INDIAN INSTITUTE OF TECHNOLOGY BOMBAY



Information Brochure
Ph.D. Admissions 2026-27

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I. Important Guidelines for Ph.D. Programme Application

1 Please read the instructions given in the brochure carefully before filling up the application form.

2 **Online** Application Form & Information Brochure (including the admission schedule along with the important dates) is available on the Institute website at the link, https://acad.iitb.ac.in/admissions/research

You are required to submit the application **ONLINE**. No Downloadable Forms will be available. After filling the form, you are advised to take a print of your application and keep the same for the record.

3 The application fee is as follows,

Category	Application fee for Regular Period **Without Fine** (In Rs.)	Application fee for Extended period **With Fine** (In Rs.)
Women candidates	150/-	650/-
SC/ST/PwD category candidates	150/-	650/-
All other candidates	300/-	800/-

The fee is to be paid by SBI Internet Banking/ Online Payment System and you do not have to submit the printed copy of the application. **Applications without online payment details will not be considered.**

APPLICATION FEE IS NON-REFUNDABLE.

4 You can apply for up to **THREE** disciplines/specialisations.

5 (i) Along with your application, you have to submit a Statement of Purpose or a Research Proposal as required by an academic unit.

(ii) If you are applying to the **Ashank Desai Centre for Policy Studies (ADCPS**) you must submit a research proposal on the selected topic. The proposal should include: (a) problem identification, (b) brief review of literature, (c) proposed methodology, (d) references (maximum word length - 2000 words, excluding references). The research proposal will be graded for admission purposes.

•(iii) If you are applying to **Management (SJMSOM**), you are required to submit research proposal (1500 words) on a topic of applicants' interest in place of Statement of Purpose. It should contain a) problem identification, b) brief review of literature, and c) methodology.

Applications without research proposal will not be considered**.**

(iv) If you are applying to **Department of Humanities & Social Sciences, or CSRE**, you need to upload Statement of Purpose as well as a research proposal along with the application form. The Research Proposal for applying should contain (a) problem identification, (b) brief review of literature and (c) proposed methodology. The SOP for CSRE should refer to one or more topics of interest FROM THE LIST of topics announced on CSRE webpage https://www.csre.iitb.ac.in/phdTopics.php

(v)Candidates applying toTechnology & Development (CTARA) are required MUST submit (a) Statement of Purpose (SoP), and (b) Research Proposal clearly indicating the area of research proposed for their PhD in 1000 words along with the application.

(vi). Candidates applying to **IDC** are required to submit a Statement of Purpose (SOP) along with a research proposal (~1500 words) that contains (a) the research area, (b) a brief review of the literature and (c) proposed methodology. The

candidates must also submit a recent work or paper related to their area of research. A link to the design portfolio (drive folder/website/online documentation), if available, can be provided along with the SOP document.

(vii). Candidates applying to **Educational Technology** are required to submit a Statement of Purpose containing (a) your interests and motivation for applying to ET (max. 50 words), (b) relevance of your recent and current activities (max. 200 words), (c) details about your academic interests including (but not limited to) your areas of interest, a problem that interests you, and what you plan on doing after completing your Ph.D. (max. 250 words).

(viii). Candidates applying to **Desai Sethi School of Entrepreneurship (DSSE)** have to submit a research proposal of 1500 words which identifies a research problem / interest from the domain of innovation and entrepreneurship, argues for its relevance by citing existing literature around it with academic references and proposes an appropriate research methodology to conduct the study.

Note: Proposals must be the original work of the applicant. The Institute reserves the right to reject applications that show evidence of plagiarism or significant AI-generation without attribution, as determined by the admission committee's verification process. The committee's decision in this regard will be final.

(ix). Candidates applying to **Centre for Climate Studies (CCS)** are required to submit a research proposal based on their research interests in the application form.

(x). Candidates applying to **Center for Defence Technology Innovations and Strategies (CDTIS)** are required to submit a statement of purpose with the application in the specified format in which the titles of topics of candidate's interest should be mentioned with a detailed justification how the candidate's academic background is suitable to pursue research in that area.

Additionally, a research proposal in the specified format on a topic from any one of the research areas listed above should be submitted. The proposal should contain (a) problem identification ,(b) brief review of literature ,(c) proposed methodology (d) references.

(xi). Candidates applying to **Medical Technology Research and Innovation Centre (MED-TRIC)** are required to submit a statement of purpose with the application in the specified format in which the titles of topics of candidate's interest should be mentioned with a detailed justification how the candidate's academic background is suitable to pursue research in that area.

(xii). Candidates applying to **Centre for Traditional Indian Knowledge and Skills (CTIKS)** are required to submit a statement of purpose with the application in the specified format in which the titles of topics of candidate's interest should be mentioned with a detailed justification how the candidate's academic background is suitable to pursue research in that area.

(xiii). Candidates applying to Motilal Oswal Centre for Capital Markets (MOCCM) are required to submit a research proposal (1000-1500 words) on a topic of interest instead of Statement of Purpose (SOP). It should contain a) problem definition, b) review of literature, and c) methodology.
Applications without research proposal will <u>not</u> be considered.

6 You should complete the application form in all respects. Incomplete application will not be considered.

7 You **MUST** upload the following while submitting the Ph.D. Application.

- Scanned version of photograph.
- Scanned version of signature.
- Mark-sheet of the last semester/ Consolidated mark-sheet of the qualifying degree. Result awaited candidates have to upload their

latest/previous semester mark-sheet.

- Caste Certificate (OBC-NC/SC/ST), if applicable. An affidavit for having applied in case the certificate is not yet received.
- Economically Weaker Sections(EWS) candidates needs to submit EWS certificate issued by the Competent Authority in the prescribed format.
- PwD Certificate, if applicable.
- Sponsorship certificate, if applicable.
- (please upload Sponsorship Certificate, If not available then attach Self-Declaration letter stating that the sponsorship certificate will be given at the time of Interview/ Admission).
- Project Staff/ Institute Staff should submit No Objection Certificate (NOC)' a letter of recommendation from the Principal Investigator (PI)/ Head/Office-In-Charge at the time of application.
- Statement of Purpose (SoP), a sample of writing (if applicable), research proposal (if applicable), as a single file irrespective of the number of disciplines/ specialisations.

8 OBC-NC candidates may note that the limit of annual income is Rs. 8 lakhs for determining the creamy layer among Other Backward Classes (OBCs) candidates.

The OBC-NC certificate issued for the financial year 2026-27 by the Competent Authority in the prescribed format must be uploaded in the ONLINE application form and submitted at the time of admission.

The OBC reservation update Information is available in the public domain https://acad.iitb.ac.in/admissions/research under OBC Reservation Update.

9 Economically Weaker Sections(EWS) candidates may note that the limit of annual income is Rs. 8 lakhs for determining the eligibility for benefit under Economically Weaker Sections(EWS) reservation.

The EWS certificate issued by the Competent Authority in the prescribed format must be uploaded in the ONLINE application form and submitted at the time of admission.
The EWS reservation update Information is available in the public domain https://acad.iitb.ac.in/admissions/research under EWS Reservation Update.

10 PwD candidates will be given extra time, as per the government of India rules on request by the candidate. Such requests need to be addressed to Head of the concerned academic units through email/hard copy well in advance.

11 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.

12 You should check the Institute website for results / important announcements.

13 You should check emails sent to the email address provided in your application for all important communications and announcements.

14 Merely fulfilling eligibility criteria doesn't entitle a candidate to be called for the test and/or interview. Admission is based on GATE/Written test/Interview performance in addition to general eligibility criterion, the applicants must also satisfy the eligibility criteria specified for the respective Departments/ Centres / Schools / Interdisciplinary Groups.

15 Candidates, if called for written test/interview should show/ bring with them (i) Photo ID Card, (ii) Printed copy of the application submitted online, (iii) Thesis / dissertation / report / publications (iv) copy of certificates and mark-sheets.

16 Candidates having degree from foreign universities should submit equivalence certificate from Association of Indian Universities (AIU), New Delhi for qualifying Exam and proof of having First class or 60% (55% for SC/ST/PwD) marks or equivalent in qualifying examination.

17 Read the Frequently Asked Questions (FAQ) given on Institute website https://acad.iitb.ac.in/admissions/research for more details.

18 Contact Details for - Ph.D. - phd_unit5@iitb.ac.in

19 Students must submit self-attested copies of his/her qualifying degree certificate & final transcripts on or before **31th August, 2026 (admitted in Autumn Semester)/January 29, 2027(admitted in Spring Semester),** failing which admission will stand cancelled.

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II) Tentative Schedule of Ph.D. Application form throughout the year

- as available on the webpage https://acad.iitb.ac.in/admissions/research

(A) Important Dates: {AUTUMN SEMESTER}

(B) Important Dates: {SPRING SEMESTER}

Results will be declared on IIT website: https://acad.iitb.ac.in/admissions/research

The dates given are tentative. Any changes in the dates will be indicated on the website.

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A) GENERAL

A.1) THE INSTITUTE

The Indian Institute of Technology Bombay (IIT Bombay) is one of the higher Institutes of Technology in the country set up with the objectives of making available facilities for higher education, research and training in various fields of Science and Technology. The Institute was established in 1958. It 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.), M.S. By Research and Doctoral (Ph.D.) programmes are offered at IIT Bombay on the Institute website https://acad.iitb.ac.in/admissions/research

The listing of all the Masters' programmes and Ph.D. programmes offered in various academic units are given below,

Programmes	Discipline [Academic Unit : Department, Centre, Interdisciplinary Group]
M.Tech./M.Tech.+ Ph.D. (Dual Degree)	Aerospace Engineering, Biomedical Engineering, Chemical Engineering, Civil Engineering, Computer Science & Engineering, Earth Sciences, Electrical Engineering, Energy Systems Engineering, Environmental Science & Engineering, Geoinformatics and Natural Resources Engineering, Industrial Engineering & Operations Research, Mechanical Engineering, Metallurgical Engineering & Materials Science,Materials, Manufacturing and Modeling, Systems and Control Engineering, Technology and Development, Educational Technology, Centre for Climate Studies
M.Des. and M.Des. by Research Programmes	Industrial Design Centre
MBA	Shailesh J. Mehta School of Management
MBA (Executive)	Shailesh J. Mehta School of Management
M.Sc.-Ph.D. (Dual Degree) in Energy	Energy Science and Engineering
MPP	Centre for Policy Studies
M.S. by Research	Computer Science & Engineering, Data Science and Artificial Intelligence (CMINDS), Healthcare Informatics (KCDH)
MA+Ph.D. (Dual Degree) in Philosophy	Humanities & Social Sciences
Master of Arts by Research (MA.Res.)	Humanities & Social Sciences
Master in Development Practice (MDP)	Centre for Technology Alternatives for Rural Areas
Ph.D	Aerospace Engineering,Biosciences and Bioengineering, Chemical Engineering, Chemistry, Civil Engineering, Climate Studies, Computer Science and Engineering, Industrial Design Centre, Earth Sciences, Educational Technology, Electrical Engineering, Energy Science & Engineering, Environmental Science and Engineering, Economics,Geoinformatics and Natural Resources Engineering Humanities and Social Sciences, Industrial Engineering & Operations Research, Management, Mathematics, Mechanical Engineering, Metallurgical Engineering and Materials Science, Collaborative Research on Science and Technology - (erstwhile CRNTS). Physic, Policy Studies, Systems & Control Engineering, Technology and Development, Urban Science & Engineering, Digital Health, Machine Intelligence and Data Science,Desai Sethi School of Entrepreneurship, Center for Defence Technology Innovations and Strategies, Centre for Traditional Indian Knowledge and Skills, Medical Technology Research and Innovation Centre. Motilal Oswal Centre for Capital Markets, **Centre for Semiconductor Technologies (SemiX)]**
IIT Bombay – Tohoku University (Japan) Double	Artificial Intelligence & Machine Learning, Digital Health, Disaster

Doctoral Degree Programme (IITB–TU DDDP **- New Programme from AY 2026-27**	Mitigation, Energy & Sustainability, Materials Science, Quantum Computing, Robotics, Semiconductors, Thermals & Fluids, and Transportation.

The Institute on an average admits 1751 candidates for the Undergraduate programmes and 2007 candidates for different Postgraduate and Doctoral programmes every year. Students from Bangladesh, Egypt, Ethiopia, Fiji, Iran, Iraq, Pakistan, Jordan, Mauritius, Malaysia, Nepal, Palestine, Sri Lanka, Vietnam and Yemen are also undergoing training in various programmes. In addition to these academic programmes, the Dean (Educational Outreach) 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 Dean (Educational Outreach).

A.2) RESEARCH FACILITIES

All the academic units 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, standards specifications and other literature in print and electronic format.The Library now holds more than 5 lakh books and bound volumes, 20,000 e-books, and subscriptions to more than 20,000 current journals in the domains of science, engineering, humanities and social sciences, management, and associated fields. More than 30 databases, including Bloomberg terminal, financial, bibliographical, and citation databases, are also subscribed by the Central Library. Additionally, the Central Library offers users access to use research-supporting technologies like grammarly, overleaf, Turnitin, Drillbit plagiarism detection tools, and provides access to millions of electronic theses.

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 18 hostels for students. Each hostel is an independent entity with its own mess facilities, recreation areas, etc. 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) 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, Environmental Science and Engineering Department, Economics, 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, Desai Sethi School of Entrepreneurship.

A.5) ELIGIBILITY CRITERION FOR PH.D. ADMISSION

A.5.1) General eligibility criterion for Admission in all academic units : Departments, Centres, Schools and Interdisciplinary Groups:

Qualifying Degree:

1a. Master’s or equivalent degree in Engineering/Technology

1b. M.B.A (with B.Tech./ B.E. or equivalent degree)

2a. Bachelor’s degree in Engineering/ Technology/ Medicine (4 year degree)

2b. Bachelor degree in Science (BS) (4 year degree)

3. Master’s or equivalent degree in science

4. Master's or equivalent degree in Arts/ Commerce (or allied subjects)

For qualifying degree listed under (2), (3) & (4), candidates must also fulfil ONE of the following additional requirements:

a) a valid GATE score or JEST score (for Physics dept. and Department of Biosciences and Bioengineering only).

b) Selected through National Eligibility Test – UGC NET including lectureship (Assistant Professorship) and Ph.D.

c) Selected through a National level examination conducted by MoE or its agencies / Institutions such as UGC/ IIT/ IISc./ IIIT etc.

(d) Selected provisionally for the DST-INSPIRE Fellowship (provisional award letter to be produced)

e) Minimum of TWO years of professional experience (acquired after obtaining the qualifying degree and completed before the starting of the semester in which admission is sought) OR with UGC-NET (Ph.D. Only).

Marks / CGPA / CPI requirement in Qualifying Degrees (listed above):

For GN/EWS/OBC (NC) category

(a) a minimum of 60% marks in aggregate, OR

(b) a First Class as specified by the University, OR

(c) a minimum Cumulative Grade Point Average (CGPA) / Cumulative Performance Index (CPI) of 6.0 on the scale of 0-10, OR

(d) an equivalent to 6.0 on other corresponding proportional requirements when the scales are other than 0-10.

(e) For Master's or equivalent degree in Arts or equivalent degree in Humanities and Social Sciences subjects, a minimum of 55% marks will be considered for admission to the Ph.D. programmes offered ONLY by Department of Humanities & Social Sciences.

For SC/ST/PwD category

(f) a minimum of 55% marks in aggregate, OR

(g) a First Class as specified by the University, OR

(h) a minimum Cumulative Grade Point Average (CGPA) / Cumulative Performance Index (CPI) of 5.5 on the scale of 0-10, OR

(i) an equivalent to 5.5 on other corresponding proportional requirements when the scales are other than 0-10.

(j) For master's or equivalent degree in Arts or equivalent degree in Humanities and Social Sciences subjects, a minimum of 50% marks will be considered for admission to the Ph.D. programmes offered ONLY by Department of Humanities & Social Sciences

A.5.2) – For TA/RA category,

All Bachelor's degree undergraduate course leading to a Bachelor's, Integrated Master's or Bachelor-Master Dual Degree in Engineering, Sciences or Architecture offered by IITs (admitted through JEE) having a CGPA/CPI score of 8.00 (on the scale of 10) and above from an Indian Institute of Technology are exempted from the requirement of a valid GATE score for the consideration of General Eligibility Requirement for admission.

A.5.2a) – For TAP/RAP category,

All Bachelor's degree undergraduate course leading to a Bachelor's, Integrated Master's or Bachelor-Master Dual Degree in Engineering, Sciences or Architecture offered by IITs (admitted through JEE) having a CGPA/ CPI score of 8.00 (on the scale of 10) and above from an Indian Institute of Technology or any of the CFTIs are exempted from the requirement of a valid GATE score for the consideration of General Eligibility

In addition to general eligibility criterion, the applicants must also satisfy the eligibility criteria specified for the respective Departments / Centres / Schools / Interdisciplinary Groups.

Over and above the general eligibility criteria for admission, candidates need to satisfy additional criteria for financial support / fellowship, as specified under specific admission categories [Please refer section 6.0].

The final selection process to Ph.D. programme to any Departments / Centres / Schools / Interdisciplinary Groups at IIT Bombay will be through written test and/or interview as specified by individual Department / Centre / Schools / Interdisciplinary Groups.

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A.6) APPLICATION CATEGORIES AND FINANCIAL SUPPORT

A.6.1) Teaching Assistantship (TA) [Financial support as per MoE norm]

A candidate, applying for the Ph.D. Programme, at IIT Bombay will be eligible for the financial support under the TA category subject to the fulfillment of General eligibility criterion as specified in A.5 except point No. A.5.1 (e).

All Bachelor's degree undergraduate course leading to a Bachelor's, Integrated Master's or Bachelor-Master Dual Degree in Engineering, Sciences or Architecture offered by IITs (admitted through JEE) having a CGPA/CPI score of 8.00 (on the scale of 10) and above from an Indian Institute of Technology are exempted from the requirement of a valid GATE score for the consideration of General Eligibility Requirement for admission.

The assistantship is payable for a maximum duration of 5 years or up to the thesis submission, whichever is earlier. The monthly rate of assistantship is Rs. 37,000/- for the first 2 years and enhanced rate of Rs. 42,000/- for the remaining period.

The continuation of assistantship under TA category will be subject to serving as a teaching assistant in a course / laboratory for 8 hours per week as assigned by the concerned academic unit as well as satisfactory academic performance. The assistantship will be paid on the basis of monthly attendance.

As per MoE directives, the employees on the rolls (with or without pay) of any organization are not eligible for admission under this category.

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A.6.2) Research Assistantship (RA)

A candidate, applying for the Ph.D. Programme, at IIT Bombay will be eligible for the financial support under the RA category subject to the fulfillment of General eligibility criterion as specified in A.5 except point No. A.5.1 (e).

All Bachelor's degree undergraduate course leading to a Bachelor's, Integrated Master's or Bachelor-Master Dual Degree in Engineering, Sciences or Architecture offered by IITs (admitted through JEE) having a CGPA/CPI score of 8.00 (on the scale of 10) and above from an Indian Institute of Technology are exempted from the requirement of a valid GATE score for the consideration of General Eligibility Requirement for admission.

The assistantship is payable for a maximum duration of 5 years or up to the thesis submission, whichever is earlier. The monthly rate of assistantship is Rs. 42,000/- for the first 2 years and enhanced rate of Rs.47,000/- for the remaining period.

The information of availability of RA seats will be available with / published by individual academic units.

Students admitted under RA category will have to look after the laboratories and also assist in teaching or research or other related academic work for about 20 hours per week as assigned by the concerned academic unit. Continuation of assistantship will remain subject to the satisfactory performance in assigned duties as well as satisfactory academic performance. The assistantship will be paid on the basis of monthly attendance.

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

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A.6.3) Teaching / Research Assistantship Through Project (TAP/RAP)

A candidate, applying for the Ph.D. Programme, at IIT Bombay will be eligible for the financial support under this category subject to the fulfillment of the General eligibility criterion as specified in A.5 except point No. A.5.1 (e).

The financial support under this category is provided from sponsored projects as per the norms approved by the sponsoring agency and IITB. In case a specified norm is not available, the same approved by MoE/DST will apply.

All Bachelor's degree undergraduate course leading to a Bachelor's, Integrated Master's or Bachelor-Master Dual Degree in Engineering, Sciences or Architecture offered by IITs (admitted through JEE) having a CGPA/ CPI score of 8.00 (on the scale of 10) and above from an Indian Institute of Technology or any of the CFTIs are exempted from the requirement of a valid GATE score for the consideration of General Eligibility.

The assistantship is payable for a maximum duration of 5 years or up to the thesis submission, whichever is earlier.

The information of availability of TAP/RAP seats will be available with / published by individual academic units.

The continuation of assistantship under TAP / RAP category will be subject to serving for the project as assigned by the concerned project investigator (s) as well as satisfactory academic performance.

The assistantship is paid from the office of Dean, IRCC.

As per MoE directives, the employees on the rolls (with or without pay) of any organization are not eligible for admission under this category.

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A.6.4) Fellowship Award (FA)

A candidate, applying for the Ph.D. Programme, at IIT Bombay will be eligible for the financial support under this category need to fulfill the General eligibility criterion as specified in A.5 except point No. A.5.1 (e).

The financial support under this category is provided by various Govt. / Semi Govt. schemes (CSIR, UGC, DAE,DST, DBT, NBHM, etc.) and some other organizations.

A valid Junior Research fellowship (JRF) award letter from the Govt. / Semi Govt. agencies (e.g. CSIR/UGC /DAE /DST/ DBT NBHM etc.) is required for the execution of this fellowship.

The amount and duration of the fellowship will be as specified by the awarding agency. The disbursement and continuation of the fellowship will be subject to as per the norms specified by the awarding agency or as specified by IIT Bombay for TA category, as deemed fit.

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A.6.5) Sponsored Candidate (SW)

A candidate, applying for the Ph.D. Programme, at IIT Bombay under this category need to fulfill the General eligibility criterion as specified in A.5.

They are not eligible for any financial support from the Institute (IIT Bombay) and are sponsored by their employers. They are expected to be released for full-time course work and research at the Institute for a minimum period of three years.

An appropriate sponsorship letter (Appendix C.1) should be submitted at the time of written test and/or interview. Students admitted under this category are not generally entitled for hostel accommodation on campus.

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A.6.6) Self-financed Indian Nationals (SF)

A candidate, applying for the Ph.D. Programme, at IIT Bombay under this category need to fulfill the General eligibility criterion as specified in A.5.

(a) Candidates admitted under SF category are not eligible for any financial support from the Institute (IIT Bombay) and are not entitled for hostel accommodation on campus.

(b) Candidate with the provisional DST-INSPIRE fellowship award letter may apply under Self-Finance (SF) category. After successful admission, if the candidate subsequently clears the final round of selection of DST-INSPIRE, s/he would be allowed to convert from the Self-Finance (SF) to Fellowship Award (FA) category.

(c) Self-financed Indian Nationals (SF), on study leave (SF)
Candidates who are working in an organization or released from the Governmental or educational Institutions on study leave for a period not less than three years for doing research work at IITB, can seek for admission under this category. Employer's Letter for Study Leave (Appendix C.2) should be produced at the time of joining, if selected.

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A.6.7) Self-Financed Foreign Nationals (FRN-SF)

A candidate, applying for the Ph.D. Programme, at IIT Bombay under this category need to fulfill the General eligibility criterion as specified in A.5.

Foreign Nationals applying under Self-financed (FRN-SF) category should visit the following link for Foreign Students on the website of the IIT Bombay International Relations Office: https://www.ir.iitb.ac.in/

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A.6.8) Foreign Nationals with Indian Council for Cultural Relations Award (ICCR)

A candidate, applying for the Ph.D. Programme, at IIT Bombay under this category need to fulfill the General eligibility criterion as specified in A.5 .

These students are sponsored by their Governments and awarded scholarship by them. They should apply for admission through Indian Embassy in their country.

Foreign Nationals applying under Self-financed (FRN-SF) category should visit the following link for Foreign Students on the website of the IIT Bombay International Relations Office: https://www.ir.iitb.ac.in/

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A.6.9) Institute Staff of IIT Bombay (IS)

This category is only for the 'permanent' persons employed as Institute Staff at IIT Bombay.

A candidate, applying for the Ph.D. Programme, at IIT Bombay under this category need to fulfill the General eligibility criterion as specified in A.5.

(i) The candidate should have been employed as Institute Staff for at least 2-years (before the starting of the semester in which admission is sought) AND after completion of qualifying degree. The candidate must produce a letter of work experience at the time of application.

(ii) The concerned academic unit will shortlist the eligible candidates. Admission will be on the basis of written test and interview as applicable to the concerned programme. The candidates need to submit NOC, from the Head/Office-In-Charge, at the time of application.

(iii) If an employee admitted under this category is not serving as an Institute Staff while pursuing the degree, then he/she cannot continue under the IS category but may seek for changing his/her category to self-financed (SF) category through proper channel.

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A.6.10) Project Staff (PS)

A candidate, applying for the Ph.D. Programme, at IIT Bombay under this category need to fulfill the the General eligibility criterion as specified in A.5.

(i) Candidate who are employed at IIT Bombay (IITB) in a sponsored project undertaken by the Institution (IITB) can seek for admission under this category provided the duration of the project, in which the candidate is employed, is 3 years or more at the time of admission. In addition, the candidates should have completed six months of service (before the starting of the semester in which admission is sought) in a sponsored project at the Institute (IITB).
(ii) In case the candidate has B.Tech./ B.S./ B.E./ M.Sc. or equivalent degree as the qualifying degree and is without a valid GATE score, the six months project experience may be counted as part of the two year mandatory professional work experience (as per the requisite general eligibility criteria).

(iii) The students admitted in Project Staff (PS) category will continue to work on the sponsored project and carry out the tasks as assigned by the Principal Investigator of the concerned project and undertake the Ph.D. topic under the same Project Investigator(s).

The candidates should upload 'No Objection Certificate (NOC)' a letter of recommendation from the Principal Investigator (PI) of the project where he/she is working as 'Project Staff' at the time of filling the application is given in **Appendix C-5**.

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A.6.11) External (EX)

A candidate, applying for the Ph.D. Programme, at IIT Bombay under this category need to fulfill the General eligibility criterion as specified in A.5.

The candidates employed in recognized R&D organizations, well-equipped scientific institutions, laboratories, and industrial organizations engaged in research based activities, and desirous of pursuing Ph.D. programme while in employment may apply for admission as external candidates.

These candidates must have a Supervisor (internal) from the Institute (IITB) and an external supervisor from their parent organization where they will be doing the research work. The admissions are based on the following norms:

The competence of these candidates will be assessed along with the regular candidates. After joining, the rules and regulations as specified by the Institution (IITB) for regular candidates with regard to academic performance will remain applicable for candidates under EX category also.

The candidate should submit, a Sponsorship Certificate (Appendix-C.3) from the organization, in which s/he is employed, at the time of application giving an undertaking that s/he would be released from the normal duties to fulfil the course-work requirement (and qualifier examination, if applicable). The certificate should also provide details of facilities relevant to the research programme and available to the candidate.

The candidate has to complete the course-work (and qualifier examination, if applicable) immediately after joining the programme within a period of one to two semesters. Depending on the student's background and the programme requirements, an additional semester may be needed to complete the coursework/qualifier examination. After fulfilling the course-work (and qualifier examination, if applicable) at the Institute, these candidates will be allowed to register for Ph.D.

To promote interaction between the internal and external supervisors, regular meetings between them should be arranged at least once in a year in the Institute or in the sponsoring organization.
Persons working in colleges/universities are not eligible under this category and rather apply under college teacher (CT) category.

At the time of joining the programme, the selected candidate will have to produce the “Relieving Certificate” from his / her employer that s/he has been fully relieved from the normal duties to complete the course (and qualifier examination, if applicable) at IITBombay.

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A.6.12) College Teacher (CT)

A candidate, applying for the Ph.D. Programme, at IIT Bombay under this category need to fulfill the General eligibility criterion as specified in A.5 .

Candidates employed as faculty members in Colleges and Universities and desirous of pursuing Ph.D. Programme, while in employment and without availing study leave may apply for admission under this category.

These candidates must have a Supervisor (internal) from the Institute (IITB) and an external supervisor from their parent organization where they will be doing the research work. The appointment of external supervisor is optional based on recommendations of the supervisor and the respective DPGC. The admissions are based on the following norms:

The competence of these candidates will be assessed along with the regular candidates. After joining, the rules and regulations as specified by the Institution (IITB) for regular candidates with regard to academic performance will remain applicable for candidates under CT category also.

The candidate should submit, a No-Objection Certificate (Appendix-C.4) from the College / University, in which s/he is employed, at the time of application giving an undertaking that s/he would be released from the normal duties to fulfil the course-work requirement (and qualifier examination, if applicable). The certificate should also provide details of facilities relevant to the research programme and available to the candidate.

The candidate has to complete the course-work (and qualifier examination, if applicable) immediately after joining the programme within a period of one to two semesters. Depending on the student's background and the programme requirements, an additional semester may be needed to complete the coursework/qualifier examination. After fulfilling the course-work (and qualifier examination, if applicable) at the Institute, these candidates will be allowed to register for Ph.D.

Candidates admitted under CT category is treated on par with SF category as far as payment of fees and deposits are concerned.

Place for research will be treated as IIT Bombay even though candidate may be carrying out part of the work at their Institute. These candidates are required to be available with the supervisor (internal) for interaction during weekends, holidays and vacations, as applicable.

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A.7) ADMISSION PROCEDURE

Admission is offered on the basis of an interview held usually a month before the commencement of the semester for which admission is sought. The interview may be supplemented by a written test, if necessary. Merely satisfying the general eligibility criterion as well as criterion set for each admission category is no guarantee for being called for test/interview. Depending on the number of applications received and considering the constraints of time and other resources for conducting Written Test and Interview, the Academic Units may put additional academic performance based shortlisting criterion.

Candidates called for the written Test/Interview under Teaching Assistantship (TA) category, only candidates belonging to SC/ST and PwD categories will be paid single second class return railway fare by the shortest route (as per rules) from their place of residence to the Institute. They have to produce evidence (Original/Photocopy of Railway Ticket) in support of their claim. A candidate called for more than one discipline, can submit only one claim.

A.8) PAYMENT OF FEES AND DEPOSITS

Various fees and deposits for the programme **- as available on the following webpage**
https://acad.iitb.ac.in/admissions/fees-structure

A.9) REGISTRATION FOR THE PH.D. DEGREE

After a candidate has been admitted to the Institute, he/she has to make an application on a prescribed form for registration for the Ph.D. degree. This application will be considered by the Departmental Postgraduate 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).

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A.10) CONFIRMATION OF REGISTRATION

All Ph.D. Admissions are provisional until the “Confirmation of Registration” is completed. This confirmation takes place after six months to a year after admission, and only if academic performance criterion set by the department 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 to confirmation of registration. Failure to meet satisfactory performance criterion may lead to termination of studentship.
Ref.: Rules & Regulations for Ph.D. Programme,
http:Computer//www.iitb.ac.in/academichome/rules.jsp

A.11) 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 (3 years for external candidates). The thesis is examined by two/three referees from outside the Institute. The Senate examines the reports of the referees and on acceptance of the thesis, appoints a Board of Examiners to conduct a *viva-voce* examination at which a candidate is required to defend the 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.

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B) INFORMATION ON DEPARTMENTS, CENTRES, SCHOOLS AND INTERDISCIPLINARY GROUPS

In addition to the eligibility requirements as given in A.5, the candidate should also fulfill the requirements for admission in the disciplines and specialisations of their choice.

B.1) AEROSPACE ENGINEERING (AE)
[Department of Aerospace Engineering]

ELIGIBILITY FOR ADMISSION

First Class or 60% marks (55% marks for SC/ST), as specified in the General Eligibility Criterion, in the qualifying degree with any one of the following :

(i) M.Tech./M.E. or equivalent degree in Aerospace Engineering OR in other branches of engineering relevant to the research areas in the department.

(ii) B.Tech./B.E. or equivalent degree in Aerospace Engineering OR in other branches of engineering Computer relevant to the research areas in the department,

OR

M.Sc. OR equivalent degree in Mathematics OR Physics OR in other specializations relevant to the research areas in the department.

Candidates are advised to follow the web page -https://www.aero.iitb.ac.in/home/academics/admission for most admissions-related updates, instructions, and information about the faculty considering guiding new students. Candidates are free to reach out to the listed faculty members if they need to learn more about the available research topics and the background expected for each.

Note: Criteria for awarding Teaching Assistantship and other application categories are as per the guidelines mentioned in section A.6 of this Brochure.

RESEARCH AREAS

Aerodynamics: Experimental Aerodynamics, Experimental Hypersonic Aerothermodynamics, Shock Waves and their applications, Computational Hypersonic Aerothermodynamics, Computational Fluid Dynamics, Computational Electromagnetics, Computation of incompressible multi-phase flow, Vortex and particle methods, Smoothed Particle Hydrodynamics, Vortex flows, Aeroacoustics, Aircraft Design, Air Transportation, Evolutionary Optimization Techniques, Turbulence modeling and applications, Computational studies of scramjet intakes, Supersonic mixing, Computation of high enthalpy flows, plasma-assisted flow control, Thermoacoustics, Morphing Aircraft, Unmanned Aerial Vehicles, and Lighter Than Air Systems, Helicopter aerodynamics.

Dynamics and Control: Flight mechanics, guidance, trajectory optimization, navigation, state and parameter estimation, tracking, and control of launch vehicles, missiles, aircraft, manned and unmanned aerial vehicles, mini aerial vehicles (MAVs), satellites, multi-agent systems, nonlinear adaptive and robust flight control, integrated navigation systems, air-breathing and gas turbine engine control, swarm, path planning, and formation flying of aerial vehicles, hardware–in-loop-simulation, co-operative missions for MAVs.

Aerospace Propulsion: Aircraft and spacecraft Propulsion, Experimental and numerical studies on detonations, Combustion instabilities, Development of new techniques for emission reduction from combustion systems, Heat Transfer, CFD of propulsive systems, Aerodynamic design and performance analysis of axial flow turbomachines, Flow control of turbomachines and internal duct flows, Computational Hypersonic aerothermodynamics, Turbulence modeling, and applications, Computational studies of scramjet engines, Supersonic mixing and combustion, Computational studies of electric and plasma-based propulsion systems, plasma-assisted combustion and flow control, Thermoacoustics, Fuel atomization and sprays, Optical diagnostics of combustion systems.

Aerospace Structures: Structural Health Monitoring, Machine Learning Assisted Uncertainty Quantification, Defects and Damages in Composites, Additive Manufacturing, Wave Propagation in Structures, Aeroelasticity, Aerothermoelasticity, Aeroservoelasticity, Reduced-

order Modeling, Structural Dynamics & Stability, Multidisciplinary Optimization, Mechanics of Materials, Computational Materials Science, Experimental Mechanics, Continuum and Computational Mechanics, Electromagnetic Interactions with Solids, Biomechanics, Multiscale modeling of materials, Fracture and Fatigue in Materials.

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B.2) BIOSCIENCES AND BIOENGINEERING (BB)
[Department of Biosciences and Bioengineering]

The Department of Biosciences and Bioengineering comprises Biosciences (BS) and Biomedical Engineering (BME) as core academic groups. Eligibility criteria and research areas are mentioned below and these are applicable for both BS and BME projects. Under item No. 10 (b) of the Application Form, students will now be required to indicate their project choices in order of priority directly.

B 2.1. BIOSCIENCES (BS) and BIOMEDICAL ENGINEERING (BME)

ELIGIBILITY FOR ADMISSION

(i) M.Tech./M. E. or equivalent degree in Biotechnology, Biomedical Engineering, Civil Engineering, Applied/Computational Mathematics, Chemical Engineering, Computer Science / Engineering, Electrical Engineering, Electronics / Telecommunications Engineering, Instrumentation Engineering, Mechanical Engineering, Engineering Physics, Optics / Optoelectronics / Photonics, Robotics, Robotics Engineering, Automation and Robotics, Mechatronics, Data Science and Artificial Intelligence, Data Science and Engineering, Artificial Intelligence, Engineering Sciences.
(ii) M.Pharm. OR MBBS with MD/MS, MVSc, MDS, MPTh, MOTh, MS/MD Health sciences AYUSH.

(iii) B.Tech./B.E. or equivalent degree in Biotechnology, Biomedical Engineering, Civil Engineering, Applied/Computational Mathematics,Chemical Engineering, Computer Science / Engineering, Electrical Engineering, Electronics / Telecommunications Engineering, Instrumentation Engineering, Mechanical Engineering, Engineering Physics, Optics / Optoelectronics / Photonics, Robotics, Robotics Engineering, Automation and Robotics, Mechatronics, Data Science and Artificial Intelligence, Data Science and Engineering, Artificial Intelligence, Engineering Sciences.

(iv) M.Sc. or 5-year Integrated B.S.-M.S. program or equivalent degree in Life Sciences, Biochemistry, Biophysics, Biotechnology, Ceramics, Chemistry, Electronics, Ergonomics, Material Science, Mathematics, Molecular Biology, Physics, Bioinformatics, Data Science, Physiology, Cognitive Science, Neuroscience, Photonics / Optics / Optoelectronics, Applied/Computational Mathematics, Psychology, Behavioural Science

(v) Health Sciences (such as MBBS (Medicine) / BDS (Dental), B.Pharm/B.V.Sc., B.P.Th., B.O.Th., B.ASLP, Pharma D (duration 4 years or more). Candidates with these backgrounds and degrees, should have qualified one of the following: All India level postgraduate entrance examinations for corresponding disciplines such as INI_CET/NEET-PG/NEET MDS/JIPMER/PGI Chandigarh/AFMC-Pune/DNB Part I/AIIPMR for MBBS/ BDS, GPAT/ All India level selection examination for B.Pharm., All India level postgraduate entrance examination such as AIIPMR for M.V.Sc., M.P.Th., M.O.Th. and M.ASLP, GATE examination for all such health science background where applicable. Eligibility/rank certificates for all such All-India level entrance examinations are required. The candidate should have qualified in the entrance exam (as per the qualification criterion of the respective exam for that exam year and category), and the score obtained should be valid (as per the duration of validity for the respective exam) at the time of admission to the Ph.D. program.

Candidates with qualifying degrees in [iii and iv] must fulfill one of the following: a valid GATE score (for TA/TAP/RA/RAP), a valid CSIR/UGC/DBT JRF, or a valid ICMR JRF not linked to ICMR project or any other fellowship that will provide scholarship for five years.
For candidates with qualifying degrees as in (i) to (v), and applying under CT, EX, IS, PS, or SW category, experience as specified earlier in A.5 and A.6 is mandatory.

Note: Criteria for awarding Teaching Assistantship and other application categories are as per the guidelines mentioned in section A.6 of this Brochure.

RESEARCH AREAS

BIOSCIENCES (BS)
(A) Biophysics and Computational Biology: Protein crystallography, NMR-based structural biology, and single particle cryo-EM, cryo-ET; Bioinformatics and computational biology; Physics of biological systems and computational Modeling of biomolecules; Dynamics of cytoskeletal filaments and chromatin remodeling; Physical properties of the extracellular matrix; Protein folding/misfolding, aggregation and neurodegeneration; Time-resolved techniques; Cellular Biophysics, cellular biophysics in microfluidic systems.

(B) Biochemistry: Molecular enzymology; Microbial metabolism and regulation; Aromatic hydrocarbon metabolism and genetic engineering; Molecular mechanisms of DNA replication, repair, and packaging in double-stranded DNA viruses

(C) Microbial Biology: Biology of model and pathogenic fungi, viral assemblies, bacterial pathogenesis, host-pathogen interactions, molecular parasitology.

(D) Cell Biology: Microtubule dynamics; Bacterial cell division; Chromosomal and extrachromosomal segregation in fungi; Neurobiology; Motor proteins

(E) Immunology: Tumor Immunology; Cancer biomarker.

(F) Genetics and Molecular Biology: Functional Genomics; Epigenetic Regulation; Fungal Molecular Genetics.

(G) Proteomics, System Biology, and Biomarkers of infectious diseases

(H) Developmental Biology: Early vertebrate development using zebrafish as a model system, cell movements during gastrulation, Motor neuron disease biology.

(I) Breast cancer, Cancer Biomarkers, Oncogenic signalling, disease modelling.

(J) Vesicular trafficking, G-protein coupled receptor (GPCR) signalling, cilia biology, and ciliopathies

BIOMEDICAL ENGINEERING (BME)
(A) Sensors and Devices: Bioinstrumentation for diagnostics and therapeutics; Early detection of carcinoma and tropical diseases; bio MEMS devices; Fluorescent Biosensors; Nanoengineered Sensors; Layer by Layer Self Assembly; Microfluidics for biomedical applications; Robotics for Healthcare applications and devices; IoT for healthcare applications and devices.

(B) Application of AI/ML in health care applications and devices.
(C) Biomaterials, Drug delivery, and tissue engineering, Nanobiotechnology, Design of scaffolds for tissue engineering, Controlled Release technologies, Neuroprosthetic devices, including aids for the ~~handicapped~~ people with disabilities, Signal processing, Telemedicine, and knowledge-based systems. Microfabrication for immunotherapy

(D) Computational physiology, Cardiac electrophysiology, muscle mechanics, Computational Neurophysiology, Respiratory system modelling

(E) Movement Neuroscience, Rehabilitation technology; Neural signal processing, Neuroimaging, Neuromodulation, Neurofeedback. Human motor control, motor learning, biomechanics of human movement, non-invasive brain stimulation, assistive devices, geriatric (aging) and neurological rehabilitation, Balance, gait and falls research, Cognitive control of movement.

(F) Biomedical Optics: Cerebral blood flow imaging in humans, Laser and diffuse speckle imaging, Microscopy, small animal imaging, functional near-infrared spectroscopy in humans and animals, Biomedical instrumentation (system development), imaging and other computational aspects, towards commercialization of imaging systems.

(G) Computational Biology and Bioinformatics: Bioinformatics and computational biology approach to study protein-protein, protein-drug interactions, etc., in cancer, and neurodegenerative and endocrine diseases.

(H) Biomedical Informatics and Physiology: Healthcare process modeling and analysis, Temporal-focused phenotypes, Mechanistic physiologic models for clinical data, Healthcare data-driven mathematical models, phenotyping patient health evolution in intensive care setting, nonlinear time-series analysis, spectral analysis.

(I) Optical and Ultrasound Imaging and Instrumentation: Low-cost, portable Optoacoustic tomography, Optoacoustic microscopy, Ultrasound imaging, Multi-modal biomedical device design, Pre-clinical small-animal imaging, Wearable/smartphone-based point-of-care optoacoustic devices, Image reconstruction, Deep learning/Machine learning in optoacoustic imaging, clinical application areas in breast cancer screening, rheumatoid arthritis, psoriasis, diabetes.

(J)Computational Biomechanics for Healthcare: tissue biomechanics, inverse/optimization problem for biomechanical characterization, physics-informed machine learning for healthcare/biomedical applications (e.g., Cardiovascular risk assessment, and others), ultrasound and MR elastography (theoretical + experimental research), biomedical image processing.

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B.3) CHEMICAL ENGINEERING (CH)
[Department of Chemical Engineering]

ELIGIBILITY FOR ADMISSION

First Class or 60% marks (55% marks for SC/ST), as specified in the General Eligibility Criterion, in the qualifying degree with any one of the following :

i. M.Tech./M.E. or equivalent degree in Chemical Engineering OR in other branches of engineering with an academic background relevant with the research areas in the department.

ii. B.Tech./B.E. or equivalent degree in Chemical Engineering OR in other branches of engineering with an academic background relevant with the research areas in the department.

OR

M.Sc. or equivalent degree in disciplines consistent with the research areas of the department.

Candidates applying to the Department of Chemical Engineering, please visit the following link for information : http://www.che.iitb.ac.in/online/education/phd/phd-admission-information.

Note: Criteria for awarding Teaching Assistantship and other application categories are as per the guidelines mentioned in section A.6 of this Brochure.

RESEARCH AREAS

Detailed information is provided in the department website:
https://www.che.iitb.ac.in/research-topics

Biological Systems Engineering
- Understanding Fundamental Biology
- Biomanufacturing/Bioprocess engineering
- Biomedical engineering

 Diseases and Health

Chemical and Electrochemical Reaction Engineering
 Catalysis and Catalytic reaction engineering
 Carbon capture and utilization
 Electrochemical Systems
 Process intensification
 Energy Storage and Conversion Systems
 Multifunctional and multiphase Reactors
 Sustainable chemical processing

Fluid and Granular Mechanics
 Multiphase flows
 Turbulent gas-solid, gas-liquid and polymeric solutions
 Electrohydrodynamics
 Hydrodynamic stability & interfacial waves
 Granular mechanics & particulate flows
 Microfluidics
 Self-assembly
 Advanced CFD techniques: LBM, VoF, BIM, DNS, LES

Process Systems Engineering
 Control Relevant Modeling
 Nonlinear State Estimation and Model Predictive Control
 Artificial intelligence and Machine Learning (AI-ML)
 Flowsheet-wide Simulation and Optimization
 Process Integration and Intensification
 Life cycle assessment
 Optimal sensor network

Soft Matter Engineering
 Sustainability and Climate
 Drug delivery, medical diagnostic devices
 Design of Highly Functional Materials
 Colloids and Interface Engineering
 Modelling and simulations

Thermodynamics and Molecular Simulations
 Materials Design & Discovery
 Design and development of environment friendly materials and solvents
 Molecular level insights in complex materials
 Development of efficient simulation techniques
 Bio-inspired systems
 Gas Adsorption in Porous Materials
 Enhanced Oil recovery
 Interfacial and Confined Systems

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B.4) CHEMISTRY (CH)
[Department of Chemistry]

First Class or 60% marks (55% marks for SC/ST), as specified in the General Eligibility Criterion, in the qualifying degree with any one of the following :

M.Sc. or equivalent degree in Chemistry and allied Areas as (but not limited to) / Physics / Biochemistry / Biotechnology / Material Science etc. Additional disciplines and degrees may be considered based on the requirements from the faculty for a particular project " (link for the same : https://www.chem.iitb.ac.in/phdadmissions_2026-27_autumn/#topics)

Note: Criteria for awarding Teaching Assistantship and other application categories are as per the guidelines mentioned in section A.6 of this Brochure.

RESEARCH AREAS

- Biophysical Chemistry
- Coordination Chemistry
- Bio-inorganic Chemistry
- Organometallic Chemistry
- Bio-organic Chemistry
- Chemistry of Natural Products
- Synthetic Organic Chemistry
- Photochemistry and Spectroscopy
- Polymer Chemistry
- Thermodynamics
- Electrochemistry
- Solid state Chemistry and Physics
- Catalysis
- Theoretical and Computational Chemistry

Please visit the following web page regularly for all relevant information and announcements, https://www.chem.iitb.ac.in/phdadmissions/

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B.5) CIVIL ENGINEERING (CE)
[Department of Civil Engineering]

ELIGIBILITY FOR ADMISSION

First Class or 60% marks (55% marks for SC/ST), as specified in the General Eligibility Criterion, in the qualifying degree with any one of the following :

i. M.Tech./M.E. or equivalent degree in Civil Engineering OR in disciplines consistent with the research areas of the department

OR

ii. B.Tech./B.E. or equivalent degree in Civil Engineering OR in disciplines consistent with the research areas of the department

OR

iii. M.Sc. or equivalent degree in disciplines consistent with the research areas of the department.

Candidates with qualification listed in (ii) or (iii) need to fulfil the additional requirements of minimum Valid GATE score of 700 (GN/EWS) out of 1000 (630 OBC-NC, 467 SC/ST/PwD) OR "minimum of 2 years of professional work experience from any reputed organization with proof".

The Institute reserves the right to call for interview only those candidates shortlisted on the basis of their qualification, academic background and requirements.

Note: Criteria for awarding Teaching Assistantship and other application categories are as per the guidelines mentioned in section A.6 of this Brochure.

Applicants are encouraged to visit department specific information available at:
https://www.civil.iitb.ac.in/phd-admission/

A candidate will be shortlisted for only ONE specialization in the order of their preference given in the application form.

RESEARCH AREAS

Fulfilling other eligibility criteria, applicant will be shortlisted only for any ONE of the following seven major research areas in Civil engineering

Transportation Systems Engineering (CE1)
Transportation Planning: Sustainable urban transportation planning, Travel survey design and analysis, Travel demand modelling, Travel behaviour and choice modelling, Transport system analysis and economic evaluation, Land use and transport planning models, Air travel demand modelling, Freight transport modelling, public transport planning and design, and Transport network modelling. Traffic Engineering: Traffic flow theory and capacity analysis, Traffic management, operations and control, Pedestrian flow modelling, Intelligent Transportation Systems, and traffic impact assessment and externalities. Highway Planning and Design: Optimal alignment design, Performance based geometric design, Road safety. Pavement Engineering: Characterization and performance tests of pavement materials, Recycled and warm mix asphalt mixes, Asphalt rheology, Constitutive modelling of pavement materials, Pavement maintenance, rehabilitation and management systems, and design and performance evaluation of concrete pavements. Next-generation pavements (pervious concrete, geopolymer, precast); Industrial and agricultural wastes in concrete pavements, Connected and Autonomous Mobility, AI-Driven Traffic Management, V2X and Cooperative ITS, Digital Twins for Smart Mobility.

Geotechnical Engineering (CE2)
Geotechnical earthquake engineering; Geoenvironmental engineering; Energy geotechnics; Computational geomechanics; Foundation engineering; Seismic hazard study; Liquefaction; Constitutive modelling of soil; Soil-structure interaction; Offshore geotechnical engineering; Pipeline geotechnics; Soil Characterization, Foundation for offshore structures, Bio-geo interface study; Earth dam problems; Rock Mechanics and tunnelling; Soil dynamics; Soil stabilization; Expansive soils; Earth retention structures; Slope stabilization; Ground improvement; Reinforced soil structures and geosynthetics; Physical modelling in geotechnics; Centrifuge modelling of geotechnical problems; Optimization techniques and environmental geotechnics; Landslides; GIS applications for geotechnical problems; Earthquake resistant design of geotechnical structures; Reliability analysis; Dynamic soil characterization; Landfills and waste containment engineering; Sea walls.

Water Resources Engineering (CE3)
a) Experimental Fluid Mechanics and Computational Fluid Dynamics Fluid flow investigation by experimental and numerical studies, Turbulent flows, Sedimentation and erosion problems, Fluid transients in closed conduits, Pipe network analysis; b) Groundwater Flow, Transport Process and Remediation-Groundwater movement and recharge, Seawater intrusion in coastal aquifers, Transport of pollutant in aquifers and aquifer remediation; c) Surface water Hydrology: River and lake hydrodynamics, Contaminant transport process, River basin and watershed scale modelling of hydrologic processes, Hydraulic structures; d) Floods and Droughts studies; e) Water Resource System and Optimization - Reservoir operation and management; f) Urban water management - Urban water supply, Storm water and wastewater management, Water quality modelling; g) Hydroinformatics- GIS and remote sensing applications in water resources, Use of Artificial Intelligence Techniques; h) Simulation-optimization for water resources environmental engineering problems; i) Climate change and Impact Studies - Detection and attribution of hydrologic change; Modelling of hydroclimatic extremes, Hydrologic statistics

Structural Engineering (CE4)
Computational Mechanics; Finite element techniques; Composite materials and mechanics; Reinforced and prestressed concrete structures; Steel structures; Strength, stability and dynamics of thin membranes; Plates and shells; Structural optimization; Structural resilience, Structural response to blast, impact and shock loading; Pressure vessels; Reliability analysis; Seismic vulnerability and fragility assessment of structures; Bridge engineering; Machine learning; Probabilistic design methods; Curved grid; Cable networks; Plastic analysis techniques; Structural dynamics; Earthquake engineering; Earthquake disaster management; Vibration control of structures; Wind effects on structures; Inverse problems and artificial intelligence applications; Offshore structures; Shell foundation; Structural health monitoring; Deployable structures and Metamaterials.

Ocean Engineering (CE5)
a) Physical modelling – Wave-Structure Interactions, floating body dynamics, offshore and maritime infrastructures design, nearshore dynamics, nonlinear waves and sediment transport;

(b) Numerical modelling - coastal processes, tidal hydrodynamics, pollutant dispersion in coastal waters, wave-current interactions, tsunami, storms, surges and extreme events, sea level rise, climate change impacts on met-ocean parameters, oil spill dispersions, coastal erosion, shoreline changes;
(c**)** AI/ML techniques - Application of statistical, stochastic and neural networks ana
lysis on ocean parameters;
(d) Remote Sensing and GIS - Application of RS and GIS for assessment of coastal vulnerability and nearshore processes.

Remote Sensing (CE6)
Development of methods and algorithms for digital analysis of Remotely Sensed Data, Thermal Remote Sensing, Microwave Remote Sensing, Applications of Remote Sensing for Vegetation, Water, Agricultural and Urban studies, Applications of Satellite Altimetry, Microwave Remote Sensing and GNSS reflectrometry for Hydrology and Cryosphere Studies; Remote Sensing Data Assimilation in Hydrology and Cryosphere; Unmanned Aerial Systems (UAS) in Civil Engineering and Agriculture; Geovisualization, GeoAI for Vegetation, Hydrology and Cryosphere Studies; Digital Twins Development and Applications in Civil Engineering.

Construction Technology and Management (CE7)
Building materials, Concrete technology; Construction management; Infrastructure project management, Urban Informatics, Social and physical infrastructure planning, Sustainable Construction Management, AI/ML in Construction, Digitalisation in construction, Heritage Construction.

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B.6) CLIMATE STUDIES (CM)
[Centre for Climate Studies]

The Centre for Climate Studies (CCS) was initiated at the Indian Institute of Technology Bombay, in January, 2012, at the doctoral level as an interdisciplinary program. The curriculum is designed to establish a focus on climate science and climate impacts, adaptation and mitigation science and solutions, sustainability and risk computations, policy responses to the severe local and remote climate impacts faced by the subcontinent as well as projects oriented towards climate services, climate solutions, and climate policies.

CCS has 7 core faculty and over 30 faculty participants drawn from 12 departments, across IIT Bombay, with expertise in Climate Processes, Climate Impacts and Adaptation, Climate Mitigation, Climate Solutions and Policy. The Ph.D curriculum in the CCS includes core courses and several advanced courses in the tracks of climate science, climate change impacts and adaptation, and climate policy, on a broad range of theoretical and practical topics.

ELIGIBILITY FOR ADMISSION

First Class or 60% marks (55% marks for SC/ST), as specified in the General Eligibility Criterion, in the qualifying degree with any one of the following :

i. M.Tech./M.E. or equivalent degree in Aerospace Engineering, Atmospheric Science, Chemical Engineering, Civil/ Construction Engineering, Computer Science Engineering / Information Technology, Electrical/ Instrumentation Engineering, Energy Science & Engineering, Environmental Science /Engineering/ Management, Mechanical Engineering, Resource Engineering, Geoinformatics, Agricultural Engineering, Materials Engineering, Mining Engineering, or any other related Engineering discipline.

OR

M.Des./M.Arch./M.Planning or equivalent degree.

OR

M.Phil.(2-year) or equivalent degree in Social Sciences (Economics, Geography, Sociology etc.)

OR

M.Mgt./MBA or equivalent degree.

ii. M.Sc/MA or equivalent degree in Atmospheric Science, Chemistry, Earth Science, Energy Science, Environmental Science, Geophysics, Physics, Social sciences (Economics, Geography, Sociology, Planning etc.) or any other related discipline with
    valid GATE score
    or CSIR/UGC JRF
    or DST INSPIRE Fellowship
    or Minimum of 2 years of professional experience (acquired after obtaining the qualifying degree and completed before the starting of the semester in which admission is sought).

iii. B.E./B.Tech. or equivalent degree in Aerospace Engineering, Atmospheric Science, Chemical Engineering, Civil/ Construction Engineering, Computer Science Engineering/ Information Technology, Electrical/ Instrumentation Engineering, Energy Science & Engineering, Environmental Science/ Engineering/ Management, Mechanical Engineering, Resource Engineering, Geoinformatics, Agricultural Engineering, Materials Engineering, Mining Engineering, or any other related Engineering discipline with valid GATE score or Minimum of 2 years of professional experience (acquired after obtaining the qualifying degree and completed before the starting of the semester in which admission is sought).

The research interests of CCS faculty members under four different themes are listed below. The candidate should note that while filling the application form for the PhD programme, they are strongly suggested to check the Admissions webpage of CCS website https://www.climate.iitb.ac.in and the faculty profiles. Candidates are advised to refer to the website and find the topics/research projects offered by the CCS faculty members for the current round of intake. Candidates are required to submit a research proposal based on their research interests in the application form. A research proposal template can be viewed here https://www.ibit.ly/3HVS for reference. Candidates are strongly advised to align their proposal with the faculty research interests. Candidates may even contact the concerned faculty member in this process. It is emphasized again that the PhD application form should contain the research proposal.

The Centre for Climate Studies (CCS) reserves the right to call for subsequent selection steps to only those candidates shortlisted on the basis of their qualification, academic background and requirements. Details regarding the admission process will be provided to the eligible candidates along with the Message from HoD in due course of time.

Note: Criteria for awarding Teaching Assistantship and other application categories are as per the guidelines mentioned in section A.6 of this Brochure.

RESEARCH AREAS

The key research themes in the **Centre for Climate Studies** are: Climate Processes, Climate Impacts and Adaptation, Climate Mitigation, Climate Solutions and Policy. These themes collectively span the entire spectrum of “Climate and Sustainability”. The Centre envisions fostering interdisciplinary research across these themes, focusing on producing integrated outcomes rather than isolated results from individual themes.

Climate Processes: Climate change and variability, Cloud, circulation & climate feedbacks, Monsoon Dynamics, Ocean dynamics and mixing, Ocean circulation, Land-Atmosphere interaction, Terrestrial ecosystem, Ecohydrology and Ecological climatology, Climate & Weather extremes, Detection, attribution and prediction of climate extremes, factors affecting the Indian monsoon, aerosol radiative processes, DNS/LES of cloud processes, causality analysis and data assimilation, impact on hydrology and water resources, Machine Learning applications in Climate

Climate Impacts and Adaptation: Climate change impacts on cities, drivers and costs of adaptation; Water resource management, vulnerability analysis at national, subnational and community levels; social & economic implications of climate change.

Climate Mitigation: Energy-emissions-economy modelling, Energy transitions, Strategies for low-carbon development, Climate mitigation and air quality, Climate finance, Clean energy access

Climate Solutions and Policy: Early warning system, Climate engineering, Enhanced carbon capture systems, Energy policy analysis, Climate policy analysis

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B.7) COMPUTER SCIENCE AND ENGINEERING (CS)
[Department of Computer Science and Engineering]

The CSE department invites curious and motivated students who love exploring ideas and building new things to apply to our Ph.D. program. If you enjoy deep thinking, tackling tough technical problems, and spending time turning ideas into real contributions, this program is for you. We're looking for students with a strong foundation in core computer science and engineering, along with the creativity and persistence to push boundaries.

The Ph.D. program offers multiple enrollment options—such as full-time and part-time—to fit different paths and goals, as outlined in Section

A.6.ELIGIBILITY FOR ADMISSION

First Class or 60% marks (55% marks for SC/ST), as specified in the General Eligibility Criterion, in the qualifying degree with any one of the following :

(i) B.E./B.Tech. or equivalent in any engineering discipline.
(ii) M.Sc. or equivalent in any science discipline.
(iii)MCA (with an undergraduate degree BCA or B.Sc. with Mathematics and Physics as a subject) or equivalent
(iv) Mtech/M.E/ MS by Research in any engineering discipline

Candidates satisfying (i) or (ii) or (iii) AND NOT satisfying (iv) have to fulfill one of the following additional requirements:

a) Valid GATE score
b) CSIR, UGC, DAE,DST, DBT, NBHM, etc.
c) Minimum of 2 years of professional work experience

Note: Criteria for awarding Teaching Assistantship and other application categories are as per the guidelines mentioned in section A.6 of this Brochure.

WRITTEN TEST

Shortlisted candidates will be called for written test and interview. The syllabus for written test can be found on the website of the department at https://www.cse.iitb.ac.in/admissions/pg

WAIVER FOR WRITTEN TEST

Eligible candidates meeting one of the following criteria may apply for a waiver of the written test:

- B.Tech. from the IITs who have graduated with a degree in Computer Science and Engineering/ Information Technology within the last five years and with a CPI/CGPA of 8/10 and above.
- Masters from the IITs/IISc who have graduated with a degree in Computer Science and Engineering/ Information Technology within the last five years and with a CPI/CGPA of 9/10 (7.2/8) and above.

Candidates seeking a waiver should email to pgadm@cse.iitb.ac.in expressing their interest in the waiver before the last date for submission of completed application forms. Further, their application material must contain documents providing proof of the criteria mentioned above. Candidates for whom the waiver has been approved will be notified by email.

POST-ADMISSION FELLOWSHIPS

Several industry and government-sponsored fellowships with higher stipends are available to meritorious Ph.D. students after admission. Please find details on the website https://www.cse.iitb.ac.in/admissions/pg .

RESEARCH AREAS

Computing Systems

Computer Networks: Data center networks and cloud computing, Network Function Virtualization and Software Defined Networking, Kernel-bypass-based optimizations, Scalable design of wired and wireless networks, Performance modeling and measurement analysis of networked and distributed systems.

Database and Information Systems: Query Optimization, with a focus on parallel and distributed databases (aka Big Data systems), Holistic optimization of database applications, data generation for testing and grading SQL queries, real-time databases, and database support for Embedded and IoT systems, and Spatial databases.

Software Engineering and Paradigms: Software Architecture, Program Synthesis, and Analysis, Design, Abstractions and Paradigms, Design Quality of Program Structure.

Computer Security and Applied Cryptography: Network Security and Privacy, Web Security, Cryptographic Engineering and Secure Computing Systems, Blockchain

Programming languages and Compilers: Programming languages and Compilers: Program analysis, code optimization, compilers, interpreters, and virtual machines, functional and object-oriented programming languages.

Intelligent Systems

Natural Language Processing and Information Retrieval: Token-based and neural text representation, Sequence modeling, labeling and generation tasks, Semantics and information extraction, record filling, Summarization and translation, Token-based and neural text retrieval and ranking, Multi-lingual and cross-lingual applications, Reasoning, context management, and dialog, Multi-modal applications with text, images, voice, and video

Visual Computing: Computer vision, Image and video processing and analysis, Medical image computing, Statistical signal processing and high-dimensional statistics, Statistical image modeling and inference, Computer graphics, animation, rendering and geometry processing, Augmented and virtual reality, robot vision, and machine learning in visual computing

Machine Learning: Data integration models and algorithms, Graphical models, Information extraction and retrieval, Forecasting and smart e-business, Text and Web data mining. Integrated mining with relational DBMS, Temporal mining, Integrating mining with OLAP

Decisions and Agents: reinforcement learning, multi-armed bandits, online learning, exploration-exploitation trade-offs, sequential decision-making under uncertainty, game theory, algorithmic mechanism design, auctions, social choice, voting, matching, fair division, cooperative games, planning and control in multi-agent systems, decentralized and distributed learning, autonomous robots, human-robot interaction, decision-making under partial observability, adaptive and interactive robots, human-in-the-loop learning

Theoretical Computer Science

Theoretical Computer Science: Algorithms, Combinatorial Optimization, Combinatorics, Complexity Theory, Cryptography, Graph Theory, and Computational Geometry.

Formal Methods: Formal specification, design, and verification of hardware and software systems; Trustworthy Artificial Intelligence; Logic, automata theory, and their applications in reasoning about systems; Automated theorem proving; Model checking;
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 members' home pages to learn about his/her current research interests.

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B.8) DESIGN (ID)

[IDC-School of Design]

IDC School of Design invites candidates to apply for PhD in the following core domains: Industrial Design, Communication Design, Interaction Design, Animation and Film, Mobility and Vehicle Design, Human Factors and Ergonomics.

Eligibility Criteria and Qualifying Degree for PhD admission (any of the following):

1. MDes / Mtech./MPhil (2year course) / MFA / MArch / MURP / MA (Design) / Postgraduate Diploma in Design (2year course), or equivalent degree with First Class or 60% marks (55% marks for SC/ST) as specified in the General Eligibility Criterion.

2. Any other Masters degree with First Class or 60% marks (55% marks for SC/ST) as specified in the General Eligibility Criterion; has demonstrated competence in design-related areas and has substantial design-related work.

3. BDes / BTech / BArch / BFA / Undergraduate Diploma in Design, or equivalent degree with First Class or 60% marks (55% marks for SC/ST) as specified in the General Eligibility Criterion, and has demonstrated competence in design-related areas.

Eligibility Criteria for TA/TAP/RA/RAP:
(a) Candidates in Eligibility Criteria 1 are eligible for TA/TAP/RA/RAP.
(b) Candidates in Eligibility Criteria 2 and 3 will be eligible for TA/TAP/RA/RAP if they also have a valid CEED / GATE score.

Note: Criteria for awarding Teaching Assistantship and other application categories are as per the guidelines mentioned in section A.6 of this Brochure.

To understand the different full-time and part-time PhD categories available at IIT Bombay, the candidates must read the section 'Application Categories and Financial Support' of the Information Brochure.

Besides these core domains, the PhD programme fosters an open interdisciplinary approach involving the disciplines such as engineering, social sciences, media and education. Refer to the section below on Research Areas & Topics' for more details.

RESEARCH AREAS

- Biomimetics
- Cinema
- Cognitive & Physical Ergonomics
- Comics Studies
- Data Visualization
- Design for Craft
- Design for Health
- Design Forecasting / Design for Future
- Design Theory
- Game Design
- Human-Computer Interaction
- Human Factors and Socio-technical Systems
- Human-Machine Interaction / Human-Automation Interaction
- Immersive Media Design (VR/AR/XR)
- Information Design
- Design Innovation and Entrepreneurship

- Instruction Design
- Interaction Design
- Mobility Design / Future Mobility / Vehicle Form & Aesthetics
- Sustainable Design
- Systems Thinking and Design
- Typography / Calligraphy / Type Design
- Visual Language & Storytelling

Before applying, the candidates are strongly suggested to check the research areas of the faculty members at IDC School of Design and the research topics that are suggested for this intake, by visiting this link: http://www.idc.iitb.ac.in/admission/phd-research-areas

Candidates are strongly encouraged to contact and discuss their research interests with individual faculty members of IDC School of Design before applying, to gain a better understanding of the current research focus. Candidates are also encouraged to work with the faculty member, for a few months, and develop their research areas before the application.

Admission Process -
To know more about the PhD admission process of IDC School of Design please visit:
http://www.idc.iitb.ac.in/admission/phd-admission

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B.9) Digital Health (DH)
[Koita Centre for Digital Health (KCDH)]

Koita Centre for Digital Health (KCDH) at IIT Bombay is the first of its kind in India, focused on driving academic programs, research, and industry collaborations in Digital Health.

Keeping in mind the interdisciplinary nature of the domain, the PhD program encourages the association of two research supervisors, preferably from two different academic entities (viz. departments or centres within IIT Bombay), to supervise the research of each Ph. D. candidate enrolled in KCDH. Also, collaborations with clinicians are encouraged for each research project.

ELIGIBILITY FOR ADMISSION

First Class or 60% marks (55% marks for SC/ST), as specified in the General Eligibility Criterion, in the qualifying degree namely

A. M..E./M.Tech/MS degrees in Engineering/ Technology

B. MS (Master of Surgery) / MD / MVSc / MDS / MPTh/MPharm/M.O.Th

C. MBBS, BDS, BPharm, BVSc, BPTh, BOTh (degree programme to be of 4 years or more) with 60 percent aggregate AND qualifying All India level post graduate entrance examination for corresponding disciplines such as AIIMS/ NEET-PG/ MCI/ JIPMER/PGI Chandigarh/AFMC-Pune/ for MBBS/BDS or GPAT (for Pharmacy graduates) or a valid CSIR/ UGC/DBT/ICMR JRF not linked to ICMR project (for FA any fellowship that will provide scholarship for 5 years.

D, M.Sc./ M.S./ Integrated BS-MS in Physical sciences (Physics, Chemistry or equivalent disciplines), M.A./M.Sc./Integrated BS-MS in Mathematical sciences (Mathematics, Statistics, Biostatistics, Applied Statistics, Applied/Computational Mathematics, Public Health, Population Studiesor equivalent disciplines). M.Sc./ M.S. / Integrated BS-MS in Life sciences (specifically Biochemistry, Biophysics, Biotechnology, Physiology, Molecular Biology or equivalent disciplines)

E. B.E./B. Tech (Bachelor's degree in Engineering /Technology)/ 4 year BS (Mathematics, Applied/Computational Mathematics, Economics, Statistics or equivalent disciplines), with eligibility subject to specified admission procedure, would be considered. A valid GATE score and other IITB norms as per IITB PhD brochure will be required.

The candidates with qualifying degrees as mentioned in ‘C, D & E’ must fulfill one of the following:

(i) A valid GATE score
(ii) a valid CSIR/UGC/DBT/ICMR JRF not linked to ICMR project (for FA any fellowship that will provide scholarship for 5 years

(iii) Experience as specified earlier in A.5 and A.6 for CT,EX IS,PS,SF,SW category

Note: Criteria for awarding Teaching Assistantship and other application categories are as per the guidelines mentioned in section A.6 of this Brochure.

RESEARCH AREAS

1. Healthcare Applications
- EHR, EMR and clinical applications
- Medical imaging
- Medical devices software
- Payers and life sciences application

2. Healthcare Data Management
- Data interoperability and standards
- Data Privacy and Security
- Healthcare data warehousing & management
- Federated data management

3. Healthcare Analytics and AI/ML.
- Healthcare AI/ML
- Medical image analytics
- Clinical decision support
- Preventive & prescriptive analytics

4. Consumer Health & Tele-medicine
- Consumer health devices
- Mobile Health applications
- Tele-medicine applications
- Remote patient monitoring

5. Computational Biology and Bioinformatics
- Proteomics
- Genomics
- Pathway analysis
- Disease diagnosis

6. Population Health & Public Health Policy
- Disease surveillance & analytics
- Population health analytics
- Epidemiology & disease management
- Public health policy

7. Large Language Models in Healthcare
- Diagnosis assistance and improved patient care
- Advancing medical research and knowledge
- AI enabled crisis management
- Data driven policy changes

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B.10) EARTH SCIENCES (ES)
[Department of Earth Sciences]

First Class or 60% marks (55% marks for SC/ST), as specified in the General Eligibility Criterion, in the qualifying degree with any one of the following :

i. M.Tech./M.Phil. (2-year degree) or equivalent degree in Geology, Geophysics or in any other related Geosciences field.
ii. M.Sc. or equivalent degree in Geology, Geophysics, or in any other related Geosciences field.

OR

M.Sc. or equivalent degree in Physics, Material Physics', Chemistry, Mathematics, Oceanography, Life Sciences, Marine Sciences, Atmospheric Sciences or equivalent and having Geology / Physics /Mathematics/ Chemistry at the Bachelors level as principal subjects, and with relevance to the research areas advertised online for a particular round of admission.

OR

B.Tech./B.E. or M.Tech./M.E. in Civil Engineering, Mining Engineering, Electrical Engineering, Chemical Engineering or Computer Science and Engineering with relevance to the research areas advertised online for a particular round of admission.

Note: Criteria for awarding Teaching Assistantship and other application categories are as per the guidelines mentioned in section A.6 of this Brochure.

RESEARCH FACILITIES

Ar–Ar mass spectrometer, fission-track dating facility, electron probe micro-analyzer (EPMA), quadrupole inductively coupled plasma - mass spectrometer (ICP-MS), X-ray fluorescence spectrometer (XRF), X-ray diffractometer (XRD), scanning electron microscope (SEM), heating-freezing stages for fluid inclusion studies, micro-laser Raman spectrometer, gas chromatograph - mass spectrometer (GC-MS), rock-eval pyrolyser, ASD spectroradiometer, airborne spectrometer and radiometric thermal camera, high precision GPS, geomechanical and engineering geological testing equipments, broadband seismographs, gravimeter, magnetometers, magnetotelluric instrument, multi-electrode resistivity imaging system.

RESEARCH AREAS

- Active Tectonics and Tectonics
- Economic Geology and Ore Deposit Modelling
- Electromagnetism
- Engineering Geology
- Geochronology and Thermochronology
- Geomagnetism
- Geomechanics
- Geophysical Signal Processing
- Geostatistics
- GPS and Geodesy
- Gravity and Magnetic
- Hydrogeology
- Ichnology
- Igneous Petrology
- Isotope Geology, Geochemistry and Geochronology
- Machine learning applications in Geophysics
- Metamorphic Petrology
- Micropalaeontology
- Mineralogy
- Near Surface Geophysics: Groundwater, Mineral and Hazards Applications
- Numerical modelling in Geophysics
- Organic Geochemistry
- Passive Seismology: Earthquake Seismology, Seismic Ambient Noise and Seismic Tomography
- Petroleum Geology

- Petrophysics
- Planetary Geophysics
- Reservoir Geophysics
- Satellite Geophysics: Satellite gravity, magnetic and Hydrogeodesy
- Sedimentology
- Seismic Imaging, Wave propagation and Inverse Problems
- Stratigraphy
- Structural Geology
- Vertebrate Palaeontology
- Volcanology

Faculty members of the Department pursue research in the above broad areas. However, for admission to the Ph.D. programme, research areas/topics only on a subset from the above will be offered for each round of admission and this information will be displayed in the Department's web site (www.geos.iitb.ac.in) as and when online application form is available in the Institute's web page. Candidates should check this information before applying.

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B.11) Economics
[Department of Economics]

ELIGIBILITY FOR ADMISSION
The applicant should have obtained at least 55% marks (50% marks for SC/ST) in M.A. or equivalent degree in Economics subjects,

OR

A First Class or 60% marks (55% marks for SC/ST) in Master’s degree in Science / Commerce / Graduate Degree in Engineering / Technology will be considered for research areas consistent with the academic background and special interests of the applicant.

a) A minimum of 2 years of professional work experience for Sponsored or External Category (EX) and Self Financing Category (SF) is mandatory.

b) To be considered for the Institute Teaching Assistantship (TA), the applicant must possess a valid GATE score or have qualified the CSIR/ UGC/ ICSSR/ ICPR/ MET/ an equivalent qualifying examination.
Note: Criteria for awarding Teaching Assistantship and other application categories are as per the guidelines mentioned in section A.6 of this Brochure

RESEARCH AREAS
Microeconomics

Macroeconomics

Applied Econmetrics

Money Banking

Economics Systems & Institution

Managerial Economics

Monetary Econmics

Industrial Economics

Environmental Econmics

International Finance

Multinational & Technology Transfer

Development Economics

Health Economics

Labour Economics

Behavioural Economics

Financial Economics & Corporate Governance

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B.12) EDUCATIONAL TECHNOLOGY (ET)
[Centre for Educational Technology]

The Interdisciplinary Programme in Educational Technology (IDP-ET) at IIT Bombay is actively involved in research and education in the area of technologies to improve the teaching-learning process. IDP-ET focuses on designing learning environments leveraging effective pedagogy and innovative technology scaffolds for supporting individual and collaborative learning in formal and informal contexts. IDP-ET is composed of core faculty members with additional associate members from various disciplines across IIT Bombay covering engineering, sciences, humanities and social sciences, design, and management.

ELIGIBILITY FOR ADMISSION

First Class or 60% marks (55% marks for SC/ST), as specified in the General Eligibility Criterion, in the qualifying degree:

(i) M.Tech./M.E. or equivalent degree in any branch of Engineering
OR
M.Des. / MBA
(ii) M.A./M.Sc./M.Phil./M.Ed.

For applicants with degrees in (ii) above, one of the following will be required
 a valid GATE score (eligible for Institute TA/RA) OR
 a valid CSIR/UGC Junior Research Fellowship (eligible for Institute TA/ RA).

Candidates who have qualified for a Junior Research Fellowship (JRF), i.e., have received financial assistance from UGC-NET/CSIR, are eligible to apply under the FA category.

Note: Criteria for awarding Teaching Assistantship and other application categories are as per the guidelines mentioned in section A.6 of this Brochure.

For other admission-related details, please visit the Admissions page of the IDP in Educational Technology: https://www.et.iitb.ac.in/academics/admission/_

A ONE page (~500 words) document containing the Statement of Purpose (SoP) must accompany the application. The Statement of Purpose should contain (a) your interests and motivation for applying to ET (max. 50 words), (b) relevance of your recent and current activities (max. 200 words), (c) details about your academic interests including (but not limited to) your areas of interest, a problem that interests you, and what you plan on doing after completing your Ph.D. (max. 250 words)

RESEARCH AREAS

The thrust areas of research of the IDP in Educational Technology are:

i. Technology-enhanced learning of disciplinary practices such as estimation skills, decision making, design thinking, computational thinking, troubleshooting, and so on

ii. Frameworks for teacher-use of educational technology tools and strategies

iii. Development of AI & ICT based tools for above teaching-learning goals

iv.. Educational data analytics using technologies such as GSR, EEG and eye tracking to understand teaching-learning processes

Please visit **http://www.et.iitb.ac.in** for details regarding the research group and recent activities.

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B.13) ELECTRICAL ENGINEERING (EE)
[Department of Electrical Engineering]

AREAS OF SPECIALIZATION

1. Communication Engineering EE1
2. Control and Computing EE2
3. Power Electronics and Power Systems EE3
4. ~~Microelectronics EE4~~
5. Electronic Systems EE5
6. Integrated Circuits & Systems EE 6
7. Solid State Devices EE 7

Additional Information:

1. There will be two categories of candidates as given below:
   a. Category A: Those candidates who satisfy the Eligibility Criteria for admission (A.5), but do not fall in Category B.
   b. Category B: Those candidates who satisfy the Eligibility Criteria for admission, and who also satisfy any of the following criteria,

      i They are in the pre-final semester of the BTech degree programme from the IITs with a minimum CPI of 8.0 (on scale of 10) at the end of the most recently completed semester.
      ii. They are in the pre-final semester of the MTech degree programme from the IITs with a minimum CPI of 8.5 (on a scale of 10) at the end of the most recently completed semester.
      iii.They are in the pre-final semester of a BE/BTech or ME/MTech degree programme, and have a GATE score* in the EE or in the EC discipline, obtained in a GATE exam conducted within the past one year.

   * GATE score cut-off will be decided before the start of the admission process.
2. Admissions for Category A will continue to be done as per the current schedule.
3. Students in Category B will be eligible to apply in the December round of PhD admissions and will be eligible for early offers of admission (the joining date will be in July of the following year).
4. The students admitted under Category B may be in Teaching Assistant (TA) or Teaching Assistant – Project (TAP) or PS category.

ELIGIBILITY FOR ADMISSION

First Class or 60% marks (55% marks for SC/ST), as specified in the General Eligibility Criterion, in the qualifying degree with any one of the following :

i. M.Tech./M.E. or equivalent degree in Biomedical Engineering, Computer Science, Computer Science and Engineering, Electrical Engineering, Electronics/ Telecommunications Engineering, Instrumentation Engineering, Engineering Physics, Materials Science and Engineering.

ii. B.Tech./B.E. or equivalent degree in Biomedical Engineering, Computer Science, Computer Science and Engineering, Electrical Engineering, Electronics/ Telecommunications Engineering, Instrumentation Engineering, Engineering Physics, Materials Science and Engineering.

OR

M.Sc. or equivalent degree in Mathematics, Physics, Electronics / Electronic Sciences.

Note: Criteria for awarding Teaching Assistantship and other application categories are as per the guidelines mentioned in section A.6 of this Brochure.

RESEARCH AREAS

Communication Engineering (EE1)

- Communication Systems: Wireless, Optical Communications and Photonics; Microwave, RF and Antennas; Information Theory and Coding; Computational Electromagnetics
- Signal Processing: Image and Speech processing, Computer Vision
- Machine Learning and Data Science
- Networking: Network protocols and security, 5G/6G, IoT

Control and Computing (EE2)

- Linear Systems Theory
- Optimal Control and Optimization
- Modeling and Identification of Dynamical Systems
- Control of Distributed Parameter Systems
- Nonlinear Systems
- Modern Filter and Network Theory
- Behavioral Systems Theory
- Computational Methods in Electrical Engineering
- Software and System Reliability
- Cryptography and Security
- GPU based Computing

Power Electronics and Power Systems (EE3)

- FACTS, HVDC and Power Quality
- Distributed Generation
- Power System Restructuring
- Wide Area Measurements and System Protection
- EMI / EMC
- Coupled Field Computations
- Electrical Machines: Modeling, Analysis, Design and Control
- Special Machines
- Power Electronic Converters, Electric Drives
- Power Electronics for Nonconventional Energy Sources
- Reliability in Power Systems and Power Electronic Systems
- Smart Grids for Energy Harvesting
- Power System Planning, Operations and Control
- Power System Economics
- Use of wide band gap devices in Power Electronic converters
- Electric Vehicles
- Insulation diagnostics

Electronic Systems (EE5)

- Electronic Instrumentation
- Signal Processing Applications
- Speech and Audio Processing
- Biomedical Electronics
- Embedded System Design

Integrated Circuits & Systms (EE6)

- Development of microprocessor architectures along with design, test and verification methodologies
- RF and millimeter wave IC (integrated circuit) design for communication, navigation and imaging applications
- Electronic and photonic IC design for high-speed wireline and optical interconnects
- Power amplifiers for wireless communications
- CAD (computer aided design) techniques for VLSI design
- Integrated circuits for biomedical, agricultural and IoT applications
- FPGA based designs and techniques for hardware acceleration and AI/ML applications.
- ICs for power management and energy harvesting

Solid State Devices (EE7)

- Non-volatile memory technologies (Flash, RRAM, FERAM, MRAM, etc.)
- Device Fabrication (CMOS, Solar cells, Detectors, etc.)

- Theory, modeling, and simulation of Electronic devices
- Novel materials and devices (III-V, Graphene, 2D, etc.)
- Spintronics, Quantum Computing, Quantum sensing, and related technologies
- Photonics, MEMS, Neuromorphic Engineering
- Photovoltaics - c-Si, Organics, Perovskite, quantum dots, etc.
- Reliability of semiconductor devices and systems (e.g., Solar panels, PV systems)
- Nanoscale energy conversion
- Flexible devices and sensors (bio, chemical, and quantum)
- Light emitting diodes (III-Nitride UV) and photodetectors (quantum dot, etc)
- Wide Bandgap Power Devices

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B.14) ENERGY SCIENCE AND ENGINEERING (EN)
[Department of Energy Science & Engineering]
DEPARTMENT OF ENERGY SCIENCE AND ENGINEERING

Energy is critical for the development of society and the economy. There are numerous issues in conventional and renewable energy systems that need to be addressed to enable large-scale development and deployment. In the short term, India also has to pursue energy efficiency and demand-side management aggressively. This will improve the efficiency of supply and utilisation devices and systems. The development of new energy technologies offers several technological challenges as well as significant business opportunities. To help meet these challenges, the Department of Energy Science and Engineering (DESE) was established with a mission to develop sustainable energy systems and solutions for the future. There is a substantial unfulfilled requirement for high quality trained personnel in the energy sector. There is also room for engineering innovators/entrepreneurs. The department has various experimental laboratories and computational facilities to cater to teaching and research requirements in various research areas in conventional and non-conventional energy. In addition to this, DESE students are actively involved in varied research and development activities. DESE faculty have been organising a biennial international conference on research advances in energy as well as several continuing education programmes on renewable energy, energy management, process integration, energy sustainability, etc. DESE has also established links with several ministries and other government bodies, industries, research and development institutes, and various consortia, which has ensured sustained relevance of the department’s research output.

ELIGIBILITY FOR ADMISSION

First Class or 60% marks (55% marks for SC/ST), as specified in the General Eligibility Criterion, in the qualifying degree with any one of the following:

MTech/ME or equivalent degree in Aeronautical/Aerospace Engineering, Chemical Engineering, Civil Engineering, Electrical Engineering, Energy Science and Engineering, Mechanical Engineering, Metallurgical Engineering, Petroleum Engineering, or equivalent disciplines relevant to energy.

BTech/BE or equivalent degree in Aeronautical/Aerospace Engineering, Chemical Engineering, Civil Engineering, Electrical Engineering, Energy Science and Engineering, Mechanical Engineering, Metallurgical Engineering, Petroleum Engineering, or equivalent disciplines relevant to energy.

OR

MSc or equivalent degree in Chemistry, Physics, Mathematics, or equivalent disciplines relevant to energy.

Note: Criteria for awarding Teaching Assistantship and other application categories are as per the guidelines mentioned in section A.6 of this Brochure.

RESEARCH AREAS

Clean and Renewable Energy

- Solar photovoltaic (PV) systems: Development of PV cells, thin film solar cells, perovskite solar cells, flexible PV devices, atomic layer deposition, reliability and performance assessment of PV modules, characterisation, modelling, and simulation of defects and degradation in solar cells and modules, thermal non-destructive evaluation of PV cells and modules
- Solar thermal systems: Concentrating solar power, solar thermal collectors for decarbonising industrial process heat and power sector, low cost concentrating collectors for decentralised applications, testing of collectors and systems, modelling and optimisation of solar thermal systems
- Biomass and biofuels: Pyrolysis, gasification, design, development and testing of biomass gasifiers, liquid fuels from biomass, biodiesel synthesis
- Waste-to-energy systems: Plastic pyrolysis, MSW to energy

Power Electronics, Electrical Machines, and Electric Vehicles

- Electric vehicles: High-performance control of motor drives for electric vehicles, charging of electric vehicles, design, modulation, and control of power electronic converters
- Energy efficient industrial drives, advanced motor design for high performance
- Next-generation converters for battery/supercapacitor storage, and solar PV systems

Smart/Microgrids and Grid Integration of Renewables

- Grid integration of renewables and electric vehicles
- Smart grids and Microgrids: Converter topologies and control, communication protocol for power systems, power systems operation and control

Building Energy Systems and Heat Pumps

- Net zero emissions buildings
- Integration of storage in buildings for better thermal comfort
- Heating, cooling, and ventilation systems: Energy recovery exchangers, desiccant humidity control, advanced absorption and absorption-hybrid cooling and heating systems for industrial applications, heat pumps and heat transformers

Conventional Energy Systems

- IC engines: Alternative fuels, advanced low temperature combustion, exhaust after-treatment and catalysis, engine combustion and after-treatment reaction modelling, engine performance and emissions
- Coal gasification and combustion
- Oil and gas: Oil-water separation, wax deposition in petroleum flow, pipeline shut-in and restart processes, bulk and interfacial rheology, mechanism of gas hydrates formation

Energy Storage

- Thermal storage: Integration of thermal storage with solar thermal systems, single tank thermocline storage systems, applications of phase change or latent heat storage materials, CFD for granular materials, molecular dynamic simulations
- Battery storage: Electrode materials, electrolyte, fabrication of Li-ion and Na-ion batteries, Metal Sulphur batteries for large scale storage, solid-state batteries, hybrid ionic electrolyte, flow batteries, battery thermal management, battery modelling and characterisation, performance and degradation modelling, advanced battery management systems, battery recycling
- Supercapacitors

Hydrogen Energy

- Hydrogen generation through electrolysis and biomass routes
- Fuel cells: Low temperature hybrid fuel cells, CFD modelling of fuel cells to optimise the flow field pattern, non-destructive methodologies for testing fuel cells, membrane-based humidifier for compact fuel cells
- Hydrogen storage: Solid state hydrogen storage materials and systems, metal hydride hydrogen storage

Energy Systems Analysis

- Energy systems modelling: Long term energy models, energy transition models

- Energy policy analysis
- Industrial decarbonisation
- Process integration: Pinch analysis, process optimisation, intensification technologies like reactive distillation
- Optimisation of energy systems
- Energy efficiency and energy management
- Energy and Sustainability

Nuclear Energy

- Thermal hydraulics research
- Computer simulation models for analysis of transients in pressurised heavy water reactor,
- Advanced numerical methods for neutron diffusion and fluid flow
- Two phase flow modelling

For further details, please visit www.ese.iitb.ac.in. BACK TO INDEX

B.15) ENVIRONMENTAL SCIENCE AND ENGINEERING (EV) [Environmental Science and Engineering Department (ESED)]

In view of the interdisciplinary nature of the Environmental Science and Engineering subject, students from diverse areas of sciences, engineering and medical sciences are permitted to apply for Ph.D. However, students who do not have adequate background knowledge will have to take additional courses to enable them to successfully pursue research in Environmental Science and Engineering Department (ESED) For further details, visit www.esed.iitb.ac.in

ELIGIBILITY FOR ADMISSION

First Class or 60% marks (55% marks for SC/ST), as specified in the General Eligibility Criterion, in the qualifying degree with any one of the following :

i. M.Tech./M.E. or equivalent degree in Aeronautical/Aerospace Engineering, Agricultural Engineering, Atmospheric Science, Chemical Engineering, Civil Engineering, Energy Science & Engineering, Biotechnology, Environmental Science & Engineering, Mechanical Engineering, Metallurgical Engineering & Materials Science, Mining Engineering.

ii. B.Tech./B.E. or equivalent degree in Aeronautical/Aerospace Engineering, Agricultural Engineering, Atmospheric Science, Chemical Engineering, Civil Engineering, Energy Science & Engineering, Biotechnology, Environmental Science & Engineering, Mechanical Engineering, Metallurgical Engineering & Materials Science, Mining Engineering.

OR

M.Sc. or equivalent degree in Atmospheric Science, Biochemistry, Biotechnology, Chemistry, Earth Sciences, Environmental Toxicology, Environmental Science*, Meteorology, Microbiology, Physics, Public Health & Statistics.

Candidates with qualifying degrees in {“ii” above] must fulfill one of the following :

a) A Valid GATE score (for TA/TAP/RA/RAP)

b) A valid CSIR/UGC/DBT JRF or a valid ICMR JRF not linked to ICMR project (for FA/BINC any fellowship that will provide scholarship for 5 years.

c) Experience as specified earlier in A.5 and A.6 (for CT,EX,IS,PS,SF,SW category)

* The applications from other specializations in field of Environment (not listed above) may also be considered depending upon the academic profile.

As per the last degree obtained, the candidates must also fulfil the additional requirements mentioned in "Eligibility criterion for Ph.D. admission" under Section A ('General').

Please note that merely fulfilling eligibility criteria doesn't entitle a candidate to be called for the test and/or interview.

Note: Criteria for awarding Teaching Assistantship and other application categories are as per the guidelines mentioned in section A.6 of this Brochure.

Broad areas of research and sub-themes (indicative only) in ESED are as follows:

• Air Quality Management and Pollution Control
Air quality assessment, source identification and mitigation; satellite remote sensing for air quality; emission measurements and emission factor estimation; particulate matter characterization; air pollution exposure modelling and health effects; Air pollution control technologies; Aerosol chemistry.

• Environmental Systems Modelling
Modelling of hydro-climatic extremes at a national-scale; disaster risk assessment; mapping vulnerability to natural and human-induced hazards using GIS; development of optimization models for surface water quality monitoring and management; design and evaluation of water & wastewater conveyance systems; Environmental management; Climate and health risk assessment; big data analysis, machine learning and stochastic modeling.

• Solid and Hazardous Waste Management Municipal solid waste (MSW) treatment and recycling by biological and hydrothermal processes; energy from waste through incineration and gasification processes; life cycle assessment for prediction of environmental impacts; carbon capture and storage; life cycle assessment; management of hazardous industrial waste.

• Water and Wastewater Treatment, Reuse and Management
Removal of geogenic contaminants from groundwater; biological processes in engineered and natural treatment systems for removal of carbonaceous organics pollutants and nutrients from wastewater; advanced oxidation processes for treatment of recalcitrant industrial effluents and micropollutants; greywater recycling and reuse; treatment and reuse of sewage and industrial sludge; emerging contaminants; resource recovery; nanotechnology in water treatment; environmental microbiology in bioremediation.

For more details, please visit http://www.esed.iitb.ac.in/research-areas

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B.16) GEOINFORMATICS & NATURAL RESOURCES ENGINEERING (GNR) [Centre of Studies in Resources Engineering (CSRE)]

Geoinformatics and Natural Resources Engineering is an interdisciplinary area encompassing diverse issues in exploration and management of natural resources such as land, water, mineral, forest, soil and ocean resources; socioeconomic aspects of sustainable development with respect to environmental impact of natural resources exploitation; renewable energy resources management; global warming and climate change. Contemporary techniques of scientific assessment using satellite remote sensing, GIS and GPS are evolved and used in the study of natural resources. Researchers in this area come from diverse backgrounds of science and engineering and work may be of applied or theoretical nature as in the fields listed below.

ELIGIBILITY FOR ADMISSION

First Class or 60% marks (55% marks for SC/ST), as specified in the General Eligibility Criterion, in the qualifying degree with any one of the following:

(i) M.Tech./M.E. or equivalent degree in Agricultural Engineering, Civil Engineering, Environmental Science & Engineering, Mining Engineering, Electrical Engineering, Electronics/ Telecommunication Engineering, Computer Science & Engineering, Information Technology, Remote Sensing, Geoinformatics, Geomatics, Architecture and Town Planning. Applicants who carried out M.Tech./M.E. after M.Sc. Must have studied mathematics at 10+2 level, which is a mandatory requirement.

(ii) B.Tech./B.E. or equivalent degree in Agricultural Engineering, Civil Engineering, Environmental Science & Engineering, Mining Engineering, Electrical Engineering,

Electronics/ Telecommunication Engineering, Computer Science & Engineering, Information Technology, Remote Sensing, Geoinformatics, Geomatics, Architecture and Town Planning.

OR

M.Sc. or equivalent degree in Earth Sciences, Environmental Science, Geology, Geophysics, Marine Sciences, Agriculture, Physics, Mathematics, Computer Science, Information Technology (Mathematics at 10+2 level is a mandatory requirement for all applicants with M.Sc. degree).

SELECTION PROCESS

Candidates will be shortlisted based on an interview for assessing their preparedness for a Ph.D. in the field of Geoinformatics and Natural Resources (GNR) in general, and on the topic selected by them in particular. Factors that contribute to shortlisting include knowledge of the PhD topic selected, relevance of background, knowledge academic performance in the qualifying degree, papers published in the qualifying program, work experience, if relevant, and a statement of purpose that demonstrates an understanding of the area the applicant wishes to work in.

The interested applicants are advised to visit CSRE webpage https://www.csre.iitb.ac.in/phdTopics.pdf for a detailed and updated list of topics / research areas.

Note: Criteria for awarding Teaching Assistantship and other application categories are as per the guidelines mentioned in section A.6 of this Brochure.

RESEARCH THEMES

Water resources
Terrain evaluation
Land-use planning and monitoring
Agro-informatics and precision agriculture
Geologic remote sensing and mineral exploration
Planetary remote sensing
Natural Hazards
Snow, Glaciers and cryospheric studies
Machine learning, image processing, computer vision
Digital Photogrammetry, GPS

Faculty members of CSRE pursue research within the above broad themes. It may be noted that for admission to the Ph.D. programme purposes, topics will be offered covering only a subset from the above themes for any round of admissions. The list of actual topics offered by the faculty members for the current round of admissions may be found on the CSRE website at https://www.csre.iitb.ac.in/phdTopics.pdf Interested applicants must refer to this link while applying for the Ph.D. programme offered by CSRE. A statement of purpose must be enclosed along with the application in the specified format (available at the same link as above) in which the title of topic of candidate's interest should be mentioned with a detailed justification how the candidate's academic background is suitable to pursue research in that area. (Mathematics at 10+2 level is a mandatory requirement for applicants with M.Sc. as one of the degrees). Applicants who have M.Sc. as one of the degrees must clearly declare in the application the subjects they studied at 10+2 level.

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B.17) HUMANITIES AND SOCIAL SCIENCES (HSS)
[Department of Humanities and Social Sciences]

ELIGIBILITY FOR ADMISSION

i. M.Phil. (awarded by IIT Bombay or equivalent 2-year degree) in any of the disciplines pertaining to the research areas in the Department, with First Class or 60% marks (55% marks for SC/ST) as specified in the General Eligibility Criterion.

OR

ii. M.A. or equivalent degree in Humanities & Social Sciences subjects, with 55% marks(50% for SC/ST).

OR

Master's degree in Commerce with 55% marks (50% for SC/ST).

OR

M.Sc. or equivalent degree in Science, with First Class or 60% marks (55% marks for SC/ST) as specified in the General Eligibility Criterion.

OR

B.Tech./B.E. or equivalent degree in Engineering/Technology, with First Class or 60% marks (55% marks for SC/ST) as specified in the General Eligibility Criterion.

Candidates with degrees in Science, Commerce, Design, Architecture, Management and Engineering/ Technology or candidates with two years of PGDM from recognised Govt. Institution will be considered for research areas consistent with their academic background. Candidates having UGC-NET Lectureship (LS)/ GATE are also eligible for Teaching Assistantship in addition to other academic qualifications.

Note: Criteria for awarding Teaching Assistantship and other application categories are as per the guidelines mentioned in section A.6 of this Brochure.

RESEARCH AREAS

- **Psychology – Only for the project in Spring 2026. Please visit the link for more details: https://www.hss.iitb.ac.in/sites/default/files/2026-08/Admission%20Posters%20%2819%29.pdf**

- **Sociology** - Only in Autumn semester 2026 : Urban Studies; Development Studies; Rural/Agrarian Sociology; Law and Governance; Legal Pluralism; Vulnerability and Adaptation to Climate Change; Gender and Development; Disaster Studies; Ethnicity and Multiculturalism; Sociological Theory; Historical Sociology; Collective Memory; Anthropology of corruption; Constitutional Law; Sociology of Higher Education; Sociology of Religion and Kinship; Conversion; Christianity in India; Caste today; Religious Institutions; Hierarchy/Stratification; Sociology in/of India; Contemporary Karnataka; Sociology of Development; Resource Rights; Subaltern Resistance and Movements and Political Ecology; Sociology and political economy of Finance; Political Economy of Development; Indian Political Economy; Theories of Money; Classical Political Economy; New and Old Institutionalism and History of Economic Thought; Issues of Gender and Sexuality; Medical Anthropology; Anthropology of the Body and Embodiment; Post-Colonial Studies; Post-Modern Feminist Studies and Southern Theories; Caste: Civility and Democracy; Civil Society, Ethnography Studies; Inclusion and Exclusion; Environmental Sociology; Social and Environmental Movements; Environmental Politics with a focus on Social inequality and Natural Resource Conflicts especially in Rural India; Issues of Livelihood and Problems of Marginalized Class and Political Ecology; Science and Technology Studies; Sociology of Medicine and Public Health.

- **Philosophy** – Only for Autumn Semester 2026: All areas.

- **History** – Only for Autumn Semester 2026: Histories of anticolonialism and decolonization, subaltern histories, social histories of modern India, studies in social mobility, community; caste studies, Dalit studies, histories of languages and scripts, manuscript cultures, print cultures (modern/early modern period), cultures of memorializaton, Archaeology of death, Landscape Archaeology, Experimental

Archaeology, South Asian Archaeology, Archaeological Theory, Public Archaeology and Heritage, Material Culture Studies, Object Histories.

- **Sanskrit*** - Autumn and Spring semester 2026: Sanskrit language; Paninian Grammar; Philosophy of Language.
  **Note for CISTS: Ph.D. candidates who have applied for Sanskrit in the SF category can get some financial support from the Chellaram Foundation.*

- **English –** Only in Autumn Semester 2026**:** All areas in **Literature and Performance Studies.** Applicants are required to submit a **Research Proposal** along with the application. The format, content and other details needed for the proposal will be available on the H&SS website at www.hss.iitb.ac.in

- **Linguistics -** Autumn and Spring Semester 2026: All areas of theoretical linguistics and, especially, early language acquisition/learning; documentation of endangered languages. Applicants are required to submit a Research Proposal along with the application. The format, content and other details needed for the proposal is available on the H&SS website www.hss.iitb.ac.in

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B.18) INDUSTRIAL ENGINEERING AND OPERATIONS RESEARCH (IO)
[Department of Industrial Engineering & Operations Research]

Industrial Engineering and Operations Research (IEOR) at IIT Bombay conducts research in a unique and insightful manner in today's economic context. The programme offers a blend of theory, modeling and application, drawing from traditional as well as modern areas of operations research, together

with a systems view derived from longstanding principles of industrial engineering. The program has a contemporary flavor, with specialized courses in Integer Programming, Game Theory, Markov Decision Processes, Analysis and Control of Queues, Services Management, Supply Chain Management, Financial Engineering, Neural Networks, Deep Learning, System Dynamics, Data Analytics, Machine Learning and core courses like Optimization Techniques, Probability theory, Stochastic Models, and Simulation. Broad areas of application are in manufacturing systems, health care, supply chains, logistics, railway networks, finance, communication networks, services, infrastructure and other industrial systems; application of quantitative methods in quality and maintenance management systems; development and application of decision support, intelligent and knowledge-based systems, computer vision, text and multi media analytics and robotics.

The website http://www.ieor.iitb.ac.in has details on the faculty, students, research, teaching, academics, admissions, and other activities of the program.

ELIGIBILITY FOR ADMISSION

First Class or 60% marks (55% marks for SC/ST), as specified in the General Eligibility Criterion, in the qualifying degree with any one of the following :

i). M.Tech./M.E. or equivalent degree in any branch of Engineering with adequate exposure to Industrial Engineering & Operations Research.

ii) B.Tech./B.E. or equivalent degree in any branch of Engineering
OR
M.Sc. or equivalent degree in Mathematics, Statistics, Operations Research

Note: Criteria for awarding Teaching Assistantship and other application categories are as per the guidelines mentioned in section A.6 of this Brochure.

RESEARCH AREAS

Optimization: Models, Theory and Algorithms: Large-scale linear optimization; Mixed-integer and conic programming; Combinatorial optimization; Polyhedral theory: Nonlinear optimization; Dynamic programming; Theory, Algorithms and Computational methods for Mixed-Integer Linear and Nonlinear Optimization, convex and non-convex optimization, stochastic optimization, search methods, metaheuristics

Stochastic Models: Queuing Theory; Queuing models; Branching Processes; Resource sharing; Parameter optimization; Performance Analysis; Polling systems; Applications in wireless communications and social networks.

Optimal Control: deterministic and stochastic control, Markov decision processes, Reinforcement learning, Diffusion control; Stochastic Approximation, Sparse Control,
Model predictive control.

Simulation Modeling and Analysis: Discrete-event simulation; Monte Carlo methods, System dynamics methodology; Hybrid (discrete-continuous) modeling; Distributed and parallel simulations; Statistical data analysis; Simulation - optimization; Bayesian methods.

Game Theory: static and dynamic games, differential games, mechanism design, network games, auctions and market design, learning, incomplete and partial information games, cooperative games, resource allocation problems.

Data Science, Machine Learning and Artificial Intelligence: Supervised, semi-supervised and unsupervised machine learning models, Optimization for emerging machine learning problems, developing new and efficient machine learning models and algorithms for novel applications, transfer and continuous learning, statistical learning theory, online learning, reinforcement learning, multi-armed bandit problems, longitudinal data analysis, time series modeling and analytics.

Deep Learning: Theoretical aspects of deep learning models, new deep learning tools for modern applications involving text, image, audio and video data, deep learning for industrial and business applications, deep learning for operations research.

Logistics, Inventory and Transportation: Transport operations planning (road, rail, air, and sea); Network design; Capacity planning; Operations scheduling and routing; Fleet and crew planning and rostering; Timetabling and rolling stock management in rail services.

Supply Chain Analysis: Information sharing; Coordination; Contract analysis and design; Realtime decision making; Performance and stability analysis; Reverse logistics and closed loop supply chains; Decision- making under uncertainties; Quality of service.

Financial Engineering: Mathematical finance; Modeling and pricing of derivatives; Insurance and asset pricing; Portfolio management; Pricing; Revenue sharing and revenue management, systemic risk analysis.

Planning, Scheduling and Control in Manufacturing Systems: Operations management; Project management; Quality management; Hierarchical production planning; Facilities planning; Reconfigurable and flexible systems; Enterprise resource planning; Product variety management; Dynamic, reactive and proactive scheduling.

Social Networks: Recommendation systems, menu design, diffusion of information on networks, online auctions.

Network Science and Random Graphs: Community Detection and Percolation

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B.19) Innovation & Entrepreneurship (ENT)
[Desai Sethi School of Entrepreneurship (DSSE)]

The vision of the Desai Sethi School of Entrepreneurship (DSSE), IIT Bombay entails creating a world class educational infrastructure for reliable promotion of technology entrepreneurship, by creating a concomitant knowledge base on this topic driven by fundamental research in the broad domain of innovation and entrepreneurship.

ELIGIBILITY FOR ADMISSION
First Class or 60% marks (55% marks for SC/ST), as specified in the General Eligibility Criterion, in the qualifying degree with any one of the following :

Candidates need to fulfil each of the following three criteria as listed in Sections A, B and C for a valid application

Section A - Qualifying Degree (Any 1 of the following):

Category	Degree Requirements
A1	• Master's in Engineering / Technology (M.Tech/M.E./MS) IITs/IIMs **OR** • Master of Management/MBA from IITs/IIMs
A2	• Master of Management / 2-Year MBA from institutes other than IITs/IIMs (recognized by AICTE / UGC/AIU) **OR** • Master of Design (M. Des)
A3	• Bachelor's in Engineering / Technology (B.Tech/B.E.) **OR** • 4-Year B. Des **OR** • 4-Year BS Economics
A4	• Master's in Science (M.Sc) **OR** • M. Pharm, MCA, or MBBS
A5	• Master's in Arts / Commerce (MA/M.Com) or Allied Subjects **OR** • LLM **OR** • 1-Year Executive MBA from IITs/IIMs or an institute recognized by AICTE/ UGC/ AIU **OR** • CA /CS/CFA/(ICWA) CMA

AND
Section B - Aptitude Scores For qualifying degree

- **If you are in Category A1:** You are EXEMPT. You do not need to fulfill Section B. You are eligible based on your degree alone.

If you are in Category A2, A3, A4, or A5: You MUST fulfill ANY ONE of the following requirements:

1. You must have taken one of these exams in the last 3 years and met the cutoff: GATE :Qualified (Above qualification cut off); CAT: 80 percentile overall, GMAT: 600 marks, GRE: 300 marks, CLAT – 80 percentile, CEED: 75 percentile, NEET PG: 75 percentile
2. Selected through **UGC/CSIR NET/JRF/DST-Inspire** (including Assistant Professorship) with valid certificate.
3. Minimum of **2 Years** of professional experience (full-time job).

Special Exemption for IIT/CFTI Graduates - *Applies to Category A3 (Bachelor's Holders)*

All Bachelor's degree undergraduate course leading to a Bachelor's, Integrated Master's or Bachelor-Master Dual Degree in Engineering, Sciences or Architecture offered by IITs (admitted through JEE) having a CGPA/CPI score of 8.00 (on 10 scale) and above from an Indian Institute of Technology or any of the CFTIs is exempted from the requirement of a valid GATE score for the consideration of General Eligibility Requirement for admission.

Note 1: Requirement of minimum marks in the qualifying degrees can be accessed in Section A.5 of the IITB Information Brochure on PhD Admissions. For CA/ CS /CFA / ICWA (CMA), marks obtained in the preceding degree will be considered.

Note 2: Criteria for awarding fellowship are as per the guidelines mentioned in section A.6 of the IITB Information Brochure on PhD Admissions
AND

Section C - Research Proposal (Compulsory for all applicants)

Applicants have to submit a research proposal of 1500 words which identifies a research problem / interest from the domain of innovation and entrepreneurship, argues for its relevance by citing existing literature around it with academic references and proposes an appropriate research methodology to conduct the study.

Note: Proposals must be the original work of the applicant. The Institute reserves the right to reject applications that show evidence of plagiarism or significant AI-generation without attribution, as determined by the admission committee's verification process. The committee's decision in this regard will be final.

RESEARCH AREAS

DSSE invites applications for a PhD in the domain of Innovation & Entrepreneurship in the following indicative areas of research, for candidates who could subsequently spread across academia, industry and the social sector strengthening technology-based innovation and entrepreneurship infrastructure of the country:

- Entrepreneurship Ecosystem elements including incubators, investors, other support organizations and policy at national and regional levels
- Forms of Innovation and Product Development Lab to Market Translation including Funding of Core Tech & Deep tech ventures
- Indigenous and grassroots innovation and rural entrepreneurship
- Intersections with Sustainable Development Goals including inclusive innovation, social entrepreneurship, necessity entrepreneurship
- Practice of entrepreneurship in academia including university entrepreneurship and entrepreneurship education
- Entrepreneurship and entrepreneurial behaviour
- AI & Entrepreneurship
- Entrepreneurial Finance
- Entrepreneurship in Deep tech

Note: Above are indicative areas. You can write your research proposal in areas of entrepreneurship research apart from above mentioned. Refer DSSE website for additional information.

SELECTION PROCESS

Applicants who fulfil the eligibility criteria will be invited to appear in an in-person research aptitude test on IITB campus.

Candidates shortlisted based on performance in the written research aptitude test will be interviewed with specific reference to the research proposal submitted at the time of application. The final merit list will be declared based on performance in the selection process.

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B.20) Machine Intelligence and Data Science (MInDS)
[Center for Machine Intelligence and Data Science (CMInDS)]

The Centre for Machine Intelligence and Data Science (C-MInDS) at IIT Bombay is the institute's key hub for cutting-edge research and education in Artificial Intelligence and Data Science. With over 50 faculty members from diverse departments across IIT Bombay, C-MInDS is committed to advancing research and developing technologies for the AI era.

The PhD program in Data Science and Artificial Intelligence is aimed at advancing the state-of-the-art in ML and AI, leading to the creation of novel concepts and technological breakthroughs in the field. Envisioned to contribute significantly to the scientific body of knowledge, the program is focused on pioneering research in the area of Foundational Models, Computer Vision, Natural Language Processing, and Applied AI.

ELIGIBILITY FOR ADMISSION

First Class or 60% marks (55% marks for SC/ST), as specified in the General Eligibility Criteria, in any of the following qualifying degrees:

i) M.E./M.Tech/M.S in any engineering or technology discipline.
ii) MBA (with B.Tech/B.E or an equivalent degree).
iii) B.E/BTech in any engineering discipline.
iv) M.Sc or equivalent in any science, statistics, or mathematical discipline.
v) Four-year Bachelor of Science degrees such as 4-year B.S., B.Sc (Honours), or B.Sc (Honours with Research) in any science, mathematical, or engineering discipline.

For candidates qualifying under (iii), (iv), or (v), any one of the following additional requirements must also be fulfilled:

a. Valid GATE score
b. A four-year or five-year degree from the IITs, IISc, IISERs or a Master's degree from ISI (any two-year Master's degree), with CPI (normalized to a 10 point scale) >= 8.00.
c. Minimum two years of professional work experience (acquired after obtaining the qualifying degree and completed at the time of submitting the admission application)

Please refer to the **Application Categories and Financial Support section (A.6)** above to understand the various admission categories and their eligibility requirements and/or restrictions.

Written test and interview:
All applicants will be required to take the written-test, and if shortlisted, will be required to appear for interviews for final selection.

Course work requirements
Given the diverse academic backgrounds of the students, five breadth topics have been defined, and the students are required to obtain proficiency in each of them. These are:
Computing
Probability & Statistics
AI/ML
Linear Algebra
Optimization

For program details, please visit https://www.minds.iitb.ac.in/academic-details/phd
For admissions details please visit www.minds.iitb.ac.in/admissions
For research, please visit www.minds.iitb.ac.in/research

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B.21) MANAGEMENT (MG)
[Shailesh J. Mehta School of Management]

ELIGIBILITY FOR ADMISSION

A. Eligibility Criteria:

At least one of the following criteria must be met.
(i) Four year Bachelor in any discipline with 60% marks/6.5 CPI (55% marks/6.0 CPI for SC/ST) and at least two years work experience.

(ii) Master in any discipline (MBA/M.Tech./M.S./M.Sc./ M.A./ M.Com./ MCA/ LLM/ M.Pharm./ M.Phil.,etc.) or 2 year PG Diploma in Management from institutions/universities incorporated by an act of parliament or state legislature in India or other institutions declared to be deemed as University under Section 3 of the UGC Act, 1956, or possess an equivalent qualification recognized by the Ministry of Education, Government of India or AICTE or AIU or reputed foreign university with 60% marks/6.5 CPI (55% marks/ 6.0 CPI for SC/ST).

(iii) Executive MBA of at least one year duration from IITs/IIMs or institutions / universities incorporated by an act of parliament or state legislature in India or other institutions declared to be deemed as University under Section 3 of the UGC Act, 1956, or possess an equivalent qualification recognized by the Ministry of Education, Government of India or AICTE or AIU or reputed foreign university with 60% marks/6.5 CPI (55% marks/ 6.0 CPI for SC/ST).

(iv) CA/CS/CFA, and ICWA (CMA) with 60% marks/ 6.5 CPI (55% marks/ 6.0 CPI for SC/ST) in the preceding degree/Bachelors Degree (B.Sc./ B.Com./ BA).

For Foreign Students:

(i) Four year Bachelor with 60% marks or 6.5 CPI (out of 10) and two years work experience or Master in any discipline with 60% marks or 6.5 CPI (out of 10).

(ii) The candidate should have valid TOEFL score.

Students holding foreign passports (including persons with OCI or PIO cards) will be eligible to apply in this category. For Ph.D. Application Form: http://www.ir.iitb.ac.in/?page_id=26

AND

B. Research proposal (for both Indian and Foreign Students):
A research proposal (1000-1500 words) on a topic of interest instead of Statement of Purpose (SOP). It should contain a) problem definition, b) review of literature, and c) methodology.

Applications without research proposal will not be considered.

Note 1: The candidates with four year Bachelor degree should have valid CAT/ GMAT/ GATE/ GRE score to be eligible for financial support.

Note 2: Criteria for awarding Teaching Assistantship, and application categories are as per the guidelines mentioned in A.6 of the Ph.D. admissions brochure.

RESEARCH AREAS
- Decision Sciences & Quantitative Methods
- Economics & Policy
- Finance & Accounting
- Information Systems/Information Technology
- Marketing
- Entrepreneurship
- Operations & Supply Chain Management
- Technology & Innovation Management
- Strategic Management & competitiveness

- International Business
- Organizational Behaviour and Human Resources Management

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B.22) MATHEMATICS (MA)
[Department of Mathematics]

ELIGIBILITY FOR ADMISSION :

In addition to the General Eligibility Criterion prescribed by the Institute as given in A.5, the candidate should also fulfill the following:

First Class or 60% marks (55% marks for SC/ST), as specified in the General Eligibility Criterion, in the qualifying degree with any one of the following :

M.Sc. / M.A. or equivalent degree in Mathematics / Statistics / Computer Science
OR
M.Stat. or equivalent degree
OR
B.Tech./B.E. or equivalent degree in Engineering/Technology
OR
M.Tech./M.E. or equivalent degree in Engineering/Technology

Shortlisted candidates will be called for written test and interview. There will be separate written tests and interviews for students in Mathematics and Statistics. For syllabi of written tests please check the website of the Mathematics Department at http://www.math.iitb.ac.in/Academics/doctoral.php

Note: Criteria for awarding Teaching Assistantship and other application categories are as per the guidelines mentioned in section A.6 of this Brochure.

RESEARCH AREAS

Algebra and Number Theory:
Commutative and Homological Algebra (Blowup algebras, Hilbert functions, local cohomology, projective modules, complete intersections, Gorenstein rings), Algebras with involution, Galois cohomology of classical groups, Representations of algebraic groups, Reductive groups and related structures, Automorphic forms, L-functions, Diophantine equations, F-singularities, Hilbert-Kunz multiplicity.

Analysis:
Functional Analysis (Operator Theory, Hilbert modules, Operator algebras), Several Complex Variables (Function theory of holomorphic functions of several variables), Harmonic Analysis (Harmonic analysis on Lie groups, Hypergeometric functions associated with root systems).

Combinatorics and Theoretical Computer Science:
Combinatorial Optimization, Algebraic Combinatorics (representation theory, spectral graph theory), Enumerative Combinatorics, Graph and Hypergraph Theory (colouring problems), Extremal and Probabilistic Combinatorics, Theoretical Computer Science (Computational Complexity, Derandomization).

Geometry & Topology:
Algebraic Topology (stable homotopy theory), Algebraic Geometry (Schubert varieties, determinantal varieties, varieties over finite fields, Algebraic cycles, Moduli spaces of vector bundles), Lie groups (discrete subgroups, congruence subgroups, homogeneous spaces, probability measures), Affine Algebraic Geometry, Principal bundles and their stacks, Topological Combinatorics.

Partial Differential equations and Numerical Analysis:
Hyperbolic systems of quasilinear partial differential equations, nonlinear waves, homogenization, Control theory, viscoelastic fluid flow problems, Navier-Stokes equations, Shock waves in hyperbolic systems of conservation laws.

Geometric analysis, prescribing-curvature type problems and partial differential equations in conformal geometry, blow-up analysis and compactness issues, geometric and functional inequalities, nodal geometry of high energy eigenfunctions, quantum ergodicity and mass concentration problems, spectral theory. Finite element methods, finite volume methods, Invisibility cloaking and meta-materials, Mathematical statistical mechanics.

Statistics and Probability:
Statistical Inference, Statistical Modelling, Design of Experiments, Reliability Theory, Industrial Statistics, Statistical Data Mining in Computational Biology, Spatial Methods in Statistics, Time Series Analysis, Statistical Signal Processing, Non-parametric regression, Curve registration, Big data inference, Compressed sensing, Stochastic Differential Game Theory, Stochastic Control Theory, Mathematical Finance, Applied Probability, Random Matrices, Free Probability, Change point analysis and Stochastic networks, Extreme value theory, Branching random walks, Robust estimation for heavy-tailed random variables, Stable random fields, Point processes, Asymptotic properties of the random walks, Branching processes, Random graphs, Bootstrap, High dimensional Statistics, Rates of Convergence to CLT, Edgeworth Expansions.

Candidates are advised to visit the department webpage: http://www.math.iitb.ac.in for additional details on research topics.

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B.23) MECHANICAL ENGINEERING (ME)
[Department of Mechanical Engineering]

ELIGIBILITY FOR ADMISSION
First Class or 60% marks (55% marks for SC/ST), as specified in the General Eligibility Criterion, in the qualifying degree with any one of the following :
i. M.Tech./M.E. or equivalent degree in Mechanical Engineering, Production Engineering, Industrial Engineering, Aerospace Engineering, Chemical Engineering,Metallurgical Engineering, Mechatronics, Instrumentation & Controls, Laser Technology, Engineering materials technology, Biomechanics.

OR

M.Tech./M.E. or equivalent degree in other branches of Engineering / Technology with an outstanding academic record for research areas consistent with the academic background of the candidates.
ii. B.Tech./B.E. or equivalent degree in Mechanical Engineering, Production Engineering, Industrial Engineering, Aerospace Engineering, Chemical Engineering,Metallurgical Engineering

OR

B.Tech./B.E. or equivalent degree in other branches of Engineering / Technology with an outstanding academic record for research areas consistent with the academic background of the candidates. .

iii. For Additional department criteria please visit :https://www.me.iitb.ac.in/?q=Ph.%20D.%20Admissions

RESEARCH AREAS

ME1- Thermal and Fluids Engineering
ME2 – Design Engineering
ME3 – Manufacturing Engineering
(Please refer to the department websitehttp://www.me.iitb.ac.in, under Research, for more details)

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B.24) METALLURGICAL ENGINEERING AND MATERIALS SCIENCE (MM)
[Department of Metallurgical Engineering and Materials Science]

ELIGIBILITY FOR ADMISSION

The general eligibility criteria prescribed by IIT Bombay are bare minimum and mere possessions of same will not entitle the applicants to be called for written test/interview, The Department may restrict the number of applicants to be called for written test/interview to a reasonable limit, on the basis of qualifications and experience higher than that of the minimum prescribed in the advertisement. The candidate must satisfy the eligibility criteria in either one of the following qualifying degree:

i. M.Tech./ M.E. or equivalent degree in Engineering/Technology.
ii. B.Tech./B.E. or equivalent degree in Engineering/ Technology.
iii. M.Sc. Or equivalent degree in Chemistry, Materials Science, Physics and related science streams. Mathematics as a subject at the B.Sc. Level is mandatory.

Please visit the Department website (https://www.iitb.ac.in/mems/en) for additional details, where a dedicated webpage will be created prior to the initiation of the PhD admission process.

Note: Criteria for awarding Teaching Assistantship and other application categories are as per the guidelines mentioned in section A.6 of this Brochure.

RESEARCH AREAS

Physical and Mechanical Metallurgy:
microstructure, microstructure evolution, phase equilibrium, phase transformation, structure property relationship, thermomechanical processing and texture analysis, metal forming, superplasticity, mechanical behavior- creep, fatigue, micromechanics, fracture mechanics

Process Metallurgy and Manufacturing:
process modelling, process analysis, iron and steel making (including clean steel production), non-ferrous extractive metallurgy, welding, powder metallurgy, additive manufacturing, E-waste processing refractories, Non-ferrous production, Sustainable metal production, powder metallurgy and additive manufacturing

Structural Ceramics:
high temperature ceramics, inorganic glasses and glass-ceramics, ceramic foams, ceramic coatings, industrial ceramics, ceramic synthesis/processing, sintering, near net shape forming, gel casting, rheology of suspensions, mechanical and tribological behavior.

Electronic, Magnetic and 2D Materials:
electrical and optical properties, magnetic properties, dielectric and piezoelectric properties, electrochemical behavior, 2D materials, quantum and correlated materials, thin films synthesis/processing/devices

Energy Materials:
materials and devices for photovoltaic, advanced battery, supercapacitor, fuel cell, thermoelectric and sensing applications, nanoscale materials synthesis/ processing/ devices

Polymers and Soft Matter:
crystallization and self-assembly in soft matter (polymers, proteins) systems, polymer blends and polymer nanocomposites, polymer thin films and membranes, polyelectrolytes, surface and interfacial phenomena in soft materials, dynamics in polymer confinement, thermodynamic, mechano-rheological, mechanical properties of polymers, responsive, functional and conjugated polymers

Corrosion and Coatings:
Aqueous corrosion, the metallurgy of corrosion, corrosion in oil and gas, atmospheric corrosion, corrosion inhibitors, and protective coatings (functional organic coating,

galvanization, electroplating, and high-temperature coatings), electrochemistry, interface degradation

Modelling and simulation:

First principles-DFT, Monte Carlo, molecular dynamics, CALPHAD, phase field, phase field crystal, cellular automata, dislocation dynamics, crystal plasticity, plastic deformation and material flow, finite element

Departmental common facilities available (in addition to those available in individual research groups' laboratories)**:**

- X-Ray Diffractometers
- Scanning probe microscope-AFM, KPFM included
- Confocal Raman/PL system
- Dual-beam SEM/FIB microscope
- Transmission Electron Microscopy Facility (300 kV)
- Sample preparation facility for transmission electron microscopy
- Nanoindenter
- Metallography sample preparation setup
- Optical Image analyser system
- Vickers Microhardness Tester
- Scanning Electron Microscope
- Environmental scanning electron microscope
- simultaneous TG-DTA Thermal Analysis
- Scanning electrochemical Microscope
- Multi-channel potentiostat/Galvanostats
- Gleeble 3800
- UTM Machines
- Differential Scanning Calorimetry
- Differential Scanning Calorimetry
- Thermogravimetric Analyzer
- Hot-dip Galvanization (HDG) Simulator
- Corrotherm 610 Salt Spry
- BET
- DLS-Nano C particle analyzer
- Dilatometer
- High temperature furnaces
- High Performance Computingfacility, along with CALPHAD and standard open Source scientific software
- UV Visible Spectrophotometer
- Dynamic loop system
- High temperature high pressure autoclaves
- Vibrating sample magnetometer

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B.25) Collaborative Research on Science and Technology (CreST) {Centre for Sophisticated Instruments and Facilities (CSIF) } - (erstwhile CRNTS)

CSIF houses 171 research facilities (listed at instruments.iitb.ac.in) and provides a unique platform for ***cross-disciplinary collaborative research***, through the **CReST** programme. In this programme, ***two or more*** faculty members, from ***different*** departments, guide a student for their Ph. D., opening up immense possibilities in areas that involve cross-disciplinarity.

For example, a faculty member in Electrical Engineering may collaborate with a faculty member in Biosciences, in the area of fabrication of nanodevices for the detection of bioanalytes, for which a student with a background of Chemical Engineering or Chemistry may have the right expertise.

Thus, the student gets a unique training that can open up many avenues that may not be available for someone trained in a single conventional discipline. Besides, the students are assigned Teaching Assistantships on the sophisticated instruments and thus get a hands-on training on them, making them real experts and not mere users of the facilities.

ELIGIBILITY FOR ADMISSION

Over and above fulfilment of the General Eligibility Criterion, in the qualifying degree with subjects/ disciplines mentioned at http://www.saif.iitb.ac.in/crnts/phd_topics.pdf, additional criteria for shortlisting TA/ FA candidates for the interview are tabulated below.

i. M.Tech./ M. E./M.S. and equivalent Master's degrees after B. Tech./ M. Sc.
Additional Criteria : CPI/CGPA of 8.5 (8 for SC/ST) in M. Tech./ M.E./M.S. and equivalent Master's degree

ii M.Sc. First Class or 60% marks (55% marks for SC/ST), as specified in the General Eligibility Criterion, in the qualifying degree with any one of the
Additional Criteria - GATE score of 450 (GN),405(OBC), 300(SC/ST)
or
CSIR-UGC NET Junior Research Fellowship/ Lecturership (Candidates with Category III are not eligible)
or
DBT Junior Research Fellowship or equivalent fellowship .
Note: Criteria for awarding Teaching Assistantship and other application categories are as per the guidelines mentioned in section A.6 of this Brochure.

SELECTION PROCEDURE
 The available Ph. D. projects, along with names of supervisors, co-supervisors and specific eligibility criteria, would be displayed at http://www.saif.iitb.ac.in/crnts/phd_topics.pdf.

 CSIF office will prepare a preliminary shortlist of candidates who apply for the CReST programme. These candidates will be given the option of choosing projects they are interested in, with an upper limit of Three(03) project.

 The list of candidates interested in individual projects will be shared with prospective guides, who would prepare final shortlists of candidates eligible for their projects, on the basis of fulfilment of advertised educational qualification and online interviews to determine the suitability of the candidates for the projects.

 The finally shortlisted candidates will be called for interviews to be conducted by the Centre

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B.26) PHYSICS (PH)
[Department of Physics]

ELIGIBILITY FOR ADMISSION
First Class or 60% marks (55% marks for SC/ST), as specified in the General Eligibility Criterion, in the qualifying degree with any one of the following :

i. M.Tech./M.E. or equivalent degree in Engineering Physics, Aerospace Engineering, Chemical Engineering, Civil Engineering, Electrical Engineering, Mechanical Engineering, Metallurgical Engineering, Computer Science.
ii. M.Sc. or equivalent degree in Physics / Chemistry / Mathematics
OR
B.Tech./B.E. or equivalent degree in Engineering Physics, Aerospace Engineering, Chemical Engineering, Civil Engineering, Electrical Engineering, Mechanical Engineering, Metallurgical Engineering, Computer Science.

Note: Criteria for awarding Teaching Assistantship and other application categories are as per the guidelines mentioned in section A.6 of this Brochure.

RESEARCH AREAS

Condensed Matter Physics-Theory
Electron correlation in one and many component quantum fluids, Many body effects in inhomogeneous electron systems and metal surfaces, Quantum magnetism, Algorithms for condensed matter theory, Theoretical studies on magnetism and superconductivity, Electronic structure of ordered and disordered alloys, insulators, conjugated polymers and clusters, Strongly correlated electron systems, Novel magnetic systems, Development of wave function based ab-initio methods for electronic structure calculations, Study of control and thermodynamics of driven quantum systems with quantum information theory tools, ultrafast electron dynamics in solids.

Condensed Matter Physics-Experimental
Magnetic oxide thin films and metallic multilayers for various applications, Spintronic materials, Nano and bio magnetism, Strongly correlated electron systems, Quantum magnetism, Low-dimensional magnets, Metal-insulator transitions, Quasi 1d/2d magnetic systems and doping effects. Dilute magnetic semiconductors, Semiconductor nanostructures. Electrical and optical properties of semiconducting oxide and nitride thin films, Nanoparticles and nanostructured thin films, Langmiur- Blodgett organic multilayers, Conducting polymers. Bilayer GaAs quantum wells, Organic semiconductors, Perovskite semiconductors, Optoelectronics, Photodetectors & photovoltaics, Solar cells, 2D and other materials for energy applications

Optics/Photonics/spectroscopy-Theory:
Theoretical plasmonics and photonic bandgap crystals, Topological Photonics, PT symmetry in optics, Nonreciprocal optics, Theory of Metamaterials and metasurfaces, Computational optoelectronics of two-dimensional crystals and their heterostructures, Numerical Methods & Simulation Techniques for Nanophotonics, Complex Nanophotonic Device Design, Study of control and thermodynamics of driven quantum systems with quantum information theory tools, Quantum Optics Theory: Study of quantum synchronization of optical and opto-mechanical systems, EIT and other effects in unconventional systems using quantum information theory tools, Femto second and attosecond electron dynamics in atoms, molecules and solids. Time-resolved x-ray processes in matter.

Optics/Photonics/Light-matter interactions / Nano-photonics/Ultrafast phenomena / Spectroscopy -Experimental
Light-matter interactions in various types of nanostructures and other materials like organic molecules, Graphene, MoS_2, Quantum wells, Quantum dots and their hybrid nanostructures, Plasmonics, Sensing, Nanoscale light sources (lasers/LEDs), Solar cells, All-optical switching,

Highly spatially and temporally resolved (ultrafast) spectroscopic investigations of optical response using various techniques, Development of 2D materials based nanoscale light sources, Photodetectors and data communications, Photovoltaic materials and devices for energy, Metamaterials, Metasurfaces, Magneto-optics, Micro-spectroscopy

Astronomy, Cosmology, Gravity - Theory, Observation, Instrumentation

Cosmology and Gravity, Astrophysical Simulations, Gravitational Wave Physics, Multi-messenger and observational astronomy, Astronomical instrumentation

Statistical Physics/Bio Physics/Soft Matter Physics/ Non-Linear Dynamics -Theory
Non-equilibrium dynamics, Biological physics, Complex fluids and polymers, Stochastic processes, Slow and glassy dynamics, Self-organisation and pattern formation in active and living matter

Bio Physics/Soft Matter Physics/ Non-Linear Dynamics -Experimental Bulk/interfacial Rheology, Synchrotron X-ray scattering, Particle tracking, Programmable self-propelled Robots, Active granular particles

Quantum Information Theory

Theoretical and computational research on quantum information processing, computing, sensing and communication. Recent activities include understanding information processing with hybrid quantum systems, quantum sensors and thermal machines, networked quantum devices, quantum error-correction, quantum optimisation algorithms and classical machine-learning enhanced quantum information protocols.

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B. 27) POLICY STUDIES [PS]
(Ashank Desai Centre for Policy Studies)

The Ashank Desai Centre for Policy Studies (ADCPS) at IIT Bombay launched its PhD in Public Policy programme from the Autumn semester of 2017. The Centre undertakes policy-relevant research across a variety of social and technical domains. Eligibility criteria for PhD admission at ADCPS are given below. A written entrance examination and interview will be conducted for all eligible candidates.

ELIGIBILITY FOR ADMISSION

1) At least one of the following criteria must be met as the qualifying degree:
   (i) B.E/B.Tech or equivalent* degree with 60% marks/6.0 CPI (55% marks/5.5 CPI for SC/ST).
   (ii) Bachelor's degree in Medicine (MBBS 4 years or more)
   (iii) M.Sc/M.A/M.Com/LLM/MCA or equivalent* degree with 60% marks/6.0 CPI (55% marks/5.5 CPI for SC/ST) at postgraduation level.
   (iv) MBA/ME/M.Tech/M.Phil from any institute recognized by a Government body (AICTE/UGC/AIU) with 60% marks/6.0 CPI (55% marks/5.5 CPI for SC/ST).

   * Equivalence of a degree must be certified by the institution(s) awarding it.

2) Candidates must also fulfill ONE of the following additional requirements for items 1(i), 1(ii) and 1(iii) above:
   (a) VALID CAT/GMAT/GRE score.
   (b) Qualified in GATE/UGC-NET (Lectureship)/UGC-JRF/CSIR-NET (Lectureship)/CSIR-JRF/DAE/DST/DBT/ICMR/NBHM etc.)
   (c) At least 2 years of work experience (acquired after obtaining the qualifying degree and completed before the starting of the semester in which admission is sought).

Note: Criteria for awarding Teaching Assistantship and other application categories are as per the guidelines mentioned in Section A.6 of this Brochure.

3) Each student must indicate a policy-related topic on which they wish to carry out doctoral research. The candidate must identify the problem from the following list of identified research areas at ADCPS: (i) Digital Societies and Governance, (ii) Social Policy, (iii) Water, Sanitation, Energy and Climate Change, (iv) Urban Policy, (v) Technology and Policy, and (vi) Industrial and Economic Policy. (See: www.cps.iitb.ac.in/academics/doctoral-programme for more details).

   Each student must submit a research proposal on the selected topic. The proposal should include: (a) problem identification, (b) brief review of literature, (c) proposed methodology, (d) references (maximum word length - 2000 words, excluding references). The research proposal will be graded for admission purposes.

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B.28) SYSTEMS AND CONTROL ENGINEERING (SC)

[Centre for Systems & Control]

ELIGIBILITY FOR ADMISSION

First Class or 60% marks (55% marks for SC/ST), as specified in the General Eligibility Criterion, in the qualifying degree with any one of the following :

i. M.Tech./M.E. or equivalent degree in any branch of Engineering
ii. B.Tech./B.E. or equivalent degree in any branch of Engineering
OR
M.Sc. or equivalent degree in Mathematics or Physics

Note: Criteria for awarding Teaching Assistantship and other application categories are as per the guidelines mentioned in section A.6 of this Brochure.

RESEARCH AREAS

Systems Theory: PDEs, mechanics, dynamical systems, optimization, game theory, probabilistic methods, information theory, AI and learning theory, sparse methods, inverse problems

Control Theory: optimal, robust, stochastic, adaptive, linear and nonlinear, geometric, quantum, embedded, data-driven

Robotics and Automated Systems: air-ground-water-space vehicles, drones,industrial automation, autonomous systems, reconfigurable and flexible structures

Connected and Information Systems: networked systems, social systems, multiagent systems, quantum systems, analytics and data science, internet-of-things, cyber-physical networks

All applicants are advised to look at the faculty webpage (https://www.sc.iitb.ac.in/coreFaculty.html) and the corresponding research areas before applying.

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B.29) TECHNOLOGY & DEVELOPMENT (TD)

[Centre for Technology Alternatives for Rural Areas(CTARA)]

ELIGIBILITY FOR ADMISSION

First class or 60% marks (55% marks for SC/ST), as specified in the General Eligibility Criterion, in the qualifying degree after 10+2 in the science stream. Applicants **MUST** have one of the following degrees:

i. M.Tech. / M.E. in any Engineering discipline
ii. B.Tech. / B.E. in any Engineering discipline
iii. BS degree (Four years) or M.Sc. (in fundamental and applied sciences such as Physics, Chemistry, Mathematics, Statistics, Biotechnology, Environmental Science, Life Sciences, Geology, Food Science, Nutritional Sciences, Agriculture, Data Science)
iv. M.Arch. / M. Planning / MD (Community Medicine) / M.Des / M.Pharm
v. Medicine and allied health disciplines—such as M.B.B.S, B.A.M.S, B.H.M.S, B.U.M.S, B.D.S, B. Pharm, and B.P.T, are eligible if they have completed a relevant postgraduate degree after their undergraduate programme as follows:
   - M.B.A, MA, or M.Phil. (in disciplines such as Public Health, Population Studies, Nursing, Public Policy, Social Work, Development Studies, Sociology, Economics, History, Political

Science, Anthropology, or Geography).

vi. Any undergraduate degree from any IITs and IISc

NOTE:

1. Prior experience in conducting research/field work/technology transfer/project management related to addressing technology and development challenges is desirable

2. Candidates MUST submit the following along with the application

(a) Statement of Purpose (SoP), and

(b) Research Proposal clearly indicating the area of research proposed for their PhD in 1000 words.

3. A written test will be conducted, followed by an interview.

Note: Criteria for awarding Teaching Assistantship and other application categories are as per the guidelines mentioned in section A.6 of this Brochure.

RESEARCH AREAS

- Technology and Development
- Rural/Agro-based Industries
- Food and Nutrition
- Natural Resources (energy, water, Land use)
- Environment, Climate Change, and Development
- Public Policy and Governance
- Agriculture and biodiversity
- Rural and regional planning
- Public health and health systems
- Rural and Agricultural Infrastructure

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B.30) Defence Technology (DT)
[Center for Defence Technology Innovations and Strategies (CDTIS]
- New Programme from the AY.2026-27

The proposed Ph.D. program in Defence Technology offers a unique opportunity for in-service personnel from defence, ex-service men, DRDO, defence manufacturing industries, start-ups and fresh graduates to carry out research that is relevant to present and future defence requirements.

ELIGIBILITY FOR ADMISSION

Qualifying Degree:

1. Master’s or equivalent degree in Engineering/Technology/Science with an academic background relevant to the research areas of the center.

2. Four-year Bachelor’s degree in Engineering/Technology/Science with an academic background relevant to the research areas of the center.

For M.Sc. as the qualifying degree and those listed in point no 2 above, candidates must also fulfil ONE of the following additional requirements:

a) Valid GATE score
b) Minimum of TWO years of professional experience (acquired after obtaining the qualifying degree and completed before the starting of the semester in which admission is sought)

Note: Criteria for awarding Teaching Assistantship and other application categories are as per the guidelines mentioned in section A.6 of this Brochure.

The following categories will be applicable :
TA, TAP, RA, RAP, IS, SW, SF, CT, Ex, PS, FA as per admission rules. The eligibility for the above categories will be as per rules mentioned in the Ph.D. rule book.

Selection Procedure
The final selection process to Ph.D. programme will be through written test and/or interview as specified by the center.

RESEARCH AREAS

1. Digital Twins
2. Autonomous Systems and Countering Technologies
3. System Security, Safety and Survivability
4. Stealth Enabling and Countering Technologies
5. Materials and structures for Military Applications
6. Reliability and Maintenance of Military Equipment
7. Enterprise Geographic Information Systems for Military Operations
8. Focussed Energy Systems for Military Applications
9. Space and Aerospace Technology for Military Applications
10. Defence strategies

Faculty members associate with the center pursue research in the above broad areas. However, for admission to the Ph.D. programme, research areas/topics only on a subset from the above will be offered for each round of admission and this information will be displayed in the center's web site (www.cdtis.iitb.ac.in) as and when online application form is available in the Institute's web page. Candidates should check this information before applying.

A statement of purpose must be enclosed along with the application in the specified format (available at the same link as above) in which the titles of topics of candidate’s interest should be mentioned with a detailed justification how the candidate’s academic background is suitable to pursue research in that area.

Additionally, a research proposal in the specified format (available at the same link as above) on a topic from any one of the research areas listed above should be submitted. The proposal should contain

(a) problem identification
(b) brief review of literature
(c) proposed methodology
(d) references.

Please note that merely fulfilling eligibility criteria doesn't entitle a candidate to be called for the test and/or interview. The Center reserves the right to call for interview and/or written test only those candidates that are shortlisted on the basis of their qualification, academic background, statement of purpose, research proposal and requirement.

Financial Support
A candidate, selected for the Ph.D. Programme, at IIT Bombay will be eligible for the financial support as per guidelines mentioned in the Ph.D. rule book.

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B.31) TRADITIONAL INDIAN KNOWLEDGE AND SKILLS (TIKS)
[Centre for Traditional Indian Knowledge and Skills (CTIKS)]

- New Programme from the AY.2026-27

The Centre for Traditional Indian Knowledge and Skills (CTIKS) is dedicated to the rigorous study, reconstruction, and contemporary application of India's scientific and artisanal knowledge traditions. The current research areas and the corresponding eligibility criteria are given below.

ELIGIBILITY FOR ADMISSION

First Class or 60% marks (55% marks for SC/ST), as specified in the General Eligibility Criterion, in the qualifying degree. **The qualifying degree for each area of specialization is given below.**

- **Indian Mathematics and Astronomy (IKS1)**
  (i) M.Tech./M.E. or equivalent degree in Engineering / Technology

  OR
  (ii) MBA or equivalent degree (with B.Tech. / B.E. or equivalent degree)
  OR
  (iii) B.Tech. / B.E. or equivalent degree in Engineering / Technology
  OR
  (iv) B.S. (4-year) degree in Mathematics / Physics
  OR
  (v) M.Sc. or equivalent degree in Mathematics / Physics

  Candidates with qualification listed in (iii), (iv) or (v) must also fulfil ONE of the following additional requirements (Refer to section A.5 of this brochure for exemptions):
  a) a valid GATE score
  b) Selected through National Eligibility Test – UGC NET including lectureship (Assistant Professorship)
  c) Selected through a National level examination conducted by MoE or its agencies / Institutions such as UGC/ IIT/ IISc./ IIIT etc.
  (d) Selected provisionally for the DST-INSPIRE Fellowship (provisional award letter to be produced)
  e) Minimum of TWO years of professional experience (acquired after obtaining the qualifying degree and completed before the starting of the semester in which admission is sought)
  Reasonable familiarity with Sanskrit is desirable.

- **Linguistics and Language Technology (IKS2)**
  M.A. in Sanskrit / Prakrit / Pali / Sanskrit Linguistics AND

  Selected through National Eligibility Test – UGC NET including lectureship (Assistant Professorship)

  Familiarity with Python programming language, competence in traditional knowledge explicitly displayed by clearance of exams (like that of the Vedashastrottejaka Sabha, Pune, for example) is desirable.

- **Yoga and Wellness Science (IKS3)**
  Qualifying degree requirements are the same as those specified in the general eligibility criteria.

  Post Graduate Degree or Equivalent in Psychology or Management or Yoga is desirable.

- **Ancient Water Management Systems (IKS4)**
  M.Tech./M.E. or equivalent degree in Hydrology and Water Resources Engineering / Irrigation Water Management / Architecture / Agricultural Engineering

  Background in Epigraphy, manuscriptology, and archaeology is desirable.

- **Heritage Structure Conservation (IKS5)**
  M.Tech./M.E. or equivalent degree in Geotechnical Engineering / Construction Technology / Structural Engineering / Construction Materials / Conservation
- **Indian Financial and Business Models (IKS6)**
  Qualifying degree requirements are the same as those specified in the general eligibility criteria.

Candidates applying to Centre for Traditional Indian Knowledge and Skills are required to submit a statement of purpose with the application in the specified format in which the titles of topics of candidate's interest shouldbe mentioned with a detailed justification how the candidate's academic background is suitable to pursue research in that area.

Note: Criteria for awarding Teaching Assistantship and other application categories are as per the guidelines mentioned in section A.6 of this Brochure.

Areas of Specialization and Research Areas:

- **Indian Mathematics and Astronomy (IKS1)**
  Textual & Critical Studies of Primary Sources, Computational Techniques (including Vakya system), Pedagogy & Knowledge Transmission, Kerala School & Late Medieval Developments, Planetary Models & Observational Astronomy, Astronomical Instruments (including masonry) & Observational Practices, Cross-Cultural Studies on the History and Evolution of Astronomy

- **Linguistics and Language Technology (IKS2)**
  Mathematical modeling of Paninian grammar, Shabdabodha in view of the indivisibility of the sentence, Discourse Analysis, Yogyata Relations and Automatic Script Generator, Accent generator, Wordnet of Indian Languages, Any other relevant topic in the field of Vyakarana

- **Yoga and Wellness Science (IKS3)**
  Language and Wellness, Psychological aspects of Yoga based practices at individual and organizational level, Study of classical texts in Yoga, Cultural, Social & Historical Studies of Yoga, Application of Yoga in different domains such as therapy, sports and management.

- **Ancient Water Management Systems (IKS4)**
  Sustainable Water Management drawing inferences from various inscriptional sources, Community-based sustainable large-scale rainwater harvesting, temple tanks and their heritage, Management of Tank-Irrigation Systems - a socio-hydrological approach, Stepwells and their contribution in water management, Water management in the Forts of 12 UNESCO heritage sites in Maharashtra and Tamil Nadu

- **Heritage Structure Conservation (IKS5)**
  Analysis of jointless structures in temples and temple tanks, Heritage Impact assessment, Characterization of ancient construction materials and methods, Interventions to existing heritage structures

- **Indian Financial and Business Models (IKS6)**
  Traditional Indian foundations of Business, Commerce, Finance and Economics, Arthashastra & Ancient Economic and Business Thought, Indigenous Financial, Banking and Business Systems, Accounting, Measurement & Wealth Reporting, Sustainable Business and Circular Economy, Behavioral Finance, Family Business, Intergenerational Capital, Entrepreneurship and Innovation, Corporate Governance and Leadership, Ethics, Trust & Informal Governance, MSMEs & Informal Economy

Please visit https://ctiks.iitb.ac.in/ for more information.

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B.32) Medical Innovations (MI)
[Medical Technology Research and Innovation Centre (MED-TRIC)]

- New Programme from the AY.2026-27

The Proposed PhD in Medical Innovations from MED-TRIC will offer a unique opportunity to incoming students to get the combined benefits of working in an Engineering Institute and a Medical College/Hospital on real life unmet medical needs that can be translated into medical devices/products/technologies through a unique Biodesign based structure offering students the advantages of an Interdisciplinary Collaboration through a Clinical Immersion process.

Eligibility Criteria for Admission to PhD in Medical Innovations (Any category students allowed including TA, FA, RA, SW, PS)

First Class or 60% marks (55% marks for SC/ST), as specified in the General Eligibility Criterion, in the qualifying degree:

(A) M.Tech./M.E / MDes (Science background)/MPharm or equivalent degree in Biotechnology, Biomedical Engineering, Chemical Engineering, Computer Science / Engineering, Electrical Engineering, Electronics/Telecommunications Engineering, Instrumentation Engineering, Mechanical Engineering, Metallurgical Engineering and Material Science, Engineering Physics, Optics / Optoelectronics / Photonics, Robotics, Robotics Engineering, Automation and Robotics, Mechatronics, Data Science and Artificial Intelligence, Data Science and Engineering, Artificial Intelligence, Engineering Sciences.

(B) MBBS with MD/MS, MVSc, MDS, MPTh, MOTh, MS/MD Health sciences AYUSH

(C) B.Tech./B.E/BDes (Science background). or equivalent degree in Biotechnology, Biomedical Engineering, Chemical Engineering, Computer Science / Engineering, Electrical Engineering, Electronics / Telecommunications Engineering, Instrumentation Engineering, Mechanical Engineering, Metallurgical Engineering and Material Science, Engineering Physics, Optics / Optoelectronics / Photonics, Robotics, Robotics Engineering, Automation and Robotics, Mechatronics, Data Science and Artificial Intelligence, Data Science and Engineering, Artificial Intelligence, Engineering Sciences.

(D) M.Sc. or 5-year Integrated B.S.-M.S. program or equivalent degree in Life Sciences, Biochemistry, Biophysics, Biotechnology, Ceramics, Chemistry, Electronics, Ergonomics, Material Science, Mathematics, Molecular Biology, Physics, Bioinformatics, Data Science, Physiology, Cognitive Science, Neuroscience, Photonics / Optics / Optoelectronics.

(E) Health Sciences (such as MBBS (Medicine) / BDS (Dental), B.Pharm/B.V.Sc., B.P.Th., B.O.Th., B.ASLP, Pharma D (duration 4 years or more). Candidates with these backgrounds and degrees, should have qualified one of the following: All India level postgraduate entrance examinations for corresponding disciplines such as INI_CET/NEETPG/NEET MDS/JIPMER/PGI Chandigarh/ AFMC-Pune/DNB Part I/AIIPMR for MBBS/ BDS, GPAT/ All India level selection examination for B.Pharm., All India level postgraduate entrance examination such as AIIPMR for M.V.Sc., M.P.Th., M.O.Th. and M.ASLP, GATE examination for all such health science background where applicable. Eligibility/rank certificates for all such All-India level entrance examinations are required. The candidate should have qualified in the entrance exam (as per the qualification criterion of the respective exam for that exam year and category), and the score obtained should be valid (as per the duration of validity for the respective exam) at the time of admission to the Ph.D. program.

Candidates with qualifying degrees in [C and D] must fulfill one of the following: a valid GATE score/CEED/UCEED (for TA/TAP/RA/RAP), a valid CSIR/UGC/DBT JRF, or a valid ICMR JRF (not linked to ICMR project), or any other fellowship that will provide scholarship for five years. For candidates with qualifying degrees as in (A) to (E), and applying under PS or SW category, experience [as specified in A.5 and A.6 in PhD brochure] is mandatory.

Note: Criteria for awarding Teaching Assistantship and other application categories are as per the guidelines mentioned in section A.6 of this Brochure.

Selection Procedure

The final selection process to Ph.D. programme will be through written test and/or interview as specified by the center.

RESEARCH AREAS
Non-Communicable Diseases (NCDs): Cancer, Cardiovascular Diseases, Diabetes, Metabolic Disorders, Mental Health, Obesity.

Genetics & Genomics: Understanding genetic basis of diseases, personalized medicine, inherited disorders.

Reproductive & Child Health: Fertility, maternal and child well-being.

Aging & Geriatrics: Age-related diseases and health issues.

Immunology & Vaccinology: Vaccine development (e.g., Covaxin, RSV), immune response research.

Neuroscience: Brain disorders, neurobiology, behavioural health.

Biomaterials & Regenerative Medicine: Stem cells, tissue engineering, prosthetics.

Public & Environmental Health: Occupational health, disease surveillance, health delivery systems.

Rehabilitation Engineering

Medical Devices

Orthopaedics and Sports Medicine

Key Requirement

A statement of purpose must be enclosed along with the application in the specified format in which the titles of topics of candidate’s interest shouldbe mentioned with a detailed justification how the candidate’s academic background is suitable to pursue research in that area.

Please note that merely fulfilling eligibility criteria doesn't entitle a candidate to be called for the test and/or interview. The Center reserves the right to call for interview and/or written test only those candidates that are shortlisted on the basis of their qualification, academic background, statement of purpose and requirement.

Financial Support

A candidate, selected for the TA/RA Category for the Ph.D. Programme, at IIT Bombay will be eligible for the financial support as per guidelines mentioned in the Ph.D. rule book.

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B.33) Financial Markets (FM)
[Motilal Oswal Centre for Capital Markets (MOCCM)]
(https://www.som.iitb.ac.in/moccm/)

- New Programme from the AY.2026-27

The Indian financial system comprising institutions, markets, and instruments is one of the largest and most diversified in the world. It comprises scheduled commercial banks, non-banking finance companies (NBFCs), cooperative banks, specialized financial institutions, payment banks, mutual funds, pension funds, insurance companies, stock and commodity exchanges, broking firms, credit rating companies, microfinance institutions (MFIs), fintechs,

and others. The Indian financial services sector has been undergoing rapid expansion both in terms of strong growth and consolidation of existing financial services firms and new entities entering the market.

Vision of the Centre

The vision is to be a national and global centre of excellence in capital markets, advancing knowledge, innovation, and leadership for the sustainable growth of the financial ecosystem. The Centre will house all the required resources - expertise, data, analytical tools, softwares, use cases, simulations, etc. It will be the go to place for any support in research, training, and policy formulation in the country. The Centre will enter into collaborative agreements with similar entities in US and Europe for mutual benefit - faculty and student exchange, joint conferences/workshops, joint research projects, joint academic programmes, etc. The institute promises to make it a world class centre for professionals to look up to for expertise in banking, financial markets, and insurance. The Centre will also encourage and promote startups in the emerging areas such as Fintech, AI/ML in Banking and Finance, Insuretech, Wealth Management, Regtech, Finance Apps, Financial Analytics, Blockchain, Digital Currency, etc.

Eligibility Criteria for Admission:

A. Eligibility Criteria (Candidates from India):

At least one of the following criteria must be met.
(i) Four year Bachelor degree in Engineering/Technology, Science, Mathematics, Economics, Management, Statistics with 60% marks/6.5 CPI (55% marks/6.0 CPI for SC/ST) and at least two years work experience.

(ii) Masters degree in Management, Accounting, Finance, Economics, Financial Markets, Capital Markets, Banking, Insurance, Securities Markets, Mathematics, Statistics, Engineering/ Technology (MBA/M.Tech./M.S./M.Sc./M.A./M.Com./ /M.Phil., etc.) or 2 year PG Diploma in Management from institutions / universities incorporated by an act of parliament or state legislature in India or other institutions declared to be deemed as University under Section 3 of the UGC Act, 1956, or possess an equivalent qualification recognized by the Ministry of Education, Government of India or AICTE or UGC or AIU or reputed foreign university with 60% marks/6.5 CPI (55% marks/ 6.0 CPI for SC/ST).

(iii) Executive MBA of at least one year duration from IITs/IIMs or institutions / universities incorporated by an act of parliament or state legislature in India or other institutions declared to be deemed as University under Section 3 of the UGC Act, 1956, or possess an equivalent qualification recognized by the Ministry of Education, Government of India or AICTE or UGC or AIU or reputed foreign university with 60% marks/6.5 CPI (55% marks/ 6.0 CPI for SC/ST).

(iv) CA with 60% marks/ 6.5 CPI (55% marks/ 6.0 CPI for SC/ST) in the preceding degree/ Bachelors Degree (B.Sc./ B.Com./ BA/ BS/ BBA).

Eligibility Criteria (Candidates from Abroad):

(i) Four year Bachelor degree in Engineering/Technology, Science, Mathematics, Economics, Management, Statistics with 60% marks/6.5 CPI (55% marks/6.0 CPI for SC/ST) and at least two years work experience.

(ii) Masters degree in Management, Accounting, Finance, Economics, Financial Markets, Capital Markets, Banking, Insurance, Securities Markets, Mathematics, Statistics, Engineering/ Technology (MBA/M.Tech./M.S./M.Sc./M.A./M.Com./ /M.Phil., etc.) or 2 year PG Diploma in Management from institutions / universities incorporated by an act of parliament or state legislature in India or other institutions declared to be deemed as University under Section 3 of the UGC Act, 1956, or possess an equivalent qualification recognized by the Ministry of Education, Government of India or AICTE or UGC or AIU or reputed foreign university with 60% marks/6.5 CPI (55% marks/ 6.0 CPI for SC/ST).

(iii) Executive MBA of at least one year duration from IITs/IIMs or institutions / universities incorporated by an act of parliament or state legislature in India or other institutions declared to be deemed as University under Section 3 of the UGC Act, 1956, or possess an equivalent qualification recognized by the Ministry of Education, Government of India or AICTE or UGC or AIU or reputed foreign university with 60% marks/6.5 CPI (55% marks/ 6.0 CPI for SC/ST).
(iv) The candidate should have valid GMAT score.
Candidates holding foreign passports (including persons with OCI or PIO cards) will be eligible to apply in this category. For Ph.D. Application Form: http://www.ir.iitb.ac.in/?page_id=26

AND

B. Research proposal (for both Indian and Foreign Students):

A research proposal (1000-1500 words) on a topic of interest instead of Statement of Purpose (SOP). It should contain a) problem definition, b) review of literature, and c) methodology.

Applications without research proposal will <u>not</u> be considered.

Note 1: The candidates with four year Bachelor degree should have valid CAT/GMAT/GATE/GRE score to be eligible for financial support.

Note 2: Criteria for awarding Teaching Assistantship, and application categories are as per the guidelines mentioned in A.6 of the Ph.D. admissions brochure.

<u>Admission Process:</u>

The eligible candidates will be shortlisted based on their performance in the screening test comprising quantitative ability, data sufficiency, data interpretation, research aptitude. The final selection will be based on performance in the interview. The Centre proposes to admit 10 candidates (including 4 institute TAs).

Course Work:

The candidates are required to complete a minimum of 52 credits over two or three semesters irrespective of their last qualification, and the confirmation of Ph.D. will be subject to satisfactory performance during course work.
The students are required to select from among the Masters and Doctoral courses offered by the Centre, SJMSOM, Economics, DSSE, IEOR, Mathematics, CMInDS, and other academic units.

The following is a basket of courses.

1. CCMxxx Corporate Finance (3 0 0 6) – Core Compulsory
2. CCMxxx Management Accounting (3 0 0 6)
3. CCMxxx Investment Management (3 0 0 6)
4. CCMxxx Financial Institutions and Markets (3 0 0 6)
5. SOM802 Theory of Finance (3 0 0 6) – Core Compulsory
6. SOM808 Introduction to Research Methods (3 0 0 3) – Core Compulsory
7. SOM814 Statistics for Management Research (3 0 0 6)
8. SOM807 Economics (3 0 0 6) – Core Compulsory
9. SOM810 Qualitative Research Methodologies (3 0 03)
10. SOM653 Security Analysis and Portfolio Management (3 0 0 3)
11. SOM654 Fixed Income Securities (3 0 0 3)
12. SOM642 Business Forecasting (3 0 0 3)
13. SOM650 Mergers, Acquisitions, and Business Valuation (3 0 0 3)
14. SOM655 Derivatives and Risk Management (3 0 0 3)
15. SOM698 Management of Banking and Financial Services (3 0 0 3)
16. SOM651 International Finance (3 0 0 3)
17. SOM720 Sustainable Finance (3 0 0 3)
18. SOM660 Financial Modelling (3 0 0 3)
19. SOM728 Business Analytics and Simulation (3 0 0 3)
20. SOM707 Behavioural Finance (3 0 0 3)
21. IE3642 Engineering Economic Analysis (3 0 0 6)
22. MA603 Statistical Methods of Analysis and Design (3 0 0 6)
23. IE605 Engineering Statistics (3 0 1 8)
24. EC306 Econometrics – I (3 0 0 6) and EC405 Econometrics II (3 0 0 6)
25. Credit Seminar (0 0 0 4)

Areas of Research

The research agenda of the Centre includes the following among others:

1. Financing of SMEs by Banks
2. Regulatory Framework for Microfinance Institutions (MFIs)
3. Need for and Success of Sector-Specific Financial Institutions such as SIDBI, NABARD, Post Office Savings Bank, etc.
4. Innovation versus Regulation in Financial Markets
5. Issues in regulation of banks, other financial institutions, and markets
6. Disruptive Technologies in Banking and Financial Markets, and the Lessons for Regulation
7. Sophisticated Models for Pricing of Derivatives
8. Algorithmic Finance – Algorithmic trading, AI/ML, optimal trading strategies, etc.
9. Continuous Time Finance (CTF) – Applications of Deep Learning to CTF
10. Market Microstructure – Intra-day market modelling, impact of algorithmic trading on market stability and liquidity
11. Financial Stability and Systemic Risk – network models, contagion in financial markets, systemic risks in banking systems
12. Computational Finance – Monte-Carlo Methods, Martingale Methods, Portfolio Optimization, Credit Risk Modelling, Order Book Modelling
13. Use of AI/ML to predict asset prices, volatility, credit scoring models, fund management, insurance.
14. Performance of AI powered mutual funds, use of AI/ML to improve the performance of hedge funds, Fraud detection and security of financial transactions.
15. Fintech, Crypto assets, Digital Finance.
16. LLMs in Finance.

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B.34) Semiconductor Engineering - New Programme from the AY.2026 -27 (Spring Semester)

[Centre for Semiconductor Technologies (SemiX)]

SemiX, the IITB Centre for Semiconductor Technologies, was established as a research center in 2022, and transformed into an academic unit in 2025. As such, it is expected to welcome its first Ph.D. students in the Spring of the 2026-27 Academic Year (starting January, 2027).

Research at SemiX is defined by its focus on translation – either through partnership with industry and/or through startup incubation – with the aim of transforming the semiconductor industrial ecosystem, from India, and in India. Students of like motivation are encouraged to apply.

The semiconductor industry is driven by highly multidisciplinary expertise. In consonance with this, the SemiX Ph.D. program in Semiconductor Science & Engineering is designed to accommodate applicants from practically all branches of engineering and physical sciences, who aspire to a career in the semiconductor industry.

Likewise, the 22 participating faculty members of SemiX span the departments of Chemistry, Electrical Engineering, Mechanical Engineering, Metallurgical Engineering & Materials Science. SemiX has also started inducting core faculty members, including distinguished industry veterans as Professors of Practice.

ELIGIBILITY FOR ADMISSION

First Class or 60% marks (55% marks for SC/ST), as specified in the General Eligibility Criteria, in any of the following qualifying degrees:

(i) ME/MTech/MS in any engineering discipline, or physics, or chemistry (with at least minor level physics and mathematics), or mathematics (with at least minor level physics and chemistry); including 5-year Integrated Masters and Dual-Degree programs from IISERs, IITs etc.
(ii) MSc or equivalent in any engineering or physics, or chemistry (with at least minor level physics and mathematics), or mathematics (only if there has been at least minor level physics and chemistry)
(iii) BE/BTech in any engineering discipline
(iv) 4-year Bachelor of Science degree such as BS, BSc (Honors), BSc (Research) in any engineering discipline, or physics, or chemistry (with at least minor level physics and mathematics), or mathematics (with at least minor level physics and chemistry)

For candidates qualifying under (ii), (iii) or (iv), any ONE of the following additional requirements must also be fulfilled:

a. Valid GATE score

b. A four-year or five-year degree from the IITs, IISc, IISERs, or other CFTIs with CPI (normalized to a 10 point scale) >= 8

(v). Minimum two years of professional work experience (acquired after obtaining the qualifying degree and completed at the time of submitting the admission application) as specified earlier in A.5 and A.6 (for CT,EX,IS,PS,SF,SW category)

For TAP category - Candidates who are in their pre-final semester in one the programs mentioned above (and who, if they are in the programs mentioned in (ii), (iii), or (iv), also satisfy either the additional requirement ‘a’ (valid GATE score) or ‘b’ (CPI >= 8 up to the most recently completed semester from a CFTI)), will be eligible to be selected for early offers in the December round of Ph.D. admissions (the joining date will be in July of the following year). This shall include the parallel possibility of offers through the job placement route in select campuses.

Note: Criteria for awarding Teaching Assistantship and other application categories are as per the guidelines mentioned in section A.6 of this Brochure.

RESEARCH AREAS

- Advanced Packaging
  - Heterogeneous Integration, 2.5D/3D Packaging - Design (Mechanical/Thermal) and Fabrication
  - Materials and Process Technologies for Backside Power and Signal Delivery
  - Materials and Process Technologies for Advanced Packaging (2.5D/3D/ Chiplet)
  - Advanced Substrates with fine-pitch RDLs (Multilayer organic, Glass panel)
  - Thermal heat dissipation in semiconductor packaging (1st level packaging)

- Semiconductor Manufacturing
  - Wafer Fab Equipment Design

- Semiconductors for High-Performance Computing (including AI and quantum hardware)
  - Logic & Memory: Materials, Process and Device Technology
  - Digital & AMS Design, Microprocessor, AI Accelerators
  - Neuromorphic Engineering

    - Materials, Processes, Devices for Quantum Technologies
    - Computing Systems, Architecture and Algorithms
    - Computing Systems Design and Packaging

- Power Semiconductors
    - Materials, Processes, and Devices for Power Applications
    - Thermal Conductive Substrates for High-Power Applications
    - Power Semiconductor Packaging

- Semiconductors for High-Speed Communications
    - Materials, Processes, Devices, Circuits and Packaging for RF Electronics
    - Materials, Processes, Devices, Circuits and Packaging for Photonics

- Semiconductors for Sensing
    - Materials, Processes and Devices for Sensors – including MEMS, PiezoMEMS, Optical MEMS
    - Sensor Circuit and System Design – including CMOS-MEMS Co-integration, MEMS and Sensor Packaging

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Appendix C.1

Sponsorship Letter for Full-time Ph.D. Candidates (SW)
(To be typed on letterhead of the sponsoring organization)

To

The Director,
Indian Institute of Technology, Bombay
Mumbai – 400 076.

Sub: Sponsoring of an Employee for Ph.D. programme

Dear Sir,

We hereby sponsor the candidature of Shri./ Smt./ Kum_____, employed in our organization as _____ (designation) for joining his / her Ph.D. Programme in _____ at your Institute as a full-time candidate.

He/ She is employee of our organization since_____. We shall bear the total expenses of his / her studies. We shall fully relieve him/ her of his/ her duties in the organization during the entire period of the Ph.D. programme, to enable him/ her to devote full time to his/ her studies in the Institute.

Signature and Seal of the Sponsoring Authority

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Appendix C.2

Employer's Letter for Ph.D. candidates joining on Study Leave (SF)
(To be typed on letterhead of the Institution)

To

The Director,
Indian Institute of Technology, Bombay
Mumbai – 400 076.

Sub: Relieving an employee on Study Leave

Dear Sir,

We hereby relieve Shri./ Smt./ Kum. _____, employed in this Institute as _____ (designation) on _____ (full-pay/ half-pay/ no-pay) leave for joining Ph.D. programme at IIT Bombay, for a period of _____ years (at least three years).

Signature of Head of the Institute and Seal of the Institution

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Appendix C.3

Sponsorship Certificate for Ph.D. External Registration (EX)

Name of the sponsoring organization: _____

Address: _____

Present Designation of the applicant: _____

Present status of the applicant: _____
(Permanent/Quasi Permanent/Temporary)

Division where research work is proposed to be done: _____

Name of supervisor from the sponsoring organization: _____
(Bio-data of supervisor to be enclosed giving details of designation, qualification, research experience etc.)

Details of facilities relevant to the research problem which will be made available to the candidate by the organization.

Statement of proposed Co-supervisor (external)

If Shri / Kum. / Smt._____ is registered for the doctorate degree, I agree to act as his/ her research Co-supervisor along with the research Supervisor from IIT Bombay.

Signature of proposed Co-supervisor (external)

If Shri. / Kum. / Smt. _____ is admitted to the Ph.D. programme, we shall allow him/ her to undergo the programme of studies at IIT Bombay.

Further, if Shri. / Kum. / Smt. _____ is admitted to the Ph.D. programme, we shall fully relieve him/her from normal duties to complete the course work requirement (and qualifier examination, if applicable) at IIT Bombay.

During the period of Doctoral programme, the candidate will be permitted to carry out his / her research work at our laboratories / organization and will be given the required facilities.

In case any intellectual property (IP) is created during the course of the doctorate degree / Ph.D. programme of Shri. / Kum. / Smt. _____, then, we hereby agree to enter into a MoU/Agreement with IIT Bombay specifying the terms of ownership and management of such IP(s), before filing of IP application(s).

We also give our consent to _____ of our organization to be the Co-supervisor (external) of the Ph.D. thesis, along with a faculty member of IIT Bombay as the Supervisor.

Signature and Seal of the Sponsoring Authority

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Appendix C.4

No Objection Certificate from College/University for Ph.D. Applicant under College Teacher Category (CT)

(To be typed on letterhead of the College/University)

Dear Sir,

This is to certify that Shri./Smt./Kum. _____ *(name)* is an employee of our College/University since _____ *(date)* and is currently serving as _____ *(designation)*.

Our College/University has no objection to his/her application in the _____ *(department)* to join the Ph.D. Programme at IIT Bombay, under College Teacher (CT) category.

Further, if selected, the College/University has 'No Objection' to allow Shri./Smt./Kum. _____ to undergo the programme of studies and also to fulfil the coursework requirements (and qualifier examination, if applicable) at IIT Bombay.

In case any intellectual property (IP) is created during the course of the doctorate degree / Ph.D. programme of Shri. / Kum. / Smt. _____, then, we hereby agree to enter into a MoU/Agreement with IIT Bombay specifying the terms of ownership and management of such IP(s), before filing of IP application(s).

Signature & Seal of the Head of the College/University

[Bio-data of proposed Co-supervisor (external), which is optional, to be enclosed giving details of designation, qualification, research experience, etc.]

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Appendix C.5

No Objection Certificate (NOC) from Principal Investigator (PI)

This is to certify that _____(name) has been working in Project _____ from dt. _____.

The duration of the project is ___years. Appointment of _____ (name) is for the period of _____ years. His / Her appointment is likely to be extended for the further period.

I have no objection if he / she register for Ph.D. Programme in _____ (academic unit) under Project Staff category.

Signature _____

Prof. _____

Principal Investigator: _____

Project Code : _____

Project Title : _____

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STATEMENT OF PURPOSE FOR ALL ACADEMIC UNITS

Statement of Purpose (SOP) is your opportunity to share with the admission committee your thoughts and feelings about Postgraduate studies at IIT Bombay including your preparation for the same. Briefly describe 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.

(i) Along with your application, you have to submit a Statement of Purpose or a Research Proposal as required by an academic unit.

(ii) If you are applying to the **Ashank Desai Centre for Policy Studies (ADCPS**) you must submit a research proposal on the selected topic. The proposal should include: (a) problem identification, (b) brief review of literature, (c) proposed methodology, (d) references (maximum word length - 2000 words, excluding references). The research proposal will be graded for admission purposes.

•(iii) If you are applying to Management (SJMSOM), you are required to submit research proposal (1500 words) on a topic of applicants' interest in place of Statement of Purpose. It should contain a) problem identification, b) brief review of literature, and c) methodology.

•**Applications without research proposal will not be considered.**

(iv) If you are applying to Department of **Humanities & Social Sciences, or CSRE**, you need to upload Statement of Purpose as well as a research proposal along with the application form. The Research Proposal for applying to should contain (a) problem identification, (b) brief review of literature and (c) proposed methodology. The SOP for CSRE should refer to one or more topics of interest FROM THE LIST of topics announced on CSRE webpage https://www.csre.iitb.ac.in/phdTopics.php

(v)Candidates applying to **Technology & Development (CTARA)** are required MUST submit (a) Statement of Purpose (SoP), and (b) Research Proposal clearly indicating the area of research proposed for their PhD in 1000 words along with the application.

(vi). Candidates applying to **IDC** are required to submit a Statement of Purpose (SOP) along with a research proposal (~1500 words) that contains (a) the research area, (b) a brief review of the literature and (c) proposed methodology. The candidates must also submit a recent work or paper related to their area of research. A link to the design portfolio (drive folder/website/online documentation), if available, can be provided along with the SOP document.

(vii). Candidates applying to **Educational Technology** are required to submit a Statement of Purpose containing (a) your interests and motivation for applying to ET (max. 50 words), (b) relevance of your recent and current activities (max. 200 words), (c) details about your academic interests including (but not limited to) your areas of interest, a problem that interests you, and what you plan on doing after completing your Ph.D. (max. 250 words).

(viii). Candidates applying to **Desai Sethi School of Entrepreneurship (DSSE)** have to submit a research proposal of 1500 words which identifies a research problem / interest from the domain of innovation and entrepreneurship, argues for its relevance by citing existing literature around it with academic references and proposes an appropriate research methodology to conduct the study.

Note: Proposals must be the original work of the applicant. The Institute reserves the right to reject applications that show evidence of plagiarism or significant AI-generation without attribution, as determined by the admission committee's verification process. The committee's decision in this regard will be final.

(ix). Candidates applying to **Centre for Climate Studies (CCS)** are required to submit a research proposal based on their research interests in the application form.

(x). Candidates applying to **Center for Defence Technology Innovations and Strategies (CDTIS)** are required to submit a statement of purpose with the application in the specified format in which the titles of topics of candidate's interest should be mentioned with a detailed justification how the candidate's academic background is suitable to pursue research in that area.

Additionally, a research proposal in the specified format on a topic from any one of the research areas listed above should be submitted. The proposal should contain
(a) problem identification ,(b) brief review of literature ,(c) proposed methodology
(d) references.

(xi). Candidates applying to **Medical Technology Research and Innovation Centre (MED-TRIC)** are required to submit a statement of purpose with the application in the specified format in which the titles of topics of candidate's interest shouldbe mentioned with a detailed justification how the candidate's academic background is suitable to pursue research in that area.

(xii). Candidates applying to Centre for Traditional Indian Knowledge and Skills (CTIKS) are required to submit a statement of purpose with the application in the specified format in which the titles of topics of candidate's interest shouldbe mentioned with a detailed justification how the candidate's academic background is suitable to pursue research in that area.

(xiii). Candidates applying to Motilal Oswal Centre for Capital Markets (MOCCM) are required to submit a research proposal (1000-1500 words) on a topic of interest instead of Statement of Purpose (SOP). It should contain a) problem definition, b) review of literature, and c) methodology.
Applications without research proposal will <u>not</u> be considered.

1. Name:
_____

2. Ph.D Programme in I) _____
ii) _____
iii) _____

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