INDIAN INSTITUTE OF TECHNOLOGY DHARWAD

॥ सा विद्या या विमुक्तये ॥

भारतीय प्रौद्योगिकी संस्थान धारवाड

Indian Institute of Technology Dharwad

Department of Mechanical Engineering

Information Brochure

Ph.D. Admissions

Autumn Semester (2020-2021)

Contents

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.E./M.Sc.(Engg.) or equivalent degree in Mechanical Engineering or equivalent stream.

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 (M.Tech./M.E.):

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.

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 Mechanical Engineering admits Ph.D. candidates under the full time research scholarship or Teaching Assistantship (TA) and part-time 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 Externally sponsored part-time 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 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 two written tests and an interview. The written tests comprise of two stages - First Round and the Second Round, respectively. The interview is the Third Round.

Candidates shortlisted based on the selection criteria are eligible to attend the First Round. Questions will be objective and will be based on the syllabus given in Section H and stream-

specific syllabus given in Section I. Only candidates selected in the First Round are allowed to write the Second Round. No change in stream will be allowed. The Second Round comprises of a subjective/objective test appropriate to their chosen stream in the PhD application form. It will be based on the syllabus given in Section F and stream-specific syllabus given in Section I.

Candidates selected in Second Round are eligible for the Third Round comprising of technical interview. If necessary, an applicant may have to appear before the interview panel more than once. The details of the tests/interview are given in the following sections.

F.1 Details of the first Round

1. There is a 90-minute objective test to all the applicants.
2. Syllabi common for all streams are given in Section H and stream-specific syllabi are given in Section I.
3. A user name and a password is given to you to login and start the exam.
4. No changes will generally be allowed in the choice of field of specialization (stream) once specified in the application form.
5. There is a negative marking for wrong answers.
6. Submit your answers and logout after your examination.
7. After the examination, the applicants are expected to wait till the short-listing for the second round of selection will be announced.
8. Second round of selection follows immediately after the announcement of the result.
9. It is the responsibility of the applicant to note the results of the First and Second round. The results would be displayed at the location/notice board; announced during the test.
10. Results will not be informed to the applicants personally, and no complaints in that regard would be entertained.

F.2 Details of the Second Round

1. The examination contains 90 minutes of subjective/objective paper.
2. Syllabi common for all streams are given in Section H and stream-specific syllabi are given in Section I.
3. All answers should be written in clear hand writing.
4. Assumptions made should be written down clearly.
5. The results will be announced for the third round of selection process on notice board.

F.3 Details of the Third Round of selection

A personal interview is conducted for each applicant who is successful in the Second Round.

The applicant is advised to read basics regarding the area of specialization and the topic that he/she has chosen in the application form.

G. RESEARCH TOPICS

Following topics are floated in the Department of Mechanical Engineering for the PhD program in this semester. Applicant has to choose at least one of these topics and fill in the application form.

Thermal Stream – G.1, G.2, G.3, G.4

Design Stream – G.5, G.6, G.7, G.8

Manufacturing Stream – G.9, G.10

G.1 Atomisation and Sprays

Broadly, Experimental Fluid Mechanics with a focus on Atomization and Spray processes aptly supported by numerical work

G.2 Fluid mechanics of turbomachinery components with flow control

Due to the advances made in understanding the fluid dynamics of various industrial components, the present-day turbomachines have reached a stage where additional increase in component efficiencies is increasingly difficult to achieve. Hence, traditional designs can no longer meet the increasing performance requirements motivating alteration of the flow using flow control. The present study envisages the use of shape optimization techniques to implement flow control in simple turbomachine flows and study their aerodynamic performance. The researcher should have a sound knowledge of fluid mechanics, engineering mathematics and an aptitude for experiments and programming.

G.3 Experimental and Numerical Study in the Area of Fires

Understanding the fire behavior and its impact on different areas like bodies in fire, fire evacuation. This project includes performing experiments using different fuels for characterization of the fire, heat transfer to and from fire in different scenarios. It requires the design and fabrication of instrumentation, analyzing the data, analytical solution, comparison and numerical simulations.

G.4 Dynamics and stability of thin films: analytical, numerical and experimental study

The dynamics and stability of thin liquid films have fascinated scientist over many decades. Thin film flow occurs over a wide range of length scales and are central to numerous areas of engineering. In the proposed research work a thin film dynamics and stability will be studied

in the context of various forces such as gravity, centrifugation, capillarity and intermolecular forces over smooth or structured and impermeable or porous surfaces possibly in the presence of evaporation and condensation. The study will include analytical, numerical and experimental work.

G.5 Study of Cellular Solids with Negative Poisson's ratio: Experiments, Analytical and Computational Modelling

The literature survey highlights growing interest in characterization of cellular solids and structures under different loading. In particular, the literature on dynamic behaviour of cellular solids augmenting experimental observations with computational and theoretical models are limited. The proposed work will address this research gap in the context of additively-manufactured cellular solids. The objective of the current project is to understand the mechanical behaviour of cellular structures under dynamic loads. Investigation involves studying the influence of important parameters such as geometrical design of cellular structures and mechanical properties (e.g. elastic modulus, relative density, yield and ultimate strength, deformation, etc.) on energy-absorption. In the proposed work experimental, computational and theoretical modeling of additively-manufactured cellular solids will be carried out.

G.6 Needle-tissue interaction modelling

Accurate modelling of the forces arising from needle insertion is possible only when the components of different forces can be separated. The force is highest when the viscoelastic material is punctured. The forces are defined such that force due to stiffness is just before the puncture of the material; friction and cutting forces are after the puncture event. The cutting force is inclusive of the plastic deformation of the material occurring from the act of cutting by the needle tip as well as a force resulting from the stiffness of the viscoelastic material. Similarly, the friction force is dependent on the viscoelastic material stiffness.

G.7 Modeling of biomechanics and growth in living organisms

This interdisciplinary research will look into the capturing correctly the growth characterization using morphological parameters and characteristics and underlying drivers for the growth. Computational mechanics, computational geometry and 3D geometric modeling concepts will be used along with machine learning techniques to explore the growth mechanisms in living organisms.

G.8 Investigation of biomechanical behavior of the tissues for better surgical equipments

From cellular level to organ level, membranes and tissues play very important role. e.g. myocardium, cellular membrane, bladder, lens capsule etc. This study will explore how the biological membrane behave when subjected to various incision methods. It is expected to contribute necessary information for better development of the surgical tools. Coordination with local hospitals is expected to bring the necessary clinical relevance for this exploration.

G.9 Fabrication of composite parts using additive manufacturing

This projects involves integrating novel methodology to prepare fiber reinforce filament with various volume fractions and fabricate composite 3D parts using fused deposition modeling and rapidly assess the mechanical properties, and characterization of composite parts.

G.10 Design and Development Ni/Ti alloys using additive manufacturing

This project involves Design, development and fabrication of Ni/Ti alloys using laser/weld based deposition for various applications viz. 4D printing, super alloys, smart material etc. Establish the relationship between process parameters, numerical models, mechanical properties and characterization of printed parts.

H. SYLLABUS – COMMON FOR ALL STREAMS

H.1. Engineering Mathematics

- **Linear Algebra:** Matrix algebra, systems of linear equations, eigenvalues and eigenvectors.
- **Calculus:** Functions of single variable, limit, continuity and differentiability, mean value theorems, indeterminate forms; evaluation of definite and improper integrals;
  doubleandtripleintegrals;partialderivatives,totalderivative,Taylorseries(inoneand two variables), maxima and minima, Fourier series; gradient, divergence and curl, vector identities, directional derivatives, line, surface and volume integrals, applications of Gauss, Stokes and Green's theorems.
- **Differentialequations:**Firstorderequations(linearandnonlinear);higherorderlinear differential equations with constant coefficients; Euler-Cauchy equation; initial and boundary value problems; Laplace transforms; solutions of heat, wave and Laplace's equations.

- **Complex variables:** Analytic functions; Cauchy-Riemann equations; Cauchy's integral theorem and integral formula; Taylor and Laurent series.
- **Probability and Statistics:** Definitions of probability, sampling theorems, conditional probability; mean, median, mode and standard deviation; random variables, binomial, Poisson and normal distributions.
- **Numerical Methods:** Numerical solutions of linear and non-linear algebraic equations; integration by trapezoidal and Simpson's rules; single and multi-step methods for differential equations.

H.2 Analytical reasoning

- **Verbal reasoning**: reading comprehension, drawing inferences based on multiple facts stated in short paragraph.
- **Non-verbal reasoning**: inductive, logical, abstract, diagrammatic and spatial reasoning.

I. SYLLABUS –SPECIFIC TO THE SELECTED STREAMS

I.1 Design Stream

- **Engineering Graphics**: Orthographic projections of lines, planes and solids, true length and true angle, sections of solids and intersections of solids, solid modeling.
- **Engineering Mechanics:** Free-body diagrams and equilibrium; trusses and frames; virtual work; kinematics and dynamics of particles and of rigid bodies in plane motion; kinematics and dynamics of particles and of rigid bodies in plane motion; impulse and momentum (linear and angular) and energy formulations, collisions.
- **Mechanics of Materials:** Stress and strain, elastic constants, Poisson's ratio; Mohr's circle for plane stress and plane strain; thin cylinders; shear force and bending moment diagrams; bending and shear stresses; deflection of beams; torsion of circular shafts; Euler's theory of columns; energy methods; thermal stresses ;strain gauges and rosettes; testing of materials with universal testing machine; testing of hardness and impact strength.
- **Theory of Machines:** Displacement, velocity and acceleration analysis of plane mechanisms; dynamic analysis of linkages; cams; gears and gear trains; flywheels

and governors; balancing of reciprocating and rotating masses;gyroscope.Vibrations:Free and forced vibration of single degree of freedom systems, effect of damping; vibration isolation; resonance; critical speeds ofshafts.

- **Control Systems**: Automatic Control, Use of Feedback, Automatic Assembly and Robots, Mechatronic Systems, Control SystemDesign.
- **Machine Design:** Design for static and dynamic loading; failure theories; fatigue strength and the S-N diagram; principles of the design of machine elements such as bolted, riveted and welded joints; shafts, gears, rolling and sliding contact bearings, brakes and clutches,springs.

I.2 Fluid-Thermal Stream

- **Fluid Mechanics:** Fluid properties; fluid statics, manometry, buoyancy, forces on submerged bodies, stability of floating bodies; control-volume analysis of mass, momentum and energy; fluid acceleration; differential equations of continuity and momentum; Bernoulli's equation; dimensional analysis; viscous flow of incompressible fluids, boundary layer, elementary turbulent flow, flow through pipes, head losses in pipes and bends, flow in convergent-divergent channels, vorticity and stream-functions, elementary Computational Fluid Dynamics, finite-difference approximation to the first and second order partial derivatives.
- **Heat-Transfer:** Modes of heat transfer; one dimensional heat conduction, resistance concept and electrical analogy, heat transfer through fins; unsteady heat conduction, lumped parameter system, Heisler's charts; thermal boundary layer, dimensionless parameters in free and forced convective heat transfer, heat transfer correlations for flow over flat plates and through pipes, effect of turbulence; heat exchanger performance, LMTD and NTU methods; radiative heat transfer, Stefan- Boltzmann law, Wien's displacement law, black and grey surfaces, view factors radiation network analysis.
- **Thermodynamics:** Thermodynamic systems and processes; properties of pure substances, behavior of ideal and real gases; zeroth and first laws of thermodynamics, calculation of work and heat in various processes; second law of thermodynamics; thermodynamic property charts and tables, availability and irreversibility; thermodynamic relations.

- **Applications Power Engineering:** Air and gas compressors; vapour and gas power cycles, concepts of regeneration and reheat. I.C. Engines: Air-standard Otto, Diesel and dual cycles. Refrigeration and air-conditioning: Vapour and gas refrigeration and heat pump cycles; properties of moist air, psychrometric chart, basic psychrometric processes.
- **Turbomachinery:** Impulse and reaction principles, velocity diagrams, Pelton-wheel, Francis and Kaplanturbines.

I.3 Manufacturing Science

- **Material Removal Processes**: Mechanics of machining, Theory of Chip Formation, Tool geometry and materials, optimization of machining processes, CNC, Non-traditional machining, Ultrasonic Machining (USM).
- **Metal forming** – Elastic and plastic deformation, hot and cold working processes, rolling, forging, extrusion, swaging, wire and tube drawing.
- **Sheet Metal working** – Die and punch clearances, blanking, piercing, punching, bending, cup drawing, coining, embossing.
- **Metal casting** - Pattern materials, allowances, types of pattern, cores, element of gating systems, types of gates, riser design considerations, casting defects.
- **Metal Joining and Welding** – Fusion and solid-state welding, brazing, soldering, manual metal arc, submerged arc, Gas Metal Arc Welding (GMAW), Tungsten Inert Gas (TIG), resistance welding, Additive Manufacturing (rapid prototyping), 3D Printing.
- **Polymers and Composites:** Thermoplastics, thermosets, elastomers and composites, gradient material and related processes.

  Metrology and inspection: Standards of measurement, interchangeability, accuracy and precision, Coordinate Measuring Machine (CMM)

J. 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.

K. 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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