

Information Brochure



M.Tech
Environmental Engineering
Department of Civil Engineering

MALAVIYA NATIONAL INSTITUTE OF TECHNOLOGY JAIPUR

Jawahar Lal Nehru Marg, Jaipur-302017 (Rajasthan) INDIA

mnit.ac.in

PROGRAMME DETAILS AND ADMISSIONS

Programme Description:-

Environmental engineers design, research and analyse, structures(stps, etps, water distribution facilities, sewer lines), environmental problems and facilities related to water, waste water, air and noise pollution that must endure stresses inflicted through human use and environmental conditions. Environmental engineers help identify and develop solutions to environmental problems to protect the population from harm or enhance people's quality of life. The M.Tech Environmental Engineering program offers learning in safety of environmental structures, sustainability, environmental issues, water treatment, waste water treatment, air and noise pollution assessment and their scientific study, their duties and contribution to the society and also understanding of professionalism.

Environmental engineering students are prepared to get employment, profession and/or to pursue Higher education and research in environmental engineering discipline in particular and allied engineering disciplines in general.

Aims and Objectives:-

1. To empower the students to get employment commensurate inter-professional skills and/or take self-driven initiative in the form of start-up entrepreneurship or to pursue higher education and research in environmental engineering discipline in particular and allied disciplines in general
2. To provide a student solid foundation and consolidation knowledge in mathematical, scientific, and engineering fundamentals required to formulate, analyse, and solve environmental engineering-related issues. Also, to equip them with experimental expertise to analyse real life environmental system and develop protocols to create database for the design and installation of new systems.
3. To prepare the students for acquiring adequate knowledge of environmental laws, regulatory policies, standards, measurement and control methods, and protocols etc. related to the professional practices in India in order to utilise their skills to facilitate environmental compliance of activities related to different engineering projects and to ensure sustainable development of the country.
4. To inculcate ethical favour among students and to establish understanding of professionalism, safety, and sustainability aspects in performing their duties towards serving the society.
5. To provide students with encouraging academic environment can make them aware of imbibing excellence and enable them to understand the significance of lifelong learning in competitive global scenarios.

Programme Highlights:-

- 1) Develop graduates with a strong understanding of Different Indian Standard Code of Practices.
- 2) Collaborative research with top international universities and industries: Enhances value in terms of knowledge and exposure.

Target Groups:-

1. Students seeking advanced knowledge of Environmental Engineering
2. Professionals from civil, mechanical, biotech, pharma, environmental, background
3. Government functionaries/ administrators
4. Contractors/Designers
5. Public Sector Undertakings Officials
6. Consultants & Researchers

PROGRAMME COURSES

Core:-

- Air and Noise Pollution
- Biological Processes and Environmental Applications
- Physicochemical Principles and Processes
- Environmental Impact Assessment
- Environmental Statistics and Modeling
- Solid and Hazardous Waste Management
- Environmental Laboratory
- Simulation Laboratory
- Seminar/Minor Research Project

Research Domains for Dissertations:-

- Development of integrated treatment scheme for RO reject management.
- Protecting Public Health with Novel Microbial Indicators to Monitor the Performance of Water Reuse Systems in India
- Waste utilization in Self-compacting Concrete Optimization and Assessment of Environmental Benefits
- Improvement in sensitivity and specificity of ColiPAT kit (a low cost field test kit for detection of coliforms in drinking water)
- Ranking System for Alternatives of Control Measures at MSW Dumps
- Installation of a pilot plant of 10 KLD comprising ZnO-Graphene based sensitive catalytic filter for the treatment of effluent of CETP, Jodhpur as a replacement of their secondary treatment unit
- Treatment of Textile Wastewater Using Modified Sand As A Low Cost Adsorbent.

- Performance enhancement of vertical flow constructed wetland.
- Performance enhancement of horizontal flow constructed wetland.
- Microplastics in urban water: occurrence and hazard assessment.
- Alternative computational approaches in environmental engineering.
- Effect of air pollution on land service temperature.
- Electrochemical treatment of industrial waste water.
- Assessment and Mitigation of silicosis

Elective:-

- Advanced Water and Wastewater Treatment
- Building and Environment
- Design of Water and Wastewater Systems
- Environment and Health
- Industrial Pollution Prevention and Treatment
- Management in WATSAN Sector
- Environmental Optimization
- Operation Research Methods & Project Economics
- Sustainable material and construction.

Admissions

Who can apply:-

B.Tech./B.E.in any of the domains of

- Civil engineers
- Environmental engineers
- Biotechnological engineers

**Relevant GATE Score Card for Eligibility:
CE and ES (applicable only for full time
with assistantship)**

Course Duration

Full-Time – 2 Years

Part-Time – 3 Years

Industry-sponsored seats are available to support potential staff to attain M.Tech. degree in Environmental Engineering

Dissertations of M.Tech Environmental Engineering students (2020 - 2022)

Student Name	Thesis Topic
Abhay Pratap Singh	Assessment of Particulate Pollution from Brick kilns
Mohit Jain	Plastic waste management in Sikar city, Rajasthan: Analysis of material flows and recycling scheme
Nemi Chand Meena	Efficient removal of color & COD by Electro-coagulation using 3D rotating electrode
Inamdar Ahmed Raza	Development of Soil stabilised bricks using brick dust and excavated soil waste
Navdeep	Leaching Behaviour and Property Enhancement of Pervious Concrete Developed using Recycled Concrete Aggregates
Akash Meena	Comparison of pre-treatment technologies for brackish water desalination: IEX & NF
Sakshi Jain	NF-RO hybrid configuration for brackish water desalination
Neha Sharma	To improve the performance of the EC process through flocculation using a 3D rotating electrode
Sunil Saini	Personal Exposure Assessment to Cooking-generated Particulate Matter
Aparna Upadhyay	Wastewater treatment by decentralised BioKube technology and optimization of disinfection using Chlorination and Hybrid disinfection
Yash Choudhary	Microplastics in Wastewater Treatment Plant: Abundance, Characterization and Removal
Deepak Saini	Optimal Design of Circular Clear Water Reservoir by Limit State Method
Pankaj Saini	Wastewater treatment by decentralised BioKube technology and optimization of disinfection using UV and Hybrid disinfection
Brijesh Sharma	Aspect of noise monitoring and control
Shubham Kumar Jain	Prediction of Influent and Effluent parameters by using Machine Learning
Joginder Sankhla	Litter and Cleanliness Analysis: A case Study for Urban Streets in Jaipur

Dissertations of M.Tech Environmental Engineering students (2021-23)

Student Name	Thesis Topic
Vishvendra Singh	Treatment of real textile waste water using photocatalysis
Tejasvini Ahuja	Evaluating the effect of AOP as a Post-treatment Method to Reduce Nitrogen and Phosphorous in Treated Sewage
Ajay Singh Solanki	Biokube technology for wastewater treatment by hybrid disinfection of treated sewage using chlorine and ozone in series and their impact
Atik Jain	Performance assessment of biokube technology for wastewater treatment by Hybrid Disinfection of treated Sewage Using chlorine and ozone combination.
Akshat	Performance assessment and improving treatment capacity of constructed wetland in terms of pollutants removal.
Rohit Suwalka	Utilization of Bio char in making Eco-Friendly Bricks
Ramhari Sharma	Optimal design of water distribution system by using water gems software and cost optimization of water distribution system
Talib Hussain	Treatment of persistent particle present in wastewater by electro chemical processes
Sanket Radheshyam Sharma	Effect of air gap in BAPV and its optimisation.
Lakkaboyina Naga Sudarshan	Litter analysis using computer vision and ML
Ajay Kumar Singh	Human health risk assessment of pathogens in treated wastewater
Mahendra verma	Prevalence and mitigation of silicosis in stone cutting, sculpture & mining industries of Rajasthan
Neelesh Soni	Prevalence and mitigation of silicosis in stone cutting, sculpture & mining industries of Rajasthan
Anurag	Prevalence and mitigation of silicosis in stone cutting, sculpture & mining industries of Rajasthan
Hansraj Gautam	Assessment and Mitigation of silicosis
Emi Elizabeth Jobi	Assessment of traffic related particulate matter in an indoor environment
Piyush Meena	Prediction of air quality parameters using machine learning
Shubham Chirania	Traffic related fine particulate matter and its effects
Lakshya Deep Sehara	Exposure assessment of size fractionated particulate matter generated from different types of solid fuels

PLACEMENT OF EARLIER BATCHES

S. NO.	YEAR	STUDENT NAME	EMPLOYEE NAME
1.	2022	SAKSHI JAIN	TATA CONSULTING ENGINEERS LIMITED
2.	2022	BRIJESH SHARMA	WATER RESOURCE DEPARTMENT OF RAJASTHAN
3.	2022	SHUBHAM KUMAR JAIN	RCDF
4.	2022	APARNA UPADHYAY	DEVELOPMENT ALTERNATIVES
5.	2022	PANKAJ KUMAR SAINI	DEVELOPMENT ALTERNATIVES

Recent talks by experts

S.NO	NAME	Institute	TOPIC OF PRESENTATION
1.	ACHINTYA BEZBARUAH	NORTH DAKOTA STATE UNIVERSITY, USA	ENVIRONMENTAL NANOTECHNOLOGY
2.	DR. JAYA NARAYAN K	IIT KHARAGPUR	TEMPORAL EVOLUTION OF OZONE LAYER RECOVERY
3.	PROF. S.C. BHADURI	EX-IIT ROORKEE AND IIT BOMBAY FACULTY	GLOBAL WARMING AND SUSTAINABILITY
4.	PROF. MANOJ PANDIT	UNIVERSITY OF RAJASTHAN	ENVIRONMENTAL ETHICS IN ANTARTICA
5.	DR. ANUPAM SINGHAL	BITS PILANI	SOLID WASTE CLASSIFICATION AND SCIENTIFIC APPROACH TOWARDS DOMESTIC HAZARDOUS WASTE”

Research facilities / centre of excellence

Adequate and well equipped laboratories in area of Program specialization

PHE LAB

S.No.	Equipment
1	Electronic Controller Timer
2	Flow Meter LPM-10
3	Flow Meter LPM-10 with Feeting Assembly
4	Stirer Motor 100 Ltr. With Stand and Controller
5	Flow Meter LPM-25 with Feeting Assembly
6	Stirer Motor 10 Ltr. With Stand and Controller
7	Magnesium Tester Model : HC-HI719 MAKE HANNA with consumable reagent 25 Tests.
8	Iron Tester Model : HC-HI721 MAKE HANNA with consumable reagent 25 Tests.
9	Calcium Tester Model : HC-HI720 MAKE HANNA with consumable reagent 25 Tests.
10	Manganese Tester Model : HC-HI709 MAKE HANNA with consumable reagent 25 Tests.
11	Chromium Tester Model : HC-HI723 MAKE HANNA with consumable reagent 25 Tests.
12	Colour Tester Model : HC-HI727 MAKE HANNA with consumable reagent 25 Tests.
13	Nitrite Tester Model : HC-HI708 MAKE HANNA with consumable reagent 25 Tests.
14	Ammonia Tester Model : HC-HI733 MAKE HANNA with consumable reagent 25 Tests.
15	TDS Meter Model : HI9813-6 MAKE HANNA
16	Muffle Furnace Rectangular Make-U-Tech
17	BOD Incubator (Low Temp.) Make -U-tech
18	Elga water Purification System with Accessories

Environmental Monitoring Laboratory

S.No.	Equipment
1	Digital P.H Meter (Labtronics)
2	Anseros Ozone Generator
3	HI96711C Kit Including HI Photometer
4	DESKTOP (Wipro make)
5	Laminar Air Flow vertical (Fully automatic) model with PC interface
6	Vertical Autoclave fully automatic capacity 90 Litre and dia 16 inch *24-inch Height
7	TOC Analyzer (LCSH) Model -TOC-LCSH along with standard accessories Make - SHIMADZU
8	Auto Sampler (OCT-L8 Port sampler) Model OCT-L unit Make- SHIMADZU
9	Zero Air Cylinder (47Ltr) with regulator Sno- C42523
10	Adsorption type gas purifier
11	Magnetic Stirrer
12	Carrier AC -2 Ton Split 24K Emperia Inverter 5 Star 2018 R410 224050058040@CMI
13	Laminar Air Flow Vertical (Standard Model) 2*2*2 Feet Model No. SVLF-1 Make Smita Scientific Mumbai
14	Multiple Tube Peristaltic Pump Model No. ENPD - 100 Victor
15	BOD Incubator / Cooling Incubator Cap. 175 Ltr Model SBOD-2S/G along with the stabilizer of sufficient capacity make Smita Scientific
16	HI96711C Kit Including HI Photometer
17	Chlorine Analyzer
18	HI93711-01 Free Chlorine Reagents
19	HI93701-01 Total Chlorine Reagents
20	TDS Tester Model No. HI98302 HANNA
21	Flexi Flow Quartz Photo Reactor unit HSN Code 85.39.90.00
22	Samsung Refrigerator Model No. RR20N2Y2ZS8/NL HSN/SAC- 84182100
23	Lutron SL4011 Sound Level Meter
24	Fabrication of Ozone off gas measurement using the existing ozone analyser
25	Slow RPM Mixer and Pressure Valve
26	Lutron Digital CO2 Meter Model : GCH-2018
27	Lutron Digital Pen type CO Meter Model : PCO-350
28	GFG make multi gas detector G460 (Sr. No. 19091267) with pump, data logging, software, pendrive and cable rechargeable Nim H battery pack gas sensor SO2,NO2,CO2,CO & VOC

29	Noise level meter CASELLA (CEL-S3X)
30	Noise level meter CESVA (SC-30)
31	GRIMM (Model- 1.108) portable Aerosol spectrometer
32	Spirometer RMS Helios 701
33	Handy Sampler
34	Envirotech APM 460 dust sampler
35	Envirotech APM 451 dust sampler
36	Personal Sampler (Envirotech)

INDUSTRIAL WASTE RESEARCH ANALYSIS LABORATORY

S.No.	Equipment
1	Jar Test Apparatus
2	Orbital Shaking Incubator
3	COD Dry Thermostat Reactor
4	Laboratory Oven
5	Centrifuge (Remi)
6	BOD Analyser
7	Multiparameter Probes & Controller - Chlorides,
8	Nitrates, Ammonical Nitrogen, Flouride
9	ORP Meter with Probe
10	Clariflocculator – 300
11	Refrigerator Samsung RT56K6378L-551 LTR CAPACITY
12	Olypus Trinocular Microscope CX2LI(LED Version)
13	Magnus Magcam DC-5 (MDC-05)
14	Flame photometer microprocessor based model no 1382 EI make supply with sodium, potassium and calcium filter upto 5 point calibration Auto ignition 20*4 line LCD Display supplied with compressor
15	Sound pressure level SPL Meter
16	Docking Station DS400 with tray DIC2D for instrument including power supply, memory card, data interference cable for pc (USB TO RS485) with configuration software tube, pipe for pump, extension tube.
17	Analytical Balance Make- ACZET Model- CY285C

Specialized Equipment Name

S.No.	Lab name	Specialized Equipment Name	Equipment details	Utilization details from the perspective of PO attainment
1	Public Health Engineering Laboratory	Colilert-18 test kit	Colilert kit for bacteria detection	PO1, PO2, PO3, PO5
2	Public Health Engineering Laboratory	Magnesium Tester	Magnesium Tester Model : HC-HI719 MAKE HANNA with consumable reagent 25 Tests.	PO1, PO2, PO3, PO5
3	Public Health Engineering Laboratory	Iron Tester	Iron Tester Model : HC-HI721 MAKE HANNA with consumable reagent 25 Tests.	PO1, PO2, PO3, PO5
4	Public Health Engineering Laboratory	Calcium Tester	Calcium Tester Model : HC-HI720 MAKE HANNA with consumable reagent 25 Tests.	PO1, PO2, PO3, PO5
5	Public Health Engineering Laboratory	Manganese Tester	Manganese Tester Model : HC-HI709 MAKE HANNA with consumable reagent 25 Tests.	PO1, PO2, PO3, PO5
6	Public Health Engineering Laboratory	Chromium Tester	Chromium Tester Model : HC-HI723 MAKE HANNA with consumable reagent 25 Tests.	PO1, PO2, PO3, PO5
7	Public Health Engineering Laboratory	Nitrite Tester	Nitrite Tester Model : HC-HI708 MAKE HANNA with consumable reagent 25 Tests.	PO1, PO2, PO3, PO5
8	Public Health Engineering Laboratory	Ammonia Tester	Ammonia Tester Model : HC-HI733 MAKE HANNA with consumable reagent 25 Tests.	PO1, PO2, PO3, PO5
9	Public Health Engineering Laboratory	Milipore Distilled water.	Elga water Purification System with Accessories	PO1, PO2, PO3, PO5
10	Environmental Monitoring Laboratory	Hanna HI 96711C	HI96711C Kit Including HI Photometer	PO1, PO2,
11	Environmental Monitoring Laboratory	TOC Analyzer (LCSH) Model -TOC-LCSH along with standard accessories Make - SHIMADZU	TOC Analyzer (LCSH) Model - TOC-LCSH along with standard accessories Make - SHIMADZU	PO3, PO5
12	Environmental Monitoring Laboratory	OCT-L8 PORT SAMPLER	Auto Sampler (OCT-L8 Port sampler) Model OCT-L unit Make-SHIMADZU	PO1, PO2, PO3, PO5
13	Environmental Monitoring Laboratory	Gas detector (Sr. No. 19091267)	GFG make multi gas detector G460 (Sr. No. 19091267) with pump, data logging, software, pendrive and cable rechargeable Nim H battery pack gas sensor SO ₂ ,NO ₂ ,CO ₂ ,CO & VOC	PO1, PO2, PO3, PO5

14	Environmental Monitoring Laboratory	DSA400 pc (USB TO RS485)	Docking Station DS400 with tray DIC2D for instrument including power supply, memory card, data interference cable for pc (USB TO RS485) with configuration software tube, pipe for pump, extension tube.	PO1, PO2, PO3, PO5
15	Environmental Monitoring Laboratory	GRIMM (Model 1.108)	Optical particle counter	PO1, PO2, PO3, PO5
16	Environmental Monitoring Laboratory	CO2 Meter	Lutron Digital CO2 Meter Model: GCH-2018	PO1, PO2, PO3, PO5
17	Environmental Monitoring Laboratory	CO Meter	Lutron Digital Pen type CO Meter Model: PCO-350	PO1, PO2, PO3, PO5
18	Industrial waste Research Analysis Laboratory	Centrifuse (Remi)	Remi R8C-BL Speed (0-4500RPM)	PO1, PO2, PO3, PO5
19	Industrial waste Research Analysis Laboratory	i) BOD Analyser	HACH BOD TRACK II Range 700mg/l	PO1, PO2, PO3, PO5
20	Industrial waste Research Analysis Laboratory	ii) Multiparameter Probes & Controller - Chlorides, Nitrates, Ammonical Nitrogen, Flouride	Hach HQ40D	PO1, PO2, PO3, PO5
21	Industrial waste Research Analysis Laboratory	i) Olympus Trinocular Microscope CX2LI(LED Version)	CX2LI(LED VERSION)	PO1, PO2, PO3, PO5
22	Industrial waste Research Analysis Laboratory	ii) Magnus Magcam DC-5 (MDC-05)	DC-5(MDC-05)	PO1, PO2, PO3, PO5
23	Industrial waste Research Analysis Laboratory	Flame photometer microprocessor-based model no 1382 EI make supply with sodium, potassium and calcium filter up to 5 point calibration Auto ignition 20*4 line LCD Display supplied with compressor	1382EI	PO1, PO2, PO3, PO5
24	Industrial waste Research Analysis Laboratory	Refrigerator Samsung RT56K6378L-551 LTR Capacity	RT56K6378L-551LTR	PO1, PO2, PO3, PO5
25	Industrial waste Research Analysis Laboratory	Analytical Balance	Analytical Balance Make- ACZET Model- CY285C	PO1, PO2, PO3, PO5

26	Industrial waste Research Analysis Laboratory	Clariflocculator	Fabrication for Pulsator; Time Controller; Flow Meter LPM-10; Flow Meter LPM-10 with Feeting Assembly; Stirrer Motor 100 Ltr. With Stand and Controller; Flow Meter LPM-25 with Feeting Assembly; Stirrer Motor 10 Ltr. With Stand and Controller	PO1, PO2, PO3, PO4, PO5
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Highlights:-

- **World water day celebration on 22nd March.**
- **World earth day celebration on 22nd April.**
- **World environment day celebration on 5th June.**
- **Engineer's day celebration in collaboration with IWWA on 15th September.**
- **World ozone day celebration on 16th September.**
- **Save soil campaign.**
- **Green Mnit campaign.**

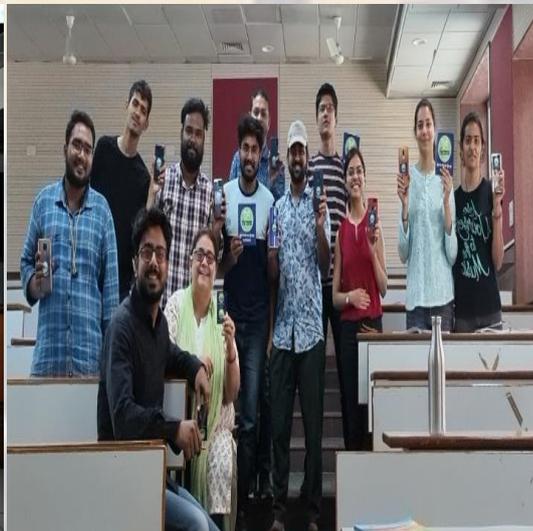
INITIATIVES

Work in collaboration with Organisations like Rajasthan State pollution Control Board (RSPCB), NEERI, RIICO, UNICEF, UNEP, IPCA, and IWWA.

REPUTED ALUMNI

S.No	Name	Position
1.	DR. KAUSHIK K. SHANDILYA	RESEARCH SCIENTIST KUNJ INC., USA
2.	DR. SHASHANK SRIVASTAVA	
3.	MR. GHANSHYAM DAS	ASSISTANT ENGINEER (JAIPUR MUNICIPAL CORPORATION)
4.	ACHYUT DHAR DWEDI	ASSISTANT ENGINEER(DLB)
5.	GAURAV SINGH	ASSISTANT ENGINEER(DLB)
6.	RENU	ASSISTANT ENGINEER(JAISALMER)
7.	SATISH KUMAR MEENA	ASSISTANT ENGINEER(KOTA NAGAR NIGAM)
8.	SHILPI SHARMA	RO RPCB JODHPUR & JAISALMER
9.	RAHULA SHARMA	RO RPCB PALI & SIROHI
10.	SUMAN ACHERA	ASSISTANT ENGINEER (PWD JAIPUR)
11.	DR. GAURAV SINGH	ASSISTANT ENGINEER (DLB)
12.	DR. DINESH POSWAL	CMD (REBOUND ENVIRO PVT. LTD)
13.	DR. NAVIN KUMAR	DIRECTOR (REBOUND ENVIRO PVT. LTD)
14.	DR. KANIKA SAXENA	RESEARCH ASSISTANT (MNIT JAIPUR)
15.	DR. ASHISH TAMBI	ASSISTANT PROFESSOR (IIS JAIPUR)

AT GLANCE:-



MALAVIYA NATIONAL INSTITUTE OF TECHNOLOGY,
JAIPUR



Celebrates

WORLD WATER DAY



In association with

INDIAN WATER WORKS ASSOCIATION,
JAIPUR CHAPTER

