Information Brochure

M. Tech.

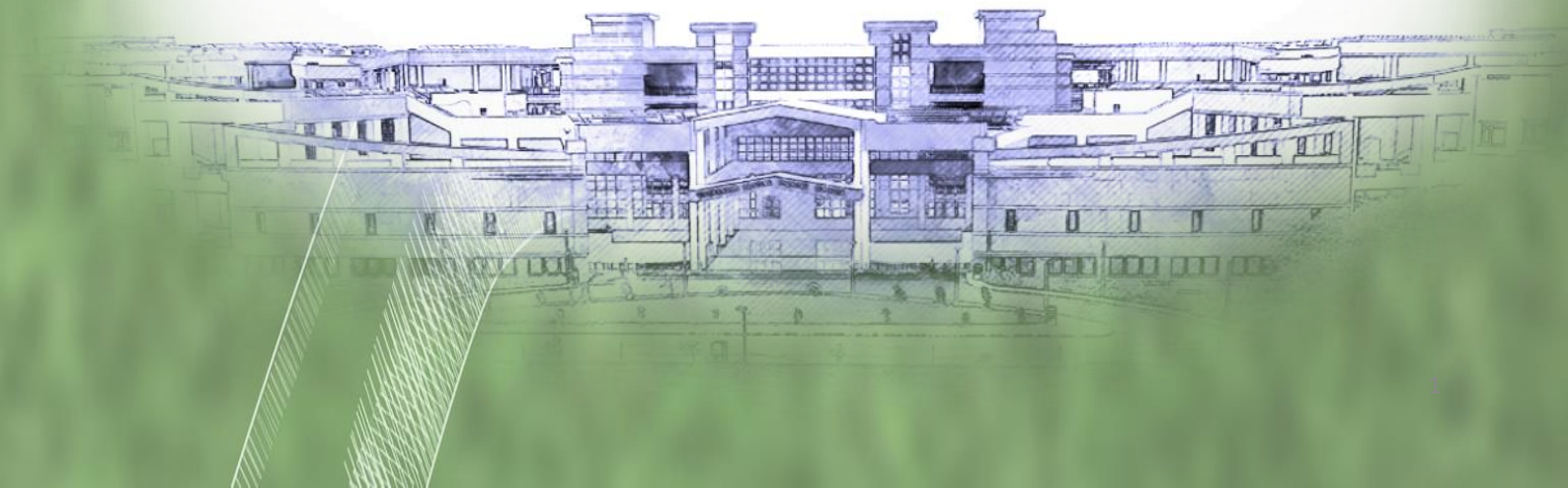
CHEMICAL ENGINEERING & SUSTAINABILITY

(DEPARTMENT OF CHEMICAL ENGINEERING)

मालवीय राष्ट्रीय प्रौद्योगिकी संस्थान जयपुर

Malaviya National Institute of Technology Jaipur

[AN INSTITUTE OF NATIONAL IMPORTANCE]



Program Overview:

In the face of energy crisis, climate change, and environmental deterioration, the world needs technically proficient as well as environmentally conscious chemical engineers. The ***M.Tech in Chemical Engineering and Sustainability*** is a forward-thinking postgraduate program designed to prepare engineers equipped with cutting-edge skills to tackle global sustainability challenges through innovation and advanced engineering. This interdisciplinary program integrates core chemical engineering principles with advanced knowledge in green technologies, process optimization, and environmental impact assessment.

Program Objectives:

- Equip students with a strong foundation in chemical engineering along with specialized expertise in sustainable process design and analysis.
- Encourage the development of innovative, energy-efficient, and environmentally friendly technologies for industrial applications.
- Interdisciplinary learning through integrating concepts from materials science, environmental science, data analytics, and clean energy.
- Hands-on and research-driven learning through laboratory research, simulations, and industry-based projects in sustainability-focused areas.
- Develop leadership, problem-solving, and analytical skills to enable graduates to pursue impactful careers in industry, research, and academia.

Target groups:

- B.E./B.Tech/B.Sc. holders seeking specialization in sustainable technologies.
- Industry Professionals looking to upgrade their skills in green processes, clean energy, and sustainability-driven innovation.
- Candidates aiming for research careers or future Ph.D. studies in sustainable chemical engineering, energy systems, or environmental science.

PROGRAMME COURSES

Core Courses

- Transport Analysis
- Advanced Reaction Engineering
- Life Cycle Assessment of Chemical Processes
- Sustainable Separation Processes
- Advanced Material Characterization

Elective Courses

- Sustainable Solid Waste Management
- Carbon Management and Upcycling
- Hydrogen and Fuel Cell Technologies
- Sustainable Process Design: Modeling and Simulation
- Computational Methods for Sustainable Processes
- Process Integration and Intensification
- Process Safety and hazard Management
- Biochemical Engineering
- Statistical Methods
- AI & ML in Process Engineering
- Advanced Thermodynamics
- Clean Technologies for Pollution Control
- Catalysis Science and Technology

Research Domains

- Modelling and Simulation, Advanced Process Control
- Biocatalysis, Fermentation Technology, Downstream Processing
- Bioprocess Engineering, Biofuels, Biotechnology
- Composite Materials, Soft Matter, Environmental Engineering
- Adsorption, Reactive Extraction, Wastewater Treatment
- Catalysis, Green Chemistry, Biomass Conversion, CO_2 Conversion
- Artificial Intelligence and Machine Learning applications
- Solid Oxide Fuel Cell, Energy Conversion and Storage
- Solid Waste Management

Course Duration

Full-Time – 2 Years

Part-Time – 3 Years

Industry sponsored seats are also available for M. Tech. in Chemical Engineering & Sustainability

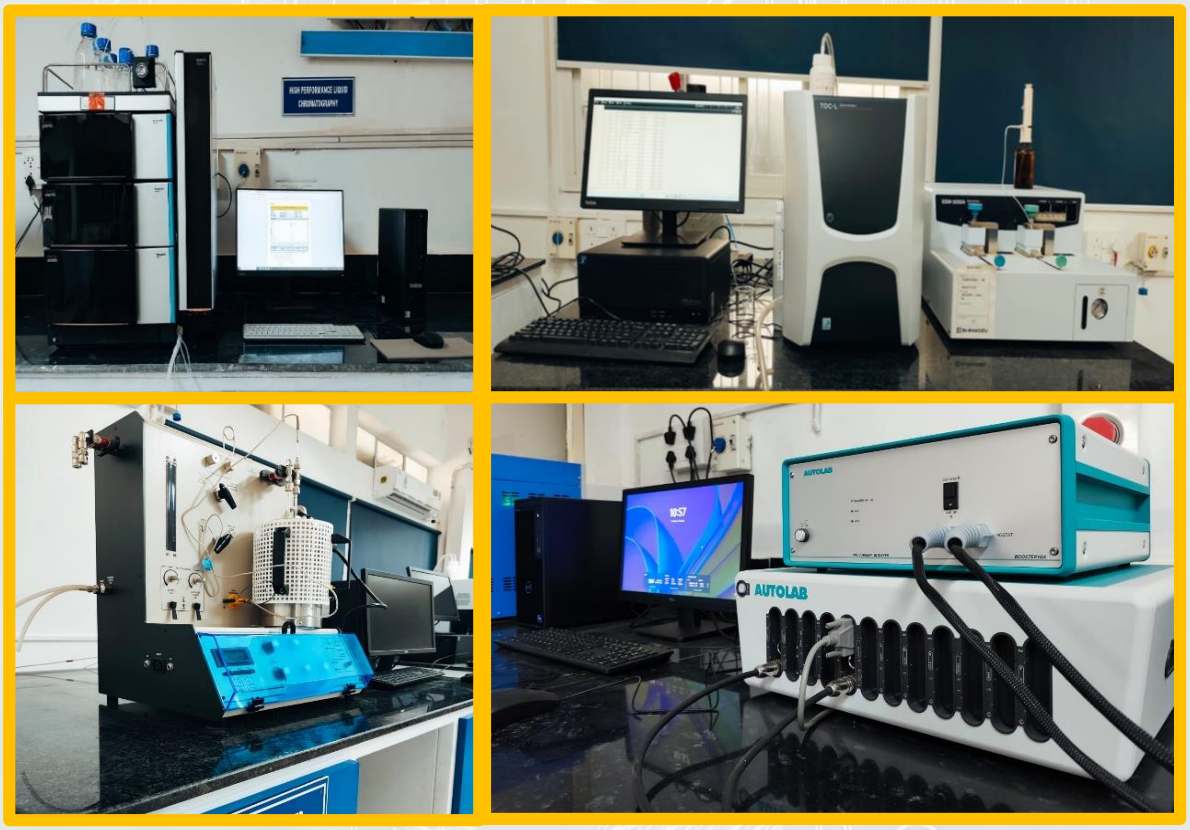
For More Information

https://www.mnit.ac.in/dept_chemical/

RESEARCH FACILITIES

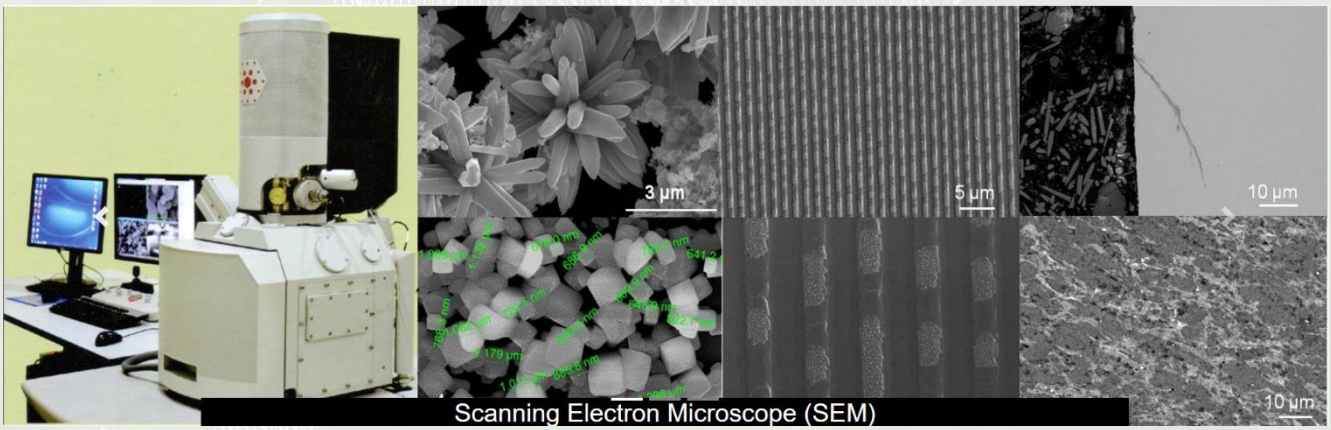
Departmental Analytical Instrumentation Lab:

The departmental analytical instrumentation lab is a state-of-the-art centre of excellence set up to promote interdisciplinary research with cutting-edge instruments, such as HPLC, Chemisorption apparatus (TPR/TPD), TOC analyzer, Electrochemical work station, etc.



Institute Research Facilities at Material Research Centre:

The Material Research Centre (MRC) is a state-of-the-art centre of excellence set up to promote interdisciplinary research. It has an extensive suite of cutting-edge instruments, such as TEM, FESEM with EDS, AFM, XRD, XPS, NMR, AAS, Raman and FTIR spectrometers, plus advanced sample prep & thin film deposition tools.

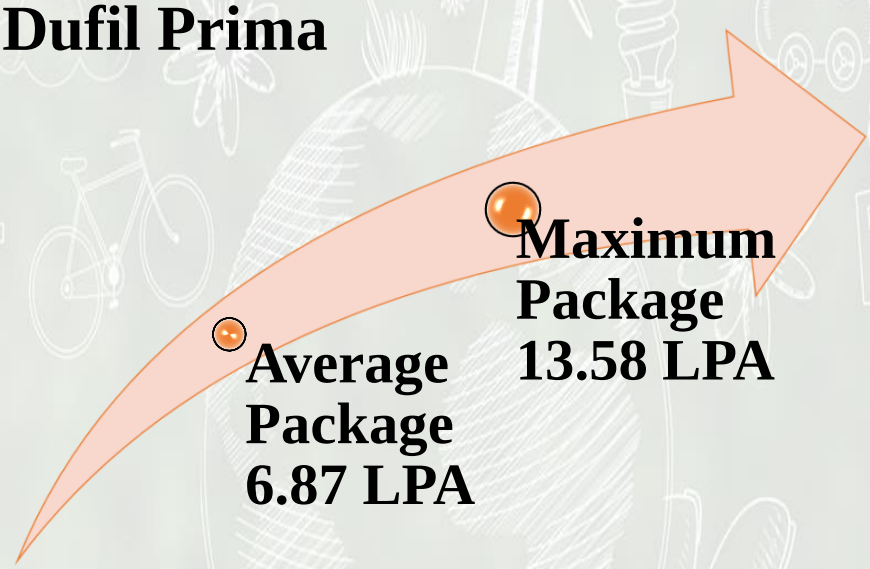


Scanning Electron Microscope (SEM)

PLACEMENTS

List of Employers:

- **Tata Consulting Engineers (TCE)**
- **Capgemini**
- **Prism Johnson**
- **Aakash institute**
- **Jaipur Rugs**
- **Dufil Prima**



2022–23

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