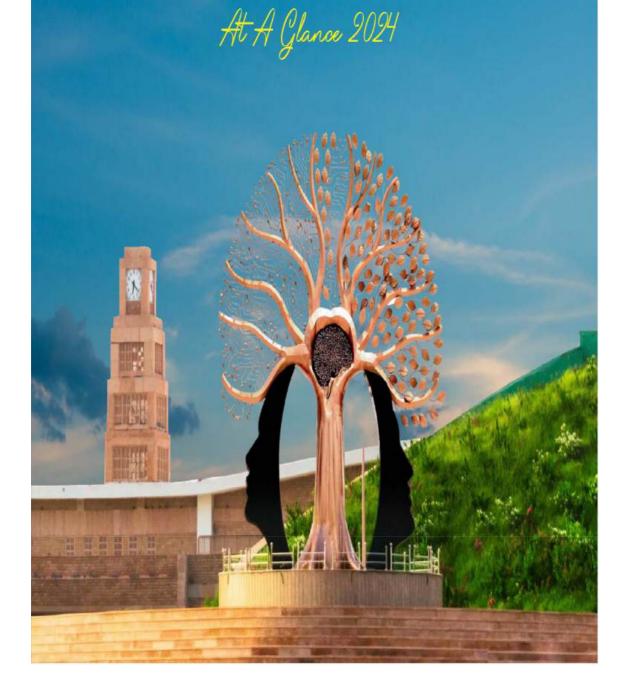


# INDIAN INSTITUTE OF TECHNOLOGY JODHPUR





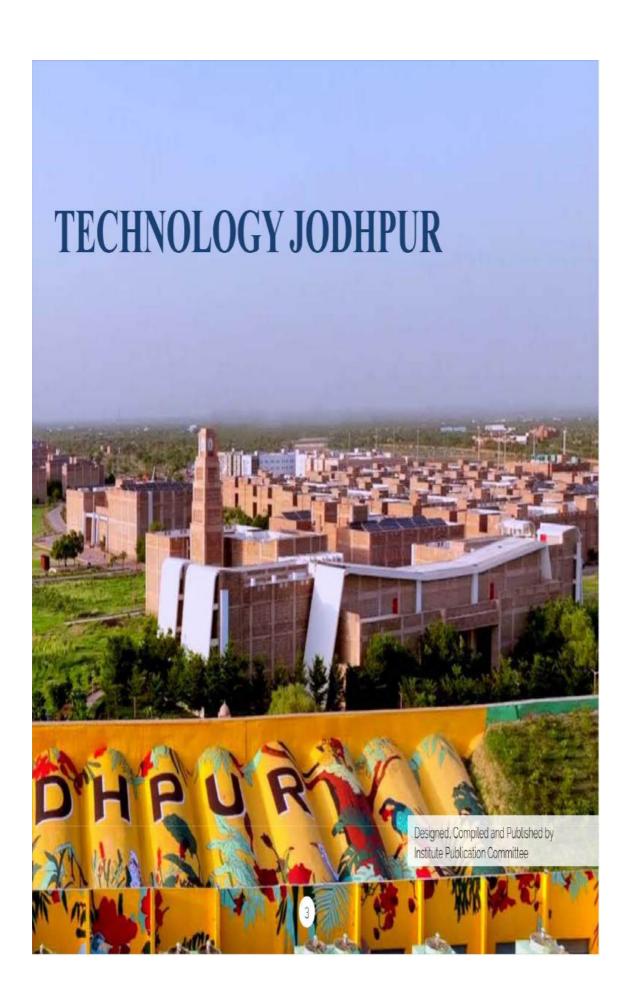
# Greetings from INDIAN INSTITUTE OF

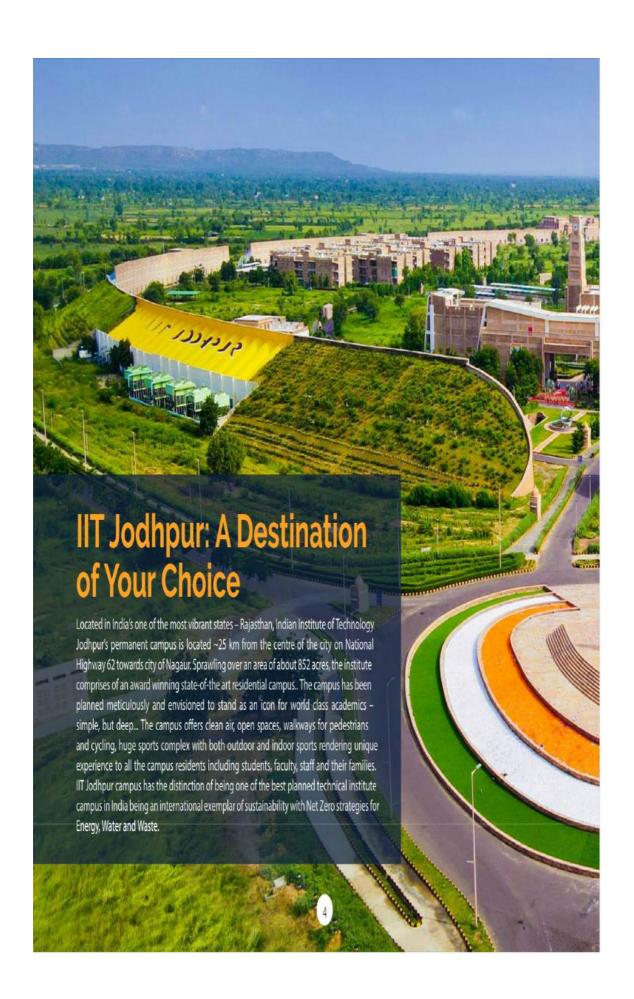
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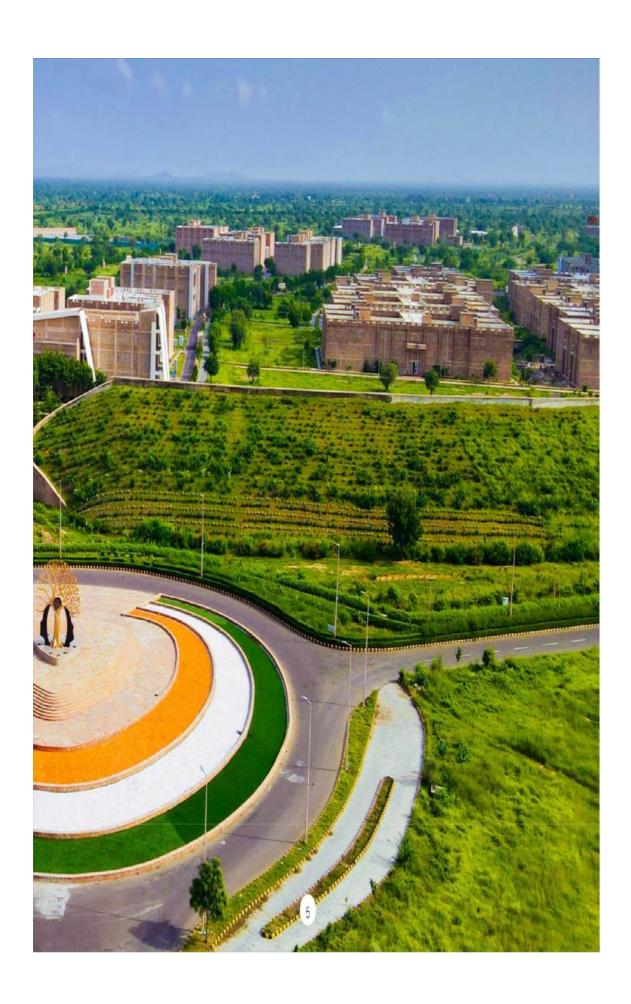
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#### PHOTO CREDITS

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### **Research Programs**

#### Ph.D.

### Departments

Bioscience & Bioengineering

Chemistry

Chemical Engineering Civil & Infrastructural Engineering Computer Science & Engineering

Electrical Engineering

Mathematics

Metallurgical & Materials Engineering

Mechanical Engineering

Physics

**IDRPs** 

Robotics and Mobility Systems

School of

Management and

Entrepreneurship

Smart Healthcare and Medical Technologies

Digital Humanities Internet of Things (IoT) and Applications

Space Science and Technology

Quantum Information and Computation

Schools

School of Artificial Intelligence and

Data Science

School of Liberal Arts Centre for Education & Technology for Education (CETE)

Centres

Centre for Emerging Technologies for Sustainable Development Center of Excellence on Arts & Digital Immersion

School of Design

M.S. by Research program

Centre of Excellence on Art and Digital Immersion Centre of Excellence on Brain Science and Application

Centre for Mathematical and Computational Economics Centre of Excellence in Al based Precision Healthcare Centre for Emerging Technologies for Sustainable Development Centre for Technology Foresight and Policy

Intelligent Infrastructure

### **Centre for Sustainable Drinking Water Sources**



The IITJ-JJM Centre for Sustainable Drinking Water was established through a collaborative effort between the Indian Institute of Technology Jodhpur and the Government of India Ministry of Jal Shakti Jal Jeevan Mission. The IITJ-JJM continues to work diligently alongside the Jal Shakti Ministry and other stakeholders to tackle the pressing water issues facing our nation. These collective efforts are driven by a shared vision: to ensure every citizen has access to clean, safe, and reliable drinking water. IITJ-JJM is committed to ensuring the sustainability of this precious resource.

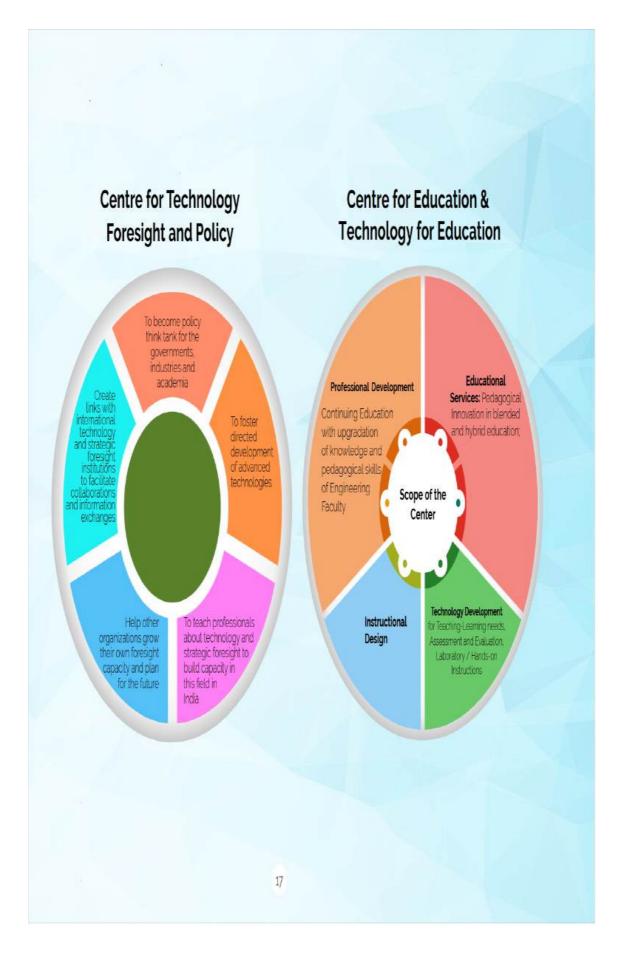


#### IITJ-JJM is engaged in the following activities:

- Establish national guidelines on water source sustainability.
- Training & Capacity Building program on the sustainability of drinking water sources.
- · Greywater Management for Source Sustainability.
- Design and Development of Advanced Desalination Methodology for Source Sustainability in Arid Regions.
- Technical Support to States to address water supply issues
- Association with various national and international agencies in education, research, industries, etc.





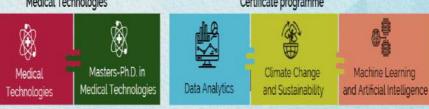


### **Post Graduate Programs**

### Preparing for Invention & Innovation

#### M.Sc. Programs





Physics & Materials Engineering



Scientific reasoning and development of analytical problem solving skills for future breakthroughs in new frontiers

Provide academic rigor and innovation, not extreme specialization, rather flexibility and comprehensive knowledge with microspecializations

Build a strong foundation of knowledge, pursue excellence in academics and enhance creativity in an intellectually stimulating environment

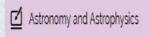
#### For More Information Scan Me



Master of Design (MDes)



#### M.S. (R.)-Ph.D.



### Schools



### Inter-Disciplinary Research Platform (IDRPs)





### Centre of Excellence on Art and Digital Immersion (ADI)

The Centre of Excellence on Art and Digital Immersion (CoE on ADI), the School of Liberal Arts (SoLA) is the first Center of SoLA. It is envisioned as a futuristic research hub exploring the intersections between Arts and emerging Digital Technologies while enhancing their immersive

On 19 September 2022, the centre of excellence was inaugurated by the Director, IIT Jodhpur, Prof Santanu Chaudhury, the Legendary Hindustani classical singer Padmabhushan Pandit Ajoy Chakrabarty; and the eminent scientist and Bhatnagar awardee Professor Ashutosh Sharma (C. V. Sheshadri Chair Professor, IIT Kanpur; President, INSA; and former Secretary, DST). The School of Liberal Arts has entrusted Prof Chhanda Chakraborti with the Co-ordinatorship of the CoE on ADI.

The centre has recently launched its flagship programmeM S (By Pandit Ajoy Chakrabarty, and Eminent scientist and Bhatnagar Research) with two specializations, namely Al and Creative Arts awardee Professor Ashutosh Sharma (C. V. Sheshadri Chair and Mixed-Media Arts. The flexible, interdisciplinary, futuristic, and Professor, IIT Kanpur; President, INSA; and former Secretary, DST) collaborative programme is the first of its kind in India.



Inauguration of ADI by Director, IIT Jodhpur, Professor Santanu Chaudhury, Legendary Hindustani classical singer Padmabhushan

### Centre of Excellence in AI and Data Science

establishing a "Centre of Excellence in Al

The collaboration advanced by launching of the Joint Centre will be implemented

- IIT Jodhour and University of Buffalo, has Feedhange of students and researchers
  - · Coordination of collaborative education, research and training programs
  - · Mechanism of internal support for such exchange and coordination
  - Exchange of scholarly and pedagogical materials
- · Collaboration in applying for research international sources
- Co-organization of International conference and thematic workshops
- Collaboration in seeking support from industry, Private foundation and alumni to ensure sustainable joint centre

## S. R. Ranganathan Learning Hub

The Library supports the teaching and research activities of the Institute by facilitating acquisition, organization and dissemination of knowledge resources, and also providing library & information services to IIT Jodhpur community.

It houses a rich and growing collection of books, journal resources and databases catering to various information requirements of the users and provides seamless access to information both on-campus and off-campus. Most of the information being the digital form it can be accessed by the faculty and staff remotely from any location having internet facilities.









### Joint Programs on Medical Technologies

Programs: Masters, Masters-Ph.D. and Ph.D.

Honourable Prime Minister Shri Narendra Modiji mentioned Medical Technologies in his dedication to the nation of IIT Jodhpur

Initiation of The Joint Centre for MedTech between IITJ and AIIMSJ. This centre will be a hub for Deep-Tech innovation in medical technologies that impact global and local health and socio-economic development.

Outcomes of the Medical Technologies Joint Programs:

- 8 Student-Faculty led startups
- 3 Startups have raised ≥ 50 lacs- 1 Cr from grants & investors
- 4 BIRAC-BIG grants
- 7 MSME grants. Approximately 15 lacs each/year duration
- 8 DBT Biodesign fellows. 60,000 pm/ year to grow deep tech startup
- 7 Won MedTech hackathons with significant cash prizes
- 5 Research publications. 8 Patents filed/granted
- 2 Prime Ministers Research Fellows for PhD



AllMS Jodhpur and IIT Jodhpur are not just institutions for Rajasthan but are becoming premier institutes for the entire nation. Together, they are exploring new possibilities in medical technologies, such as robotic surgery, and enhancing medical tourism



Some of the major startups



Sarbit Innovations Pvt. Ltd



Healyantra Medical Technologies Pvt. Ltd.



Cellverse Pvt. Ltd.

### **Collaborations (Government bodies and Industries)**























































































































### Jodhpur City Knowledge and Innovation Foundation

#### Introduction

Jodhpur City Knowledge and Innovation Foundation (JCKIF), is an IIT Jodhpur promoted Section-8 non-profit company established on 31st March, 2021 to carry out and sustain the activities of Jodhpur City Knowledge and Innovation Cluster (JCKIC). The cluster is an initiative of the Office of the Principal Scientific Adviser to the Government of India on the recommendation of Prime Minister's Science, Technology & Innovation Advisory Council.

The primary objective of JCKIF is to create strong linkages among Academic Institutions, R&D Institutes, National & State Research Laboratories, Government Agencies and Industries of the city of Jodhpur and its surroundings. JCKIF has been working on the following six verticals:

#### **JCKIF Verticals**

- a. Medical Technologies (MedTech)
- b. Water and Environment
- c. Handicrafts and Handlooms
- d. I-Governance
- e. Thar Designs
- f. AloT Innovation Hub













#### Prof. Samir K. Brahmachari

- Academy Professor, AcSIR
- J.C Bose National Fellow
- » Chief Mentor Open Source Drug Discovery
- » Academy Professor Academy of Scientific & Innovative Research
- ➤ Scientist and Founder Director CSIR- Institute of Genomics & Integrative Biology
- Former Director General Council of Scientific and Industrial Research



#### Pandit Ajoy Chakrabarty, Padma Bhushan Awardee

- Senior Guru and Expert INAE Visvesvarya Chair Professor Committee Member



#### Professor Ashutosh Sharma

- Institute Chair Professor
- Coordinator.DSTUnitonNanoscience
- and Engineering
  - Indian Institute of Technology Kanpur
  - National Academies for Science/ Engineering in India

## **Technology Innovation and Start-up Center**

IIT Jodhpur Technology Incubation and Startup Center is a Section 8 Not for Profit Company which is set up by the Indian Institute of Technology, Jodhpur. The aim of this establishment is to promote Innovative Ideas / Research into Startups and nurture the Startups to scale and succeed through » Encouragement towards innovation and continuous mentorship, capacity building, fundraising support and laboratory access. » To encourage youth to become Job TISC has more than 10,000+ sq. ft. of dedicated Co-working space, Biotech labs » To promote knowledge driven and and other common facilities.



Create an environment in which knowledge and innovation can be translated into the creation of successful ventures.



#### Mission:

To provide an environment to nurture and support innovation and knowledgebased entrepreneurship resulting in the generation of wealth and social value through successful companies.



#### Goals:

- » To inculcate Sustainable Startup culture with aim towards a healthy lifestyle.
  - nurture the Innovative Ideas.
- Givers instead of Job Seekers.
- technology based ventures among the IIT Jodhpur Students, faculties and
- » To encourage the youth to participate in various Hackathons, Challenges, Competitions, etc organized all over the







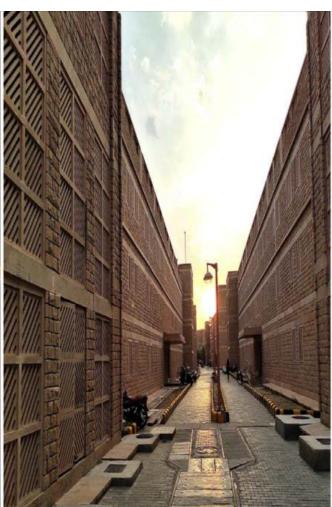
#### Achievements:

- » Currently, we have 18 incubatees and they have collectively raised investments of Rs 2.75 crore.
- » The BIRAC's Bionest Scheme was sanctioned Rs. 445 Cr.
- » TISC is the only Bionest incubator catering to Rajasthan.

### **Engagement with Industry**







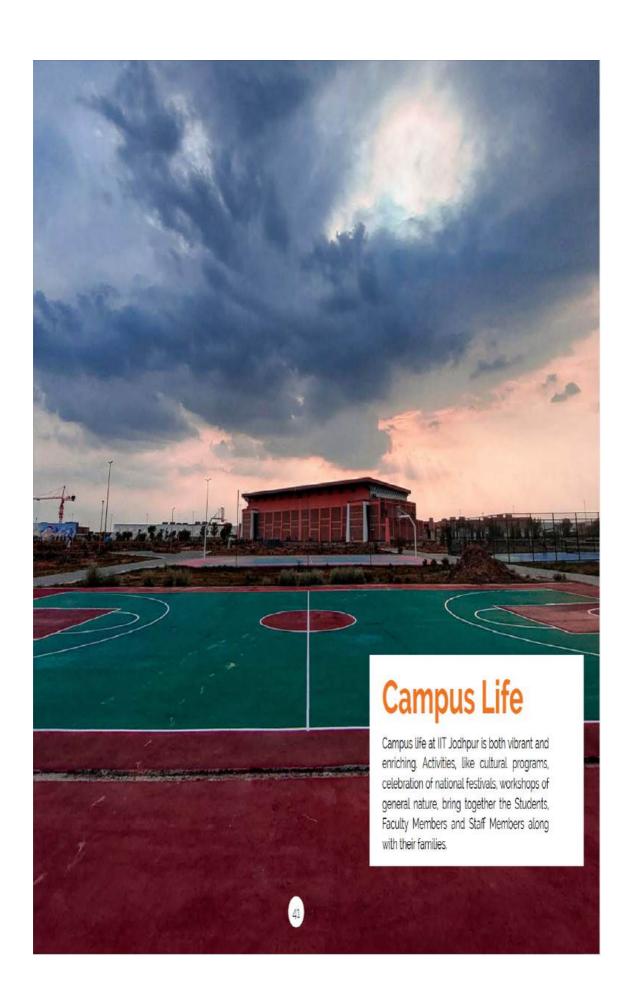






### **Current Thrust Areas of Research**







### **Brain Tree**

Standing tall as you take in the massive scale of IIT Jodhpur is the rightfully coined Brain Tree. Depicting two halves of nature and technology, man and woman it truly shows the spirit of ITJ combining the best of both worlds and working together in symphony. The Brain Tree, a symbolic amalgamation of natural sciences and technology, embraces all who walk through the gates of IIT Jodhpur. With growing branches of leaves symbolizing life and development on one side and neurons and electronics representing the advancement of technology on the other, the tree is a constant source of motivation for the students, faculty and staff to expand their knowledge. The tree also supports collaborative authoring and social annotation, and it cautions that some wisdom lies beyond human prerogative. Just like a tree, students here symbolize growth of the technological mind while also being rooted in values and aiming for the skies.



### DRDO-Industry-Academia Center of Excellence (DIA CoE)

IIT Jodhpur has signed an MoU with DRDO to establish a DIA-CoE for research in defence related technologies in the following three identified verticles:



#### The Defense Research and Development Organization (DRDO) has approved seven projects in collaboration with ITJ faculties.

- Development of Multi-agent Amphibious quadcopter system
- Development and testing of a bioinspired flapping wing model with morphing capability for aerial and aquatic locomotion.
- AIOT based Water Monitoring Technologies
- Smart Apparel for desert War Fare: integration of active and passive cooling through hybrid thermal management
- Seamless Man-Machine Interface for next-generation wargaming.
- Misinformation Pathways: Understanding, Detection and Generation.
- Developing multi-agent system-based AI Strategist for wargames.

### **Undergraduate Programs**

New curriculum: Design your own program

#### B.Tech. Programs



Bioengineering





Computer Science & Engineering





Civil & Infrastructural Engineering



Materials Engineering



Mechanical Engineering



Electrical Engineering

- » New Broad-based Curriculum
- Flexible programme with right balance of knowledge and Hands-on Experience
- Provides opportunities for experiential learning
- » Meet emerging demands of industry
- Focus on Developing technical capability in interdisciplinary areas
- Emphasize on Design thinking and Creativity from 1st year
- Option to pursue
   Entrepreneurship and
   Engineering Innovation in 8th semester

- Offers Minor, Interdisciplinary and Department Area
   Specialization as part of 4 year programme
- Student can opt Double B.Tech.
   within 4 year of programs
   through extra credits
- Option to convert B.Tech. into 5-year B.Tech. + M.Tech. Dual Degree in 7th semester
- Newly introduced technology - oriented B.S. programs with specializations in emerging technology domains
- BS program also provides an opportunity for a dual degree

#### Option to pursue Minor / Interdisciplinary Specializations

- 1. Artificial Intelligence (Al)
- Cyber Physical Systems (CPS)
- 3 Internet of Things (IOT)
- 4. Smart Healthcare
- 5. Management
- 6. Entrepreneurship
- 7. Engineering Innovation

### **Bachelor of Science Programs**



Physics with Specialization



Chemistry with Specialization B.Sc.-B.Ed.



B.Sc.-B.Ed.

B.Sc./B.S.



Applied Al and Data Science For More Information



### **Centre for Emerging Technologies for Sustainable Development**

The vision of CETSD is "To be a partner in tapping the potential of emerging technologies for creating a sustainable and prosperous future India".

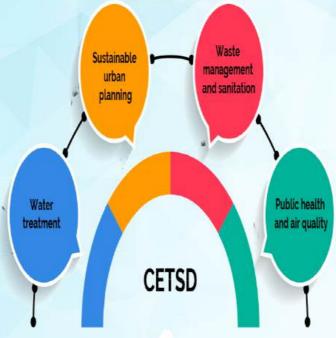
#### The mission of CETSD is

- To help develop scientific temper societies to understand technologies that are sustainable or technologies that are using sustainability aspects.
- To provide a platform for NGOs and government agencies to collaborate to apply emerging technologies and solutions towards achieving SDG targets.
- Trimester-based Executive Certificate Programs on Climate Change and Sustainability starting from 2024-25 for industry professionals





Thematic areas of CETSD



# Rishabh Centre for Research and Innovation in Clean Energy

Rishabh Centre for Research and Innovation in Clean Energy at Indian Institute of Technology Jodhpur is being set up philanthropic donations by M/s Rishabh Instruments Ltd. and M/s Ivaan Foundation. The Centre will facilitate focused basic and applied research by utilizing the knowledge base of faculty and researchers at IIT Jodhpur and also engage with other academic institutions and technology centers, startups and industries. The Centre will enable collaborative research through different academic programs and using other avenues to develop new technologies as per the research & technology roadmap of the Centre. The Centre will have close linkages with respective industries and leverage the robust innovation ecosystem of IIT Jodhpur for technology translation and product development. The center's focus will be to conduct and promote basic and/or applied research and innovation, nurture entrepreneurship, support startups and MSME in identified areas of Clean / Green Energy Technologies.

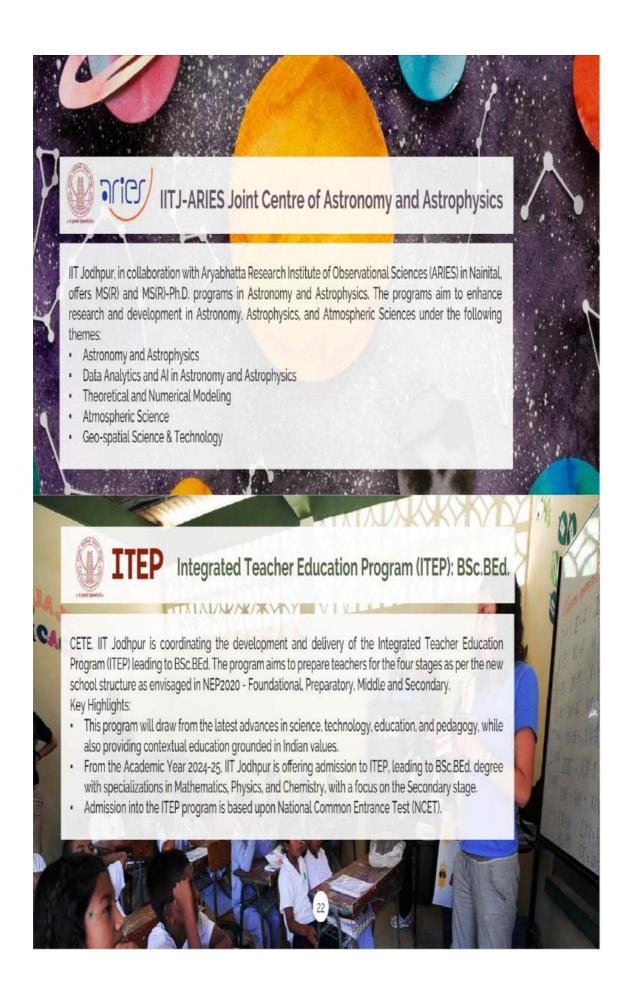
The center has plan to admit M.S. (by Research) students in AY 2023-24. The main research verticals of the center are: Microgrid, Power Quality and future Grid research Electric Vehicles [including DC Solar Energy to directly Charge modern age EVs (without going through AC mechanism)] Solar Thermal with Thermal storage Fuel Cells and Hydrogen as energy source Study the feasibility of carbon geo sequestration Storage of Solar Energy in cells / batteries Improve efficiency of Solar cells and inverters.





The Vision of the Centre is to become a global destination for research and product / process development in the different areas of Green and Clean Energy in close collaborations with industries, start-ups and other stakeholders.





### **Collaborations (Academic Institutions)**

The Institute collaborates with several institutes and organizations of national and international repute for furthering its academic and research activities, which include joint academic and research activities including conduct of academic courses, projects, publications, technology development.

























































iHub Drishti, IIT Jodhpur is a Technology Innovation Hub focused around 'Computer Vision, Augmented Reality and Virtual Reality'. iHub Drishti Foundation has been at the forefront of fostering growth, innovation, and collaboration in Cyber-Physical Systems (CPS) technologies. With its cutting-edge research initiatives and state-of-the-art lab infrastructure, iHub Drishti has emerged as a beacon of technological advancements and interdisciplinary collaboration.

#### Lab Infrastructure

iHub Drishti supports its research with cutting-edge lab facilities. Office and laboratory are as with state-of-the-art infrastructure serves the participating institutions. The hub deployed and commissioned NVIDIA Omniverse, a real-time collaboration platform for 3D applications and assets. The NVIDIA DGXA100, the first AI system based on NVIDIA A100, is also at iHub Drishti. This ground breaking AI infrastructure integrates training, inference, and analytics with unparalleled computational density, performance, and flexibility. Images

AR-VR APPLICATIONS	COMPUTER VISION-BASED SOLUTIONS FOR INDUSTRY 4.0	COMPUTER VISION-BASED SOLUTIONS FOR BIOSPHERE
SKILL DEVELOPMENT	COMPUTER VISION-BASED SOLUTIONS FOR AUTONOMOUS SYSTEMS	COMPUTER VISION-BASED SOLUTIONS FOR HEALTHCARE

### Vision and Mission



11

A future-driven institute for nurturing excellence of thought; creating, preserving, and imparting knowledge; and using transformational technologies/interventions with a multidisciplinary approach for responding to societal challenges and aspirations.

On completion of about a decade of its existence, IIT Jodhpur began to re-imagine and revamp its academic curriculum through a series of workshops amongst faculty members, seeking inputs from relevant experts from industry and academia. Further, through a process of brainstorming the institute has prepared its new Strategy and Vision document to define its trajectory and targets for the five years (2021-2025). The Vision and Strategy for the 5 years 2021-2025 has been crafted using the principles - namely "Re-imagine, Redefine, Disrupt, Innovate".

The document charters a path to broaden the existing vision and mission of IIT, Jodhpur, is being implemented through strategies rooted in the world/ needs of tomorrow. The Vision document also entails transformation of IIT Jodhpur into a holistic institute for knowledge creation and dissemination of all traditional and emerging technologies and their fusion for national/ societal benefits in diverse areas like industry, finance, sustainability, environment and critical problem-solving (grand challenges).

The five Mission Statements have been identified by the institute to realize the Vision (2021-25):

- · Foster humanitarian values, passion for learning, and creativity in faculty and students
- Move towards high quality, futuristic educational, and research ecosystem
- Develop socially responsible faculty, students, and future leaders, committed to creating a self-reliant India
- Catalyze a professional internal culture along with enabling infrastructure and ancillary services
- Forge effective national as well as international collaboration and partnership with industry and academia for diverse purposes and activities.

## **ANVISA (A Novel Innovation Space)**

IIT Jodhpur proudly presents its cutting-edge Tinkering Lab: ANVISA (A Novel Innovation Space), dedicated to nurturing innovative ideas in science, technology, and entrepreneurship. Supported by the Academic and Co-Curricular Activity Council, Here's a glimpse of what this incredible lab has to offer.

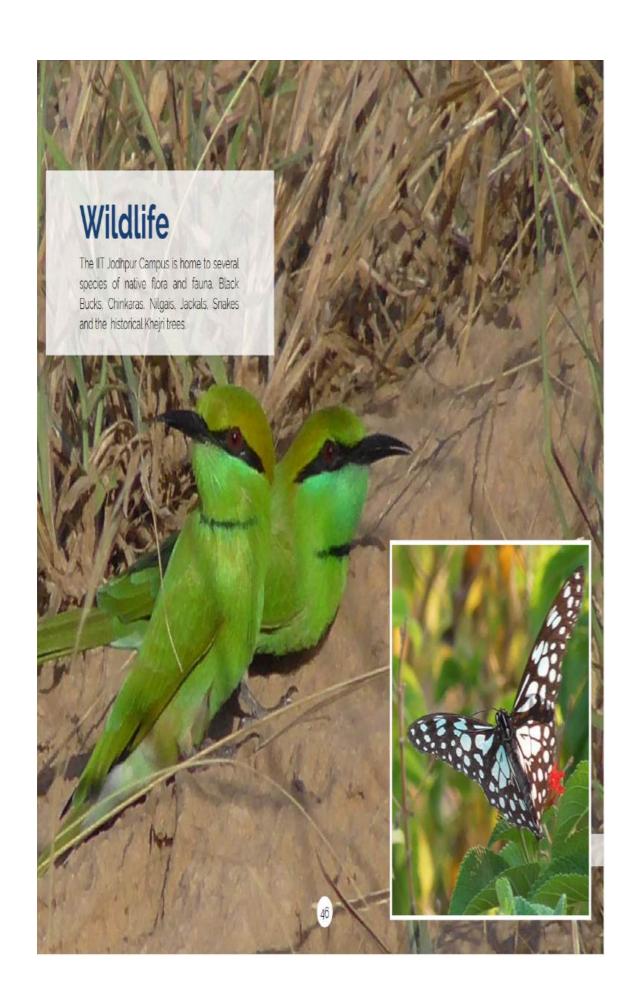
















# Centre for Advanced Security Technology Development in CPS

Ministry of Electronics and IT has supported establishment of a Centre for Advanced Security Technology Development in Cyber Physical Systems (CPS) at IIT Jodhpur with an outlay of Rs. 591 crore. The center became operational in March 2022.

The objectives of the center are:

To develop expertise and train manpower in the security of Cyber Physical Systems (CPS).

To provide technical know-how to agencies.

With a focus on:

- (i) Water distribution networks (security of PLC's and SCADA)
- (ii) Vehicular Traffic and Vehicular Networks (security of interand intra- vehicular communication)
- (iii) Multiagent systems (swarm of robots, UAVs, and their applications in disaster management)

## State of the Art Teaching Tools

The fully equipped lecture hall facilitates blended mode of teaching and caters to the classroom instruction requirement of a student strength of 1500 approximately including two large lecture halls of capacity 320 and 625 seats.

Moreover, each department building is having its own well-equipped classrooms and teaching laboratories. Most of the classrooms both the Lecture Hall Complex and Departments are equipped with the state-of-the-art digital technologies thereby allowing the hybrid mode of teaching.





# Centre for Research & Development of Scientific Instruments

The Centre for Research & Development of Scientific Instruments (CRDSI) at IIT Jodhpur provides researchers with access to high-end equipment for multidisciplinary research. It is registered with the I-STEM portal of the Govt. of India and manages an external booking system for users across the country.



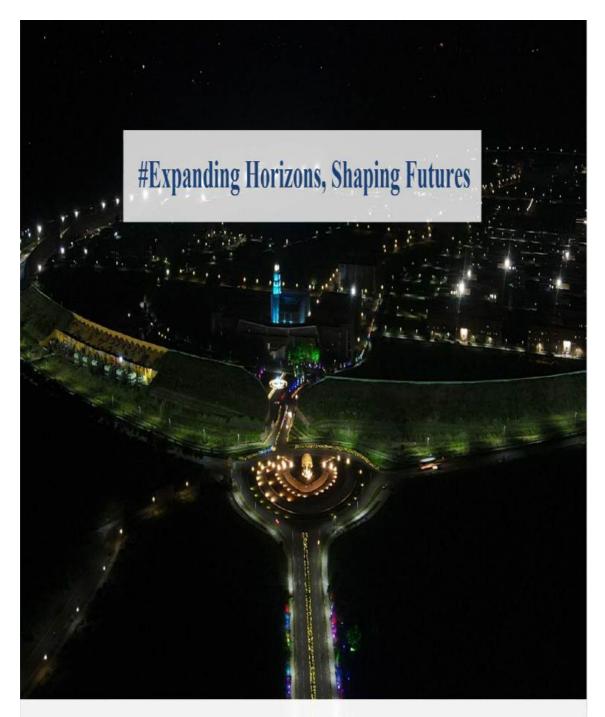




### Indian Institute of Technology Jodhpur

### Campus Placements 2023-24





For any query, please contact Institute Publication Committee IIT Jodhpur publications@iitj.ac.in +91 291 280 1161 For more information, please visit https://iitj.ac.in/publication

#### Contact us:





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### Scholars-in-Residence



#### Dr. Shekar Choudhari

- \* Former Director, IIM Calcutta
- \* Former Professor of IIMA
- \* Former Dean of the Vinod Gupta School of Management, IIT Kharagpur
- \* The Founding Director of the School of Management & Entrepreneurship at the Shiv Nadar University



#### Dr. Kaushik Basu

- C. Marks Professor Cornell > INSA Distinguished Professor, ISI > Distinguished Professor and University
- President of the International Economic Association (Currently)
- » Professor of Economics and C. Marks Professor at Cornell University
- Served as Chief Economist and Senior Vice President of the World Bank
- » Served as Chief Economic Adviser to the Government of India
- > Taught at the Delhi School of Economics, Harvard, Princeton and MIT
- > Fellow of the Econometric
- Received the title of Padma Bhushan



#### Prof. Sankar K. Pal.

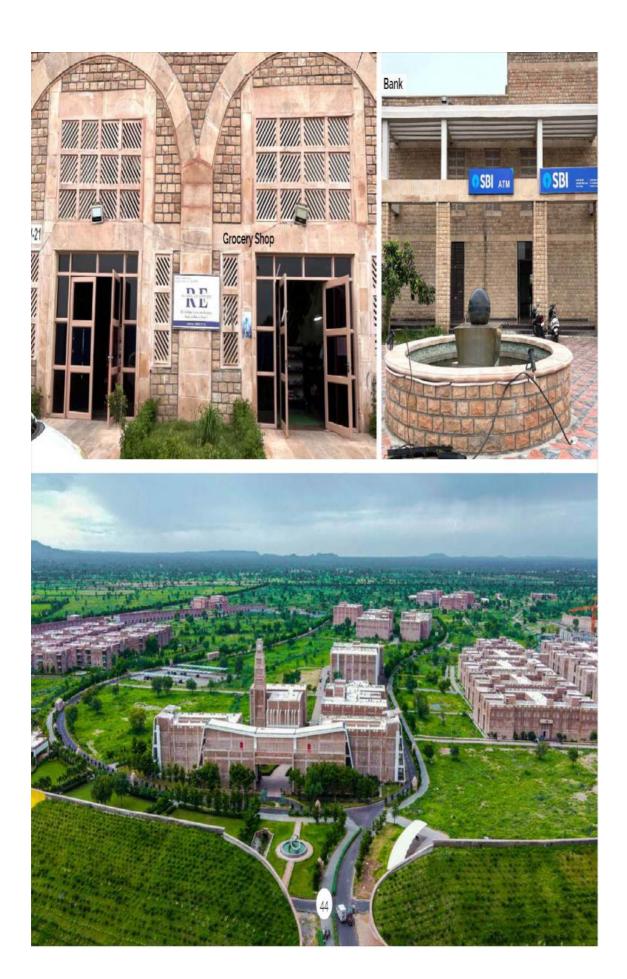
- Emeritus Professor and Former Director at ISI, Kolkata
- Expert in Fuzzy Neural network, soft computing, and machine intelligence
- Padma Sri, 2013
- Mahalanobis Birth Centenary Gold Medal from Prime Minister of India for Lifetime Achievement
- > Khwarizmi International Award from the President of Iran, 2000
- Vikram Sarabhai Research Award.
- > Shanti Swarup Bhatnagar Award, 1990
- > Life Fellow of the IEEE, Fellow of the World Academy of Sciences (TWAS), International Association for Pattern 

  • Swamajayanti recognition, International Association of Fuzzy Systems, International Rough Set Society, and all the four Fellow, Indian National Academy National Academies for Science/ Engineering in India



#### Prof. Devang V. Khakhar

- Former Director, Indian Institute of Technology Bombay
- Expert in Polymer Science
- » H. H. Mathur Award for Applied Sciences, IT Bombay, 2005.
- Millennium Gold Medal, Indian Science Congress, 2000
- Herdillia Award, Indian Institute of Chemical Engineers, 1999
- Shanti Swarup Bhatnagar Prize,
- Amar Dyechem Award, Indian Institute of Chemical Engineers,
- Fellowship, Department of Science and Technology, 1998
- of Engineering and Indian National Science Academy



# **Our Faculty**

Young Faculty

Associate

264 147 62 38

Total Faculty Assistant Professor Professor

03 03 09 02

Visiting Professor

Professor of

Practice

Distinguished

Professor

### **Post Graduate Programs**

Preparing for Invention & Innovation

M.Tech. & M.Tech. — Ph.D. Dual Degree Integrated Programs

Bioscience & Bioengineering

Communication and Signal Processing

Law and Technology

Infrastructure Engineering with Specialization in Environmental Engineering

Computer Science and Engineering

Data Engineering

Mechanical Design

Artificial Intelligence Cyber Physical Systems Sensors & Internet of Things (SIOT)

Advanced Manufacturing

Data & Computational Sciences Advanced Manufacturing & Mechanical Design

Thermofluids Engineering Intelligent Communication Systems

Medical Technologies Robotics and Mobility System Intelligent VLSI Systems

Quantum Technologies

Augmented Reality and Virtual Reality (AR & VR)

Chemical Engineering Infrastructure Engineering with specialization in Energy

Materials Engineering

# Advanced Manufacturing and Mechanical Design M.Tech.-Ph.D. Dual Degree Integrated
## Medical Technologies Master-Ph.D. Dual Degree

### **AIOT Innovation Hub**

The hub aims to create a sustainable and advanced ecosystem with facilities for end-to-end design, development, prototyping and pilot production of AIOT (Artificial Intelligence of Things) systems at the Technology Park of IIT Jodhpur.

- The center works with the unique approach that is "System focused", rather than "component (sensor) focused" approach.
- \* All the developments start with an "End in Mind" approach that is use-case driven.
- The systems development leverage Al & IOT principles while design and development is done rather than retro-fit into what's already available.

 Research and development mainly aims for translational research leading to commercial success.

### Following are the key differentiating factors for the proposed innovation hub at IIT Jodhpur:

- Is "System focused", rather than "component (sensor) focused" approach
- Begin with "End in Mind" approach 

  End use-case driven approach.
- Leverage AI and IOT principles while design and development;
   rather than retro-fit into what's already available.
- Translation of research into commercial success as the key success indicator.

