



MAULANA AZAD NATIONAL INSTITUTE OF TECHNOLOGY, *BHOPAL*

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

Ph.D. Admissions

2021-2022

INFORMATION BROCHURE

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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 process 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 is final.
5. All disputes related to admission are subject to Bhopal Jurisdiction only.

1. ADMISSION CATEGORIES:

Following are the 4 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 (30 number of seats).
3. JRF/Project Associates (In all Department/Centers) (as per ordinance 10.1.1(3))
4. Internal faculty members working in MANIT Bhopal.

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 from external candidates. However they will undergo course work as 6 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
1.	Civil Engineering
2.	Computer Science & Engineering
3.	Electrical Engineering
4.	Electronics & Communications Engineering
5.	Mechanical Engineering
6.	Chemical Engineering
7.	Materials & Metallurgical Engineering
8.	Energy Centre
9.	Biological Science & Engineering
10.	Architecture & Planning
11.	Physics
12.	Chemistry
13.	Mathematics, Bioinformatics & Computer Applications
14.	Humanities and Social Sciences
15.	Management Studies

3. ELIGIBILITY:

Sl. No.	Stream	Essential Qualification In Relevant Area
1.	Engineering	Master degree in Engineering with minimum of 60% or CGPA 6.5, with GATE qualified.
2.	Sciences	Master degree in Sciences/ Engineering with minimum of 60% or CGPA 6.5 AND NET/Gate qualified.
3.	Architecture and Planning	Master degree in Architecture / Planning with minimum of 60% or CGPA 6.5 with GATE qualified.
4.	Humanities and Social Sciences	Master degree in Humanities / Social Sciences with minimum of 55% or CGPA 6.0 AND NET qualified.
5.	Management	Master degree in Management /Engineering with minimum of 55% or CGPA 6.0 AND NET/GATE/CAT qualified.
6.	Computer Applications	Master degree in Computer Applications / Engineering with minimum of 60% or CGPA 6.5, AND NET/GATE qualified.

For reserved category students i.e. SC/ST/PwD a relaxation of 5% (0.5 in CGPA) is applicable.

4. SEAT MATRIX:

S.No	Department	UR	EWS	SC	ST	OBC	Total
1	Civil Engineering	9	2	3	1	6	21
2	Electrical Engineering	6	2	2	1	4	15
3	Computer Science & Engineering	5	1	2	1	3	12
4	Energy Centre	2	0	0	1	1	4
5	Managements Studies	2	1	1	1	1	6
6	Humanities & Social Sciences	2	1	1	0	1	5
7	Chemical Engineering	3	1	1	1	2	8

8	Materials & Metallurgical Engineering	2	1	1	0	2	6
9	Mechanical Engineering	9	2	3	1	6	21
10	Electronics & Communication Engineering	5	1	2	1	5	14
11	Architecture & Planning	6	2	2	2	4	16
12	Mathematics, Bioinformatics and Computer Applications	4	1	2	1	3	11
13	Biological Science & Engineering	1	0	0	0	1	2
14	Physics	2	0	1	0	1	4
15	Chemistry	2	0	2	0	1	5
Total		60	15	23	11	41	150

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.

Distribution of Sponsored candidates amongst departments:

S.No	Department	Total
1	Civil Engineering	4
2	Electrical Engineering	3
3	Computer Science & Engineering	3
4	Energy Centre	1
5	Managements Studies	1
6	Humanities & Social Sciences	1
7	Chemical Engineering	2
8	Materials & Metallurgical Engineering	1

9	Mechanical Engineering	4
10	Electronics & Communication Engineering	2
11	Architecture & Planning	3
12	Mathematics, Bioinformatics and Computer Applications	2
13	Biological Science & Engineering	1
14	Physics	1
15	Chemistry	1
Total		30

5. FEE STRUCTURE:

Ph.D. FEE DETAILS 2021-22 without Hostel				
S.No.	Fee Details (Applicable to all Category)	1 st Semester (At the time Admission)	2 nd Semester Onwards	Annual
1.	Tuition Fee	7500.00	7500.00	15000.00
2.	Other Fees	17299.00 (included – 1st Sem fee – 7048 + Caution money -5000+ One time fee - 5251)	7048.00	24347.00
Day Scholar Fee Total:Rs.		24799.00	14548.00	39347.00
Hostel Fees				
3.	Hostel Maintenance Charges	7500.00	7500.00	15000.00
	Hostel Caution Money One time (Refundable)	5000.00	00	5000.00
	Hostel Electricity & Water Charges	3000.00	3000.00	6000.00
	Hostel Rent Single Occupancy	10000.00	10000.00	20000.00
Hostel Fees in INR		25500.00	20500.00	46000.00
Total PhD fee with Hostel fee in INR		50299.00	35048.00	85347.00

Hostel facility is likely to be available to all Ph.D. Students. HRA will only be paid to Ph.D. scholars only wherever provision of Hostel accommodation is not possible in the institute and the scholars shall be entitled for HRA as per central government norms applicable in the city/location where they are working.

6. APPLICATION PROCEDURE:

Applications are invited for Ph.D. Programme in the Departments as listed in point 2:

- a) The application form can be downloaded from the Institute website <http://www.manit.ac.in>. Duly completed application form in the prescribed format will only be considered.
- b) Completed form along with **non-refundable processing fee of Rs. 1500/- (for UR, OBC & EWS) and Rs. 1000/- (for SC/ST/PwD candidates) should be submitted to Deputy Registrar (Academic), MANIT Bhopal – 462003 upto 15th October, 2021.** 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 application form along with separate processing fees, if he/she wishes to apply in different departments. Applications received after due date will not be entertained.

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 after initial scrutiny of the application forms. Candidates are advised to visit the institute website regularly for further updates.

- c) **Written test:** For each department, admission test of two hours (02 hr) 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 Subject (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 Mathematics and English is enclosed for engineering & non-engineering candidates.

Copies of Section 3 will only be evaluated when student will attain minimum total 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 normalized cut off in the written test will be given to SC/ST/PwD Candidates.

There is negative marking for wrong answers. One fourth marks will be deducted for every wrong answer

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

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

d) The selection process will be based on the candidate's academic research profile and as per following criteria:

- Weightage of written test - 50%
- Weighage of Interview - 20%
- Weightage of UG - 5%
- Weightage of PG - 5%
- Weightage of GATE/NET/CAT marks - 20%

OR

In case written test could not be conducted due to COVID-19 or any other reason

- Weighage of Interview (Section 3) - 40%
- Weightage of UG - 10%
- Weightage of PG - 20%
- Weightage of GATE/NET/CAT marks - 30%

7. TEACHING ASSISTANCE:

Candidates selected as full time research students shall get Teaching Assistantship as per Government of India/institute norms. This shall be awarded to the students of this category on a semester-to-semester basis depending on semester registration, satisfactory academic performance of the scholar as per Ph.D. Ordinance Clause 10.2.2). Selected candidates will be required to assist in teaching in the department equivalent to 8 hrs per week. However, no teaching assistantship shall be provided to sponsored candidates.

8. SCHEDULE:

(Institute reserves the right to change the schedule as per the prevailing conditions)

S.No.	Schedule	Schedule date
1.	Last Date of form submission	15 th October, 2021
2.	Date of written test	Please visit regularly the Institute website www.manit.ac.in for further instructions & schedule.
3.	Date of Interview	
4.	Declaration of Result on institute website	15.12.2021
5.	Admission Date	20.12.2021 to 24.12.2021
6.	Start of Course work	As per the academic calendar

9. DOCUMENTS REQUIRED by speed post along with Ph.D. application form:

The candidates are required to bring following documents in original at the time of admission (Please send by speed post self attested photocopy of the following documents along with the application form).

- a. 10th Class Marksheet
- b. 12th Class Marksheet
- c. Graduation Marksheet All semester
- d. Graduation Degree Certificate
- e. Post Graduation Marksheet all semester

- f. Post Graduation Degree Certificate
- g. GATE score card / NET/ CAT qualified certificate.
- h. EWS/OBC/SC/ST/PWD Certificate , If applicable
- i. Experience Certificate, If applicable
- j. Publication details, if applicable
- k. Valid OBC – NCL certificate and EWS Certificate (issued by competent authority on or after 01st April, 2021)
- l. SBI Collect receipt copy.
- m. Any other relevant documents

10. ADDRESS FOR COMMUNICATION:

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

Deputy Registrar (Academic)

Maulana Azad National Institute of Technology (MANIT),

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

Contact No. - 0755-4051055, 0755-4051056

The envelope must contain the following header “Application form for Ph.D. Admission in Department”.

DIRECTOR

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

(A) Mathematics Syllabus for Ph.D. Entrance Exam
(Engineering Departments)

**(Civil, Mechanical, Electrical, ECE, CSE, MSME, Chemical, Physics,
Mathematics, MCA, Energy)**

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.

(B) Mathematics Syllabus for Ph.D. Entrance Exam (Non-Engineering Departments)

(Architecture & Planning, Chemistry, Bio Informatics, Humanities & Social Sciences, Management Studies, Biological Science)

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.

Ph.D. Entrance Exam Syllabus (General 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.)