

Interdisciplinary Research Topics Offered by the Academic Centres for PhD Programme – July 2025

Joint Supervisor	Joint Supervisor	Project Code	Academic Centre	Title of the Research Topic
Dr. Arunasis Chakraborty	Dr. Sonali Chouhan	ID_CDMR_01	Centre for Disaster Management and Research	Wireless Sensor Network for Structural Health Monitoring
Dr. Sonali Chouhan	Dr. Moumita Patra	ID_CDMR_02	Centre for Disaster Management and Research	Unmanned Aerial Vehicles for Disaster Response
Dr. Prithwijit Guha	Dr. P. K. Das	ID_DT_01	Centre for Drone Technology	Object Detection in Sonar Images
Dr. S. B. Nair	Dr. Ajay Dashora	ID_DT_02	Centre for Drone Technology	Decentralized task execution in a swarm of drones
Dr. Rinku Kumar Mittal	Dr. Sparsh Johari	ID_DT_03	Centre for Drone Technology	Development of Sustainable Polymer Composites Based Light-Weight and High-Performance UAVs/Drones
Dr. Sparsh Johari	Dr. P. K. Das	ID_DT_04	Centre for Drone Technology	Utilizing Drone Technology for Structural Assessment and Maintenance of Old Buildings
Dr. Arun Goyal	Dr. Supradip Das	ID_CIKS_01	Centre for Indian Knowledge Systems	A Scientific Study of Megalithic Structures
Dr. Srinivasan Krishnaswamy	Dr. Arun Goyal	ID_CIKS_02	Centre for Indian Knowledge Systems	Expressing Mathematical Logic in Terms of Navya Nyaya
Dr. Sukanya Sharma	Dr. Lalit M. Pandey	ID_CIKS_03	Centre for Indian Knowledge Systems	Archaeobotanical study on Indigenous Agriculture Practices of Northeast India with special focus on egg plant, colacassia and rice

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Dr. Uday Shanker Dixit	Dr. Sukanya Sharma	ID_CIKS_04	Centre for Indian Knowledge Systems	Archeometallurgical traditions of Northeast India, History and Evolution of Engineering in India
Dr. T. V. Bharat	Dr. Sachin Kumar	ID_CIKS_05	Centre for Indian Knowledge Systems	Groundwater Identification Based on Bioindicators
Dr. T. V. Bharat	Dr. Supradip Das	ID_CIKS_06	Centre for Indian Knowledge Systems	A Scientific Study of Ancient Temples and Monuments of North-East India in the Light of Vaastu Shastra
Dr. Uday Shanker Dixit	Dr. Lalit M. Pandey	ID_CIKS_07	Centre for Indian Knowledge Systems	Improving Post-Harvest Grain Storage Based on Indian Tradition
Dr. Biranchi Panda	Dr. Arijit Sur	ID_CICPS_01	Centre for Intelligent Cyber Physical Systems	Digital Twins and Cyber-Physical Systems toward Smart Manufacturing
Dr. Prithwijit Guha	Dr. Sukumar Nandi	ID_CICPS_02	Centre for Intelligent Cyber Physical Systems	Face Analytics in Networked Surveillance System
Dr. R. Ganesh Narayanan	Dr. Anirban Dasgupta	ID_CICPS_03	Centre for Intelligent Cyber Physical Systems	Predictive Maintenance of underwater friction stir welding (FSW) machinery using AI/ML
Dr. R. Ganesh Narayanan	Dr. S. B. Nair	ID_CICPS_04	Centre for Intelligent Cyber Physical Systems	Data-driven control of additive manufacturing using reinforcement learning.
Dr. Ravindra Kumar Jha	Dr. S. K. Dwivedy	ID_CICPS_05	Centre for Intelligent Cyber Physical Systems	Design and Development of 2D Material based ISFET for Detection of Dissolved Oxygen in Water
Dr. Rishikesh Dilip Kulkarni	Dr. Pranab Kumar Mondal	ID_CICPS_06	Centre for Intelligent Cyber Physical Systems	Development of Laser Speckle Imaging Device for Assessment of Plant Growth and Seed Viability

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Dr. S. K. Dwivedy	Dr. Subashisa Dutta	ID_CICPS_07	Centre for Intelligent Cyber Physical Systems	Wetland monitoring using drone
Dr. Uday Shankar Dixit	Dr. S. B. Nair	ID_CICPS_08	Centre for Intelligent Cyber Physical Systems	Developing a unified theory of evolutionary optimization algorithms with applications in underwater technology
Dr. Abhishek Shrivastava	Dr. Priyankoo Sarmah	ID_CLST_01	Centre for Linguistic Science and Technology	Representation of soundscapes from North-East India
Dr. Bidisha Som	Dr. Sukumar Nandi	ID_CLST_02	Centre for Linguistic Science and Technology	Artificial and human language processing: an exploration
Dr. Prithwijit Guha	Dr. Sanasam Ranbir Singh	ID_CLST_03	Centre for Linguistic Science and Technology	Structured Organization of Videos Acquired from Social Media News Channels
Dr. Prithwijit Guha	Dr. Sukumar Nandi	ID_CLST_04	Centre for Linguistic Science and Technology	Multimodal Debate Video Analytics
Dr. Priyankoo Sarmah	Dr. Neeraj Kumar Sharma	ID_CLST_05	Centre for Linguistic Science and Technology	Text-to-speech (TTS) Development in Northeastern languages
Dr. Rohit Sinha	Dr. Ashish Anand	ID_CLST_06	Centre for Linguistic Science and Technology	Automatic Speech Recognition (ASR) for North Eastern Languages
Dr. Sanasam Ranbir Singh	Dr. Bidisha Som	ID_CLST_07	Centre for Linguistic Science and Technology	Machine Translation System for North Eastern Languages
Dr. Shakuntala Mahanta	Dr. Shyamanta M Hazarika	ID_CLST_08	Centre for Linguistic Science and Technology	Experimental approaches and technology development in reading development and phonological processing

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Dr. Suresh Sundaram	Dr. Samit Bhattacharya	ID_CLST_09	Centre for Linguistic Science and Technology	Use of artificial intelligence for digitization and understanding of handwritten documents in Indian languages
Dr. Harshal B. Nemade	Dr. Dipankar Bandyopadhyay	ID_NT_01	Centre for Nanotechnology	Diagnostic-on-a-Chip (DOC): A Microfluidic Approach POC Detection of Markers
Dr. Siddhartha Sankar Ghosh	Dr. Parameswar K. Iyer	ID_NT_02	Centre for Nanotechnology	Development of Smart Healthcare Based Signaling Devices over In-House Diagnosis Platforms
Dr. Biman B. Mandal	Dr. Akshai Kumar A. S.	ID_NT_03	Centre for Nanotechnology	Affordable Wearable Anti-Microbial Electro-Stimulation Bandage For Treatment of Chronic Wounds
Dr. Biman B. Mandal	Dr. Uttam Manna	ID_NT_04	Centre for Nanotechnology	Flexible and Wearable Water repellent Surfaces for monitoring muscle movement & Thermal Treatment
Dr. Parameswar K. Iyer	Dr. Arun Tej M	ID_NT_05	Centre for Nanotechnology	Flexible Resistive Random-Access Memories for Wearable Electronics
Dr. Nageswara Rao Peela	Dr. Akshai Kumar A. S	ID_NT_06	Centre for Nanotechnology	Portable Devices for Small-Scale Energy Applications Portable Devices for Small-Scale Energy Applications
Dr. Siddhartha Sankar Ghosh	Dr. Arun Chattopadhyay	ID_NT_07	Centre for Nanotechnology	Sensing of Chemical and Bio Molecular Species Using Optical and Optoelectronic Devices
Dr. Roy P. Paily	Dr. Ashok Kumar Dasmahapatra	ID_NT_08	Centre for Nanotechnology	A conducting hydrogel FET based biosensor for detection of small molecules by employing tear fluid
Dr. Ankush Bag	Dr. P. K. Giri	ID_NT_09	Centre for Nanotechnology	Development of Wearable Self-Powered Photodetectors for Health Monitoring

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Dr. Roy P. Paily	Dr. D. Pamu	ID_NT_10	Centre for Nanotechnology	Development of innovative $[(Ca)_{10} ((PO)_4)_6 (OH)_2 - (Ba)_{(0.5)} (Sr)_{(0.5)} TiO_3]$ bulk composites and thin films for fabrication of smart scaffolds and thin film technology for bone tissue engineering
Dr. Harshal B. Nemade	Dr. Tapas Kumar Mandal	ID_NT_11	Centre for Nanotechnology	E-Eyes-enable POCT kits for non-invasive detection of heavy metals and pathogens in biological samples
Dr. Partho Sarathi Gooh Pattader	Dr. Tanmay Dutta	ID_NT_12	Centre for Nanotechnology	Interlayer exchange coupling based non-volatile, low-complexity and scalable PUF hardware
Dr. Arun Tej M.	Dr. Raghvendra Gupta	ID_NT_13	Centre for Nanotechnology	Development of a microfluidic cooling system for semiconductor packaging
Dr. Uday Narayan Maiti	Dr. Ankush Bag	ID_NT_14	Centre for Nanotechnology	Phase and Bandgap Engineering of III-Oxides in Quest of Interfacial 2DEG
Dr. Tanmay Dutta	Dr. Kalyan Raidongia	ID_NT_15	Centre for Nanotechnology	Development of Nanomaterials for Oil and Gas Applications
Dr. A. S. Achalkumar	Dr. Vimal Katiyar	ID_CSP_01	Centre for Sustainable Polymers	Biodegradable polymers for organic electronics
Dr. Amit Kumar	Dr. Ujendra Kumar Komal	ID_CSP_02	Centre for Sustainable Polymers	Studies on Biodegradable Polymer-based Nanocomposites
Dr. Ashok Kumar Dasmahapatra	Dr. Sreedeeep Sekharan	ID_CSP_03	Centre for Sustainable Polymers	Polymer Hydrogels for Agricultural Applications

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Dr. Raghvendra Gupta	Dr. Ujendra Kumar Komal	ID_CSP_04	Centre for Sustainable Polymers	Studies on the synthesis, rheology, characterisation of next generation polymer composites
Dr. Senthilkumar Sivaprakasam	Dr. Sreedeeep Sekharan	ID_CSP_05	Centre for Sustainable Polymers	Sweet Potato Waste-Based Starch Films: A Sustainable Revolution in Food Packaging
Dr. Vimal Katiyar	Dr. S. Senthilkumar	ID_CSP_06	Centre for Sustainable Polymers	Production of Biodegradable Plastics using Non-Agro Bio-feedstocks
Dr. Anamika Barua	Dr. Debanga Raj Neog	ID_SWR_01	Centre for Sustainable Water Research	Enhancing Early Warning Systems for Urban Floods Using AI/ML for Last-Mile Dissemination
Dr. Anamika Barua	Dr. Suresh Kartha	ID_SWR_02	Centre for Sustainable Water Research	Virtual Water Trade and Hydrology for Assessing Water Flows in Present and Future Scenarios from India
Dr. M. K. Purkait	Dr. Prashant W. Patil	ID_SWR_03	Centre for Sustainable Water Research	Development of an AI-powered digital framework for rural water management
Dr. Selvaraju Narayanasamy	Dr. Archana M. Nair	ID_SWR_04	Centre for Sustainable Water Research	Integrated Development of Microalgal Consortia for Wastewater Treatment and Biodiesel Production: A Sustainable Approach to Resource Recovery
Dr. Sreedeeep Sekharan	Dr. Selvaraju Narayanasamy	ID_SWR_05	Centre for Sustainable Water Research	Exploring hydrogels for removing emerging contaminants from water
Dr. Sreeja Pekkat	Dr. Sreenath J. G.	ID_SWR_06	Centre for Sustainable Water Research	A study on the climate change impact on human well-being
Dr. Anamika Barua	Dr. C. Mallikarjuna	ID_ENV_01	Centre for the Environment	Towards Sustainable Urban Transport: Assessing the Shift from Cost-Benefit Analysis to Sustainability Performance Indicators

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Dr. Animes Kumar Golder	Dr. Abhishek Singh	ID_ENV_02	Centre for the Environment	Next-Gen Protective Masks: 3D-Printed Adaptive Solutions for High AQI and Extreme Weather
Dr. Animes Kumar Golder	Dr. Kalishankar Bhattacharyya	ID_ENV_03	Centre for the Environment	Single atom-based transition metal oxides for catalytic conversion of methane to methanol
Dr. Chandan Das	Dr. Ajay Kalamdhad	ID_ENV_04	Centre for the Environment	Development of Advanced Bio-adsorbents for Uranium Capture from Water through Sustainable Synthesis Techniques
Dr. Debasis Manna	Dr. Rajkumar P. Thummer	ID_ENV_05	Centre for the Environment	Antibiotics Conjugated Heparin and Other Biopolymers for Bacterial Cell Imaging and Antibacterial Applications
Dr. Gopal Das	Dr. Deepmoni Deka	ID_ENV_06	Centre for the Environment	Green Synthesis of Hydrogel Nano-Composite Biosorbent for Wastewater Remediation
Dr. Lal Mohan Kundu	Dr. Bishnupada Mandal	ID_ENV_07	Centre for the Environment	Chemically modified biopolymers conjugated to graphene oxide as fabricated nanomaterials for environmental remediation and carbon capture
Dr. Pankaj Tiwari	Dr. Lalit M. Pandey	ID_ENV_08	Centre for the Environment	Applications of biosurfactants for Microbial Enhanced Oil Recovery and Crude Oil Washing
Dr. Lalit M. Pandey	Dr. Raghvendra Gupta	ID_ENV_09	Centre for the Environment	Modelling of Dispersion Phenomena for radioactive materials
Dr. Senthilmurugan Subbiah	Dr. Kalyan Raidongia	ID_ENV_10	Centre for the Environment	Innovative Formulation and Characterization of Graphene Oxide (GO) Polymer Ink for Multi-Functional Environmental Sensors
Dr. Senthilmurugan Subbiah	Dr. Rashmi Dutta Baruah	ID_ENV_11	Centre for the Environment	Intelligent Integration of AI and IoT for Dynamic Air Quality Monitoring and Red Zone Identification

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Dr. Subhendu Sekhar Bag	Dr. Ranjan Tamuli	ID_ENV_12	Centre for the Environment	Plastic Degrading Bacteria with an Expanded Genetic Code and In Vitro Study of Its Environmental Benefits.
Dr. Subhendu Sekhar Bag	Dr. Vishal Trivedi	ID_ENV_13	Centre for the Environment	Development of nanophotocatalyst Against MDR Strain Bacteria Isolated from Hospital effluent
Dr. Tamal Banerjee	Dr. Sandip Paul	ID_ENV_14	Centre for the Environment	Formulation of Natural Deep Eutectic Solvent for Bioactive Extraction