



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

**(An Institute of National Importance under Ministry of Education, Govt. of India)**

# **Ph.D. Admissions**

**2022-2023**

**INFORMATION BROCHURE**

## TABLE OF CONTENTS

S.No	Particulars	Page No.
1.	Admission Categories	3
2.	Department Offering Ph.D. Programmes	3
3.	Eligibility	4
4.	Seat Matrix	4-5
5.	Fee Structure	5
6.	Application Procedure	6-7
7.	Selection Procedure	7
8.	Teaching Assistantship	8
9.	Schedule	8
10.	Address for Communication	8
11.	Annexure A : Syllabus for Ph.D. Entrance Examination	9-10
12.	Annexure B: Certificate from the employer for sponsored candidates to be issued on employers letter head	11

### Note:

1. Candidates are advised to visit the institute website regularly for updates (if any). No individual communication via postal or e-mail shall be made regarding selection procedure by the institute.
2. Applicants are advised to go through the institute's Ph.D. Ordinance and amendments as available on the institute website <http://www.manit.ac.in> for norms, rules and regulations.
3. Institute reserves the right to refuse admission to any candidate, or cancel the whole admission process, without assigning any reason.
4. In case of any ambiguity, typographical error or mistake, the decision of Chairman, Senate shall be final.
5. All disputes related to admission shall be subject to Bhopal Jurisdiction only.

## 1. ADMISSION CATEGORIES:

Following are the four categories under which a candidate can apply depending upon his/her eligibility:

1. Full Time Research Students (150 number of seats).
2. Sponsored Full Time (36 number of seats). *Admission under sponsored Full Time category in only for the candidates from Government organization, Public Sector & Research Institute, as per Ph.D. 2016 Ordinance Clause No. 10.1*
3. JRF/Project Associates (In all Department/Centres of MANIT, Bhopal) (as per ordinance 10.1.1(3))
4. Internal faculty members working in MANIT Bhopal in regular capacity.

The admission of internal candidates of MANIT Bhopal in the program may be given with following norms:

- (i) No change or relaxation of norms in admission process. The Candidate has to undergo normal selection process as external candidates.
- (ii) They have to complete the course work as required for external candidates. However they will undergo course work as 8 credits per semester to balance as a student and educator.
- (iii) There will not be any relaxation with respect to their academic and administrative duties.
- (iv) Institute shall not bear any financial liability towards pursuing the Ph D Program.
- (v) These candidates will be admitted as “Part Time (Internal)”.

## 2. DEPARTMENTS OFFERING Ph.D. PROGRAMMES:

S.No	Department/ Centre
1.	Architecture & Planning
2.	Biological Science & Engineering
3.	Centre for Artificial Intelligence
4.	Centre for Excellence in Product Design & Smart Manufacturing
5.	Centre for Excellence in Water Management
6.	Chemical Engineering
7.	Chemistry
8.	Civil Engineering
9.	Computer Science & Engineering
10.	Energy Centre
11.	Electrical Engineering
12.	Electronics & Communications Engineering
13.	Humanities and Social Sciences
14.	Management Studies
15.	Materials & Metallurgical Engineering
16.	Mathematics, Bioinformatics & Computer Applications (MBC)
17.	Mechanical Engineering
18.	Physics

### 3. ELIGIBILITY:

#### a) For admission categories 1, 3 and 4

S. No.	Stream	Essential Qualification In Relevant Area
1	Engineering	Bachelors & Master degree in <u>Relevant</u> Engineering with minimum of <b>60% or CGPA 6.5</b> , with <b>GATE qualified</b> .
2	Sciences	Bachelors & Master degree in <u>Relevant</u> Sciences/ Engineering with minimum of 60% or CGPA 6.5 with <b>NET/ GATE</b> qualified.
3	Architecture and Planning	Bachelors & Master degree in Architecture / Planning with minimum of 60% or CGPA 6.5 with <b>GATE</b> qualified.
4	Humanities and Social Sciences	Bachelors & Master degree in Humanities / Social Sciences with minimum of <b>60% or CGPA 6.5</b> with <b>NET qualified</b> .
5	Management	Bachelors & Master degree in Management /Engineering with minimum of <b>60% or CGPA 6.5</b> with <b>NET/GATE qualified</b> .

#### b) For admission category 2

S. No.	Stream	Essential Qualification
1	Engineering	Bachelors & Master degree in <u>relevant</u> Engineering with minimum of <b>60% or CGPA 6.5</b> .
2	Sciences	Bachelors & Master degree in <u>relevant</u> Sciences/ Engineering with minimum of 60% or CGPA 6.5.
3	Architecture and Planning	Bachelors & Master degree in Architecture / Planning with minimum of 60% or CGPA 6.5.
4	Humanities and Social Sciences	Bachelors & Master degree in Humanities / Social Sciences with minimum of <b>60% or CGPA 6.5</b> .
5	Management	Bachelors & Master degree in Management /Engineering with minimum of <b>60% or CGPA 6.5</b> .

Reservations are as per prevailing GOI Norms. For reserved category students i.e. SC/ST/PwD a relaxation of 5% (0.5 in CGPA) is applicable.

### 4. SEAT MATRIX:

#### a) Full Time Research Students

S. No	Department	UR	EWS	SC	ST	OBC	Total
1	Architecture & Planning	6	2	2	2	4	16
2	Biological Science & Engineering	1	0	0	0	1	2

<b>S. No</b>	<b>Department</b>	<b>UR</b>	<b>EWS</b>	<b>SC</b>	<b>ST</b>	<b>OBC</b>	<b>Total</b>
3	Centre for Artificial Intelligence	1	1	1	0	1	<b>4</b>
4	Centre for Excellence in Product Design & Smart Manufacturing	1	0	1	1	1	<b>4</b>
5	Centre for Excellence in Water Management	1	1	1	0	1	<b>4</b>
6	Chemical Engineering	3	1	1	1	2	<b>8</b>
7	Chemistry	2	0	2	0	1	<b>5</b>
8	Civil Engineering	8	1	2	1	5	<b>17</b>
9	Computer Science & Engineering	4	0	1	1	2	<b>8</b>
10	Energy Centre	1	0	0	1	1	<b>3</b>
11	Electrical Engineering	6	2	2	2	4	<b>16</b>
12	Electronics & Communications Engineering	5	1	2	1	5	<b>14</b>
13	Humanities and Social Sciences	2	1	1	0	1	<b>5</b>
14	Management Studies	2	1	1	0	1	<b>5</b>
15	Materials & Metallurgical Engineering	2	1	1	0	2	<b>6</b>
16	Mathematics, Bioinformatics & Computer Applications (MBC)	4	1	2	1	3	<b>11</b>
17	Mechanical Engineering	8	2	2	0	5	<b>17</b>
18	Physics	3	0	1	0	1	<b>5</b>
<b>Total</b>		<b>60</b>	<b>15</b>	<b>23</b>	<b>11</b>	<b>41</b>	<b>150</b>

**Note:** The reservation of Persons with Disability (PwD) is 5% overall as per Government of India norms. Reservation of SC/ST/OBC/EWS is as per prevailing GOI norms.

**b) Sponsored Full Time:** There shall be two seats of Sponsored candidates in each department as mentioned at sr. no. 2 totaling to 36seats.

## **5. FEE STRUCTURE:**

The fee structure for the session 2022-23 is in the process of approval and will be notified later on the Institute website. There will be no exemption of tuition fee to any category of Ph.D. students. Hostel facility is not available to Ph.D. Students.

## 6. APPLICATION PROCEDURE:

Applications are invited for Ph.D. Programme in the Departments as listed in point no. 2:

- a) The application form can be filled from <http://erp.manit.ac.in/ext/adm/login>
- b) Completed form downloaded along with self attested copies of essential documents and **non-refundable processing fee of Rs. 1500/- (for UR, OBC & EWS) and Rs. 1000/- (for SC/ST/PwD candidates) should be submitted to Assistant Registrar (Academic), MANIT Bhopal – 462003 upto 3<sup>rd</sup> June, 2022**. The payment of processing fee is to be done only through SBI online “SBI Collect” (**The steps are available for online fee payment through SBI Collect on the institute website**) into the account of the Director, MANIT, Bhopal. **The envelope must contain the following header “Application form for Ph.D. Admission in ..... Department”**. Applicant must submit separate processing fees, if he/she wishes to apply in different departments. Applications received after due date will not be entertained.
- c) No individual communication via postal or e-mail shall be made regarding the written test and/or interview of the institute. The schedule of the selection process will be displayed on the institute website only, after initial scrutiny of the application forms. Candidates are advised to visit the institute website regularly for further updates.
- d) List of Essential Documents:
  - (i) If applicants have applied for multiple departments, the priority list of the choice of department duly signed must be submitted on a plane paper.
  - (ii) 10th Class Marksheet
  - (iii) 12th Class Marksheet
  - (iv) Graduation Marksheets (All semesters)
  - (v) Graduation Degree Certificate
  - (vi) Post Graduation Marksheets (All semesters)
  - (vii) Post Graduation Degree Certificate / Completion Certificate
  - (viii) GATE score card / NET qualified certificate.
  - (ix) EWS/OBC/SC/ST/PWD Certificate , If applicable
  - (x) Experience Certificate and NOC (for sponsored candidates only)
  - (xi) Publication details, if applicable

- (xii) OBC-NCL certificate (issued by competent authority on or after 1<sup>st</sup> April, 2022)
- (xiii) EWS Certificate (issued by competent authority on or after 1<sup>st</sup> April, 2022)
- (xiv) Experience/ Gap Certificate, if applicable
- (xv) SBI Collect receipt copy.
- (xvi) Any other relevant documents

## 7. SELECTION PROCEDURE:

The selection will be based on the candidate's academic research profile and following criteria:

Weightage of written test	50%
Weightage of Interview (if found eligible for research)	20%
Weightage of UG	5%
Weightage of PG	5%
Weightage of GATE/NET/CAT marks	20%

- a) **Written test:** For each department, admission test of two hours (02 hrs) duration containing three sections of total 200 marks with the following structure will be conducted in the Institute:

**Section 1:** English (50 Marks, 30 Minutes, 25 Questions).

**Section 2:** Mathematical Ability (50 Marks 30 Minutes, 25 Questions).

**Section 3:** Concerned Discipline (100 Marks, 60 Minutes, 50 Questions).

*Section 1 and 2 of written test of 1 hour is common for all the departments, Section 3 written test of 1 hour will be conducted separately for each department.* The Syllabus of English and Mathematical Ability is enclosed as Annexure A.

**Answer sheets of Section 3 will only be evaluated** when a student attains minimum total of **30 marks in Section 1 and Section 2 together**. Branch wise Merit list will be prepared on the basis of total marks of Section 3 only. A relaxation of 5% in minimum cut off in the written test will be given to SC/ST/PwD Candidates.

There is negative marking for wrong answers. Two marks shall be awarded for every correct answer and Half marks will be deducted for every wrong answer.

**For section 3 written tests, GATE/NET/CAT syllabus of respective discipline will be applicable.**

**No TA/DA will be paid for attending the written test &/or Interview.**

## 8. TEACHING ASSISTANTSHIP:

Candidates selected as full time research students shall be eligible for Teaching Assistantship as per Government of India / Institute norms. This shall be awarded to the full time research students on a semester-to-semester basis depending upon regular registration in each semester and satisfactory academic performance of the scholar as per Ph.D. Ordinance (Clause 10.2.2) and subsequent amendments. Selected candidates will be required to assist in teaching in the respective departments, equivalent to 8 hrs per week. However, no teaching assistantship shall be provided to Internal and Sponsored candidates.

## 9. SCHEDULE:

S.No.	Schedule	Date
1.	Last Date of form submission	3 <sup>rd</sup> June 2022
2.	Date of written test	<b>Please visit regularly the Institute website <a href="http://www.manit.ac.in">www.manit.ac.in</a> for further instructions &amp; schedule.</b>
3.	Date of Interview	
4.	Result Declaration on institute website	5 <sup>th</sup> July 2022
5.	Admission Date	14 <sup>th</sup> and 15 <sup>th</sup> July 2022
6.	Start of Course work	As per the academic calendar

**Institute reserves the right to change the schedule as per the prevailing conditions.**

## 10. ADDRESS FOR COMMUNICATION:

The hardcopy of the application along with the self attested documents and fee details should be sent by speed post to:

**Assistant Registrar (Academic)**

**Maulana Azad National Institute of Technology (MANIT),**

**Near Link Road no. 3, Bhopal (MP)-462003**

Contact No. - 0755-4051055, 0755-4051056

**DIRECTOR**



## ANNEXURE A: SYLLABUS FOR PH.D. ENTRANCE EXAMINATION

### Section 1 : English

The Ph.D. Entrance exam syllabus broadly includes the following components of grammar:

1. Articles (Use of a, an and the)
2. Parts of Speech
3. Subject-Verb Agreement
4. Use of Tenses
5. Active and Passive Voice
6. Direct and Indirect Speech
7. Infinitive and Gerunds
8. Use of Prepositions
9. Punctuation
10. Common Errors, Correction of Sentences
11. Vocabulary (Phrasal verbs, Idioms, Synonyms, Antonyms, One-word Substitutes etc.)

### Section 2 : Mathematical Ability

**Group (A): Civil, Mechanical, Electrical, Electronics & Communication Computer Science, Materials & Metallurgical Engineering (MME), Chemical, Physics, Mathematics, Bioinformatics & Computer Applications (MBC), Energy Centre for Artificial Intelligence, Centre for Excellence in Product Design & Smart Manufacturing, Centre for Excellence in Water Management.**

Algebra of matrices; Inverse and rank of a matrix; System of linear equations; Symmetric, skew-symmetric and orthogonal matrices; Determinants; Eigenvalues and eigenvectors; Diagonalization of matrices; Cayley-Hamilton Theorem.

Calculus: Functions of single variable: Limit, continuity and differentiability; Mean value theorems; Indeterminate forms and L'Hospital's rule; Maxima and minima; Taylor's theorem; Fundamental theorem and mean value-theorems of integral calculus; Evaluation of definite and improper integrals; Applications of definite integrals to evaluate areas and volumes.

Functions of two variables: Limit, continuity and partial derivatives; Directional derivative; Total derivative; Tangent plane and normal line; Maxima, minima and saddle points; Method of Lagrange multipliers; Double and triple integrals, and their applications. Taylor's series;

Fourier series; Fourier Transforms; Laplace Transforms.

Probability: Random variables. Uniform, normal, exponential, Poisson and binomial distributions. Mean, median, mode and standard deviation. Conditional probability and Bayes theorem.

Complex Variables: Analytic functions; Cauchy-Riemann equations; Line integral, Cauchy's integral theorem and integral formula; Taylor's series and Laurent series; Residue theorem and its applications.

Numerical Methods

Solution of systems of linear equations using LU decomposition, Gauss elimination and

Gauss-Seidel methods; Lagrange and Newton's interpolations, Solution of polynomial and transcendental equations by Newton-Raphson method; Numerical integration by trapezoidal rule, Simpson's rule and Gaussian quadrature rule; Numerical solutions of first order differential equations by Euler's method and 4th order Runge-Kutta method.

Ordinary Differential Equations

First order equations (linear and nonlinear); higher order linear differential equations with constant coefficients; second order linear differential equations with variable coefficients; Method of variation of parameters; Cauchy-Euler equation.

**Group (B): Architecture & Planning, Chemistry, Humanities & Social Sciences, Management Studies, Biological Science & Engineering (BSE)**

Logical and quantitative aptitude, Matrix and its basic operations, Solution of Simultaneous linear equations, Data collection, presentation and visualizations, Mean, median, mode, Standard deviation, Standard error, correlation and regression, probability, Differentiation and Integration and their basic applications. Differential equation first order first degree.

**ANNEXURE B: Certificate from the employer for sponsored candidates to be issued on employers letter head**

1. Name of the Employer : \_\_\_\_\_
2. Type of Organization:  Central Government  State Government  
 National Level Research Organization  
 Public Sector Enterprise
3. Address of Administrative Officer/HR Manager : \_\_\_\_\_  
\_\_\_\_\_  
Phone : \_\_\_\_\_ Fax: \_\_\_\_\_  
Email : \_\_\_\_\_ Mob. \_\_\_\_\_
4. Designation of the Employee : \_\_\_\_\_  
Seeking admission in MANIT
5. Employment Details :  
a) First joined on (date) : \_\_\_\_\_  
b) Holding the present Position since (date) : \_\_\_\_\_  
c) Nature of Job : \_\_\_\_\_

(R & D, Design, Production, Marketing, Administrative, Teaching)

This is to certify that, Mr/Ms. \_\_\_\_\_ employed as \_\_\_\_\_ in this organization in regular capacity, is sponsored for admission to Full Time Ph.D Programme at MANIT, Bhopal. He / She has been employed in this organization for the past \_\_\_\_\_ years in a regular cadre. If selected the organization has no objection to his/her undergoing Ph.D Programme under Sponsored category at MANIT, Bhopal. He/ She, if selected, shall be allowed to attend the classes in day time and to stay in the campus/ Bhopal during his/ her Ph.D program course work.

\_\_\_\_\_  
Signature of Applicant

Seal & Signature of Competent Authority

**Name, Designation**