

CHEMICAL ENGINEERING DEPARTMENT

M. Tech. in CHEMICAL ENGINEERING

Scheme 2025 admitted batch onwards



Department of Chemical Engineering

Maulana Azad National Institute of Technology Bhopal

Scheme of Post Graduate Program (M.Tech in Chemical Engineering)

Programme Educational Objective (PEOs):

1. To prepare students for successful practice in diverse fields of chemical engineering such as pharmaceuticals, chemicals, polymers / advanced materials, energy, biotechnology, and environmental engineering and in the fields of societal expectations on time.
2. To prepare students for advanced studies in Chemical Engineering and its allied fields.
3. To ensure our students are recognized for excellence and leadership and selected for high-ranking industrial, academic, government and other professional positions.
4. To develop students' skills and awareness to become socially, ethically and morally responsible individual in all the challenges they take over in our communities and in the field of chemical engineering.

Programme Outcomes (POs):

A post graduate shall develop

PO1: An ability to independently carry out research /investigation and development work to solve practical problems

PO2: An ability to write and present a substantial technical report/document

PO3: The ability to demonstrate a degree of mastery over the area as per the specialization of the program. The mastery should be at a level higher than the requirements in the appropriate bachelor program.



**MAULANA AZAD NATIONAL INSTITUTE OF TECHNOLOGY,
BHOPAL-462003**

M.Tech in Chemical Engineering
Scheme of Study (w.e.f. July 2025)

First Semester:

Course No.	Subject	Schemes of studies periods per week			Total Credits
		L	T	P	
CL CE 1101	Advanced Transport Phenomena	3	-	-	3
CL CE 1102	Sustainable Technologies & Energy Transition	3	-	-	3
CL CE 1103	Petroleum Refinery Engineering	3	-	-	3
	Department Elective – 1/ NPTEL Course 1	3	-	-	3
	Department Elective - 2/ NPTEL Course 2	3	-	-	3
CL CE 1104	Software Lab	-	-	2	1
CL CE 1105	Advanced Fuels Processing Technology Lab	-	-	2	1
CL CE 1106	Seminar-I	-	-	2	1
CL CE 1107	Minor Project-1 (Self Learning)	-	-	4	2
HS 1101	Communication Skill				
Total Hours: 25 Total Credits: 20		Total Semester Credits			20

☐ Communication Skill will be an Audit Course of 2 credits which will not be counted in SGPA/CGPA calculation

Second Semester:

Course No.	Subject	Schemes of studies periods per week			Total Credits
		L	T	P	
CL CE 1201	Thermodynamics of Chemical Processes	3	-	-	3
CL CE 1202	Petrochemical Technology	3	-	-	3
	Department Elective - 3/ NPTEL Course 3	3	-	-	3
	Department Elective - 4/ NPTEL Course 4	3	-	-	3
	Open Elective / /NPTEL Course 5	3	-	-	3
CL CE 1203	Advanced Chemical Engineering Lab	-	-	2	1
CL CE 1204	Modeling and Simulation Lab	-	-	2	1
CL CE 1205	Seminar-II	-	-	2	1
CL CE 1206	Minor Project-2 (Self Learning)	-	-	4	2
Total Hours: 25 Total Credits: 40		Total Semester Credits			20

☐ Research Methodology should be included in Departmental Elective instead of core subject

Third Semester:

Course No.	Subject	Schemes of studies periods per week			Total Credits
		L	T	P	
CL CE 2101	Dissertation Phase-I	-	-	40	20
Total Hours:40 TotalCredits:60		Total Semester Credits			20

Fourth Semester:

Course No.	Subject	Schemes of studies periods per week			Total Credits
		L	T	P	
CL CE 2201	Dissertation Phase-II	-	-	40	20
Total Hours: 40 Total Credits: 80		Total Semester Credits			20

M.Tech in Chemical Engineering

List of Department Electives 1		List of Open Electives C	
CL CE 1151	Polymer Science & Technology	ARP-581	Introduction to Urban Planning
CL CE 1152	Nanotechnology	BSE-581	Bioprocess Engineering
CL CE 1153	Advanced Oil and Paint Technology	BSE-582	Biophysics Tools and Techniques
CL CE 1154	Pinch Technology	CE-581	Solid Waste Management
CL CE 1155	Advanced Fluid Dynamics	CE-582	Basic Concept of GIS
CL CE 1156	Advanced Process Dynamics and Control	CE-583	Road Safety
CL CE 1157	Petroleum Engineering & Technology	CSE-581	Machine Learning
CL CE 1158	Environmental Chemistry & Pollution Acts	CSE-582	Advanced Data Structures and Algorithms
CL CE 1159	Industrial Catalysis	PHY-581	Nanotechnology and Nanoscience
CL CE 1160	Air and Noise Pollution Control	EE-581	Electric Machines & Applications
List of Department Electives 2			
CL CE 1161	Advanced Environmental Biotechnology	EE-582	Control and Instrumentation
CL CE 1162	Corrosion Science & Engineering	ECE-581	Introduction to Fuzzy Logic
CL CE 1163	Solid Waste Management	ECE-582	Neural Networks and its Applications
CL CE 1164	Bioenergy & Biorefinery Engineering	EC-581	Energy Resource Technologies
CL CE 1165	Wastewater Treatment	HUM-581	Intellectual Property Rights for Engineers
CL CE 1166	Advance Heat & Mass transfer	HUM-582	Applied Psychology: Human Centered Design and Engineering
CL CE 1167	Optimization Techniques	MTH-581	Advanced Operations Research
CL CE 1168	Energy Management in Process Industries	MTH-582	Computing Technologies
CL CE 1169	Food Processing & Technology	ME-581	Value Engineering
CL CE 1170	Textile Technology	ME-582	Design Thinking
CL CE 1171	Multiphase Flow Modeling	ME-583	Mechatronics and NDT in Engineering
CL CE 1172	Paper and Pulp Technology	MME-581	Advanced Instrumentation Methods for Material Analysis
CL CE 1173	Membrane Science and Technology	MME-582	Smart Materials and their Application
List of Department Electives 3		MBA-581	Engineering Startup Management
CL CE 1251	Economics and Management of Chemical Industries	Open Electives offered to Students of Other Departments	
CL CE 1252	Fire Safety & Management	CL CE 1281	Environmental Modelling
CL CE 1253	Regulatory Procedures for Safety and Environment	CL CE 1282	Green Technology & Processes
CL CE 1254	Energy Resources & Utilization		

M.Tech Chemical Engineering Scheme & Syllabus w.e.f. 2022-23

CL CE 1255	Modeling & Simulation of Engineering Processes		
CL CE 1256	Industrial Safety and Hazard Management		
CL CE 1257	Bioprocessing & Biochemical Engineering		
CL CE 1258	Research Methodology		
CL CE 1259	Environmental Sustainability in Refineries		
CL CE 1260	Molecular Modeling in Refinery Technology		
List of Department Electives 4			
CL CE 1261	Natural Gas Engineering		
CL CE 1262	Refinery Process Design		
CL CE 1263	Electrochemical Applications in Chemical Industries		
CL CE 1264	Colloids and Interface Science		
CL CE 1265	Process Intensification and Integration		
CL CE 1266	Refinery Effluent Treatment		
CL CE 1267	Catalysts and Adsorbents		
CL CE 1268	Control & Instrumentation in Refineries		
CL CE 1269	Sustainable Green Technologies in Petroleum Refineries		
CL CE 1270	Petroleum Reservoir Engineering		
CL CE 1271	Petroleum Production Engineering		
CL CE 1272	Carbon Capture and Utilization		
CL CE 1273	Advanced Chemical Reaction Engineering		

