate Program on Cyber Defense with Whizhack. A total of 95 students have registered under the ongoing program.
3. To commemorate the build up to India @ 75 celebrations, BioNEST at IIT J TISC organized a series of talks under the Vigyan se Vikas umbrella to Showcase Potential, Journey and Impact of Biotechnology on the Society on the 28<sup>th</sup> of June 2021. The following eminent Bioscience researchers delivered their talks on this occasion:
  - Prof Raghavan Varadarajan, Professor at the Molecular Biophysics Unit at IISc Bangalore
  - Prof Dulal Panda, Chair Professor, Department of Biosciences and Bioengineering at IIT Bombay
  - Prof Ashok Kumar, Department of Biological Sciences and Bioengineering at IIT Kanpur
  - Prof Suman Kumar Dhar, Professor at the Special Centre for Molecular Medicine of Jawaharlal Nehru University.
  - Prof Souvik Maiti, Senior Principal Scientist at Institute of Genomics and Integrative Biology
4. IITJ TISC organized a Roadshow webinar on 22<sup>nd</sup> February, 2021 on various aspects of entrepreneurship and innovation in the Bioscience / Medtech space. The following speakers delivered expert talks on the subject:
  - Prof Santanu Chaudhury, Director IIT Jodhpur



- Prof Sampat Raj Vadera, HoD Department of Physics, IIT Jodhpur
  - Prof. Vijay Chandru, Co-founder and Director at Stand Life Sciences & Adjunct faculty at IISc Bangalore
  - Dr. Chandra Madhavi, Senior Manager (Programmes) BIRAC, DBT
  - Prof. Kuldip Singh, Dean, AIIMS Jodhpur
  - Mr. Satyendra Johari, Founder and chairman at Johari Digital Healthcare Ltd.
5. IITJ TISC welcomed Dr. Nilotpall Ghosh from SERB in the month of November 2021. An interaction with our incubates and students was held wherein Dr. Ghosh gave insights on various funding as well as technical matters.

A webinar was delivered by Dr. P K Dan of IIT Kharagpur in the month of December 2021 on “Frugal Engineering: An Emerging Paradigm for Innovation and Startups” which was attended by incubates and students.

### **IIT Jodhpur Technology Park**

IIT Jodhpur promotes and supports the technology thoughts and actions towards the societal outreach. In fulfilment of the above, IIT Jodhpur has established the IIT Jodhpur Technology Park in the sprawling campus of IITJ having advanced facilities for industry engagement and scale-up of innovation capacity by leveraging the available intellectual capital at IIT Jodhpur. This has been created with the sole objective of providing technology innovations as a force to as many industries as possible for the economic value creation. We are working towards diffusion of the fruits of cutting-edge R&D from IITJ by setting up state-of-art infrastructure having facilities for design and development of advanced technologies. Pending the construction and set-up of a fully functional Technology Park with all add-on facilities, a mini version has already been established at the Innovation Centre in the Pocket-B of the main campus. With a few Centres of Excellence in the contemporary technology verticals, this mini version of the Technology Park at the Innovation Centre is envisaged for the creation of a thriving techno-entrepreneurial ecosystem. This is expected to boost the creation of new age technology ventures and directly contribute to the capacity building for emerging industries. In this line we have already signed three MoUs for the new centres of excellence in the IIT Jodhpur Technology Park.

These include:

- Pingala AI Pvt. Ltd. (Prithvi.AI) –a provider of seed-stage acceleration program designed for budding start-ups in the Artificial Intelligence and machine learning arena to set-up AIOT and Industry 4.0 support system ‘HEEEAL’ (Healthcare, Education, Energy, Environment, Agriculture and Livelihood) at the Innovation Centre in the unit.
- Johari Digital Healthcare Limited (JDHL), Jodhpur –one of the first MDSAP and US FDA certified GMP audited manufacturing company in India working on design, development, engineering and production of electronic healthcare devices to be distributed worldwide to set up a Centre of Excellence for Medical Technologies at the Innovation Centre in the unit powered by JDHL.
- WhizHack Technologies Private Limited – signed an MoU with IITJ Tech Park on the 10<sup>th</sup> December 2020 for establishing a Centre of Excellence (CoE) for new innovations in Cyber Security, AI, and to encourage and promote cooperation for developing jointly branded Advocacy, Training programs and Product Development in the mentioned areas. WhizHack Technologies is the first Indian product engineering and human capital development company for managing complete value chain of secured cyber environment.

The IIT Jodhpur technology park has also signed an MoU with MSME Technology Centre Bhiwadi on the 24<sup>th</sup> December 2020. The aim here is to support students with projects / fellowships and Industrial hands-on at MSME Technology Centre Bhiwadi, support R&D projects, Joint EDP workshop/seminar / training, supporting start-ups, students, upcoming entrepreneurs with incubation and technological support, etc. Some of the industries linked with MSME Technology Centre Bhiwadi will be engaged virtually at the IIT Jodhpur Technology Park in the initial phase for a larger industrial ecosystem in the state of Rajasthan.

### **iHub Drishti, the Technology Innovation Hub (TIH)**

iHub Drishti, the Technology Innovation Hub (TIH) at IIT Jodhpur, is a section 8 company, established under National Mission on Interdisciplinary Cyber-Physical System (NM-ICPS) in 2020. iHub Drishti is the point of convergence between industry and academic community in the country for computer vision (CV), augmented reality (AR) and virtual reality (VR). Its mandate

includes research activities, training and capacity building, and technology generation to ensure self-sustainability. NM-ICPS agreed to support the Hub with the Grant-In-Aid up to Rs. 115 crore to be released to the Hub over a period of 5 years. The hub has already received the initial grant of Rs. 19.25 crore, and within a year of operation, it has partnered with top academicians, researchers and industry players from India and abroad. The hub endeavours to ramp up its activities encompassing development of technology and products, setting up state-of-the-art labs, generation of intellectual properties, increasing CPS research base, development of entrepreneurial ecosystem, job creation, human resource development and international collaboration.

1. **Technology Development:** The hub focuses on four core scientific horizontal: (i) Seeing and Sensing, (ii) Dependability, (iii) Realtime Computer Vision Systems, (iv) Data Collection, Curation and Annotation for developing technologies in the following application verticals:
  - Computer Vision for Autonomous Systems
  - Computer Vision for Better Living: Healthcare and Biosphere
  - Imaging for Document Analysis
  - CV and VR for Industry 4.0
  - AR-VR for X
  - RAKSHAK (AI and Data Science for COVID)
2. **Productization & Commercialization:** Monitoring the ecosystem to facilitate new research, ideas, research translation to business creation. The RAKSHAK vertical has projects leading to products:
  - Campus RAKSHAK - A decision support framework for Campus Safety - a collaborative work: Contact tracing app, Agent based simulators, Badging. Commercializing this as product through Direct Executives, Marketing Partners and Testing Labs.
  - Tapestry pooling - Combinatorial pooled testing technique developed by IIT Bombay team leading to a startup.
  - SMART HEALTH solutions for Rapid Mass Diagnosis for COVID: A telemedicine platform developed by IIT Jodhpur leading to a startup.
3. **Research Publications and Patent:** There have been several publications from different projects supported, and few technologies are in the advanced stage of patent filing.

4. **Hackathon and International Conference:** Increasing the visibility and outreach of the hub with an enriched network of stakeholders. The hub has co-organized, in collaboration with IIT Jodhpur, '16th International Conference on Automatic Face and Gesture Recognition (FG 2021)' via virtual mode.
5. **Skill Development:** 200+ executives trained in Computer Vision, Autonomous Systems, NLP in collaboration with IIT Jodhpur. PG & MTech program in ARVR framework in collaboration with Pan IIT faculties & Industries is being finalized.
6. **Fostering industry connections:** Twelve companies including Samsung Research India Bangalore (SRIB) are onboarded as Industry Partners. Collaborative research started with the Defence Research & Development Organisation (DRDO) Centre for Artificial Intelligence & Robotics (CAIR).
7. **Calls for Proposal:** Fostering culture of Industry-academia collaboration through Open calls: (i) Creation of Digital Museums for the Rajasthan government with Alwar Museum as the starting point, (ii) Content creation solutions for ARVR, (iii) India Anatomy Project, (iv) Improving doctor-patient communication using VR, (v) Haptics based medical simulators for palpation and tele-diagnosis.
8. **US-India Collaborative Research:** Discussion is in advanced stage with the National Science Foundation's (NSF) Directorate for Computer and Information Science and Engineering (CISE) and Directorate for Engineering (ENG) to conduct US-India Collaborative Research.

## Human Resources

On the human resources front, the Institute has grown organically to include 11 Departments, a School of Management & Entrepreneurship, a School of AI and Data Science, 2 centres and 6 Inter-disciplinary Research Platforms (IDRPs). The number of faculty members has increased to 193 this year. Currently, we have 10 Professors, 09 Visiting Professors, 02 Professors of Practice, 46 Associate Professors, 126 Assistant Professors and 02 Young Faculty Associates, associated with these

departments and schools. In last one year 33 new Faculty Members have joined the Institute. Recruitment of faculty members is a continuous process and is underway. The Institute has consciously taken steps towards establishing centers and schools, wherein academicians and industry experts are expected to collaborate on topics of current interest and scope. Additionally, we have a robust system of supporting staff, total 74 in number and additional 9 members in senior administrative positions.

## **Collaborative Activities**

IIT Jodhpur has created a vibrant ecosystem of innovation and entrepreneurship to facilitate and encourage its students to exploit their creativity. The system is in place to nurture the young minds and provide them opportunities to work on their innovative ideas and carry them forward in the form of projects leading to the development of prototypes. As a part of this ecosystem, Institution Innovation Council is functional at IIT Jodhpur. The council consists of a number of faculty mentors and a large pool of students. It organizes a wide range of events for the students including Seminars by Experts, Workshops, Technical Competitions, etc. all throughout the year.

IITJ Bootcamp supported by WhizHack and Cybint Israel is India's first and only cybersecurity training program that offers dual certification. The training program combines India's prestigious academic institution, IIT, and the world's top country in cybersecurity, Israel. The course offers two certificates, one from IIT Jodhpur TISC and the second from Cybint that is aligned with NIST-NICE (US). On the completion of the course, fresh graduates can explore both international and Indian cyber defense career opportunities.

IIT Jodhpur has joined hands with WileyNXT to offer India's First Online PG Diploma with Academic credits. Developed by IIT Jodhpur in collaboration with Wiley Innovation Advisory Council's innovators and industry proponents, the 12-month intensive program weaves together academic lectures from top faculty from IIT Jodhpur, hands-on practical sessions conducted on state-

of-art technology labs led by Wiley's Industry Experts, assignments, and a capstone project to provide as experiential learning in Data Engineering with a focus on Cloud Computing.

## Memoranda of Understanding

IIT Jodhpur is embarking on joining hands with many industries, Institutes, and organizations to collaborate in the area of mutual interests of R&D and Academic Collaborations. The Institute has entered into 19 memoranda of understanding with various academic and non-academic entities for collaborative efforts.

S. No.	MoU / Agreement signed between
1	Cognizant Technology Solutions India Pvt. Ltd. and IIT Jodhpur
2	Defence Laboratory (DRDO) Jodhpur and IIT Jodhpur
3	IIT Jodhpur and MSME Technology Centre Bhiwadi
4	International Cooperation Master Agreement between University Poltechnique Huats-de-France and IITJ
5	License Agreement between Confederation of Indian Industry and IIT Jodhpur
6	Memorandum of Understanding La Trobe University and IIT Jodhpur
7	Memorandum of Understanding for Academic Collaboration between EPITA, School of Engineering & Computer Science, France and IIT Jodhpur
8	MoU between Agriculture University, Jodhpur, and IIT Jodhpur
9	MoU between DoIT&C, GoR and IITJ
10	MoU between Dr. Sarvepalli Radhakrishnan Rajasthan Ayurved University, Jodhpur & IIT Jodhpur
11	MoU between IIT Jodhpur and IIT Kharagpur for Implementation of ERP System
12	MoU between Institut Polytechnique De Grenoble and IIT Jodhpur
13	MoU between Rajasthan State Industrial Development and Investment Corporation Ltd. & IIT Jodhpur
14	MoU between Siemens Software (India) Private Limited and IIT Jodhpur

15	MoU between Wiley India Private Limited and IIT Jodhpur
16	Student Exchange Agreement between Indian Institute of Technology Jodhpur and Ecole Pour L'Informatique ET Les Techniques Avancees, FRANCE
17	Tata Consultancy Services Ltd. and IIT Jodhpur
18	Tripartite Agreement among IITJ, Siemens Industry Software (India) Private Limited and Coreel Technologies
19	Universite Polytechnique Hauts-de-France, UPHF and IIT Jodhpur

## Engagement with Industries

The Institute has been actively engaging with industries and other academic and R&D organizations to encourage delivery-based research and development. During 2020-21, our faculty members actively worked on consultancy projects with various agencies, such as with GE India Industrial Pvt. Ltd. for modelling of laser ignition of coal, Park Life Invocations for vision of future in a post-pandemic world, Growth Pond regarding source code similarity, PHED Rajasthan for vetting of hydraulic designs related RGLC Systems, SpanIdea Systems Private Ltd. as research advisory, and Ercon Composites Jodhpur for wind load analysis of fiberglass mast towers. In 2021, the Institute engaged in consultancy projects with SBSR Power CleanTech Eleven Pvt. Ltd. for sand dune mitigation for the proposed Haphasar Solar Ark, Johari Digital Healthcare Pvt. Ltd. for photometry-based biomedical analyzers and design of a cuffless BP monitoring device, Rajasthan State Warehousing Corporation for structural proof-checking, supervision and inspections of warehouse construction at Ramgarh, and EEKI Automation Private Ltd. for growing chambers used in hydroponic farming.

In September 2021, the Office of Corporate Relations was set up for catalyzing and fostering strategic Industry-IITJ connect. This dedicated office will help in building R&D infrastructure and capabilities with the help of industry including established corporates, startups and MSMEs. Connect



with corporate will not only be focused for sponsored research and consultancy but also for educational activities, i.e. industry level skilling, re-skilling, and up-skilling. I am glad to report that the Institute has also constituted a New Financial Model Task Force to innovate overall financial management and bring efficiency in different practices being followed. The institute has also received around Rs. 82 lacs from Corporates under CSR. Office of Planning and Resource Generation is also working to generate resources through different avenues.

## **Technology Transfers**

In May 2020, the Institute developed an Advanced Photocatalytic Oxidation Sterilization System based on UV-Light and Metal Oxide Nanoparticles Catalyst to treat N-95 Filtering Face-Mask Respirators for reuse, and transferred the technology to several companies. In June and September 2020 respectively, this technology was also transferred to Pyrotech Electronics Pvt. Ltd. Rajasthan and NACL Industries Ltd. Hyderabad. In March 2021, the advanced photocatalytic oxidation conveyer (APCOC) system developed by the Institute was transferred to Porte Automation Private Limited, Noida. In September 2021, a novel Geometry Cold-Plasma Detergent in Environment (CODE) Device which is useful for better indoor air quality and Covid-19 was transferred to Divya Plasma Solution Pvt. Ltd. Noida.

## **Major Institute Events**

On 06 December 2020, the Institute's 6th Convocation was held in an immersive 360-degree mixed-reality environment streamed live from the Lecture Hall Building. Medals and certificates were awarded to the students through their computer-generated 3D Virtual Avatars. The students also took their graduation oath via their virtual avatars augmented in the Lecture Hall. The Chief Guest, Turing Award Winner Professor Geoffrey E. Hinton, popularly known as the 'Godfather of Deep Learning',

joined the proceedings virtually and also inaugurated IIT Jodhpur's newly-established School of AI & Data Science.

This year, on 02 August 2021, the Institute celebrated its fourteenth Foundation Day in hybrid mode in adherence to social distancing norms. The event was graced by eminent personalities such as Prof. Ashutosh Sharma, Secretary, Department of Science & Technology, Government of India, and Prof. Sanjeev Misra, Director, AIIMS Jodhpur. Prof Sharma also inaugurated the SERB-funded Duchenne Muscular Dystrophy (DMD) Research Centre at the Institute. The event also included distribution of awards to winning Moonshot ideas and other Institutional Awards to faculty and staff members.

On 28 September 2021, Hon'ble Vice President of India, Shri Venkaiah Naidu visited IIT Jodhpur to inaugurate Jodhpur City Knowledge and Innovation Cluster (JCKIC) and lay the Foundation Stone of Fab Lab for AIOT Systems of IIT Jodhpur. The JCKIC, under the aegis of IIT Jodhpur, is identified as one of the six City Clusters by the Government of India for an integrated initiative between academic intuitions, research organizations and industry of the city for growth and expansion of knowledge, innovation, industrial, environmental and economics ecosystem of the city and its surroundings.

The Fab Lab for AIOT Systems is a unique facility being developed by IIT Jodhpur for R&D and Innovation in the area of AI of Things which will contribute towards Atmanirbhar Bharat in Industry 4.0, Healthcare, Clean Environment and Quality Drinking Water by generating know-how and products in the area of AI of Internet of things. This will also support growth of startups and MSMEs with new-age technology solutions.

## Faculty Recognition

We are happy to report following prestigious fellowships earned by the faculty of the institute:

- a. Prof. Mitali Mukerji, Professor, Department of Bioscience and Bioengineering has been elected as a Fellow of the National Academy of Sciences, India (NASI), for her important contributions in the area of ayur-genomics and personalized medicine.
- b. Dr. Rakesh K. Sharma, Associate Professor, Department of Chemistry, has been elected as a Fellow of the Royal Society of Chemistry, London.
- c. Dr. Mayank Vatsa, Professor, Department of Computer Science & Engineering and School of Artificial Intelligence & Data Science (AIDE), has been elected as “IEEE Fellow” for contributions to secure biometric recognition
- d. Dr. Mahesh Kumar, Associate Professor, Department of Electrical Engineering, received the Fellowship of Royal Society of Chemistry (FRSC)
- e. Dr. Subhashish Banerjee, Associate Professor, Department of Physics, has been accorded the fellowship of the National Academy of Sciences, India (NASI), for his important contributions to the field of Open Quantum Systems.

Also, it is heartening to see several Faculty Members being recognized for their research contribution in their respective fields:

1. Dr. Priyanka Singh, Assistant Professor, Department of Bioscience & Bioengineering, received the highly prestigious and competitive *Young Scientist Research Award* from the Board of Research in Nuclear Sciences (BRNS), Department of Atomic Energy, Government of India.
2. Dr. Sushmita Jha, Associate Professor, Department of Bioscience and Bioengineering, received *Kusum Sharma Award for a Young Woman Scientist*, from the Indian Academy of Biomedical Sciences, 2021.
3. Dr. Angan Sengupta, Assistant Professor, Department of Chemical Engineering, received a Certificate of Appreciation, 2021 during a Faculty Development Programme at Gharda Institute of Technology, Lavel, which was sponsored by AICTE-ISTE.

4. Dr. Ritu Gupta, Associate Professor, Department of Chemistry, received the SERB Women Scientist Award, and the NASI Young Scientist Platinum Jubilee Award; She became an Associate of the Indian Academy of Sciences, and a Member of Indian National Young Academy of Sciences, INSA (January 2021-25).
5. Dr. Ajay Agarwal, Professor, Department of Electrical Engineering, received the *IETE-Bapu Seetharam Award 2021*, from the Institution of Electronics and Telecommunication Engineers (IETE), India; and *Outstanding Engineering Services to Society Award 2021*, from the Institute of Engineers (India), Rajasthan State Centre.
6. Dr. Mahesh Kumar, Associate Professor, Department of Electrical Engineering, received the following awards:
  - a. Friedrich-Wilhelm-Bessel Research Award by Alexander von Humboldt Foundation.
  - b. The Royal Society Yusuf Hamied International Exchange Award by the Royal Society.
7. Dr. Ravi Yadav, Assistant Professor, Department of Electrical Engineering, received the Power System Operation Corporation Limited (POSOCO) Power System Award 2021.
8. Dr. Alok Ranjan, Assistant Professor, Department of Humanities & Social Sciences, has been listed as Emerging Voices for Global Health (Ev4gh), 2020-2021 by the Emerging Voices program initiative of the Institute of Tropical Medicine in Antwerp.
9. Dr. Ankita Sharma, Associate Professor, Department of Humanities & Social Sciences, won 2<sup>nd</sup> place award at the Early Career Scholar Presentation in International Wisdom Summit 2021 for the flash talk titled, "*Translational relation of wisdom and transformational leadership: Exploring conceptualization and predictions*".
10. Dr. Dibyadyuti Roy, Assistant Professor, Digital Humanities (an Interdisciplinary Research Platform) was recognized and inducted as one of three global experts for the Data and Society research institutes' project and workshop on *Parables of AI in/from the Global South* held in October 2021; and has been invited as a guest lecturer in November 2021 to Amherst College to deliver two lectures (online); and recognized as one of the leading global scholars in Digital Humanities by the Centre for Data, Culture & Society at the University of Edinburgh and invited for their special lecture series in April 2022.

11. Dr. Pranay Ranjan, Assistant Professor, Department of Metallurgical and Materials Engineering, won the Chancellor Innovation Award, United Arab Emirates (UAE) University.

A few of the noteworthy mentions among recipients of research grants and from outside agencies are:

1. Dr. Neha Jain, Assistant Professor, Department of Bioscience & Bioengineering, received 2<sup>nd</sup> IndiaBioscience Outreach Grant.
2. Dr. Sucharita Dey, Assistant Professor, Department of Bioscience and Bioengineering, was awarded the Ramalingaswami re-entry Fellowship (2020-21) and research grant from the Department of Biotechnology, India.
3. Dr. Ranju Mohan, Assistant Professor, Department of Civil and Infrastructure Engineering, received the Start-Up-Research Grant from DST-SERB.
4. Dr. M. P. R. Sai Kiran, Assistant Professor, Department of Electrical Engineering, has been awarded with DST NM-ICPS Technology Innovation Hub on Autonomous Navigation Foundation Faculty Fellowship for 2021-23.
5. Dr. Alok Ranjan, Assistant Professor, Department of Humanities & Social Sciences, received Fulbright-Nehru Postdoctoral Research Fellowship at Harvard T. H. Chan School of Public Health, during July 2021-March 2022.
6. Dr. Farhat Naz, Assistant Professor, Department of Humanities & Social Sciences, received the DAAD (German Academic Exchange Service) Grant, University of Gottingen, Germany, and Shastri Indo-Canadian Institute, Golden Jubilee Conference and Lecture Series Grant (GJCLSG).
7. Dr. Prasenjeet Tribhuvan, Assistant Professor, Department of Humanities & Social Sciences, was awarded the certificate for successful completion of the prestigious National Fellowship at Indian Institute at Advanced Studies (IIAS), Shimla in December, 2020.
8. Dr. Mahesh Kumar, Associate Professor, Department of Electrical Engineering, received the following:
  - a. Fulbright-Nehru Academic and Professional Excellence Fellowships to work at MIT, USA for 4 months.

- b. The CAS President's International Fellowship Initiative (PIFI) to work at Hefei Institutes of Physical Science, Chinese Academy of Sciences (HFIPS) for 3 months.

Besides these, International Research Mobility Grants were also given away to the following faculty members:

1. Dr. Raviraj Vankayala, Department of Bioscience and Bioengineering, for research project titled *“Near Infrared Light Activatable Erythrocyte Membrane Coated Black Phosphorous Nanosheets for Targeted Bioimaging and Photo-Chemotherapy of Breast Cancer Cells”*
2. Dr. Nipun Arora, Department of Mechanical Engineering for research project titled *“Role of Passive Deformation on the Aerodynamic Performance of a Flexible Flapping Wing”*, and
3. Dr. Debasis Das, Department of Computer Science and Engineering for his research project titled *“Secure Communication and Searching System for Vehicular Cloud Computing”*.
4. Dr. Moumita Mondal, Assistant Professor, Department of Mathematics.

During the 14<sup>th</sup> Foundation Day of the Institute, IIT Jodhpur honoured several of its Faculty Members with teaching excellence and research excellence awards. Teaching excellence awards 2021 were conferred on Dr. Dip Sankar Banerjee and Prof. Mayank Vatsa, Department of Computer Science & Engineering; Dr. Hardikkumar B. Kothadia, Department of Mechanical Engineering. The Institute recognized excellence in young researchers, namely, Dr. Raviraj Vankayala, Department of Bioscience and Bioengineering, Dr. Ritu Gupta, Department of Chemistry, and Dr. Farhat Naz, Department of Humanities and Social Sciences, for their outstanding contributions in Nanobiotechnology, Applied Nanomaterials, and Sociological Aspects of Water Management, respectively. Senior researchers, namely, Prof. Richa Singh, Department of Computer Science and Engineering and Dr. Vidya Sarveswaran, Department of Humanities and Social Sciences won the research excellence awards for their outstanding contributions in Computer Vision, and Literature, Environment and Film, respectively.

In the fond memory of Late Dr. Vandana Sharma, (Assistant Professor, Department of Mathematics), a young faculty member and a pioneer of online teaching initiative at IIT Jodhpur,

whom we lost to CoVID-19 unfortunately, an award has been instituted, which is called as Dr. Vandana Sharma Memorial Award for Teaching Innovation. During this 14<sup>th</sup> Foundation Day, it was conferred on Dr. Rajlaxmi Chouhan, Assistant Professor, Department of Electrical Engineering, and Dr. Manish Narwaria, Assistant Professor, Department of Electrical Engineering.

This year, the Institute has introduced a new category of awards called the *Moonshot Awards*. Moonshot projects aim to stimulate research initiatives to foster creativity that will soon lead to large-scale solutions to address health, societal, economic and environmental issues. These awards were given to the following promising researchers.

1. Dr. Suchetana Chakraborty, Assistant Professor, Department of Computer Science & Engineering, and Dr. Ankita Sharma, Associate Professor and Head of Department of Humanities and Social Sciences, for their moonshot idea “*ExPoPsych: Experiencing Positivity at the face of Psychological Vulnerability*”;
2. Dr. Debanjan Guha Roy, Assistant Professor, Department of Civil and Infrastructure Engineering, for his moonshot idea “*Harvesting an Asteroid: Microwave-assisted Rock Pulveriser and Electrostatic Separator (MARPEs)*”;
3. Dr. Sumit Kalra, Assistant Professor, Department of Computer Science & Engineering, for his moonshot idea “*Personal Independent Digital Twin*”; and
4. Dr. Sankalp Pratap, Associate Professor, School of Management & Entrepreneurship, Dr. Romi Banerjee, Assistant Professor, Department of Computer Science & Engineering, Dr. Venkat Ram Reddy Ganthula, Assistant Professor, School of Management & Entrepreneurship, and Dr. Dibyadyuti Roy, Assistant Professor, Department of HSS, for their moonshot idea of *leveraging collective intelligence across social strata through digital network ecosystems - BRBL (pronounced Birbal)*.

Meritorious Staff Awards were also given away during the function to Mr. Bharat Pareek, Technical Superintendent, Department of Bioscience and Bioengineering (Group B Category), and to Mr. Darsh Kumar Khatwani, Junior Superintendent, Office of Director (Group C Category).

Research publications of the faculty members received their share of recognition too. To name a few:

1. Research article titled “*Reconfigurable Intelligent Surface for Mixed FSO-RF Systems with Co-Channel Interference*” co-authored by Dr. Aashish Mathur, Assistant Professor, Department of Electrical Engineering, appears in the list of popular articles of IEEE Communications Letters for the month of February 2021.
2. Research work of Dr. Pranay Ranjan, Assistant Professor, Department of Metallurgical and Materials Engineering, on borophene is published on the cover page of the Advanced Materials (impact Factor- 30.58) and on the leading nanotechnology portal Nanowerk.
3. Dr. Deepak M. Fulwani, Associate Professor, Department of Electrical Engineering, received 3<sup>rd</sup> Prize Paper Award for a paper published in 55<sup>th</sup> IEEE Industry Applications Society Annual Meeting 2020 in domains of IACC by IACC committee, which was announced in October 2021.
4. Dr. Sucharita Dey, Assistant Professor, Department of Bioscience and Bioengineering, was invited for a short talk at the international EMBL conference: Bringing Molecular Structure to Life: 50 Years of the PDB, held virtually during 20/10/21 to 22/10/2021. Her research article has been published in the international peer reviewed journal *Structure* on November 4<sup>th</sup> 2021.
5. Dr. Soumava Mukherjee, Assistant Professor, and Mr. Naman Baghel, Ph.D. Student, from the Department of Electrical Engineering, have been selected as recipients of the prestigious IEEE AP-S C. J. Reddy Travel Grant for attending the 2021 IEEE AP-S Symposium on Antennas and Propagation and USNC-URSI Radio Science Meeting, Singapore. Their paper is listed in Popular Documents - April 2021 of IEEE Transactions on Circuits and Systems II: Express Briefs.

Also, faculty members were appointed to various editorial positions in reputed journals and as subject experts in their respective domains. A few of such achievements are:

1. Dr. Raviraj Vankayala, Assistant Professor, Department of Bioscience & Bioengineering, received the following:
  - a. Review Editor for *Frontiers in Bioengineering and Biotechnology* and *Frontiers in Molecular Biosciences* journals.



- b. Topic Editor for Frontiers in Nanotechnology journal for a special issue entitled “Multifunctional Nanomaterials for Biosensors and Therapeutics”.
2. Dr. Sandip Murarka, Assistant Professor, Department of Chemistry became Early Career Advisory Board (ECAB) member of the Wiley journal ‘ChemistrySelect’ and Fellow of Indian Chemical Society (FICS); and has been chosen by the editorial boards of the journals Synthesis, Synlett, and Synfact as one of the “Thieme Chemistry Journal Awardees” for 2022.
3. Dr. Anand Mishra, Assistant Professor, Department of Computer Science and Engineering has been recognized as one of the Outstanding Reviewers at International Conference on Computer Vision (ICCV 2021).
4. Dr. Mahesh Kumar, Associate Professor, Department of Electrical Engineering, received the following:
  - a. Core Membership of the SERB Expert Committee-Engineering Sciences (SRG, NPDF, ECRA Schemes).
  - b. Membership of Subject Expert Group (SEG): Participation in School Education, Unnat Bharat Abhiyan, April 2021-till date.
  - c. Membership of Programme Advisory Committee on Technology Development Programme under Technology Development & Transfer Division, Department of Science and Technology, Dec 2020-Nov 2023.
5. Dr. Alok Ranjan, Assistant Professor, Department of Humanities & Social Sciences, has been appointed as an Academic Editor at PLOS ONE since November 2021, an international, peer-reviewed, open-access, online science publication of the Public Library of Science.
6. Dr. Shahab Ahmad, Assistant Professor, Department of Physics has got graphics on the research work done by his group, selected for publication on the cover page of Research & Technology Development Compendium on Material for Energy Storage launched by the Department of Science & Technology (DST), Government of India, for 2021.

## **International Relations**

In line with the lofty vision, IIT Jodhpur has embarked on, internationalization of its academic programmes and forging long-term international collaborations for research is a top priority for IIT Jodhpur. To this effect the Institute operationalized its Office of International Relations and Outreach. In the last one year, the Institute has entered into MoUs with internationally reputed institutions such as the Universite Polytechnique Hauts-De-France, EPITA, La Trobe University Australia and Institut Polytechnique De Greoble. A delegation including Dr. Nicolas Gherardi, Deputy Counsellor for Education, Science and Culture, Country Deputy Director, and Dr Fabien CHAREIX, Science and Higher Education Attaché for French Institute in India visited IIT Jodhpur on 13th September, 2021 to discuss possibilities of academic and research collaborations with French Universities. The French embassy found synergies in many academic and research areas between IIT Jodhpur and French universities. The French Embassy has invited Dr. Satyajit Sahu, Associate Professor, Department of Physics to visit Universite de Technologie de Troyes to explore academic and research opportunities during December 2021. The institute has 6 international students currently enrolled in various postgraduate programs from Indonesia, Syria, Nepal and Bangladesh, through various initiatives of GoI such as ASEAN fellowship program, Study in India and ICCR. Ms. Dipinti Manandhar, an international student pursuing M.Tech in the Department of Computer Science and Engineering was recently placed in Google. Five undergraduate students of IIT Jodhpur were selected for international internship opportunities this year in companies like SMS DataTech, Otsuka Holdings - Willing and Diverta - Willings.

## **Alumni Affairs**

The Alumni of IIT Jodhpur have always brought pride to their Alma Mater by excelling in their respective professions as part of multinational companies, esteemed institutions of research, prominent institutions of higher education or rapidly growing entrepreneurial ventures. The Alumni Relations Committee strives to purposefully engage with Alumni to ensure that the Alumni remain

connected with the Institute. I am happy to announce that the Alumni society of IIT Jodhpur has been registered formally and has initiated activities. The society actively engages with the Institute in mentoring and supporting current students.

The Institute has also partnered with and works with Alumni of other IITs through umbrella organizations such as IITACB and PanIIT to strengthen its relationship with the pan IIT Alumni base. The Alumni day 2021 was organized virtually on 6th February 2021 and saw enthusiastic participation from IIT Jodhpur Alumni across the world. The Institute also awarded the Recognition of Excellence in Young Alumni (REYA) awards for 2021 to Ms. Sonu Mehta (Class of 2015, B.Tech. in CSE) and Dr. Heena Rathore (Class of 2016, Ph.D. in ICT) for their accomplishments in academics and research. As a matter of pride to the Institute, the bootstrapped start-up PushOwl, founded by our Alumnus Mr. Shashank Kumar (Class of 2013, B.Tech. in CSE) was recently acquired by the French firm Sendin blue along with two other marketing companies for a combined deal of more than \$47 million.

## **Outreach**

IIT Jodhpur has been working with sincere scientific social responsibility for the benefit of the region. I shall briefly outline some of the major initiatives undertaken.

### **Provision of Technologies for Clean Water to Schools**

Through Centre for Emerging Technologies for Sustainable Development (CETSD), proactive measures were continued by the Institute to ensure clean water for drinking in primary and secondary schools of (i) Khadaat village in Sirohi district, (ii) Dhanuri village in Pindwara of Sirohi district, & (iii) Luna villages in Jhunjhunu district, during the pandemic time by designing and installing ultra-filtration membrane assisted adsorption based water purification units. Membrane based units were installed in two more schools in Jheepasani village and Roodiya village. One unit was installed for treatment, recycle and reuse of greywater in a school of Jheepasani village during the pandemic. It has provided critical support to the student's health, capacity building and awareness.

IIT Jodhpur received a help request on 9 March 2021 from Government Senior Secondary School, Rudiya village, Bhopalgarh, for a proper water drinking and treatment location to be provided. The village of Rudiya was provided with a UF filtration-based membrane system with Absorptive features in collaboration with the Unnat Bharat Abhiyan (UBA) scheme. The installation was performed by NirmalGehlot, Hanwant Singh Rathore, and Bharat Singh Rathore under the guidance of Prof. Pradip Tewari.

### **Projects completed/ongoing under the Unnat Bharat Abhiyan (UBA) at IIT Jodhpur for CoVID 19**

1. Personal Use facial fit trails of reusable ceramic respirators is being manufactured at Bhopalgarh for use towards preventing spread of air borne diseases. Project undertaken by Dr. Anand Krishnan Plappally, Dr. Rajendra Nagar, Dr. K. R. Ravi and Dr. V. Narayanan
2. Project for development of low-cost portable ventilator for CoVID-19 patients was undertaken by Dr. Mahesh Kumar and team.
3. Activities towards CoVID-19 Awareness in collaboration with other Institutions:
  - (a) Dr. Sumit Kalra is the faculty mentor of the Bikaner District from IIT Jodhpur. He created a platform to connect with doctors in these CoVID-19 conditions. Dr. Sumit spoke at the national UBA meetings on the contributions of IIT Jodhpur in telemedicine and gave important links.
  - (b) Homemade face-mask making for use inside the home explained by MPH student, School of Public Health, AIIMS Jodhpur.
  - (c) Jodhpur Institute of Engineering Technology (JIET) has developed two major Technological interventions: Automated Sanitation Machines to Nagar Nigam Jodhpur Development Authority and an App named *TrakCovid19*. The App provides the latest statistics of Covid19 across the globe, as well as state wise.
  - (d) Aishwarya College distributed ceramic masks in Banad
  - (e) Jain Vishva Bharati Institute, Nagaur, donated food rations and helped with distribution of rations to needy people.

- (f) Dr. Kuldeep Singh, Professor, All India Institute of Medical Sciences, Jodhpur, made all the Principal Investigators aware of the facts of social distancing, sanitation and hygiene issues.

### **Scientific Social Responsibility through the Centre for Emerging Technologies for Sustainable Development (CETSD)**

Centre for Emerging Technologies for Sustainable Development (CETSD) is the center at IIT Jodhpur which puts on the ground sustainable solutions through schemes combining the technology, funding, management, social, data and environmental touchstones. Communities, industries, government, students, academic institutes, individuals and non-governmental organizations are a part of this trans-disciplinary center. There are five major, broad missions on which CETSD is working. These are:

1. To provide a platform for non-governmental and governmental collaborators to work together to apply emerging technologies for finding and implementing solutions towards achieving SDG targets.
2. To help develop scientific temper societies to understand technologies that are sustainable or technologies that are using sustainability aspects.
3. To innovate solutions and strategies towards challenges in location specific problems related to energy use, education, water management, infrastructure, traditional livelihood skills, and health.
4. To perform applied research in areas such agriculture, environment, healthcare, waste management, pollution, livelihood, knowledge dissemination and rural development.
5. To make synergistic policy suggestions to handle issues in energy use, agriculture, water management, local pollution in a region and its influences on health.

With Mission Point No. 4, CETSD also aligns itself with the mandate of the Ministry of Education (erstwhile Ministry of Human Resource Development) to set up rural development centers at all IITs. CETSD will work towards all the 17 United Nations Sustainable Development Goals

(UNSDG) but will concentrate on a handful of them at a time, on a priority basis, as per the requirement and funding availability.

At present, health, water management, education tools and management, industry partnerships and collaborative programs are major focus at CETSD. The centre has live projects on the ground at Sirohi contributing to the Aspirational District Scheme of the Government of India. Silicosis prevention clinics and camps using telemedicine, Artificial Intelligence (AI) technologies and genomic intervention and dust extraction solutions are deployed in certain mines across Sirohi. These steps are taken towards achieving solutions for the Sustainable Development Goal (SDG) - 3, which is related to good health and well-being.

Water technologies such as membrane-based purification devices, water production devices, and household water purification have been installed in various locations in different districts of Western Rajasthan. For example, more than five installations of UF hybrid water purification technologies have been installed in rural schools across Jhunjhunu, Pali, Sirohi and Jodhpur. With this thought IIT Jodhpur works towards achieving solutions with regard to SDG 6 Clean water and Sanitation.

CETSD faculty also has IIT Jodhpur Campus Site C, which is almost 5 acres, to pilot their technologies, as well as to demonstrate it to the common public. These faculty get involved with Rural Technology Advancement Group (RuTAG) projects at IIT Delhi, to enable the rural grassroot communities of artisans and farmers with novel technologies, for example, modified pitcher irrigation. With these projects on the ground and applied towards solving grassroot problems in the nearby regions, IIT Jodhpur contributes to Sustainable Development Goal (SDG) - 11 on sustainable cities and communities.

## Conferences and Workshops

Several conferences and workshops were organised during the year by the faculty members of the Institute. The Department of Bioscience and Bioengineering at IIT Jodhpur organized an international conference on 'Bioengineering Solutions for Healthcare, Food, Energy and Environment' on April 9-10, 2021. The conference brought experts from various domains to share their excellence journey while providing their inputs on the department's research directions. The conference was supported by The Biotech Research Society, India. The organizing committee for the conference consisted of Prof. Santanu Chaudhury, Director IIT Jodhpur, Prof. Ashok Pandey, Distinguished Scientist, Centre for Innovational and Translational Research, CSIR- Institute of Toxicology Research, Lucknow, and Dr. Meenu Chhabra, Associate Professor, Department of Bioscience and Bioengineering, IIT Jodhpur. The conference brought together eminent scientists and professors from academia, industry and research organizations. Invited speakers included Dr. V Nagaraja, Department of Microbiology and Cell Biology, IISC, Dr. Sumanta Chattarji, Professor NCBS, Bangalore, Prof. Chrisitan Larroche, Universite Clemonte Aurverne, France, and others. The conference consisted of a series of paper presentations and talks on topics focusing on Bioengineering solution for Healthcare, Food, Energy and the Environment.

The Thar DESIGNS Jamboree was organised by the Department of Bioscience and Bioengineering in collaboration with the Jodhpur City Knowledge and Innovation Cluster. The Jamboree provided a platform to present and discuss different aspects and perspectives on desert sciences around the world including the Thar. This day-long event had a convergence of themes from diverse disciplines - geology, genomics, desert medicine from modern and traditional knowledge systems, bioengineering, nanomedicine, digital health technologies, engineering and social sciences. Besides presentations from members of the JCKIC cluster, a special invited lecture by Dr. Pranay Lal, the author of "Indica" that traces the natural history of the Indian subcontinent through evidences from different streams was arranged. A panel discussion to deliberate on challenges and opportunities in the Thar ecosystem region and how a transdisciplinary approach can be developed for understanding metasystems of Thar was organized and moderated by Prof. Mitali Mukerji. Panelists

included Prof. Santanu Chaudhury, Director, IIT Jodhpur; Mr. Pradip Krishen, the chief architect of the rewilding scheme at Rao Jodha Desert Rock Park near Mehrangarh fort in Jodhpur; Dr. Kuldeep Singh, Dean, Academics, AIIMS Jodhpur; Dr. Abhimanyu Kumar, Vice Chancellor, Dr. Sarvepalli Radhakrishnan Rajasthan Ayurved University, Jodhpur; Dr. Arun Sharma, Director, National Institute for Implementation Research on Non-Communicable Diseases, Jodhpur; Dr. Ajay Agarwal, Professor, Department of Electrical Engineering, IIT Jodhpur and Dr. Apurba Bera, RRSC -ISRO. The discussions provided interesting insights on technology enabled approaches to better understand the Thar ecoregion to bioprospect bioinspired innovations.

A series of lectures on the theme “Paradigms of Water Governance and Climate Change in the Indian Context” were organized by Dr. Farhat Naz and Dr. K. J. George of the Department of Humanities and Social Sciences, IIT Jodhpur, as a part of the Shastri Indo-Canadian Institute (SICI), Golden Jubilee Conference and Lecture Series (2021-21). The invited speakers included Dr. Aditi Mukherji, Research Group Leader on Climate Change, Adaptation and Resilience, International Water Management Institute who spoke on ‘Political economy of India’s water management’ and Dr. Karine Gagne, Department of Sociology & Anthropology, University of Guelph, Canada who spoke on ‘Climate Research and Local Experiences: Insights from the Himalayas’.

The interdisciplinary research group on Quantum Information and Computation (QIC) organised an International Conference on Quantum Information and Computation: From Foundations to Applications -2021 (QFA-2021) from 18th to 23rd October 2021. The conference provided a platform to national and international experts to share knowledge and their experiences in the field of Quantum Information and Computation. Some of the key points covered in the conference included:

- Academia-Industry collaboration wherein eminent speakers from academics and industry discussed the roadmap for taking India forward in the direction of quantum technologies
- The role of Start-ups in partnership with academia, within the framework of quantum technologies was discussed



- The topics of discussions ranged from foundational issues to practical ones such as Quantum Key Distribution (QKD) as well as new areas like Quantum Machine Learning (QML).

The plenary lecture of the conference was delivered by Dr. Michael Hall from the Australian National University.

A continuing Webinar Series ""Thar Talk Series: AI and Beyond" is jointly organised by School of Artificial Intelligence and Data Science (AIDE), IIT Jodhpur and Jodhpur City Knowledge and Innovation Foundation (JCKIF) through the year. A wide array of global experts engaged through this platform on the cutting-edge domain of Artificial Intelligence. Invited speaker included Prof. Miguel Nicolelis, Duke School of Medicine, who spoke on the Future of BMI Basic Research and Clinical Applications, Prof. Gordon Cheng, Technical University of Munich who spoke on Enabling the brain to Adopt a Robotic body and Prof. Srinivas Peeta, Georgia Tech Research Institute, who spoke about the Psychological and Cognitive Aspects of Real-Time information systems.

In addition, Faculty Members of the Departments invited several eminent scientists and academics during this year to deliver special lectures and for review of curricula of various academic programs hosted by the Institute.

## **Student Achievements**

This year, despite the challenging circumstances, students of the Institute were involved in several activities. While this is not an exhaustive list of the achievements of our students, here is a sneak peek into their achievements.

1. Mr. Idury Satya Krishna, Ph.D. Student, Department of Electrical Engineering, received prestigious European Microwave Association (EuMA) internship award.
2. The Master's thesis work of Mr. Priyanshu Raj Shrivastava titled 'Design and Development of Novel Jaw Rehabilitation Device for Temporomandibular Joint Disorder patients' carried out

under the supervision of Dr. Kaushal A. Desai, Associate Professor, Department of Mechanical Engineering, has been selected for the prestigious SITARE- Gandhian Young Technological Innovation Award (GYTI) 2021 awarded by Biotechnology Industry Research Assistance Council (BIRAC).

3. Ms. Sunidhi Dayam, Ph.D. Student, Department of Mechanical Engineering, who is resident of Nagaur in Rajasthan, received appreciation from India Book of Records 2021 for developing face shields using scrap materials available at home during the initial days of Covid-19 during April 2020.
4. During the Academic Year 2020-21, the Logo Designing Workshop, 3D Designing Workshop, and Digital Collage Workshop were organized by the core members of the Student Design and Creativity Society through online mode wherein students got Exposure to the designing.
5. The Photography Club of IIT Jodhpur, Shutterbugs, had organized an Event Poster Competition on the Republic Day 2021, Colour Correction Activity, and an inter-college Photography Contest AINDRI - IN FRAMES on the Women's Day 2021.
6. The Music Club of IIT Jodhpur had organized a Music and Video Production workshop on Art of Storytelling using Music through online mode on 20 February 2021 with the collaboration of Frame X.
7. The Ek Bharat Shrestha Bharat (EBSB) club of IIT Jodhpur coordinated with the EBSB Club of IIT Guwahati and hosted webinars to celebrate various cultural and social events of Assam.
8. The Rotaract club of IIT Jodhpur hosted webinars, conducted donation drives, and collaborated with other Rotaract clubs as well.
9. The Rotaract club of IIT Jodhpur received several awards for their good work during the pandemic situation:
  - a. Virtual Aabhar for the project Covi-Help.
  - b. Best revived club of the year
  - c. Most Innovative Project: School for All
  - d. Outstanding President citation: Sonal Jaiswal, RAC, IIT Jodhpur

## Career Development and Placement

The Career Development Cell (CDC) at the institute offers support to students for excelling in the career path. A team of faculty and staff members at CDC are making sustained efforts to establish processes for the career development plan to facilitate the training of students for both short and long-term career goals. This includes internship opportunities to the placement planning, application process until the final offer and strategic support to the students. CDC focuses on nurturing technical and interpersonal skills by arranging training courses, lectures by eminent speakers, and up-to-date seminar concepts. In addition, CDC is actively engaged in developing symbiotic relationships with a broad spectrum of companies through industrial projects, visits, and professional networking. I am happy to state that more than 100 companies visited the campus during the year 2020-21. Some of the key campus recruiters include Tata Consultancy Services (TCS), L&T Engineering, ArcelorMittal Nippon Steel, Microsoft, Morgan Stanley, Goldman Sachs, DE Shaw, Arcesium, ZS Associates, Maruti Suzuki, Future First, Yodlee, Nokia, Accenture, Sterlite Technologies, etc. that offered internship and placement opportunities for graduating engineers and researchers. This year, companies like Google, AmEx, Zomato, Graviton Research Capital, Deolitte, Capgemini, Oracle, Housing, Tata Electronics, Housing, Adobe, De Shaw, Microsoft, Morgan Stanley, Arcesium were invited for campus hiring.

Academia was no exception when pandemic CoVID-19 distressed the entire world. Despite the adversities, CDC swiftly transitioned its action plan and activities to an entirely online mode. The CDC recognized a contemporary alumni contact network in line with the existing placement structure. The ongoing efforts will expand the career opportunities for students and induct strategic relationships of IITJ with potential industries and organizations. As an interface to career prospects, CDC is determined to provide unique talent, knowledge, and technology transfer in India and abroad. Moreover, CDC is working persistently to sustain the unforeseen challenges and provide IITJ students with every possible avenue for professional growth.

## Campus Development

The Phase-II development work of the Institute with a total built up area of 2,27,909 sq.m. has been completed in July, 2021. IIT Jodhpur is now in the top of the 2nd generation IITs which has completed its infrastructure work as per the revised DPR 2015.

Currently, the campus has a capacity of 132 flats for Faculties and Officers along with 84 flats for Staff members. A transit accommodation for about 40 faculties will also come up soon using rapid precast construction technology.

The total accommodation facility for the students presently available is 2511 and two more hostels with total capacity of 559 will come up soon. 02 dedicated dining blocks with both the mess and canteen facilities in each meet the requirement of the students as well as other residents and visitors of the Institute. A state-of-the-art indoor stadium with 8-badminton courts, 02 squash courts, 4-table tennis boards are available with the students to play under floodlights. Along with the above, there is a modest facility of Badminton Courts, Indoor Table Tennis and Gymnasium in each hostel.

A colourful outdoor canteen for the students, faculties and staff members with small amphitheatre and kids' play has also come up in the campus. Three beautiful artworks namely 'Circle of Success', 'Brain Circle' and 'Dancing Fountain' have been erected on the entrance path of the administrative and academic blocks from the main gate.

The Infrastructure at IIT Jodhpur Campus caters for all the essential requirements of the residents like an ISO: 9001 certified Primary Health Centre, Community Centre with shopping services, banks and ATMs, parks with open gyms, Jodhpur Club (The Club House) etc. for the IIT Jodhpur fraternity.

Developed in 3 parcels of land, presently the construction is done in only two pockets namely Pocket A and Pocket B. The buildings which have come up in past one year & used for its Academic & Research Activities are:

1. Computer Centre building houses the Computer Centre, Electric vehicle and industry 4.0 Lab and Technology & Innovation Hub;
2. Department of Bioscience & Bioengineering;
3. Department of Physics;
4. Department of Metallurgical & Materials Engineering houses the Department of Metallurgical & Materials Engineering and Department of Chemical Engineering;
5. Department of Civil and Infrastructure Engineering;
6. School of Artificial Intelligence and Data Sciences;
7. School of Management and Entrepreneurship;
8. Centre for Advanced and Scientific Equipment; and
9. Animal House.

Institute has taken initiatives towards Campus Sustainability and two areas have been identified namely Horticulture and Landscaping (HoLa) and Society, Energy and Environment (SEE). Under HoLa 06 projects and SEE 08 projects have been identified towards Campus Sustainability Programme (CSP) under Centre for Emerging Technology for Sustainable Development (CETSD) in association with Office of Infrastructure.

Under the area HoLa following 06 projects are initiated:

S.No.	Name of Project
1	Development and Maintenance of Horticulture Activity in the Permanent Campus of IIT Jodhpur
2	Smart Water Irrigation System
3	Installation of dried wooden plant fiber Mincing Machine
4	Ecofriendly Shed
5	Soil Restoration
6	Solid waste audit in the Campus and segregation at source

Under the area SEE following 08 projects are initiated:

S.No.	Name of Project
1	Electrical Vehicle Popularization
2	Wetland restoration and design
3	Digital Archiving of Flora and Fauna
4	Carbon Footprint

5	Farmer Market
6	Energy Audit
7	Virtual connection of nearby village with doctors for COVID 19 awareness
8	Natural vegetation spatial analysis

## In Closing...

Ladies and Gentlemen, I wish to reiterate that IIT Jodhpur is advancing steadily on its path of progress with a clear vision for the future. With all your good wishes and support, I am certain that we will make it a reality. It's a momentous occasion for all of us here to have with us Dr. Rajesh Gokhale as the Chief Guest for this convocation. It is also a matter of great privilege for us to have the Hon'ble Minister of Education Sh. Dharmendra Pradhan addressing us through a video message. This *Seventh Convocation of IIT Jodhpur* is indeed a special occasion for the Institute, and a defining moment in the lives of 404 Students, who will be stepping into the real world from this afternoon. On behalf of the Institute and on my personal behalf, I heartily congratulate the Parents of the Students receiving the degrees today. With this, the total number of students who graduated from this Institute stands at 1,968. Thank you for your time and attention.

*Jai Hind ...!!*

## Address by the Chairman, Board of Governors, IIT Jodhpur



**Dr. R. Chidambaram**

*Chairman, Board of Governors, IIT Jodhpur*

Honourable Chief Guest Dr. Rajesh Gokhale, Secretary Department of Biotechnology, Professor Santanu Chaudhury, Director of IIT Jodhpur, distinguished members of the Board of Governors, members of the Senate, faculty and staff of IIT Jodhpur, invitees, guests, parents, and my dear young friends who are graduating today:

On behalf of the Board of Governors, it gives me immense pleasure to extend a very cordial and special welcome to our Chief Guest of this function Dr. Rajesh Gokhale, a distinguished biologist and immunologist.

Director Santanu Chaudhury mentioned about the progress of the Institute over the last year. We have research programmes in various advanced areas and many of them are naturally inter-departmental, because the boundaries among scientific and engineering disciplines are continuously becoming more and more fuzzy.

In every BOG meeting, we have recently started research presentations from faculty members, and these have been excellent. The topics covered so far have included Microgrid Control and other Control systems; Nanomaterials and Devices for Energy and Sensor applications; Automated Manufacturing towards smart manufacturing and Industry 4.0; and Retro-Engineering of brain tumours for personalized medicine. These presentations also give an idea about the range of advanced research areas in IIT Jodhpur.

As part of implementation of the New Education Policy, many important steps have been taken by IIT Jodhpur. These include a multi-entry, multi-exit programme on Virtual & Augmented Reality, planned to be offered jointly by faculty from IIT Jodhpur, IIT Delhi, IIT Bombay and some other institutions.

Jodhpur has been identified as one of the six cities for initiating city-based innovation clusters by the PSA's Office, with the objective of increasing cooperation amongst proximate national laboratories and universities, and also of enhancing academia-industry interactions. IIT Jodhpur is the coordinator for this cluster. And this innovation cluster is progressing very well.

In his biography of Prof. S. Chandrasekhar, the biographer K. C. Wali asks him: "How did India produce world-class scientists like C.V. Raman and S.N. Bose in the 1920's?" Chandrasekhar's answer is interesting. He said: "In the 1920's, there was need for self-expression as a part of the national movement ..... to show the West that in their own realm, we were equal to them."

Today, the motivation should be to make India a 'Developed Country' and a 'Knowledge Economy', a country with the ability to generate new knowledge, and the ability to appropriate knowledge generated anywhere in the world. To make India into a 'Knowledge Economy' is the responsibility of young people, like those who are graduating today.

After the degrees you get today, you young people will start a new chapter in your careers, pursuing research, or acquiring additional academic qualifications, or in industries. Some of you may go for Startups. I wish you all the best in your future careers.

*Thank you and Jai Hind ...!!*



## Convocation Address by Chief Guest



**Dr. Rajesh Gokhale**

Secretary, Department of Biotechnology  
Ministry of Science & Technology, Government of India

### *Creating your own identity in this intertwined world*

Respected Chairman, Board of Governors Dr. R. Chidambaram, Director IIT Jodhpur Prof. Santanu Chaudhury, dignitaries, on and off this podium, proud parents, and above all Graduating Students.

Let me first say thank you for this honour and privilege to be a part of the Convocation ceremony day of IIT Jodhpur. This being my first convocation address..., while I am excited about delivering this today, the anxiety that I have gone through the weeks of preparation made me feel as if I am appearing for the JEE examination again! Thank you, Prof Chaudhary, for making me relive the experience again!

As I began thinking about preparing for this address, I was recollecting my Convocation Day and the address at IIT Bombay, after completing my master's degree in 1990. I was reflecting, if I could learn from those experiences that could benefit me in delivering this lecture. I very soon realized, to be honest with you all, I do not remember a single word from that address today. In fact, I do not even remember who delivered that address! This liberated realization, eventually enabled me to prepare

this lecture, without any fear that I am not going to be inadvertently influencing your minds and would not get blamed for diverting you from the goals of your promising careers ahead.

In actuality, I have debated considerably on what I should talk to you about. On this memorable day of your life, when you all graduate from a top institution in the country, I thought that I should share with you about some of the important lessons that I have learnt from the past 30 years of my professional career. With your newly acquired educational qualification, many of you would embark upon journey's that are likely to influence lives of several other people. And it is therefore important, to understand how to create one's own identity in this increasingly intertwined world, that makes 'real life' interesting yet challenging! Whether it is to do with government positions or multinational businesses, global cooperation, or be technological and innovative breakthroughs or even socializing online -in all instances there is a need to appreciate the importance of a deeply networked and intertwined world.

Emily Maroutian, a young award-winning writer, and philosopher explains in her book "The Process of "I" - She narrates that each person creates their own identity, knowingly or unknowingly, and then projects it into a reflective, personal reality that creates corresponding experiences and events. Every aspect of life is thus a reflection of your created identity. An important component is the ecosystem, that surrounds you during the periods of creating this 'I'. I may not be wrong in saying to this talented batch of millennials, that you all are born in India, that is, far more confident and self-reliant than a generation ago. And therefore, the way you would grow and react is going to be very different from my generation. To make you better appreciate my narration, let me try to give a background of my childhood era.

Born in a typical middle-class family with hand-to-mouth existence, I grew up in Delhi. Obtaining the daily necessities was a kind of struggle (I cannot even imagine today how it would have been in remote towns and villages!). Let me explain this with an example. I remember that fetching every-day milk was an important event for my parents. Delhi Milk Scheme used to distribute milk packaged in bottles during those days. And you would have to purchase it from a milk-booth that had timings of 5.30 to 6.30 am in the morning or 4.00 to 5.00 pm in the evening. Invariably, the milk used to be in short supply, and one had to stand in queue much before the delivery van would arrive.

The sight of the milk van coming your direction would initiate commotion and there used to be a struggle each day to fetch that 1 L of milk for all. Everything in that era was limited for common man and there was an element of anxiety and unpredictability. And so, the psychology of people born in that era was of planning well for tomorrow. Such a grooming develops an attitude of 'Safety First'. However, this also created better human-human contact with feeling of togetherness, which is still a fabric of our present society.

Having set the stage of that era, I would like to share my journey, and leave you with important lessons. The first one is "*Find your niche while Accepting Failures*". I was more fascinated by sports than academics and like all young boys in the country wanted to pursue cricket. I was a fast bowler and even today, I think, I had a good chance to make it to a big stage!! But this dream never materialized. Making careers in an unorganized sector like sports was always tricky back then. Academics, in contrast, is very organized- you follow X<sup>th</sup>/XII<sup>th</sup>/Bachelors/Masters and so on and can then find a Job. Keeping long term social security in mind, failure was not an option. Of course, today with IPL, sports industry is more businesslike, though it is still risky enough, due to limited period of employment. And so, with my family by my side, I ventured with the idea of joining the Indian Air Force to pursue both sports and career together. As luck would have it, during the process of getting through to National Defense Academy, I was handed spectacles. This new aspect quite abruptly ended my ambitions of going through this career path. This misadventure even resulted in a gap-year for me. Interestingly, those days Delhi University had a policy to admit gap-year students after completing admissions of the current passed-out batch. That was a time when I almost felt that I had no way ahead! Eventually, did Chemistry (Hons) from Rajdhani College and then climbed through the ladders to IIT Bombay followed by PhD at Indian Institute of Science, and then was a post-doctoral fellow at Stanford University. While this may not appear to be a bad trajectory in the career path, one could argue from an individual perspective that I failed to achieve personal targets. However, I would argue we all have to decide for ourselves what constitutes a failure. And that is where I come to my second lesson dear friends "*Be Open to Press the Reset button all the time*".

Returning to India, the major drive for me was to make an impact for the country and also be closer to my aging parents. After completing about three-and-half years of postdoctoral time, a

successful one, I left the cushiony shores of the west and returned to join National Institute of Immunology, Delhi. I decided to take-on the problem of Tuberculosis, a major health concern of India. With no prior domain expertise in tuberculosis research, there was an element of fear. However, I relied on the fact that I may be able to bring a fresh perspective. The plan was to make scientific breakthroughs that would make impact to mitigate the disease burden of the country. I had a wonderful 7-8 years of exciting research activity in my laboratory, distinctly satisfying with many interesting discoveries that were published in top international journals. With early success, came accolades and in about 7 years I received Shanti Swarup Bhatnagar Prize, a most coveted award for performing outstanding research in India. While I debated about perils and pitfalls of awards and recognitions in human life, in retrospective, I think this early recognition served several important purposes. First and foremost, people who directly work along with you get motivated. Second, your immediate peers take you more seriously. Third, awards can empower you to reset your career plans. As you get into the systems of this country, that is full of hustle and bustle, all the initial drive melts into managing resources- whether it is funds, people, facilities, family life or even competitors! I reminded myself of the real-life question- 'Did my research make any significant advancement that could eventually contribute to the enormous burden of TB in the Indian public health system?' And the simple answer was NO. While it is true that the gap between fundamental discovery and translation is very large, my best efforts could not find takers who could be willing to take research leads to the next level. This got me to recognize the concept of push-and-pull and of strategic management. Also, I realized that public health problems are far too complex to be only solved purely based on scientific breakthroughs and in fact these are intertwined by socio-economical aspects of human interactions. With this enlightenment, I soon reconciled that I was in no position to address the human TB suffering.

This appreciation got me thinking to identify alternate problems that could potentially make an impact. After carefully evaluating several domain areas, I decided to work on human skin depigmenting disorder Vitiligo. This is an autoimmune disease with no cure and many patients suffer from psychological stress throughout their lives. Along with an unmet medical need, this problem had both competitive and scientific advantages. Only about 25-30 major laboratories across the world were studying this disease and that lesional and non-lesional skin was present on the same individual

that facilitated comparative studies. I thus embarked on this new adventure along with colleagues and friends with a plan to find a cure for Vitiligo. This decision, in the hindsight, turned out to be an excellent choice for my career.

I also got some lucky breakthroughs, where I was asked to lead an institution. The balance between vertical and horizontal growth in the career is of great essence. My leadership role at Institute of Genomics & Integrative Biology (IGIB) was exciting and full of opportunities to empower younger generations and establish a new campus. As former UK Prime Minister Winston Churchill said, “We shape our buildings, and afterwards our buildings shape us”. I learnt how leadership can indeed define the character of the organization that creates environment of trust and innovation. My move, though slowed down my personal research outputs, this widened my skill set and knowledgebase and provided an opportunity to create new institutional models.

This period in the western world coincided with the rapid growth and emergence of startup entrepreneurial ecosystem. The spirit behind academia spin-offs is to transform technological inventions and develop them towards potential commercialization, which otherwise would have remained unexploited. In India, Department of Scientific and Industrial Research in the Ministry of Science & Technology also issued notification to permit scientists to start spin-off companies called ‘Scientific Entrepreneurship Scheme’ in 2009. Though this was a completely new and unfamiliar territory, I decided to take up this challenge. The idea of the company was to develop topical dermatological products, particularly based on the new emerging knowledge of genome sequences. Interestingly, *Malassezia* fungus, that causes disorders like dandruff and seborrheic dermatitis, with its genome sequence decoded in 2007, revealed absence of enzymatic machinery to produce its own fatty acids. These fungi survived by harvesting lipids from host. If you examine what anti-dandruff oils and shampoos are made up of; it contains fatty acids and the antifungal molecule. So, one is simultaneously providing food and drug. We modified the oil formulation and with same drug improved the product quality by several-fold. Creating a successful spin-off firm requires different competencies compared to the traditional core academic missions of research and teaching. Vyome Biosciences was cofounded with another young faculty from Harvard Medical School, whom I met in a conference along with a young investor and this venture could not have been possible without this

fantastic team. Vyome, all these years went through lots of ups and downs. Presently, Vyome Biosciences, after undergoing restructuring through merger and acquisition, is completing Phase II clinical trial in US for the drug-resistant acne. **Partnerships and shared vision are key to do new things and only ideas are not enough!**

In my group, along with several young researchers, we continued scientific endeavors to study Vitiligo pathogenesis- what triggers loss of pigment from skin and what are the underlying biological principles. We identified a few compounds that could have a potential to reduce depigmenting patches and filed a patent. Having myself experienced the Startup culture for 5 years and understanding how spin-offs provides necessary fillip to translation, we requested to set up another company in vitiligo drug discovery. Unfortunately, this time around there was no nod given by the organization. What followed were the darkest 4 years of my life. Success, sure has its enemies! These adversities have taught me things that I could not have learnt otherwise. I discovered that I have a much stronger will than I had suspected. I also found out that I have friends who truly value the relationships. And this knowledge, even though acquired painfully, is of immense value. Life is not a checklist of qualifications with all the right ticked boxes. In fact, it is far too much complicated, challenging and beyond the total control. My third lesson, therefore, is '**Even during times of hardship, work hard with empathy & ethics**'.

I would use another quote of Winston Churchill: "Success is not final; failure is not fatal: it is the courage to continue that counts."

My final recommendation to all you Graduates of IIT Jodhpur is to go out and touch other peoples lives in whatever you do. Your intelligence, capacity to do work and the education you have earned empowers you to identify yourself with people who are not as fortunate. The way you react and interact are all very important in future. I am sure many of you will have an opportunity to transform this world and that's the true essence of this graduation day! I wish you all the very best in the life ahead.

## Address by the Honourable Minister of Education



**Shri Dharmendra Pradhan**

Honourable Minister of Education, Government of India

Dr. R. Chidambaram, Dr. Rajesh Gokhale, Prof. Santanu Chaudhury, Director, Indian Institute of Technology, Jodhpur, Members of Board of Governors, Faculty and Staff members and other invited guests and graduating students. My greetings to all of you. I am elated to address the young graduates on this special occasion of Seventh Convocation of the Indian institute of Technology, Jodhpur. Let me begin by congratulating all the 411 students who will be receiving their degrees across various departments. I extend my wishes further to the institute, the learned faculty and the proud parents. Rajasthan is one of the most colorful states in the country with fine arts, rich culture, heritage and architectural beauty of its forts and palaces. Being established in 2008 as one of the eight second generation IITs in the country, IIT Jodhpur in a short span of time has demonstrated huge progress from infrastructure to research and innovation. Our government is driven to give impetus to entrepreneurial spirit and start-ups and is pleased to know that IIT Jodhpur has set up the Technology Innovation and Startup Center to promote startups and programs funded on scientific discovery to solve critical, real world issues through transformative technologies. During his address on the 75<sup>th</sup> Independence Day, Prime Minister Narendra Modi Ji said that New Education Policy

(NEP), 2020 is a means to fight poverty and meet the needs of the 21<sup>st</sup> century. I am pleased to know that the institute has recently revamped its entire curriculum and pedagogical approach to make the programs more effective in terms of experiential learning of students and application of acquired knowledge and skills. I am sure that with collective efforts we will be able to reinvent the education landscape for the country. I am delighted to know that IIT Jodhpur has adopted 200 villages as the regional coordinating institute for the Unnat Bharat Abhiyan (UBA), a flagship program of Ministry of Education (MoE). I am told that work is being carried out under forty-nine different projects such as providing support through ultra-filtration water purification systems for pure drinking water for the rural population. Friends, India is one of the fastest growing countries in the world and presents a plethora of opportunities to the youth to pursue their goals and aspirations. I urge you all to realize your full potential to leverage the existing ecosystem and build further for the future generations. I once again congratulate all of you and convey best wishes for your bright future.

Jai Hind.



## List of Medal Winners

## Medal Winners of 2021 Programs

### BACHELOR OF TECHNOLOGY

#### President's Gold Medal

for the graduating student with **Best Academic Performance** among students of **ALL B.Tech.** Programs of the class of **2021** goes to

**Mayank Raj**

#### Chairman, Board of Governors, Gold Medal

for the graduating student with **Best All-Round Performance** among students of **ALL B.Tech.** Programs of the class of **2021** goes to

**Aksh Chordia**

#### Director's Gold Medal

for the graduating student with **lady All-rounder** among students of **ALL B. Tech.** Programs of the class of 2021 goes to

**Geetika Agrawal**

#### Silver Medal

for the graduating student with **Best Academic Performance** in the graduating class of 2021 of the **B.Tech. (Computer Science and Engineering)** Program goes to

**Mayank Raj**

#### Silver Medal

for the graduating student with **Best Academic Performance** in the graduating class of 2021 of the **B.Tech. (Electrical Engineering)** Program goes to

**Sahil Harish Batra**

### Silver Medal

for the graduating student with **Best Academic Performance** in the graduating class of 2021 of the **B.Tech. (Mechanical Engineering)** Program goes to

**Siddhant Shrikant Saoji**

### Director's Prize

for a group of graduating students with **Best Academic Innovation work** among students of **ALL B.Tech.** Programs of the class of **2021** goes to

**Vaibhav Mishra & Mayank Maheshwari**

## MASTER OF TECHNOLOGY

### Jagadish Chandra Bose Gold Medal

for the graduating student with **Best Academic Performance** among students of **ALL M.Tech.** Programs of the class of 2021 goes to

**Durgesh Kumar Pandey**

## MASTER OF SCIENCE

### Silver Medal

for the graduating student with Best Academic Performance in the graduating class of 2021 of the **M.Sc. (Chemistry)** Program goes to

**Sagar Munjal**

### Silver Medal

for the graduating student with Best Academic Performance in the graduating class of 2021 of the **M.Sc. (Mathematics)** Program goes to

**N. R. Rohan**

### **Silver Medal**

for the graduating student with Best Academic Performance in the graduating class of 2021 of the **M.Sc. (Physics)** Program goes to

**Aditi Shahani**

### **Doctor of Philosophy**

#### **C. V. Raman Gold Medal**

for the graduating student with **Best Thesis Work** among students of **ALL Ph.D.** Programs of the class of 2021 goes to

**Gaurav Jajoo**

## List of Graduates

## Recipients of Degrees

### BACHELOR OF TECHNOLOGY

#### Computer Science & Engineering - Class of 2021

Nagelli Balamallesh	Kunal Jangid
Sai Kishore Kesaram	Kush Trivedi
Uneet Meena	Manish Kumar
Abhinav Pandey	Manisha
Abhinish Kumar Singh	Mayank Maheshwari
Alok Kumar	Mohammad Umair Anis
Aman Raj	Mohit Maroliya
Ansh Shrivastava	Muzzafer Ali
Anshul Ahuja	Peramsetty Pranavi
Anshuman Deka	Piyush Kumar
Arjun Joshi	Pranjal Jain
Aryan Singh	Rahul Sudish Bansode
Ayush Saxena	Rameshver
Bandaru Santhu Ruthvik	Rishav Jain
Battula Gautam	Ritesh Goyal
Ch Bhanu Prakash	Samyak Kumar
Chalodiya Hiren Nareshbhai	Satya Prakash Sharma
Deesha Chavan	Saurav Ramesh Malekar
Dev Saad	Shashwat Kathuria
Devesh Kumar	Shreyas Sharad Mahajan
Dheeraj Meena	Shubhankar Gaikwad
Elvish Dadhaniya	Shyam Kumar Gautam
Fateh Singh Meena	Sourabh Dharpure
Gagandeep Singh	Sristi Jain
Gangwar Anmol Reddy	Undadi Ganesh
Gaurav Arya	Vaibhav Mishra
Geetesh Gupta	Vinay Vijay Devadiga
Hrishi Raj	Yashodharm Mogra
Itisha Patidar	Yuvraj Dagar
Jay Bhaskar Kapadia	Chakshu Gupta
Kamal Kant Sharma	Darsh Agrawal
Karan Sanjay Modh	Mayank Raj

## BACHELOR OF TECHNOLOGY

### Electrical Engineering – Class of 2021

Lalit Mirdha	Gaurav Rawat
Vamsi Prudhvi Chintaguntala	Geetika Agrawal
Rohit Kewat	Gunjan Mandawat
Shubham Lodwal	Harshit Sharma
Aditya Gupta	Harshkooshal Kamlesh Gandhi
Akash Kumar Singh	J Sandeep Narayan
Aksh Chordia	Jain Ritik
Akshansh Malik	Kanani Alishkumar Hareshkumar
Aman Namdev	Lucky Kumar
Aniket Sharma	Manasi Khobragade
Anil Kumar Gurjar	Mansi Singh
Anshu Priya	Muskan Chitara
Anupama Patel	Navin Kumar
Apoorv Jain	Nikita Mangal
Arham Chordia	Nikita Sen
Aryan Mehta	Pradeep Kumar Kushwaha
Asif Ahmed	Raghav Gupta
Bhuvnesh Kumar	Sabyasachi Pradhan
Chaitany Prakash Mahawar	Sachin Meena
Chavan Pratik Sharad	Sahil Harish Batra
Chayan Parikh	Sakshi
Dev Meena	Sanchit Tapdiya
Devansh Bhargava	Saurav Yadav
Devesh Kumar Jangid	Shah Nisarg Anish
Devraj Meena	Shivani Meena
Dheeraj Kumar	Shivansh Kulshrestha
Dhruv Jain	Siddarth Jain
Diwakar Twinwal	Vaidya Swar Bhavarth
Dravid Kumar	Vipin Kumar
Ganesh Balasaheb Jadhav	Vipul Sahu
Gaurav Biyani	Dnyaneshwari Pandhari Sonone

## **BACHELOR OF TECHNOLOGY**

### **Mechanical Engineering – Class of 2021**

Sachin Yadav	Kshitij Patil
Abhijeet Abhay Sutar	Kumar Aashish
Adarsh Jain	Mayank Kumar
Aditi Tiwari	Mayank Singh
Ajay Goel	Mayank Tak
Ajay Kumar	Naman Jindal
Ajay Kumar Meena	Pallav Agrawal
Akarsh Kumar	Pankaj Kumar
Akash Gaur	Pareekshit Singh Rawat
Aman Sumit Goel	Pawan Kishore
Anil Kumar	Pooja Chouhan
Animesh Baggan	Prakhar Gupta
Anirudh Singh Tomar	Pravar Joshi
Ankit Malav	Priyesh Kumar
Ankit Mangal	Pushpendra Singh
Ankur Meena	Rajat Nirwan
Anshul Kulhari	Raju Raj Kumar
Apte Prathamesh	Raushan Kapoor
Arif Muhammed V S	Rohan Sunil Shisode
Arpit Kumar	Sachin Pandey
Ashish Sandesh Chavan	Shaunak Abhijit Mehta
Atharva Mandsaurwale	Shivam Goel
Ayaz Aslam	Shubham Suresh Gattani
Chirag Raj Gajrani	Siddhant Shrikant Saoji
Deepak Kumar Yadav	Simon Timothy
Dhruv Krishna	Yash Kala

## **BACHELOR OF TECHNOLOGY**

### **System Science – Class of 2021**

Palash Jain



## MASTER OF SCIENCE

### Chemistry – Class of 2021

Vishav Kant	Naresh Kumar Majhi
Aakash	Nitin Kumar
Anju Yadav	Patanvadiya Dhirajkumar Jitendrabhai
Anmol Royal	Peeyush Pandey
Annu Kumari	Rittwika Pan
Anubhuti	Sagar Munjal
Arpit	Shailesh Kumar Meena
Arun Kumar	Shrutika Agrawal
Harikrishna K	Srabani Nandi
Kavish Saini	Vikas Singh
Mohammad Saim Raza	Vikrant Vini
Monika	Vineeta Chaudhary
Mukesh Kumar Meena	

## MASTER OF SCIENCE

### Mathematics – Class of 2021

Varsha Singh	Pankaj Yadav
Adarsh Dwivedi	Pramod Kalal
Ajay Kumar	Rhondeno P Murry
Alka Santosh	Sabhilesh
Apoorva Lakshman	Sanghdeep Kishor Ukey
Jashan	Shivani
Jyoti Deshwal	Shivani Agarwal
Md Umar Faruk Ali	Tushar Badola
N. R. Rohan	Vaibhav Agarwal

## MASTER OF SCIENCE

### Physics – Class of 2021

Aditi Shahani	Mahima Chaudhary
Akash Chandra Saraf	Manisha
Akshima Negi	Murshed Alam
Anubhav Paul	Nilesh Dalla
Arunava Das	Pankaj Pareek
Chandra Prabha Charan	Parmeshwar Singh
Debabrata Sahoo	Ramniwas Kumhar
Debraj Kundu	Shubham Sharma
Harsh Kumar Jain	Shweta Yadav
Harshita Devda	Smriti
Hemant Verma	Sourav Paul
Jai Prakash Singh	Yomesh Saini

## MASTER OF TECHNOLOGY

### Bioscience & Bioengineering – Class of 2021

Ashutosh Kumar	Swati Jain
Rahul Kumar	Anjali Setiya
Sanjana Gajbhiye	Parvathy A
Shubhi Katiyar	Astha A Yadav
Tamal Dey	Som Mohanlal Patwa
Akshita Varshney	Prashant Pandey
Sweta Haripoojan Singh Chauhan	Pritha Das
Abhilasha Thakur	Aswin Sasi

## MASTER OF TECHNOLOGY

### Artificial Intelligence – Class of 2021

Megha Kumari	Anurag Jain
Atanu Guin	Ankit Dixit
Sandeep Kumar Verma	Tejas Sudam Gaikwad
Sunil Kumar Sharma	Vikanksh Nath
Gaurav Makaranda Pilankar	Harsha M
Kena Hemnani	Arpit Jain
Shobhit Sharma	Amulya Rawat
Siddharth Yadav	Ravi Ranjan
Ashu Kumar Solanki	

## MASTER OF TECHNOLOGY

### Computer Science – Class of 2021

Guruvachan Jain	Praveen
Shaurya Suman	Madugunda Jeevan Kumar
Nagendra Singh	Rahul Kumar Shakya
Samyak Jain	Suman Karan
Prashant Kumar Choudhary	Vaibhavi Gupta
Neelofar Hassan	Rishabh Tomar
Shiksha Mishra	Muskan Dosi

## MASTER OF TECHNOLOGY

### Data & Computational Sciences – Class Of 2021

Vikash Rathaur  
Utkarsha Gupta  
Ashish Sharma  
Abhishek Kumar  
Sachin Negi  
Kapil Gupta

Shital Arun Padwekar  
Andey Sai Kumar  
Pratik Vilasrao Somwanshi  
Lovely Lakhi Mudi  
Pankaj Kumar  
Shubham Kishor Londhe

## MASTER OF TECHNOLOGY

### Cyber Physical Systems – Class of 2021

Vaidya Rohan Vidyadhar  
Dwikul Jyoti Das  
Raghvendra Kaushik  
Duriseti Venkata Rama Ratna Satya Sameer  
Shubham Sharma  
Mohammad Aziz Mohiuddin  
Bheemraj Meena

Aditya Wasnik  
Dharamvir Ramroop Yadav  
Irfan Ahmad Ganie  
Shivika Tyagi  
Sanskрати Upadhyay  
Manjita Saini  
Vishal Raj

## MASTER OF TECHNOLOGY

### Electrical Engineering – Class of 2021

Mahendra Bajya  
Praneeth Karukola

## MASTER OF TECHNOLOGY

### Sensors & Internet of Things – Class of 2021

Hemant Shrivastava  
Rohan Kumar  
Shailesh Yadav  
Vivek Anand  
Adarsh Chaturvedi  
Neelu  
Varun Kumar  
Siddhant Kumar Srivastava

Chauhan Megha  
Anjana Singh  
Rounak Jain  
Surendra Hemaram  
Diksha Singh  
Mukesh Bharadwaj  
Swapnil Sureshkumar Bande

## MASTER OF TECHNOLOGY

### Advanced Manufacturing & Design – Class of 2021

Deepak Daksh	Devavrit Maharshi
Nikhil Sheshkar	Bharat Gajanan Pawar
Amita Jain	Sarbesh Kumar
Bhupesh Sharma	Deepak Kumar Maurya
Ritu Yadav	Bhanumati Seervi
Rajat Goswami	Vikas Kumar Lakhmani
Subham	Piyush Gupta

## MASTER OF TECHNOLOGY

### Thermofluids Engineering – Class of 2021

Smita Santram Sontakke	Veeru
Kommuri Kamalcharan	Piyush Gangwar
Lokendra Mohan Sharma	Abhay Pratap Singh
Ghanshyam Sitaram Bharate	Shubhanshu Rai
Kapil Kumar	Arpit Sanwal
Parth Rajeshbhai Patel	Vaibhav Pathak
Chandrashekhar Bhardwaj	

## MASTER OF TECHNOLOGY

### Metallurgical & Materials Engineering – Class of 2021

Rishabh Kumar Sharma	Md Faiz Akhtar
Sami Anwar	Durgesh Kumar Pandey
Abhijeet Kumar	Pawan Rangile
Zimmi Singh	Aman Mohhta
Mahendra Kumar Pandey	Aman Bansal
Vritant Kumar Khairwar	Shubhansu Singh
Rakesh Maurya	

## DOCTOR OF PHILOSOPHY

### Class of 2021

Rajneesh Chaurasiya  
Arpita Srivastava  
Sumitra Godara  
Vivek Raghuwanshi  
Parveen  
Devika Laishram  
Anchal Gahlaut  
Ishan Varun  
Brajesh Kumar Shukla  
Ankit Agarwal  
Pratibha Choudhary  
Shivam Chaturvedi  
Ajay Jain  
Bhawna Chaubey

Anuj Kumar Bharti  
Ajay Kumar Mahato  
Gaurav Bahuguna  
Amitap Khandelwal  
Aniket Dilip Monde  
Gaurav Jajoo  
Abhra Paul  
Jyoti Saini  
Erum Gull Naz  
Sumit Mahajan  
Ram Milan Sahani  
Urgunde Ajay Bhimashankar  
Rohit Kumar

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## List of Selected Students for Award of Degree with Specialization

### Bachelor of Technology in Computer Science & Engineering

#### Minor in Management

Ansh Shrivastava	Kush Trivedi
Anshul Ahuja	Mohammad Umair Anis
Aryan Singh	Pranavi Peramsetty
Santhu Ruthvik	Piyush Kumar
Battula Gautam	Ritesh Goyal
Bhanu Prakash	Shubhankar Gaikwad
Hiren Chalodiya	Sristi Jain
Devesh Kumar	Vinay Vijay Devadiga
Anmol Reddy Gangwar	Chakshu Gupta
Gaurav Arya	Darsh Agrawal
Hrishi Raj	Mayank Raj
Kamal Kant Sharma	

### Bachelor of Technology in Computer Science & Engineering

#### Minor in Entrepreneurship

Abhinish Kumar Singh
Deesha Chavan
Samyak Kumar

### Bachelor of Technology in Electrical Engineering

#### Minor in Management

Arham Chordia	Vipin Kumar
Nikita Sen	Vipul Sahu
Saurav Yadav	

### Bachelor of Technology in Mechanical Engineering

#### Minor in Management

Arpit Kumar	Mayank Tak
Ashish Chavan	Naman Jindal
Atharva Mandsaurwale	Pawan Kishore
Kshitij Patil	Shivam Goel

**Bachelor of Technology in Electrical Engineering**

**Minor in Entrepreneurship**

Apoorv Jain  
Harshit Sharma  
Jain Ritik

**Bachelor of Technology in Electrical Engineering**

**Specialization in Internet of Things**

Aksh Chordia  
Devansh Bhargava  
Alish Kanani  
Vaidya Swar Bhavarth

**Bachelor of Technology in Electrical Engineering**

**Specialization in Artificial Intelligence**

Anshu Priya  
Anupama Patel  
Mansi Singh  
Muskan Chitara

**Bachelor of Technology in Mechanical Engineering**

**Specialization in Thermofluids Engineering**

Abhijeet Sutar  
Ankit Mangal  
Rohan Shisode

**Bachelor of Technology in Mechanical Engineering**

**Specialization in Artificial Intelligence**

Aditi Tiwari

**Bachelor of Technology in Mechanical Engineering**

**Specialization in Robotics**

Ayaz Aslam  
Dhruv Krishna  
Shaunak Abhijit Mehta  
Shubham Suresh Gattani  
Siddhant Shrikant Saoji

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## Oath

I pledge that I shall be scrupulously honest, with every thought, word and deed, and in the discharge of my duties. I shall honour always the knowledge, wisdom and values inculcated in me by this Institute.

I pledge to devote my knowledge and skills only towards the wellbeing of the citizens of the country and of humanity at large. I shall uphold always the dignity and integrity of my profession, Institute and Nation.



# 7<sup>th</sup> Convocation Committee

*Chairman: Deputy Director IIT Jodhpur*  
*Co-Chairmen: Advisor (Academics) and PIC (Infrastructure)*

S.No.	Item	Members (Persons Responsible)
<b>1. Academics</b>		
<b>Subcommittee Co-Chairpersons: AD-UG and AD-PG</b>		
1.1	Degree Certificates <i>Verification and Printing</i>	AR(Academics)
1.2	<i>Script of Proceedings of Convocation, printing and Scroll of Honour</i>	AR(Academics)
1.3	Capes Procurement	AR(Academics)
1.4	Registration and Distribution of Material	AR(Academics) and SS(Students)
1.5	Urgent Printing and Xeroxing	In charge (LHB)
1.6	Academic Procession, Guiding the Procession	FIC (Evaluations) and FIC (UG Curricula)
1.7	Planning of Seating Arrangement for grandaunts and parents	FIC (Timetable)
1.8	Rehearsal	FIC (Academics Research) and FIC (PG Admission)
1.9	Invocation and National Anthem	Dr. Ankita Sharma
<b>2. Convocation Materials</b>		
<b>Subcommittee Chairpersons: Chairman (Publication Committee) &amp; Adviser (Academics); Co-Chair: Deputy Librarian</b>		
2.1	Single booklet with Institute Report, Chief Guest Address, Chairman, BoG Address Convocation Invitation	Publication Committee Office of Publication (Printing)
2.2	Printing of Booklet	Office of Publication
2.3	Design and printing of invitation card	

2.4	Design of e-invitation card	
2.5	Design and printing of Banners and Standees	
<b>3. Graduands</b>		
<b>Subcommittee Chairpersons: AD (Students) and AD (Hostel Affairs)</b>		
3.1	Accommodation for Graduands and Parents	Students Hostel Wardens Committee, JR (Students)
3.2	Ushering Graduands at the Venue	Chairperson (Counselling Services)
3.3	Medals & Prizes (with Certificates) and Seating Arrangement for winners	Chairperson (Student Scholarships and Prizes Committee)
3.4	Lunch, snacks and related arrangements	Dining Services Committee
3.5	No dues	SS (Students)
<b>4. Invitations</b>		
<b>Subcommittee Chairpersons: Officiating Registrar &amp; AD (Students)</b>		
4.1	Chief Guest, Guest of Honour, Chairman BoG	Office of Director
4.2	Faculty Members and Staff Members	
4.3	Members of BoG and Senate	Officiating Registrar
4.4	Members of FC and BWC	
4.5	Adjunct Faculty, Advisors	
4.6	Parents of Graduands, and Students	JR (Students)
4.7	Dignitaries from Jodhpur	AR(Establishment) and Office of Deputy Director
4.8	Dignitaries from outside Jodhpur	
<b>5. Accommodation and Hosting of Dignitaries</b>		
<b>Subcommittee Chairperson: Dean (R&amp;D)</b>		
5.1	Members of BoG, FC, BWC and Senate	DR (Accounts)

5.2	Arrival and Departure and hosting of Chief Guest, Guest of Honour and Chairman BoG	Prof. Ajay Agarwal, Prof. Mitali Mukerji, Dr. K.R. Ravi, JR (S&P)
<b>6. Welcome of Dignitaries and Guests</b>		
<b>Subcommittee Chairpersons: AD (PRG) and FIC (TISC)</b>		
6.1		<p>Dr. Aakansha Choudhary  Dr. Amandeep Kaur  Dr. Anand Mishra  Dr. Ankur Gupta  Dr. Anoop Jain  Dr. Arun Kumar R  Dr. Durga Madhab Mishra  Dr. Jaiveer Singh  Dr. Moumita Mandal  Dr. Nil Kamal Hazra  Dr. Pankaj Yadav  Dr. Prabhat Jaiswal  Dr. Rohan D. Erande  Dr. Shahab Ahmad  Dr. Subrata Chakraborty  Dr. Sudipta Bhattacharyya  Dr. Suchetana Chakraborty  Dr. Yashaswi Verma</p>
<b>7. Infrastructure/Venue</b>		
<b>Subcommittee Chairperson: PIC (Infrastructure) and Chairman (CCCD)</b>		
7.1	<i>Decoration, Stage, Chairs, Posters</i>	AEE (Civil), AE (Electrical)
7.2	Backup Power	AE (Electrical)
7.3	Fire Fighting	AE (Electrical)
7.4	Water Supply	AEE (Civil)
7.5	Beautification of Campus and removal of construction debris	AEE (Civil),

7.6	Housekeeping, Dressing Room, and Upkeep of Toilets	AR (Infrastructure)
<b>8. Logistics and Security</b>		
<b>Subcommittee Chairperson: FIC (Transport and Security)</b>		
8.1	Buses from GPRA, Institute, Station, Airport	Manager (Facilities)
8.2	Cars for Chief Guest, Chairman, Board of Governors, Members, Board of Governors, Members, Finance Committee, Members, Senate, Members, Building & Works Committee	
8.3	Parking and Signages Spaces at LHB & Institute Building	Security Officer
8.4	Arrangements for Security & Briefing	
8.5	Arrangement of Fire Brigade	
<b>9. Press, Publicity and Memento for Graduands</b>		
<b>Subcommittee Chairperson: AD (IRO)</b>		
9.1	Press Invitations	Office of Director Office of IRO
9.2	Hosting of Press Members	
9.3	Director's briefing to press	
9.4	Publicity of the Event on Social Media	Media Outreach Committee
<b>10. Alumni Dinner and Memento</b>		
<b>Subcommittee Chairperson: AD (IRO)</b>		
10.1	Alumni Dinner on the eve of convocation	FIC (Alumni Relations) Office of (IRO)
10.2	Memento (AR App and 3D-Printed Lithophane) for graduands on chargeable basis	

<b>11. Convocation Projection, Live steaming and online event execution</b>		
<b>Subcommittee Chairperson: Head (CC)</b>		
11.1	Audio-Visual Arrangements	Dr. Dip Sankar Banerjee Dr. Ravi Bhandari Dr. Sumit Kalra Dr. Rajendra Nagar Office of CC AEE (Electrical) Manager (Facilities) Webmaster
11.2	Photography, Videography, Recording Live Streaming & Webcasting <i>Event &amp; Group Photos</i>	
11.3	Internet Connectivity	
	Online Event Planning, Rehearsal and Execution	
11.4	Convocation website	
<b>12. Procurement and Bill Processing Committee</b>		
<b>Subcommittee Chairperson: DR(Accounts)</b>		
12.1	Procurement and Bill processing support for the event	AR (S&P) AR (R&D) AR (Infrastructure) SS (Accounts)
<b>13. Liaison with Chief Guest, Guest of Honour, and Chairman, BoG</b>		
<b>Subcommittee Co-Chairpersons: AD-UG and AD-PG</b>		
13.1.	To liaise with Chief Guest, Guest of Honour and Chairman, BoG, for obtaining a soft copy of their speeches, biodata and Travel Plan	PA to Director Office of Director
13.2	Memento for Chief Guest, Guest of Honour and Chairman BoG	Office of Deputy Director
<b>14. Emergency</b>		
<b>Subcommittee Chairperson: Chairperson (Medical Services Committee) and Chairman (Safety Committee)</b>		
14.1	Medical & Ambulance Services	Medical Officer
14.2	Safety of the venue	Security Officer
15	<b>Convenor</b>	<b>DR (Accounts)</b>

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