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Indian Institute of Technology Jodhpur

Annual Report
2018-19

Annual Report

2018-19

Indian Institute of Technology Jodhpur
NH 65, Nagaur Road, Karwad, Jodhpur 342037

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Preface

IIT Jodhpur is in its tenth year. This is the beginning of a new journey for the institute. It is now well settled in the permanent campus. With all the facilities in place, this year IIT Jodhpur has embarked on a major plan of expansion. Senate has provided approval for initiating new M.Tech, M.Tech-Ph.D and M.Sc-Ph.D dual degree programmes. Institute has initiated interdisciplinary research programmes in seven broad areas: Space technology, Quantum Information Processing, Cognitive Science, Smart Healthcare, IOT and Applications, Digital Humanities, Autonomous Vehicle. IITJ has established a new generation AI lab with installation of high-end GPU based super computing system in collaboration with NVIDIA. It has worked out a plan to increase its student strength to 1500 by next academic session. The process for appointment of new faculty members is in place.

Institute community is now looking forward to a brighter future with support of all stake holders.

Santanu Chaudhury

IIT Jodhpur
Vision, Mission & Core Values

VISION

The Institute shall

(1) Promote technology thought and action, and

(2) Prepare needed technical human resources to meet the technology challenges of the nation.

MISSION

The Institute shall

(1) Create a vibrant technology institute that incubates and promotes learning, research, invention and eventually innovation; and

(2) Prepare each primary stakeholder towards their dharma, while continuing to adhere to its core values:

- (a) Prepare competent Technology Graduates ready to meet Grand Challenges of India;
- (b) Train active functionaries of a process driven professional institute;
- (c) Facilitate builders of an internationally competitive academic institute; and
- (d) Provide technology innovation as a force to as many industries as possible for economic value creation.

CORE VALUES

The Institute stands for a set of core values, wherein each member of the IIT Jodhpur community shall

(1) Uphold highest levels of human integrity and dignity;

(2) Not take unfair advantage of any stakeholder of the Institute;

(3) Work towards building the most admired technology Institute furthering interests of Students, Industries and Society;

(4) Commit to economic development of India through technological thought and action;

(5) Be ethical, sincere and open in all transactions; and

(6) Be continually responsible for upholding utmost confidentiality of all information and circumstances arising out of any interaction.

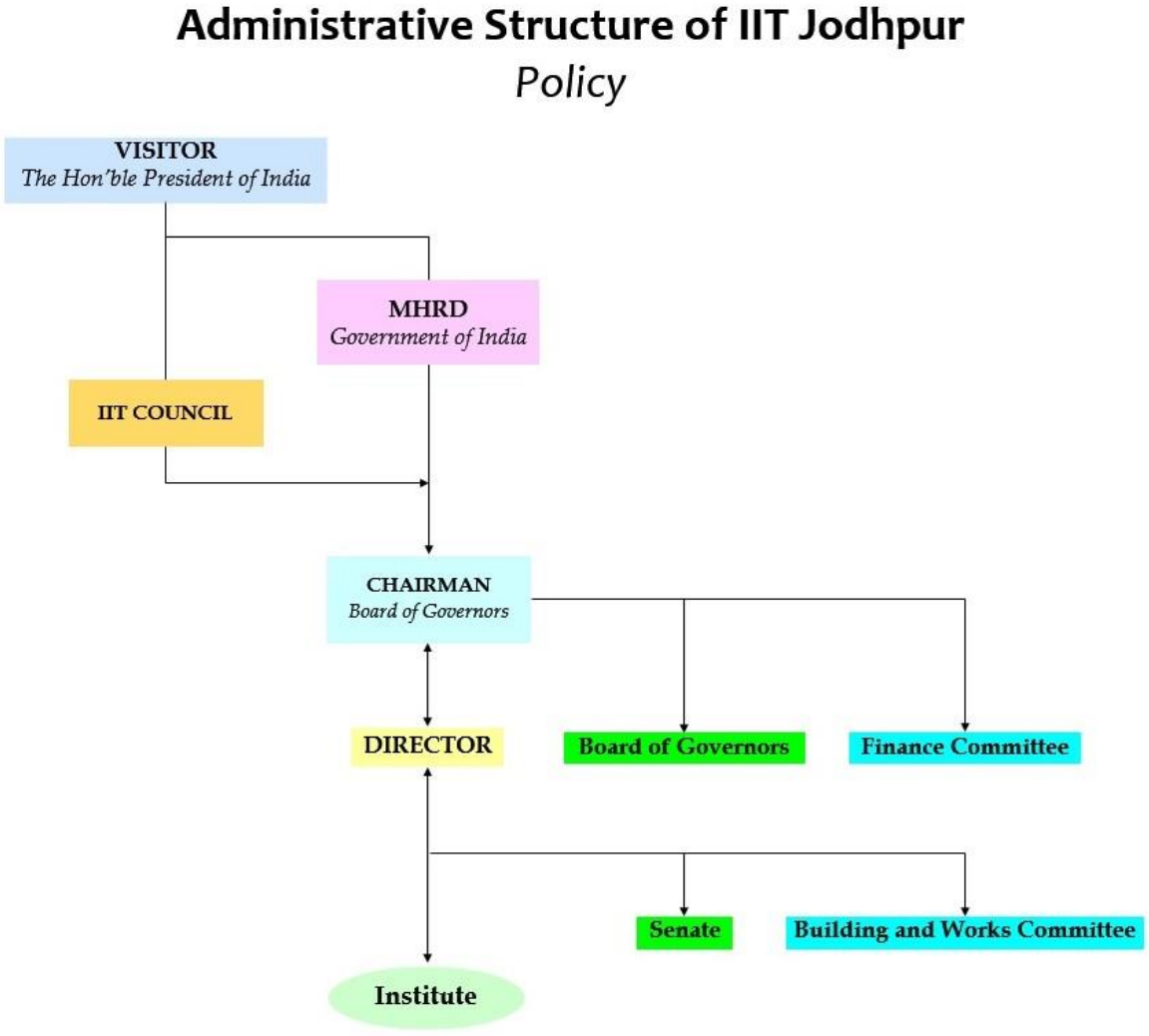
ORGANIZATION

Organizational Structure

Under the broad umbrella of IIT Council, IIT Jodhpur functions under the guidance of the following statutory bodies.

(1) Board of Governors;
(2) Finance Committee;
(3) Senate; and
(4) Buildings & Works Committee.

The following organogram represents the broad administrative structure of the Institute, at policy level.



Member details of these Statutory Bodies are given in the pages to follow.

Chairman

Dr. R. Chidambaram
Former Principal Scientific Advisor, Government of India, and
DAE - Homi Bhabha Chair Professor, Bhabha Atomic Research Centre, Bombay

Member-Nominees of the IIT Council

1. **Additional Secretary (Technical Education)**
   Ministry of Human Resource Development
   Government of India, New Delhi

2. **Dr. Narpat S. Shekhawat**
   Former Professor (Plant Technology)
   Jai Narayan Vyas University, Jodhpur

3. **Dr. Akhil Ranjan Garg**
   Professor (Electrical Engineering)
   Jai Narayan Vyas University, Jodhpur

4. **Mr. Anil Bhavarlal Jain**
   Vice Chairman, MD & CEO
   Jain Irrigation Systems, Jalgaon

Member (Nominee of Government of Rajasthan)

Dr. Subodh Agarwal, IAS
Additional Chief Secretary
Government of Rajasthan, Jaipur

Member (Nominee of Senate)

Prof. Sampat Raj Vadera
Professor
Department of Physics
Indian Institute of Technology Jodhpur

Member (Ex-Officio)

Prof. Santanu Chaudhury
Director
Indian Institute of Technology Jodhpur

Chairman

Dr. R. Chidambaram
Former Principal Scientific Advisor, Government of India, and
DAE - Homi Bhabha Chair Professor, Bhabha Atomic Research Centre, Bombay

Members

1. **Additional Secretary (Technical Education)**
   Department of Higher Education
   Ministry of Human Resources and Development
   Government of India

2. **Financial Advisor**
   Department of Higher Education
   Ministry of Human Resources and Development
   Government of India

3. **G. S. Sood,** IDAS
   House No. 1090, Sector 29
   Faridabad 121008

4. **S. S. Bhandari**
   Director, Non-Executive Director on the Board
   Bank of Baroda
   P-7, Tilak Marg, C-Scheme
   Jaipur 302005

Member (from within the Institute)

Dr. Gaurav Harit
Associate Professor
Department of Computer Science & Engineering
Indian Institute of Technology Jodhpur

Member (Ex-Officio)

Prof. Santanu Chaudhury
Director
Indian Institute of Technology Jodhpur

Santanu Chaudhury	Chairman
Pratap Bhanu Mehta	Member (Nominee of Board of Governors)
H. P. Khincha	Member (Nominee of Board of Governors)
Sanjeev Misra	Member (Nominee of Board of Governors)

Members

Head, Department of Bioscience & Bioengineering
Head, Department of Chemistry
Head, Department of Computer Science & Engineering
Head, Department of Electrical Engineering
Head, Department of Humanities & Social Sciences
Head, Department of Mathematics
Head, Department of Mechanical Engineering
Head, Department of Metallurgical & Materials Engineering
Head, Department of Physics

Chairman's Nominee from Departments

Professor C. Venkatesan, Department of Mechanical Engineering
Professor B. P. Kashyap, Department of Metallurgical & Materials Engineering

Invitees

Associate Dean (Faculty)
Associate Dean (R&D)
Associate Dean (Academics)
Associate Dean (Students)
Chairperson, Student Hostel Warden Committee
Chairperson, Library Committee
Chairperson, Student Counselling Services Committee
Chairperson, Admissions Committee

Student Representatives

Secretary, Academics and Careers Society, Students Gymkhana
General Secretary, Students Gymkhana

Chairman

1. **Prof. Santanu Chaudhury**
   Director
   Indian Institute of Technology Jodhpur

Members

1. **Ms. Usha Kasana**
   Chief Architect
   Public Works Department
   Government of Rajasthan
   Jacob Road, Civil Lines
   Jaipur 302006

2. **Mr. R. K. Govil**
   Additional Director General Civil (Retd.), CPWD
   26, Ankur Apartments
   7, I.P. Extension
   Delhi 110092

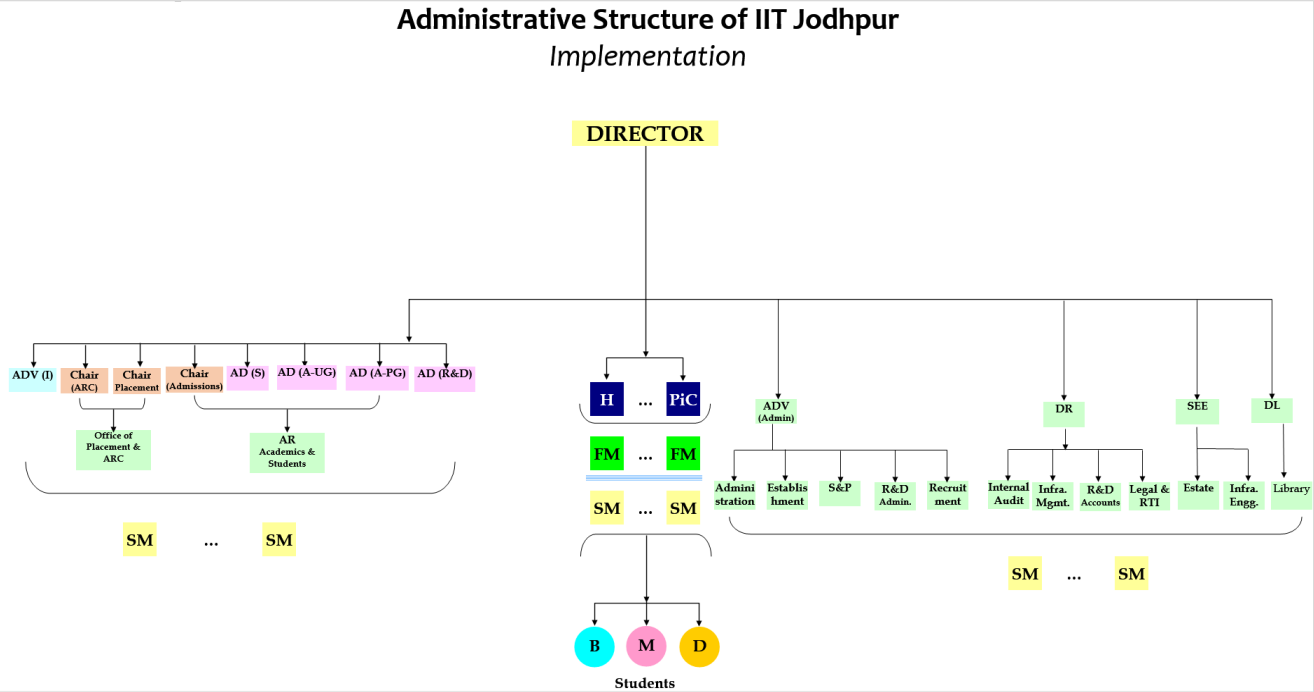
3. **Mr. V. K. Bansal**
   Chief Engineer Electrical (Retd.), CPWD
   721 Sky Lark Apartment,
   Sector-6, Plot No.35, Dwarka
   New Delhi 110075

Member (from within the Institute)

Dr. B. Ravindra
Associate Professor
Department of Mechanical Engineering
Indian Institute of Technology Jodhpur

Key Functionaries

At the implementation level, the Institute has organized its activities through various key functionaries, as depicted in the organogram below.



Abbreviations of Key Functionaries & Offices

AD	Associate Dean
ADV	Advisors
Chair	Chairperson
H	Head
PiC	Professor in-Charge
FM	Faculty Members
SM	Staff Members
DR	Deputy Registrar
AR	Assistant Registrar
SEE	Senior Executive Engineer
DL	Deputy Librarian
B	Bachelors
M	Masters
D	Doctoral
ARC	Alumni Relations Committee
S&P	Stores & Purchase

Details of various key functionaries of the Institute are as follow.

Director	
Santanu Chaudhury	
Associate Deans	
Rakesh K. Sharma	Research & Development
Suril V. Shah	Academics (UG Programs)
Somnath Ghosh	Academics (PG Programs)
Samanwita Pal	Students
Heads of the Departments	
Meenu Chhabra	Bioscience & Bioengineering
Ritu Gupta	Chemistry
Gaurav Harit	Computer Science & Engineering
Anil K. Tiwari	Electrical Engineering
Ankita Sharma	Humanities & Social Sciences
Gaurav Bhatnagar	Mathematics
Kaushal A. Desai	Mechanical Engineering
Sampat Raj Vadera	Physics
Professors In-Charge of Departments	
B. P. Kashyap	Metallurgical & Materials Engineering
Chairman / Chairperson	
Gaurav Bhatnagar	Admissions Committee
Shankar Manoharan	Alumni Relations Committee
B. P. Kashyap	Best B.Tech. Project Thesis Evaluation Committee
Rakesh K. Sharma	Center for Advanced Scientific Equipment
Associate Dean (Faculty)	Fellowship Application Evaluation Committee
Advisor (Administration)	Financial, Administration & Infrastructure Committee
V. Narayanan	Grievance Redressal Committee
B. P. Kashyap	House Allotment Committee
Kaushal A. Desai	Industry Immersion Program
Kshema Prakash	Internal Complaints Committee, Women Cell
Kirankumar R. Hiremath	Library Committee
Nirmal K. Rana	Medical Services Committee
Appala Naidu Gandi	Scholarships and Prizes Committee
Ankita Sharma	Student Counselling Services Committee
Puneet Sharma	Student Hostel Warden Committee
Sandip Murarka	Student Placement Committee
Associate Dean (Academics)	Students Disciplinary Action Committee
Associate Dean (Students)	Anti-Ragging Committee
Associate Dean (Students)	COTPA Committee
Associate Dean (Faculty)	House Allotment Disciplinary Action Committee
Associate Dean (R&D)	Research Publication Committee
Dr. Kuldeep Singh, Physician AIIMS, Jodhpur	Institute Ethics Committee

Officers

Ananya Debnath	Nodal Officer, Unnat Bharat Abhiyan
Appala Naidu Gandi	Nodal Officer for OBC, PwD, and Minorities
Atul Kumar	Green Initiatives Officer
Gaurav Bhatnagar	Transparency Officer
Gaurav Bhatnagar	Nodal Officer, National Institutional Ranking Framework (NIRF)
Gaurav Harit	Chief Vigilance Officer
Kshema Prakash	Women Cell Officer
Meenu Chhabra	Nodal Officer, Swachh Bharat Abhiyan
Priyanka Singh	Nodal Officer, Vigyan Jyoti Program
Puneet Sharma	Hindi Officer
Rakesh K. Sharma	Nodal Officer, IMRPINT India Program
Ramesh K. Metre	Nodal Officer for SC and ST
Ritu Gupta	Nodal Officer, GIAN Program
Sandip Murarka	Nodal Officer, DAAD Scholarships Program
Sanjeeb Mukherjee	Infrastructure Engineer
Amardeep Sharma	Estate Officer
Somnath Ghosh	Nodal Officer, Study in India Program
Amardeep Sharma	Public Relations Officer
Amardeep Sharma	Central Public Information Officer
Sudipto Mukhopadhyay	Nodal Officer, Ishaan Vikas Program
Sudipto Mukhopadhyay	Nodal Officer, Undergraduate Research Initiative (UGRI)

Academic Committee

Associate Dean (Academics - UG)	Co-Chairman
Associate Dean (Academics – PG)	Co-Chairman

Members

Head, Department of Bioscience & Bioengineering
Head, Department of Chemistry
Head, Department of Computer Science & Engineering
Head, Department of Electrical Engineering
Head, Department of Humanities & Social Sciences
Head, Department of Mathematics
Head, Department of Mechanical Engineering
Professor In-Charge, Metallurgical & Materials Engineering
Head, Department of Physics
Convener, Focus Group – Biologically Inspired System Science
Convener, Focus Group – System Science
Associate Dean (Students)
Liaison Officer (SC/ST Cell)

Student Members

General Secretary, Students Gymkhana
Secretary, Academics & Careers Society, Students Gymkhana

Appointment of new Chairman and new Members of the Board of Governors, IIT Jodhpur

Dr. R. Chidambaram, Former Principal Scientific Advisor, Government of India, and DAE - Homi Bhabha Chair Professor at Bhabha Atomic Research Centre, Bombay, is appointed as Chairman, Board of Governors, IIT Jodhpur.

Also, the Board of Governors of IIT Jodhpur has been reconstituted with four new Members.

1. *Additional Secretary (Technical Education)*
   Ministry of Human Resource Development
   Government of India, New Delhi
2. *Narpat S. Shekhawat*
   Former Professor (Plant Technology)
   Jai Narayan Vyas University, Jodhpur
3. *Akhil Ranjan Garg*
   Professor (Electrical Engineering)
   Jai Narayan Vyas University, Jodhpur
4. *Anil Bhavarlal Jain*
   Vice-Chairman, MD & CEO
   Jain Irrigation Systems, Jalgaon

Professor Santanu Chaudhury assumes charge as Director, IIT Jodhpur

Professor Santanu Chaudhury, Professor, Department of Electrical Engineering, IIT Delhi, assumed charge as Director, IIT Jodhpur, on December 10, 2018. He holds B.Tech. (Electronics and Electrical Communication Engineering) and Ph.D. (Computer Science & Engineering) degrees from IIT Kharagpur.

Professor Chaudhury joined as Faculty Member in the Department of Electrical Engineering, IIT Delhi, in 1992. He was Dean, Under-Graduate Studies at IIT Delhi. He has served as Director of CSIR-CEERI, Pilani, during 2016-18. Professor Chaudhury is a recipient of the Distinguished Alumnus award from IIT Kharagpur.

Professor Chaudhury is a Fellow of Indian National Academy of Engineers (INAE) and National Academy of Sciences (NAS). He is a Fellow of International Association for Pattern Recognition (IAPR). He was awarded the INSA (Indian National Science Academy) Medal for Young Scientists in 1993. He received ACCS-CDAC award for his research contributions in 2012.

A keen researcher and a thorough academic, Professor Chaudhury has about 300 publications in peer-reviewed journals and conference proceedings, 15 patents and 4 authored/edited books to his credit.

Departments and Associated Faculty Members

The Institute has organized its academic activities to be conducted through nine Departments, namely:

1. Bioscience & Bioengineering,
2. Chemistry,
3. Computer Science & Engineering,
4. Electrical Engineering,
5. Humanities & Social Sciences,
6. Mathematics,
7. Mechanical Engineering,
8. Metallurgical & Materials Engineering, and
9. Physics

The Institute welcomed 7 new faculty members into the IIT Jodhpur community during this year. Details of the departments and associated faculty members are given in the pages to follow. Recruitment of new faculty is underway.

The Department of Bioscience & Bioengineering aspires to cater to the technological requirements of the country by conducting high-quality, translatable research and by training our students to be technological innovators in Biological sciences.

Department currently offers B.Tech. Program in Biotechnology, and M.Tech. & Ph.D. programs in Bioscience & Bioengineering. In these programs, Students are exposed to state-of-the-art research infrastructure, where they undergo hands-on training.

The focus of research efforts of the department is on developing solutions in the areas of healthcare, environment and agriculture. Faculty members pursue complex biological questions in the fields of:

1. Molecular & Cellular Biology,
2. Systems & Computational Biology,
3. Biomaterials & Biomechanics, and
4. Biological Processes & Bio-Devices.

The department actively collaborates with other departments of the Institute and with other institutions of higher learning in and around Jodhpur to maximize research and teaching outcomes. The department has received research funding from premier funding agencies in India, namely, Ministry of Human Resource Development, Department of Science & Technology, Department of Biotechnology, Board of Research in Nuclear Science, Science & Engineering Board, and Wellcome Trust DBT India Alliance.

Following are the Faculty Members associated with the department:

Name	Research Areas
 Meenu Chhabra *Head of Department*	Biological Science & Bio-Engineering: Renewable Bioenergy Bioremediation
 Amit Kumar Mishra	Cellular and Molecular Neuroscience, Cell Cycle Regulation and Cancer
 Madhu Dikshit	Molecular Pharmacology and Redox Biology
 Priyanka Singh	Cellular and Molecular Biology

Shankar Manoharan

Molecular Microbiology, Host-Microbe Interaction, Genomics and Metagenomics

Sushmita Jha

Cellular and Molecular Neuroscience, Cell and Molecular Physiology

Sushmita Paul

Computational Biology and Bioinformatics

Professor U. C. Banerjee, Professor & Head, Department of Pharmaceutical Technology at National Institute of Pharmaceutical Education and Research (NIPER) is associated with the department as Adjunct Faculty Member.

Chemistry at IIT Jodhpur is where Chemistry sees Technology. At IIT Jodhpur, Chemistry embraces a distinctive locus in science and technology collaboration. The department is making technological contribution to new materials for energy solutions, catalysis and water. Fundamental understanding of chemical dynamics, biological phenomena, Nuclear Magnetic Resonance and Quantum Chemistry are growing in prominence. The vision of the Department of Chemistry is to strive to be acknowledged for excellence in teaching, research, and outreach. The following Faculty Members are associated with the department:

Name	Research Areas
 Ritu Gupta *Head of Department*	Nanomaterials & Nanodevices for Water, Energy and Healthcare
 Ananya Debnath	Theoretical and Computational Chemistry
 Atul Kumar	Quantum Information Processing
 Manikandan Paranjothy	Theoretical and Computational Chemistry, Chemical Reaction Dynamics
 Nirmal Kumar Rana	Asymmetric Catalysis and Natural Product Synthesis
 Rakesh Kumar Sharma	Catalysis for Energy and Stereocontrol, Feedstock Chemistry, Fuel and Lubricants, Energy Storage and Water Treatment Technology

Ramesh K. Metre

Main-group organometallic chemistry, Coordination polymers, Inorganic-organic hybrid materials and Metal phosphonate and phosphate chemistry

Samanwita Pal

Solution and solid state NMR and NQR spectroscopy

Sandip Murarka

Organic Synthesis, Development of Novel Synthetic Methods, Transition Metal Catalyzed Synthetic Transformations, C-H Functionalization Reactions, Asymmetric Catalysis

The primary objective of the Department of Computer Science & Engineering is to impart quality education in the field of Computer Science. The department's vision is to:

1. Expand its depth and breadth in the research and study of core Computer Science and Engineering,
2. Continually improve the research and teaching environment to ensure creation of human resources with adequate technical and soft skills, and
3. Establish strong industry and academia partnership to augment the classroom knowledge with practical hands on experience.

The Department is currently offering three academic programs, namely, B.Tech. M.Tech. and Ph.D. Programs in Computer Science & Engineering. The Bachelor of Technology (B.Tech.) aims to develop core competence in Computer Science and Engineering among the students and thereby prepare them to carry out development work, as well as take up challenges in research. The intake of this B.Tech. Program is 60 and M.Tech. Program is 15. The students who have graduated from the department are either placed in reputed industries in India, or pursuing higher studies in reputed universities within the country or abroad.

The department has research interests in core areas of Computer Science and Engineering. The Doctor of Philosophy (Ph.D.) program is offered with the goal of producing state-of-the art research outputs. Ph.D. students are working in the areas of video analytics, image understanding, cloud computing, document analysis, and internet of things. To strengthen the core competence, department is also looking for Faculty Members in all areas of Computer Science and Engineering.

Also, the department is keen to collaborate with industry and academia. At present, projects are going on with All India Institute of Medical Science (AIIMS), Jodhpur, Department of Science and Technology, Government of India.

Moreover, department works closely with industry leaders like Microsoft, IBM, Intel, TCS, for academics and research collaboration. In near future, the department is also planning to move towards Outcome Based Education (OBE) along with a strong industry-academia partnership. The department is steadily striving towards excellence in both academics and research with active participation from faculty, staff and students.

Following are the Faculty Members associated with the department:

Faculty Member	Research Areas
 Gaurav Harit *Head of Department*	Image and Video Analysis
 Chiranjoy Chattopadhyay	Computer Vision

Computer Vision, Multimedia Systems, Computational Intelligence

Santanu Chaudhury

Distributed System, Cloud Computing, Distributed Storage, Consistency

Subhajit Siddhanta

Software Architecture, Cloud Computing, Data Analytics

Sumit Kalra

The department also has a Scholar-in-Residence, *Professor R. K. Shyama Sunder,* who is a Senior Professor and J. C. Bose National Fellow at Tata Institute of Fundamental Research, Mumbai.

The department has an Adjunct Faculty Member, Professor Venkatesh Raman from Institute of Mathematical Sciences, Chennai.

The Department of Electrical Engineering, formerly a part of the Centre for Information and Communication Technology (ICT) at IIT Jodhpur (2008), primarily focuses on imparting quality education and preparing students to face the future technological challenges. The vision of the Department is to enhance the research environment and to innovate in pedagogy to address the challenges of socio-economic and human resource development. The Department is committed to engage in high quality research by Faculty Members and Students, and in the pursuit of excellence in teaching.

With excellent laboratory facilities and dedicated Faculty Members, the Department of Electrical Engineering offers the following programs:
1. B.Tech. (Electrical Engineering),
2. M.Tech. (Electrical Engineering), and
3. Ph.D. with specialization in Electrical Engineering.

The broad areas of research are Microelectronics, Power and Control Systems, Communication and Signal Processing, RF and Microwave; and thrust Areas of Research include the following.
1. Signal processing for healthcare,
2. Devices and circuits for security and sensing,
3. Low-cost flexible electronics,
4. Smart grids and distribution of renewable energy,
5. Wireless and mobile communication,
6. RF and Microwave, and
7. Image Processing.

The department has active on-going collaborations with organizations like Freescale Semiconductors, Global Foundries, AIIMS Jodhpur, DST, DRDO, ISRO, to name a few. The Department has been receiving various sponsored projects from R&D organizations since its inception.

The following Faculty Members are associated with the department.

Name	Research Areas
 Anil Kumar Tiwari *Head of Department*	Electrical Engineering: Image Processing, Video Processing, and Signal Processing application in Bio-Medical
 Abdul Gafoor Shaik	Protection of various components of Power System, Protection of Distribution Network with DG penetration, Power Quality assessment and mitigation in Distribution Networks with Renewable Energy Source penetration

Aashish Mathur

Power Line Communications, Free Space Optical Communications, Visible Light Communications

Arpit Khandelwal

Group III-V Optoelectronic Devices, Fiber Optics and Integrated Optics Sensors, Non-Linear Photonics, Silicon Photonics and Optical Communication

Arun Kumar Singh

Communication Theory, Wireless and Mobile Communications, Satellite based Navigation Systems, Spread Spectrum Systems

Deepakkumar M. Fulwani

Control and state estimation of uncertain systems, Power system, Control issues in wind energy conversion system

Mahesh Kumar

Group III-V quantum structures by MBE, Growth of thin films and nanostructures, Group III-nitride alloys for LEDs, HEMTs and photovoltaic applications, Inorganic-Inorganic hybrid structures with special attention to band gap engineering, Si and wide band gap semiconductors for MEMS, Micro and Nano device fabrications

Sandeep Kumar Yadav

Signal Processing, Condition Monitoring, Image Processing, Data Compression, Blind Source Separation, Artificial Neural Network

Shree Prakash Tiwari

Microelectronics & VLSI Technology, Microfabrication, Organic Electronics, Device Physics and Characterization, New Device Structures

Rajlaxmi Chouhan

Image processing, Noise-aided image processing using Stochastic Resonance, Image enhancement, Digital watermarking, Image quality assessment

Soumava Mukherjee

Microwave Communication

The department has following three Adjunct Faculty Members.

1. *Kota V. Murali*, Chief Technologist, Semiconductor Research and Development Center, IBM India, Bangalore;
2. *Debashish Datta*, Retired Professor, IIT Kharagpur; and
3. *Akshay Kumar Rathore*, Associate Professor, Electrical and Computer Engineering, Concordia University, Montreal, Canada.

The following activities were organized by the department during the FY 2018-19.

ANSOFT HFSS Workshop, 01-02 March 2019
Workshop on ANSOFT HFSS was organized by the Department of Electrical Engineering at IIT Jodhpur during 01-02 March 2019.
Department Day
The Department of Electrical Engineering celebrated Department Day on 11 March 2019. The event was inaugurated by the Director, and the activities included an invited lecture by Prof. P. K. Biswas, IIT Kharagpur, followed by a poster symposium by PhD students of the Department. Best TA Award was presented to *Bhuvnesh Rathore* during the event.

The following are the collaborations by the Faculty Members.

1.	Aashish Mathur with Prof. Michael Cheffena and Dr. Yun Ai, NTNU, Norway in the area of in PLC and FSO.
2.	Anoop Jain with Prof. Debasish Ghose, IISc, Bangalore and Prof. Daniel Zelazo, Technion in the areas of multi-agent systems and nonlinear control.
3.	Soumava Mukherjee with Prof. A. Biswas, Prof. M. J. Akhtar, IIT Kanpur in the area of SIW antennas.

DEPARTMENT OF HUMANITIES AND SOCIAL SCIENCES

The Department of Humanities and Social Sciences operates from spaces that gives an opportunity to act as an interface between empirical and experiential knowledge systems. Playing a significant role in the academic curriculum of the young engineers, we offer both core and elective courses at the Bachelors, Masters, and Doctoral levels. The ability to provide tools and skills for specific aims notwithstanding, the essence of Humanities and Social Sciences involves the sensitizing of individuals. Acting as facilitators, thus, we engage in meaningful interactions with students and help them witness, study, and understand the interplays among technology, society, and humanity. This task assumes even more significance in an educational context where the brightest young minds of India come together.

With faculty members who specialize in diverse disciplines (including Philosophy, Psychology, and Literature) and with students from a spectrum of backgrounds, the department provides an enriching platform where technical education can be complemented with human and social understanding. Following are the faculty members associated with the department.

Name	Research Areas
 Ankita Sharma Head of Department	***Psychology:*** Gerontology, Clinical and Positive Psychology
 K. J. George	***Philosophy:*** Applied Ethics, Ethics of Technology, Bioethics
 V. Hari Narayanan	***Philosophy:*** Cognitive Studies, Evolutionary Theory, Analytic Philosophy and Mindfulness
 Mayurakshi Chaudhury	***Sociology/Sociocultural Anthropology:*** Gender Studies; Postcolonial South Asia; International and Transnational Migrations, Qualitative Research
 Vidya Sarveswaran	***English:*** *Literature and Environment (Ecocriticism), Film and Literature, Literatures of the Global South, Regional Literatures in Translation, American Literature*

Chhanda Chakraborti, Professor, Humanities & Social Sciences, IIT Kharagpur is associated with the Department as Adjunct faculty member.

Mayurakshi Chaudhuri was invited to participate in the Direct To Home (DTH) project by the Ministry of Human Resources Development (MHRD). As part of the project, she has recorded a set of 20 lectures on the course Gender and Society at the Media Center, IIT Kanpur, which is the Coordinating Institute for the project. Her lectures shall be telecast on Channel 16 for Humanities & Social Sciences and Management, by Doordarshan. Channel 16 has already begun telecasting courses since early 2018.

Mathematics, being the basis of many disciplines, is a subject that evolves with time and creates new theories to solve real-world challenging problems. The department has been taking a leading role in developing new methods to model such situations that can be used in diverse areas of computer science, engineering, and basic sciences. The department has faculty with research interests in the areas of Algebra, Mathematical Physics, Scientific Computation, Numerical Analysis, Partial Differential Equations, Topological Dynamics, Low Dimensional Chaos, Dynamical Systems, Renormalization in Low-dimensional dynamics, Wavelet Analysis, Fractional Transform Theory, Image Processing, Financial Risk Analysis, Categorical Data Analysis, Reliability Theory and Applied Probability.

The department offers high-quality programs at postgraduate level, M.Sc.(Mathematics) and Ph.D.(Mathematics) catering mathematical interests of students in various areas of pure and applied mathematics. The institute has also approved two year M.Tech program in Data and Computational Sciences, a four-year M.Sc-M.Tech program in Data and Computational Sciences and an M.Tech-Ph.D. dual degree program in Data and Computational Sciences to be offered by the department of Mathematics, and are expected to commence from the upcoming academic session. Following are the Faculty Members associated with the department.

Name	Research Areas
 Gaurav Bhatnagar *Head of Department*	Wavelet Analysis, Fractional Transform Theory, Multimedia Security, Image Processing, Information Fusion
 Kirankumar R. Hiremath	Theoretical, mathematical and computational aspects of wave-matter interactions
 Puneet Sharma	Topological Dynamics, Low Dimensional Chaos
 V. V. M. S. Chandramouli	Dynamical Systems, Renormalization in Low-Dim Dynamics
 Vivek Vijay	Financial Risk Analysis, Categorical Data Analysis, Regression

The Department of Mechanical Engineering primarily focuses on imparting quality education and preparing students to face the future technological challenges in the field of Mechanical engineering. The vision of the Department is to enhance the research environment and to innovate in pedagogy to address the challenges of socio-economic and human resource development. The Department is committed to high quality research by Faculty Members and Students in the pursuit of excellence in teaching.

The department offers B. Tech. in Mechanical Engineering providing specializations across different domains in Mechanical engineering. The department also offers high quality postgraduate programs, M.Tech.(Mechanical Engineering) and Ph.D.(Mechanical Engineering) with a broad range of specializations. The institute has approved to offer minor degrees in Management and Entrepreneurship for B. Tech. students and to offer interdisciplinary specializations in the emerging areas such as Artificial Intelligence (AI), Data and Computational Science, Smart Healthcare, Energy Materials and Cyber Physical Systems (CPS). All approved minor degrees are expected to be offered from upcoming academic session.

The department offers a high quality Ph.D. program along different technology tracks. The institute has approved two state-of-the-art M.Tech. programs, M.Tech. in Thermofluids Engineering and M.Tech in Advanced Manufacturing and Design and a dual degree (M. Tech. + Ph. D.) program to be offered by Department of Mechanical Engineering. The programs are expected to commence from the upcoming academic session. The department is well-equipped with laboratories in different domains of Mechanical Engineering. The department has vast variety of computational tools such as ANSYS, ABAQUS, OpenFOAM, Solidworks, Hyperworks, Creo, Tecplot, MATLAB etc. along with high end computational facilities. The department has active collaborations with AIIMS Jodhpur, General Electric, Thermax, DRDO, ISRO, TCS Innovation Lab, TVS Motor Company to name a few. The department has been attracting various sponsored projects from R&D organizations since its inception.

Technology Tracks include the following.

1. Additive Manufacturing
2. Conventional and Non-Conventional Machining
3. Casting, Welding and Forming
4. Non-linear Vibration
5. MEMS
6. Robot Modelling and Control
7. All Terrain Vehicles
8. Unmanned Aerial Vehicles
9. Energy and Propulsion
10. Solar Resource Assessment
11. Solar Thermal Storage
12. Solar Thermal Applications
13. Multi-phase Flow and Heat Transfer
14. Air Cooled Condensers
15. Compact Heat Exchanger
16. Heat Transfer Enhancement
17. Water energy Nexus
18. Technologies for Rural Development
19. Smart Manufacturing and Industry 4.0
20. Metrology and Quality Control

The following Faculty Members are associated with the department.

Name	Research Areas
 Kaushalkumar A. Desai *Head of Department*	Modeling of Manufacturing Processes, CAD/CAM, CNC Machining, Error compensation
 Anand Krishnan Plappally	Water, Water Management and Characterization of Engineered Materials
 B. Ravindra	Design, Dynamics, Vibration and Control
 Barun Pratiher	Dynamics of Machines and Structures, Flexible Robots, MEMS, Rotor Dynamics, Nonlinear Oscillations
 C. Venkatesan	Helicopter Dynamics and Aeroelasticity, Design of Autonomous Mini Helicopters, and Smart Structure Analysis
 Hardik B. Kothadia	Multiphase Flow, Boiling and Condensation, Heat Transfer, Fluid Mechanics, Gasification
 Prodyut R. Chakraborty	Heat and mass transfer, Latent heat based storage device for high temperature applications, Alloy solidification process, Active and passive solar cooling systems, Electronic cooling
 Rahul Chibber	Welding and joining, Manufacturing and materials processing, Mechanical behaviour of materials

Suril V. Shah

Robotics, Multibody Dynamics and Control

Sudipto Mukhopadhyay

Energy Technology, Combustion Technology, Computational Fluid Dynamics, Turbulent flows, Sprays

DEPARTMENT OF METALLURGICAL & MATERIALS ENGINEERING

The Institute has started Department of Metallurgical & Materials Engineering in January 2017. The department is currently offering two degree programs, namely, M.Tech., and Ph.D. in Metallurgical & Materials Engineering. The focus areas of the department are:
(1) Electronic Materials, Biomaterials, Optical and Magnetic Materials and Devices,
(2) Extraction of Metals and Mineral Processing,
(3) Integrated Computational Materials Engineering,
(4) Materials Processing and Process Development,
(5) Physical and Mechanical Metallurgy of Materials, and
(6) Thermodynamics and Kinetic Processes in Materials.

The following Faculty Members are associated with the department.

Name	Research Areas
 Bhagwati P. Kashyap *Professor In-Charge*	Thermo-mechanical treatment and Super-plasticity, Grain boundary phenomena, Creep and low temperature deformation, Microstructure - flow property correlations, and Light metals and alloy development
 Abir Bhattachayya	Mechanical Behavior of Materials, Fatigue of Bearing Steels, High-strain rate Deformation of Materials, Indentation Response of Materials
 Appala Naidu Gandi	First Principles Calculations, Phase Filed Modelling
 Ravi, K. R.	Computational Thermodynamics for Alloy Design, Solidification Studies on light alloys, Biodegradable magnesium alloys, Self-cleaning coating

The following activities were organized by the department.

International Day of Light Celebration

International Day of Light was observed on 16 May 2018. On this occasion, the department organized a lecture by Professor B. M. Arora, an eminent scientist and academic from IIT Bombay.

DEPARTMENT OF PHYSICS

A visible research in fundamental Physics along with its applications is the major theme of Physics department at IIT Jodhpur. The faculty members carry out research in the field of Astrophysics, Condensed Matter Physics & Material Science, Particle Physics, Experimental and Theoretical Quantum Optics, Quantum Information and Foundations of Quantum Mechanics. The research facilities available in the department include SQUID magnetometer, Physics Property Measurement Systems (PPMS), Raman Spectrometer and Scanning Tunnelling Microscope (STM).

Following are the faculty members associated with the department.

Name	Research Areas
 Sampat Raj Vadera *Head of Department*	Solid State Physics, Materials Science, Nanoscience and Nanotechnology, Stealth Materials, Stealth Technology
 Ambesh Dixit	Semiconductors, multifunctional ferroics & materials for energy-fabrication & characterization, Photovoltaic materials & devices ab initio DFT study and device simulations
 Ashutosh Kumar Alok	Particle Physics and Cosmology
 Durgamadhab Mishra	Magnetic thin films and nanoparticles, Permanent Magnets, Synchrotron and Neutron Scattering and X-ray imaging
 Monika Sinha	Astrophysics, Astroparticle physics
 Satyajit Sahu	Information Processing in Biological Systems
 Subhashish Banerjee	Open Quantum Systems; Quantum Information; Non-Equilibrium Statistical Mechanics; Quantum Optics

Somnath Ghosh

Light in disordered and complex systems, Mid-IR photonics and unconventional devices

V. Narayanan

Optics and Solar Field Design, Plasmonics, Laser Produced Plasmas (LPP), Pulsed Laser Deposition (PLD), Plasma Diagnostics (Interferometry & Optical Emission Spectroscopy (OES)), Laser Matter Interaction and Laser Cluster Interaction

The department also has a Scholar-in-Residence, Professor K. L. Chopra, Advisor, Thin Film Laboratory, IIT Delhi.

Staff Members

The following are the Staff Members engaged in various Offices and Departments of the Institute.

Academic Staff Members	
Office of Library	
Kshema Prakash	Deputy Librarian
Amit Kumar Soni	Senior Library & Information Assistant
Chunni Chhatwani	Senior Library & Information Assistant
Kamleshkumar J. Patel	Senior Library & Information Assistant
Administrative Staff Members	
Office of Academics	
Gaurav Nigam	Superintendent
Sandeep Singh Chandel	Superintendent
Rashmi Dhyani	Junior Assistant
Ram Niwas Dhayal	Junior Assistant
Office of Accounts	
Ashish Kachhawaha	Superintendent
Naresh Chouhan	Junior Superintendent
Rakesh Kumar	Junior Assistant
Narayan Dadhich	Junior Assistant
Sapna Sankhla	Junior Assistant
Office of Administration	
Amardeep Sharma	Deputy Registrar
Neeraj Kumar	Junior Assistant
Office of Alumni Relations & Student Placement	
Gurpreet Kaur Virdi	Assistant
Office of Establishment	
Laxman Singh	Junior Superintendent
Abhay Kumar Awasthi	Junior Assistant
Biswajit Pramanik	Junior Assistant
Office of Infrastructure Engineering	
Sanjeeb Mukherjee	Senior Executive Engineer (Civil)
Anand Padegaonkar	Assistant Executive Engineer (Civil)
Vinay Kumar	Assistant Engineer (Electrical)
Siddarth Mukherjee	Assistant Engineer (Civil)
Ashish Kumar	Junior Engineer (Civil)
Dheeraj Updhyay	Junior Assistant
T. Madhavi Lata	Stenographer
Office of Internal Audit	
Sharad Srivastava	Senior Assistant

Office of Recruitment	
Darsh Kumar Khatwani	Assistant
Shyam Sunder Singh	Junior Assistant
Office of Research & Development	
Ishmeet Singh	Junior Assistant
Office of Students	
Sandeep Singh Chandel	Superintendent
Arjun Das	Physical Training Instructor
Mahesh Kumar Meena	Junior Assistant
Office of Stores & Purchase	
Sharabh Pradhan	Junior Superintendent
Shakti Ranjan Patra	Assistant Registrar
Suresh Chandra Phulara	Junior Assistant
Ganesh Kumawat	Junior Assistant
Administrative Staff Members engaged in Offices of Departments	
Dhani Ram Choudhary	Stenographer
Swati Kushwaha	Junior Assistant
Trilotama Singh	Junior Assistant
Shashank Choudhary	Junior Assistant
Technical Staff Members	
Department of Bioscience & Bioengineering	
Bharat Pareek	Junior Technical Superintendent
Poonam	Junior Technician
Department of Chemistry	
Ganpat Chowdhary	Junior Technician
Shubham Pandey	Junior Technician
Department of Computer Science & Engineering	
Rimpesh Katiyar	Technical Superintendent
Rinkesh Kumar Mangal	Junior Technical Superintendent
Dheerendra Kumar Yadav	Junior Technical Superintendent
Poonam Chand Sankhla	Junior Technical Superintendent
Ram Singh Ratnu	Technician
Vivek Verma	Junior Technician
Department of Electrical Engineering	
Bhanprakash Goswami	Junior Technical Superintendent
Gajraj Sharma	Junior Technician
Hemraj Dhodhawat	Junior Technician
Kailash Chander	Junior Technician
Naveen Kumar	Junior Technician

Department of Mechanical Engineering	
Chandra Veer Charan	Assistant Workshop Superintendent
Praveen Suthar	Junior Technician
Bhagya Wardhan	Junior Technician
Rambeer Singh	Junior Technician
Dhavalbhai M. Raiyani	Junior Technician
Ravi Jangid	Junior Technician
Department of Metallurgical & Materials Engineering	
Sampatlal N. Suthar	Junior Technician
Department of Physics	
Narendra Kumar Singh	Technical Superintendent

ACADEMICS

Current Academic Programs

Currently, the Institute offers the following four sets of Programs:

1. Bachelor of Technology Programs:
    1. B.Tech. (Biotechnology)
    2. B.Tech. (Computer Science and Engineering)
    3. B.Tech. (Electrical Engineering)
    4. B.Tech. (Mechanical Engineering)

2. Master of Science Programs
    1. M.Sc. (Chemistry)
    2. M.Sc. (Mathematics)
    3. M.Sc. (Physics)

3. Master of Technology Programs
    1. M.Tech. (Bioscience & Bioengineering)
    2. M.Tech. (Computer Science & Engineering)
    3. M.Tech. (Electrical Engineering)
    4. M.Tech. (Mechanical Engineering)
    5. M.Tech. (Metallurgical & Materials Engineering)

4. Doctor of Philosophy Programs
    1. Ph.D. with specialization in Biology
    2. Ph.D. with specialization in Chemistry
    3. Ph.D. with specialization in Computer Science & Engineering
    4. Ph.D. with specialization in Electrical Engineering
    5. Ph.D. with specialization in Humanities & Social Sciences
    6. Ph.D. with specialization in Mathematics
    7. Ph.D. with specialization in Mechanical Engineering
    8. Ph.D. with specialization in Metallurgical & Materials Engineering
    9. Ph.D. with specialization in Physics

Upcoming Academic Programs

Senate of the Institute has approved the following new programs from AY 2019-20.

1. Master of Science - Master of Technology Programs
    1. Mathematics & Data Science

2. Master of Technology Programs
    1. M.Tech. (Computer Science & Engineering)
    2. M.Tech. (Artificial Intelligence)
    3. M.Tech. (Cyber Physical Systems)
    4. M.Tech. (Sensors and Internet of Things)
    5. M.Tech. (Data and Computational Sciences)
    6. M.Tech. (Advanced Manufacturing and Design)
    7. M.Tech. (Thermofluids Engineering)
    8. M.Tech. (Metallurgical & Materials Engineering)

3. Master of Technology - Doctor of Philosophy (M.Tech.-Ph.D.) Dual Degree Programs
    1. M.Tech.-Ph.D. Dual Degree (Bioscience & Bioengineering)
    2. M.Tech.-Ph.D. Dual Degree (Computer Science & Engineering)
    3. M.Tech.-Ph.D. Dual Degree (Artificial Intelligence)
    4. M.Tech.-Ph.D. Dual Degree (Communication Engineering)
    5. M.Tech.-Ph.D. Dual Degree (Cyber Physical Systems)
    6. M.Tech.-Ph.D. Dual Degree (Sensors and Internet of Things)
    7. M.Tech.-Ph.D. Dual Degree (Data and Computational Sciences)
    8. M.Tech.-Ph.D. Dual Degree (Metallurgical & Materials Engineering)
    9. M.Tech.-Ph.D. Dual Degree (Design Engineering)
    10. M.Tech.-Ph.D. Dual Degree (Advanced Manufacturing and Design)
    11. M.Tech.-Ph.D. Dual Degree (Thermofluids Engineering)

4. Doctor of Philosophy Program in Inter-disciplinary Areas
    1. Ph.D. (AUV Technologies)
    2. Ph.D. (Cognitive Science)
    3. Ph.D. (Digital Humanities)
    4. Ph.D. (IOT & Applications)
    5. Ph.D. (Quantum Information and Computation)
    6. Ph.D. (Smart Healthcare)
    7. Ph.D. (Space Technologies)

Ph.D. Theses

The following Ph.D. Students defended their theses successfully this year:

S.No.	Name of the Student	Title of Thesis	Supervisor	Center / Focus Group / Department	Date of Defense
1.	Rakesh Kanji	Systems modeling of target and chemical profiles of drugs to predict their phenotypic side effects with canonical correlation analysis	HoD Bioscience & Bioengineering and Ganesh Bagler	Bioscience & Bioengineering	2 April 2018
2.	Rahul Badhwar	Systems Biological Investigations of Brain Networks	HoD Bioscience & Bioengineering and Ganesh Bagler	Bioscience & Bioengineering	18 April 2018
3.	Lokesh Saini	Ferroics and Their Rubber Composites for Wide-band Microwave Absorption	Ambesh Dixit and S.R. Vadera	Physics	4 June 2018
4.	Rohitash Kumar	Design, Development and Characterization of Low and High Temperature Phase Change Materials for Thermal Energy Storage Applications	Ambesh Dixit	Physics	17 July 2018
5.	Kapil Sharma	Utilizing Topology Structures For Delay Sensitive Traffic in Data Center Network	B. Venkata Ramana	Computer Science & Engineering	13 July 2018
6.	Ranveer Singh	A Measure of Balance, Spectra of Signed Graphs, and a Novel Algorithm for Matrix Determinant and Permanent	Bibhas Adhikari	Mathematics	19 July 2018
7.	Rohan Sharma	Complex network generative models using corona product of graphs	Bibhas Adhikari	System Science and associated with the Department of Mathematics	19 July 2018
8.	Parmod Kumar Paul	Technical Analysis for Short-Term Forecasting of Financial Data and Turn of the Year Effect	Vivek Vijay	Mathematics	5 October 2018
9.	Parvinder Singh	Analysing Multiqubit Entanglement, Nonlocality and Quantum Information Processing Protocols	Atul Kumar	System Science & Department of Chemistry	8 October 2018
10.	Om Prakash Mahela	Power Quality Assessment and Mitigation in Distribution System with Renewable Energy Penetration	Abdul Gafoor Shaik	Electrical Engineering	11 October 2018

S.No.	Name of the Student	Title of Thesis	Supervisor	Center / Focus Group / Department	Date of Defense
11.	Suresh Dahiya	Massive MIMO Systems: Channel Modeling and Efficient System Architecture	Arun Kumar Singh	Electrical Engineering	13 October 2018
12.	Vibha Sahlot	Conflicts in Geometry	Subhashish Banerjee	Computer Science & Engineering	8 January 2019
13.	Supriyo Dutta	Graph Theoretic Aspects of Quantum Information Processing	Subhashish Banerjee	Mathematics	11 January 2019
14.	Amrita Kaurwar	Characterization of Clay Ceramics based on reuse of Organic residue and Industrial wastes for Point of Use Water Filteration Application	Anand Krishnan Plappally	Mechanical Engineering	28 January 2019
15.	Rakesh Joshi	Experimental Investigation on Development and Structural Integrity Assessment of Glass to Metal Joint	Rahul Chhibber	Mechanical Engineering	25 January 2019
16.	Manish Raghav	Dynamics of a General Non-autonomous Dynamical System	Puneet Sharma	Mathematics	7 February 2019
17.	Goutam Kumar Gupta	Cu2ZnSnS4 related Chalcogenide Absorbers: Thin Films and Heterostructure Photovoltaic Devices	Ambesh Dixit	Center for Solar Energy and associated with the Department of Physics	14 February 2019
18.	Vibhuti Joshi	Promising Molecular Modulations of E3 Ubiquitin Ligases Regulate Cellular Proliferation and Suppresses Misfolded Proteins Accumulation	Amit Kumar Mishra	Bioscience & Bioengineering	22 February 2019
19.	Arun Kumar Upadhyay	Innovative Harnessing of Molecular Protein Quality Control Strategies Inhibits: Aberrant Protein Aggregation and Deregulated Proliferation	Amit Kumar Mishra	Bioscience & Bioengineering	27 February 2019
20.	Vipin Joshi	Modeling and Simulation of Gallium Nitride High Electron Mobility Transistors and Optimisation of Buffer Layer	Shree Prakash Tiwari	Electrical Engineering	27 February 2019

Collaborations

The Institute has signed Memoranda of Understanding (MoUs) with several international and national universities, agencies for furthering cooperation on specific fronts. These MoUs are:

(a) International Institutes and Universities

1. *Central Connecticut State University, New Britain, Connecticut, USA (08 October 2018)*

   To implement academic exchange and cooperation in teaching, research and training for the advancement and dissemination of learning.

(b) National Institutes and Universities

1. *National Law University, Jodhpur (Continuing)*

   To collaborate in various academic activities in the spheres of expertise.

2. *All India Institute of Medical Sciences, Jodhpur (10 July 2018)*

   To collaborate in various academic activities in the spheres of expertise.

3. *All India Institute of Medical Sciences, Jodhpur (06 September 2018)*

   For development of joint Center for Healthcare Technologies.

4. *CSIR – Central Electronics Engineering Research Institute (21 January 2019)*

   For development of exchange programs based on their respective academic and educational needs.

5. *CSIR - Institute of Genomics & Integrative Biology, New Delhi (26 February 2019)*

   For the joint pursuit of education, advancement of research and product development.

6. *National Digital Library of India, a project of MHRD (26 February 2019)*

   Collaboration to carry out research and develop a production quality Digital Representation Generation tool for Bangla scanned image textual contents.

7. *National Coordinating Institute IIT Delhi (Unnat Bharat Abhiyan) and Regional Coordinating Institute, IIT Jodhpur (06 March 2019)*

   MoU in line with Unnat Bharat Abhiyan, Ministry of Human Resource Development

(c) Industries

1. *NVIDIA (30 January 2019)*

   To develop next generation AI systems at IIT Jodhpur's AINEXT Centre, with NVIDIA as a key technology and computing platform partner.

RESEARCH

R & D Projects

Sponsored Research Projects

Department of Bioscience & Bioengineering				
(1)	**How LRASM1 gene regulates cellular protein quality control functions? Implications in neurodegeneration and ageing** *Science and Engineering Research Board (SERB), Department of Science & Technology (DST), Government of India*			
	PI: Amit Mishra	*Rs. 23.10 Lakhs*	*Start Date: 26 Sep 2016*	*End Date: 25 Sep 2019*
(2)	**Molecular studies to delineate the role of nitric oxide/nitric oxide synthase in neutrophil maturation, survival and functions** *Science and Engineering Research Board (SERB), Department of Science & Technology (DST), Government of India*			
	PI: Madhu Dixit	*Rs. 88.40 Lakhs*	*Start Date: 15 May 2018*	*End Date: 23 Feb 2021*
(3)	**Bioremediation of low level wastes including denitrification using microbial fuel cells** *Board of Research in Nuclear Sciences (BRNS), Department of Atomic Energy (DAE), Government of India*			
	PI: Meenu Chhabra; Co-PI: Atul Kumar	*Rs. 22.73 Lakhs*	*Start Date: 12 Mar 2018*	*End Date: 30 Sep 2018*
(4)	**Development of low cost Microbial Carbon capture (MCC) cells for algae cultivation and powers generation** *Department of Biotechnology (DBT), Government of India*			
	PI: Meenu Chhabra	*Rs. 77.59 Lakhs*	*Start Date: 24 Dec 2018*	*End Date: 23 Dec 2019*
(5)	**Role of Centriole Protein, CPAP, in Neurodevelopmental disorder** *Science and Engineering Research Board (SERB), Department of Science & Technology (DST), Government of India*			
	PI: Priyanka Singh	*Rs. 38.74 Lakhs*	*Start Date: 28 Nov 2018*	*End Date: 27 Nov 2020*
(6)	**Hospital-associated ESKAPE pathogens: Unraveling novel regulatory layers controlling virulence and persistence** *The Wellcome Trust / DBT India Alliance*			
	PI: Shankar Manoharan	*Rs. 1.64 Cr.*	*Start Date: 17 Jan 2018*	*End Date: 31 Aug 2022*
(7)	**Deposition of particulate matter in lungs** *Board of Research in Nuclear Sciences (BRNS), Department of Atomic Energy (DAE), Government of India*			
	PI: Sushmita Jha	*Rs. 24.79 Lakhs*	*Start Date: 12 Mar 2014*	*End Date: 31 Mar 2019*
(8)	**Expression analysis of inflammasome-forming NLRs in gliomas for identification of novel therapeutic interventions** *Department of Biotechnology (DBT), Government of India*			
	PI: Sushmita Jha	*Rs. 42.15 Lakhs*	*Start Date: 06 Sep 2017*	*End Date: 05 Sep 2020*
(9)	**Integrative Approach for Identification of Disease Genes of Type II Diabetes** *Science and Engineering Research Board (SERB), Department of Science & Technology (DST), Government of India*			
	PI: Sushmita Paul	*Rs. 26.76 Lakhs*	*Start Date: 30 Mar 2017*	*End Date: 29 Mar 2020*
Department of Chemistry				
(10)	**Multiparticle Entanglement, Nonlocality and Quantum Information processing-Analysing the role and applications of quantum correlations** *Science and Engineering Research Board (SERB)), Department of Science & Technology (DST), Government of India*			
	PI: Atul Kumar	*Rs. 19.50 Lakhs*	*Start Date: 18 Mar 2019*	*End Date: 18 Mar 2022*
(11)	**Development of Catalytic Diastereo and Enantiodivergent Tandem Reactions** *Department of Science & Technology (DST), Government of India*			
	PI: Nirmal Kumar Rana	*Rs. 35 Lakhs*	*Start Date: 02 July 2018*	*End Date: 01 Nov 2020*

(12)	**Solid State High Energy Density Lithium Ion Rechargeable & Technlogy** *Indo-Portugal Research Center, Minho, Portugal*			
	PI: Rakesh Kumar Sharma	*Rs. 6.45 Lakhs*	*Start Date: 26 June 2014*	*End Date: 22 May 2018*
(13)	**Catalytic Upgrading of Bio-Oil to Transport Fuel** *Department of Biotechnology (DBT), Government of India*			
	PI: Rakesh Kumar Sharma	*Rs. 94.79 Lakhs*	*Start Date: 24 Dec 2014*	*End Date: 23 Dec 2019*
(14)	**Impact of Rainwater Harvesting on Groundwater Quality in India with Specific Reference to Fluoride and Micropollutants** *Department of Biotechnology (DBT), Government of India*			
	PI: Rakesh Kumar Sharma	*Rs. 75.27 Lakhs*	*Start Date: 10 May 2018*	*End Date: 09 May 2021*
(15)	**New Single Source Precursors for Potential Nanostructured Bi2Te3/sb2Te3 System Based Thermoelectric Materials** *Science and Engineering Research Board (SERB), Department of Science & Technology (DST), Government of India*			
	PI: Ramesh K. Metre	*Rs. 32.12 Lakhs*	*Start Date: 05 Oct 2017*	*End Date: 04 Oct 2020*
(16)	**Development of electrochemical energy storage from carbon rich waste** *Science and Engineering Research Board (SERB), Department of Science & Technology (DST), Government of India*			
	PI: Ritu Gupta; *Co-PI: Rakesh Kumar Sharma*	*Rs. 37.17 Lakhs*	*Start Date: 02 Mar 2017*	*End Date: 01 Mar 2020*
(17)	**Solid state Nuclear Magnetic Resonance (NMR) assessment of zinc oxide (ZnO) nanomaterial based drug delivery systems** *Science and Engineering Research Board (SERB), Department of Science & Technology (DST), Government of India*			
	PI: Samanwita Pal; *Co-PI: Ambesh Dixit*	*Rs. 34.45 Lakhs*	*Start Date: 28 Aug 2017*	*End Date: 27 Aug 2020*
(18)	**Tandem Annulations Involving Metallocarbenes: Towards Diverse Molecular Architectures** *Science and Engineering Research Board (SERB), Department of Science & Technology (DST), Government of India*			
	PI: Sandip Murarka	*Rs. 33 Lakhs*	*Start Date: 10 Jul 2018*	*End Date: 09 July 2021*
Department of Computer Science & Engineering				
(19)	**Development of Multimodal Search Framework For Architectural Floor Plan** *Science and Engineering Research Board (SERB), Department of Science & Technology (DST), Government of India*			
	PI: Chiranjoy Chattopadhyay	*Rs. 24.5 Lakhs*	*Start Date: 30 Mar 2017*	*End Date: 29 Mar 2020*
(20)	**Information Access from Document Images of Indian Languages** *Ministry of Human Resource Development (MHRD) & Ministry of Electronics & Information Technology (MeitY)*			
	PI: Gaurav Harit	*Rs. 40 Lakhs*	*Start Date: 25 Oct 2017*	*End Date: 24 Oct 2020*
(21)	**Netapp Faculty Fellowship: Edge Computing** *NetApp*			
	PI: Subhajit Sidhanta	*Rs. 5 Lakhs*	*Start Date: 02 Feb 2018*	*End Date: 01 Feb 2020*
(22)	**Indian Heritage in Digital Space of Interdisciplinary cyber physical Systems** *Department of Science & Technology (DST)*			
	PI: Santanu Chaudhury	*Rs. 12.75 Cr.*	*Start Date: 25 Mar 2019*	*End Date: 24 Mar 2022*
(23)	**Software as a service for OCR system for Odia Documents Images** *Ministry of Electronics & Information Technology (MeitY)*			
	PI: Santanu Chaudhury; *Co-PI: Gaurav Harit*	*Rs. 20.16 Lakhs*	*Start Date: 26 Mar 2019*	*End Date: 25 Sep 2020*
(24)	**Digital Representation Generation for Efficient Retrieval of Bangla Document Images in Digital Libraries** *Indian Institute of Technology Kanpur & Ministry of Human Resource Development (MHRD)*			
	PI: Santanu Chaudhury; *Co-PI: Gaurav Harit*	*Rs. 76 Lakhs*	*Start Date: 01 Mar 2019*	*End Date: 31 Jan 2020*

Department of Electrical Engineering					
(25)	**Transforming Healthcare through Tech-dinor** *IBM*				
	PI: Sandeep Kumar Yadav	*Rs. 14.25 Lakhs*	*Start Date: 02 Dec 2014*	*End Date: 01 Dec 2016*	*Project Extended*
(26)	**Substrate Integrated Coaxial Line (SICL) based Circuits and Systems for Millimeter Wave Application** *DST*				
	PI: Soumava Mukherjee	*Rs. 35 Lakhs*	*Start Date: 20 Sep 2017*	*End Date: 19 Sep 2022*	
(27)	**Design and Development of Midrange(>=10 km) RF Transceiver system to transmit Nuclear Radiation Sensor Data** *Defence Research & Development Organization, Jodhpur, Government of India*				
	PI: Arpit Khandelwal; *Co-PI: Suril V. Shah*	*Rs. 9.60 Lakhs*	*Start Date: 17 Dec 2018*	*End Date: 16 Dec 2019*	
(28)	**Computationally efficient fixed complexity sphere decodes for multiuser MIMO communications** *Science and Engineering Research Board (SERB), Department of Science & Technology (DST), Government of India*				
	PI: Arun Kumar Singh	*Rs. 22.82 Lakhs*	*Start Date: 13 Jan 2016*	*End Date: 12 Jan 2019*	
(29)	**Design and development of NavIC Receiver** *Ministry of Electronics & Information Technology (MeitY), Government of India*				
	PI: Arun Kumar Singh	*Rs. 64.55 Lakhs*	*Start Date: 18 Oct 2017*	*End Date: 17 April 2020*	
(30)	**Hub and Spoke Consortia for e2W and e3W Electric Drives-Design Development of Prototyping of Advanced IM and Synchronous Reluctance Drives and Vehicle Integration for e2W and e3W Applications** *Department of Heavy Industry (NFTDC), Government of India*				
	PI: Deepak Fulwani	*Rs. 24.40 Lakhs*	*Start Date: 31 Aug 2018*	*End Date: 30 Aug 2020*	
(31)	**Design and Development of Tunable RF Filter Based on Ferroelectric Thin Film by Sputtering** *Defense Research & Development Organization (DRDO), Government of India*				
	PI: Mahesh Kumar; *Co-PI: Satyajit Sahu*	*Rs. 20 Lakhs*	*Start Date: 04 Dec 2017*	*End Date: 03 Dec 2019*	
(32)	**Noise-enhanced Edge-preserving Image Denoising using Stochastic Resonance** *Science and Engineering Research Board (SERB), Department of Science & Technology (DST), Government of India*				
	PI: Rajlaxmi Chouhan	*Rs. 26.64 Lakhs*	*Start Date: 17 Mar 2017*	*End Date: 16 Mar 2020*	
(33)	**Special Manpower development Program for Chips to System Design (SMDP-C2SD)/ Design of a Sensor Signal Conditioning System (I) & Multiprocessor Scheduling Alogrithms using Control Theoretic Approach (II)** *Department of Electronics & Information Technology (DeitY), Government of India*				
	PI: Shree Prakash Tiwari; *Co-PI: Deepak Fulwani*	*Rs. 10.43 Lakhs*	*Start Date: 11 Aug 2015*	*End Date: 31 Mar 2020*	
(34)	**High Performance Low Voltage Flexible Organic Field-Effect Transistors for Circuit and Sensing Applications** *Science and Engineering Research Board (SERB), Department of Science & Technology (DST), Government of India*				
	PI: Shree Prakash Tiwari	*Rs. 51.70 Lakhs*	*Start Date: 15 Sep 2018*	*End Date: 14 Sep 2021*	
Department of Humanities & Social Sciences					
(35)	**Wisdom as cognitive and motivational-emotional heuristics in ecologically rational decision making** *Department of Science & Technology, Government of India*				
	PI: Ankita Sharma	*Rs. 22.3 Lakhs*	*Start Date: 29 Apr 2015*	*End Date: 28 Apr 2018*	
(36)	**Where the Bougainvillea Blooms: Stories of Place from a Resilient Landscape** *M. R. A. R. Educational Foundation*				
	PI: Vidya Sarveswaran	*Rs. 0.5 Lakhs*	*Start Date: 04 Sep 2014*	*End Date: 03 Sep 2015*	*Project Extended*
(37)	**Public Outreach Grant** *The Rachel Carson Center for Environment and Society, Munich, Germany*				
	PI: Vidya Sarveswaran	*Rs. 1.06 Lakhs*	*Start Date: 05 Jun 2017*	*End Date: 04 Jun 2019*	

Department of Mathematics					
(38)	**Multimedia security based on biometrics for copyright protection and authentication** *Science and Engineering Research Board (SERB), Department of Science & Technology (DST), Government of India*				
	PI: Gaurav Bhatnagar	*Rs. 13.44 Lakhs*	*Start Date: 13 Nov 2014*	*End Date: 12 Nov 2017*	*Project Extended*
(39)	**Automorphism Groups of Induced Symbolic Systems** *National Board for Higher Mathematics (NBHM), Government of India*				
	PI: Puneet Sharma	*Rs. 3.32 Lakhs*	*Start Date: 31 Mar 2017*	*End Date: 30 Mar 2020*	
Department of Mechanical Engineering					
(40)	**Local Composite geotextile mats for soil and water conservation in western Rajasthan** *Science and Engineering Research Board (SERB), Department of Science & Technology (DST), Government of India*				
	PI: Anand Krishnan Plappally	*Rs. 19.80 Lakhs*	*Start Date: 30 Aug 2016*	*End Date: 29 Aug 2019*	
(41)	**Hybrid reactionless manipulation and visual serving of a satellite mounted robot for autonomous on orbit services** *DST*				
	PI: Suril V. Shah	*Rs. 35 Lakhs*	*Start Date: 27 Jan 2016*	*End Date: 28 Nov 2018*	
(42)	**Bifurcation and stability assessment of a highly lightweight rotor-bearing system with moving platform** *Science and Engineering Research Board (SERB), Department of Science & Technology (DST), Government of India*				
	PI: Barun Pratiher	*Rs. 21.80 Lakhs*	*Start Date: 17 Jul 2014*	*End Date: 16 Jul 2017*	*Project Extended*
(43)	**Performance Testing of ACC Tube Bundles Along With Establishing Their Theoretical Correlation** *Thermax SPX Energy Technologies Limited*				
	PI: Hardik Kothadia	*Rs. 29.15 Lakhs*	*Start Date: 27 Mar 2019*	*End Date: 26 Sep 2019*	
(44)	**Minimizing deflection induced surface errors in end milling of thin walled components** *Science and Engineering Research Board (SERB), Department of Science & Technology (DST), Government of India*				
	PI: Kaushal A. Desai	*Rs. 15.34 Lakhs*	*Start Date: 26 July 2016*	*End Date: 25 Jul 2019*	
(45)	**Thermal Design of PCM Cool and Warm Vest** *Defense Research & Development Organization (DRDO), Jodhpur, Government of India*				
	PI: Prodyut R. Chakraborty; *Co-PI: Akshay Prakash*	*Rs. 9.96 Lakhs*	*Start Date: 02 Dec 2015*	*End Date: 30 Jun 2019*	
(46)	**Cascaded Latent Heat Storage (CLHS) for high temperature CSP applications material development and characterization to lab-scale setup** *Department of Science & Technology (DST), Government of India*				
	PI: Prodyut R. Chakraborty; *Co-PI: Laltu Chandra, Ambesh Dixit, Saptarshi Basu*	*Rs. 58.44 Lakhs*	*Start Date: 03 Aug 2018*	*End Date: 02 Aug 2021*	
(47)	**Development of Highly Efficient Low Cost Insulation for power plants** *Ministry of Human Resource Development (MHRD), Government of India*				
	PI: Sudipto Mukhopadhyay	*Rs. 93.47 Lakhs*	*Start Date: 07 May 2018*	*End Date: 06 May 2021*	
Department of Physics					
(48)	**Synchrony Based Evolution of Various Biological and Artificial Systems to Understand Complex Computational Aspects** *Department of Science & Technology (DST), Government of India*				
	PI: Satyajit Sahu	*Rs. 35 Lakhs*	*Start Date: 13 Mar 2013*	*End Date: 12 Mar 2019*	
(49)	**Development of III-Nitrides thin film(s) for high frequency saw device applications** *Department of Science & Technology (DST), Government of India*				
	PI: Ambesh Dixit	*Rs. 22.62 Lakhs*	*Start Date: 01 Apr 2013*	*End Date: 30 Jun 2018*	
(50)	**Probing Magnetic Structures and Spin Flop transition in bulk and nanostructured FeVo4 Multiferroic System** *UGC-DAE, Department of Science & Technology (DST), Government of India*				
	PI: Ambesh Dixit	*Rs. 6.60 Lakhs*	*Start Date: 13 Jan 2016*	*End Date: 31 Dec 2019*	

(51)	**Development of nanostructured Cu2ZnSn(S/Se)4 thin films and their electronic properties for next generation solar photovoltaic applications** *Department of Science & Technology (DST), Government of India*			
	PI: Ambesh Dixit	*Rs. 37.22 Lakhs*	*Start Date: 18 Mar 2017*	*End Date: 17 Mar 2020*
(52)	**Application specialty optical fibers and towards 1D random lasers in disordered lattices** *Department of Science & Technology (DST), Government of India*			
	PI: Somnath Ghosh	*Rs. 35 Lakhs*	*Start Date: 28 Mar 2017*	*End Date: 27 Mar 2019*
(53)	**Investigation of magnetoelectric coupling in CiI-xTMxOMultiferroic System** *Board Of Research In Nuclear Sciences (BRNS), Mumbai*			
	PI: Ambesh Dixit	*Rs. 23.42 Lakhs*	*Start Date: 27 Mar 2014*	*End Date: 26 Mar 2017*
(54)	**Synthesis and study of properties of electrochemically active composites based on lithium intercalated silicates of iron, manganese,cobalt and having high electron conductivity corbosilicides of transition metal** *Department of Science & Technology (DST), Government of India*			
	PI: Ambesh Dixit	*Rs. 23.31 Lakhs*	*Start Date: 22 Nov 2018*	*End Date: 07 Nov 2020*
(55)	**Magnetars with Superfluid Core** *Science and Engineering Research Board (SERB), Department of Science & Technology (DST), Government of India*			
	PI: Monika Sinha	*Rs. 20.60 Lakhs*	*Start Date: 21 Mar 2018*	*End Date: 20 Mar 2021*
(56)	**Possibilities and Device Applications of Degenerate Optical Microcavities** *Science and Engineering Research Board (SERB), Department of Science & Technology (DST), Government of India*			
	PI: Somnath Ghosh	*Rs. 34.89 Lakhs*	*Start Date: 09 May 2018*	*End Date: 08 May 2021*
(57)	**A Study of quantum correlations : Squeezing and its various facets** *Council of Scientific and Industrial Research (CSIR), Government of India*			
	PI: Subhashish Banerjee	*Rs. 5.10 Lakhs*	*Start Date: 22 Aug 2016*	*End Date: 22 Aug 2019*

Consultancy Projects

Department of Chemistry			
(1)	**Towards the development of low-cost water quality sensors - Phase I** *Panasonic R&D Center of India*		
	PI: Rakesh Kumar Sharma	*Rs. 2.35 Lakhs*	*Start Date: 01 Oct 2014*
(2)	**Towards the development of low-cost water quality sensors - Phase II** *Panasonic R&D Center of India* *PI: Rakesh Kumar Sharma*		
	PI: Rakesh Kumar Sharma	*Rs. 64.37 Lakhs*	*Start Date: 16 Feb 2015*
Department of Mechanical Engineering			
(3)	**Short term course on Helicopter dynamics and handling qualities** *Defense Research & Development Organization (DRDO), Government of India*		
	PI: Suril Vijaykumar Shah; *Co-PI: C. Venkatesan*	*Rs. 3.72 Lakhs*	*Start Date: 15 Feb 2017*
(4)	**Visual Servoing of Mobile Manipulator with application to smart warehouse and smart factory** *Tata Consultancy Limited*		
	PI: Suril Vijaykumar Shah	*Rs. 10.12 Lakhs*	*Start Date: 01 Jul 2017*
(5)	**Helicopter Dynamics and Handling Quality** *ASTE Bangalore*		
	PI: C. Venkatesan	*Rs. 3.42 Lakhs*	*Start Date: 10 Dec 2018*

Fellowship Projects

Department of Bioscience & Bioengineering					
(1)	**Identification, assessment and characterization of E3 ubiquitin ligases implicated in the neurodegenerative diseases** *Ramalingaswami Fellowship Project*				
	PI: Amit Mishra	*Rs. 74.50 Lakhs*	*Start Date: 15 July 2011*	*End Date: 14 Feb 2017*	*Project Extended*
Department of Computer Science & Engineering					
(2)	**Young Faculty Research Fellowship (YFRF) of Visvesvarya PhD Scheme** *Ministry of Electronics and Information Technology (MeitY)*				
	PI: Gaurav Harit	*Rs. 22.2 Lakhs*	*Start Date: 22 Jan 2018*	*End Date: 21 Jan 2020*	
Department of Electrical Engineering					
(3)	**Visvesvaraya Ph.D Scholarship scheme for Electronics & IT (Part-2)** *Media Lab Asia*				
	PI: Anil Kumar Tiwari	*Rs. 3 Cr.*	*Start Date: 21 Oct 2014*	*End Date: 20 Oct 2019*	
(4)	**Visvesvaraya Ph.D Scholarship scheme for Electronics & IT (Part-2)** *Media Lab Asia*				
	PI: Anil Kumar Tiwari	*Rs. 3 Cr.*	*Start Date: 21 Oct 2014*	*End Date: 20 Oct 2019*	
(5)	**Young Faculty Research Fellowship (YFRF) of Visvesvarya PhD Scheme** *Ministry of Electronics and Information Technology (MeitY)*				
	PI: Shree Prakash Tiwari	*Rs. 37 Lakhs*	*Start Date: 24 Jan 2018*	*End Date: 23 Jan 2020*	
(6)	**Young Faculty Research Fellowship (YFRF) of Visvesvarya PhD Scheme** *Ministry of Electronics and Information Technology (MeitY)*				
	PI: Deepak Fulwani	*Rs. 37 Lakhs*	*Start Date: 01 Feb 2018*	*End Date: 31 Jan 2020*	
Department of Physics					
(7)	Design and Development of Metal Oxide Hole Transporting Material (HTM) based Inverted Perovskite Solar Cell (iPSC) Under Ambient Conditions *Department of Science & Technology (DST), Government of India*				
	PI: Ambesh Dixit	*Rs. 21.18 Lakhs*	*Start Date: 26 sep 2018*	*End Date: 25 Sep 2023*	

Other Projects

Department of Electrical Engineering				
(1)	**Design and Fabrication of Germanium on Silicon near infrared photodetectors** *Department of Science & Technology (DST), Government of India*			
	PI: Saravanan Rajamani	*Rs. 19.20 Lakhs*	*Start Date: 09 Aug 2017*	*End Date: 08 Aug 2019*
Department of Chemistry				
(2)	**Unnat Bharat Abhiyan** *Ministry of Human Resource Development (MHRD)*			
	PI: Ananya Debnath	*Rs. 3.77 Lakhs*	*Start Date: 06 Mar 2017*	*End Date: 05 Mar 2020*
Department of Mechanical Engineering				
(3)	**Unnat Bharat Abhiyan (RCI)** *IIT Delhi*			
	PI: Anand Krishnan Plappally	*Rs. 5 Lakhs*	*Start Date: 31 Mar 2019*	*End Date: 31 Mar 2020*

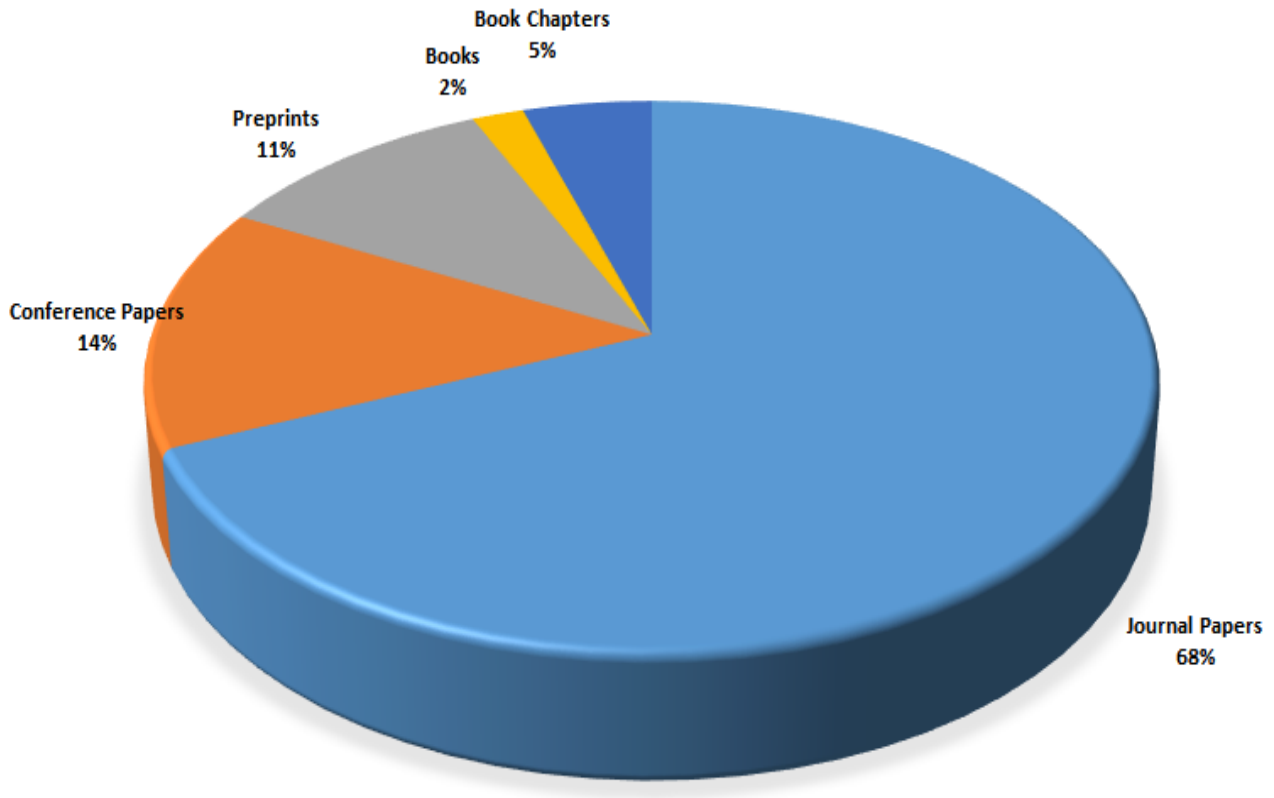
Appearing below are the details of completed sponsored research projects.

Department of Electrical Engineering				
(1)	**Ion-Beam Synthesis and Characterization of Gallium Nitride based Nanocrystals embedded in Si based Matrices for New-Generation Photodetector and Light-Emitter Applications.** *Department of Science & Technology (DST) International Division [DST-RMES Indo-Russia], Government of India*			
	PI: Mahesh Kumar	*Rs. 61.29 Lakhs*	*Start Date: 02 May 2015*	*End Date: 18 Apr 2019*
	Outcome: The development of modern optoelectronics, high-speed optical communication networks demands integrated and packaged light sources and detectors. LEDs, lasers and photodetectors based on III-nitride semiconductors show excellent technical qualities, but their integration into a Si electronics is associated with key technical difficulty such as large dislocation densities due to lattice mismatch and thermal expansion coefficient mismatch. Possible ways to overcome these problems are creation of III-N and III-oxide nanocrystals inside the Si, Si-based and other dielectric or semiconductor matrices by using ion implantation. These nanocrystals in a wide-bandgap dielectric matrix can act as the sources of UV emission, as well as UV-photodetectors.			
(2)	**Development of MEMS based gas sensors using RF sputtered transition metal doped ZnO Nanostructures** *Science and Engineering Research Board (SERB), Department of Science & Technology (DST), Government of India*			
	PI: Mahesh Kumar	*Rs. 24.17 Lakhs*	*Start Date: 09 Sep 2015*	*End Date: 08 Sep 2018*
	Outcome: Hydrogen is one of the most inflammable gases and have several potential applications. Due to low ignition energy and broad explosive range of hydrogen, safety precaution is highly recommended. Nowadays, Metal oxide based gas sensors are broadly used due to their good performance, low cost and compatibility with electronic circuits. However, these sensors have some drawback like poor selectivity and high operating temperature. Thus, it is highly desirable to improve the sensing properties using transition metal doping, decoration of noble nanoparticles, addition of p-type material and inclusion of carbonaceous nanomaterials.			
(3)	**Development of Tunable RF Filter Based on Ferroelectric Thin Film by Sputtering** *Indian National Science Academy*			
	PI: Mahesh Kumar	*Rs. 15 Lakhs*	*Start Date: 01 Mar 2016*	*End Date: 31 Mar 2019*
	Outcome: The continuous upgradation of communication system from radio to modern 4G enabled smart phones seeks for highly efficient and miniaturized frequency agile components. Ferroelectric materials, due to their inherent spontaneous electrical polarizability are the suitable candidates for various applications, especially for tuning purposes. For frequency agile components, the tunable materials should possess high tunability with low dielectric loss. Ba0.5Sr0.5TiO3 (BST) is the most promising perovskite oxide and has been extensively studied for RF and microwave applications.			
(4)	**Algorithms for Blind Signal Detection and Demodulation** *Defense Research & Development Organization (DRDO), Jodhpur, Government of India, Rs. 55.24 Lakhs*			
	PI: Sandeep Kumar Yadav	*Rs. 55.24 Lakhs*	*Start Date: 29 Jul 2015*	*End Date: 28 Jul 2018*
	Outcome: Algorithm has been implemented and tested on real time signals. Any order of ASK, PSK and QAM can be identified from the developed method in AWGN channel. This algorithm has also been deployed on FPGA (PXIe 7975R). Algorithm is optimized in order to use less space on FPGA and achieves the result in 82 msec. Different thresholds has been optimized by taking many signal (around 1000) each different symbol length. Developed algorithm on labVIEW achieves reliable results above 12 dB SNR while FPGA requires a SNR of 15 dB and above. Algorithm along with modulation type, estimates Symbol rate, carrier frequency offset, and symbol timing offset as well. Developed method is also independent to any phase offset and work without any requirement of training.			
Department of Physics				
(5)	**Probing the Foundations of Quantum Mechanics in Neutrino Oscillations** *Department of Science & Technology (DST), Government of India*			
	PI: Subhashish Banerjee; *Co-PI: Ashutosh K. Alok*	*Rs. 10.08 Lakhs*	*Start Date: 01 Jan 2017*	*End Date: 31 Dec 2018*
	Outcome: The foundations of quantum mechanics are usually studied in optical or electronic systems. In such systems, the interplay between the various measures of quantum correlations is well known. Due to the technical advances in high energy physics experiments, such as the short and long baseline neutrino experiments, it will be fruitful to test the foundations of quantum mechanics in such systems. This is achieved here in the context of neutrino oscillations.			

Patents & Publications

In 2018-19, our Faculty Members have filed 1 patent, published 143 research papers and articles in scholarly journals. 30 of their works have been covered as conference proceedings; 22 preprints, 4 edited books and 10 book chapters have been contributed.

Department	Patents Filed	Journal Papers	Conference Papers	Preprints	Books	Book Chapters	Total
Bioscience & Bioengineering		12	1			2	**15**
Chemistry	1	30		2			**37**
Computer Science & Engineering		4	5	2	1		**12**
Electrical Engineering		38	21	1			**61**
Humanities & Social Sciences		5			1	1	**7**
Mathematics		10		3			**13**
Mechanical Engineering		12	1	3	1	5	**22**
Metallurgical & Materials Engineering		11	1				**12**
Physics		21	1	11	1	2	**38**
Total	**1**	**143**	**30**	**22**	**4**	**10**	**217**



The following is the department-wise list of patents filed.

Department of Chemistry	
1.	Sunlight driven H2 production by water splitting from nanocomposite heterostructures and preparation method thereof ***Rakesh Kumar Sharma*** Application Number 201911008783 dated. 06 March 2019

The following is the department-wise list of publications.

Department of Bioscience and Bioengineering	
	Journal Papers
1.	Joshi, V., Upadhyay, A., Chhangani, D., Amanullah, A., Sharan, R. N., & **Mishra, A.** (2018). Gp78 involvement in cellular proliferation: Can act as a promising modulator for cell cycle regulatory proteins? Journal of Cellular Physiology, 233(10), 6352-6368. ISSN: 1097-4652. https://doi.org/10.1002/jcp.26618
2.	Kanuri, B. N., Rebello, S. C., Pathak, P., Agarwal, H., Kanshana, J. S., Awasthi, D., Gupta, A. P., Gayen, J. R., Jagavelu, K., & **Dikshit, M.** (2018). Glucose and lipid metabolism alterations in liver and adipose tissue pre-dispose p47^{phox} knockout mice to systemic insulin resistance. *Free Radical Research*, *52*(5), 568-582. ISSN: 1071-5762. https://doi.org/10.1080/10715762.2018.1453136
3.	Mishra, R., Upadhyay, A., Prajapati, V. K., & **Mishra, A.** (2018). Proteasome-mediated proteostasis: Novel medicinal and pharmacological strategies for diseases. *Medicinal Research Reviews, 38(6), 1916-1973*. ISSN: 0198-6325. https://doi.org/10.1002/med.21502
4.	Narula, A., Pandey, R. K., Khatoon, N., **Mishra, A.,** & Prajapati, V. K. (2018). Excavating chikungunya genome to design B and T cell multi-epitope subunit vaccine using comprehensive immunoinformatics approach to control chikungunya infection. *Infection, Genetics and Evolution*, *61*, 4–15. ISSN: 1567-1348. https://doi.org/10.1016/j.meegid.2018.03.007
5.	**Paul, S.,** & Brahma, D. (2019). An Integrated Approach for Identification of Functionally Similar MicroRNAs in Colorectal Cancer. *IEEE/ACM Transactions on Computational Biology and Bioinformatics*, *16*(1), 183–192. ISSN: 1557-9964. https://doi.org/10.1109/TCBB.2017.2765332
6.	Sarkar, S., Gulati, K., Kairamkonda, M., **Mishra, A.,** & Poluri, K. M. (2018). Elucidating protein-protein interactions through computational approaches and designing small molecule inhibitors against them for various diseases. Current Topics in Medicinal Chemistry, 18(20), 1719 - 1736. ISSN: 1568-0266. https://doi.org/10.2174/1568026618666181025114903
7.	Shahid, U., & **Singh, P.** (2018). Emerging Picture of Deuterosome-Dependent Centriole Amplification in MCCs. Cells, 7(10), 152. ISSN: 2073-4409. https://doi.org/10.3390/cells7100152
8.	Singh, S., & **Jha, S.** (2018). NLRs as Helpline in the Brain: Mechanisms and Therapeutic Implications. *Molecular Neurobiology*, 55(10), 8154–8178. ISSN: 1559-1182. https://doi.org/10.1007/s12035-018-0957-4
9.	Upadhyay, A., & **Mishra, A.** (2018). Amyloids of multiple species: are they helpful in survival? *Biological Reviews, 93(3), 1363-1386*. ISSN: 1469-185X. https://doi.org/10.1111/brv.12399
10.	Vijay, A., Arora, S., Gupta, S., & **Chhabra, M.** (2018). Halophilic starch degrading bacteria isolated from Sambhar Lake, India, as potential anode catalyst in Microbial fuel cell: A promising process for saline water treatment. *Bioresource Technology, 256, 391-398*. ISSN: 0960-8524. https://doi.org/10.1016/j.biortech.2018.02.044
11.	Sherine, J., Upadhyay, A., **Mishra, A.**, Kumar, D., **Pal, S.**, & Harinipriya, S. (2019). Ag(I) and Au(III) Mercaptobenzothiazole complexes induced apoptotic cell death. Scientific Reports, 9(1), 621. ISSN: 2045-2322. https://doi.org/10.1038/s41598-018-36801-6
12.	Vijay, A., **Chhabra, M.**, & Vincent, T. (2019). Microbial community modulates electrochemical performance and denitrification rate in a biocathodic autotrophic and heterotrophic denitrifying microbial fuel cell. Bioresource Technology, 272, 217–225. ISSN: 0960-8524. https://doi.org/10.1016/j.biortech.2018.10.030

	Conference Papers
1.	**Paul, S.**, & Bansal, S. (2018). Type 2 Diabetes Gene Identification Using an Integrated Approach from Single-Cell RNA Sequencing Data. In 2018 IEEE International Conference on Bioinformatics and Biomedicine (BIBM) (pp. 2152–2158). Madrid, Spain: IEEE. ISBN: 978-1-5386-5488-0. https://doi.org/10.1109/BIBM.2018.8621342
	Book Chapters
1.	Joshi, V., Upadhyay, A., Amanullah, A., Mishra, R., & **Mishra, A.** (2019). Predicting E3 Ubiquitin Ligases as Possible Promising Biomarkers for Brain Tumors. In K. K. Shukla, P. Sharma, & S. Misra (Eds.), *Molecular Diagnostics in Cancer Patients* (pp. 43–72). Singapore: Springer Singapore. ISBN: 9789811358777. https://doi.org/10.1007/978-981-13-5877-7_4
2.	**Paul, S.** (2019). Integration of miRNA and mRNA Expression Data for Understanding Etiology of Gynecologic Cancers. In X. Lai, S. K. Gupta, & J. Vera (Eds.), Computational Biology of Non-Coding RNA: Methods and Protocols (Vol. 1912, pp. 323–338). New York, NY: Humana Press. ISBN: 978-1-4939-8982-9. https://doi.org/10.1007/978-1-4939-8982-9_13
Department of Chemistry	
	Journal Papers
1.	Bahuguna, G., Ram, P., **Sharma, R. K.**, & **Gupta, R.** (2018). An Organo-fluorine Compound Mixed Electrolyte for Ultrafast Electric Double Layer Supercapacitors. ChemElectroChem, 5(19), 2767-2773. ISSN: 2196-0216. https://doi.org/10.1002/celc.201800908
2.	Chaubey, B., & **Pal, S.** (2018). Binding Interaction of Organofluorine-Serum Albumin: A Comparative Ligand Detected 19F NMR Analysis. The Journal of Physical Chemistry B, 122(40), 9409–9418. ISSN: 1520-5207. https://doi.org/10.1021/acs.jpcb.8b06583
3.	Dahiya, V., & **Pal, S.** (2018). The effect of paracetamol on 5 fluorouracil and bovine serum albumin interaction: A biophysical study. AIP Conference Proceedings, 1953(1), 140012. ISSN: 0094-243X. https://doi.org/10.1063/1.5033187
4.	Gahlaut, A., & **Paranjothy, M.** (2018). Unimolecular decomposition of formamide via direct chemical dynamics simulations. *Physical Chemistry Chemical Physics, 13(20), 8498-8505*. ISSN: 1463-9084. https://doi.org/10.1039/C8CP00541A
5.	Gupta, N., Rao, K. D. M., Srivastava, K., **Gupta, R.**, Kumar, A., Marconnet, A. M., Fisher, T. S., & Kulkarni, G. U. (2018). Cosmetically Adaptable Transparent Strain Sensor for Sensitively Delineating Patterns in Small Movements of Vital Human Organs. ACS Applied Materials & Interfaces, 10(50), 44126–44133. ISSN: 1944-8252. https://doi.org/10.1021/acsami.8b16282
6.	**Gupta, R**. (2018). Fabrication of stretchable compliant electrodes on PDMS with Au nanoparticles. Bulletin of Materials Science, 41(5), 114. ISSN: 0973-7669. https://doi.org/10.1007/s12034-018-1630-2
7.	Joshi, A., Singh, R., & **Kumar, A.** (2018). Concurrence and three-tangle of the graph. Quantum Information Processing, 17(12), 327. ISSN: 1573-1332. https://doi.org/10.1007/s11128-018-2085-5
8.	Krishnan, Y., Rajbangshi, P., & **Paranjothy, M.** (2018). Theoretical Study of Perbenzoate Anion Decomposition Pathways in the Gas Phase. *International Journal of Mass Spectrometry, 428, 8-14*. ISSN: 1387-3806. https://doi.org/10.1016/j.ijms.2018.01.011
9.	Kumar, D., & **Pal, S.** (2019). Solution dynamics of 5-fluorouracil entrapped in Poly Lactic-co-Glycolic Acid (PLGA) microsphere - A study with 1D selective NMR methods. Magnetic Resonance in Chemistry, 52(2-3), 118-128. ISSN: 1097-458X. https://doi.org/10.1002/mrc.4799
10.	Laishram, D., Shejale, K. P., **Gupta, R.**, & **Sharma, R. K.** (2018). Solution Processed Hafnia Nanoaggregates: Influence of Surface Oxygen on Catalytic Soot Oxidation. ACS Sustainable Chemistry & Engineering, 6(9), 11286–11294. ISSN: 2168-0485. https://doi.org/10.1021/acssuschemeng.8b00674
11.	Laishram, D., Shejale, K. P., **Gupta, R.,** & **Sharma, R. K.** (2018). Heterostructured HfO2/TiO2 spherical nanoparticles for visible photocatalytic water remediation. Materials Letters, 231, 225-228. ISSN: 0167-577X. https://doi.org/10.1016/j.matlet.2018.08.053
12.	Majumdar, D. J., Dey, S., Sreekumar, S. S., Das, S., Das, D., **Metre, R. K.**, Bankura, K., & Mishra, D. (2018). Nitrato, Pseudohalo-Linked Zn(II)/Cd(II) Schiff-Base Complexes with 1,3-Diimine Spacer Group: Syntheses, Crystal Structures, DFT, TD-DFT and Fluorescence Studies. ChemistrySelect, 3(43), 12371–12382. ISSN: 2365-6549. https://doi.org/10.1002/slct.201802996

13.	**Murarka, S.** (2018). N-(acyloxy)phthalimides as Redox-Active Esters in Cross Coupling Reactions. *Advanced Synthesis & Catalysis*, 360(9), 1735-1753. ISSN: 1615-4169. https://doi.org/10.1002/adsc.201701615
14.	**Murarka, S.**, & Antonchick, A. P. (2018). Metal-catalyzed oxidative coupling of ketones and ketone enolatess. *Synthesis, 50(11), 2150-2162*. ISSN: 1437-210X. https://doi.org/10.1055/s-0037-1609715
15.	Naz, E. G., Godara, S., & **Paranjothy, M.** (2018). Direct Chemical Dynamics Simulations of H3+ + CO Bimolecular Reaction. The Journal of Physical Chemistry A, 122 (43), 8497–8504. ISSN: 1089-5639. https://doi.org/10.1021/acs.jpca.8b08671
16.	Nunes-Pereira, J., Lima, R., Choudhary, G., Sharma, P. R., Ferdov, S., Botelho, G., **Sharma, R. K.,** & Lanceros-Méndez, S. (2018). Highly efficient removal of fluoride from aqueous media through polymer composite membranes. Separation and Purification Technology, 205, 1–10. ISSN: 1383-5866. https://doi.org/10.1016/j.seppur.2018.05.015
17.	Nunes-Pereira, J., Sharma, P., Fernandes, L. C., Oliveira, J., Moreira, J. A., **Sharma, R. K.,** & Lanceros-Mendez, S. (2018). Poly(vinylidene fluoride) composites with carbon nanotubes decorated with metal nanoparticles. Composites Part B: Engineering, 142, 1–8. ISSN: 1359-8368. https://doi.org/10.1016/j.compositesb.2017.12.047
18.	**Rana, N. K**., Shukla, K., Mahto, P., Jha, R. K., & Singh, V. K. (2018). A facile and highly diastereoselective synthesis of carbocyclic spiro-pyrazolones via DABCO catalyzed Michael-Michael domino reaction. *Tetrahedron, 74(38), 5270-5279*. ISSN: 0040-4020. https://doi.org/10.1016/j.tet.2018.02.002
19.	Kaur, H., & **Kumar, A.** (2019). Analyzing the efficiency of partially entangled states in Vaidman's-type games and its applications in Quantum Secret Sharing. International Journal of Computers and Applications, 41 (1), 2–13. ISSN: 1206-212X. https://doi.org/10.1080/1206212X.2018.1465666
20.	Pandey, M. D., **Metre, R. K.,** Kundu, S., Mahanti, B., Kumar, A., Gopal, K., & Chandrasekhar, V. (2019). Luminescent Pyrene-decorated Organotin Compounds: Observation of Monomer-and Excimer Emission. Crystal Growth & Design, 19(3), 1888–1895. ISSN: 1528-7505. https://doi.org/10.1021/acs.cgd.8b01856
21.	Ram, P., Gören, A., Gonçalves, R., Choudhary, G., Ferdov, S., Silva, M. M., Singhal, R., Costa, C. M., **Sharma, R. K.,** & Lanceros-Méndez, S. (2018). Improved electrochemical performance of rare earth doped LiMn1.5-xNi0.5RExO4 based composite cathodes for lithium-ion batteries. *Composites Part B: Engineering, 139, 55–63*. ISSN: 1359-8368. https://doi.org/10.1016/j.compositesb.2017.11.054
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20.	Chaurasiya, R., & **Dixit, A.** (2019). Point defects induced magnetism in CdO monolayer: A theoretical study. Journal of Magnetism and Magnetic Materials, 469, 279–288. ISSN: 0304-8853. https://doi.org/10.1016/j.jmmm.2018.08.076
21.	Chaurasiya, R., **Dixit, A.**, & Pandey, R. (2019). Strain-driven thermodynamic stability and electronic transitions in ZnX (X = O, S, Se, and Te) monolayers. Journal of Applied Physics, 125(8), 082540. ISSN: 0021-8979. https://doi.org/10.1063/1.5053680
	Conference Paper
1.	Biswas, P., & **Ghosh, S.** (2018). Pulse Reshaping and Stable Propagation through a Chirped-clad Dispersion Oscillating Bragg Fiber. In Advanced Photonics 2018 (BGPP, IPR, NP, NOMA, Sensors, Networks, SPPCom, SOF) (2018), paper JTh4A.3 (p. JTh4A.3). Zurich Switzerland: Optical Society of America. ISBN: 978-1-943580-43-9. https://doi.org/10.1364/BGPPM.2018.JTh4A.3
	Book Chapters
1.	Singh, G., Kumar, R., **Dixit, A.,** & Chandra, L. (2018). Thermal and Materials Perspective on the Design of Open Volumetric Air Receiver for Process Heat Applications. In H. Tyagi, A. K. Agarwal, **P. R. Chakraborty**, & S. Powar (Eds.), *Applications of Solar Energy* (pp. 113–127). Singapore: Springer. ISBN: 9789811333026. https://doi.org/10.1007/978-981-10-7206-2_7
2.	Bazil Raj, A. A., Sharma, V., & **Banerjee, S.** (2019). Quantum Based Satellite Free Space Optical Communication and Microwave Photonics. In Arun K. Majumdar, Zabih Ghassemlooy & A. Arockia Bazil Raj (Eds.), Principles and Applications of Free Space Optical Communications (pp. 0-0). IET, UK. ISBN: 978-1-78561-415-6. https://www.theiet.org/resources/books/telecom/free-space.cfm
	Book (Authored)
1.	**Banerjee, S**. (2018). Open Quantum Systems: Dynamics of Nonclassical Evolution. Singapore: Springer. ISBN: 978-981-13-3182-4. https://doi.org/ 10.1007/978-981-13-3182-4
	Pre-prints
1.	Abbas, G., **Alok, A. K.,** & Gangal, S. (2018). New physics effects in radiative leptonic Bs decay. ArXiv:1805.02265 [Hep-Ph]. http://arxiv.org/abs/1805.02265
2.	Bhattacherjee, S., Laha, A., & **Ghosh, S.** (2018). Origin of third order exceptional singularities and its signature in successive state conversion. ArXiv:1806.10795 [Physics]. http://arxiv.org/abs/1806.10795
3.	Bhattacherjee, S., Laha, A., & **Ghosh, S.** (2018). Realization of third order exceptional singularities in a three level non-hermitian system: towards cascaded state conversion. ArXiv:1805.06505 [Quant-Ph]. http://arxiv.org/abs/1805.06505
4.	Biswas, P., Gandhi, H. K., Mishra, V., & **Ghosh, S.** (2018). Propagation and asymmetric behavior of optical pulses through time-dynamic loss-gain assisted media. ArXiv:1806.05608 [Physics]. http://arxiv.org/abs/1806.05608
5.	Chaurasiya, R., & **Dixit, A.** (2018). MoSSe Janus monolayer as a promising two dimensional material for NO2 and NO gas sensor applications. ArXiv:1812.08547 [Cond-Mat]. http://arxiv.org/abs/1812.08547
6.	Laha, A., Biswas, A., & **Ghosh, S.** (2018). Non-adiabatic Modal Dynamics around Exceptional Points in an All-Lossy Dual-Mode Optical Waveguide: Towards Chirality Driven Asymmetric Mode-Conversion. https://arxiv.org/abs/1809.07617
7.	Malpani, P., Alam, N., Thapliyal, K., Pathak, A., **Narayanan, V.,** & **Banerjee, S.** (2018). Lower- and higher-order nonclassical properties of photon added and subtracted displaced Fock states. ArXiv:1808.01458 [Quant-Ph]. http://arxiv.org/abs/1808.01458
8.	Naikoo, J., **Alok, A. K., Banerjee, S.**, & Sankar, S. U. (2019). Leggett-Garg inequality in the context of three flavour neutrino oscillation. ArXiv:1901.10859 [Hep-Ph, Physics:Quant-Ph]. http://arxiv.org/abs/1901.10859
9.	Naikoo, J., **Banerjee, S.**, & Srikanth, R. (2018). Leggett-Garg inequality violation under non-Markovian noise. ArXiv:1806.00537 [Quant-Ph]. http://arxiv.org/abs/1806.00537
10.	Sahu, A., & **Dixit, A.** (2018). Inverted structure perovskite solar cells: a theoretical study. ArXiv:1806.03950 [Physics]. http://arxiv.org/abs/1806.03950
11.	Sharma, V., & **Banerjee, S.** (2018). Analysis of Quantum Key Distribution based Satellite Communication. ArXiv:1807.07544 [Quant-Ph]. http://arxiv.org/abs/1807.07544

The following is the department-wise list of Invited Talks.

Invited Talks	
	Department of Electrical Engineering
1.	Aashish Mathur delivered an invited talk on "Free Space Optical Communications and its applications to 5G" in 1st International Conference on 5G Communication and Applications at VFSTR, Vadlamudi, AP, India on 6 December 2018.
2.	Soumava Mukherjee delivered an invited talk on "Aperture Antennas" at IIT Guwahati in Faculty Development Programme on "Antenna Trends" on 02 July 2019.
Mahesh Kumar delivered the following invited talks.	
3.	"Heavy metal ion detection using AlGaN/GaN HEMTs as sensor" at Institute of Physics, Lobachewsky University Nizhny Novgorod on 21 March 2019.
4.	"Enhanced NO2 Sensing Performance of Vertically Aligned MoS2 via a Synergistic Vacancy and Interface Engineering" at PSCES 2019, IIT Delhi during 6-8 March 2019.
5.	"Multifunctional High-Performance MoS2/GaN Heterojunction: The Futuristic Optical and Gas Sensors" at The 30th AGM of MRSI and the First Indian Materials Conclave at IISc Bangalore from 12-15, February 2019.
6.	"2D MoS2 based ultrafast and reversible room temperature NO2 Sensor" Workshop on Recent Trends in Transducers and Actuators (RTTA-2019) at CEERI Pilani on 21 January 2019.
7.	"Opportunities and Risks of Digitalization for Climate Change Mitigation/Adaptation and Research Security in the MENA Region" at KAS - REMENA Experts' Meeting in Rabat Morocco during 19-21 December 2018.
8.	"Development of highly selective and sensitive NO2 Sensor using 2D materials" at International Conference on Nano-Structured Materials and Devices (ICNSMD-2018), University of Delhi during 17-20, December 2018.
9.	"MoS2 Functionalized with rGO Particles for Efficient Room Temperature NO2 Sensor" at the 3rd International Conference on Soft Materials (ICSM 2018) at MNIT Jaipur during 9-14 December 2018.
10.	"2D MoS2 based ultrafast and reversible gas Sensors" at 1st Indian National Young Academy of Science - Frontiers of Science (INYAS-FoS) Brainstorming Meeting at Pragati Resorts Hyderabad during 9-12 December, 2018.
11.	"Science Advice for a Changing World" at Tokyo Japan during 6-7 November 2018.
12.	"Nanomaterials based Energy efficient Gas Sensor" at Advanced Materials for Energy and Environmental Applications at Uzbekistan-Japan Innovation Center of Youth, National University of Uzbekistan Tashkent during Oct 15-20 October 2018.
13.	At IAP/AASSA Regional Workshop on the SDGs at Kuala Lumpur Malaysia during 13-14 August 2018.
14.	"Energy efficient nano-devices for the better and sustainable society" at 8th International Conference of Young Scientists & Annual General Meeting 2018 of the Global Young Academy, in Pattaya, Thailand, during 7-11 May 2018.
15.	"Self-aligned ZnO nanorods for energy efficient hydrogen sensor" at 1st TYAN International Thematic Workshop on "Fundamentals of Photoelectrochemistry: From Materials Chemistry to Energy Conversion" in Chascomus, Argentina during 23-27 April 2018.
16.	Rajlaxmi Chouhan delivered invited lectures on Basic Electronics (August 2018) and Signals & Systems (April 2019) for B.Tech. students at JIET College of Engineering, Jodhpur.
Department of Humanities & Social Sciences	
1.	Ankita Sharma delivered an Invited talk and served as a panelist in Pan-Asian Symposium on Morality, Character and Wisdom, 2019 at the Hilton Colombo in Colombo, Sri Lanka.
2.	Ankita Sharma delivered an Invited talk on "Wisdom and decision making: Role of life experiences and leadership position" at the 1st Indian Congress of Industrial and Organizational Psychology, University of Rajasthan, Jaipur.

The following is the department-wise list of Conference Presentations.

Conference Presentations	
	Department of Electrical Engineering
1.	Ajay Kumar Mahato, Vivek Raghuwanshi, Deepak Bharti, Ishan Varun, Narottam Prasad, Mahesh Saran Roy, and Shree Prakash Tiwari, "Gate Dielectric Dependence of Electrical and Photo-Response Behaviour in Copper (II) Phthalocyanine Based Organic Field-Effect Transistors," 4th IEEE International Conference on Emerging Electronics (ICEE 2018), December 16-19, 2018, Bangalore, India
2.	I. S. Krishna, S. Mukherjee, "Design of Dual-Mode Substrate Integrated Coaxial Line (SICL) Cavity Filter for Millimeter-wave Applications", Presented in 2018 International Microwave & RF conference, Kolkata, 2018.
3.	Ishan Varun, Deepak Bharti, Ajay Kumar Mahato, Vivek Raghuwanshi, and Shree Prakash Tiwari, "Effect Effect of Annealing on Resistive Switching Behavior of PMMA Based RRAM," 4th IEEE International Conference on Emerging Electronics (ICEE 2018), December 16-19, 2018, Bangalore, India.
4.	S. Mukherjee and A. Biswas, Design of Eliptical SIW Cavity Backed High Gain Slot Antenna, Presented in 2018 IEEE-INAE Workshop on Electromagnetics, Trivandrum, 2018.
5.	Vivek Raghuwanshi, Deepak Bharti, Ajay Kumar Mahato, Ishan Varun, and Shree Prakash Tiwari, "Effect of TIPS-Pentacene:Polystyrene Blend Ratio on Electrical Performance and Stability of Solution Processed Organic Field-Effect Transistors," 4th IEEE International Conference on Emerging Electronics (ICEE 2018), December 16-19, 2018, Bangalore, India.
	Department of Humanities & Social Sciences
1.	Mayurakshi Chaudhuri presented a research paper titled "Digitised Swasthya: Technology and Healthcare As Sociotechnical Ensembles in Rajasthan, India," at the XIX ISA World Congress of Sociology organized by the International Sociological Association, in Toronto, Canada, 15-21 July 2018.
	Department of Mathematics
1.	S. P. Singh and G. Bhatnagar "A Reference Based Secure and Robust Zerowatermarking Scheme" Proc. Int. Conf. Computer Vision & Image Processing, IIITDM Jabalpur, India, September 29-October 01, 2018.
2.	S. P. Singh and G. Bhatnagar, "A Robust Watermarking Scheme for Copyright Protection" Proc. Int. Conf. Computer Vision & Image Processing, IIITDM Jabalpur, India, September 29-October 01, 2018.

Awards & Recognitions

Department of Bioscience & Bioengineering	
1.	**Amit Mishra**, Assistant Professor, Department of Bioscience & Bioengineering, awarded eminent Shri Om Prakash Sharma Award, India by Indian Academy of Biomedical Sciences (IABS) India for outstanding contributions in Biomedical Research.
2.	**Amit Mishra**, Assistant Professor, Department of Bioscience & Bioengineering, selected for Shankunta Amir Chand Prize by Indian Council of Medical Research (ICMR) Human Resource Development (HRD)-Health Research Ministry. The ICMR awards recognize the contributions of Indian biomedical scientists undertaking pioneering work in various fields of health sciences and finding solutions for health problems in the country.
3.	**Amit Mishra**, Assistant Professor, Department of Bioscience & Bioengineering, selected for the Distinguished Life Time Membership of National Academy of Medical Sciences (NAMS), India for his excellent research contribution in Biomedical Science.
4.	**Sushmita Jha**, Assistant Professor, Department of Bioscience & Bioengineering, selected for Outstanding Scientist Molecular Biology award under the Health and Medical Sciences discipline at the 4th Venus International Research Awards - VIRA 2018. This award recognizes 'Expertly Qualified Research Professionals' for their exceptional research record of significant contribution (Fundamental Discoveries, New Theories, or Insights which had an Impact on their own discipline and beyond and cutting-edge achievements) to the laboratory/Institute.
Department of Chemistry	
1.	**Rakesh Kumar Sharma**, Assistant Professor, Department of Chemistry, honoured with the Outstanding Research Award 2018 during 1st Annual Transformational Leadership Summit & Awards 2018 at Bangalore. The Outstanding Research Award exemplifies excellence in research, and fosters and felicitates individuals with inclination towards creating positive impact on research and academic community with notable contribution to their field.
Department of Electrical Engineering	
1.	**Deepak Fulwani**, Associate Professor, Department of Electrical Engineering, inducted in Editorial Board of IEEE Transactions on Industry Applications as an Associate Editor.
2.	**Mahesh Kumar**, Assistant Professor, Department of Electrical Engineering, selected as Emerging Leader 2018 by the Journal of Physics D: Applied Physics, published by the Institute of Physics, UK. Journal of Physics D: Applied Physics (JPhysD) will be publishing a special issue bringing together the best early-career researchers in condensed matter physics. Called Emerging Leaders, this special issue will be part of the Journal of Physics (JPhys) series' 50th anniversary celebrations in 2017, recognizing the talents of exceptional, upcoming researchers.
3.	**Mahesh Kumar**, Assistant Professor, Department of Electrical Engineering, admitted as Member of The Royal Society of Chemistry, UK.
4.	**Mahesh Kumar**, Assistant Professor, Department of Electrical Engineering, awarded Bhaskara Advanced Solar Energy (BASE) Fellowship
5.	**Mahesh Kumar**, Assistant Professor, Department of Electrical Engineering, selected as Member of National Academy of Sciences India (NASI)
6.	**Mahesh Kumar**, Assistant Professor, Department of Electrical Engineering, elected as Chairman of Indian National Young Academy of Science (INYAS)
7.	**Rajlaxmi Chouhan**, Assistant Professor, Department of Electrical Engineering, was presented with Late Shri Pralhad P Chhabria Award 2019 for Best Woman Professional (Early Career) instituted by Hope Foundation and Research Center (HFRC) in association with IEEE India Council and Women in Engineering Affinity Group, IEEE Pune Section. The award includes a Medal, a Citation, and a Prize of Rs. 1.25 Lakhs.
8.	**Soumava Mukherjee**, Assistant Professor, Department of Electrical Engineering, received URSI Young Scientist Award in 2019 URSI Asia Pacific Radio Science Conference held during 9-15 March 2019.
9.	Transaction paper titled "SIW Based Quad-beam Leaky-wave Antenna With Polarization Diversity for Four Quadrant Scanning Applications," by A. Sarkar, **Soumava Mukherjee**, A. Sharma, A. Biswas and M. J. Akhtar selected for top cover page of the journal issue (IEEE Transactions on Antennas and Propagation, vol. 66, no. 8, Aug. 2018) in IEEE Transactions on Antennas and Propagation.

Outreach

The following Outreach activities have been undertaken by the Faculty Members at IIT Jodhpur during the FY 2018-19.

Unnat Bharat Abhiyan

The orientation program on UBA 2.0 was attended by Nirmal K. Rana at IIT Delhi on 25 April 2018 and regional workshop on UBA 2.0 was attended by the Nodal Officer Ananya Debnath at MPUAT, Udaipur on 10 August 2018. UBA team of IIT Jodhpur along with Ananya Debnath attended Gramsabha meeting in Rudiya village on 15 August 2018. Chiranjoy Chattopadhyay, Ganpat Choudhary, Amitap Khandelwal spoke about the action plans for the three major problems in the village identified based on the survey performed under the guidance of Anand Plappally.

Unnat Bharat Abhiyan team organized an open discussion on "Use of emerging technology for social good" at IIT Jodhpur on 25 February, 2019. Two distinguished speakers, Mr Anurag Goyal and Dr Anurag Agrawal delivered lectures on emerging technology relevant for health care and role of administration in this aspect. This brainstorming session was attended by Faculty members and Students. In continuation, another discussion was held with Mr Anurag Goyal, Faculty members and the Director on 26 February 2019. Different aspects and practical challenges on working on such areas were critically explored during the discussion.


Unnat Bharat Abhiyan team of IIT Jodhpur at Gramsabha meeting in Rudiya village

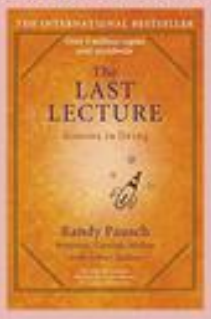
Vigyan Jyoti Program

Vigyan Jyoti Program was organized by IIT Jodhpur during 14 May – 02 June 2018. The program is a new initiative of the Department of Science & Technology (DST), Government of India, to bring gender parity in the different fields of Science & Technology (S&T), where women are under-represented. This program was spearheaded by Priyanka Singh, Assistant Professor, Department of Bioscience & Bioengineering, IIT Jodhpur. Under this program, 30 female students of Classes XI & XII attended this comprehensive three week residential program at IIT Jodhpur campus and participated in various activities specifically designed for them on a spectrum of issues like Role Models, Society & Life, Health, Competence, and Profession & Life.

Participants of Vigyan Jyoti Program

Role Model

1. Motivational Books provided in Welcome kit



2. Talking about history of Indian women contribution in S&T

3. Interaction with Achievers

Interaction with Prof Madhu Dikshit, Former Director, CDRI Lucknow

Interaction with female faculty members, AIIMS Jodhpur

Role Model

Interaction with female faculty members and students of IITJ









Profession & Life

Faculty Members Talking about S&T

1) Bioscience & Bioengineering Day
2) Chemistry Day
3) Physics Day
4) Mathematics Day
5) Humanities & Social Science Day
6) Computer Science & Engineering Day
7) Mechanical Engineering Day
8) Metallurgy and Materials Science Day





Science Exhibition and Lecture Series on Nanotechnology, 15 October 2018

A one-day "Science Exhibition and Lecture Series on Nanotechnology" was organized by Ritu Gupta, Assistant Professor, Department of Chemistry, IIT Jodhpur in collaboration with Centre for Nano and Soft Matter, Bangalore and support from Karnataka Science and Technology Promotion Society (Govt. of Karnataka). The event was scheduled at IIT Jodhpur on 15 October 2018 and at Rajasthan University, Jaipur on 29 October 2018 for science students belonging to different streams from various schools, colleges and institutes of Jodhpur and Jaipur. There were around 300 participants at the event organized at IIT Jodhpur and 250 participants at Rajasthan University, Jaipur. The event consisted of introductory and advanced lectures, an exhibition, open discussion session, a quiz and a video show. The main objective of the event was to introduce the importance of nanoscience for mankind and linking the activities of Tenth Bengaluru India Nano Promotional Programme organized every year by Department of Information Technology, Biotechnology, and Science & Technology and Vision Group on Nanotechnology (VGNT) under the guidance and support of Prof. C. N. R. Rao, FRS.

Group Photo of Participants, Faculty Members, Staff Members with Invited Guests

6th GIAN Course on Topological Solitons and their Applications, 10-15 December 2018

The sixth course under GIAN Program at IIT Jodhpur on "Topological Solitons and their Applications" was organised during 10-15 December 2018. Subhashish Banerjee, Associate Professor, IIT Jodhpur and Richard MacKenzie, Professor, Université de Montréal, Canada were the key resource persons.

Group Photo of Participants of GIAN Program, Faculty Members, Staff Members and Students with Invited Guests

National Workshop on Emerging Applications of Nonlinear Dynamics and Chaos in Science and Engineering , 13-15 December 2018

A National Workshop on "Nonlinear Dynamics and Chaos (NDCSE2018)" was organized during 13-15 December 2018 at Department of Mechanical Engineering, IIT Jodhpur. The workshop had 6 Keynote Talks, 20 invited Lectures and poster presentation in the area of nonlinear dynamics and Chaos by postgraduate students/research scholars from various IITs/NITs/Central universities. The workshop received a very encouraging response and it was attended by more than eighty-five participants. The aim of this workshop was to bring together leading specialists from engineering, applied mathematics, physics, and biophysics to promote interdisciplinary discussion in areas related to dynamics, chaos and their applications. This workshop was primarily designed to present the fundamentals and the recent developments in the fast developing, interdisciplinary field of Nonlinear Dynamics and Chaos. This workshop provided a platform to exchange experiences in the field of Nonlinear Dynamics. The outcome presented recent breakthroughs in the state-of-art applied research being carried out in the field of Nonlinear Dynamics and Chaos. Further, the workshop encouraged Students and Scholars pursuing M.Sc. (Physics/Applied Mathematics/Bio-physics), M.E/M.Tech. and PhD and provided an opportunity to present their current research interest in this scientific field with their poster presentations.

Prof. Santanu Chaudhary, Director of IIT Jodhpur welcomed the participants and invited speakers and provided the opening note for the conference while Prof. Barun Pratiher, Convener of NDCSE 2018 addressed briefly about the workshop. The workshop started with keynote lectures by Prof. P. Parmananda (IIT Bombay) and Prof. S. Prof. Keshavamurthy (IIT Madras). Prof. S. K. Dwivedy (IIT Guwahati), Prof. Kannan Iyer (IIT Bombay), Prof. Nandan K. Sinha (IIT Madras), and Prof. S. Sinha (IISER Mohali) delivered keynote talks while Prof. S. P. Harsha (IIT Roorkee), Prof. B. K. Goswami (BARC, Mumbai), Prof. S. Chakraborty (IIT Kanpur), Prof. A. Prasad (Delhi University), Prof. L. Chandra (IIT BHU), Prof. N. Bairagi (Javadpur University), Prof. A. Garg (JNVU, Jodhpur), Prof. J. Vajpai (JNVU, Jodhpur), Prof. M. Shrimali (CU, Rajasthan), Prof. D. Fulwani (IIT Jodhpur), Prof. A. Mishra (IIT Jodhpur), and Prof. Rakesh Choubisa (BITS, Pilani) delivered the invited talks in this workshop.

Group Photo on the closing day

16th Subject Expert Committee-Life Science Meeting under Women Scientist Scheme (WOS-A), 14-16 February 2019

The 16th Subject Expert Committee-Life Science meeting under the Women Scientist Scheme (WOS-A) of DST, Government of India, was organized at IIT Jodhpur during 14-16 February 2019. Twelve Committee Members and around 100 participants attended this event, which was coordinated by Dr. Priyanka Singh, Assistant Professor, Department of Bioscience & Bioengineering, IIT Jodhpur. The Women Scientists Scheme aims to encourage women scientists to pursue research in frontier areas of science and engineering, on problems of societal relevance and to take up S&T-based internship followed by self-employment.

Participants of the Meeting with Organisers

National Workshop on Intelligent Multimodal Interfaces, 09-10 March 2019

A National Workshop on Intelligent Multimodal Interfaces was organised by the Department of Mathematics at IIT Jodhpur during 09-10 March 2019. The workshop had two Keynote talk, four Expert Lectures, two interactive sessions and a Panel Discussion in the area of Intelligent Multimodal Interfaces by eminent Professors, Scientists, and Researchers from Academia, R&D Organizations and Industry. The workshop received a very encouraging response, and was attended by more than 100 participants. The workshop emphasized bringing forward various problems and research opportunities in the area of Intelligent Multimodal Interfaces. More specifically, it focused on artificial intelligence, computational linguistics, computer graphics, cognitive sciences, software design, and information retrieval.

Gaurav Bhatnagar, General Chair and Head, Department of Mathematics, welcomed the participants and experts to the workshop. The workshop was inaugurated by S. Chaudhury, Director, IIT Jodhpur who then delivered the inaugural talk. This was followed by the invited talks by S. Das, IIT Madras; A. Sankaran, IBM Research, India; S.R. Nair, NVIDIA, India; A. Malik, Vizara Technologies, Delhi; P.K. Biswas, IIT Kharagpur; B. Chanda, ISI Kolkata; M. Manivanan, IIT Madras; C. Arora, IIT Delhi. The workshop concluded with a panel discussion on challenges, opportunity, and road ahead in the area. The panel discussion was steered by S. Chaudhury, Director, IIT Jodhpur with panel members as P.K. Biswas, Professor, IIT Kharagpur, B. Chanda, Professor, ISI Kolkata, C. Arora, Associate Professor, IIT Delhi, and A. Sankaran, Research Scientist, IBM Research Lab.

The workshop provided an opportunity to the participants to showcase their research in the form of posters and demonstrations and to experts to get their valuable inputs. A total of 9 posters were selected after peer review to demonstrate their research work during the poster session.

Group Photo of the Participants of NWIMI'19

Panel Discussion during NWIMI'19

National Conference on AI innovations and IP Trends, 11-12 March 2019

National Conference on AI innovations and IP Trends was jointly organised by DST Government of Rajasthan, and IIT Jodhpur during 11 – 12 March 2019. It was the first conference in the country to deal with the subject of AI Innovations and Intellectual property rights-related issues. This conference brought together accomplished and experienced AI and IP professionals from academia, industry, and R&D organization to understand both – AI innovations and their protection methodologies. Eminent speakers were invited from various organizations such as Tata Consultancy Services, Office of Scientific Advisor to Honourable PM, CIPAM, Vibrant Health Limited, Mehta & Mehta Associates, XLPAT Labs, Ex Lege Chambers, FormulateIP, etc.

Lectures & Seminars

In the year 2018-19, the following Lectures and Seminars were organised whose details are as below.

IIT Jodhpur Decennial Lecture Series

IIT Jodhpur has completed ten years since successful inception in July 2008. This journey of its first decade has been a journey of accomplishments, challenges, learning and opportunities. In this context, the Institute started organizing a *Decennial Lecture Series* to celebrate this special milestone in its journey.

S.No.	Speaker & Topic
(1)	Tapan Misra Distinguished Scientist, Former Director Indian Space Research Organisation, Ahmedabad 1st Decennial Lecture - "Sanskar" of Innovation 11 February 2019
(2)	Dr. Anurag Agrawal Director CSIR - Institute of Genomics & Integrative Biology (IGIB), New Delhi 2nd Decennial Lecture - "Multi, Inter and Trans: Brothers from different Mothers" 25 February 2019

Expert Lectures

	Department of Bioscience & Bioengineering
(3)	G.N. Sastry Senior Principal Scientist CSIR - Indian Institute of Chemical Technology "Cooperativity of non-covalent interactions" 02 April 2018
(4)	Ramakrishna Ramaswamy, Professor Jawaharlal Nehru University, New Delhi "Fireflies and Chimeras: Symmetry and symmetry-breaking in dynamical systems" 19 April 2018
(5)	Rama S. Verma Department of Biotechnology Indian Institute of Technology, Madras "Developing Biological Dressings From Biological Waste For Diabetic Wound Healing" 30 August 2018
	Department of Chemistry
(6)	Bhabatosh Banik Nanotherapeutics Research Laboratory, University of Miami, USA "Cancer, Atherosclerosis, Mitochondria Isolation, BBB penetration and their 'Nanoparticle Connection'" 17 April 2018
(7)	Soumik Siddhanta, Post-Doctoral Fellow, Department of Mechanical Engineering, Johns Hopkins University, USA "A Plasmonics Route towards Spectroscopic Fingerprinting of the Tumor and its Microenvironment" 8 June 2018
(8)	Srinu Tothadi NCL, Pune "Crystal Engineering: Design and Synthesis of Multicomponent Crystals and their Applications" 24 October 2018

(9)	Shreyam Chatterjee Institute of Scientific and Industrial Research (ISIR), Osaka University, Japan "Systematic Development, Synthesis and Applicati on of New - Conjugated Compounds for Organic Solar Cell Devices" 4 January 2019
(10)	Banani Chakraborty, Professor Indian Institute of Science, Bangalore "DNA-aptamer coupled DNA origami as bio-sensors and delivery vehicles" 18 January 2019
	Department of Computer Science & Engineering
(11)	Vishal Dhupar Managing Director, Asia South, NVIDIA 29 January 2019
(12)	Avinash Sharma, Assistant Professor IIIT Hyderabad
(13)	Philippe Dugerdil, Professor University of Applied Sciences Western Switzerland
	Department of Electrical Engineering
(14)	S.C. Sahasrabudhe, Professor Former Director, DA-IICT, Gandhinagar "Electronics, as it evolved over the years" 23 October 2018
(15)	Saif Khan Mohammed , Professor Indian Institute of Technology, Delhi "Massive MIMO and OTFS Modulation for 5G Wireless Communication Systems" 20 February 2019
(16)	H.M. Gupta, Formerly, Professor "Ten Points Academics & Not So Random Thoughts" 11 July 2019
(17)	M.L. Kothari, Professor Indian Institute of Technology, Delhi and INAE Fellow 08 August 2019
	Department of Mathematics
(18)	Inder K. Rana Emeritus Fellow, Department of Mathematics, Indian Institute of Technology, Bombay "Why Linear Algebra!" and "Beyond Infinity" 12,14 November 2018
	Department of Mechanical Engineering
(19)	Ashok Joshi, Professor Indian Institute of Technology, Bombay "Space Missions" 20 – 22 April 2018
(20)	S. Bhattacharya Chief Designer at Rotary Wing Research & Design Centre (RWRDC) Hindustan Aeronautics Limited, Bangalore "Development Challenges of Modern Helicopter Transmission Systems" 28 September 2018
	Department of Metallurgical & Materials Engineering
(21)	Maya Sharma KU Leuven, Belgium "Structure – Property Correlations in Polymer based Nanocomposites" 21 February 2019

Celebration of National Festivals & Observance of Days of National Importance

World Immunology Day Celebration

World Immunology Day was organized at IIT Jodhpur on 1st May 2018, by Dr Sushmita Jha, with support from *Indian Immunology Society*. This program was organized with the aim of encouraging students to choose a career in Science. M.Tech and PhD students from the Department of Bioscience and Bioengineering, conducted quiz, skit, videos and laboratory visit for Students of *Kendriya Vidyalaya, IIT Jodhpur*.

Students of Kendriya Vidyalaya, IIT Jodhpur, watching videos on Immune System

Students of Kendriya Vidyalaya, IIT Jodhpur, viewing samples under microscope

Ph.D. and M.Tech. Students of Department of Biocience & Bioengineering enacting a skit on Immune System

Prize Distribution

4th International Day of Yoga Celebration

The 4th International Day of Yoga was observed on 21 June 2018 at IIT Jodhpur. Members of the IIT Jodhpur fraternity including Students, Faculty and Staff Members, and their family members enthusiastically participated in the event. Professor B. P. Kashyap, Professor In-charge, Department of Metallurgical & Materials Engineering, IIT Jodhpur, in his opening remarks, welcomed the participants and explained the benefits of Yoga for physical and mental health. The participants were taught various *Aasanaas* and *Pranayam*. A vote of thanks was proposed by Shri Subhash Pandey, Advisor (Administration), IIT Jodhpur.

The day was observed in the GPRA Residential Campus as well, by the Staff Members and Students staying there.

Yoga session in progress at Permanent Campus and at GPRA Residential Campus, IIT Jodpur

72nd Independence Day Celebration

The 72nd Independence Day of the Nation was celebrated by Members of IIT Jodhpur, on 15 August 2018. The Director hoisted the National Flag, and the National Anthem was sung with affection and devotion to the motherland, by all present. Competitions were organized for the children of IIT Jodhpur employees. Students presented music and street play.

A *Children's Library* was inaugurated on this occasion, for the children of employees, which is an initiative of the IIT Jodhpur Library.

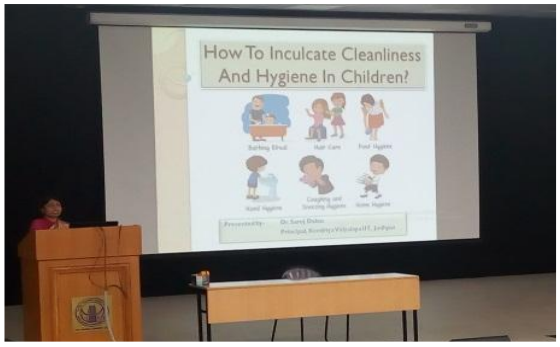
Musical performance by Students of IIT Jodhpur

Street Play on *Depression in Youth* by Nukkad Natak Mandali, Students Gymkhana, IIT Jodhpur

Observance of Swachhta Pakhwada

Swachhta Pakhwada was observed at Indian Institute of Technology Jodhpur during 1-15 September 2018. On this occasion, activities such as Institute Lecture on Swachhta and Hygiene in Children, poster making and slogan writing, were organized. The Institute Swachhta Committee assessed the level of cleanliness in buildings on campus and a cleanliness drive was undertaken in the Institute.

Members of the Institute Swachhta Committee assessing level of cleanliness in buildings on Campus



Dr. Saroj Dabas, Principal, KV IITJ, delivering a talk on How to inculcate Swachhta and Hygiene in Children

International Day of the Girl Child Celebration

The International Day of Girl Child was observed at IIT Jodhpur on 11 October 2018 during which the Women Cell of the Institute organized its Autumn Activities. Chief Guest Professor. Poonam Saxena, Vice Chancellor, National Law University, Jodhpur addressed on "Towards making gender parity a reality" and a competition was organized on Legal Awareness.

Prize Distribution

Professor Poonam Saxena addressing the audience

Ek Bharat Shreshth Bharat celebration

On 29 April 2018, under the *Ek Bharat Shreshth Bharat* initiative, the students of IIT Jodhpur, in collaboration with SPICMACAY, Rajasthan Chapter, rendered a soulful presentation of the beauty and cultural heritage of Assam, deep in the hinterlands of Rajasthan. The evening started with a beautiful traditional performance of *Bihu Dance*, an ethnic folk-dance of Assam, by the students of IIT Jodhpur. The State Anthem of Assam was then receited. *Shrimati Anwesha Mahanta*, a famous exponent of the traditional Assamese dance Sattariya, presented two beautiful renditions of the ancient dance forms *Bhagavatam* and *Krishnakatha* followed by a short video presentation depicting the natural beauty of Assam and music performance by the students.

Bihu Dance performance by Students

Sattriya Dance by Shrimati Anwesha Mahanta

Vigilance Awareness Week

Vigilance Awareness Week was observed at IIT Jodhpur as per Central Vigilance Commission's (CVC) guidlelines from 29 October 2018 to 3 November 2018, with the theme Eradicate Corruption - Build a New India. The pledge of integrity was administered by Professor S. R. Vadera, Head and Professor, Department of Physics, which was attended by the Faculty Members and Staff Members.

Banners and display boards propagating the message on Vigilance Awareness, Anti-corruption etc. were displayed at all prime locations of the Institute. Also, essay writing and presentation competitions on the said theme were organized by Dr. Gaurav Harit, Chief Vigilance Officer, during 1-2 November 2018 for all members of the Institute.

Pledge of Integrity administered by Professor S.R. Vadera and prize distribution for participants of the competitions

Celebration of Rashtriya Ekta Diwas, Birth Anniversary of Sardar Vallabhbhai Patel

Rashtriya Ekta Diwas was celebrated at IIT Jodhpur under the guidance of Ministry of Human Resource development (MHRD), Government of India on 31 October 2018 to commemorate the birth anniversary of Sardar Vallabhbhai Patel, one of the founding fathers of the Republic of India. Professor S. R. Vadera, Professor, IIT Jodhpur, led the Institute's Community i.e., the Faculty Members, Staff Members and Students, in taking a pledge for National Unity, which was taken at Institute's Lecture Hall Complex. Also, on this occasion, a 5 kilometer Run for Unity event was flagged off by Vadera along with Sh. Subhash Pandey, Advisor (Administration), IIT Jodhpur. Many Students, Faculty and Staff Members participated in the event. Professor Vadera encouraged the participants and distributed prizes amongst the winners of Run for Unity.

Prof S. R. Vadera, Head and Professor, Department of Physics, and Sh. Subhash Pandey, Advisor (Administration) flagging off of the Run for Unity

National Education Day

National Education Day, which is the birthday of *Maulana Abul Kalam Azad* was celebrated by the *Children's Library* of the Institute on 17 November 2018. Elocution and drawing competitions were organised for children of the employees of IIT Jodhpur. Children participated in these competitions with great enthusiasm. Prizes were given away to the winners and runners up by Professor S. R. Vadera, Head, Department of Physics.

Children participating in competitions with great enthusiasm

2018 Institute Day Celebration

2018 Institute day was celebrated at IIT Jodhpur on 20 April, 2018 marking the culmination of the year's academic and non-academic activities. Sri Subhash Pandey, Advisor (Administration) welcomed the gathering. Reports of the Institute's activities during 2017-18 were presented by Rakesh K. Sharma (Associate Dean (R&D)), Suril V. Shah, (Associate Dean (Academics)), Samanwita Pal (Associate Dean (Students)), and C. V. R. Murty (Director). Certificates of appreciation were distributed to students for their achievements in academic and non-academic activities during 2017-2018. Thereafter, Madhu Dikshit (Professor-in-Charge, Department of Bioscience & Bioengineering), B. P. Kashyap (Professor-in-Charge, Department of Metallurgical & Materials Engineering), and Shri M. L. Bapna (Advisor (Industry – Academia Interface)) addressed the gathering on growth of the Institute. The Director delivered the closing remarks.

Dr. Rakesh K. Sharma, Associate Dean (R&D) presenting Report of R&D Activities during 2017-18

Dr. Suril V. Shah, Associate Dean (Academics) presenting Certificates to Students for Academic Achievements

Outgoing Students attending the function

Dr. Samanwita Pal, Associate Dean (Students) presenting Certificates to Students for Non-Academic Achievements

4th Convocation Ceremony

The 4th Convocation of IIT Jodhpur was organized on 25 August 2018 in its Permanent Campus. The Chief Guest for this momentous occasion was *Dr. Srikumar Banerjee*, Chancellor, Homi Bhabha National Institute, Mumbai. *Dr. R. Chidambaram*, Chairman, Board of Governors, IIT Jodhpur (and former Principal Scientific Advisor to Government of India), presided over the ceremony. In this 4th Convocation, the Institute awarded 388 degrees – 289 B.Tech., 37 M.Sc., 43 M.Tech. and 19 Ph.D. degrees, consisting of students who graduated in 2017 and 2018 together. With this the total

number of students who graduated from this Institute has reached 1,108. 267 of these 388 students received their degrees in person in the presence of their parents and family members. Also, the academically outstanding students received medals and certificates. The following are the Medal winners in the Convocation.

S.No.	Prize	Awarded to
1.	2018 President's Gold Medal for the graduating student with Best Academic Performance among all students of ALL 2018 B.Tech. Programs	Vijay Kumar Paliwal B.Tech. (CSE) Student
2.	2018 Chairman, Board of Governors, Prize for the graduating student with Best Academic Performance amongst all students of 2018 B.Tech. (Computer Science & Engineering) Program	Vijay Kumar Paliwal B.Tech. (CSE) Student
3.	2018 Chairman, Board of Governors, Prize for the graduating student with Best Academic Performance amongst all students of 2018 B.Tech. (Mechanical Engineering) Program	Kartik Venkata Ramachandruni B.Tech. (ME) Student
4.	2018 Director's Prize for the Group of Students with Best Academic Innovation work amongst all Students of B.Tech. Programs of 2018 for their project on Self-Balancing Two Wheeler. The work was done under the supervision of Kaushal Kumar A. Desai and Suril V. Shah, and the technology has been transferred to TVS Motor Company Limited, Hosur.	Abhishek Sharma Santosh, M. Anandhu Suresh Balasankula Sai Chaithanya
5.	2017 President's Gold Medal for the graduating student with Best Academic Performance among all students of ALL 2017 B.Tech. Programs	Nithin, V. B.Tech. (CSE) Student
6.	2017 Chairman, Board of Governors, Prize for the graduating student with Best Academic Performance among all students of 2017 B.Tech. (Computer Science & Engineering) Program	Nithin, V. B.Tech. (CSE) Student
7.	2017 Chairman, Board of Governors, Prize for the graduating student with Best Academic Performance among all students of 2017 B.Tech. (Mechanical Engineering) Program	Hardik Jain B.Tech. (ME) Student
8.	2018 Chairman, Board of Governors, Prize for the graduating student with Best Academic Performance among all students of 2018 M.Tech. (Electrical Engineering) Program	Atal Tewari M.Tech. (EE) Student

Opening Ceremony of Children's Library @ The Learning Hub, IIT Jodhpur

The Learning Hub, IIT Jodhpur, has started a Children's Library under its umbrella for children of IIT Jodhpur fraternity. The Opening Ceremony was witnessed by guests and children of IIT Jodhpur employees along with their parents.

Dr. (Mrs.) Bharti Swamy, opening the Children's Library

Today's enthused readers, tomorrow's informed citizens…!!

Curious children and parents during the Opening Ceremony of Children's Library

FACILITIES

Our Campus

IIT Jodhpur moved into its sprawling Permanent Campus located on NH 65, Nagaur Road, Karwar (Village), Jodhpur (City) during May – June 2017. By shifting its entire academic activities to its Permanent Campus, the Institute crossed a major milestone. This new campus has been planned meticulously and envisioned to stand as a symbol of academics – simple, but deep. More importantly, it will be an international exemplar of sustainability with strategies for ensuring NET ZERO ENERGY, WATER and WASTE. The other salient features of the Permanent Campus are:

(1) Walking campus, which is pedestrian oriented and bicycle dominant;
(2) Learning facilitated anywhere, anytime with wireless ICT backbone (including Multi-media enabled learning spaces with flexible, shared public spaces);
(3) Thermally comfortable smart buildings with GRIHA 4/5 star compliant buildings and GRIHA LD benchmark campus (including dense desert settlement morphology, low height buildings (up to a maximum of 3 storeys) built with low embodied energy materials, and improved local and traditional methods);
(4) Plantation with native species, soil stabilization, protection from dusty wind to arrest erosion, desertification, and building-up soil moisture over time;
(5) Rain water harvesting, and water reduction and sewage recycling, together greening the site over time; and
(6) Segregated wastes and customized recycling.

Many of the Faculty Members are residing on campus. Initially, there were 60 flats in the *Park Avenue* residential colony; in the Second Phase of Campus Development, 72 more flats have been constructed. Also, 3 new hostel buildings have been constructed. The salient feature of these hostels is *Single AC Room* accommodation in all buildings. A dedicated dining hall building caters to the needs of students and other residents. It has a mess and a canteen that serve hygienic and nutritious food. Essential services and amenities have been established to facilitate residents in their day-to-day needs. A Primary Health Center runs in the residential area, in collaboration with M/s. Goyal Hospital & Research Center, Jodhpur, and is ISO:9001 certified. Basic services (like the groceries, dining and food court, bank, stationery, laundry, beauty parlour and salon services) are operational in the Community Center towards southern side of the Campus. A *Kendriya Vidyalaya* is functional in the campus, running Classes 1 to 8. It is housed in the First Building of IIT Jodhpur. There is a dedicated bus service for commuting from the Campus to and from the city of Jodhpur. The Staff Members have relocated to the Staff Quarters on campus during February 2019.

The photographs in the pages to follow give a glimpse of the Permanent Campus of IIT Jodhpur.

A view of the Main Building of IIT Jodhpur

Blue 1: Boys Hostel, IIT Jodhpur

Dining Hall

Library Building: *The Learning Hub*

A view of *Park Avenue*: Faculty & Officers Housing

ISO Certified Primary Health Center

Shopping Center in the Community Center, Jaisalmer Club

Facilities on Campus

Following are some facilities that are available in Permanent Campus of IIT Jodhpur:

(a) ***ATM & Bank:*** The IIT Jodhpur Branch of SBI (State Bank of India) and its ATM are housed in the Community Center Building, enabling students and residents to make transactions with ease.

(b) ***Dining Hall:*** The Dining Hall Building has a Mess and a Restaurant that cater to the needs of students and employees. They provide hygienic food, fresh juices and various other snacks. The mess offers good quality food, regularly monitored by the Wardens for hygiene and nutritional values, and provided at affordable cost.

(c) ***Gymnasium:*** All students hostels have well-equipped gymnasium for students.

(d) ***Entertainment Room:*** Every hostel consists of recreation facilities (like TV Rooms, where students can enjoy matches and watch movies) along with indoor games (like table tennis and carroms).

(e) ***Laundry Service:*** Students and residents are facilitated with a dedicated laundry service on campus.

(f) ***Shopping Center:*** Shops catering to the various primary needs of students and residents, like, grocery, stationery, grooming parlour, milk parlour, are housed in the Community Center Building.

(g) ***Transport Services:*** The Institute has a bus service running between the Permanent Campus and Jodhpur City at regular intervals, exclusively for the Students of the Institute.

(h) ***Medical Services:*** The Primary Health Center operated by M/s. Goyal Hospital & Research Center Pvt. Ltd., Jodhpur, in the residential area of the Institute, provides routine health services to students and residents of the Campus. Besides this fully functional, round-the-clock, ISO Certified, Primary Health Center in the campus, IIT Jodhpur is fortunate to have in the city an all new state-of-the-art All India Institute of Medical Sciences, the associated Hospitals of the S. N. Medical College and some specialized hospitals. The Institute has agreements with a few prominent hospitals for priority treatment to its employees and students. These include: Goyal Hospital and Research Center, Medi Pulse Hospital, and Vasan Eye Care Hospital. Also, the Institute has constituted a Medical Board consisting of Senior Doctors from the Medical College and the AIIMS; advice is taken for enhancement of medical services of the Health Centers and in critical medical cases. IIT Jodhpur has empanelled two hospitals in Jaipur. These two hospitals are accredited by National Accreditation Board for Hospitals & Healthcare, and patients can be referred to these hospitals as per the need of the treatment.

For its copybook-style Master Plan, the Master Plan of IIT Jodhpur's Permanent Campus has been awarded ***5 Star Rating*** by the Green Rating for Integrated Habitat Assessment (GRIHA) Council under GRIHA LD V1 category on 11 December 2018. The campus design of IIT Jodhpur visualizes all parts of all zones as interdependent, integral network, like the metabolism of a living organism, integrating social, economic and environmental sustainability to become a near-zero emission campus. Unlike a campus where buildings are spread out, increasing infrastructure and water consumption and creating heat islands, this campus uses a series of compact urban clusters typical of desert settlements. The campus is designed to be a flexible plug and play system by using a series of service tunnels, trenches and serviceable shafts that allow easy maintenance and upgrading of all wired and piped services without breaking open a wall, slab or road.

ACADEMIC & RESEARCH FACILITIES

The Permanent Campus of IIT Jodhpur spreads across 852 acres of land located ~24 km away from the center of the city of Jodhpur on National Highway 65 towards Nagaur, N-NE from the center of Jodhpur. It has 3 parcels of land. Presently constructions exist in Pockets A and B. The First Phase of Construction is complete with the buildings following buildings that are being used for its academic, research and administrative activities are:

1. Main Building, housing all the administrative offices of the Institute;
2. *The Learning Hub*, housing the Library of the Institute, and accommodating the Computer Center;
3. Lecture Hall Building with 9 classrooms of 60 seating capacity and a 325 and 650 seater classrooms each. All the classrooms are air conditioned, equipped with modern learning facilities like the Internet and audio visual facilities;
4. The Basic Laboratories are established in one building;
5. Department of Computer Science & Engineering (CSE) Building houses the Departments of CSE, Mathematics, and Humanities & Social Sciences. Also, the laboratories of Computer Science & Engineering are established in this building;
6. Departments of Chemistry and Bioscience & Bioengineering are housed in the building of Department of Chemistry;
7. Departments of Electrical Engineering and Physics share the space in the building of Department of Electrical Engineering;
8. Department of Mechanical Engineering also houses the newly established Department of Metallurgical & Materials Engineering;

Besides these buildings, the First Building of IIT Jodhpur in Pocket B houses the Office of Infrastructure.

The following pages give a description of the laboratories and research facilities, library and computing facilities of the Institute.

Laboratories

IIT Jodhpur has established good number of teaching and research laboratories and facilities, which aid in elevating the students from minimalist academic concerns to inquisitive world of scientific arena. These teaching and research laboratories help Faculty Members and Students work for better future by supplementing and improving existing technologies and bodies of knowledge, using competence, creativity and imagination. Also, the Institute has a centralized management of its sophisticated instruments under one umbrella known as the *Center for Advanced Scientific Instruments (CASE)*; for use by both internal and external users.

Appearing below is a list of laboratories established in IIT Jodhpur whose details are given in the following pages.

S.No.	*Name of the Laboratory*
1.	Advanced Biosciences and Neuroscience laboratory
2.	Chemical Biology laboratory
3.	Environmental Biotechnology Laboratory
4.	Protein Engineering Laboratory
5.	Chemistry Laboratory
6.	Multimedia Laboratory
7.	Networking Technologies Laboratory
8.	Control / DSP / Microprocessor Laboratory
9.	Electronic Circuit Laboratory
10.	Instrumentation & Communication Laboratory
11.	Power Electronics Laboratory
12.	Robotics Laboratory
13.	Advance Manufacturing Laboratory
14.	Central Workshop
15.	Dynamics & Vibration Laboratory
16.	Electro Mechanical Energy Conversion Laboratory
17.	Fluid Mechanics & Heat Transfer Laboratory
18.	High Temperature Solar Thermal Laboratory
19.	Materials Testing & Solid Mechanics Laboratory
20.	Renewable Energy Laboratory
21.	Solar Radiation Laboratory
22.	Biomolecular Information Processing Laboratory
23.	Magnetic Property Measurement System (MPMS / SQUID) Laboratory
24.	Materials Analysis Laboratory
25.	Physics Laboratory

1. Advanced Biosciences and Neuroscience laboratory

The Advanced Biosciences and Neuroscience laboratory provides cellular and molecular investigative tools for UG and PG teaching and research in neuroscience. Cell culture studies are utilised along with molecular biology, biochemistry and microscopy approaches to elucidate the molecular mechanisms underlying molecular and cellular interactions underlying inflammation and repair. Inflammation is a key component of many diseases including traumatic brain injury, cancer, multiple sclerosis, stroke, asthma, Parkinson's disease and Alzheimer's disease. Inflammation is characterized by accumulation and proliferation of innate immune cells. This is followed by clearance of dead cells and cellular debris along with enhanced expression of molecular mediators called cytokines and chemokines, which cause migration and proliferation of immune cells and may even lead to cell death. Understanding the mechanisms by which inflammation occurs, and the molecular mediators involved in this process, is necessary for identification of potential therapeutic targets.

2. Chemical Biology laboratory

The Chemical Biology Laboratory deploys cellular and molecular biology approaches to explore the pathogenesis of cancer and other neurodegenerative diseases. Given the interest in neuronal death, it is no wonder that this lab team is interested in E3 ubiquitin ligases essential for quality control events in neuronal survival. Protein ubiquitylation is highly versatile, ordered, the multistep post translation modification enzymatic process that regulates numerous aspects of cell physiology. This lab team has been studying the role of such E3 ligases to find out the role of quality control E3 ubiquitin ligases in maintenance of proteostasis and hence playing a role in cellular survival and death. Such important biochemical findings may contribute to innovative therapeutic approaches for the diseases associated with misfolded proteins.

Organisms at the cellular level possess a well-established protein quality control mechanism which the lab team is trying to understand at present. The role of E3 ubiquitin ligases was reported in such mechanisms so far. Our laboratory is dedicated to a qualitative research in the field of protein quality control mechanisms. We have recently found that a HECT domain containing E3 ubiquitin ligase E6-AP helps in Amyotrophic Lateral Sclerosis diseases suppression through its

association with the misfolded protein aggregates formed by SOD1 mutants. Such findings support that an E3 ligase can have a capability to clear the misfolded protein aggregation. However, while appreciating the incredible efficiency of cellular systems, we must recognize the crucial role of chaperones which are supposed to work preferentially compared to E3 ubiquitin ligases in order to refold the misfolded proteins, and hence conserving the energy utilized during the translation of those proteins. Various examples made us think that we could explore the role of both the chaperones and E3 ubiquitin ligases in the clearance of misfolded proteins. Therefore, now we are working not only with E3 ubiquitin ligases but also with the chaperones and even in their functional association to confer an efficient quality control mechanism to the cell.

3. Environmental Biotechnology Laboratory

The Environmental Biotechnology Laboratory at IIT Jodhpur, in addition to serving various undergraduate and post-graduate courses, undertakes research in the areas of bioenergy and bioremediation. Researchers in the lab investigate on waste to energy conversion processes with an aim to develop sustainable biotechnological solutions to water pollution and energy. At present, successful bioremediation processes for nitrate and chromium (VI) contaminated wastes have been developed. Also, research is underway for the development of low cost Microbial Carbon Capture cells for power generation and algae cultivation. In addition to this, researchers in the lab have been successful in isolating novel yeasts, the potential biodiesel producing candidates.

4. Protein Engineering Laboratory

The Protein Engineering Laboratory at IIT Jodhpur is undertaking cutting-edge research in developing biomaterials based on the understanding of structural and functional properties of useful proteins such as collagen. The implications of the research could also extend towards development of effective biomedical devices and implants.

5. Chemistry Laboratory

The core objective of the chemistry laboratory of IIT Jodhpur is to train students in scientific methods that would solve real problems at the frontier of our understanding of the matter. This is a multi-use laboratory and provides a number of resources to assist undergraduate, graduate and Ph.D. students in planning their professional careers after completing their academic program at IIT Jodhpur.

This laboratory maintains a broad spectrum of state-of-the-art instrumentation including basic laboratory set up (for organic, inorganic, organometallic and material synthesis), Nitrogen, Oxygen and LPG gas line, Inert atmosphere boxes, vacuum line work, fume hood pH, conductivity, BOD, COD, meters, Rotary evaporator, Vacuum pumps, centrifuges, High pressure reactor system, Chiller, microbalances, Orbital Shaker, GC, HPLC and Radleys ready reactor. In the academic year 2012-2013, the lab procured equipment such as Polarimeter, Melting point Instrument, Solar Simulator, Digital Titrator, Kugalrohr, Electrochemical work stations, and Battery analysers.

A 500 MHz NMR spectrometer with solid state probe is an essential resource, whose mission is to make a state-of-the-art high field NMR and methods available to researchers, providing a place for them to pursue their projects and develop new methodologies in NMR methods.

Nuclear Magnetic Resonance Spectrometer (500 MHz)

Chemistry Laboratory

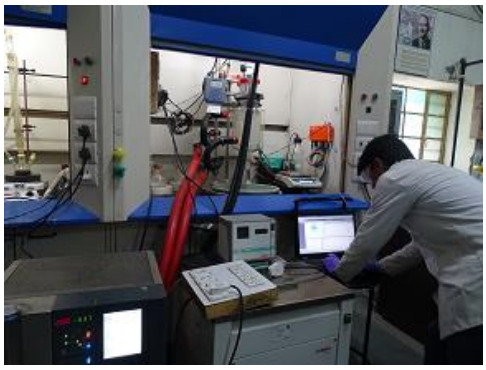
Powder X-ray Diffractometer

Scanning Electron Microscope and Electron Dispersion Spectrometer

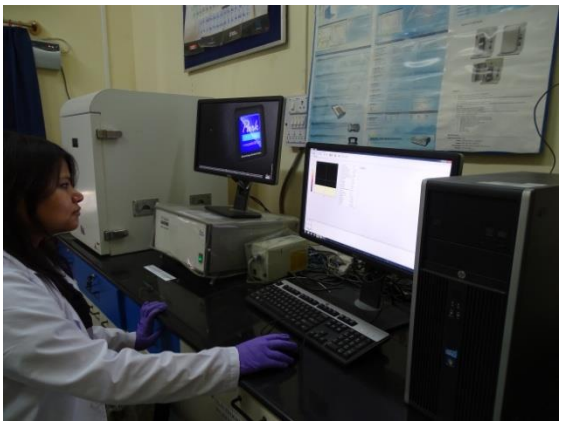
Solar Simulator

Surface Area Analyzer

Gas Chromatograph



Reactor Ready



Atomic Force Microscope

Fluorescence Spectrometer

Glow Box

High Pressure Reactor

6. Multimedia Laboratory

The Media Laboratory provides facilities to carry out work related to E-learning, image processing, and computer vision. The thrust areas of research in this lab are: Semantic analysis of video/image content, video surveillance, human motion analysis, document image analysis, content based image retrieval etc. E-learning related activities include video recording, audio-video digitization, video editing, etc. In the academic year 2011-2012, a research on Indian sign language recognition using Kinect has been initiated. The following equipment are available in this laboratory.

1. Scanners: Book Drive Mini, UMAX Powerlook.
2. Cameras: Sony 177PD, Sony Camcorder, Cannon 500D VCR: Sony DSR 45AP
3. Tripods: Manfrotto, iMac.

7. Networking Technologies Laboratory

Networking Technologies Laboratory has been started functioning in the Academic Year 2011-2012. It aims at enabling undergraduate and graduate students, who pursue their interest in the area of computer networks, to understand the concepts of computer networks and work with contemporary networking equipment in a realistic setting. In addition, the lab aims at providing necessary infrastructure to carry out research activities on advanced topics, such as wireless mesh networks, sensor networks, communication on power lines, from computer networks. The activities that take place in this laboratory are:

1. Prototyping of networking hardware (Example, Ethernet switch, IPV4 router etc.) using NetFPGA.
2. Developing packet processors using "Click router" modular software framework.
3. Establishing infrastructure for the mini-Internet, single-hop wireless networks, multi-hop wireless mesh and sensor networks, power line communication networks, home phone line networks.
4. Studies related to the performance analysis of various protocols over on different network configurations.
5. Development of novel routing algorithms, transport layer mechanisms, and services for next generation networks.
6. Setting up planet-lab infrastructure (which will essentially become part of the global distributed computing platform created over the Internet by connecting over 500+ sites). This allows the students and researchers not only to understand the traffic patterns on the Internet but also to develop new technologies/applications on the Internet for distributed storage, networking mapping, peer-to-peer systems, content distribution service, and cloud computing.

8. Control / DSP / Microprocessor Laboratory

The lab provides software and hardware infrastructure for carrying out experiments in the field of Control Systems, Microprocessor and DSP. Broadly, the lab includes the following experimental setup:

1. Control Systems
   (a) Ball & Beam System from Quanser
   (b) Magnetic Levitation System from Quanser
   (c) Inverted Pendulum System from Quanser
   (d) Software include Scilab / MatLab
2. DSP Lab Equipment
3. Microprocessor Lab

9. Electronic Circuit Laboratory

In this laboratory the students make and test their analog and digital circuits by using all kinds of circuit components like diode, transistor, op-amps, and clocks. The lab has following equipment:

1. Arbitrary Function Generator from Agilent
2. Digital Oscilloscope from Agilent
3. Programmable Power Supply from Scientific
4. 6 1/2 BIT DMM from Agilent

10. Instrumentation and Communication Laboratory

The mission of Instrumentation and Communication Laboratory is to provide platform for UG and PG students on research and hands-on learning in Measurement and Automation Technology. The state-of-the-art facilities at this laboratory offer innovative research opportunities in the astronomical space of communication and real time measurement technology. The experienced Lab team nurtures students' talent in research and offers an opportunity for developing sophisticated measurement, test, control systems, data analysis system and next generation communication technologies.

Students also develop theoretical and practical competence in (i) building baseband communication circuits, (ii) the application of NI LabVIEW graphical programming software, (iii) the PXI based NI RF/Wireless measurement stand, (iv) evaluating NI WSNs and LabVIEW software, adjusting a software-defined radio system, measuring the parameters of studied antennas and (v) the operation of analog modulation schemes. NI-Lab contains software and hardware subsystems which enable rapid prototyping and development of embedded systems for various applications. Currently, this lab constitutes the following setups:

1. NI ELVIS based Communication Systems and Theory Teaching Stand
2. Large MIMO Stand for Spectral, Channel Efficiency Studies and New Standard Development
3. Protocols Stand for WLAN, WiMAX, GPS, RFID, Zigbee, GSM, CDMA, WCDMA, Bluetooth
4. FPGA-enabled Software Defined Radio Stand for Custom Communication Scheme Development and Research
5. Basic Analog and Digital Communication Techniques Teaching Stand
6. Wireless Sensor Networks Stand
7. Signal Intelligence and Wireless Spectral Monitoring Stand
8. Wireless Prototype Characterization and Testing Stand
9. FPGA based protocol development for base-band studies and signal processing
10. VNA based Antenna Characterization Stand
11. Fiber Optic Communication Stands
12. Network Based Manufacturing
13. USRP (Universal Software Radio Peripheral) based wireless communication system for physical layer design, record and playback, signal intelligence, algorithm validation and more.
14. Network Communication and Manufacturing Control Stand

This lab has contributed immensely to the learning and research activities at IIT Jodhpur. Communications and Networking Lab, Intelligent Instrumentation, System Analysis Techniques and Bio-Sensors courses are being offered through this lab for both graduate and undergraduate students. The lab has provided the right hardware and software tools for many industrial consultancy projects, including the development of DRM/DRM+ IP for digital radio standards, Link budget design for Marine environment, DRFM based Radar echo simulator and Blind Signal Demodulator. Other projects being done in the lab are development of affordable wireless video transmission systems, cognitive radio and Zigbee protocol development.

11. Power Electronics Laboratory

The power electronics laboratory is used for undergraduate studies and research in the area of power electronics based power conversion systems, control systems and drives. The laboratory facilitates for faculty and students to conduct research in the areas power converters and AC/DC micro-grid. The laboratory is equipped with state-of-art test and measurement instruments, converters, power supplies and programming boards. Major equipment available in this lab are:

1. High Precision power Analyzer –YOKOGAWA WT3000.
2. DSO- Tektronix 200MHz (DPO 2024) and 1GHz (DPO 4104B).
3. Function Generator-Tektronix AFG 3021B.
4. Power Supply: 0-30V, 1A; 0-32V, 3A; 0-32, 10A.
5. Three phase inverter drive.
6. Three phase inverter stacks.
7. DC-DC converters.
8. Differential currents Probes.
9. Current clamps.
10. Isolation Transformers.
11. FPGA training kits and programming boards.

12. Robotics Laboratory

IIT Jodhpur has an advanced robotics laboratory for PG/UG education and research. The infrastructure includes the following:

1. Vicon Motion Tracking System
2. Mobile Manipulator comprising of Barret WAM ARM mounted on a PowerBot Mobile robot platform
3. Pioneer P3-DX mobile robots - 10 units
4. Turtlebot
5. Wheel Chair
6. Force Plate
7. Infrastructure for Mobile Robotics - Navigation, Path-planning, SLAM
8. Dynamic and Kinematic Control problem, Redundancy Resolution, Inverse Kinematics of Manipulators and Mobile Manipulators, Visual Servoing, and
9. GAIT Analysis and Robot Assisted Rehabilitation

13. Advance Manufacturing Laboratory

In the Advance Manufacturing Laboratory, CAD model of object is prepared using 3D modelling software like ProE, SolidWorks, and Catia. FE analysis is carried out using Analysis software like Ansys, Nastran/Patran and precision manufacturing is carried out using CNC programing/CNC machines and Rapid Prototyping Machine/ 3D Printer. The manufactured components are characterised for mechanical behaviour using UTM, Hardness testers, Impact testers etc. The role of CNC machines in increasing flexibility and precision of the product to be manufactured and, increasing productivity are illustrated. The Advance Manufacturing Laboratory of institute is equipped with following facilities:

1. CAD Section
2. Precision Machining Section
3. Rapid Prototyping Section
4. Mechanical Behaviour Characterisation section

14. Central Workshop

Central workshop is the central facility of Institute, consisting of various workshops such as Welding shop, Carpentry shop, Fitting shop, Sheet metal shop, Foundry and Heat treatment shop and Machine shop. Undergraduate Students get hands on experience in above sections by doing the job work and carrying out projects as part of their coursework and also students utilize the facilities for fabrication purpose of their academic projects. It also supports the R&D projects of the institute handled by various Faculty Members and Ph.D. and M.Tech. Thesis work of research scholars by providing them assistance in fabrication of their research set-ups. The following machines and equipment are available in the Central Workshop:

1. Welding fume extraction down draft table
2. Multi process welding equipment
3. Portable single phase MIG/MAG
4. AC/DC welding equipment
5. MIG/MAG welding equipment
6. Treadle operated shearing Machine
7. Hand operated Folding Machine
8. Kaizen Muffle Furnace
9. Hand operated Jeeny or Burying Machine
10. Motorized Circle cutting Machine
11. Hand operated Circle cutting Machine
12. Hydraulic shearing Machine
13. Portable Heating Plant
14. Portable hardening plant
15. Forging Heating Plant
16. Aluminium Melting Plant
17. Fitting Table
18. Mould Making Facility
19. Portable Tool Grinder

15. Dynamics and Vibration Laboratory

Dynamics and Vibration Laboratory is well equipped with various mechanisms such as Motorized Gyroscope Apparatus, Static and Dynamic Balancing Apparatus, Universal Governor Apparatus, Coriolis Component of Acceleration Apparatus, Epicyclic Gear Train Apparatus, Cam Analysis Machine Apparatus, Universal Vibration Apparatus, Stroboscope and Tachometer 10 in helping the students to understand the behavior of the various mechanisms and forces acting on them.

In addition, the laboratory is also equipped with various vibration measuring instruments for computing the vibration characteristics of a machine or structures and equipment for vibrating the machine or structures in order to finds its resonance characteristics in various environmental conditions. Following equipment are available for measuring and/or testing vibration characteristics of elements to structures.

16. Electro Mechanical (EM) Energy Conversion Laboratory

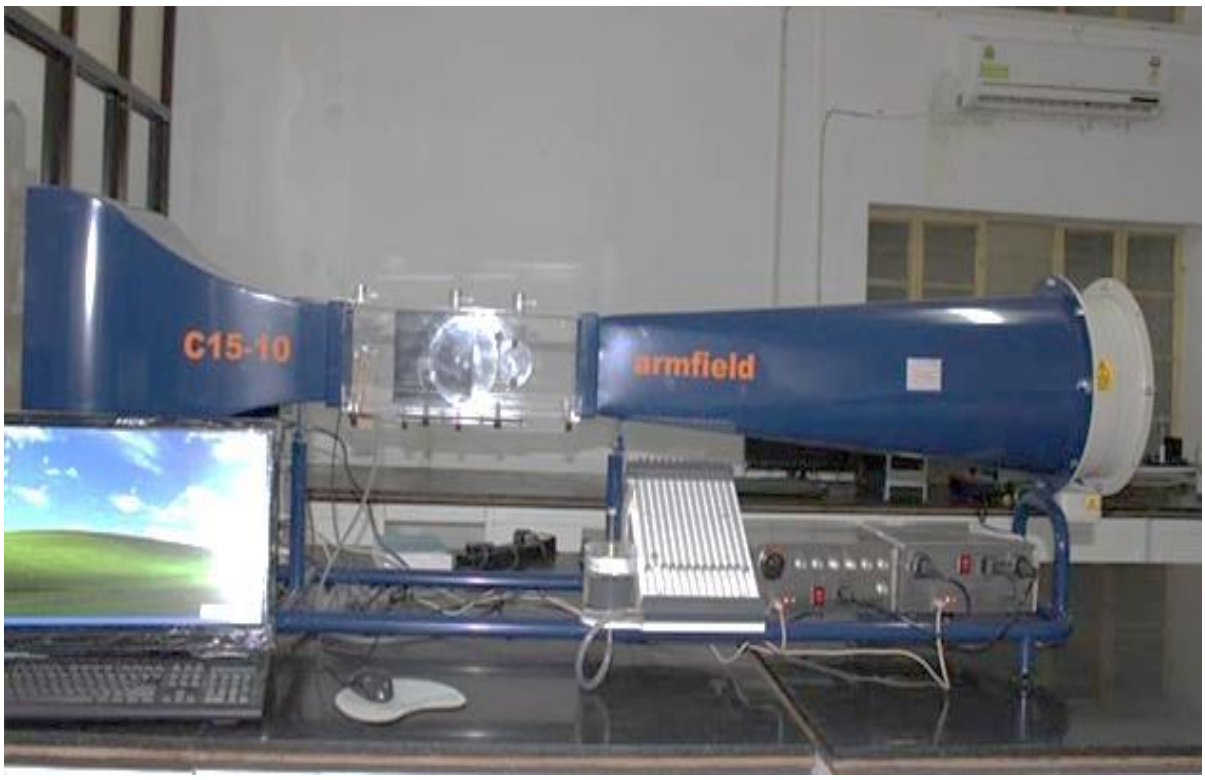
In order to familiarize students to Electrical Machines properties & characteristics, IIT Jodhpur has established "Electro Mechanical Energy Conversion Laboratory" and has continually been developing the potential of its lab facility. In this lab, state-of-the-art "Electrical Engineering" facilitates the students to empower their potential by familiarizing themselves with the fundamental of electro-mechanical energy conversion process, including several practical & industrial applications of machines in true applicable environment. This lab occupies conventional as well as modern equipment to fulfil the basic and modern technological requirements with continual developing efforts.

17. Fluid Mechanics and Heat Transfer Laboratory

At Fluid Mechanics Laboratory students learn about the following:

1. Analyses and evaluation of experimental data
2. Comparison between theoretical models and experimental data
3. How to design a fluid mechanical and heat transfer system e.g. a piping system considering various technical aspects, heat exchanger, thermal energy storage, receiver, wind catcher, volumetric air receiver.

In addition to the above, this laboratory aims at generating innovative ideas in students by promoting the design of experiments and small scale projects. At present in the fluid mechanics laboratory are conducted experiments on losses in pipes (smooth/rough) and fittings (e.g. valves, bends), comparison between different flow meters, particle image velocimetry technique, Hot-wire anemometer, labscale sub-sonic wind tunnel for- pressure distribution around a cylinder/air-foil, lift and drag balance, boundary layer development, weather monitoring. Furthermore the lab provides training on standard software, such as, CFAST for fire simulation.



The Heat Transfer Laboratory is equipped with the demonstration of various thermometry techniques, heat exchange system, ventilation system, Natural and forced convection system, heat conduction unit for different materials, lab and industrial-scale solar water heater system, and thermal radiation unit. All these equipment are installed with respective software.

For testing, calibration and research purpose in these laboratories, various equipment such as Laser Doppler Velocimeter with Particle Analyzer, pressure and temperature calibration, blower with variable flow, pressure transducers, differential pressure transducers, turbine test rig, turbo-machine test rig, IC engine test rig etc., have been procured.

Moreover, multi-purpose test set up is being indigenously designed and the components / sub-systems involved are being fabricated locally. This system aims at investigation and evaluation of solar thermal sub-systems such as volumetric air receiver, thermal energy storage, air-water heat exchange systems and their simultaneous operation. Devices such as earth air heat exchange system, wind catcher, and air-cooled heat exchange systems are being fabricated and tested for certain applications.

18. High Temperature Solar Thermal Laboratory

High Temperature Solar Thermal Laboratory is one of the specialized laboratories at IIT Jodhpur. The aim of this laboratory is to:

1. Address fundamental aspects of fluid flow and heat transfer related problems, like, dust deposition, and
2. Design and analysis of sub-systems for concentrated solar thermal systems.

Some of the sub-systems being designed and analyzed in this laboratory are:

(a) Open Volumetric Air Receiver for process heat applications
(b) Compact heat exchanger
(c) Solar Convective Furnace

This laboratory includes test facility, such as, Solar Air Tower Simulator (SATS) facility, advanced research grade equipment like Laser Doppler Velocimetry. SATS facility includes, open volumetric air receiver, thermal energy storage, air-water heat exchanger and is being extended with solar convective furnace.

19. Material Testing and Solid Mechanics Laboratory

The material testing lab of the institute provides facilities to test samples of different types of materials to find out their mechanical properties like modulus of elasticity, tensile and compressive strength, stress strain curve, bending properties, hardness etc. The lab is equipped with following test equipment:

1. Universal testing Machine 5-50 kN
2. Rockwell Tester
3. Brinell Tester
4. Vickers Tester
5. Poldi Hardness Tester
6. Portable hardness tester

20. Renewable Energy Laboratory

To resolve most daunting challenge of this world—energy needs—and also our nation's heavy reliance on fossil fuels, Renewable Energy Laboratory (REL) promotes rigorous and objective empirical research at IIT Jodhpur on issues related to energy and environment. REL focuses on designing, testing, and disseminating renewable and efficient energy system. The mission of REL is to help these technologies to realize their full potential to contribute to environmentally sustainable development in industrial and developing countries. In the renewable energy field, expert faculty and students at this Laboratory are currently striving to create an innovative system to efficiently harness energy from sunlight and wind power. REL has computer interfaced systems and approximately 30 students can work at a time. Students are the greatest resource of REL and IIT Jodhpur has made substantial commitment to the area of renewable energy and been providing all required resources to execute a viable plan and innovative research at REL. One aspect of the evolution of REL is the development of collaborative partnership with other academic and industrial groups. In the near future, it will be a hub for training and public-private sector collaboration. Recently, the lab has started a consultancy project, with Panasonic R & D India Pvt. Ltd., on the prototyping of microbial fuel cells. In addition, the lab has started work on data collection, interpretation, and analysis of PV power plants less than 5 MW in Rajasthan and Gujarat.

The Renewable Energy Laboratory uses the following equipment:

1. Wind power of 2KW Charge controller ~12V, Synchronous generator with permanent magnets ~12V, Lamp board ~12V, Off grid inverter *etc.*
2. PEM Fuel cell Fuel cell with DC converter, Electronic load, Metal hydride storage cell, Electrolyser, 200W/20V/10A.
3. Advanced Photovoltaics Solar module simulation model 23V/2A, Solar module with solar altitude emulator, Solar charge controller 12/24V, 6A, Solar accumulator 12V, 7Ah, Off grid inverter 230V, 275VA etc.
4. Combined RF/DC Sputtering Unit for Coatings Applications.

21. Solar Radiation Laboratory

The Ministry of New and Renewable Energy (MNRE) has selected the IIT Jodhpur campus site as one of their solar radiation centers. Solar radiation measurement (Global and Direct), Humidity, Ambient temperature, Rain gauge and wind speed measurement are carried out at this center and the data is transmitted via a satellite link to the MNRE nodal center C-WET in Chennai. The instruments in this laboratory are powered by a couple of solar panels. The data collected from this center enables the solar resource assessment required for the setting up of solar thermal and solar photovoltaic power plants as outlined in the Jawaharlal Nehru National Solar Mission (JNNSM).

22. Biomolecular Information Processing laboratory

This laboratory is involved in the understanding of information processing by various kinds of biomolecules and related synthetic molecules. The process involves in using a single molecule first and then a group of molecule on a given interface. The interaction among the molecules in a given external stimuli will help us understanding the communication among them.

23. Magnetic Property Measurement System (MPMS/SQUID)

IIT Jodhpur has created an excellent facility in the field of material characterization. Recently an additional dimension has been added to it by procuring magnetic property measurement system (MPMS). MPMS (SQUID) is getting installed in coming few months. This will provide a wide temperature 2 K – 1000 K range for both DC and AC magnetic measurements in conjunction with field dependent magnetic measurements. Such measurements will help to understand magnetic properties and associated spin dynamics in magnetic materials.

24. Materials Analysis Laboratory

The research focuses on the development of novel materials for different applications including materials for energy generation and storage. The current work includes the development of solution processable CIGS compound semiconductor materials for solar cell applications and transition metal oxide based materials for lithium ion batteries and supercapacitor applications. The laboratory is equipped with synthesis of bulk and thin films techniques such as sputtering, sol-gel process assembly etc., and numerous characterization techniques such as X-ray diffraction, Scanning electron microscope, Optical spectroscopic techniques, LCR meter, ferroic measurement system for bulk samples etc.

In addition, the group is also focusing on the development of multifunctional materials for different applications such as solar selective coatings, ferroic materials for high frequency absorbing system, and magnetic particles for different applications. The laboratory is equipped with state-of-the-art facilities to carry out thermal analysis, electrochemical analysis, surface morphology studies, separation techniques for chemicals, electrical conductivity measurement devices, glove box etc.

25. Physics Laboratory

The mission of the Physics laboratory at IIT Jodhpur is to provide students with experiential knowledge in basic physics. This laboratory has state-of-the-art facilities including specific equipment and offers different experiments in Mechanics, Waves, Electricity, Magnetism, and Optics. The lab has facilities for experimenting with Speed of Light, Zeeman Effect, and Michelson Interferometer.

Computer Center

The Institute has a modern Computer Center, presently running on a gigabit LAN with 1Gbps internet bandwidth. It is the nucleus of all computing activities for Students, Staff Members and Faculty Members. Several terminals running on Windows and GNU/Linux operating systems across the campus provide access to several licensed software, like MatLab, Mathematica, Cadence, Mentor Graphic, Ansys, PSCAD and Solidworks. A 802.11/b/g/n Wi-Fi service is enabled in the academic and residential areas. Also, the Computer Centre hosts a High Performance Computing cluster for scientific research.

Resources

The Institute has five key resources at the Computer Center, namely, the Linux Operating System, SVN Server, GIT Server, OwnCloud and various licensed application software that are used for academic and research purpose, have made it possible to offer the various resources and facilities.

Facilities

The Institute extends three facilities, namely, networking, computing, Internet access, and LDAP and Active Directory ID facilities through its Computer Center.

High Performance Computing

Highly equipped laboratory facilities

Services

The Institute offers services like FTP, LDAP, HPC, Web Hosting, Network Connectivity, VPN, EduRoam, and News Group, through its Computer Center.

Library

The Learning Hub, i.e., the library supports teaching and research activities of the Institute by facilitating acquisition, organization and dissemination of knowledge resources, and also by providing library & information services to IIT Jodhpur community. *The Learning Hub* on the Permanent Campus of the Institute is sited pre-eminently at the entrance of the academic area of the Institute, stands as the tallest structure on the campus scaling over 15m from the ground; keeps time for the entire campus with a 4-way clock at the clock tower, only the third in the city of Jodhpur. It functions with the guidance of Library Committee, which has representatives from all Departments, and Student Representatives.

The Learning Hub, Library Building in Permanent Campus, IIT Jodhpur

Collection

The Library has a rich and growing collection of 13,000 volumes of books (approx.), which include textbooks, and books of general and reference nature. A wide range of scholarly journals and databases are also subscribed from various sources for the academic and research purposes of the Institute.

Services & Facilities

The following services and facilities are being provided by the Library to its registered users.

1. Member & Circulation Services,
2. Orientation & User Education,
3. Borrowing Facility,
4. Reference & Information Service,
5. Course Reserves,
6. Current Awareness Service,
7. Inter Library Loan & Document Supply, and
8. Digital Library Facility & Services.

Digital resources are accessible through the Library website, which is a comprehensive site maintained by Library. These include the Library subscribed resources, online catalogue, lists of useful resources accessible in the open domain like the open access journals, books, repositories, video lectures, open courseware. These resources are continuously updated.

Also, Library maintains a portal for hosting bibliographic listing of the Faculty Publications. Additionally, a course guide portal has also been developed and maintained by Library, wherein, resources i.e., books available in Library, subscribed journals, resources accessible in open domain are listed and linked, course-wise. This platform is very useful for the students in finding topical and course-wise resources. Library also provides remote access to the subscribed scholarly resources and anti-plagiarism checking.

Stacks & General Section

Course Reserves & Digital Library Section

Appearing below are some vital statistics of Library for FY 2018-19:

S.No.	Description	Statistics
1.	Books added	Total 402
	a. Number of titles added	84
	b. Number of volumes added	402
2.	Number of Scholarly Resources subscribed (For CY 2018)	Total 18
	a. Fulltext resources	12
	b. Research databases	6
3.	Document Supply & Inter Library Loan service requested fulfilled	Total 124
	a. Document supply of articles & research papers	124
	b. Books arranged on Inter Library Loans	0
4.	Circulation Transactions	Total 26122
	a. Number of book check-outs	12,613
	b. Number of book check-ins	12,620
	c. Number of book renewals	874
	d. Number of book recalls	15

Details of Journal Resources

Library has licensed the following journal resources in this year, for teaching, research and private study of its academic community.

1. Association of Computing Machinery Digital Library,
2. American Chemical Society Journals,
3. American Physical Society Journals,
4. American Society for Mechanical Engineers Digital Library,
5. IEL (IEEE) Online Digital Library,
6. Institute for Studies in Industrial Development (ISID) Database,
7. JStor Archives,
8. MathSciNet,
9. Nature Journal,
10. Oxford University Press Journals,
11. Elsevier Science Journals,
12. Society of Industrial & Applied Mathematics Journals, and
13. Springer Journals.

Also, the Library is a core member of the *eShodhSindhu: Consortium for Higher Education Electronic Resources*, operated by INFLIBNET Center, Gandhinagar, through which subscriptions to major resources are fulfilled. Besides, the Library is a member of *DEveloping Libraries NETwork (DELNET), New Delhi* through which the Library meets its Inter Library Loan requirements.

Library subscribes to Plagiarism Detection Tool and Remote Access Tool for its users. Orientation sessions and Library Instruction sessions for Students are conducted by the Library Staff Members during registration of new students and on demand.

Primary Health Center

IIT Jodhpur provides round the clock health care facilities to Students, Faculty and Staff Members of the Institute, at its Permanent Campus. This fully equipped and self-sufficient facility is run by M/s. Goyal Hospital & Research Center Private Limited, Jodhpur. Presently, the following facilities available at the Primary Health Center (PHC).

1. Qualified Medical Doctors,
2. Regular Visits of Specialist Doctors,
3. Paramedical Staff,
4. Physiotherapy Unit,
5. Pharmacy,
6. 24 Hours Emergency Room, and
7. an ICU Ambulance.

Besides this fully functional, round-the-clock, ISO Certified, Primary Health Center (PHC) in the campus, IIT Jodhpur is fortunate to have in the city an all new state-of-the-art All India Institute of Medical Sciences, the associated Hospitals of the S. N. Medical College and some specialized hospitals. The Institute has agreements with a few prominent hospitals for priority treatment to its employees and students. These include: Goyal Hospital and Research Center, Medi Pulse Hospital, and Vasan Eye Care Hospital.

The Health Center coordinates and supervises the treatment of students, employees, and their dependents during hospitalization in other hospitals that are empaneled by the Institute, to provide in-patient care. On request, the Health Center extends its health care services to Institute visitors during their stay in the residential campus. Under emergency circumstances medical services are also extended to the non-IIT Jodhpur community residents in the residential campus. Details like patient records, medicine procurement/disbursement, assets, equipment of Health Center are all computerized.

Sports Facilities

Sports and games facilities to students are provided on campus. Facilities for playing Basket Ball, Volley Ball, Cricket, Lawn Tennis and Table Tennis have been developed. Jogging and running track is available. There is a modest badminton facility in every hostel. Development of facilities for few more sports are underway. Students also enjoy a gymnasium facility at the residential campus.

Lawn Tennis Court in Permanent Campus of IIT Jodhpur

Basket Ball Court in Permanent Campus of IIT Jodhpur

SC/ST Cell

An SC/ST Cell for ensuring the proper utilization and adaptation of reservation policies and guidelines issued by the Government of India, is functional at IIT Jodhpur. The Cell deals with matters related to grievances received from SC/ST and OBC employees and students in the Institute. The Cell acts as a communicator between the Institute and the Ministry of Human Research and Development in matters related to SC/ST and OBC students and employees in the Institute. IIT Jodhpur has adopted the reservation policy while selecting the students for MCM scholarship. In addition, a substantial number of SC students whose total family income is limited to Rs. 6 lakhs per annum, are deriving the benefit of Central Sector Scholarship of Top Class Education available from the Ministry of Social Justice and Empowerment.

Women Cell

The Women Cell, IIT Jodhpur, functions in accordance with the provisions contained in Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013. The following are some activities organized by the Women Cell during FY 2018-19.

International Women's Day Celebration

The 2019 International Women's Day was celebrated at the Indian Institute of Technology Jodhpur on 8 March 2019. The program was organized by the Women Cell, IIT Jodhpur. Dr. Kshema Prakash, Convenor, Women Cell, IIT Jodhpur, introduced the program to the guest gathering. The event had an invited talk by Ms. Nisha Johari, Director of Marketing and Product Development, Johari Digital Healthcare Ltd., Jodhpur. She shared her life experiences as a woman entrepreneur and her journey in evolving the company. A Panel Discussion on the theme "Think equal, build smart, innovate for change", focusing on innovative ways in which we can advance gender equality and the empowerment of women, followed the invited talk. The panel discussion was moderated by Dr. Kirankumar R. Hiremath, Assistant Professor, IIT Jodhpur with panel members as Ms. Nisha Johari, Director of Marketing and Product Development, Johari Digital Healthcare Ltd., Jodhpur, Dr. (Ms.) Lipika Dey, Principal Scientist, TCS Innovation Labs, New Delhi, Prof. Santanu Chaudhury, Director, IIT Jodhpur, and faculty members, namely Dr. Samanwita Pal, Dr. Sushmita Jha, Dr. Rajlaxmi Chouhan, and Dr. Kirankumar R. Hiremath. Prayrika Sharma, 3rd year B. Tech. student recited a poem written by her on this occasion. Dr. (Ms.) Lipika Dey, Principal Scientist, TCS Innovation Labs, New Delhi read out a play based on a woman's struggle between new ambitions and old restrains. Thereafter, Professor Santanu Chauhuri, Director, IIT Jodhpur, welcomed the gathering and shared his thoughts on the occasion. In closing Professor Kirankumar Hiremath, Member, Women Cell, IIT Jodhpur, proposed a vote of thanks.

Panel Discussion during International Women's Day Celebration

Prof. Santanu Chaudhury presenting the memento to the Chief Guest Ms. Nisha Johari

STUDENT ACTIVITIES

Students Gymkhana

Students Gymkhana is the organized system of self-governance of the activities of the Student Body at the Institute level. The Students Gymkhana of IIT Jodhpur is established to:

(1) Uphold the spirit of cooperation, fraternity and social bonding among all Students of the Institute, and

(2) Provide a platform for organizing themselves, undertake self-governance, and organize creative activities for the all-rounded mental, physical, social and cultural growth of students.

Similarly, the student activities at the hostel level are organised through Students Regatta.

The Students of the Institute associate and establish the *Constitution of the Students Gymkhana* in keeping with the tenets of the Gymkhana, and agree to abide by it in all walks of life during their student life. The *Students Gymkhana* hosts its activities through seven Student Societies, and in turn, each Society comprises of several clubs. A Society is a thematic community of students, furthering the cause of the theme among the students. These societies fulfil the varied interests of the students and contribute to their holistic development.

These seven societies are:

(1) Sports & Games Society,
(2) Cultural & Literary Society,
(3) Design & Arts Society,
(4) Science & Technology Society,
(5) Academics & Careers Society,
(6) Campus Life Society, and
(7) Elected Representatives Society.

Under the overall leadership of the General Secretary, Students Gymkhana, and with the overall guidance of Associate Dean (Students), these societies are run by students with help of Student Secretaries and Faculty Advisors for each society.

(1) Sports & Games Society

Sports & Games produce remarkable athletes, and can nurture humble human beings, who have internalised:

(1) The grace of learning to face victory with humility and defeat with grace; and
(2) The force multiplier effect of teamwork.

The Sports & Games Society has been formed with an intent to promote this spirit, by providing to the campus community facilities for sports & games. This Society aims to inculcate this as essential part of every student's life. This society deals with all the sports (formal physical activities carried out under an agreed set of formal rules with the intent of competition, self-enjoyment or a combination of these intents) and games (informal physical activities carried out under a mutually agreed set of informal rules with the intent of recreation) at the Institute level. It is headed by the Student Secretary (Sports & Games Society), and its membership consists of:

(i) Captains of all Institute Teams of the various Sports and Games; and
(ii) Hostel Secretary (Sports & Games Society) of all the Hostels.

The Sports & Games Society of IIT Jodhpur Students Gymkhana formally adopts all Student Sports & Games, which are included in the annual Inter-IIT Students Sports Meet. These sports include Aquatics, Athletics, Badminton, Basketball, Bridge, Chess, Cricket, Football, Gymnastics, Hockey, Kabaddi, Lawn Tennis, Squash, Table Tennis, Volleyball and Weightlifting.

(2) Culture & Literary Society

Student Culture & Literary activities produce remarkable citizens of the country, and can nurture knowledgeable and skilled human beings, who have internalised:
(1) The diverse cultures of India with equal respect for all; and
(2) The richness of traditional & modern literature of India with desire to share with others.

With this intent of promoting this spirit, Students Gymkhana of IIT Jodhpur provides to the campus community facilities for culture & literary activities. The Student Culture & Literary Society of IIT Jodhpur aims to inculcate this as essential part of every student's life.
This society deals with all the cultural and literary activities at the Institute level. It is headed by the Student Secretary (Cultural & Literary Society), and its membership consists of:
(i) Captains of all Institute Teams of the various Cultural and Literary activities; and
(ii) Hostel Secretary (Cultural & Literary Society) of all the Hostels.

The Cultural & Literary Society of IIT Jodhpur Students Gymkhana formally adopts all Student Culture & Literary activities, which are included in the annual Inter-IIT level and other national level Students Culture & Literary Festivals. These include Student Music Activities, Student Dance Activities, Student Drama Activities, Student Film Activities, Student Literature Activities, Student Quiz Activities, Student Book Activities and Student Newsletter Activities as a Club each.

(3) Design & Arts Society

Design & Arts activities produce skilful citizens of the country, and can nurture artistic and skilled human beings, who have internalised:
(1) The diverse creative arts & crafts of India with equal respect for all; and
(2) The richness of traditional & modern designs of India with desire to share with others.

With this intent of promoting this spirit, Students Gymkhana of IIT Jodhpur provides to the campus community facilities for culture & literary activities. The Student Design & Arts Society of IIT Jodhpur aims to inculcate this as essential part of every student's life.
This society deals with all the design and arts activities at the Institute level. It is headed by the Student Secretary (Design & Arts Society), and its membership consists of:
(i) Captains of all Institute Teams of the various design and arts activities; and
(ii) Hostel Secretary (Design & Arts Society) of all the Hostels.

The Design & Arts Society of IIT Jodhpur Students Gymkhana formally adopts all Student design and arts activities, which are included in the annual Inter-IIT level and other national level Students Design & Arts Festivals. These include Student Animation Activities, Student Design Activities, Student Fine Arts Activities, Student FM Radio Activities, Student Photography, Student Media, and Student Cinematography as a Club each.

(4) Science & Technology Society

Science & Technology activities produce skilful citizens of the country, and can nurture artistic and skilled human beings, who have internalised:

(1) The intriguing magic of science and importance of basic, applied and targeted research; and

(2) The challenges of undertaking technology development for the good of the nation.

Students Gymkhana of IIT Jodhpur intends to promote this inquisitiveness towards science and technology, by providing to the campus community facilities for Science & Technology activities. The Student Science & Technology Society of IIT Jodhpur aims to inculcate this as essential training of every student at the Institute.

This society deals with all the science and technology activities at the Institute level. It is headed by the Student Secretary (Science & Technology Society), and its membership consists of:

(i) Captains of all Institute Teams of the various Science and Technology activities; and

(ii) Hostel Secretary (Science & Technology Society) of all the Hostels.

The Science & Technology Society of IIT Jodhpur Students Gymkhana formally adopts all Student Science & Technology activities, which are included in the annual Inter-IIT level and other national level Students Science & Technology Festivals. These include Student Automobile Activities, Student Robotics Activities, Student Astronomy Activities, Student Aeromodeling Activities, Student Science Activities, Student Electronics Activities and Student Computer Programming Activities as a Club each.

(5) Academics & Careers Society

Academics & Careers are two basic premises of presence of student at the Institute. Each student is expected to internalise:

(1) A basic competence (knowledge, skill and attitude) in the discipline of the Program registered for; and

(2) Clarity on distinction between jobs and careers, and prepare for a planned career in the discipline chosen for the study.

Students Gymkhana of IIT Jodhpur wishes to provide a platform to students to represent their desires, difficulties and concerns during the process of education, by providing a mechanism of representation through the Academics & Careers Society. The Student Academics & Careers Society of IIT Jodhpur aims to actively contribute to providing inputs on academic programs, curricula, teaching and infrastructure through the Office of Academics of the Institute.

This society deals with all the student academics and careers related activities at the Institute level. It is headed by the Student Secretary (Academics & Careers Society), and its membership consists of:

(i) Captains of all Institute Clubs of the various student Academics and Careers related activities; and

(ii) Hostel Secretary (Academics & Careers Society) of all the Hostels.

The Academics & Careers Society of IIT Jodhpur Students Gymkhana formally adopts all

Student Academics & Careers activities, which are included in the annual Inter-IIT level and other national level Students Academics & Careers Events. These include Student Career Planning Activities, Student Communications Development Activities, Student Entrepreneurship Skills Development Activities and Student Personality Development Activities as a Club each.

(6) Campus Life Society

Campus Fraternity of students needs to build the personal side of students of life, beyond the purpose of building academic side of life at the Institute. Each student is expected to internalise issues associated with:

(1) The basic needs of shelter and food; and

(2) The safety, health and hygiene.

To provide a platform to students to get real-life experiences and to improve quality of holistic life of students on campus, the Campus Life Society was formed. Also, Students Gymkhana and Students Regatta of IIT Jodhpur actively help in providing the needed interactions and experiences to be able to make considered decision to choose and prepare for a career after graduating from the Institute. The Student Campus Life Society actively works with the Office of Students of the Institute.

This society deals with all the student campus life related activities at the Institute level. It is headed by the Student Secretary (Campus Life Society), and its membership consists of:

(i) Captains of all Institute Clubs of the various student Campus Life related activities;

(ii) Hostel Secretaries (Campus Life Society) of all the Hostels;

(iii) Faculty Member Mentors;

(iv) Staff Member Mentors; and

(v) Senior Student Mentors.

The Campus Life Society of IIT Jodhpur Students Gymkhana formally adopts all Student Campus Fraternity activities at the Institute, including Student Legacy Activities, Student City Tourist Services, Student Dining Services, Student Informal Events, Student Picnics and Social Service Activities as a Club each.

(7) Elected Representatives Society

Student Elected Representatives form a critical interface of students with the Institute, to better the situation on all fronts related to study & living on the campus, and to learn & practice the constitutional way of conducting oneself in & as a community of students. The Student Elected Representatives Society actively works with the Dean (Students).

This society deals with all the student matters specific to each group (program-wise and year-wise) at the Institute level. Student Elections and Student Conduct activities are the major activities of the Student Elected Representatives Society. It is headed by the Student Secretary of the Student Elected Representatives Society (SERS), and its membership consists of all Student Elected Representatives elected from each group of students.

Student Fests & Events

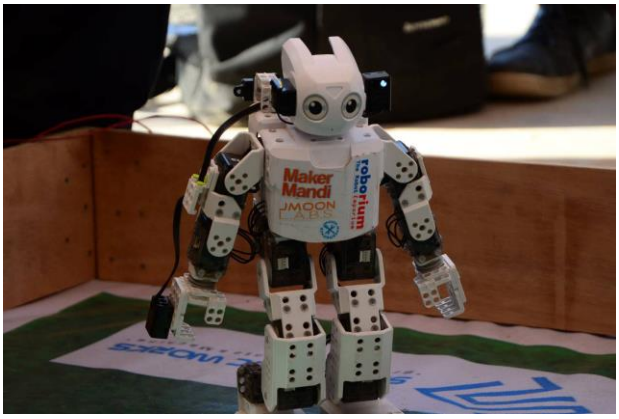
The Students Gymkhana of the Institute organizes events with dual purpose. On the one hand, these events help engage students in creative work during their leisure hours and thereby build skills and interests in them. And, on the other side, these events help students to self-organise themselves and provide platforms for others to excel.

Besides celebrating the Gymkhana Day, the events organized by the Students Gymkhana can be seen in two streams, namely:

1. Inter-Institute Festivals and Tournaments; and
2. Intra-Institute Festivals and Championships.

Like every year, during FY 2018-19 too, the students were successful in nurturing a culture filled with energy and initiative. They have organized events which served as a medium of communication and bonding amongst themselves. Major festivals like Janmashtami, Ganesh Chaturthi, Navratri, Diwali, Sankranti, Eid and Holi were celebrated with great enthusiasm. Sports activities were also regularly conducted to encourage sportsmanship, which were supported by the Faculty Members.

IGNUS, the annual technical-cultural-social festival of IIT Jodhpur was organized at IIT Jodhpur during 21-24 February, 2019. The technofest included several technical events which was attended by representations from various institutions. The event also included performances by various National and International artists.



Glimpse of IGNUS '19

Student Accolades

During the Financial Year 2018-19, students of the Institute received their share of accolades.

(1) Inter-IIT Tech Meet 2018: A contingent of 32 students participated in the Inter-IIT TechMeet 2018 held in IIT Bombay, and won one Gold Medal and two Bronze Medals. The Gold Medal was won in the event BETiC Innovation Challenge by the team comprising Dhruv Krishna, Aman Goel, Pushpank Katare, Deepak Arjariya, Subham Suresh Gattani, Bhaskar Vijay, Mukesh Sharma, and Ashutosh Pandey. The Bronze Medal was won in the Campus Sustainability Challenge by the team mentored by Dr. Ritu Gupta, comprising Kuldeep Singh Jangir, Shreyas Mahajan, Vaibhav Mishra, Aksh Chordia, Nikhil Srivastava, Aryan Singh, Shivang Khandelwal, Sanchit Tapadiya, Piyush Kumar, and Saksham Sanjay Banga. Another Bronze Medal was won in the Coding Hackathon by the team comprising Ajat Prabha, Sahil Harish Batra, Abhinav Suthar, and Saksham Sanjay Banga. The overall position of IIT Jodhpur in the TechMeet was 10th among all the participating IITs.

(2) DST & TI India Innovation Challenge Design Contest (IICDC) 2018: Two of our teams have qualified for the quarterfinals of the DST & TI India Innovation Challenge Design Contest (IICDC) 2018. These teams comprise Eashan Jindal, Ankit Mittal, Arham Chordia, Akshay Goel, and Animesh Kumar Singh (for their project on automated quality control of crops), and Kanani Alishkumar Hareshkumar, Chakshu Gupta, Siddhant Shrikant Saoji, Sumanth U, and Srijan Agarwal (for their project on Netra - Indoor navigator for the visually impaired). This edition of IICDC witnessed participation of 26,511 students from 10,146 teams from all the states of India. Our two teams are among the 346 teams who will be moving ahead to the Quarterfinals Round.

(3) ACM ICPC Regional Rounds: Three teams from our Institute qualified for the ACM ICPC Regional Rounds, out of which the team comprising Anurag Shah, Srijan Agarwal, and Shambhu Singh have received a rank 30 in the Regional rounds.

(4) IEEE Signal Processing Society Travel Grants 2018: Two of our PhD students received $1000 as a part of the IEEE Signal Processing Society Travel Grant to attend two flagship international conferences of the IEEE Signal Processing Society. Hiteshi Jain (PhD Student, CSE) was awarded the travel grant for attending IEEE International Conference on Image Processing (ICIP) 2018 in Greece, and Deepak (PhD Student, EE) received the travel grant for attending IEEE Global Conference on Signal and Information Processing (GlobalSIP) 2018 in California, USA.

(5) Aditya Raj, Ph.D. Student, working under the supervision of Anil Kumar Tiwari, Assistant Professor, Department of Electrical Engineering, has been selected for the prestigious Newton Bhabha Ph.D. Placement program 2019. Under this program, he will work as a visiting researcher at Kingston University, London, under the supervision of Professor Maria G. Martini, for a period of four months. His visit is funded by the Department of Biotechnology (DBT), India and the British Council, UK.

(6) A team of second year students namely Anshul Ahuja, Aksh Chordia and Ayush Saxena bagged the 3rd prize at the Microsoft AXLE 2019 organized at Bengaluru. In their project they developed a distributed IoT-based solution which can be deployed in different rooms of a building and acts as an early warning system and takes precautionary measures on detection of disasters. For instance, if an earthquake is detected, it will shutdown the water, gas and power supplies. They also developed an application that could predict and diagnose skin diseases.

(7) Megha Singh, Ph.D. Student, working with Abdul Gafoor Shaikh, Department of Electrical Engineering, won the Best Paper Award in the track Power Systems and Smart Grid for the research paper "Location of Defective Bearing in three-phase Induction Motor using Stockwell Transform and Support Vector Machine" at the 2nd International Conference on Energy, Power and Environment (towards Smart Technology) organized by NIT, Meghalaya, during 1-2 June 2018.

(8) Tushar Shinde, Ph.D. Student, working with Anil Kumar Tiwari, Assistant Professor, Department of Electrical Engineering, has been awarded Winner's Prize of $1500 in 3 Minute Thesis Competition for a compelling oration on his research work at the IEEE International Conference on Image Processing (ICIP 2018), held during 7-10 October 2018 at Athens, Greece.

(9) Abhinav Srivastava, Ph.D. student, working with Ananya Debnath, Assistant Professor, Department of Chemistry, received Best Poster Prize from Royal Society of Chemistry, for his research work at the International conference on Computational Fluids (CompFlu-2018) held during 06-09 December 2018 at Indian Institute of Technology Roorkee.

(10) Harshkooshal Kamlesh Gandhi, II Year B.Tech. (Electrical Engineering) Student has been awarded Excellence in poster presentation. He has been given a Certificate of Appreciation and Rs. 10,000/- for the paper titled Asymmetric Pulse Propagation through Time-dynamic Gain-loss Assisted Media jointly authored by Piyali Biswas, Bishnu P. Pal and Professor Somnath Ghosh. It was presented to him during the international conference PHOTONICS 2018: The International Conference on Fiber Optics and Photonics, 12-15 December 2018 at IIT Delhi.

Student Counseling Service

The *Student Counseling Service* is an integral part of IIT Jodhpur since 2008. Every year, it strives to ensure that every student gets to know the Institute in intricate details and to help absorb all that the opportunities that the Institute creates. It works towards making the transition of new Students from their homes to the Institute a memorable one. The objective of Student Counseling Service is to provide friendly support to the new Students for their well-being during their stay on the campus and for their personal & professional developments. In essence, the *Student Counseling Service* promotes the development of students along three aspects, namely:

(1) Academic: It provides information about different academic programs of the Institute, and suggests efficient time management and study skills,
(2) Extra-Curricular: It strives to develop talents in students, and encourages them to discover their extra-curricular interests/hobbies. Also, it provides an interface with the Institute activities, and provides a platform for interaction with the Institute; and
(3) Personal: It provides a cushion against homesickness, and assists in adjusting to the new environment (including concerns and difficulties arising during their stay at the Institute) by providing personalised guidance. Also, it provides psycho-education and confidential referral services to students.

The *Student Counseling Service* is headed by a Faculty Member, as the Chairperson of the Student Counseling Service Committee, and ably supported by Faculty Members, Staff Members and senior students. A full-time Student Counselor plays the role of growth coach, well-being moderator and psychological counselor. Besides, the Student Counseling Service strives to:

(1) Maintain a ragging-free campus;
(2) Organize Orientation Program for new students to acquaint them with the Institute;
(3) Organize lectures and trainings on: (a) Career counseling, (b) Stress management, (c) Time management, (d) Health care and hygiene, (e) Vocational training, (f) Relationships, (g) Cope with homesickness, (h) Addiction and others, and (i) motivational lectures by eminent speakers;
(4) Address academic issues of students, e.g., poor academic performance, basic IT skills and language skills of students from non-English background; and
(5) Organize events for encouraging interaction among students of different years, and Staff and Faculty Members.

The following are some activities organized by the Student Counseling Service during FY 2018-19.

Orientation Program

The Orientation Program 2018 was organised during 23-29 July 2018. A week full of fun-filled activities welcoming the students to college and making their transition from school to college smooth. Orientation week included motivating talks from guest speakers Dr. Arvind Bhatt and Smita Majumdar, a fun-filled trip to Mehrangarh Fort, a social drive to various government school in villages near Jodhpur. Arvind Bhatt, Director, Samvaad, advised students to not focus on problems but on selections. Compliment others, don't criticize them and welcome criticism from your well-wishers, he said. Student Counseling Service in coordination with Border Security Force (BSF) organized a trip to Jaisalmer and Indo-Pak border outpost during 7 August 2018, 18 August 2018 and 23 September 2018 for the newly joined students. Amit Lodha, IPS Officer, addressed these students during their visit and inspired them to be a patriotic citizen of India.

Welcome Program during Orientation Week

Yoga session during Orientation Program

Group photo of Student Counseling Team

Speaker during the Orientation Program

World Gratitude Day Celebration

World Gratitude Day was organized at IIT Jodhpur on 21 September 2018. The activities included a carnival with a series of social media posts, rides and open mic.

Campus Mentorship Program

The Institute has launched a Campus Mentors Program in 2014, especially for the new Students, wherein Faculty Members, Staff Members and senior Students work towards helping each new student towards:

(a) Adjusting well in hostel life away from home and in his academic life, and

(b) Keeping in touch with the student and his/her family members/guardians.

These on-campus friends and guides support and motivate new students in their personal life and academic life. Also, through this association, Faculty Members get insider's perspectives in the lives of students. This interaction will help both the teacher and the taught, to grow together as one community. Further, the Campus Mentors Program ensures that even parents of students get opportunities to interact with the Institute.

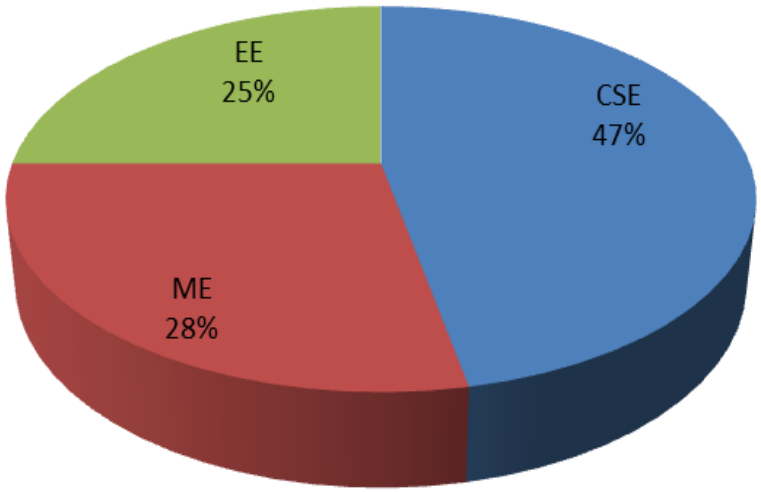
Student Placement Cell

The *Office of Student Placements (OSP)* is moving ahead in developing *Student Career Development Centre*, which aims to create an encouraging atmosphere for students by providing them ample reminders to build competencies in sync with their dream careers, thereby ensuring their smooth landing into the professional world. The office performs duties related with creating awareness about career planning, soft skills enhancement along with coordinating with various companies, their interaction with the students, arranging pre-placement talks, tests, and interviews and activities related with placements.

In 2018-19, companies in core engineering, information and communication technology, and banking sector, government and public sector organizations have visited IIT Jodhpur for placements.

Total 77 of our students i.e., 64 B.Tech. students and 13 M.Sc. and M.Tech. students, have been placed with different companies in the year 2018-19.

Branch-wise Placement of Undergraduate Students in 2018-2019



Details of companies and placements are as below.

B.Tech. Placements for the year 2018– 2019					
S.No.	Company	Number of Students Selected per Branch			Total Number of Students Placed
		CSE	ME	EE	
1.	Indian Space Research Organisation (ISRO)		1	1	2
2.	Future First			1	1
3.	Morgan Stanley	3	1	1	5
4.	Amazon	4			4
5.	Infosys	1			1
6.	Tata Consultancy Services			3	3
7.	Cipher	1		1	2
8.	MAQ Software	4			4
9.	LnT Infotech	2			2
10.	Levadata	2			2
11.	Maruti		1		1
12.	Microsoft	3			3
13.	Prototech			1	1
14.	All on Block	2		1	3
15.	SpeedLabs			1	1
16.	Envestnet Yodlee	1		1	2
17.	Go-Jek	2			2
18.	Linkbal Inc. (Japan)	1			1
19.	SMS Data Tech (Japan)	1			1
20.	L&T ECC		1	1	2
21.	Bill Dsk		1		1
22.	Teevra Edutech		1		1
23.	Career Launcher		2	1	3
24.	Resonance		2		2
25.	L&T		3		3
26.	TVS		2		2
27.	One Assist			1	1
28.	Rao IIT			1	1
29.	E Value Serve		2		2
30.	Aakash Institute			1	1
31.	CVRS Education Private Limited		1		1
32.	Delhi Rounds	1			1
33.	Goldman Sachs	2			1
	Total	**30**	**18**	**16**	**64**

PG Placements for the year 2018 – 2019						
S.No.	**Company**	**Number of Students Selected per Branch**				**Total Number of Students Placed**
		M.Tech. (BISS)	**M.Tech. (ME)**	**M.Sc. (CHE)**	**M.Sc. (Math)**	
1.	VE Commercial		2			2
2.	Elgi Equipments		1			1
3.	TCS	1				1
4.	L&T Engg		4			4
5.	Resonance				1	1
6.	Bharat Seats	1				1
7.	MIC Engineering College	3				3
	Total	***5***	***7***		***1***	***13***

Alumni Relations

The Alumni Relations Committee (ARC) of the Institute envisions building a mutually beneficial relationship with the Alumni of the Institute by purposeful engagement. The Committee shall enable and facilitate activities that (1) Benefit our Alumni (2) Foster mutual trust and (3) Promote professional and technical excellence.

IIT Jodhpur values its Alumni as indispensable partners in its ultimate goal of Technology development for India. The Institute seeks to nurture and support its Alumni into a strong and dependable resource. The ARC will facilitate this objective of the Institute and aspires to serve as a platform, where our Alumni, the Institute and other stakeholders can work together towards achieving the common goal of nation building.

The following are some activities organized by the Alumni Relations Committee during FY 2018-19.

Alumni Induction & Orientation Program

The First Alumni Induction and Orientation Program of Indian Institute of Technology Jodhpur took place on the noon of 25th August 2018, after the 4th Convocation ceremony of the Institute. Organized by the Alumni Relations Committee (ARC), this event oriented the fresh Graduates of the Institute about the activities of the Committee. *Professor C. V. R. Murty, Director*, IIT Jodhpur, in his Induction Address encouraged Alumni to reconnect with their alma mater and summarized mutual expectations in the Alumni-Institute relationship. *Professor Shankar Manoharan*, Chairman, ARC, spoke about the current focus of the Alumni Relations Committee and its proposed activities. On this occasion, the First Edition of the Alumni eNewsletter was jointly released by *Vijay Kumar Paliwal* and *Nithin, V.*, the 2018 and 2017 President's Gold Medal Winners in B.Tech., respectively. Thereafter, a Panel Discussion was organized with the Alumni. The panel comprised of the Director, IIT Jodhpur, Members of the ARC, and participants from the Alumni in attendance. The panel responded to several queries on the current and future activities of the ARC. Also, the panel encouraged Alumni to participate actively in the events organized for them by the ARC. Several suggestions and inputs from the participants were received and recorded. *Professor Appala Naidu Gandi*, Member Secretary, ARC, thanked the Panel and all participants for their presence, and proposed the vote of thanks for the program.

Panel Discussion with the Alumni

Group Photo of the Director, ARC office Bearers and Alumni

Ask an Alumnus Session

The Alumni Relations Committee (ARC) organized the first Ask an Alumnus session at IIT Jodhpur on 9 January 2019. Ayush Raina, currently a Graduate Student at Carnegie Mellon University (CMU), interacted with students. Ayush earned his B.Tech. in Mechanical Engineering from IIT Jodhpur in 2017. As a part of the Integrated Design Innovation Group at CMU, Ayush is now working on developing artificial intelligence that can apply human-like problem solving in any design process.

The audience benefited from his answers to questions on his current research, career prospects, the application process for pursuing Ph.D. degree from overseas universities, in general and from Carnegie Mellon University, in particular, preparation for relevant exams, strategies for success in a competitive environment and his experience during his internship with Mercedes Benz.

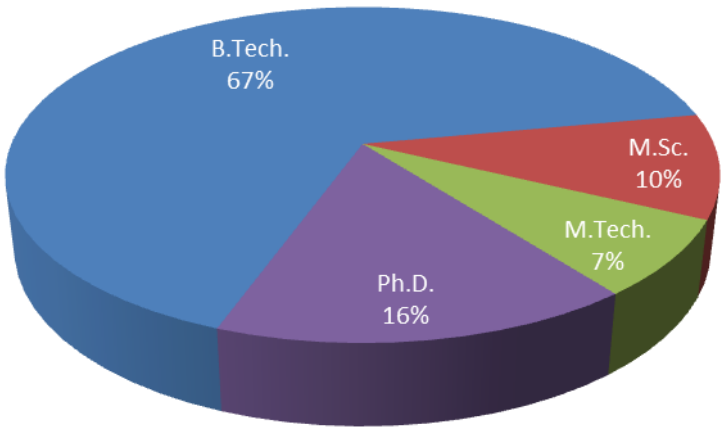
Alumni Relations Committee members and Students during Ask an alumnus session

Registered Students in IIT Jodhpur

IIT Jodhpur has, as on 31 March 2019, a total of 964 students registered in various programs offered by the Institute. The table and chart below depict the program-wise break-up of the registered students in the Institute.

Program	Year of Registration	Number
Ph.D.	2018	42
	2017	16
	2016	17
	2015	34
	2014	28
	2013	10
	2012	4
	2011	3
	2010	1
	Total	***155***
M.Tech.	2018	41
	2017	30
	Total	***71***
M.Sc.	2018	51
	2017	46
	Total	***97***
B.Tech.	2018	217
	2017	176
	2016	121
	2015	112
	2014	9
	2013	1
	2012	5
	Total	***641***
	Grand Total	**964**

Program-wise breakup of Registered Students in IIT Jodhpur (as on March 2019)



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