

M.Tech.

(Energy Science and Technology)

AICTE Approved and Supported by MNRE

2025-26



DEPARTMENT OF APPLIED SCIENCES AND HUMANITIES
FACULTY OF ENGINEERING AND TECHNOLOGY
JAMIA MILLIA ISLAMIA
New Delhi-110025

For Admission visit on www.jmicoe.in

Department of Applied Sciences & Humanities

Established in 1996, as one among the departments of the Faculty of Engineering and Technology, this department participates in B. Tech and M. Tech. programs offered by the faculty. In addition, the department offers a two-year M. Sc. Electronic program. There are 11 well qualified and experienced faculty members whose services are available to the department. Faculty members of the department have published numerous research papers, research articles and books with reputed international publishers. The Department has been actively involved in research and development based on different domains of Applied Sciences and Humanities. The faculty members of the department have successfully completed many research projects in various fields of science and technology funded by different funding agencies. Several research projects are going on in the department and expected to deliver significant impact. Solar photovoltaics and energy efficient lighting and displays are some of the focus areas of the department. Major emphasis is being given on the organic materials-based energy systems to march towards sustainability. Department has well equipped teaching and research laboratories for hands-on training of the students. The department is also involved in training and placement of its students in coordination with the Training and Placement Office of the university.

Brief About the Program

Modern civilization is completely dependent on power and energy to move ahead. Every single electrical device that we use in our daily life, as well as the production of such machines, is not able to function without power. Initially, coal was the main fuel of the eighteenth and nineteenth centuries. However, the birth of electricity, automobiles and airplanes saw oil, which is termed as a fossil fuel, comes into the picture as the dominant fuel in twentieth century. Till now, the main contributors in power generation have been fossil fuels like oil and natural gas, coal, and nuclear resources, accounting for 86.2%. Other energy resources like hydro, solar, wind, geothermal, and wood have contributed an infinitesimal 0.9% of global energy production. In the last few years, world energy consumption has increased. This results in raising the price of oil from about \$15 a barrel to above \$100 a barrel, which has made everybody start thinking about the possibility of alternative energies. On the other hand, burning of fossil fuels causes environmental degradation. The planet is getting hotter day by day. The ice on the mountains is melting and the existence of the planet is getting into a danger zone. The time has come to think about these serious issues in our country also and we may need dedicated manpower for both academics as well as energy-based industries to carry out research and development as well as to work as the experts in the commercial units in the energy sector. To fulfil the future demands of the experts in the energy sector, we have started Master of Technology program in the field of Energy Science & Technology. The aim of M. Tech. in Energy Science & Technology is to provide advanced understanding of energy production, conversion, utilization, and conservation from conventional as well as non-conventional sources with the special emphasis on Renewable Energy. The focus is being drawn on economic, environmental and policy impact of sustainable energy practice so that the students will develop the research and communication abilities to be effective leaders in the energy industry.

Course Objectives

The objectives of the M. Tech. program (Energy Science & Technology) are to empower and enable students to develop advanced knowledge and skills to become leaders and managers in the energy sector. Specifically,

- ✓ Students will have a solid understanding of the sciences and technology related to energy production, conversion, utilization, and conservation.
- ✓ Students will understand the economic, environmental and policy impact of a sustainable energy practice for a sustainable society.
- ✓ Student will learn basic to advanced aspects of Renewable Energy systems and to be prepared for paradigm shift from fossil fuels to renewable sources.
- ✓ Students will develop their research and communication abilities to be effective leaders in the energy industry.
- ✓ To provide students with an academic environment aware of excellence, leadership, ethical codes and guidelines and the life-long learning needed for a successful professional career.

Highlights of the Course

- ❖ The M. Tech in Energy Science & Technology program is approved by the All-India Council for Technical Education (AICTE).
- ❖ Supported by the Ministry of New and Renewable Energy (MNRE), Government of India, emphasizing its alignment with national energy goals.

Fellowships

GATE-qualified students admitted to the M. Tech in Energy Science & Technology program are eligible for fellowships from MNRE, AICTE, and UGC. These fellowships provide financial support to promote excellence and innovation in sustainable energy technologies.

Courses Offered in M. Tech in Energy Science & Technology

Core Energy Courses

- | | |
|--|---------------------------------|
| ▪ Hybrid Electric Vehicles and Charging Stations | ▪ Solar Photovoltaic Technology |
| ▪ Energy Resources: Concepts and Technologies | ▪ Energy Storage Systems |
| ▪ Wind Energy: Resource, Engineering & Projects | ▪ Energy Management Systems |
| ▪ Hydrogen Generation and Storage | ▪ Energy Audit |
| ▪ Energy Economics and Energy Policy | ▪ Energy from Waste |
| ▪ Concepts and Design of Green Building | ▪ Data-Driven Energy Systems |

Basic and Interdisciplinary Energy Courses

- | | |
|--|-----------------------------|
| ▪ Nanotechnology Concepts and Applications | ▪ Advanced Energy Materials |
| ▪ Fundamentals of Energy Sciences | ▪ Embedded Control Systems |
| ▪ Innovation, Entrepreneurship, and Startup Ecosystems | ▪ |

Faculty Engaged in M. Tech in Energy Science & Technology program

Name of the Faculty	Affiliation	Subject Expert
Prof. Zishan Husain Khan	Department of Applied Sciences and Humanities, Jamia Millia Islamia, New Delhi	Nanotechnology, Perovskite Solar Cells, Energy Storage
Prof. Naqui Answer	Head, Department of Energy and Environment, TERI School of Advanced Studies, New Delhi	Wind Energy
Prof. Ramkishore Singh	Department of Energy and Environment, TERI School of Advanced Studies, New Delhi	Solar Photovoltaic Technology
Dr. Prabir Kanti Basu	Former Vice President, Reliance New Energy Limited	Solar Photovoltaic Technology
Dr. Faheem Ahmed	Department of Applied Sciences and Humanities, Jamia Millia Islamia, New Delhi	Hydrogen Generation, Fuel Cell, Energy Storage
Dr. Arunesh Kumar Singh	Department of Electrical Engineering, Jamia Millia Islamia, New Delhi	Electric Vehicles, EV Charging Technology
Dr. Navaid Zafar Rizvi	Department of Applied Sciences and Humanities, Jamia Millia Islamia, New Delhi	Energy Management and Data Driven Energy Systems
Dr. Islam Uddin	Department of Applied Sciences and Humanities, Jamia Millia Islamia, New Delhi	Fundamental of Energy Science
Dr. Mohammad Bilal Kahn	DST-Project Scientist, Department of Applied Sciences and Humanities, Jamia Millia Islamia, New Delhi	Advanced Energy Materials, Perovskite Solar Cells
Dr. Osama Khan	Assistant Professor Contractual, Department of Mechanical Engineering, Jamia Millia Islamia, New Delhi	Energy Economics, Energy Policy, Energy Audit
Dr. Sultan Ahmad	MNRE-Research Associate, Department of Applied Sciences and Humanities, Jamia Millia Islamia, New Delhi	Advanced Energy Materials, Perovskite Solar Cells
Mr. Mohd. Rayyan	Consultant, Building Energy Analyst GEED India PVT LTD	Green Building

Carrer Opportunities for M. Tech (EST) Graduates

Graduates of the M. Tech (EST) program are well-prepared for diverse career opportunities across various domain, including:

❖ Industry Opportunities:

- **Renewable Energy Engineer (Solar, Wind, Hydrogen, Energy Storage):** Work with advanced technologies to design, implement, and manage renewable energy systems.
- **E-Vehicle Engineer/Technologist:** Contribute to the design and development of electric vehicles and related charging infrastructure.
- **Energy Management Consultant:** Help businesses and organizations optimize energy consumption, reduce costs, and implement sustainable energy solutions.
- **Energy Policy Analyst:** Work in governmental or research organizations to shape energy policies that promote sustainability and reduce environmental impacts.
- **Green Buildings:** Focus on creating environmentally friendly, energy-efficient buildings by evaluating and certifying energy-saving standards and integrating renewable energy solutions like solar and wind into construction projects.
- **Energy Audits:** Conduct energy audits to identify inefficiencies, implement energy-saving strategies, and ensure regulatory compliance while recommending improvements for energy efficiency.
- **Additional Career Fields:**
 - **Bioenergy:** Develop sustainable biofuels and biomass-based energy systems.
 - **Geothermal Energy:** Harness geothermal resources for sustainable energy generation.
 - **Waste-to-Energy:** Innovate methods to convert waste into usable energy.

❖ Research and Development Opportunities:

- **Junior/Senior Research Fellowships (JRF/SRF) / Research Associate:** Work in leading research institutes or universities, contributing to advancements in energy technologies like solar, wind, energy storage, and hydrogen.
- **Project Scientist:** Lead scientific projects focused on energy innovation and sustainability, including energy generation, storage, and efficiency.
- **Ph.D. Opportunities:** Pursue academic research in energy science or technology, exploring deep topics in renewable energy, energy policies, and sustainable solutions.

❖ Entrepreneurship and Consulting Opportunities:

- **Energy Startups:** Launch or work with startups focused on clean energy solutions, smart grid technologies, or advanced energy storage.
- **Consulting:** Offer expert consultancy services to industries, governments, and organizations on energy optimization, energy audits, and integrating sustainable energy practices.

This program opens doors to roles in industries, research organizations, governmental bodies, and startups aiming to build a sustainable energy future.

PLACEMENT

The M. Tech in Energy Science & Technology program boasts excellent placement statistics, with students securing roles in renowned companies, startups, and research organizations. Prominent recruiters include Tata Power, Siemens, NTPC, Adani Green Energy, Bharat Petroleum, Reliance New Energy, and others. Past placement data reflects a strong track record, with placement rates ranging from 70% to 90% across recent batches.

Batch	Intake	Pass out	Placed	Salary (Lakhs)
2018 - 2020	22	22	22	6.1 - 12
2019 - 2021	18	18	18	5.5 - 9.5
2020 - 2022	22	22	22	4.2 - 10.3
2021 - 2023	20	20	14	5.9 - 12.5
2022 - 2024	16	16	12	6 - 18



Higher Studies

Some graduates from the M. Tech in Energy Science & Technology program pursue higher studies at prestigious institutes, including:

- IITs / NITs / University
- TERI School of Advanced Studies, New Delhi
- International Universities in Europe, America and Aisa.



Program Details

Program Name: Master of Technology (M. Tech.) Energy Sciences and Technology

Nature: Regular

Course Duration: 2 Years (4 Semesters)

Course Fee: INR 55,100/- per year

Eligibility: M.Sc. in Physics/ Applied Physics/ Electronics/ Chemistry/ Applied Chemistry/ Nanoscience/ Material Science/ Energy Studies/ Energy Tech with at least 55% marks or equivalent CGPA or B. Tech/B.E. in Mechanical / Electronics/Electrical/ Chemical/Civil / Petrochemical/ Materials Science/ Nanoscience/ Nanotechnology/ Energy Studies/ Energy Science/ Energy Tech. with at least 55% marks or equivalent CGPA

How to Apply

- ❖ Applications forms will be available for session 2025-2026 from **February 20, 2025**.
- ❖ For online applicationn, entrance test syllabus, and other information please visit www.jmicoe.in

For More Information, Please Contact

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