

NATIONAL INSTITUTE OF TECHNOLOGY SILCHAR
SILCHAR – 788010, ASSAM, INDIA
Admission into Ph.D. Programme for the session Jan to June 2020

No. Dean (RC)/105/2019/2

Date: 27.12.2019

Applications are invited for admission into **Ph.D programme** in the following departments for the session Jan to June 2020.

DEPARTMENT	SPECIALISATION	
Civil Engineering	<ul style="list-style-type: none"> ➤ Water Resources Engineering ➤ Structural Engineering ➤ Earthquake Engineering ➤ Transportation Planning ➤ Transportation Engineering ➤ Geotechnical Engineering ➤ Environmental Engineering 	
Mechanical Engineering	<ul style="list-style-type: none"> ➤ Thermal Engineering, CFD application, Non-conventional energy; Computational combustion; Bio-fuel research, Boiling heat transfer, Refrigeration, Air - conditioning, CFD, Solar Energy; Renewable energy, Robotics; Advanced Manufacturing processes, Micro-machining; Micro hydro turbine, Hybrid renewable energy system, Solar thermal collectors; Composite, Fatigue & fracture behavior of material; Extended surface, Heat transfer, Thermodynamics, Nano fluidics; Design of object under water, Non-linear & linear water flow. 	<ul style="list-style-type: none"> ➤ Development of innovative idea; Microfluidics, Natural convection, Non-Newtonian fluid mechanics, Numerical heat transfer; Bio-mechanics, Bio-materials, Fatigue behaviour of materials; Heat exchanges, Mixed convection, Solar thermal; Uncertainty quantification, Computational mechanics and modelling, Mechanics of tribology, Meta-materials, functionally graded materials and composites, Multi-scale Analysis, Optimization and reliability analysis; Non-traditional optimization, Virtual manufacturing; Fluid mechanics, LBM
Electrical Engineering	<ul style="list-style-type: none"> ➤ Low power VLSI, Image Processing, CNT & Nanowires Compound Semiconductors ➤ Power System Analysis and Optimization, Renewable Energy Sources ➤ Nonconventional Energy, Application of soft computing techniques in control and Operation of non-conventional energy based hybrid power system ➤ Smart grid, Power Quality, Power system Reliability, Renewable energy sources 	<ul style="list-style-type: none"> ➤ Renewable energy generation of control (Power electronics control) FACTS Devices & its Control, Microgrid control, Power electronics, Electric device control ➤ Smart grid, Reliability of power system, cost allocation, Deregulated power System, use of artificial intelligence in power system, Economics of power System ➤ Control Theory, Application of control in biomedical application Time-delay system and control, Robust Control ➤ Control System, Nonlinear Control,

	<p>Cogeneration Management, Application of Big Data in Power system</p> <ul style="list-style-type: none"> ➤ Micro-grid, Renewable energy integration in competitive power markets, FACTS device Transmission system planning 	<p>adoptive control, Fractional order control</p> <ul style="list-style-type: none"> ➤ Smart Grid, AGC, Brainwaves, LFCetc
Electronics and Communication Engineering	<ul style="list-style-type: none"> ➤ Semiconductor Devices, Electronic Design and Technology, Materials for Semiconductor Devices, High-k CMOS and Non-Volatile Memory, VLSI Interconnects, Carbon Nanotube Interconnects, Stretchable interconnects, Signal Integrity, Power Integrity, Device Modelling. ➤ Optical fiber Communication and Optoelectronics Devices ➤ MEMS, RF- MEMS, Solar cells ➤ Wireless sensor network, Wireless relay network, Wireless communication, Cross-layer Issues in Wireless Networks, Cooperative Communications, Underwater Networks, Free-Space Optical Communications, Green Communications, Machine Learning, and Artificial Intelligence ➤ Antenna Design, RF & Microwave Devices, and Antenna Structure Optimization, Computational electromagnetics, Metamaterial Antennas ➤ Communication and Signal Processing, Image Processing and Computer Vision (3-D reconstruction from stereo and multi-view, image restoration and depth reconstruction from blur image. Temporal Super resolution, Tracking in high speed video etc.), Image Processing and Machine Learning, Image Processing / Medical Imaging. 	
Computer Science and Engineering	<ul style="list-style-type: none"> ➤ Machine Intelligence ➤ Artificial Intelligence ➤ Natural Language Processing ➤ Bran Waves Research ➤ Artificial Immune Systems ➤ Semantic Networks ➤ Information Retrieval ➤ Digital Geometry ➤ Computational Geometry ➤ Computer Network Communication and Related Areas. 	<ul style="list-style-type: none"> ➤ Mathematical Imaging And Image Analysis ➤ Image Hashing ➤ Shot Boundary Detection ➤ Video Indexing ➤ VLSI Physical Design Automation ➤ FPGA Layout ➤ Internet of Things ➤ Sensor Technology ➤ Speech Processing ➤ Cloud Computing

Electronics and Instrumentation Engineering	<ul style="list-style-type: none"> ➤ Biomedical Signal Processing ➤ Biomedical Instrumentation, BCI ➤ Biosensors ➤ Transdermal drug delivery ➤ Sensors design & Application ➤ VLSI design (Analog & Digital) ➤ Thin Film solar cells ➤ Signal, Speech & Image Processing ➤ Image Segmentation ➤ Measurement and monitoring of Industrial parameters ➤ Modelling, Estimation, Control and Optimization of energy systems (PG, Batteries, Supercapacitors in Electrified Vehicles, Wireless Sensor Nodes, Consumer Electronics) 	<ul style="list-style-type: none"> ➤ Industrial Instrumentation ➤ Intelligent Instrumentation ➤ Linear and Non-linear Control ➤ Sliding Mode Control ➤ Control of Biological systems ➤ Study of dielectric material used for insulator, Communication circuit, nano-film, defense, pharmaceutical, polymer, food and agricultural industry ➤ Communication System: Performance Analysis, Energy Efficiency and Power Allocation ➤ Wireless Communication: D2D, Cognitive Radio, 5G, UWB ➤ Wireless Networks: VANET, Cross Layer Optimization
Mathematics	<ul style="list-style-type: none"> ➤ Evolutionary Optimization, Networking Optimization ➤ Operation Research and Optimization Techniques, Mathematical Modeling, Uncertainty Modeling, Fuzzy Logic and Fuzzy Set Theory, Seismic Wave Propagation, ➤ Fuzzy reliability and Fuzzy Statistics 	<ul style="list-style-type: none"> ➤ Inverse Eigen Value Problem, Fractional Integral Equation, Fuzzy Set Theory ➤ Computational Fluid Dynamics ➤ Differential Equations, Fractional Differential Equations and Function Differential Equations
Chemistry	<p>Green synthesis and applications of Organosulphur compounds. Synthesis of metal complexes and applications.</p> <p>Synthesis of Nanocatalysts and their applications in photochemical and Chemical transformation</p> <p>“Synthesis and Characterization of Fly-ash based nanoaggregates for various applications” And “Industrial waste management and its potential utilization”.</p> <p>Study of Photoexcited states in different pure solvents and microheterogeneous media</p> <p>Organic Synthesis , Heterogeneous catalysis, Solid phase synthesis, nanocatalysis</p> <p>Synthesis of nanocomposites for dye sensitized solar cells, Photocatalysis Green and facile methodologies for production of nanomaterials (nanostructures) and porous materials, noble metal and metal oxide (semiconductor) nanomaterial’s for organic transformations, and degradation of organic compounds and purification of water, Adsorption/interfacial phenomenon, Development of low cost, synthetic nanoadsorbents and nanocomposites for waste water treatment, waste plastic recycling, Co- processing of petroleum vacuum residue with plastics and biomass, cracking or pyrolysis of biomass, polymer composites and nanocomposites and their applications, Desulfurization, solid waste Management .</p>	
Physics	<ul style="list-style-type: none"> ➤ B- Physics, Neutrino Physics, CP Violation ➤ Solar energy materials, Solar Photo Catalysis, Solar Photo- voltaics ➤ Resistive memory, devices, Semiconductor nanostructure 	<ul style="list-style-type: none"> ➤ Multiferroics ➤ Nanomaterials ➤ Energy storage materials ➤ Nanoionic resistive switching devices

Humanities and Social Sciences	<ul style="list-style-type: none"> ➤ Economics: Development Economics, International Trade, Regional Development, Political Economy & Agricultural Economics 	<ul style="list-style-type: none"> ➤ Post-colonial Literature, Indian writing in English, Feminist Literature, Cultural Studies, Literature, Literary Theory, Film Sociology, Comparative literature, Cultural Studies & Media Studies.
Management Studies	<ul style="list-style-type: none"> ➤ Finance and Accountancy ➤ Organisational Behaviour & Human Resource Management ➤ Marketing ➤ Entrepreneurship ➤ Intellectual Property Rights. 	

ADMISSION GROUP:

1. There are two Groups (A and B) of admission under Ph.D. Program

GROUP A: Ph.D. Program - Regular Category who may receive fellowship from the MHRD / CSIR/UGC or any other recognized funding agency.

Fellowship: As per MHRD / CSIR / UGC guidelines.

Research Fellowship is available to the scholars who are admitted to Ph.D. programmes in different departments subject to the availability as stipulated by Ministry of Human Resources Development. The award and renewal of the fellowship is as per the guidelines issued by MHRD, from time to time.

Eligibility for application in GROUP A:

1. Students for admission into Ph.D. Programs in Engineering Departments must satisfy one of the following criteria:
 - i) M.E./M.Tech. or equivalent with GATE / NET qualification in an appropriate area with a minimum CPI of 6.5 (on a 10 point scale) or equivalent (60% of marks). For SC/ST/PwD candidates, a minimum CPI of 6.0 (on a 10 point scale) or equivalent (55% of marks).
 - ii) B.E./B.Tech. with an excellent academic record with valid GATE score and with a CPI of at least 8.0 (on 10 point scale) or equivalent (75% of marks). For graduates from IITs/NITs, the minimum CPI requirement is 7.0 (on 10 point scale). For SC/ST/PwD candidates, there is a relaxation of 0.5 CPI or 5% of marks.
2. Students for admission into the Ph.D. Programs in Science departments must have a Master degree in the relevant discipline with a GATE / UGC / CSIR / NBHM / NET score for admission with a minimum CPI of 6.5 (on a 10 point scale) or equivalent (60% of marks). For SC/ ST/ PwD candidates, a minimum CPI of 6.0 (on a 10 point scale) or equivalent (55% of marks) with a GATE / UGC / CSIR / NBHM / NET score for admission.
3. Students for admission into the Ph.D. Programs in Management Studies departments must have a Master's degree in Business Administration or Master's degree in Engineering /Technology with a minimum CPI of 6.5 (on a 10 point scale) or equivalent (60% of marks) or Master degree in other disciplines with a minimum CPI of 6.5 (on a 10 point scale) or equivalent (60% of marks). For SC / ST / PwD candidates, a minimum CPI of 6.0 (on a 10 point scale) or equivalent (55% of marks). A score in NET / GATE / UGC is required for all.
4. Students for admission into the Ph.D. Programs in Humanities and Social Sciences (HSS) Department must have a Master's degree in any field with a minimum CPI of 6.5 (on a 10 point scale) or equivalent (60 % of marks) or Master degree in other disciplines with a minimum CPI of 6.5 (on a 10 point scale) or equivalent (60 % of marks). For SC / ST/ PwD candidates, a minimum CPI of 6.0 (on a 10 point scale) or equivalent (55 % of marks). A score in NET / GATE / UGC is required for all.

GROUP B: Ph.D. Program—No financial assistance or stipend by NIT Silchar will be provided for this GROUP.

Following students will be considered under this GROUP:

- I) REGULAR- The regular students are those who work full-time for their Ph.D. and self-financed.
- II) SPONSORED—who are employed in a Central/State Govt. Departments/PSUs/Reputed Educational Institutes/Research organizations/Reputed Industries for doing research in the Institute on a full-time basis. He / She should have at least two years of working experience in the respective field. The candidate must submit the filled-in sponsorship letter (FORM I) from the employer with the application for admission. He / She shall not be entitled to any financial support from the Institute.
- III) PART-TIME- This category refers to the candidates who are professionally employed personnel. They have to stay in the Institute/around the Institute at least during the period of course work so that they can attend regular classes as per the Institute academic norm. The applicant must be an employee of a State/Central Govt. Departments/PSUs/ Reputed Educational Institutes/Research organizations/Reputed Industries/Faculty under TEQIP III at the time of admission having at least one year experience in the discipline in which admission is sought. No financial assistance shall be provided by the Institute to such students. A No Objection Certificate from the Head of the Institute/Organization, in which he/she is employed, must be enclosed with application in FORM II-A.
- IV) INSTITUTE EMPLOYEES- Employees of NIT Silchar. A No Objection Certificate from the concerned Head of the Department and the Director must be enclosed with application form (FORM II-B).
- V) PROJECT STAFF -This category refers to the candidates who work on sponsored projects in the Institute. A No Objection Certificate from the Principal Investigator of the concerned project and Dean (R & C) must be enclosed with application form (FORM III).
- VI) SPONSORED (EXTERNAL REGISTRATION) - Candidates employed in R&D organizations / educational Institutes having adequate research facilities. Sponsorship certificate (FORM IV) from the Head of the organization where the candidate is employed must be enclosed at the time of application.

Eligibility for application in GROUP B:

1. Students for admission into Ph.D. Programs in Engineering Departments must satisfy one of the following criteria:
 - i) M.E./M.Tech. or equivalent in an appropriate area with a minimum CPI of 6.5 (on a 10 point scale) or equivalent (60% of marks). For SC/ST/PwD candidates, a minimum CPI of 6.0 (on a 10 point scale) or equivalent (55% of marks).
 - ii) B.E./B.Tech. with an excellent academic record with valid GATE score and with a CPI of at least 8.0 (on 10 point scale) or equivalent (75% of marks). For graduates from IITs/NITs, the minimum CPI requirement is 7.0 (on 10 point scale). For SC/ST/PwD candidates, there is a relaxation of 0.5 CPI or 5% of marks.
2. Students for admission into the Ph.D. Programs in Science departments must have a Master degree in the relevant discipline) with a minimum CPI of 6.5 (on a 10 point scale) or equivalent (60% of marks). For SC/ST/PwD candidates, a minimum CPI of 6.0 (on a 10 point scale) or equivalent (55% of marks) is required.
3. Students for admission into the Ph.D. Programs in Management Studies departments must have a Master's degree in Business Administration or Master's degree in relevant disciplines with a minimum CPI of 6.5 (on a 10 point scale) or equivalent (60% of marks). For SC/ST/PwD candidates, a minimum CPI of 6.0 (on a 10 point scale) or equivalent (55% of marks) is required.
4. Students for admission into the Ph.D. Programs in Humanities and Social Sciences (HSS) Department must have a Masters degree in any field with a minimum CPI of 6.5 (on a 10 point scale) or equivalent (60 % of marks). For SC / ST/ PwD candidates, a minimum CPI of 6.0 (on a 10 point scale) or equivalent (55 % of marks) is required.

Downloadable application form with other relevant papers is available in the Institute's website: **www.nits.ac.in**.

The filled in and signed Application Form must be accompanied with an Application Fee of **Rs.500/-** (for General/OBC) **OR Rs.250/-** (for SC/ST) in the form of crossed Demand Draft (D.D.) in favour of **Director, N.I.T. Silchar**, payable at Silchar; otherwise, the application form will be treated as cancelled.

Hard copy of the Application form complete in all respects alongwith original D.D. should reach the **office of Dean (Research and Consultancy), NIT Silchar, PIN- 788010** on or before **25th January, 2020** by **5.00 p.m.** The **subject line of the envelope** should be **"Application for Ph.D. program- *Name of the department (applying for) - Group A / Group B*"**.

Scanned copy of the Application form complete in all respects and the D.D. must be emailed to— **directornits@gmail.com** & **deanrcnits@gmail.com** on or before **25th January, 2020** by **5.00 p.m.** Subject line should be **"Application for Ph.D. program- *Name of the department (applying for)- Group A / Group B*"**.

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.

The result will be available in the website.

Important Dates:

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| (i) | Last date of submission of form to the Institute. | : 25 th Jan, 2020. |
| (ii) | List of short-listed candidates to be uploaded in the institute website
(To be communicated by the department concerned to the students through Institute's Website) | : 4 th Feb, 2020. |
| (iii) | Date of written test and Counselling and document verification | : 15 th Feb, 2020. |
| (iv) | Date of sending recommendation list by the Department to Dean (R & C) | : 21 st Feb, 2020. |
| (v) | List of provisionally selected candidates to be uploaded in the Institute website (including waitlisted candidates) | : 27 th Feb, 2020. |
| (vi) | Period of Admission and Registration | : 9 th to 13 th March, 2020. |
- **Hostel accommodation is subject to availability.**

The details of specialisations, regulations, and applications form (downloadable) is available in the Institute website **www.nits.ac.in**.

GENERAL TERMS AND CONDITIONS

1. The Institute reserves the right to cancel the candidature without assigning any reason thereof.
2. The prescribed qualification are minimum and mere possession of the same does not entitle candidates to be called for written test and counselling.
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 disqualification of candidature.
5. Legal disputes, if any, will be restricted within the jurisdiction of Silchar Court only.
6. Candidates should send 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 competent authority.
8. Candidates must produce original marksheets and certificates during verification and counselling at the time of counselling, if called for.

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 short listed 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 website regularly.

Sd/-
Dean (R & C)