

National Institute of Technology Silchar

Silchar – 788010, Assam.

Advertisement for IPDF admission for July – December 2023 session

No.: Dean (RC)/ 001 /2023-24/1

Date: 27.04.2023

Applications are invited for admission into **Institute Post-Doctoral Fellowship (IPDF) programme** in the following departments with the area/ specializations and admission group as mentioned in the table for the session July – December 2023.

Department	Area of Research
Civil Engineering	<p>Transportation Engineering Pavement materials, microscopic study on filler, Bio nano materials, Reclaimed asphalt pavement, Geopolymer, Traffic Engineering; Traffic Safety.</p> <p>Structural Engineering Earthquake Engineering, Civil Engineering Materials, Global-level structural damage detection using Vibration-measurements, New Concrete Material, Sustainability in Concrete Structures, Environmental friendly Materials in concrete, Seismic performance of RC structures under dynamic loading, Prediction of strength values of concrete using machine learning, Soft Computing of Concrete Structures Composite Structures, GFRP Pultruded Profiles, Steel Structures, Lightweight structures, Fire behaviour of Steel and composite structures, Timber structures, Structural dynamics and Vibration control, Structural-acoustics and Noise control, Composite and Functionally Graded Structures, Stochastic analysis, Sustainable and Resilient Structure/Infrastructure; Structural Design and Optimization, AI and ML in Structural Engineering.</p> <p>Geotechnical Engineering Soil Dynamics, Machine Foundation, Vibration Isolation, Pile Foundation, Soil Stabilization, Slope Stability Analysis, Application of soft computing in Geotechnical engineering, Foundation Engineering, Application of probabilistic methods and reliability theory in geotechnical engineering, Soft computing in geotechnical engineering, Ground Improvement, Soil-Structure Interaction, Dynamics of Improved Soil, Transportation Geotechniques, 3D Slope Stability Analysis, AI in Geotechnical Engineering, Slope stability analysis, Ground response analysis, Seismic hazard analysis, Liquefaction, Disaster Early Warning.</p> <p>Water Resource Engineering</p>

	<p>Water resources engineering, climate change impact studies, environmental impact of climate change, machine learning in water resources, Advanced soft-computing and MCDA Techniques to solve flood groundwater assessment and natural hazards related to water resources, Coastal Engineering, Applications of RS and GIS in coastal and water resources engineering, image processing techniques, AI in climate change studies, Groundwater modeling and planning, Climate change impact on hydrological system, water resources system analysis using AI and ML, Optimization.</p>
<p>Mechanical Engineering</p>	<p>Computational fluid dynamics (CFD), Bio fluid dynamics, Magneto hydrodynamics, Microchannel flow, Droplet dynamics, Microfluidics, Wettability, Multiphase flow, Non-Newtonian fluid mechanics, Instability analysis, Heat transfer, Atomization and spray, Solar Thermal Energy, Bio heat transfer, Energy storage, Biofuel, Passive cooling methods, Boiling heat transfer, Phase change materials, Battery, Combustion, Fuel cell, Porous media flows, Energy Efficient Retrofitting of buildings with passive concepts, Bionic wind turbine blades, Development and Synthesis of polymer composites, Hybrid composite materials, Energy materials and management, Fatigue and fracture behaviour of materials, Application of MCDM techniques. Composite Materials, Bionic, Bioscience/ Biotechnology/ Bio-Mechanics, Modelling and development of Expert System for communicable and non-communicable diseases, Augmented/ virtual reality, AI / ML based image processing, Thermo-Fluid-Structure Interaction, Digital Twin, Additive Manufacturing, Artificial Intelligence (AI) and Machine Learning (ML) application in Manufacturing. 3D printing of lightweight and biodegradable structure, 4D printing of SMP, Development of new 3D printing composite materials, Robotics and Control, Mechatronics, Mechanism and Design, Dynamics of the robotic system, Lower limb Rehabilitation Robotic Devices, Mobile Robotic manipulator, Shape memory Alloy based soft robotics, Kinematics and dynamics of the robotic system, Planar and spatial parallel manipulators, Micro-stereolithographic 3D motion Stage, Compliant Mechanism, Bio-medical Robotic System, Micro-machining robotic devices, Underwater Vehicle Manipulator Robotic System, Advanced Manufacturing processes, Micromachining, Fabrication of microfluidic devices.</p>

<p>Electrical Engineering</p>	<p>Nanoelectronic materials and devices, Ferro-electric transistors and memories, Vedic mathematics and its application in digital signal and image processing.</p> <p>Charging Infrastructure planning for Electric Vehicles, Electric Vehicle Route Planning using Machine Learning, Aging assessment for Battery Energy Storage System in Electric Vehicles.</p> <p>Computational Intelligent approaches for future power systems with high Renewable Energy Share to achieve a cleaner environment</p> <p>Automatic generation control, Renewable energy, Power electronics application in power quality, Soft computing application, Microgrid.</p> <p>Design and development of Underwater Autonomous Vehicles, their control and applications, Advanced Battery Management System of electrical vehicles to overcome sudden explosion of batteries, Nonlinear dynamics and chaos, their control with advanced nonlinear controllers and applications, including secured communications, Design and development of a mobile application to measure the correctness of Pranayam in terms of number/ sec and postures and suggest corrections, Design and development of a solar-based trimming of lawns and trimming of bushes (next phase will be autonomous) for a 5000 + population campus, Design and development of a solar-based road cleaner along with bruising (next phase will be autonomous) for a 5000 + population campus, Designing an awareness program on cyber security for common people., Develop a unified criterion for using block chain technologies to satisfy cyber security properties., Stability analysis of networked-isolated micro-grids in the presence of source, load disturbances and faults, Design, develop and control drones for different societal applications.</p> <p>Power system Reliability, Smart Grid, Deregulated power system, Power Economics, Electric Vehicle, Image processing, VLSI</p> <p>Renewable Energy</p> <p>Brainwaves analysis using intelligent techniques.</p>
<p>Electronics and Instrumentation</p>	<p>Sensing Technology, Instrumentation, Biomedical Instrumentation & signal processing, Smart sensor, Industrial Instrumentation, Machine Learning, and Application of IoT.</p> <p>Transdermal Drug delivery, Medical Electronic devices, Energy storage devices.</p>

	<p>Communication: IRS for 5G & beyond Communication, Blockchain for 5G & beyond, UAV for 5G and beyond, IoT & IIoT Communication, Vehicular: V2X communication, D2D, mmWave 5G, Cognitive Radio, MIMO, etc.</p> <p>Image and Signal Processing: Image Segmentation models for real-time and medical applications, Medical Imaging,</p> <p>Biomedical Signal Processing and its applications,</p> <p>AI: Machine Learning, Deep Learning and its applications in Healthcare, Communication and Signal Processing.</p> <p>Control systems (conventional and data driven Modelling, estimation, control);</p> <p>Renewable Energy system; Energy storage (battery, supercapacitor, fuel cell); Battery health diagnostics and management;</p> <p>Electric vehicle; Smart village and agriculture; Fractional order systems</p>
Computer Science and Engineering	Machine Learning, Image Processing, Deep Learning, Language Identification, Medical Image data analysis, Health Informatics, Speech Processing, Audio video Processing
Electronics and Communication	<p>Signal Processing and Machine Learning</p> <p>Microelectronics Devices, Circuits and Systems</p> <p>RF and Microwave</p> <p>Communication Engineering</p>
Physics	Perovskites for energy and Nano-electronics application
Chemistry	<p>Photocatalytic and/ or catalytic applications of Graphitic carbon nitride and Hydroxyapatite based nanomaterials for environmental remediation and energy storage and harvesting</p> <p>Nanoscience and Nanotechnology, Nanocatalysts, Synthesis and characterization and application of inorganic nanostructured materials as catalysts, sorbents or polymer reinforcing nano-additives. Application of nanomaterials in various organic transformations, photodegradation of industrially emerging pollutants, bio-energy production and water treatment, waste-derived catalysts for various organic transformations and photodegradation of organic compounds, Waste plastics recycling, Co-processing of petroleum vacuum residue, Polymers, Desulfurization, Solid waste Management, Multifunctional Porous Materials (Metal Organic Frameworks and Covalent Organic Frameworks) for Energy, Environment and Catalysis applications, Physical Chemistry</p>

	<p>Organic synthesis, Synthesis of Schiff bases and Metal complexes, DFT and Biological studies.</p> <p>Organic Chemistry and Renewable Energy.</p> <p>Studying the photophysical and photochemical processes of organic fluorophores in homogeneous and heterogeneous environments using fluorescence spectroscopy; protein-ligand interaction</p> <p>Transition metal complexes of nitrogen based heterocyclic ligands: Synthesis, properties and application</p> <p>Organic Chemistry (Nano-structured materials for photocatalysis and medical/ bio-medical applications etc.); Environmental Waste Management (Applications of Nano-materials derived from solid-waste in Nano-electronics, Sensors, Nano-composite fillers etc.); Renewable (Biofuels) and Non-Renewable energy (Coal, Petroleum).</p>
Mathematics	<p>Evolutionary Optimization, Soft Computing, Nature-inspired Algorithms, Multi/Many-objective Optimization, Networking Optimization, Graph Theoretic Applications, Integral equations and Integro-differential equations with application to image processing, Inverse eigenvalue problem, linear algebra, Fuzzy set theory and optimization, Sequence spaces and summability.</p>
Management Studies	Entrepreneurship

The Institute offers **Post-Doctoral Fellowship (PDF)** with a view to providing an opportunity for competent researchers to do independent research work in an appropriate area. Institute will admit young researchers, as Institute Postdoctoral Fellows (IPDFs).

Institute PDF: Those who are applying through advertisement of this institute. These PDFs are termed Institute Post-Doctoral Fellows (IPDF). Their rules and regulation are governed by the Institute's policy. The total number of IPDF will be as per the sanctioned strength at any time in a department.

Eligibility:

The eligibility criterion of the applicant for IPDF are as follows:

1. The National Institute of Technology Silchar is offered Full Time (FT) IPDF program in the area of research/ specialization mentioned in above for the respective department.
2. Institute Post-Doctoral Fellowship is intended for persons normally below 35 years of age. However, for persons from teaching institutions recognized by AICTE/UGC/ R&D organizations or persons sponsored by DSIR-recognized industrial organizations, the maximum age limit shall be 40 years.
3. Institute Post-Doctoral Fellowship will be offered to persons with a Ph.D. degree in the mentioned branch of Engineering/ Science/ Social Sciences/ Management studies and with a

minimum of 03 (Three) research publications in peer-reviewed SCI/SCIE/SSCI indexed journals.

4. All the degrees acquired by the candidate must be in first class, with at least one degree from IIT/NIT/Government Funded/CFTI/Centrally Funded Institutes and/or the institute NIRF rank within 100.
5. Candidate must apply within five years after completing his/her Ph.D. degree.
6. The candidates who have completed their Ph.D. from NIT Silchar can apply for the fellowship after **03** (Three) years of completion of their Ph.D. degree.
7. SC/ST/OBC/EWS/Women reservations and relaxation will be followed as per Government of India norms.
8. Fellowship is available to Indian Nationals only.

Application procedure:

- a) A proposal must be submitted by the aspiring post-doctoral fellow with the consent of a faculty member of NIT Silchar as a mentor.
- b) The proposal submitted by the fellow must not be a mere extension of the Ph.D. work.
- c) The applicant is allowed to submit only one concept note with respect to a single advertisement.
- d) The expertise brought in by the applicant will be an important criterion in the selection process.
- e) The concept note must be submitted as per the format given in **Annexure – I** with filled up application form.
- f) The candidate/ applicant will be allowed to pursue PDF only once at NIT Silchar.

The filled-up application form with the proposal must reach to the following address on or before **26/06/2023**.

All the applications cover must be mention the subject line ***“Application for the IPDF program – Name of the Department”***.

To
The Dean (R&C)
2nd Floor, Administrative Building
National Institute of Technology Silchar
Dist.: Cachar, City: Silchar
Pin – 788010, Assam, India.

Also a advance copy of the applications with all supporting documents should be sent to the email id ipdf_nitsilchar@nits.ac.in. The candidates are advised to give their latest contact numbers/e-mail ids in the application form. The Institute reserves the right to reject any or all applications or it may amend any of the clauses above as per orders of the competent authority/Government of India.

Important Dates:

01.	Last date of receipt of applications	26.06.2023
02.	Publication of shortlisted candidates for interview/ test	07.07.2023
03.	Tentative date of interview/test	24 – 25 th July 2023
04.	List of selected candidates to be uploaded in the institute website	01.08.2023

An Application Fee of **Rs. 1000/-**(for Open/OBC) **OR Rs. 500/-** (for SC/ST/ PwD) must be paid via online payment and the steps for online payment is as follows:

1. www.onlinesbi.com
2. State Bank Collect (SB Collect).
3. Accept and proceed.
4. State of Institute>Assam.
5. Type of Institute> Educational institute> Go.
6. Educational Institutions Name>Select online fee collection account NIT Silchar>Submit.
7. Select payment category as “Application fee for IPDF Admission2023”.
8. Fill the required information and submit.

The payment reference number and date of the payment are to be mentioned in the application form, otherwise the application form will be treated as canceled.

The applicant must enclose all relevant documents, self-attested, in connection with the credentials claimed by the applicant along with the signed copy of the Declaration form at the time of submission of the application form.

GENERAL TERMS AND CONDITIONS

1. The Institute reserves the right to cancel the candidature without assigning any reason thereof.
2. The prescribed qualifications are minimum and mere possession of the same does not entitle candidates to be called for written test and/or counseling.
3. No correspondence will be entertained with the candidates, who are not called for counseling/selected for appointment.
4. Canvassing in any form will result in the disqualification of candidature.
5. Legal disputes, if any, will be restricted within the jurisdiction of Silchar Court only.
6. Candidates should submit their application form along with all supporting documents duly self-attested.
7. All reserved category candidates shall be required to submit self-attested copies of the latest Caste certificate issued by the competent authority.
8. Candidates must produce original mark sheets and certificates during verification and counseling at the time of counselling if called for.
9. Selected candidates shall have to sign an agreement at the time of joining.
10. **The fellowship is Rs. 50,000/- per month and Rs. 50,000/- as a contingency per year.**

11. **The initial appointment of the fellow is for a period of One year and extended up to another year after successful progress.**

OTHER IMPORTANT INFORMATION

1. Candidates are requested to provide their active email Id/ mobile phone numbers/ landline phone numbers in the application form for easy contact.
2. List of shortlisted candidates will be displayed on the Website of the Institute. No personal intimation will be made to the candidates. Candidates are advised to visit the Institute's website regularly for any updates.

Sd/-

Dean (R&C)



National Institute of Technology Silchar
Silchar – 788010, Assam, India.

Application for Institute Post-Doctoral Fellowship (IPDF)

Advertisement No.: _____

Dated: _____

1. Applied For

Name of Department:

Name of Mentor:

Name of Co-Mentor (if any):

Proposed area of research:

2. Personnel Details

Full Name (in Block Letter):

Mother's Name:

Father's Name:

Date of Birth (DD/MM/YYYY):
(Proof to attached)

Age as on ___/___/2023:

Gender (Male/ Female):

Marital Status:

Category (Open/OBC-NCL/SC/ST):
(Proof to be attached)

Whether PwD: Yes/ No:

%age of disabilities (if yes):
(Proof to be attached)

Nationality:

Domicile:

Email ID:

Mobile number:

Address for Communication:

Permanent Address (if separate):

Affix your recent colour
photograph

3. Academic details

Educational Qualifications: (Class X onwards with proof)

Sl. No.	Name of Examination	Year of Passing	Institute/ Board/ University	Subject/ Branch	Class/ Division	%age / CGPA/ CPI

Details of Ph.D.:

Title of the thesis:	
Name of Supervisor (s):	
Name of Institute/ University:	
Year of Degree award: (Proof to be submitted)	

NET/ GATE examination passed (Proof to be attached, if any):

Subject	Qualifying Year	Score	Valid up to

Employment details (including PDF, if any; Proof to be attached):

Sl. No.	Name of Organization	Nature of Post	Period (From-To)	Pay Scale	Nature of Duty

4. Publication details

Details of Peer-review Journal Publications (1st Page to be attached):

Sl. No.	Author (s) name	Journal name	Title of Paper	Volume/ Issue/ Page	Year	Indexing, Impact Factor (if any)

Details of Conference Publications (1st Page to be attached):

Sl. No.	Author (s) name	Conference details	Title of Paper	Volume/ Issue/ Page	Year	Indexing, Impact Factor (if any)

Details of Other Publications (Patent/ Book/ Book chapters/ any other) (Proof to be attached):

Sl. No.	Author (s) name	Details	Title	Volume/ Issue/ Page	Year	Indexing, Impact Factor (if any)

5. Details of Two References (Recommendation letter to be attached):

Sl. No.	Name	Designation	Affiliation	Contact details	Address

6. Any other relevant information that you may like to furnish:

Declaration

I declare that the above information are true and correct to the best of my knowledge and belief.

Date:

Place:

Signature of Applicant

Research Proposal/ Concept Note Format

The complete format for the research proposal consisting of the following contents/sections is a part of the Application Form. No research proposal or a section thereof needs to be submitted separately. All the proposals are to be signed by the applicant as well as Mentor and Co-Mentor (if any).

In all, the research proposal shall be in about 3,000 words comprising of the following sections:

- i. **Title of the Research Proposal:** The research proposal should have a clear, meaningful and confirmed topic reflecting the scope of the study.
- ii. **Abstract** of the proposed research proposal should be given (in about 200 words).
- iii. **Introduction:** The introduction should clearly state the research problem to be investigated in the light of its theoretical and/or empirical context in the relevant area (in about 400 words).
- iv. **Major Research Works Reviewed:** (National and International): Reviews of at least 15 to 20 significant national and international research works related to the proposed theme of research is to be given in this column (in about 300 words).
- v. **Identification of Research Gaps:** The applicant should summarize the current status of research in the area and major findings, including the researcher's own work in the area. Existing empirical findings may also be discussed. The overview should clearly demonstrate the inadequacies/ gaps in the existing findings or approaches and their relevance (in about 300 words).
- vi. **Objectives of the Study:** The study's general aim and the specific objectives to be accomplished should be clearly stated in bullet form (in about 100 – 150 words).
- vii. **Framework and methods proposed for research:** The researcher must describe in detail (a) the scope and coverage of his/her study, and (b) the approach and methodology with adequate justification to conduct the research. The details of the methodology may include research design, data to be collected, and empirical and analytical methods to be used. The description of the methodology must be clearly linked to the aims of the research and the research questions/hypotheses of the study (in about 300 words).
- viii. **Expected outcomes of the Study:** A brief note on the proposed plan of publications, during the course of research and after its completion, must be provided. The section should enlist the proposed outputs from the study in terms of publications in the form of research papers/articles in journals/ books/ monographs, etc.) (in about 150 – 200 words).
- ix. **Timeline of proposal:** A detailed timeline to be presented in bar diagram.
- x. **Format of write up:** All the proposal to be submitted the suggested format. All type setting to be in Times New Roman with 12 point fonts and 1.5 line spacing. All margins are in 2.54 cm with A4 size paper setting.