

INDIAN INSTITUTE OF TECHNOLOGY DHARWAD



॥ सा विद्या या विमुक्तये ॥

भारतीय प्रौद्योगिकी संस्थान धारवाड
Indian Institute of Technology Dharwad

Department of Biosciences and Bioengineering

Information Brochure

Ph.D. Admissions

Autumn Semester (2020-2021)

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A. SCHEDULE OF Ph.D. ADMISSION

Detailed schedule of admission process will be announced later on the institute website.

Deadline for submission of online application: ~~5th May~~ 21st May 2020, 11:59 pm.

First shortlist of eligible applicants: 28th May 2020 (tentative)

All potential candidates are requested to visit institute website regularly for updated information about the schedule, especially in context on ongoing Coronavirus (COVID-19) related developments. Future updates regarding the admission process will be made available on the institute website under section Academics >> Admissions >> PhD.

B. ELIGIBILITY FOR ADMISSION

B.1 Qualifying Degree

M.Tech. /M.Phil. /MSc. or equivalent in Bioinformatics/ Chemistry/Biotechnology/Microbiology/or other allied biology subject, Computer Science/Electrical Engineering.

B.2 Minimum score in the qualifying degree

For General/OBC category candidates and/or for candidates where no concession in academic performance is called for, the eligibility criteria in the qualifying degree:

- 1) a minimum of 60% marks (without round off) in aggregate, OR,
- 2) a minimum Cumulative Grade Point Average (CGPA) or Cumulative Performance Index (CPI) of 6.0 on the scale of 0-10; with corresponding proportional requirements when the scales are other than on 0-10, (for example, 4.8 on a scale of 0-8).

For SC/ST category candidates and differently abled candidates (PwD), a relaxation of 5% (or CPI/CGPA of 0.5 on the scale of 0-10) in the qualifying degree is applicable.

Candidates with masters degree other than M.Tech. and M.Phil. MUST fulfil any one of the following:

1. Valid GATE score
2. Junior Research Fellowship (JRF) of CSIR/UGC/NBHM/ DBT/ICAR/ICMR/ ICPR/PMRF or DST INSPIRE Fellowship

B.3 Eligibility of applicants who are in the final phase of getting the qualifying degree

Students who are in the final phase of receiving above mentioned qualifying degree and who are likely to graduate before commencement of Autumn 2020 semester of IIT Dharwad are also eligible to apply. However, if offered, the admission to those candidates would be provisional. To join academic program at IIT Dharwad, such candidates need to furnish necessary documents regarding completion of the degree on the date of joining mentioned in the Section A above. They need to meet the criteria specified in section B.2 above considering

updated score in the qualifying degree. In the meanwhile, the aggregate academic performance announced by the respective university till the last date for submission mentioned in section A should be used to determine eligibility for application and same to be reported in the online application.

C. APPLICATION CATEGORIES & FINANCIAL SUPPORT

The Department of Biosciences and Bioengineering admits Ph.D. candidates under the full-time research scholarship or Teaching Assistantship (TA), Project Staff-Teaching/Research Assistantship through Project (PS-TAP/RAP), Govt./Semi Govt. Fellowship Award (FA) (QIP, CSIR, UGC, DAE, DST Inspire, DBT, NBHM, PMRF etc.), and externally sponsored research scholars.

C.1 Teaching Assistantship (TA)

Funded by MHRD, the TAs are expected to assist in the academic/administrative work for smooth functioning of the Institute. Students under this category are entitled to the financial support as per the MHRD norms.

1. For students with M.Tech./M.E./M.Sc.(Engg.)/M.Phil. or equivalent degree as the qualifying degree, the assistantship is payable for a maximum duration of 5 years or up to the thesis submission, whichever is earlier. At present, the monthly rate of assistantship is ₹ 31,000 for the first 2 years and enhanced rate of ₹ 35,000/- for the remaining 3 years and HRA as per rules.
2. To get the Teaching Assistantship, the students concerned must assist in teaching, research and/or administrative work as assigned by the respective Academic Unit to the extent of 8 hours of work per week.
3. The continuation of the assistantship will be subject to the satisfactory performance of the duties assigned by the Departments as well as satisfactory academic performance.
4. As per MHRD directives, the employees on the rolls (with or without pay) of any organization are not eligible for admission under this category. Candidates selected in this category have to resign from the current job and submit a relieving letter from their employer before joining the programme.
5. Students getting assistantships from the Institute may join projects sponsored by external agencies and obtain corresponding fellowships in lieu of TA ship.

C.2 Project Staff-Teaching/Research Assistantship through Project (PS-TAP/RAP)

The students under this category receive financial support from sponsored projects. The candidates do not have to indicate their preference for TAP separately. The rate of stipend, the admission procedure and other requirements are same as applicable to TA, except that these students may be assigned research related to the specific projects in place of other duties assigned to TAs. While candidate may find alternative source of funding for stipend after the stipulated duration of the project is over, currently the stipend is only assured for duration of

the respective project assigned at the time of admission (subject to meeting the necessary academic and research progress expectations from the candidate).

C.2.1 Project Details

Title: Understanding the role of RNA binding Protein in cancer development.

Funding Agency: ICMR

PhD supervisor: Prof. Sudhanshu Shukla

PhD co-supervisor: None

Type of work: Molecular Biology and cell biology

C.3 Govt./Semi Govt. Fellowship Award (FA)

These students are financially supported under various Govt. / Semi Govt. schemes like CSIR, UGC, DAE, DST, DBT, NBHM, PMRF or DST INSPIRE, etc. and some other organizations. The admission procedure and other requirements are same as applicable to TA.

C.4 Externally sponsored research scholars Ph.D. (EX)

The candidates employed in recognized R&D organizations and desirous of pursuing Ph.D. programme while in employment may apply for admission as external candidates. The option of external registration is for applicants who are working in well-equipped scientific institutions, laboratories, R&D establishments and industrial organizations engaged in research based activities. Persons working in colleges/universities are not eligible under this category. After fulfilling the coursework requirement at the Institute, these candidates will be allowed to register for Ph.D. with a Supervisor (internal) from the Institute and a Co-supervisor (external) from their parent organization where they will be doing the research work. The admissions are based on the following norms:

1. The competence of these candidates will be assessed along with the regular candidates.
2. On the day of selection process, the candidate should submit a Sponsorship Certificate (Appendix A) from the organization in which he / she is employed giving an undertaking that the candidate would be released from the normal duties to fulfill the coursework requirement (and qualifier examination, if applicable). The certificate should also provide details of facilities relevant to the research programme and available to the candidate.
3. The candidate is required to be at the Institute as a full-time student for the coursework (and qualifier examination, if applicable) of his/her Ph.D. Programme. The coursework requirement is likely to be a period of 1-2 semesters. Depending on the student's background and the programme requirements, an additional semester may be needed to complete the coursework/qualifier examination.
4. To promote interaction between the internal supervisor and external co-supervisor, meeting between them should be arranged at least once in a year in the Institute or in the sponsoring organization.
5. The Ph.D. registration of an external candidate would be reviewed at the end of each year

from the date of registration in terms of his progress in courses / seminars / approved research programme by a Research Progress Committee (RPC) nominated by the concerned Department Postgraduate Committee (DPGC).

6. At the time of joining the programme, the students will have to produce a “Relieving certificate” from his / her employer that he / she has been fully relieved from normal duties during the semester(s) to complete the course work and other academic work at IIT Dharwad.

Based on the information provided by the applicants a short-list of candidates called for the selection process will be declared on the Institute website on the date specified in the schedule. Only the short-listed candidates are permitted to participate in the selection process.

D. GENERAL GUIDELINES for APPLYING ONLINE

1. Please read all the instructions given in the brochure carefully before filing up the application form.
2. Application fee has to be paid prior filling online application. The transaction details such as Reference No, Transaction Date and Name of the Account Holder have to be mentioned accurately in the application form. **The contact number mentioned in the remarks/comments field of the online payment mechanism has to match with the one which will be entered while filling the application form.** It is also recommended to upload a proof of payment of application fee in pdf format just before submission of the online form.
3. This information brochure and future updates regarding the admission process will be made available on the institute website under section Academics >> Admissions >> PhD.
4. You are required to submit the application form online. There are no downloadable forms available. After filling the form, you are advised to take a print and keep the same for future reference.
5. The application fee is as follows,

Women candidates	₹ 100/-
SC/ST/PwD category candidates	₹ 100/-
All other candidates	₹ 200/-

6. The fee is to be paid by NEFT/RTGS Online Payment System. The details of the institute bank details are:
BANK: State Bank of India
Account Name: REGISTRAR IIT DHARWAD
Account No.: 35636327083
Branch: Main Branch, Dharwad
IFSC: SBIN0000833
7. The transaction details like: UTR/ITR/Transaction Number with date are to be necessarily

provided in filling up the Online Application Form. **The Application Form without valid online payment details will not be considered. Application FEE is Non-Refundable.**

8. Applicants may find it convenient to keep following information handy while filling the application form online (whichever relevant): i) Skype Id, ii) passport size photo whose size is less than 50 kb, iii) application fee transaction details of application fee payment e.g. reference no, date of transaction, Name of account holder, phone no used for online payment, iv) Educational details from secondary school onwards, v) GATE , JRF qualification details, vi) Statement of Purpose (pdf file), vii) proof of application fee payment (pdf file), viii) list of fellowship/ awards, ix) publications, x) any other achievements/information.
9. Economically Weaker Sections (EWS) candidates may note that the limit of annual income is ₹ 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 submitted at the time of admission.
10. Candidates belonging to OBC – NC (Non Creamy layer) as per Government of India norms should produce certificate from competent authority at the time of selection.
11. Check your emails regularly for any updates from the institute regarding the selection process
12. Keep checking institute website regularly for updates regarding the selection process. Shortlisted candidates list will be uploaded on the institute website as per the schedule given above.

Candidates called for written test / interview should bring with them Photo ID Card, Admit Card, Printed Copy of Online Application Form, Photocopies of Academic Transcripts & Experience Certificates, Caste Certificate (if applicable), PwD Certificate (if applicable), EWS Certificate (if applicable), Thesis/Dissertation/Report/Publications and all other relevant documents.

E. GUIDELINES for SHORTLISTED APPLICANTS

E.1 General information

1. Reporting Time: **To be announced later online.**
2. Online screening test will begin on: **To be announced later online.**
3. Based on the performance in the online screening test, some of the candidates will be shortlisted for the written test.
4. Written test will begin on: **To be announced later online.**
5. Based on the performance in the written test, some of the candidates will be shortlisted for the interview.
6. Interviews will be held on: **To be announced later online.**
7. Very limited **accommodation/transportation may be facilitated** in the campus during the written test/interview. Details will be decided later and institute reserves the right to cancel the same at short notice depending upon the future circumstances.

8. Applicants should bring:
 - a. Photo ID card
 - b. Printed copy of the application
 - c. Thesis/dissertation/report of M.Tech. or equivalent degree
 - d. Copy of certificates and mark sheets
 - e. Two passport size photographs
 - f. Scientific calculator
 - g. Copy of publications (if any)

E.2 Examination policy

1. Mobiles are not allowed in the examination hall or during the interview(s).
2. Candidates are responsible for their own belongings during the selection process, especially, the items that you leave outside before entering the examination hall.
3. Candidates are required to bring all documents mentioned in section E for the selection process.
4. Delayed candidates may not be allowed to take the exam after 20 minutes of exam start time and no one will be allowed to leave the exam hall before 30 minutes once exam is started.

F. MODALITY OF THE SELECTION PROCESS

Only the short-listed applicants are permitted to participate in the selection process. The selection process may consist of online screening tests, written tests and/or interviews. Candidates will be offered a PhD position based on their performances as mentioned above.

- The selection process consists of MCQ type screening test. The duration of the exam would be 60 minutes. The syllabus for the exam is given in the Information Brochure.
- Each question will have multiple options to choose from.
- The exam will have negative marking scheme. For MCQ questions, 1/3rd of the points allotted for that question will be deducted for wrong answers.

Screening Cut-off:

- The seat distribution is as follows - 50% for general, 27% for OBC-NC, 15% for SC, 7.5% for ST (subject to satisfaction of cut-off).
- OBC-NC cutoff at 90% of General cut-off.
- SC/ST cutoff at 2/3rd of General cut-off.
- PwD cutoff same as SC/ST.
- If required, a list of wait-listed candidate will be also announced.
- If the selected candidates, for any reason fail to get registered for the Ph.D. program then the wait-listed candidates will be given chance in the order of merit.
- Document Verification: Only for candidates short-listed for interview. Certificate required are like Date of Birth certificate, Degree certificate along with marks cards, aggregate percentage, JRF offer letter from UGC/CSIR and INSPIRE fellowship, GATE Score, Cast certificate, Income certificate, Photo Identity, etc.

G. RESEARCH TOPICS

Project title 1: Monitoring oxidative stress in tumors using Raman active theranostics nanoparticles.

Project title 2: To develop a heavy water-based sensing platform for identifying antimicrobial resistance.

Project title 3: Understanding the role of RNA binding Proteins in cancer development.

Essential Skills: Candidates should have basic knowledge of Biostatistics, Biotechnology, Chemical synthesis, and Microbiology.

Desirable Skill: Candidates ought to have experience in cell culture, nanoparticle synthesis and molecular biology to work on interdisciplinary areas across biology, chemistry, and engineering.

H. SYLLABUS

For the written test, the following syllabus will be followed. Candidates can expect questions based on aptitude and reasoning as well.

Bioinformatics and Biophysics: Basics of programming, Statistics, Descriptive statistics, Correlation and regression, basic machine learning, Hypothesis Testing, Probability theory, Raman spectroscopy, Absorption spectroscopy, Fluorescence spectroscopy, and NMR.

Biochemistry, Microbiology, Molecular & Cell Biology, Genomics: Biomolecules, Metabolism, Membrane transport, Structure and regulation of prokaryotes and eukaryotes genes, Transcription, Translation, Post-transcriptional and Translational modifications, Molecular interaction, Molecular markers, Genetic and physical mapping, Gene interaction; Population genetics, Genetic engineering; Cloning and expression vectors, rDNA technology, Gene cloning approaches, Whole-genome sequencing & annotation, High throughput gene expression, and Function elucidation technologies, PCR, Blotting Techniques, Gene transfer technologies, Protein-protein interactions, Mass spectrophotometry, Signal transduction pathways, and their elucidation, Primary and secondary metabolic pathways, Systems biology frameworks for metabolic engineering, Nanobiotechnology, Genomics, and proteomics.

I. INFORMATION PERTAINING TO HOSTELS

About IIT Dharwad	Kindly visit the website https://www.iitdh.ac.in/ for available facilities
Hostel Room Allocation	You will be given your room key at the time of registration. Each room accommodates approximately four students and has an attached bath & toilet.
Are hostel rooms furnished?	Each student is given a cot, chair, table and wardrobe. Students can purchase mattress/bedding, bucket etc. locally.
Possession of motorized vehicle	NOT ALLOWED, however bicycle is permitted in the campus.
Climatic conditions	Generally, it will be raining, windy & cold. It is suggested that you carry protective clothing accordingly.

J. FEES, DEPOSITS & HOSTEL RENT

S. No	Amount (INR)	Amount (in INR) for General/OBC/EWS	Amount (in INR) for For SC/ST/PwD
A. One-time payment at the time of admission			
1	Admission fee	2,200.00	2,200.00
2	Thesis fee	2500.00	2500.00
3	Medical examination	400.00	400.00
4	Provisional certificate	500.00	500.00
5	Student welfare fund	1,000.00	1,000.00
6	Modernisation & upgradation	2500.00	2500.00
7	Identity card	500.00	500.00
	Sub-total (A)	9,600.00	9,600.00
B. Per semester fee			
1	*Tuition Fee-Statutory fee	2500.00	00.00
2	Examination fee	1,000.00	1,000.00
3	Registration fee	750.00	750.00
4	Gymkhana fee	1,750.00	1,750.00
5	Student benevolent fund	500.00	500.00
6	Medical fee	1,500.00	1,500.00
7	Hostel rent	2,000.00	2,000.00
8	Electricity & water charges	3,000.00	3,000.00
9	Hostel establishment charges	3,000.00	3,000.00
10	Mess establishment charges	1,550.00	1,550.00
11	Student association insurance fund	200.00	200.00
	Sub-total (B)	17,750.00	15,250.00
C. Deposits (refundable) to be paid at the time of admission			
1	Institute security deposit	1,000.00	1,000.00
2	Library security deposit	1,000.00	1,000.00
3	Mess security deposit	1,000.00	1,000.00
	Sub-total (C)	3,000.00	3000.00
GRAND TOTAL FEE (A+B+C)		30,350.00	27,850.00

NOTE:

1. All the students are required to submit the **Mess Advance of ₹ 26,000.00/-** per semester by online payment method along with the course fee.
2. * Students admitted under External category (EX) will pay tuition-statutory fee of ₹ 25,000/- per semester (**Grand total fee of ₹52,850/-**). It shall be noted institute will incur semester continuation fee of ₹ 5000/- when a candidate joins parent organization after finishing the required course work at IIT Dharwad.
3. * IIT Dharwad reserves the right to revise the tuition fee-statutory fee.

Appendix A: Sponsorship Certificate for Ph.D. External Registration (EX)

(To be typed on letterhead of the Sponsoring Organization)

Name of the applicant:

Name of the sponsoring organization:

Address:

Present Designation of the applicant:

Present status of the applicant: (Permanent/Semi-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 Dharwad.

Date:

Signature of proposed Co-supervisor (external)

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Statement of sponsoring authority

If Shri. /Kum. / Smt. _____

is admitted to the Ph.D. programme, we shall allow him/ her to undergo the programme of studies at IIT Dharwad.

Further, we shall fully relieve him/her from normal duties to complete the course work requirement (and qualifier examination, if applicable) at IIT Dharwad.

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.

We also give our consent to Shri. /Kum. / Smt./ Dr. _____

of our organization to be the Co-supervisor (external) of the Ph.D. thesis, along with a faculty member of IIT Dharwad as the Supervisor.

Date:

Signature and Seal of the Sponsoring Authority

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