Department	Topic (Research Area)
Biosceinces and Bioengineering	Meiotic DNA repair
Biosciences and Bioengineering	Multimodal AI and Deep Learning for Integrative Genomics and Imageomics-Based Biomarker Discovery
Biosciences and Bioengineering	Regenerative Medicine
Biosciences and Bioengineering	Microfluidic Devices for Diagnostics
Biosciences and Bioengineering	Lab-on-Chip, Biophysics of Viral Fusion, Male Fertility Markers, Epilepsy
Biosciences and Bioengineering	1. Motor Learning and Sensorimotor Control 2. Neural Signal Processing and Brain Connectivity 3. Computational Neuroscience 4. Brain–Computer Interfaces 5. Translational Neuroscience
Biosciences and Bioengineering	Electrochemical Sensors, Medical Devices
Biosciences and Bioengineering	Targeting GPCR Signaling Bias for Precision Therapeutics
Biosciences and Bioengineering	Environmental Engineering, Waste to wealth, Chemical and biochemical purification, Neutraceuticals, Carbon Capture and Storage, Nanomaterials, Pyrolysis, quantum dots
Chemical engineering	lithium and sodium ion battery, solid state battery, metal organic framework, covalent organic framework, electrocatalysis, supercapacitor
Chemical Engineering	Integrated Microfluidic Devices for Environment, and Health
Chemical Engineering	AI for Chemical Engineering, Carbon capture
Chemical Engineering	Hydrogen storage as clathrate hydrates
Chemical Engineering	Design and development of non-invasive optical imaging techniques and experimentation (Polymer–Plasticizer/solvent Systems) , Design and development of non-invasive optical imaging techniques and experimentation (Polymer– Polymer Systems)

Chemical Engineering	1. Zinc ion batteries 2. Direct Air Capture and Utilization
Chemical Engineering	Molecular Simulations for Drug Discovery Industrial Formulation Development Accelerated Discovery of Advanced Membranes for Energy and Environmental Applications Covalent Organic Frameworks (COFs) and Functional Polymers
Chemical Engineering	Environmental Engineering, Waste to wealth, Chemical and biochemical purification, Neutraceuticals, Carbon Capture and Storage, Nanomaterials, Pyrolysis, quantum dots
Chemical Engineering	Chemical Coatings for Glass Surfaces,
Chemistry	Energy Storage Materials and Battery Technology
Chemistry	Coordination Chemistry, Photoredox catalysis, Photocatalytic H2 production, Photodynamic Therapy
Chemistry	Supramolecular self-assembly
Chemistry	Lab-on-Chip, Biophysics of Viral Fusion, Male Fertility Markers, Epilepsy
Chemistry	Porous Materials, Electrochemistry, CO2 Reduction
Chemistry	Organic Synthesis and Catalysis
Chemistry	Bio-inorganic Chemistry, Organometallics and Catalysis, CO2 reduction catalysis, Dehydrogenation Catalysis, Bio-inspired catalysis
Civil Engineering	Ground water modelling
Civil Engineering	Structural Engineering - Impact strength of prefabricated concrete structures
Civil Engineering	Structural Dynamics and Earthquake Engineering
Civil Engineering	Advanced Concrete Materials, Fiber-Reinforced Concrete, Durability of Concrete Materials

Civil Engineering	Avalanche Protection Structures; Geosynthetics for High-Altitude Infrastructure
Civil Engineering	Modelling nonlocal damage and transport phenomenon in porous media
Civil Engineering	Hydraulics, Hydrology and Water Resources Management,
Civil Engineering	Structural Concrete NDT - Assessment of joints
Civil Engineering	Numerical and experimental analysis of of Concrete structures subjected to cyclic loads
Computer Science and Engineering	Cryptology, Quantum Technology
Computer Science and Engineering	LLMs for code generation and security analysis
Computer Science and Engineering	AI-ML Assisted - Network Security, 5G ORAN Security, and Network Resource Allocation
Computer Science and Engineering	Computer Vision & AI and Quantum Machine Learning
Computer Science and Engineering	Computer Architecture and GPU Systems, AI Accelerators, and High-Performance Computing
Department of Interdisciplinary Program	Research Area: Multimodal AI and Deep Learning for Integrative Genomics and Imageomics-Based Biomarker Discovery **Qualification : Candidates with a Degree (4-year Bachelor's or Master's) in computer science, data science, or Mathematics and computing, and those with prior project experience in image analysis, shall be given preferrence.** Note: Other qualifications, including the requirement of GATE/NET/JRF/GPAT/CSIR/UGC or other applicable examinations and the minimum CGPA requirement, shall be as per Point No. 02 of the Ph.D. Advertisement.

Department of Interdisciplinary Program	Research Area: Transport phenomena studies in complex fluids using non-invasive advanced optical techniques **Qualification:** **B.E./B.Tech. in Chemical Engineering/ Chemical Technology/ Energy Engineering/ Petroleum Engineering/ Nanotechnology/ Production and Industrial Engineering/ Mechanical Engineering/ Metallurgical and Material Engineering/ Plastic and Polymer Engineering/ General Engineering/ Environmental Engineering/ Other Relevant Discipline with First Division at both the Graduate and Postgraduate level.** **Or** **M.E./M.Tech. in Chemical Engineering/ Chemical Technology/ Energy Engineering/ Petroleum Engineering/ Nanotechnology/ Production and Industrial Engineering/ Mechanical Engineering/ Metallurgical and Material Engineering/ Plastic and Polymer Engineering/ General Engineering/ Environmental Engineering/ Other Relevant Discipline with First Division at both the Graduate and Postgraduate levels.** **Or** **M.Sc. in Physics/Applied Physics/Engineering Physics/Materials Science/ Materials Physics/ Nanoscience / Nanotechnology / Materials Science / Materials Physics/ Materials Chemistry/Polymer Science / Polymer Chemistry/Polymer, and allied branches/Metallurgy and Materials Engineering (Integrated MSc)/Engineering Sciences etc.** Note: Other qualifications, including the requirement of GATE/NET/JRF/GPAT/CSIR/UGC or other applicable examinations and the minimum CGPA requirement, shall be as per Point No. 02 of the Ph.D. Advertisement.
Department of Interdisciplinary Program	Research Area: Development of a Multifunctional Microelectrode Array Platform for Electrical Stimulation and Functional Sensing of Neural Organoids **Qualification: B.Tech/M.tech/M.Sc degree in Electrical Engineering/Electronics and Communications Engineering/Bioengineering/Biotechnology/Biomedicalengineering and other allied relevant areas.** Note: Other qualifications, including the requirement of GATE/NET/JRF/GPAT/CSIR/UGC or other applicable examinations and the minimum CGPA requirement, shall be as per Point No. 02 of the Ph.D. Advertisement.
Department of Interdisciplinary Program	Energy Storage Materials for Li-S Batteries **Educational Requirements: Applicants should possess an MTech (Chemical Engineering or Materials Engineering preferred) or an MSc in Chemistry/Physics, along with a valid GATE score or CSIR-UGC NET qualification.** Note: Other qualifications, including the requirement of GATE/NET/JRF/GPAT/CSIR/UGC or other applicable examinations and the minimum CGPA requirement, shall be as per Point No. 02 of the Ph.D. Advertisement.

Department of Interdisciplinary Program	Research Area: Deep Learning, Medical Imaging **Educational Qualifications: Bachelor's (4-year) /Master's (or equivalent) in engineering, sciences or a field related to medical specialisation.** Note: Other qualifications, including the requirement of GATE/NET/JRF/GPAT/CSIR/UGC or other applicable examinations and the minimum CGPA requirement, shall be as per Point No. 02 of the Ph.D. Advertisement.
Department of Interdisciplinary Program	Research Area: Interface thermodynamics in batteries **Educational Requirement:** **a) Master's degree in Physcics/Chemistry/Nano Science/Material Science** **b) B.Tech with minimum 8 CGPA in Chemical Engineeing/Materials Engineering** Note: Other qualifications, including the requirement of GATE/NET/JRF/GPAT/CSIR/UGC or other applicable examinations and the minimum CGPA requirement, shall be as per Point No. 02 of the Ph.D. Advertisement.
Department of Interdisciplinary Program	Research Area: Advanced Materials for Sustainable Li/Na-Ion and Solid-State Energy Storage **Educational Requirement: Master's degree in Chemistry or Materials Science/Engineering, or related field.** Note: Other qualifications, including the requirement of GATE/NET/JRF/GPAT/CSIR/UGC or other applicable examinations and the minimum CGPA requirement, shall be as per Point No. 02 of the Ph.D. Advertisement.
Department of Interdisciplinary Program	Research Area: Next-Generation Solid-State Batteries: Materials, Interfaces and Ion Transport **Educational Requirement: Master's degree in Chemistry or Materials Science/Engineering, or related field.** Note: Other qualifications, including the requirement of GATE/NET/JRF/GPAT/CSIR/UGC or other applicable examinations and the minimum CGPA requirement, shall be as per Point No. 02 of the Ph.D. Advertisement.
Department of Interdisciplinary Program	Research Area: Flexible and Bendable Batteries **Educational Requirements:** **B.Tech or Master's degree in Engineering/Technology in Materials Engineering, Metallurgical and Materials Engineering, Chemical Engineering, Polymer/Plastics Engineering, Mechanical Engineering or textile Engineering or Fiber Engineering, or a related discipline, with a strong academic record and a proven understanding of electrochemistry and/or battery technologies.** Note: Other qualifications, including the requirement of GATE/NET/JRF/GPAT/CSIR/UGC or other applicable examinations and the minimum CGPA requirement, shall be as per Point No. 02 of the Ph.D. Advertisement.

Department of Interdisciplinary Program	Drone Technology; Energy & Sustainability **Educational Requirements: Candidates with a B.Tech or M.Tech Degree or a Master's Degree in Physics.** Other Qualifications like requirement of GATE/NET/JRF/GPAT/CSIR/UGC/other or CGPA requirement shall be applicable as per point no. 02 of the PhD advertisement
Department of Interdisciplinary Program	Environmental Engineering, Waste to wealth, Chemical and biochemical purification, Neutraceuticals, Carbon Capture and Storage, Nanomaterials, Pyrolysis, quantum dots. **Qualification: MTech/BTech (Chemical Engineering, Mechanical Engineering, Civil Engineering, Materials Engineering) or MSc (Chemistry and allied areas, Biology, Physics, Biotechnology) or M.Pharma.** Other Qualifications like requirement of GATE/NET/JRF/GPAT/CSIR/UGC/other or CGPA requirement shall be applicable as per point no. 02 of the PhD advertisement.
Electrical Engineering	Microelectronics and VLSI Design, Low-power Circuits and Systems
Electrical Engineering	Speech Processing, Deep learning, Artificial Intelligence
Electrical Engineering	Antennas, RF & Microwave, Applications of Artificial Intelligence in RF & Microwave
Electrical Engineering	stutter speech detection via Deep Learning Models, AI and Signal Processing
Electrical Engineering	Semiconductor Devices and RFIC Design, Application of AL/ML on the Semiconductor Devices and RFIC Designs
Electrical Engineering	Power Electronics (Converters for renewable Energy and Electric Vehicle, SST)
Electrical Engineering	POWER TRANSMISSION LINE INSPECTION USING ROBOT ASSISTED TECHNOLOGY
Electrical Engineering	Artificial Intelligence, Deep Learning, Large Language Models
Electrical Engineering	Green Hydrogen Fuel Cell Enriched Microgrids

Electrical Engineering	Digital Circuits and Systems, FPGA Implementation and Chip Design for Quantum Key Distribution
Electrical Engineering	Robotics & Intelligent Systems, Control Systems
Electrical Engineering	Optoelectronic Devices for emission and detection
Electrical Engineering	AC-DC Power Converter, Bidirectional Converter, Electric Vehicle Chargers and Soft-Switched Converters
Electrical Engineering	Cyper Physical System in Power System and Intergration of Renewable Energy in Grid
Electrical Engineering	1. RFIC Circuits (Low Noise Amplifiers, Power Amplifiers, mixers, oscillator, filters, etc.) Designs; 2. Design of RFIC Circuits using AI/ML
Electrical Engineering	AI Accelerators, High Performance Computing, Hardware Security and Trust
Electrical Engineering	EMBEDDED SYSTEMS (IOT, EDGE AI)
Electrical Engineering	Computer Architecture, GPU Computing, AI Accelerators, and High-Performance Computing
Electrical Engineering	Wireless Communication, NOMA, IRS, Terahertzz
Electrical Engineering	Wireless communication, IRS, NOMA, Terahertz
Electrical Engineering	Multilevel converters for FACTS application
Humanities & Social Sciences	Cognitive and affective neuroscience; cognition, emotion and decision-making; mental health and maladaptive behaviours; brain–behaviour relationships; EEG and eye-tracking.
Humanities and Social Sciences	Sociology of Religion, Partition and Borderland Studies, Sound Studies (JRF only)
Humanities and Social Sciences	Development Economics, Agriculture Economics, Environmental Economics (JRF only)

Humanities and Social Sciences	Social Psychology: Social Stigma, Gender, and Sexuality (JRF)
Humanities and Social Sciences	Sociology (JRF Only), Social and Cultural Anthropology (JRF Only)
Materials and Metallurgical Engineering	Microstructure-processing-property correlations, alloy development (including but not limited to, metallic glasses, high entropy alloys), phase transformations.
Materials and Metallurgical Engineering	Polymer Synthesis for extreme environment, MXene based devices
Materials and Metallurgical Engineering	Corrosion science
Materials and Metallurgical Engineering	1. Computational Modelling 2. Pyrometallurgical Recycling
Materials and Metallurgical Engineering	High entropy ceramics for energy storage applications
Materials and Metallurgical Engineering	AI-Driven Discovery and Additive Manufacturing of Self-Adaptable High-Entropy UHTCs for Hypersonic Thermal Protection
Materials and Metallurgical Engineering	Materials for nuclear applications
Materials and Metallurgical Engineering	Next-Generation Solid-State Batteries: Materials, Interfaces and Ion Transport
Materials and Metallurgical Engineering	Advanced Materials for Sustainable Li/Na-Ion and Solid-State Energy Storage
Materials and Metallurgical Engineering	Metal Recycling and sustainability, high temperature materials, data-driven optimization of material properties
Materials and Metallurgical Engineering	Metal Extraction, Recylcing, Process Modelling
Materials and Metallurgical Engineering	Designing Next-Generation Structural Alloys and Rare-Earth-Free Magnets using DFT and Experiments.
Materials and Metallurgy Engineering	Coatings and Surface Engineering (Mechanical Behaviour and Properties of Coatings, Thermal Barrier Coatings, Cold-Sprayed Coatings) Failure and Integrity of Multilayer Coating Systems)

Materials and Metallurgical Engineering	Flexible and Bendable Batteries
Mathematics	Number Theory
Mathematics	Commutative Algebra
Mathematics	Commutative Algebra
Mathematics	Combinatorics
Mathematics	PDE and Numerical Analysis
Mathematics	Commutative Algebra
Mathematics	Algebraic Curves over Finite Fields
Mathematics	Permutation polynomials over finite fields
Mathematics	Analytic number theory
Mechanical Engineering	Nano-manufacturing for Sensing and Energy
Mechanical Engineering	Experimental and numerical fatigue and fracture study
Mechanical Engineering	Cooling Technology; Air Pollution; Water Technology
Mechanical Engineering	Micro-Machining, Magnetorheological Finishing, and Profile Grinding & Machining
Mechanical Engineering	1. Thermal hydraulics, 2. Experimental heat transfer and fluid flow, 3. Numerical/computational heat transfer and fluid flow, 4. Reactor kinetics, 5. AI/ML based analysis of heat transfer and fluid flow

Mechanical Engineering	Solar Energy, Thermal energy storage, Thermal management
Mechanical Engineering	Non destructive testing of composite structures
Mechanical Engineering	Gas turbine engines, Propulsion
Mechanical Engineering	1. Bio-Fluid Mechanics of Cardio-Vascular Systems, 2. Thermal-Hydraulics of Liquid Metal Cooled Reactors, and 3. Axial Flow Induced Vibrations of heat exchangers
Mechanical Engineering	Turbulence in boundary layers (simulation and analysis)
Mechanical Engineering	Computational Mechanics
Mechanical Engineering	1. Robotics and Control, 2. NDT
Mechanical Engineering	Advanced Polymer Composites, Design and Manufacturing, Bio/Bio Composites, Structural & Power Composites, Rehabilitation Devices
Physics	Kinetic turbulence studies in strongly coupled plasmas | Experiments and simulations
Physics	Quantum Computation and Quantum Information