

# INDIAN INSTITUTE OF TECHNOLOGY BOMBAY



M.S. by Research

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## A) GENERAL

### A.1) THE INSTITUTE

The Indian Institute of Technology Bombay (IIT Bombay), established in 1958, was set up with the objective of making available facilities for higher education, research and training in various fields of Science and Technology. The Institute is located at Powai in a campus extending over 220 hectares amidst picturesque surroundings with Vihar and Powai lakes on either side.

At present, Undergraduate (B.Tech.), Postgraduate (M.Tech.) and Doctoral (Ph.D.) programmes are offered by the Departments and Centres of the Institute. From 2020, the Department of Computer Science and Engineering is offering a new M.S. by Research Programme.

### A.2) RESEARCH FACILITIES

All the departments, centres, schools and interdisciplinary groups of the Institute have well equipped research laboratories and workshop facilities. In addition, there are a number of central facilities, which include Computer Centre, Central Library and Central Workshop. The Central Library has a very large collection of books, back volumes of periodicals, standard specifications and other literature. The Library now has more than 3 lakhs books and volumes and subscribes to over 1500 current journals in Science, Engineering, Humanities and Social Sciences. The Computer Centre of IIT Bombay provides high-end networked computing facilities.

The Institute has many research collaborations with leading universities in USA, Europe, Japan, and other East Asian countries. As part of these collaborations, the post graduate students get opportunities to carry out joint research projects with faculty and students from these universities.

The location of IIT Bombay, in close proximity to several leading R&D Centers and major industrial establishments, offers excellent opportunities to interact with them and plan some research programmes in collaboration with them. The Industrial Research and Consultancy Centre (IRCC) coordinates collaborative projects with industry and other research organizations such as BARC, TIFR and CSIR. The Institute is actively collaborating with several organizations of other countries on a bilateral basis.

### A.3) STUDENTS AMENITIES

The Institute is fully residential and has 16 hostels for students. Each hostel is an independent entity with its own mess facilities, recreation areas, etc. However students may be permitted to have their own arrangements for accommodation outside campus. Some flatlets are available for married research scholars.

Extra-curricular activities are provided by the Students' Gymkhana. These activities include Sports, Cultural programmes and Social Service. Various clubs of the Gymkhana encourage individual talents of students in hobbies such as painting, modeling, music, photography, aeromodelling and fabrication of electronic devices. A swimming pool is an additional facility. A well-planned Student Activities Centre (SAC) routinely organizes several vibrant extra curricular events.

### A.4) M.S. BY RESEARCH PROGRAMME

The Institute has introduced a Master of Science by Research programme. The aim of the programme is to provide training to students in carrying out research and to contribute to expanding the frontiers of knowledge. Any mention of the M.S. programme in the rest of this document may be understood to refer to the M.S. by Research programme.

***For the academic year 2020-21, the Computer Science and Engineering department is the only department offering admissions to this program.***

The highlight of this program its flexible duration and focus on research. Students graduate when they complete the required coursework and defend a high quality M.S. thesis based on their research work. The normal maximum duration for fulfilling these requirements is 3 years. However, early completion (as early as at the end of 1.5 years) is also possible and encouraged.

Please look up the department website for additional details of the programme such as course requirements, typical course schedule, list of courses, areas of research etc.

For CSE, the website is: <https://www.cse.iitb.ac.in>

Also refer to the Rules and Regulation document of the M.S. Research program for details with regards to

the programme, graduation criteria, continuation in the programme, and other rules and regulations of the programme.

## **ADMISSIONS**

Eligible applicants will be shortlisted on the basis of their GATE score. Admissions will be based on written test and interview given to shortlisted candidates.

### **Economically Weaker Sections(EWS) /Other Backward Class Non-Creamy Layer(OBC-NCL)/Scheduled Caste (SC)/ Scheduled Tribe (ST) and Person with Benchmark Disability (PwD) Categories**

Seats are reserved for Economically Weaker Sections(EWS)/ Other Backward Class Non-Creamy Layer(OBC-NCL)/Scheduled Caste (SC), Scheduled Tribe (ST) and Person with Benchmark Disability (PwD) categories as per Government of India rules.

### **Admission for IIT B.Tech. degree holders**

Candidate having a B.Tech. Degree from IITs and having a CGPA/CPI score of 8.00 (on 0-10 scale) and above are exempt from the requirement of GATE qualification. They may be admitted to M.S. Programme under TA/RAP positions through written test and interview.

## **A.5) APPLICATION CATEGORIES AND FINANCIAL SUPPORT**

The Institute admits M.S. candidates under the following categories :

- i. Teaching Assistantship (TA)
- ii. Research Assistantship through Project (RAP)

Admissions to all categories are subject to availability of seats. The continuation of the financial support and the registration for the selected programme will be subject to satisfactory performance of the duties assigned by the Academic Unit as well as satisfactory academic performance and fulfillment of the other academic and non-academic requirements, as per rules.

### **A.5.1) TEACHING ASSISTANTSHIP (TA)**

- A.5.1.1) Candidates in this category are selected subject to (i) a valid GATE score and (ii) Performance in Test / Interview.
- A.5.1.2) As per MHRD directives, a student holding Teaching Assistantship (TA) shall not accept or hold any appointment paid or otherwise or receive any emoluments, salary, stipend from any source during the tenure of the award.
- A.5.1.3) The students joining the programme under this category will be considered for Teaching Assistantships ( Rs. 12,400/- per month, at present) based on the following norms:
  - i. Students getting assistantship will be required to assist / work for courses, laboratory, or any other related academic / administrative work to the extent of 8 hours per week as assigned by the concerned Academic Unit.
  - ii. The assistantship will be available for a maximum period of 36 months.
  - iii. Assistantship will be paid on the basis of monthly attendance.
- A.5.1.4) Employees on the rolls (with or without pay) of any organization are not eligible for admission under this category.

### **A.5.2) RESEARCH ASSISTANTSHIP THROUGH PROJECT (RAP)**

- A.5.2.1) Candidates to this category are selected subject to (i) a valid GATE score and (ii) Performance in Test / Interview.
- A.5.2.2) The students joining the programme under this category will be considered for Assistantships supported under Sponsored Research Project being carried out

at the Institute based on the following norms:

- i. Research Assistants have to work in the assigned Sponsored R&D project. They are required to work for about 20 hours a week on the Sponsored Research Project.
- ii. They will do their thesis / dissertation in same project area.
- iii. They have to complete the programme in 3 years.

A.5.2.3) Only some disciplines/specializations have RAP seats.

A.5.2.4) Employees on the rolls (with or without pay) of any organization are not eligible for admission under this category.

## **A.6) FEES AND DEPOSITS**

Please check the IITB admissions website (<http://www.iitb.ac.in/newacadhome/toadmission.jsp>) for details.

## **A.7) ELIGIBILITY FOR M.S. PROGRAMME**

### **A.7.1) General Eligibility for M.S. Programme in all Academic Units (Departments, Centres, Schools, Interdisciplinary Groups, Cross-Departmental Programmes)**

Candidates with First class or 60% (55% marks for SC/ST) marks in B.E./ B.Tech./ B.Sc. (Engineering)/ M.Sc./ M.C.A./ MBBS/ M.Pharm./ B.Pharm.(4 yr. Degree)/ BDS (4 yr. Degree)/ Associate Membership Examinations conducted by recognized professional bodies (like Institution of Engrs. (India), Institute of Chemical Engrs., Aeronautical Society of India, Institute of Electronics & Telecommunication Engrs., Indian Institute of Metals, etc.) and recognized as equivalent to B.E. / B.Tech. Degree.

Eligibility criteria for the different disciplines and specializations, qualifying examinations, GATE (or other Postgraduate Admission Examination) and requirement for admission under different admission categories are given in **Table A.3** of this brochure.

### **A.7.2) Admission for IIT B.Tech. degree holders**

Candidate having an B.Tech. Degree from IITs and having a CGPA/CPI score of 8.00 (on 0-10 scale) and above are exempted from requirement of GATE qualification. They may be admitted to M.S. Programme under TA/RAP positions through written test and/or interview.

### **A.7.3) Eligibility Requirement for PG admission at IIT Bombay**

The overall institutional requirement for admission to PhD/PG programme of the Institute is meeting ANY ONE of the following criteria :

#### **For GN/EWS/OBC (NC) category**

(1) a minimum of 60% marks in aggregate in the qualifying degree.

OR

(2) a First Class as specified by the University.

OR

(3) a minimum Cumulative Grade Point Average (CGPA)/ Cumulative Performance Index (CPI) of 6.0 on the scale of 0-10; or an equivalent to 6.0 on other corresponding proportional requirements when the scales are other than 0-10. in the qualifying degree.

#### **For SC/ST/PwD category**

(1) a minimum of 55% marks in aggregate in the qualifying degree.

OR

(2) a minimum Cumulative Grade Point Average (CGPA)/ Cumulative Performance Index (CPI) of 5.5 on the scale of 0-10; an equivalent to 5.6 on other corresponding

proportional requirements when the scales are other than 0-10. in the qualifying degree.

#### **A.8) GUIDELINES FOR FILLING UP THE APPLICATION FORM**

Please refer to the Institute website <https://portal.iitb.ac.in/mtechapp/Help.jsp> under 'Instructions' for filling ONLINE application form.

#### **A.9) Termination of Studentship**

Failure to meet academic performance criterion set by the Institute for the M.S. programme will cause termination of studentship.

**Table A.2 : Summary of M.S. Programmes**

Discipline [Academic Unit : Department, Centre, Interdisciplinary Group]	Specialization	Code
Computer Science & Engineering [Department of Computer Science and Engineering]	Computer Science & Engineering	CS

**TABLE-A.3 : ELIGIBILITY FOR ADMISSION TO DIFFERENT DISCIPLINES**

Discipline [Academic Unit : Department, Centre, Interdisciplinary Group]/Specialization	Degree/Qualifying Discipline First class or 60% marks (55% marks for SC/ST) as specified in the clause A.7.3.	GATE Requirement
Computer Science & Engineering(CS) [Department of Computer Science & Engineering]	(i). B.E./B.Tech./AMIE or equivalent in any engineering discipline. (ii). M.Sc. or equivalent in any science discipline. (iii). MCA (with Physics & Mathematics at B.Sc. level) or equivalent	CS
Valid GATE score (CS) is required for all applicants except commissioned officers of the armed forces and those having B.Tech. Degree in CS/CSE from IITs with CGPA/CPI of 8.00 (on 0-10 scale) and above.		

## **B) M.S. PROGRAMMES**

Currently, the Department of Computer Science and Engineering is offering the M.S. by Research programme

### **B.1) Computer Science and Engineering (CS)**

**[Department of Computer Science and Engineering]**

The M.S. programme in Computer Science is a flexible, research-oriented programme offering students a wide choice of research areas such as:

Theoretical Computer Science

Computer Networks

Operating systems

Distributed Systems

Systems modeling, analysis and design

Database and Information Systems

Machine Learning and Artificial Intelligence

Natural Language Processing

Visual Computing

Formal Methods

Programming languages and Compilers

Real-Time, Embedded, Cyber Physical Systems

Software Engineering and Paradigms

Computer and Network Security and Applied Cryptography

The programme is aimed at generation of human resource that is trained in carrying out high quality research work. The department has strong ties with the computer industry and many M.S. students are expected to work on sponsored research projects.

Refer to the department web page (<https://www.cse.iitb.ac.in>) for more information about various RESEARCH AREAS. Candidates are also encouraged to visit individual faculty member's home page to learn about his/her research interests and current/past work.

ELIGIBILITY FOR ADMISSION- as given in Table A.3 - Eligibility for Admission to Different Disciplines.

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## STATEMENT OF PURPOSE(SoP)/Additional information

Statement of Purpose (SoP) is your opportunity to share with the admission committee your motivation for Postgraduate studies at IIT Bombay. Include a brief description of past project/ research work done by you. Restrict yourself to 500-600 words. The personal SOP will aid the admission committee in evaluating your application.

1. **Name:**

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2. **Programme of study:** M.S.

Discipline : \_\_\_\_\_

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