

**INDIAN INSTITUTE OF TECHNOLOGY BOMBAY**

## Information Brochure



**Ph.D. Programme for Foreign Students**  
(updated as on 20.01.2016)

## CONTENTS

I	IMPORTANT GUIDELINES FOR PH.D. PROGRAMME FOR FOREIGN NATIONALS
II	IMPORTANT DATES : a) Schedule for Autumn Semester b) Schedule for Spring Semester
III	<b>GENERAL INFORMATION</b>
	○ The Institute
	○ Research Facilities
	○ Student Amenities
	○ Ph.D. Programme
	1. Eligibility and Procedure for Application
	2. Application Categories and Financial Support 2.1 Application Category 2.2 Financial Support
	3. Documents required
	4. Visa requirements
	5. Medical Fitness Requirements
	6. Formalities after foreign students join the Institute 6.1. Payment of Fees and Deposits
	7. Payment of Fees and Deposits
	8. Registration for the Ph.D. Degree
	9. Confirmation of Registration
	10. Submission of Thesis and Award of Degree
IV	<b>APPENDICES</b>
	1. Personal Particulars of Foreign Scholars
	2. Statement of Purpose for Ph.D. Application (SoP)
	3. Fees and Deposits.
V	<b>APPLICATION FORM</b>

## I. IMPORTANT GUIDELINES FOR PH.D. PROGRAMME FOR THE FOREIGN NATIONAL CATEGORY

1	Please read the instructions given in the Information Brochure carefully before filling up the application form.
2	Downloadable Application Form & Information Brochure is available on the Institute website <a href="http://www.ir.iitb.ac.in/?page_id=26">http://www.ir.iitb.ac.in/?page_id=26</a> or <a href="http://www1.iitb.ac.in/academic/phd.jsp">http://www1.iitb.ac.in/academic/phd.jsp</a> . Candidates are required to download their application form.
3	Completed application along with the prescribed fees is to be sent in a closed envelope superscribing on the cover ' <i>Application for Ph.D. Programme under Foreign National category</i> ', to the following address, Dy. Registrar / Asstt. Registrar (Academic) Academic Section, 2 <sup>nd</sup> floor, Main Building, IIT Bombay, Powai, Mumbai – 400 076 Maharashtra, India. Ph: +91- 22- 2576 7042 / 7044
4	A non-refundable application fee is US \$ 20/INR 1500 is to be paid along with the application form through a Banker's Cheque drawn in favor of "Registrar, IIT Bombay", payable at Mumbai branch.  Candidate must write his/her Name, Department applied and Email address on reverse side of the Banker's cheque.  <u>APPLICATION FEE IS NON-REFUNDABLE</u>
5	A candidate can submit multiple applications, if he/she wishes to apply to more than ONE Programme by paying separate application fee.  The application form should be complete in all respect, Incomplete application will not be considered.
6	Please refer to the Institute website <a href="http://www1.iitb.ac.in/academic/phd.jsp">http://www1.iitb.ac.in/academic/phd.jsp</a> for details about result and other important announcements.
7	Important communication and announcements will be made through the E-mail Id provided in the application form.

**II) IMPORTANT DATES :****a) Schedule for Admission in Semester 1: begins in July**

No	Particulars	Dates
Mode of Application form : Offline		
01.	Availability of application forms	15 <sup>th</sup> October
02.	Last date for submission of completed application forms	30 <sup>th</sup> November,
03.	Declaration of Result	31 <sup>st</sup> January

**b) Schedule for Admission in Semester 2 : begins in January**

No	Particulars	Dates
Mode of Application form : Offline		
01.	Availability of application forms	15 <sup>th</sup> April
02.	Last date for submission of completed application forms	30 <sup>th</sup> May
03.	Declaration of Result	31 <sup>st</sup> July

## **GENERAL INFORMATION**

### **THE INSTITUTE**

Indian Institute of Technology Bombay (IIT Bombay) is one among the 16 IITs in the country set up with the objective of making available facilities for higher education, research and training in various fields of Science and Technology. IIT Bombay was established in the year 1958 at Powai, Mumbai in a huge campus extending over 220 hectares amidst picturesque natural surrounding.

The Institute offers Undergraduate, Postgraduate and Doctoral programmes leading to prestigious B.Tech., Dual Degree (B.Tech. M.Tech.), Integrated 5 year M.Sc. & 2 year M.Sc. under the ambit of Undergraduate programmes. Masters Degrees such as M.Tech., M.Des., M.Phil, M.Mgt., Dual Degree (M.Tech-Ph.D & M.Sc. Ph.D) and Ph.D. Programmes are offered in various Engineering, Science, Humanities and Social Sciences and Interdisciplinary areas.

Aerospace Engineering, Chemical Engineering, Civil Engineering, Computer Science and Engineering, Earth Sciences, Energy Science & Engineering, Electrical Engineering, Mechanical Engineering and Metallurgical Engineering and Materials Science Departments and Interdisciplinary groups - Industrial Engineering and Operations Research and Systems and Control Engineering offers M.Tech. and Ph.D. programmes.

The Industrial Design Center of the Institute offers a 2-year M.Des. Programme in Industrial Design, Visual Communication, Animation, Interaction Design, Mobility and Vehicle Design and a Ph.D. Programme in Design. M.Sc. and Ph.D. programmes in Applied Geology and Applied Geophysics, Chemistry, Mathematics, Physics, M.Sc. Programme in Applied Statistics and Informatics are offered by the respective Departments. The Department of Physics also offers a 4-year B.Tech. Programme in Engineering Physics. The Humanities and Social Sciences Department offers Doctoral programmes and a 2-year M.Phil programme. The Center of Studies in Resources Engineering (CSRE) offers a 2-year M.Tech. Programme in Geoinformatics & Natural Resources Engineering and Doctoral programmes. The Departments of Physics, Energy Science and Engineering, Center for Environmental Science and Engineering are also offering M.Sc. - Ph.D Dual degree programmes and their admissions are through JAM.

Centre for Technology Alternatives in Rural Technology (CTARA) offers M.Tech. in Technology and Development and Doctoral programme. Ph.D in Nano Technology is offered by CRNTS. Cross-Departmental M.Tech. programme in Materials, Manufacturing & Modeling (MMM) is offered by Mechanical Engineering, Met. Engineering & Mat. Sci. & Mathematics. The Shailesh J. Mehta, School of Management offers a 2-year Master of Management (M.Mgt.) programme and also a doctoral programme. The Department of Bio sciences and Bio engineering offers M.Sc. and Ph.D. programme in Biotechnology, M.Tech. and Ph.D. programme in Bio medical Engineering and M.Sc.-Ph.D. Dual Degree Programme in Biotechnology. The Center for Urban Science & Engineering (C-USE) offers Ph.D. Programme in Urban Science & Engineering. The Institute also has PG Dual Degree Programmes (M.Tech. + Ph.D.) in several disciplines.

The Institute on an average every year admits about 1400 candidates every year for different Postgraduate and Doctoral programmes. Students from Bangladesh, Egypt, Ethiopia, Fiji, Iran, Iraq, Pakistan, Jordan, Mauritius, Malaysia, Nepal, Palestine, Sri Lanka, Vietnam and Yemen are also undergoing studies in various programmes. In addition to these academic programmes, the Continuing Education Programme (CEP) organizes short, intensive courses in specialized topics both for practicing engineers as well as for teachers from engineering colleges; and also conducts seminar and conferences on current scientific and technological developments. Further, teachers from various engineering colleges also join Institute for the postgraduate and doctoral programmes under Quality Improvement Programme (QIP).

### **RESEARCH FACILITIES**

All the Departments, Centers, Schools and Interdisciplinary groups of the Institute are independently equipped with state-of-the-art Research Laboratories and Workshop facilities. In addition, there are a number of central facilities such as Computer Center, Central Library and Central Workshop which are commonly used by all faculty and students across the Institute. The Central Library has a huge collection of books, back volumes of periodicals, standard specifications and other literature. The Library now has

more than 3 lakhs books and volumes of various journals and subscribes to over 1500 current journals in Science, Engineering, Humanities and Social Sciences. The Computer Center of the Institute 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 opportunity for interaction between Industry and the Academia so as to plan for research collaborations. The Industrial Research and Consultancy Center (IRCC) coordinates the collaborative projects with industry and other research organizations such as BARC, TIFR and CSIR. The Institute also actively collaborates with foreign Institutions / Organizations on a bilateral basis.

## **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 as well.

The Students' Gymkhana provides Extra-curricular activities to the students. These activities include Sports, Cultural programmes and Social Service. Various Clubs under the Student's Activity Center (SAC) 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 Center (SAC) routinely organizes several vibrant extra curricular events.

## **Ph.D. PROGRAMME**

With extensive infrastructural facilities and a sound research base, the Institute offers Ph.D. programme in a wide range of areas in Engineering, Sciences and Humanities & Social Sciences. The broad objectives of the Ph.D. programme are to contribute to expanding the frontiers of knowledge and to provide research training.

The academic programme leading to the Ph.D. degree is broad-based and involves a course credit requirement and a research project leading to thesis submission. The Institute also encourages research in interdisciplinary areas through a system of joint supervision and interdepartmental group activities. The Institute undertakes sponsored research and development projects from industrial and other organizations in public as well as private sector.

Facilities for research work leading to the Ph.D. degree are available in the departments of Aerospace Engineering, Biosciences and Bioengineering, Chemical Engineering, Chemistry, Civil Engineering, Computer Science and Engineering, Earth Sciences, Electrical Engineering, Energy Science & Engineering, Humanities and Social Sciences, Mathematics, Mechanical Engineering, Metallurgical Engineering and Materials Science, Physics, Industrial Design Centre, Centre for Environmental Science & Engineering, Centre of Studies in Resources Engineering, Centre for Research in Nanotechnology & Science and Centre for Technology Alternatives for Rural Areas, Centre for Urban Science and Engineering, Interdisciplinary Groups in Climate Studies, Educational Technology, Industrial Engineering & Operations Research and Systems & Control Engineering and in Shailesh J. Mehta School of Management.

## 1. ELIGIBILITY AND PROCEDURE FOR APPLICATION

Students holding foreign passports (including persons with OCI or PIO cards) will be eligible to apply for this scheme. For Engineering disciplines, a 4-year bachelor's degree is the minimum qualification. For graduates in Science disciplines, a Masters degree or equivalent is a must for applying. The candidate must have valid GRE and TOFEL examination scores and should be sent along with their applications. Persons who are in the final year of their degree are also eligible to apply. The non-refundable application fees of US \$ 20/INR 1500 to be paid by Banker's cheque should be attached with the application. The Departments / Centres / IDPs / School will be free to hold internet supported interviews with the prospective candidate in case it is recommended by the Admission Committee.

Admission of foreign nationals will be made twice a year. For admission in Autumn Semester, the application last date is 15<sup>th</sup> February and the admission offers will be made by 31<sup>st</sup> March. For admission in the Spring Semester, the application last date is 14<sup>th</sup> August and the admission offers will be made by 30<sup>th</sup> September.

In addition to the above eligibility criterion, the applicant must satisfy the general eligibility criteria specified for the respective Departments/Centres/Schools / Interdisciplinary Groups, and the eligibility criteria for admission with different types of financial support (available at <http://www1.iitb.ac.in/academic/phd.jsp> under Ph.D. Information Brochure).

## 2. APPLICATION CATEGORIES AND FINANCIAL SUPPORT

### 2.1 APPLICATION CATEGORY

Foreign Nationals can seek admission to various Postgraduate and Research Programmes under the following categories at IIT Bombay / IITB-Monash Academy (<http://www.iitbmonash.org>).

- (I) FRN IITB TA (Teaching Assistantship)      Students holding foreign passports (including persons with OCI or PIO cards) will be eligible to apply under this scheme. TAship as applicable to FRN IITB-TA students will be available from the Institute upon admission to Ph.D. programmes of the Institute.
- Stipendiary support for students joining IITB-Monash Research Academy will come from the Academy.

### 2.2 FINANCIAL SUPPORT

Financial Support is dependent on qualifying degree and satisfying the requirement of TAship. Students under this category are entitled to financial support as per MHRD norms.

- i. For Students under Teaching Assistantship (TA) category the teaching assistantship (TA-ship) is for a maximum duration of 5 years or up to the thesis submission, whichever is earlier. The monthly rate of assistantship is Rs.25000/- for first two years and enhanced rate of Rs.28000/- for the remaining period.
- ii. Students in SJMSOM with M.B.A. as the qualifying degree and with B.Tech./B.E. or equivalent degree, the assistantship is same as in (i) above. For other students the amount is as in (ii) above.
- iii. To get Teaching Assistantship, the students concerned must assist in teaching or research, as assigned by the respective Academic Unit to the extent of 8 hours of work per week.
- iv. The continuation of the assistantship will be subject to satisfactory performance of the duties assigned by the Academic Units as well as satisfactory academic performance.
- v. Employees on the rolls (with or without pay) of any organization are not eligible for admission under this category.

As per MHRD directives, the employees of any organizations with or without pay are not eligible for admission under TA category. Such candidates may be considered under SW/SF category, if found suitable. Students getting assistantships from the Institute may join projects sponsored by external agencies and obtain corresponding fellowships in lieu of TA ship.

### 3. DOCUMENTS REQUIRED

Foreign students applying for the Ph.D. Programmes require to submit the following documents:-

- 1) Application form as available on the Academic homepage/ Dean (International Relation's Office):
  - a) For Ph.D. Application Form-  
<http://www1.iitb.ac.in/academic/phd.jsp>
- 2) Bio-Data / Curriculum Vitae / Resume
- 3) Personal particulars of Foreign Scholars coming to India (**Appendix-1**).
- 4) Copy of the grade transcripts with the explanation of the assigned grades.
- 5) Statement of purpose.
- 6) Three recommendation letters – at least one recommendation should be about the student's academic performance issued by a faculty member.
- 7) Documentary proof to illustrate fluency in English language.  
If English is not the first language or language of medium of instruction (during secondary & tertiary education), passing any of the following tests will be required. Test scores more than two years old will not be accepted for consideration.
  - i. The Test of English as a foreign language (TOEFL), administered by the Educational Testing Service in the US, in which scores of at least 580 overall and 4.0 in the Test of Written English are required. The computer based test requires scores of at least 240 overall and 4.0 in essay writing. The internet based test requires scores of at least 95 overall with a minimum score of 20 in writing.
  - ii. The International English Language Testing Service (IELTS) test, administered by the British Council, in which scores of 6 or more in each section and an overall score of 6.5 are required.
  - iii. TOEFL/IELTS scores more than two years old will generally not be consideration. However if the candidate is otherwise found to be of very good credential in the core subject, he/she may be considered subject to qualifying English Language test to be conducted by the Institute within one semester of his/her admission.
- 8) GRE / GMAT Scores are desirable for all categories
- 9) Copy of the passport (page showing your nationality and personal details).

### 4. VISA REQUIREMENTS

Students admitted for Ph.D. programmes must have a Research Visa.

### 5. MEDICAL FITNESS REQUIREMENT

It is advisable that the candidates get a general check up done before departure, to ensure that he/she do not suffer from any major ailments. They should get vaccinated against the following diseases, before reporting to IIT Bombay,

- i. Typhoid
- ii. Hepatitis A
- iii. MMR – 1 dose after age of 15 years
- iv. Chickenpox
- v. dT (diphtheria and tetanus)

Only those candidates in whom vaccination is medically contraindicated, would be exempted from these vaccinations on production of medical certificate. They are also requested to submit the "Vaccination Certificate/Vaccination Exemption Certificate" at the time of registration. They may be allowed to register with the partial vaccination, if done. However, he/she will be required to complete the vaccination during the first semester. Registration for the second semester will be subject to complete vaccination as required. Please refer to <http://www1.iitb.ac.in/academic/phd.jsp> for proforma of "Vaccination Exemption Certificate".

After admission formalities are completed, Full-Time students will be provided with full medical facilities as applicable to Indian students at IIT Bombay.



## **6. FORMALITIES AFTER FOREIGN STUDENTS JOIN THE INSTITUTE**

### **6.1 PAYMENT OF FEES AND DEPOSITS**

Fee structure is a combination of USD & Indian Rupees (INR) as given in **Appendix-3**

The fees payments can be made through Travelers cheques / Bankers cheques / Demand Draft in USD or equivalent in INR drawn in favor of “Registrar, IIT Bombay”.

In case the payment is made in INR, the following exchange rate will be applicable:

- For the students joining in the Autumn semester, rate as on 1<sup>st</sup> June will be applicable for the entire semester.
- For the students joining in the Spring semester, rate as on 1<sup>st</sup> December will be applicable for the entire semester
- The Dollar-INR exchange rate as applicable on the above dates shall be verified with the Office of Dean-IR before making payment of fees. The Dean-IR office will also intimate to applicable rates to the Cash section and Academic office for further necessary action.

### **7. ACCOMMODATION AND STUDENT ACTIVITIES**

Hostel accommodation with messing is available on the IIT Bombay campus for Ph.D. students, together with facilities for sports and cultural activities, in addition to the academic infrastructure.

Students can contact the Office of International Relations (<http://www.ir.iitb.ac.in>) for more information regarding the stay of International students in India and on the IIT Bombay campus.

### **8. REGISTRATION FOR THE Ph.D. DEGREE**

After a foreign national has been admitted to the Institute, he/she has to make an application in the prescribed form for Ph.D. Registration. This application will be considered by the Departmental Post-Graduate Committee (DPGC) which will make appropriate recommendations to the Senate regarding (a) the course work prescribed for the candidate and (b) the date of registration.

The period of validity of Ph.D. Registration for all candidates is FIVE/SIX years from the date of confirmation of registration (Registration is confirmed as per rules, after successfully completion of course credit requirements )

### **9. CONFIRMATION OF REGISTRATION**

All Ph.D. Admission are provisional until the “Confirmation of Registration” is completed. This confirmation takes place after completing the prescribed course work (within six months to a year after admission) and only if academic performance criterion set by the academic unit is met. Some academic units (Departments / Interdisciplinary groups / Centres/ Schools) prescribe a qualifier examination for the Ph.D. Programme. These must be completed successfully prior to the date of confirmation of registration. Failure to meet satisfactory performance criterion may lead to termination of studentship [Ref:”Rules & Regulations for Ph.D. Programme” available at <http://www1.iitb.ac.in/academic/rules.jsp>]

### **10. SUBMISSION OF THESIS AND AWARD OF DEGREE**

Subject to fulfilling the course credit requirements and other conditions as may be laid down from time to time, the candidate may submit the Ph.D. Thesis after two years from the date of registration.

The thesis is examined by two/three referees from outside the Institute. The Senate examines the reports of the referees and only on acceptance of the thesis, appoints a Board of Examiners to conduct a viva-voce examination at which the candidate is required to defend his/her thesis.

On the basis of the report of the Board of Examiners, the Senate decides the student's eligibility for award of the degree of Doctor of Philosophy.

**PERSONAL PARTICULARS OF FOREIGN SCHOLARS**

1	Full Name (expanding the initials)	
2	Nationality	
3	Date & Place of Birth	
4	Parentage (names of the parents)	
5	Present address	
6	Permanent address	
7	Passport number date and place of issue & validity	
8	Whether previously in India if so dates & place	
9	Occupation	
10	Purpose of visit	
11	Expected duration of stay (in IIT Bombay)	
12	Places in India likely to be visited	
13	Name of the Indian Mission abroad at which the foreigner will apply for visa authorization	
14	Source of funding and terms/ conditions of funding / appointment	
15	Whether accompanied by spouse/ dependents, and if, full personal particulars & sources of funding should be indicated	

## STATEMENT OF PURPOSE (SoP)

Statement of Purpose (SoP) is an opportunity for the student seeking admission to share his/her thought/feelings with the admission committee about Postgraduate studies at IIT Bombay and also to highlight his/her preparation for the same. The candidate is required to briefly describe his/her past project / research work done by him/her in 500-600 words. The personal SoP will aid the admission committee in evaluating the application.

(i) If the candidate is applying for more than one academic discipline, he/she has to include separate SoP for each discipline.

(ii) If the candidate is applying to **CTARA**, he / she has to give a SoPa research proposal.

(iii) If the candidate is applying to **Shailesh J. Mehta School of Management**, he/she is required to submit a sample of his/her recently published writings on a relevant topic or an **essay proposal (1500 words) on a topic of research interest in place of Statement of Purpose**. The proposal should contain (a) problem identification, (b) brief review of literature, and (c) methodology.

1. Name of the candidate:

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**FEE STRUCTURE** (Likely to be revised )

## 1) Ph.D. Programme : FRN-TA

A) Fees payable at the time of admissions	
Admission Fee	US \$ 300
International Students Association Fee	US \$ 50
Security Deposits (Refundable)	US \$ 150
Total	US \$ 500
B) Per semester (2 semester per year)	
Tuition fees	Rs. 5000/-
C) Other fees:	
Examination fee	Rs. 500/-
Registration fee	Rs. 500/-
Gymkhana fee	Rs. 750/-
Hostel Seat Rent @	Rs. 2500/-
Electricity & Water charges @	Rs. 2500/-
Medical fee	Rs. 1000/-
Student Benevolent Fund	Rs. 1000/-
Hostel Establishment charges @	Rs. 2000/-
Contribution to Hostel Subsidy @	Rs. 6000/-
Total	Rs. 16,750/-
D) Annual Insurance premium	Rs. 126/-

@ Student not staying in the hostel need not pay these fees)

In addition to the above, every student has to pay semester mess advance of INR 13,000/- (every semester), refundable mess advance INR 2000/- (at the time of joining) and INR 1000/- towards bus pass (per year ). (These are approximate amounts. The actual amount will be communicated to the students by the respective hostels at the time joining).

Candidates with financial hardship may request / apply for fees reduction which shall be consider on case to case basis on may be granted fee reduction initially for an academic year, dependent on the performance in the course work, and subject to maintaining of a CPI of 8, the waiver may be extended for the subsequent academic year. It will be the responsibility of the concerned student to apply to the Departmental Post Graduate committee (DPGC)/ Interdisciplinary Programme Committee (IDPC) in the subsequent year for consideration for continuation of the fee waiver. Further extensions to the waiver will be decided every year base on the APS report of the students.

# All fees are subject to revision from time to time.

A semester is considered to be a period of 4 months or less.