राष्ट्रीय प्रौद्योगिकी संस्थान नागालैंड
NATIONAL INSTITUTE OF TECHNOLOGY NAGALAND
Chumukedima - 797103
Nagaland

Ref.No. NIT-N/ADVT/Research/0001/2023 dated 13/04/2023

A. Ph.D. PROGRAMME

Applications are invited from qualified candidates for admission to Ph.D. programme (Full Time / Part Time) in the disciplines of CE, EEE, ECE, CSE, EIE, ME and S&H (Mathematics, Physics, English), Integrated Ph.D. Programme and Interdisciplinary Research (IR). The Departments and Research Areas in which the following Programs will be offered are listed as below:

Sl. No.	Department	Specialization/ Area of Research/ IR domain	Eligible Disciplines
1.	Civil Engineering	Structural Engineering, Environmental Engineering, Concrete Technology, functionally graded concrete, concrete microstructure and durability, Steel –Concrete composite Structures, Finite Element Modelling, Waste Utilization in Concrete and Bricks Manufacturing, Solid Waste Management, Soil Stabilized Roads.	B. Tech. in Civil Engineering, M. Tech. in relevant discipline
2.	Computer Science and Engineering	Data Analytics, Artificial Intelligence, Machine Learning, Deep Learning, Bioinformatics, Online Social Networks, Computer Networks, Wireless Communication and Networks, IoT, Mobile Communications, Device to Device Communication, Vehicular Ad-Hoc Network, Public Safety Network, Image Processing, Information and Cyber Security, Block chain, Biomedical Image Processing, Data Mining, Stock Market Prediction using Machine Learning and Deep Learning, Multimedia Hashing.	B. Tech./B.E., M. Tech./ M.E in Engineering/ Technology or Equivalent in Computer Science / Information Technology and Allied Branches.
3.	Electrical and Electronics Engineering	Power Electronics, Restructured Power Systems, Smart Grid, Power System Economics, Embedded Systems, Power System Operation & Control, Electric Drives Solar Photo-voltaic systems, Wind Energy, Biogas, Renewable Energy Systems - Forecasting / Predictive analytics, Machine Fault Diagnostics, Power Quality, Power Electronics, Optimization, Micro Grid, Smart Grids, Demand side Management, Machine Learning and Deep Learning, Internet of Things, Smart Transportation Systems, Artificial Intelligence for Health Care Systems,	B.E./B. Tech., M.E./M.Tech. in Electrical and Electronics, Electronics and Communication, Electronics and Instrumentation Engineering equivalent / relevant discipline.

		AI for Educational Systems, AI for Industrial Internet of Things, Robotics, Micro Electro Mechanical Systems (MEMS), MEMS / NEMS Energy Harvesters, Bio-Medical Applications, Thin Films, Self-Cleaning Technology for Solar Panels, Nano Structures, High Power Devices, Control System, Optimization, Estimation, Control design for power system, Control design for Microgrid, PV system and Wind energy system, Control design for Power Converters and Filters, Converter Design, Solar Cell Device, Biomedical instrumentation and Control, Machine Learning and Deep Learning in control perceptive, Control development for robotic vehicles. Artificial Intelligence for Machinery Maintenance, Industrial Internet of Things, IoT based Automation, Smart Transportation Systems, Wireless Sensor Networks, Automotive Applications, AI for Medical Applications, AI for Educational Systems, Power System Fault Analysis, Wind Farms, IoT for Smart Grids, Micro Grids, Machine Learning in Power Systems Wireless Sensor Networks, Smart Grids, Demand Side Management, Power Systems, Internet of Things, Electric Vehicles: PEV/PHEV in Smart Distribution grid, Artificial Intelligence, Machine Learning and Deep Learning, Industrial Automation, Drone Technology. Smart Grid and Renewable Integration, Network Reconfiguration, Condition monitoring of Power apparatus, Service Restoration, Congestion Management. Electricity markets and economics of electric power grids, Policy and regulation for electric power grids, Smart grids and its enabling technologies and mechanisms, Demand-side management, demand response and flexible loads, Reliability analysis of Power System, Power System Congestion management	
4.	Electronics and Communication Engineering	Semiconductor device modelling, Optoelectronic devices, Photovoltaic devices, Nanoelectronics, Gas sensors, Memory devices, Speech Processing, Antenna Design and Digital Image Processing, Medical Electronics.	B.E/B.Tech., M.E/M.Tech in Electronics and Communication Engineering, Electrical Engineering,

		VLSI, Circuits and Systems, MEMs, Semiconductor Device Modelling and Simulations, Optoelectronic Devices and Displays, Photodetectors, Sensors, Power Devices, Compound Semiconductors and High-Speed Devices, Memory Devices, Neuromorphic Devices, Flexible electronic devices, Nanotechnology, Low power devices and circuits, Photovoltaic devices, Organic electronics, Optoelectronics	Instrumentation Engineering, Nanotechnology and Allied Branches.
5.	Electronics and Instrumentation Engineering	Wireless Communication, Control of Smart Structures, WSN, Embedded Systems, MEMS, IoT, Internet of Vehicles (IoV), Mobile Ad Hoc Network, Thin Film Flexible Bio-Transducer/Sensor. Artificial intelligence, Machine learning, Deep learning, Network anomalies detection using AI algorithms, Resource management using Fog/IoT systems. Behavioural OTFT micro/nano device for Biosensing of SARS-CoV-2/ DNA, Multianalyte assays suitable for body or health monitoring, Enhanced separation and sensing based biosensor utilizing Organic Thin Film Transistors (OTFT's) for capturing of Microorganisms, IoT Enable Smart Mental Healthcare Monitoring and Rehabilitation System. Optoelectronic Instrumentation, Fiber optic communication, Optical sensors and system design, Labview based Virtual Instrumentation design.	B.E./B. Tech., M.E./M.Tech. in Electronics and Instrumentation Engg., Electronics and Communication Engg., Electrical and electronics Engg., or relevant/ equivalent discipline. Industrial Instrumentation, Process Control, Fiber Optics and Laser Instrumentation, Control systems, Power Electronics, Electrical Engg., Electronics Engg., Electrical drives, Embedded Systems, Applied Electronics, Comm. Systems, Comm. Engg., Communication Networks, VLSI, Signal Processing, MEMS, Microfluidics, or relevant/ equivalent discipline.
6.	Mechanical Engineering	Advanced Manufacturing, CAD/CAM/CIM, Mechatronics and Automation, Material Science: Composites and Alloys, Soft Computing and Optimization, Power Plant Engineering, Biomass, Tribology, Biodiesel.	B.E./B. Tech., M.E./M.Tech. in Mechanical Engineering, Metallurgical Engineering, Material Science, Production Engineering, Mechanical Design, Biomedical and

			Engineering Fluid Mechanics and equivalent / relevant /Allied discipline.
7.	Science & Humanities (Mathematics, Physics, English)	**MATHEMATICS:** Optimization Theory, Cooperative Game Theory, Stochastic and Differential Game, Supply chain Network, Abstract Algebra, Ring and Module Theory. **PHYSICS:** Nanomaterials, Nanomagnetism, Thin Film Technology, Material science, Membrane Science & Technology. **ENGLISH**: ELT, English Fiction (preferably South Asian Fiction), Poetry (preferably Commonwealth Poetry)	MSc in Mathematics/ MSc in Statistics/ Operation research. MSc Physics/ Masters in Physical Sciences/Engineering or allied field. B. A English Honors, M. A English.

INTERDISCIPLINARY RESEARCH TOPICS

Machine Learning and Deep Learning for Predictive Analytics in Renewable Energy, Block Chain Technology for Smart Grids, Applications of Drone in Disaster Management, Solar Cell, Fabrication of High Power Devices, Supercapacitors, Micro-Electro Mechanical Systems (MEMS) for Bio-Medical Applications, NEMS Application, Optimization in Supply Chain Management, Kinematics and Dynamics Study of Different Robots, Optimization and Modelling Nano-Devices, Delay Deferential Equation, AI for Educational Systems, Industrial Internet of Things, AI for Engineering Applications, Application of image processing and graph theory in Power System, IOT application in Energy system, Intelligent IOT and Sensor Power System Restoration, Block Chain application in Power System.

Optoelectronics, Semiconductor Devices, Nanostructure Fabrication, Semiconductor Device Modelling, Nanostructure Surface Analysis

Disaster recovery communication Network with Cellular/ D2D/V2V/ V2I/ UAV technologies. Designing IoT/ WSN based communication system for Smart agriculture. Application of Machine learning and AI in Next Generation Wireless communication.

ELIGIBILITY CRITERIA FOR PHD PROGRAMME IN ENGINEERING

1. Master's degree in Engineering / Technology with Bachelor's degree in Engineering / Technology with a minimum First class and CGPA/CPI of 6.5 or above (on scale of 10) or 60 % marks (55% marks for SC/ST candidates).

2. MS by Research in Engineering / 5-year integrated Masters/ Dual Degree in Engineering or BS+MS (5-year integrated course) from CFTI in a relevant area specified above with a minimum First class and CGPA/CPI of 6.5 or above (on scale of 10) or 60 % marks (55% marks for SC/ST candidates).

3. Master's degree in Engineering / Technology with Master degree in Computer Application with a minimum First class and CGPA/CPI of 6.5 or above (on scale of 10) or 60 % marks

(55% marks for SC/ST candidates).

4. MBBS with a Master degree with a minimum First class and CGPA/CPI of 6.5 or above (on scale of 10) or 60 % marks (55% marks for SC/ST candidates).

ELIGIBILITY CRITERIA FOR PHD PROGRAMME IN SCIENCE & HUMANITIES

Master's degree in Science/Humanities/M.E./M.Tech or MS by Research in Engineering/ BS+MS (5-year integrated course) from CFTI or equivalent degree, with minimum First class and CGPA/CPI of 6.5 or above (on scale of 10) or 60 % marks (55% marks for SC/ST candidates)

ELIGIBILITY CRITERIA FOR INTEGRATED PH.D. PROGRAMME

Bachelor's degree in Engineering / Technology or equivalent in the disciplines of Civil Engineering, Electrical and Electronics Engineering, Electronics and Instrumentation Engineering, Electronics and Communication Engineering, Mechanical Engineering and Computer Science and Engineering with a minimum CGPA of 8.5 or above (on scale of 10) or 80 percent of marks and a valid GATE score. If the qualifying B.E. / B.Tech. degree is from an IIT / NIT or any Centrally Funded Technical Institute (CFTI) with CGPA 8.5 or 80 percent of marks, then the valid GATE score requirement shall be exempted but scholarship will be provided to only to candidates with valid GATE score.

GUIDELINES FOR ADMISSION TO INTERDISCIPLINARY RESEARCH

1. The candidate shall submit his/her research plan in about 250 to 300 words along with his/her application.
2. Irrespective of application for IR or in one field, the candidate shall be examined in his/her discipline only to assess his / her suitability.
    a. If Bachelor and Master degree are from the same discipline, the candidate must take the selection exam in the same department only. After qualifying in the exam in his/her own discipline through the institute written Test /GATE, he/she will be considered for IR, if the candidate wishes to pursue in IR. The committee (IR) will consider only the Co-guide for the candidate.
    b. If the candidate has Bachelor and Master degree from different disciplines, then the institute Committee (IR) will examine the research proposal / plan of the candidate including his/ her written test/interview performance. This committee may recommend probable Supervisors and Co-Supervisor to guide the scholar.

3. The Scholar can interact with the probable guides recommended by the Committee and select his/her Guides for his/her work with the approval of Associate Dean/ Dean (R&C).

Note: Candidates awaiting their final year results are also eligible to apply for all the programs subject to the submission of passing certificates, meeting all the above eligibility criteria of the institute at the time of physical document verification, reporting and admission at the institute.

B. OTHER GUIDELINES

- Candidates applying for Ph.D. Programme/ Integrated Ph.D. Programme can apply through the downloaded application form only.
- Integrated Ph.D. Programme is only applicable for all the engineering departments only in full-time mode.
- For Interdisciplinary Research (IR) applications, the candidate can choose the research proposal/ plan from the list of department specializations/ areas of research, but shall not be restricted to only those areas.
- If anyone requires to **apply for more than one specialization**, he / she should apply separately for each specialization with a **separate application fee**.
- Candidates can attach their academic profile, if required. Academic profile includes the following information:
    1. Details of publications / conference papers
    2. Awards, patents, prizes etc.,
    3. Other activities
- If the candidate is applying for full-time Ph.D. and he / she is employed, relieving certificate from the employer should be produced at the time of admission.
- Preference will be given to those candidates who are having valid GATE / NET score.
- The Institute will not be responsible for any error in application process.
- **The date and time of written test/interview for the shortlisted candidates will be uploaded in the institute website. So, the candidates are requested to check the website regularly for any updates.**
- **No separate intimation will be given to the individual applicant.**

The duly filled in application form along with enclosures and a non-refundable application fee of Rs. 500/- (SC / ST / PH candidates are exempted from application fee) by means of online transaction (**Account Name: IRG NIT Nagaland, Account Number: 35747839287, IFSC Code: SBIN0007543, Branch: SBI, Chumukedima**) should be sent to the office of the **Associate Dean (R&C), National Institute of Technology Nagaland, Chumukedima – 797 103, Nagaland, by Registered Post only on or before 15-05-2023. A postal delay of 5 (Five) working days will be considered, provided the complete application is sent on or before the last date.**

The Rules and Regulations of Ph.D. Programme and Integrated Ph.D. Programme may be downloaded from the given link below:
http://nitnagaland.ac.in/index.php/academics/rules-and-regulations

Note:

Only full-time candidates with GATE score / UGC NET including lectureship (Assistant Professorship) in order of merit will be considered for institute scholarship subject to the availability of funds from MoE. Others are not eligible for scholarships.

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