IIT KANPUR
INDIAN INSTITUTE OF TECHNOLOGY KANPUR

DEPARTMENT OF SUSTAINABLE ENERGY ENGINEERING

PLACEMENT BROCHURE

Session 2025-2026

The Recruiter's Guide

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Department of
Sustainable Energy Engineering

The Department of Sustainable Energy Engineering at IIT Kanpur is a dynamic & innovative hub committed to addressing global energy challenges. With faculty expertise spanning engineering, technology and policy, the department fosters a collaborative environment for developing sustainable solutions. Research focuses on emerging areas such as renewable energy, energy storage, energy efficiency and clean technologies. From solar & wind power to smart grids, biofuels, hydrogen, CCUS & advanced battery systems, the department is actively shaping the future of sustainable energy, equipping students with the knowledge and skills to lead in a rapidly evolving energy landscape.

The department runs a Master of Technology [M. Tech], Master of Science by Research [M.S.(R)], and Doctor of Philosophy [Ph.D.] programs and is known for its academic rigor, excellence, and cutting-edge research with several sponsored projects and consultancies.

visit us at https://www.iitk.ac.in/see/

Message from the HoD

On behalf of the Department of Sustainable Energy Engineering at IIT Kanpur, I extend a warm welcome to you as we commence this year's placement season.

IIT Kanpur has long stood at the forefront of education, research, and innovation in India. Our institute is known for its rigorous science and engineering curriculum, enriched by strong human values and a forward-looking vision. Beyond academics and research, we foster a dynamic campus environment that supports holistic development and leadership.

The fourth postgraduate batch of Sustainable Energy Engineering embodies this spirit. Our students have undergone a comprehensive programme combining in-depth coursework, hands-on laboratory training, and impactful research. As a result, they possess strong theoretical, analytical, computational, and practical skills. They are well-prepared to tackle complex sustainability challenges, not just within the energy sector but across interconnected industries and domains.

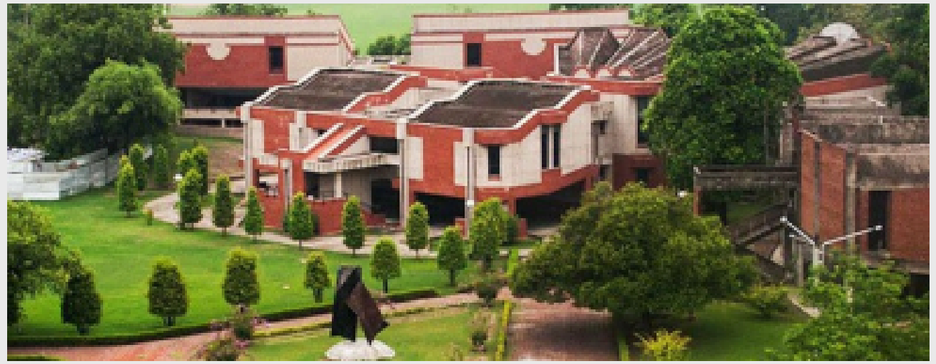
The Student Placement Office (SPO) at IIT Kanpur plays a pivotal role in connecting our talented students with organisations that share their aspirations. We are confident that our graduates will become valuable contributors to your teams and catalysts for innovation and growth.

We thank you for your continued engagement and welcome you to IIT Kanpur. May this placement season be both pleasant and productive for you.

ASHISH GARG
Professor & Head
Sustainable Energy Engineering
IIT Kanpur

DEPARTMENT OVERVIEW

2021	Master of Technology & Master of Science (R)
2021	Doctor of Philosophy (PhD)
2022	Minor in Sustainable Energy Engineering for Undergraduates
2022	Dual Degree Option for Undergraduates
2023	eMasters Program in Renewable Energy & e-Mobility



Academic Complex IITK

PROGRAM OVERVIEW

The Sustainable Energy Engineering program at IIT Kanpur features a robust core curriculum, ensuring all students acquire a comprehensive understanding of the field.

FOR M.Tech — 72 Course Credits + 72 Thesis Credits = 144 Total Credits

FOR M.S.(R) — 54 Course Credits + 90 Thesis Credits = 144 Total Credits

<u>Courses offered by the department.</u>

PG Compulsory (minimum for M.Tech., M.S.(R), and Ph.D. students)

SEE 601: Thermo-Fluid Engineering

SEE 602: Physics of Energy Materials

SEE 603: Electrical Power Engineering

SEE 604: Thermodynamics of Energy Systems

SEE 607: Manufacturing of Energy Systems

SEE 609: Mathematical and Computational Tools for Engineering

Compulsory [for all M.Tech., M.S.(R), and Ph.D. students]

SEE 605: An Introduction to Sustainable Energy Technologies (with Laboratory)

SEE 608: Seminar Course I

SEE 691: Seminar Course II

Department Electives

SEE 606: Electrochemical Energy Systems

SEE 607: Hydrogen Energy Production, Storage and Utilization

SEE 608: Introduction to Bioenergy and Biofuels

SEE 610: Introduction to Materials Modelling and Simulations

SEE 611: Energy Systems: Modelling and Analysis

SEE 612: Solar Photovoltaics

SEE 614: Wind Energy

SEE 615: Solar Thermal Engineering

SEE 616: Essential Electrical Engineering for RE Integration

SEE 617: Introduction to Sustainable Energy Policy

SEE 618: Energy Efficient Building Design

SEE 619: Finite Volume Methods for Engineers

SEE 620: Heat Driven Cooling Systems

SEE 621: Biomass Conversion and Biorefineries

SEE 622: Sustainable Energy: Enabling Net Zero Emissions

SEE 623: Fuel Cell Electrical Energy Systems

SEE 624: Design Strategies for Net Zero Energy Buildings

SEE 625: Microstructural & Spectroscopic Characterization of Materials

SEE 626M: Ecological Principles and Biodiversity

SEE 627: Electric Vehicles

SEE 628: Policy Processes and Analytical Methods: Application to Climate Policies

SEE 629M: Ecology, Equity and the Economy

SEE-634: Critical Material Resources for Clean Energy Transition

Open Electives

EE698D: Smart Grid Technology

EE616B: Simulations of Power Systems

EE604A: Basics of Power Electronic Converters

EE631A: Advanced Power System Stability

MS673A: Fundamentals and Applications of Electrochemistry

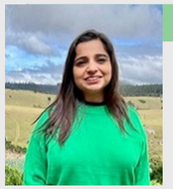
ME739: Fuel Cells

Any other suitable elective in the Institute

FACULTY PROFILE

Ashish Garg

HOD & Professor
Ph.D. (University of Cambridge, UK)
Area of Interest: Solar photovoltaic materials and devices: organic, perovskites, and tandem; energy harvesting from ambient sources.



Deepika Swami

Assistant Professor
Ph.D. (IIT Bombay)
Area of Interest: Energy Policy and Climate Change.

Sayan Kar

Assistant Professor
Ph.D. (University of Southern California)
Area of Interest: Carbon Capture, CO2 Utilisation, Energy Materials

Srinivas Karthik Yadavalli

Assistant Professor
Ph.D. (Brown University)
Area of Interest: Halide Perovskites, Solar Cells, Multi-junction Photoelectrodes for Green Hydrogen, Recycling of Photovoltaic Materials

Aakash Chand Rai

Associate Professor
Ph.D. (Purdue University)
Area of Interest: Energy-efficient Buildings, Impact of Climate Change on Heating and Cooling of Buildings, Indoor Air Quality

Lalit M. Pant

Assistant Professor
Ph.D. (University of Alberta, Canada)
Area of Interest: Electrochemical Energy Conversion and Storage, Numerical Modelling, Porous Media Transport

Sachchida Nand Tripathi

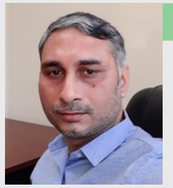
Professor
Ph.D. (Reading University, UK)
Area of Interest: Climate Issues, Climate Modelling, Environment, Air Pollution.

Sudarshan Narayanan

Assistant Professor
Ph.D. (Carnegie Mellon University, USA)
Area of Interest: Solid state batteries (solid electrolytes, anode materials), thin films for energy conversion, advanced characterization

Amarendra Edpuganti

Assistant Professor
Ph.D. (National University of Singapore)
Area of Interest: Power electronics applications in renewable energy. electric vehicles, and fuel cell vehicles



Laltu Chandra

Professor
Ph.D.(Karlsruhe Institute of Technology)
Area of Interest: Heat Transfer and Fluid Flow, Computation and Experiment, Turbulent Flow Simulation and Modelling.

Sheo Shankar Rai

Professor of Practice
Ph.D. (Indian School of Mines, Dhanbad)
Area of Interest: Sustainable Development of Natural Resource Sector. Deep Sea Mining for Critical Mineral Resources, CCS

Vaibhav Arghode

Professor
Ph.D. (University of Maryland, USA)
Area of Interest: Solar Thermochemical Systems, Biomass Gasification, Green Hydrogen Production, Heat Transfer

Debopam Das

Professor
Ph.D. (IISc, Bangalore)
Area of Interest: Wind energy, Computational Fluid Dynamics, UAV's

Prabodh Bajpai

Professor
Ph.D. (IIT Kanpur)
Area of Interest: Hybrid AC-DC Microgrids, Smart Grid and Renewable Integration, Electricity Markets, Power System Analysis.

Soumyabrata Roy

Assistant Professor
Ph.D. (JNCASR, Bangalore)
Area of Interest: Materials for Energy Transition, CCU, Green Hydrogen & Sustainable Fuels, Reaction Engineering.

Vivek Verma

Assistant Professor
Ph.D. (NTU,Singapore)
Area of Interest: E-waste Material Recovery/Recycling, Battery Materials Development, Bulk X-ray Characterization

Click on profile to know more

RESEARCH WORK

Solar PV Systems
perovskite photo-voltaics durability improvements

Wind
Developing new turbine designs for low wind speeds

Batteries
Advancing Li-Na batteries for energy storage

Electric Vehicles
Developing chargers and powertrains for EVs

Solar Thermal
Exploring hydrogen generation and waste-heat recovery

Green Hydrogen
Optimizing electrolyzers for hydrogen production

Renewable Power Systems
Integrating solar - wind power with microgrids

Control Systems
Managing energy in microgrids with storage technologies

Carbon Capture
Creating materials for carbon capture and utilization

Energy Policy
Planning for renewable energy adoption and transition

Build Environment
Designing net-zero energy-efficient buildings

LABORATORIES AT SEE IITK

Solar Photovoltaic Lab

1. Solar photovoltaics: process development, materials development, perovskite cells, organic & tandem cells.
2. Energy storage using batteries.
3. Materials for Green Hydrogen.
4. Energy harvesting devices and sensors for wearable electronics and IoT devices.
5. Recycling and waste management.
6. Materials and devices for Data storage, Sensors and Actuators, Interconnects, contacts, Automotive sector.
7. Electronic Devices and Materials manufacturing.

TheSLa

(**The**rmal **S**ystems **La**boratory)

1. Battery thermal management systems.
2. Bubble-induced heat transfer augmentation for energy systems.
3. Dust transport and deposition on solar PV panels or reflectors/concentrators.
4. Heat transfer enhancement with nano-fluids.
5. Thermo-chemical hydrogen generation.
6. Technologies for concentrated solar thermal systems like receiver, thermal energy storage, heat transfer fluids etc.

NOVEL

(sustai**N**able p**O**wer inno**V**ation t**E**chno**L**ogies)

1. Renewable Hybrid Energy Power Plant.
2. Hybrid AC/DC Micro-grid test facility.

CREATE

(**C**entre for **R**echargeable **E**nergy storage systems for **A**ugmenting **T**ransportation & **E**lectrification)

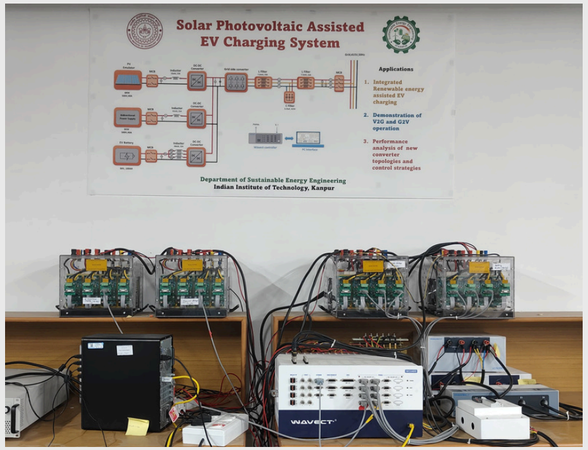
1. Electrical vehicles.
2. Fuel cell applications.
3. Renewable energy integration.

Energy Materials, Characterization, & Device Engineering Group

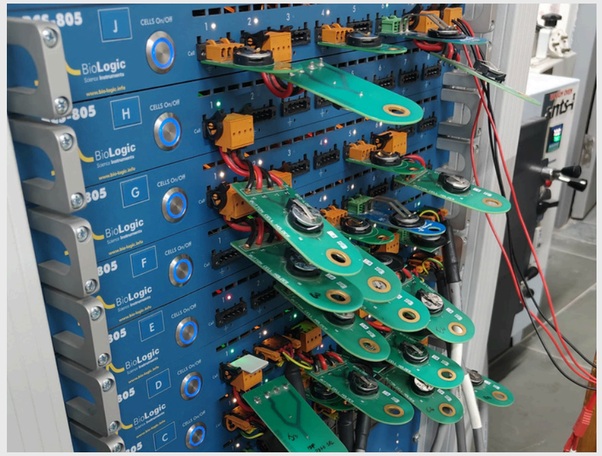
1. Energy Storage (primarily solid-state batteries).
2. Multi-layer spectrally-selective thin film coatings.
3. Building-integrated photovoltaics.
4. Microstructural, chemical, and electrochemical evolution in the bulk & at interfaces through advanced ex-situ, in-situ & operando characterization techniques.

Glove Box @ Solar PV lab

Solar tower simulator for thermo-catalytic ammonia cracking to regenerate hydrogen @ TheSLa



EV Charging Setup @ NOVEL



Cell Grading Machine @ EMCDEG

LABORATORIES AT SEE IITK

ElectroDES
(Electrochemistry & Transport for **D**esign of **E**nergy **S**ystems**)**

1. Fabrication and optimization of electrodes in fuel cells and electrolyzers.
2. Pore-scale characterization and analysis of electrodes.
3. Multi-physics simulation of electrochemical energy conversion systems.
4. Electrochemical ammonia synthesis and hydrogen regeneration.

METLab
(**M**aterial for **E**nergy **T**ransition)

1. Functional Materials, Processes & Circularity.
2. Carbon Capture Utilization & Storage (CCU).
3. Modular Molecular Transformations: (Power-to-X): Waste-to-wealth Sustainable fuels & Chemicals.
4. Integrated Devices/ Membranes for Energy and separation applications.

National Aerosol Facility

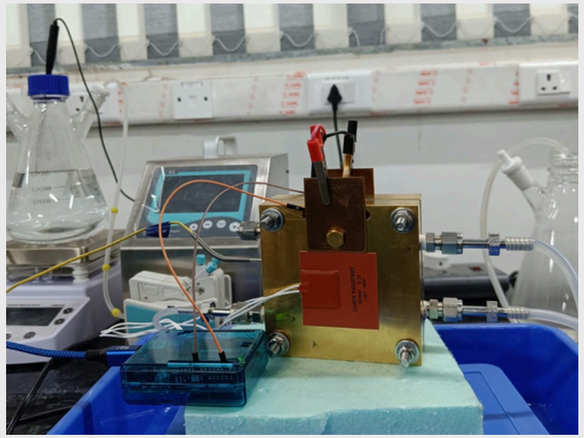
1. The Dynamic Hyper-Local Source Apportionment DHSA.
2. Evaluation of PM2.5 spatio-temporal variability and hotspot formation.
3. Ambient air quality Monitoring of Rural Areas using Indigenous Technology (AMRIT) project.
4. Seasonal hyperlocal hotspot detection (500mx500m) using high-resolution satellite imagery across Lucknow (2021-2022).

Energy Policy

1. Sustainability, ESG reporting and Energy Market.
2. Life Cycle Assessment of different types of houses.
3. NetZero Energy and NetZero Building.

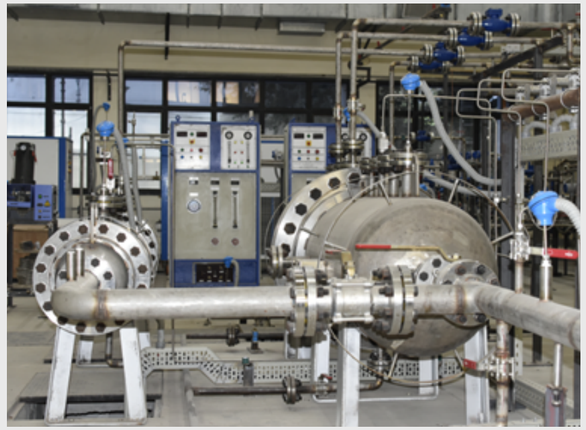
Wind Energy Lab

1. Flexible flapping wing Wind Turbine.
2. Tropical cyclone forecasting based on time series data.
3. Developing environment-friendly novel wind turbines.

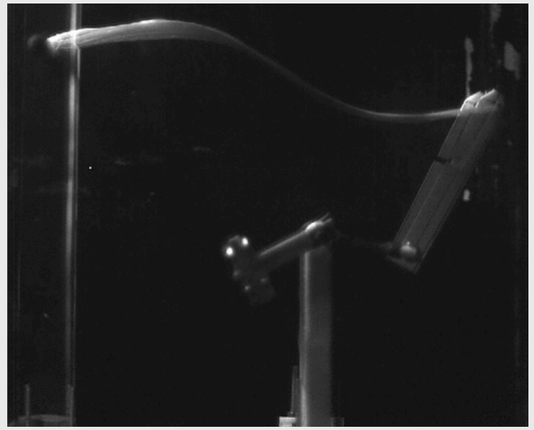


PEM Electrolyzer test station @ ElectroDES

Portable Solar Simulator @ METLab



Mixing Vessels @ NAF



Flexible flapping wind turbine @ Wind Energy Lab

CENTERS

The **Chandrakanta Kesavan Center** leads IIT Kanpur's commitment to becoming carbon neutral, serving as a testbed for a low-to-zero carbon campus. This includes studies on electricity use, conservation, mobility, water, and waste recycling, followed by policy implementation. Several projects are undertaken by undergraduate and graduate students.

The **Rice-IITK Collaborative Center** is a partnership between Rice University and IIT Kanpur. It aims to foster groundbreaking research in sustainable energy and the environment, addressing global energy demands. By promoting collaboration and knowledge exchange, it leverages the strengths of both institutions to tackle major energy challenges.

SERB-IRHPA Centre for Rechargeable Energy storage systems for Augmenting Transportation & Electrification (CREATE) has the aim to develop high energy density, low-cost and high-cycle life batteries using earth-abundant materials along with scale up to pouch and cylindrical cell geometries.

Established by the **Department of Science and Technology (DST).** The platform is dedicated to the design & development of energy-harvesting materials through the integration of quantum mechanics based atomistic simulations, AI/ML algorithms, & automation technologies.

The **Kotak School of Sustainability** at IIT Kanpur aims to excel in sustainability education, research & innovation, technology development, entrepreneurship, and outreach. The school will spearhead the development of holistic end-to-end technology solutions for sustainable development for a healthy planet and species.

PARTNERSHIPS

GUEST LECTURES AT SEE IITK

Mr. Manojit Sengupta is a sustainability expert in the power utility sector. In his talk, he highlighted sustainability as a key opportunity for utility companies and emphasized placing the prosumer at the center of the energy ecosystem. He discussed sustainable practices across the entire value chain and shared real-world success stories of green transformation.

Dr. Asit Kumar Mishra is an engineer and innovator focused on optimizing indoor climate for smart, sustainable buildings and healthier occupants. The talk explores how classroom thermal comfort design can be reimagined to create energy-resilient. It highlights the limitations of adult-based standards and introduces tools like the TAIL rating scheme and design thinking for more effective future classroom designs.

Dr. Sudhanshu Shukla is a senior researcher at Interuniversity Microelectronics Centre (IMEC), Belgium. In his talk, he addressed material challenges in PEC solar fuel generation and shared insights from photovoltaic research. He focused on chalcogenide semiconductors like CIGS for efficient CO_2 reduction. . He also gave an overview of ongoing energy research activities at IMEC's Energyville facility.

Mr. Manish Chourasia, COO at Tata Capital Ltd, is a veteran in financial services with extensive experience in cleantech finance. The session delves into the role of financial intermediaries in tackling climate change, highlighting challenges, opportunities, and funding avenues in climate finance. It also showcased Tata Capital's cleantech initiatives and equips participants with India's sustainability and decarbonization goals.

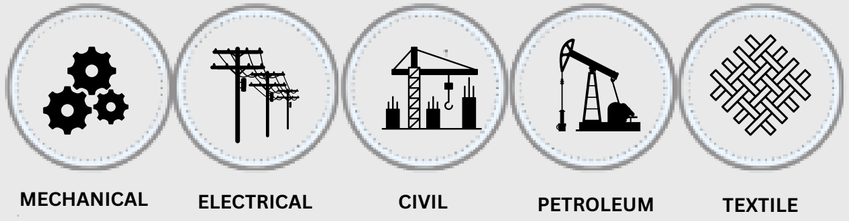
Dr. Virender K. Sharma, a globally recognized expert in environmental chemistry, is a Professor at the University of Miami with over 460 publications and an H-index of 103. The presentation explores innovative, sustainable solutions using high-valent iron species (ferrates) to address global challenges like water pollution, pathogens, & antibiotic resistance. It highlights ferrates applications in disinfecting healthcare settings, treating emerging contaminants, purifying water & food.

Mr. Ajay Phatak a tech entrepreneur and sustainability expert with 40 years of experience across healthcare, energy, and ecology. This talk explores the complex challenges of transitioning to a new energy system, emphasizing that relying solely on renewables is insufficient. It highlights the spatial, temporal, and scalability issues involved, while urging timely action and exploring diverse transition pathways.

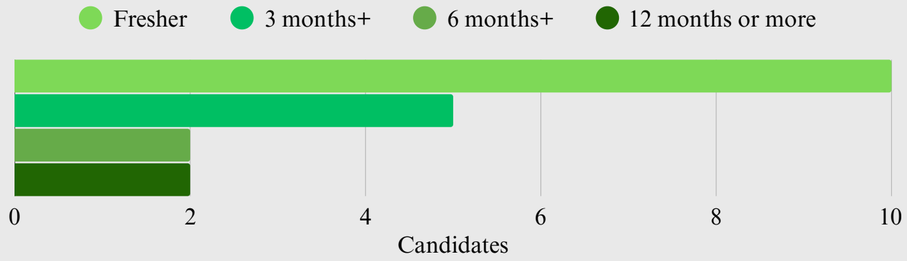
STUDENT DEMOGRAPHIC

The Department of Sustainable Energy Engineering attracts a diverse & talented student body from across India. Our students come from a wide range of academic backgrounds, united by a passion for sustainable energy. Many candidates also have prior industry exposure, with work experience in diverse sectors. This blend of academic depth and practical experience enables them to contribute effectively to roles in energy systems, sustainability, policy, analytics, and technology development.

Academic Diversity



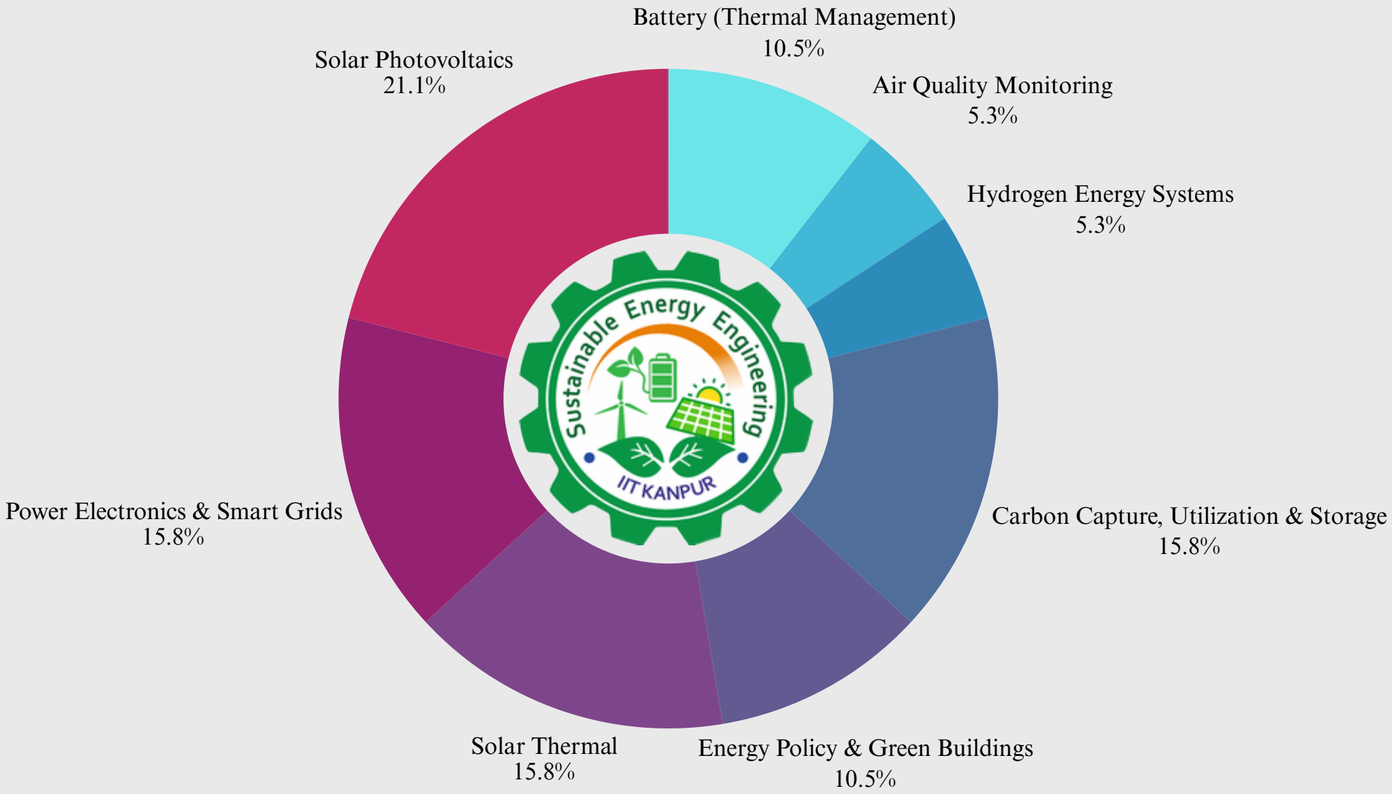
Work Experience



STUDENT RESEARCH DOMAINS

Our students undertake cutting-edge research projects as part of their M.Tech thesis, addressing some of the most pressing challenges in sustainable energy and environmental engineering. Their work spans a diverse set of domains. This strong technical foundation equips them with analytical thinking, domain expertise, and problem-solving skills that are directly relevant to both industry and research-oriented roles.

Research Domains



BATCH PROFILES 2025-2026

The **fourth postgraduate batch** of Sustainable Energy Engineering is equipped with strong theoretical, practical, and analytical skills.
They are prepared to tackle sustainability challenges across energy and related sectors through rigorous training & research, bringing experimental and computational expertise to national and global problems.

Abhishek Dixit

Research: Recycling of Solar PV Panels.
Interests: Energy Policy, Electric Vehicles, Wind Energy, Thermodynamics, Bio-fuels.

Braj Mohan Pandey

Research: Lamination of Perovskite Solar Cells
Interests: Energy Policy, Power Market, Energy Storage Technologies, Energy Transition.

Anshul Aswal

Research: Carbon Capture, Utilization & Storage
Interests: Renewable Energy Integration, Energy Policy, EV, Manufacturing of Energy Systems, Bio-fuels.

Divyanshu Ranjan

Research: Solar Thermal System & Hydrogen Production.
Interests: Energy Modelling & Analysis, Wind Energy, Manufacturing of Energy Systems, Electric Vehicle.

Abhinav Saini

Research: Battery Thermal Management System (BTMS).
Interests: Cell Modelling & Simulation, Solar PV, EV, Manufacturing of Energy Systems, Wind Energy.

Aryesh Singh Yadav

Research: Battery Thermal Management System (BTMS) For Micro EV.
Interests: AI/ML, Solar Energy System Modelling & Simulations, Wind Energy, Electric Vehicle, ESG and Energy policy.

Jyoti Dubey

Research: Power Converters for the Hybrid Powered Electric Tower Car
Interests: Electric Vehicle, Electrical Power Engineering,PCB designing, converter designing.

Click on profile to know more

BATCH PROFILES 2025-2026

Kavita Omar

Research: Design & Modelling of Electrolyzer.
Interests: Data Science & ML, Energy Modelling & Analysis, Energy Policy, Battery, Solar Photovoltaic.

Pranshu Vajpayee

Research: Air Quality Monitoring and Source Apportionment Study.
Interests: Data Science & ML, Electric Vehicle, Energy Policy & ESG metrics, Econometrics, Bio-fuels.

Priyanshu Kumar

Research: Solar Biomass Pyrolysis.
Interests: Electric Vehicle, Thermo-fluid Engineering, Energy Modelling & Analysis, Solar Thermal Engineering.

Nilesh Jagtap

Research: Carbon Capture, Utilization & Storage.
Interests: Data Science & ML, Wind Energy, Manufacturing of Energy Systems, EV, Solar PV.

Praveen

Research: Smart Grids
Interests: Electrical Power Systems, Electric Machines (Transformer & DC Machines), Switch-gear & Protection.

Rahul Pradhan

Research: Perovskite Solar Cell.
Interests: Solar Photovoltaic, Energy Policy, Mathematics & Statistics, Bio-fuels.

Pranav Jichkar

Research: Carbon Capture, Utilization & Storage.
Interests: Data Science & ML, Solar PV, Manufacturing of Energy Systems, EV, Energy Modelling & Analysis.

Praveen Sahu

Research: Flexible Solar PV Systems.
Interests: Data Science, Manufacturing Energy Systems, EV, Energy Modelling & Analysis, Energy Policies, RE Integration.

Jigmet Yangchan

Research: Energy efficiency building design.
Interests: EV, Manufacturing energy system, Zero Energy Building design, HVAC system, Energy Policy

Click on profile to know more

BATCH PROFILES 2025-2026

Khritisha Devi Koomar

Research: Solar PV-Assisted EV Charging Station
Interests: Renewables integrated smart power systems, Energy Policy, Design strategies for net zero energy buildings.

Piyush Tripathi

Research: Understanding Stubble Burning Practices in India
Interests: Energy policy, Public policy, Data analytics, Statistics.

Shishir Kumar Mall

Research: Techno economic study of H_2 production from thermo-catalytic cracking of NH_3
Interests: Green Hydrogen, Numerical modelling, Energy modelling & analysis, Solar PV, Electric Vehicle.

Click on profile to know more

PROMINENT RECRUITERS

Reliance NEW ENERGY
pwc
susten By Mahindra
AIR INDIA
Hitachi Energy
First Solar
सेकी SECI सूर्य सदैव SUN FOR EVER
latentview
DHL Group
LARSEN & TOUBRO
EXL
CATERPILLAR®
Rodic ENGINEERING PASSION
EY
merilytics AN ACCORDION COMPANY
BAJAJ
ReNew POWER
JSL JINDAL STAINLESS
esyasoft
GIST IMPACT
PIERSIGHT
Deloitte.
FLUENCE A Siemens and AES Company
MLA GROUP

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