

**INDIAN INSTITUTE OF TECHNOLOGY
DHARWAD**

Department of Biosciences and Bioengineering

Ph.D. Admission: Autumn - 2018

A. ELIGIBILITY FOR ADMISSION:

M. Tech. /M.Phil. /MSc./B.Tech or equivalent in Bioinformatics/Biotechnology/Computer Science/ Information technology or other allied biology subjects.

Candidates who are yet to complete their qualifying examinations, but expect to complete all the requirements for admission eligibility (including all examinations, project dissertation, viva-voce etc.) are also eligible to apply provided they can furnish the necessary certificates by 30th July, 2018.

Requirement:

MSc/B.Tech– Must have Valid GATE Score/ Junior Research Fellowship (JRF) of CSIR/UGC/ DBT/ICAR/ICMR/ ICPR/PMRF or DST INSPIRE Fellowship.

M. Tech and M.Phil. – GATE/JRF desirable but not essential.

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 (M.Tech./M.E.) is First Class as specified by the University. If the University doesn't specify the division/class, then either:

1. a minimum of 60% marks (without round off) in aggregate.
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, a relaxation of 5% in the qualifying degree is applicable.

B. PROJECT TOPIC:

Landscape analysis of splicing in various cancer types and identification of clinical utilities of splice variants.

Essential Skills: Candidates should have basic knowledge of Bioinformatics and Biostatistics.

Desirable Skill: Candidates ought to have a quantitative or computational track record and an inclination to work in interdisciplinary areas across biology, medicine, computational sciences and engineering.

C. GUIDELINES FOR SHORTLISTED APPLICANTS

The following are the important guidelines of the institute on 9th of July, 2018 at 9 AM.

1. Shortlisted candidates should report the institute on 9th of July, 2018 at 9 AM
2. No accommodation will be provided in the campus during the written/interview
3. Applicants should bring:
 - a. Photo ID card
 - b. Printed copy of the application
 - c. Thesis/dissertation/report of MSc./M.Tech. or equivalent degree
 - d. Copy of certificates and mark-sheets
 - e. Two passport size photographs
 - f. Non-programmable scientific calculator

DO NOT'S

- a. Mobiles are not allowed in the examination hall or in the interview room
- b. Department's decision is the final regarding any disciplinary matters
- c. Institute doesn't take any responsibility of your luggage/items that you leave before entering the examination hall.

D. APPLICATION CATEGORIES AND FINANCIAL SUPPORT

The Department of Bioscience and Bioengineering admits Ph.D. candidates under the full time research scholarship, Teaching Assistantship (TA) and FA (Govt./ Semi-Govt. Fellowship Awardees (CSIR, UGC, DBT, ICMR, etc) only.

D.1. Fellowship Awardees

Students with valid fellowship from CSIR, UGC, DBT, ICMR, etc can apply in this category.

D.2. 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 financial support as per MHRD norms.

1. For students with MSc./M.Tech./M.E./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 25,000 for the first 2 years and enhanced rate of 28,000/- for the remaining period.
2. For students with B.Tech./B.E. or equivalent degree and students with M.Sc. or equivalent as the qualifying degree and having valid GATE score or having Junior Research

fellowship (JRF) of UGC/CSIR or DST INSPIRE fellowship, 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 ₹25,000/- for the first two years and enhanced rate of ₹28,000/- for the remaining period

3. To get 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.

4. The continuation of the assistantship will be subject to satisfactory performance of the duties assigned by the Departments as well as satisfactory academic performance.

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

As per MHRD directives, the employees of any organizations with or without pay are not eligible for admission under TA category. Candidates selected in this category have to resign from the current job and submit a relieving letter from their employer before joining the programme. Students getting assistantships from the Institute may join projects sponsored by external agencies and obtain corresponding fellowships in lieu of TA ship

E. IMPORTANT DATES

Last date of application: 30-06-2018

Announcement of shortlisted candidates: 02-07-2018

Date/s of examinations: 09-07-2017 and 10-07-2018

Announcement of Results: 10-07-2018

Registration: 25-07-2018

F. SELECTION PROCESS:

1. Schedule for screening test and interview:

Written test and followed by Interview:	Date of Written Test:	09-07-2018
	Duration & Proposed Timings of Written Test:	60 mins (9:00 to 11:00 AM)
	Dates for Interview:	09-07-2018 and 10-07-2018
	Timings of Interview:	12:00 PM onwards

2. 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.

3. Each question will have 4 options to choose from. Only one option would be correct.
4. 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.

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. SYLLABUS FOR THE WRITTEN TEST

General English and logic

Bioinformatics: Major bioinformatics resources (NCBI, EBI, ExPASy); Sequence and structure databases and analysis, Sequence analysis, Phylogeny, Comparative genomics; Molecular modeling and simulations. Overview and functions of a computer system; Basics of database management system- Conceptual Schema, ER diagrams, normalization and SQL. Basics of programming; Statistics: Descriptive statistics, Correlation and regression, Hypothesis Testing, Probability theory.

Biochemistry, 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, Phylogenetic, 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, Nano biotechnology, Genomics and proteomics.