# MAULANA AZAD NATIONAL INSTITUTE OF TECHNOLOGY BHOPAL

(An Institute of National Importance under an Act of Parliament)

Bhopal, Madhya Pradesh

**BSc GRADUATES**

JOIN A 3-YEAR MTECH PROGRAM IN A PREMIER NIT AND BUILD A STRONG FUTURE IN ENGINEERING

**FOR BSc GRADUATES**

**ADMISSIONS 2026**

# MTech

**3-YEAR PROGRAMME**

IN

## MATERIALS AND METALLURGICAL ENGINEERING

A great opportunity for BSc graduates to enter into the field of Engineering!


- Material Sciences
- Metallurgical Processes
- Semiconductors
- Manufacturing
- CAE (Computer Aided Engineering)

## PROGRAMME HIGHLIGHTS

- 3-year MTech programme specially designed for BSc graduates
- Strong foundation in core engineering principles and advanced materials
- AI/ML applications in materials science and process optimization
- Semiconductor materials, devices, and processing
- Manufacturing for advanced engineering applications
- Opportunities for interdisciplinary research and collaborative projects
- Exposure to CAE and simulation tools for engineering applications
- Placement support and pathways to higher studies (PhD)

### QUALIFYING EXAM

National Level JAM Exam 2026 in Physics/Chemistry/Mathematics

### ELIGIBILITY

Degree details as mentioned in CCMN website

### APPLY THROUGH CCMN 2026

Centralized Counselling for MSc/ MSc Tech. /MTech Admissions (CCMN)

Official CCMN Website:
https://ccmn.admissions.nic.in/

### HOW TO APPLY?

Register on CCMN Portal → Fill Application Form → Pay Application Fee → Choose MANIT Bhopal and Programme → Participate in CCMN Counselling

### IMPORTANT DATES*

- CCMN Counselling Registration: As per CCMN 2026 schedule
- Document Verification & Choice Filling: As per CCMN 2026 schedule

*Dates are tentative and as per CCMN 2026 schedule. Please visit the official JAM and CCMN websites for updates.

**CONTACT US**
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**FOR MORE INFORMATION ABOUT THE PROGRAMME**
https://www.manit.ac.in/content/materials-metallurgical-engineering

# Maulana Azad National Institute of Technology (MANIT) Bhopal

## Department of Materials and Metallurgical Engineering

## The 3-Year M.Tech. Program (3YMTP) for BSc Students

### I. Introduction

MANIT has introduced a first-of-its-kind 3-Year M.Tech. Program (3YMTP) with the objective of transforming qualified BSc students into industry-ready engineers. Students admitted to the program will study the same foundational courses offered to B.Tech. students. The curriculum is industry-oriented and broad-based, covering mainstream metallurgy, materials science, semiconductors, data science, and management.

### II. Advantage over the 2-year M.Tech. Program (2YMTP)

In the 2-year M.Tech. program, MSc students are exposed to a limited number of engineering courses. The curriculum is primarily aligned with their research topic and is neither as comprehensive nor as broad-based as MANIT's 3YMTP. As a result, job opportunities for graduates of the 2YMTP are comparatively limited.

### III. Job Opportunities

1) Metallurgical companies such as SAIL, Tata Steel, JSW Steel, HINDALCO, and Vedanta.
2) Semiconductor companies such as Micron, Applied Materials, and Tata Electronics.
3) Manufacturing companies such as Tata Motors, Maruti, Hyundai, Larsen & Toubro, Kalyani Forge, and Reliance.
4) Non-core companies in IT, finance, and consulting.
5) CSIR laboratories.
6) Masters and PhDs in IITs/IISc and reputed foreign universities.

### IV. Program Highlights

1) Includes the same foundational courses offered to B.Tech. students.
2) Builds a strong foundation in core metallurgical engineering and advanced materials.
3) Offers courses in (i) data structures and algorithms, (ii) numerical computation using Python, (iii) introductory AI and ML, and (iv) computational materials design (elective)
4) Places special emphasis on manufacturing for advanced engineering applications.
5) Includes a course on semiconductor materials, devices, and processing.
6) Includes courses in supply chain management and failure analysis and quality management.
7) Students may take open electives offered by other departments such as CSE, Electronics, Mechanical, and Management.
8) Program electives allow students to take departmental courses to specialize in a chosen area or enhance employability.
9) The emerging area of critical metals and refining is offered as an elective.

### V. Internship, Dissertation, and Dual Degree

1) Summer internship in industry after the first and second years.
2) Students can do their dissertation research in collaboration with IITs/IISc.
3) Students may choose to transition to the M.Tech.-PhD dual degree and graduate with both M.Tech. and PhD degrees.

4) Students who opt for the M.Tech. - PhD dual degree program will get their assistantship from the fourth year onwards like regular PhD students.

## VI. Fee structure

1) During the first two years, semester fees and financial assistance will be the same as those for students in the 2-year M.Sc. program.
2) In the third year, students who qualify for GATE in Metallurgy or XE will be eligible for assistantship on par with regular M.Tech. students.
3) Students who opt for the M.Tech.-PhD dual degree program will receive assistantship from the fourth year onward, similar to regular PhD students.

## VII. Curriculum

| **Course Name, (M.Tech. 1st Semester)** | **Credits** |
|---|---|
| Mathematics Subject-1 | 4 |
| Unit Operations in Non-Ferrous Metals Extraction | 3 |
| Thermodynamics of Materials | 3 |
| Structure, Properties and Characterization of Materials | 3 |
| Manufacturing Processes-I | 3 |
| Manufacturing Processes Lab – I | 1 |
| Materials Characterization Lab | 1 |
| Numerical Computation Lab | 1 |
| Seminar-I | 1 |
| **Total Credit- 20** | |

| **Course Name (M.Tech. 2nd Semester)** | **Credits** |
|---|---|
| Data Structure and Algorithm | 3 |
| Introduction to Artificial Intelligence and Machine Learning | 4 |
| Iron & Steel Making | 3 |
| Mechanical Behavior of Materials | 3 |
| Transport Phenomena | 3 |
| Metallography and Heat Treatment Lab | 1 |
| Materials Testing Lab | 1 |
| Extractive Metallurgy Lab | 1 |
| Seminar-II | 1 |
| **Total Credit- 20** | |

| **Subject**<br>**(M.Tech. 3rd Semester)** | **Credits** |
|---|---|
| Manufacturing Process-II | 4 |
| Failure Analysis and Quality Management | 3 |
| Semiconductor Materials, Devices and Processing | 3 |
| Program Elective 1(A) | 3 |
| Program Elective 2(A) | 3 |
| Electronics Materials Lab | 1 |
| Failure Analysis Lab | 1 |
| Manufacturing Process Lab- II | 1 |
| Internship/ Industrial Training | 1 |
| **Total Credit- 20** | |

| **Subject**<br>**(M.Tech. 4th Semester)** | **Credits** |
|---|---|
| Supply Chain Management | 4 |
| Corrosion and Wear Engineering | 3 |
| Advanced Materials and Manufacturing | 3 |
| Open Elective -1(A) | 3 |
| Program Elective 3(A) | 3 |
| Corrosion and Wear Engineering lab | 1 |
| Computer Aided Engineering Lab (CAE) | 2 |
| Computational Materials Design Lab | 1 |
| **Total Credit- 20** | |

| **Subject**<br>**(M.Tech. 5th Semester)** | **Credits** |
|---|---|
| Open Elective-2(A)<br>[NPTEL/SWAYAM Courses only] | 3 |
| Dissertation Phase - I | 17 |
| **Total Credit- 20** | |

| **Subject**<br>**(M.Tech. 6th Semester)** | **Credits** |
|---|---|
| Open Elective-3(A)<br>[NPTEL/SWAYAM Courses only] | 3 |
| Dissertation Phase - II | 17 |
| **Total Credit- 20** | |