

National Institute of Technology, Uttarakhand
Information Brochure of Ph.D. Programme
Even Semester-2024



Applications are invited for admission to Ph.D. Programme **Full Time (Institute-Sponsored), Full Time (Self-Sponsored), Full Time (Sponsored), and Part Time** in Even Semester-2024.

Application form and Information Brochure can be downloaded from NITUK website www.nituk.ac.in

Eligibility: A candidate is eligible for registration to Ph.D. Program if he/she satisfies the following conditions:

A Master's degree in the concerned or an allied subject with a minimum 6.5 CGPA or 60% for General/OBC and 6.0 CGPA or 55% for SC/ST/PWD candidate and GATE / NET (CSIR/UGC/LS) in the concerned subject or discipline.

Or

A minimum of 6.5 CGPA or 60% for General/OBC and 6.0 CGPA or 55% for SC/ST/PWD at Bachelors level with at least 55% marks at Master's level and GATE / NET (CSIR/UGC/LS) in the concerned subject or discipline.

Note: GATE/NET (CSIR/UGC/LS) in the concerned subject or discipline is mandatory. However, relaxation from the requirement of GATE/NET will be given only for admission into part time Ph.D. Program, for part time candidate candidates with minimum two years of relevant experience in reputed Academic/Industrial Organizations or Govt. funded Research Projects. Minimum 2 year serving experience is mandatory (spell of one contract should be minimum 6 months) and the candidate should be in service at the time of application. NOC in case of regular serving candidate is mandatory with the application form.

However, fees structure, essential qualifications, other terms & conditions will be same as per Ordinances of the Institute.

Minimum Qualification(s) required for shortlisting of Ph.D applications:

Department	Minimum Educational Qualification
CIVIL	M.E., M. Tech., M.S., and M.Sc.(Engg.) in relevant engineering and technology disciplines.
CSE	B.E./B. Tech. in Computer Science and Engineering/Computer engineering/Information Technology/Communication and Computer Engineering/Electronics and Communication engineering/Electronics Engineering/Electrical Engineering /Artificial Intelligence/Cyber Security/Machine Learning/ or other relevant Engineering and Technology disciplines. <p style="text-align: center;">and</p> M.E./M.Tech./M.S. in Computer Science and Engineering/Software engineering / Information Technology/Computer Applications/ Information Security/IoT/Robotics/Data Science/Artificial Intelligence/Cyber Security/Machine Learning or other relevant Engineering and Technology disciplines. <p style="text-align: center;">or</p>

	MCA/MSc (in relevant discipline)
ECE	B.E./B. Tech. and M. Tech.in Electrical/ Electronics/ Computer/ Communication/ Telecommunication/ Instrumentation/ Control/ Microelectronics/Signal Processing or equivalent discipline consistent with research areas of the department, MSc in Physics or Electronics with valid GATE Score.
EEE	M.E./M.Tech. or equivalent degree in respective & relevant Engineering disciplines
MEC	B.Tech./M.Tech. degree or equivalent degree in Mechanical/Industrial/Production Engineering, Manufacturing Engineering, Automobile Engineering, other allied branches of Engineering and Technology. B.Tech./M.Tech. degree/ disciplines consistent with the research areas of the department.
PHYSICS	M.Sc. in Physics/Applied Physics/Engineering Physics/allied areas of Physics/interdisciplinary areas in physical sciences (OR) M. Tech or equivalent degree in Materials Science/Solid State Physics/Optics/Nanotechnology/allied areas of Physics/interdisciplinary areas in physical sciences/ equivalent discipline consistent with research areas of the department.
CHEMISTRY	M.Sc. in Chemistry with or without specialization.
MATHEMATICS	M.A./M.Sc. in Mathematics, M.Sc. (Applied Mathematics), M.Sc. (Industrial Mathematics), M.Sc. (Mathematics & Computing), M.Tech (Mathematics/Applied Mathematics).
HSS	Master's or equivalent degree in Organisational Behavior/ Psychology/ Sociology/ Applied Discipline

Table 1. Department-wise Areas of Research for admission in Ph.D. Programme under Institute/CSIR/UGC fellowship:

Department	Area of Research
CIVIL	1. Structure Engineering, Construction Materials / Concrete Technology, Construction Technology and Management.
	2. Traffic Engineering and Management, Road Traffic Safety (Vehicles and Pedestrians), Transportation Planning.
	3. Transportation Planning & Modelling, Pavement Construction & Maintenance , Geospatial Techniques in Transportation
	4. Advanced civil engineering materials, Non Destructive Testing of Materials, Retrofitting of Structures.
	5. Computational Geomechanics, Ground Improvement Techniques, Reliability Based Design of Geotechnical Structures.
	6. Pavement Materials, Evaluation, Ground Improvement Techniques, Transportation and Traffic Engineering.
CSE	1. AI&ML (Generative and Discriminative Models), Wireless Adhoc & Sensor Networks (Including IoTs).
	2. Computing Systems (Real-Time Systems, IoT, Job Scheduling, Edge Computing, Real-Time Traffic Management Systems, Wireless Adhoc & Sensor Networks), AI&ML (Disease Detection, Generative and Discriminative Models, etc.).

ECE	1. Biomedical Signal and Image Processing, Speech Signal Processing, AI/ML for VLSI Design and Communication System.
	2. Signal Processing, Robust Control and Automation.
	3. VLSI Design, Novel Devices and Co-design, 3D ICs.
	4. Novel Semiconductor FET at Cryogenic Application, In-memory computation using FeFET, System Technology Circuit Optimization using Machine Learning.
	5. Circularly Polarized Antenna, Beamforming Antenna, Aperture Shared Antenna.
	6. Signal Processing, Robust Control and Automation.
EEE	1. Power system stability and renewable energy integration issues in power systems, microgrid and smart grid, FACTS applications in power systems.
	2. Power Electronics, Electric Drives, Renewable Energy System, Electric Vehicle
	3. Protection of modern power system (Transmission line , Distribution line and Micro-grid)
	4. Autonomous vehicles, electric vehicles, climate changes and power electronics.
	5. Application of IoT, data analytics methodologies and artificial intelligence to various electrical systems.
MEC	1. Computer-Aided Design (CAD) and Additive Manufacturing (3D Printing).
	2. Prognostics, analysis of nonlinear vibration and its assessment. Condition monitoring. Fault diagnosis, Fault assessment, Application of AI and machine learning in mechanical engineering, Signal processing and its application.
	3. Composite and Bio-Material characterization, Vibration, FEM analysis and MD simulation.
	4. Advanced Materials and alloys, Composite Materials, Biomechanics, Finite Element Analysis, Tribology, Computational Mechanics, Mechanical Characterization.
	5. Nanofluids, heat transfer and energy.
	6. Micromachining, Flow and heat transfer through microchannels, Advanced manufacturing processes, Composites, Microwave material processing.
	7. Computer-Aided Design (CAD) and Additive Manufacturing (3D Printing).
Physics	1. Magnetic thin films, Nanowires, Composite Materials.
	2. Material Science, Optics, Bio-medical Materials and Luminescence.
	3. Magnetism, Thin films, Spintronics.
Chemistry	1. Organic Synthesis, Transition-Metal-Catalyzed C-H bond activation reactions, Development of novel and sustainable organic reactions.
	2. Synthesis of nanomaterials and their applications, Computational and Theoretical Chemistry of Molecules and Materials.
Mathematics	1. Mathematical Analysis, Summability Theory, Approximation Theory.
	2. Biofluid mechanics, Microfluidics and nanofluidics, Nanofluids.
	3. Computational Mechanics, Numerical Methods.
Humanities & Social Sciences	1. Human Resource Management and OB, Cross-cultural Studies, Organizational Psychology.

Table 2. Department-wise Areas of Research for admission in Ph.D. Programme under Part-time/Self-sponsored/CSIR/UGC Scheme:

Department	Area of Research
CIVIL	1. Transportation Planning & Modelling, Pavement Construction & Maintenance, Geospatial Techniques in Transportation.
	2. Advanced civil engineering materials, Non Destructive Testing of Materials, Retrofitting of Structures.
	3. Computational Geomechanics, Ground Improvement Techniques, Reliability Based Design of Geotechnical Structures.
	4. Pavement Materials, Evaluation, Ground Improvement Techniques, Transportation and Traffic Engineering.
	5. Structural Engineering, Seismic analysis and design of structures, Structural Health monitoring.
	6. Ground Improvement Techniques, Computational Geomechanics, Landslide assessment and risk mitigation.
	7. Light Gauge Steel Frames, Seismic Analysis and Design, Computational structural Analysis.
	8. Stability analysis of geotechnical structures, Stability of tunnels / underground structures, Engineering behaviour of rocks.
	9. Groundwater Contamination in unsaturated porous medium and flow modelling, Environmental Hydraulics and Pollution Management, Groundwater Hydraulics.
	10. Structure Engineering, Construction Materials / Concrete Technology, Construction Management.
	11. Traffic Engineering and Management, Road Traffic Safety (Vehicles and Pedestrians), Transportation Planning.
CSE	1. Mobile distributed systems, Sensor Networks, Network Security.
	2. Cryptography, Secret Sharing Schemes, Machine Learning.
	3. WSNs, Artificial Intelligence, IoTs.
	4. Image Processing and Computer Vision, Salient Object Detection, Machine Learning.
	5. Cryptography, Attribute-Based Cryptosystem, Smart Grid.
	6. Real-Time Systems, Fog and Edge Computing, Computer Networks.
ECE	1. Biomedical Signal and Image Processing, Speech Signal Processing, AI/ML for VLSI Design and Communication System.
	2. Signal Processing, Robust Control and Automation.
	3. Optical Communication and Sensors, Plasmonic Sensors, Wireless Communication.
	4. Planar Antenna solutions on Tera Hertz, Microwave Sensors.
	5. Semiconductor Device Physics & Modeling, Novel MOS based Device-Circuit Co-design, Low-power Memory/SRAM circuits Design.
	6. VLSI Design, Novel Devices and Co-design, 3D ICs.
	7. Novel Semiconductor FET at Cryogenic Application, In-memory computation using FeFET, System Technology Circuit Optimization using Machine Learning.
	8. Circularly Polarized Antenna, Beamforming Antenna, Aperture Shared Antenna.
EEE	1. Control Scheme for Various Applications in Power System and Power Electronics Such as Load Frequency Control of Multi Interconnected Area for Hybrid Micro Grid System, Close Loop Control of DC-DC Isolated and Non-isolated Converter, Fractional Control System.
	2. Power system stability and renewable energy integration issues in power systems,

	microgrid and smart grid, FACTS applications in power systems.
	3. Power Electronics, Electric Drives, Renewable Energy System, Electric Vehicle.
	4. Protection of modern power system (Transmission line , Distribution line and Micro-grid).
	5. Power electronics, electrical drives and microgrids.
	6. Electric Drives, Power Electronics and DC microgrid.
	7. Autonomous vehicles, electric vehicles, climate changes and power electronics.
	8. Application of IoT, data analytics methodologies and artificial intelligence to various electrical systems.
MEC	1. Computer-Aided Design (CAD) and Additive Manufacturing (3D Printing).
	2. Renewable energy technologies, Biomass gasification, Alternative fuels, Combustion, heat transfer, Smart materials and Composite materials.
	3. Advanced Machining and Joining Processes, Welding, Simulation of Manufacturing Processes, Materials Processing, Thermoplastic Composites (Extrusion).
	4. Composite materials.
	5. Renewable energy-based hydrogen generation, Alternative fuels for I C Engines, Solar energy storage and applications, Bio-hydrogen generation.
	6. Composite and Bio-Material characterization, Vibration, FEM analysis and MD simulation.
	7. Advanced Materials and alloys, Composite Materials, Biomechanics, Finite Element Analysis, Tribology, Computational Mechanics, Mechanical Characterization.
	8. Nanofluids, heat transfer and energy.
	9. Micromachining, Flow and heat transfer through microchannels, Advanced manufacturing processes, Composites, Microwave material processing.
	10. Heat transfer in nanofluids, Desiccant-based dehumidification system.
	11. Conceptualization and development of polymer matrix composites, joining of green composites, primary and secondary processing of composite materials.
	12. Two phase flow, numerical modelling, thermo-fluids.
	13. Prognostics, analysis if nonlinear vibration and its assessment. Condition monitoring. Fault diagnosis, Fault assessment, Application of AI and machine learning in mechanical engineering, Signal processing and its application.
Physics	1. Magnetic thin films, Nanowires, Composite Materials.
	2. Material Science, Optics, Bio-medical Materials and Luminescence.
	3. Magnetism, Thin films, Spintronics.
	4. X-ray Scattering, Charge and Magnetic Compton Profile, ab-initio Calculations.
Chemistry	1. Supramolecular Organic/Bioorganic Chemistry, Fluorescent Organic Probes & Responsive Materials, Functional Organic Materials.
Mathematics	1. Biofluid mechanics; Microfluidics and nanofluidics; Nanofluids.
	2. Computational Mechanics, Numerical Methods.
	3. Wave propagation in Gaseous Media; Quasilinear Hyperbolic System of PDEs.
	4. Mathematical Modeling, Mathematical Biology, Epidemiology.
	5. Mathematical Analysis, Summability Theory, Approximation Theory.

Details of seats as per the reservation roster for **Full Time (Institute Fellowship)** are as under:

Department	Open	SC	ST	OBC	Open-EWS	Total
Civil Engg.	2+1(PWD)	0	1	2	0	6
Mechanical Engg.	2	1	1	2	1	7
Electronics Engg.	2	1	0	1+1 (PwD)	1	6
Electrical Engg.	1	1	1	1	1	5
Computer Science & Engg.	1	0	0	1	0	2
Humanities & Social Sciences*	1	0	0	0	0	1
Chemistry	1	0	0	0	1	2
Physics	1	1	0	1	0	3
Mathematics	1	1	0	1	0	3
Total No. of Seats	13	5	3	10	4	35

*The seat is for Humanities. There is no vacant seat for English.

Selection Procedure:

Whole selection process will be through offline (physical) mode. The shortlisted candidates will be called for written test. There will be objective type questions as per Gate/NET syllabus. The candidate who secures at least 40% marks in the written test will be shortlisted for online/offline interview. **List of shortlisted candidates for written test and Interview schedule will be displayed on Institute website www.nituk.ac.in separately. No separate letter/communication will be made to any individual for written test/Interview. Candidates are advised to visit the Institute website regularly in this regard.**

Important Points:

- There is no vacant seat for Full-time Institute fellowship in English under HSS department. Therefore, applications are invited from the candidates in Humanities only.
- Candidates MUST specify at least one broad area of research in the application form in which he/she is interested to work. **To avail Institute fellowship, the areas of interest in the application form must be provided from Table 1.** Part-time and self-sponsored fellows should provide the areas of interest from **Table 2.** However, CSIR and UGC fellows may provide the areas from either **Table 1** or **Table 2.**
- Candidates are required to submit duly filled Application form along with all the enclosures and fee deposit slip by registered or speed post/courier to Assistant Registrar (Academic), NIT Uttarakhand on or before **04.01.2024** by 05:00 PM. "Ph.D application form in.....(Subject) should be mentioned on the top of the envelop.
- Candidates are required to pay Rs.500/- as application fee (Non-Refundable) through online mode (SBI Collect) Fee link will be available on Institute Website. Transaction ID along with date should be mentioned on the application form. In case of missing of transaction ID or wrong transaction ID on the application form, application will be summarily rejected.
- Candidate has to produce all the Original documents against the documents attached with the application at the time of reporting for written test and admission. In case of failure to produce any original document, the candidature will be cancelled.
- Clear passport photograph should be attached on the application form.
- Application Forms received after the deadline will be rejected. Incomplete / incorrect applications will not be considered for admission.
- Full Time (Sponsored) Candidates may be one of the following:

Candidates:

- Having NET-JRF (CSIR/UGC).
- Already engaged under some Project at NIT, Uttarakhand can also apply as an Internal Candidate (Sponsored). However, the required educational qualification for shortlisting will be same as mentioned above. Assistantships shall be declared by the Project's Investigator with approval from NITUK and sponsoring agency.
- Self or externally (outside NIT, UK) Sponsored candidate.
- Part time Candidates will not be provided any fellowship from the Institute.
- Conversion from Part Time to Full Time and from Self Sponsored to Scholarship at a later stage will not be allowed irrespective of the fund state.
- List of shortlisted candidates for written test will be displayed on institute's website.
- Candidates are advised to visit Institute's website to know the Fees structure, Ordinances, Rules & Regulations for Ph.D. Programme.
- The candidates are advised to visit the Institute website for Faculty Expertise and also for updated information about the Ph.D. Programme of Even Semester-2024.
- Research scholar selected for the Ph.D. Programme will have to complete the specified course work as per Ordinances.
- Hostel accommodation is not available for PhD scholars.
- Institute does not guarantee the allotment of supervisor in the area of interest filled by the candidate in the application form.
- The rules & regulations regarding Ph.D program are mentioned in the Ph.D Ordinances and the same is uploaded on Institute website.
- A candidate applied under part-time category will not be allowed for admission in full-time Institute fellowship although the seat is available in the Department during allotment.
- Institute reserves the right to cancel the admission of a student at the time of joining or at any stage of Ph.D. Program, if it is found that the candidate provided wrong information in the application form.
- Institute reserves the right to cancel the admission of student at any stage of Ph.D. Program, if it is found that the candidate did not fulfill the essential qualifications/experiences/other terms & conditions as per the requirements of the Advertisement.
- Institute reserves the right to cancel the process of Ph.D admission at any stage without assigning any reason.

Details of Ph.D. Fee Structure:

a) Application fee for Ph.D. registration: Rs.500/-

b) Other fees :

(I)	Registration	Rs. 5,000/- (one time)
	Tuition Fee	Rs. 15,000/- (annual)
	Caution money	Rs. 3,000/- (refundable)
	Library fee	Rs. 2,000/- (one time)
	Development fee	Rs. 10,000/- (annual)

TOTAL **Rs. 35,000/-**

Rs. 35,000/- is to be paid before 31st January / 31st July.

(II)	Subsequent years: Annual fees	
	Tuition fee	Rs. 15,000/-
	Development fee	Rs. 10,000/-

	TOTAL	Rs. 25,000/-

Rs. 25,000/- is to be paid before six monthly seminars of June / December.

Examination fee:

The examination fee of Rs. 5000/- shall be paid by the candidate prior to the Submission of the thesis.

Note:

- The delay in payment of semester fees may invite cancellation of registration. Payment of fees is annual. Six-monthly seminar shall not be conducted without payment of fees.*
- If the thesis is submitted after 31st December /30th June, candidates are required to pay the fees for next academic session.*

The self-attested copies of the following documents (whichever applicable) should be enclosed along with the duly filled application:

- Photo ID card (Aadhar Card/Driving License).
- High School (10th class) certificate.
- Under-Graduate degree certificate and all mark sheet(s).
- Post-Graduate degree certificate and mark sheet.
- GATE score card or NET (CSIR/UGC/LS) qualifying certificate.
- Caste certificate (if applicable):
 - In case of SC/ST candidates, Caste Certificate (In Central Govt. Format) should be issued by the competent authority (not below the rank of SDO/SDM/Tahsildar).
 - In case of OBC candidate, Caste Certificate (In Central Govt. Format) should be issued by the Competent Authority (not below the rank of SDO/SDM/Tahsildar) indicating the status regarding Non Creamy Layer (NCL). **The certificate should be issued on or after 1st April, 2023.**
- EWS certificate (if applicable), the Certificate (In Central Govt. Format) should be issued by the Competent Authority (not below the rank of SDO/SDM/Tahsildar) indicating the annual income of the family for last financial year. **The certificate should be issued on or after 1st April, 2023.**
- PWD certificate (if applicable), the Certificate (In Central Govt. Format) should be issued by the authorized medical authority.
- If employed, No Objection Certificate (NOC) from the current employer in support of your application must be attached with application form.
- All the publications (if any).
- Teaching/research experience certificate (if any).
- Profile of the Organization/ Employer in case of SRS category candidate.
- Credentials including AICTE recognized short-term courses attended, research publications, professional qualifications etc.

Notes:

1. Same photo ID card should be produce at the time of reporting.
2. For seeking admission to Ph.D. Programme as Part Time candidate, candidate has to attach original NoC in format as given in application form at the time of applying that he/she will be granted leave for a minimum period of six months for course work. In case of failure to produce the same, the candidate will not be allowed to appear in written test.
3. The eligibility of the candidate shall be determined on the basis of the documents attached with the application form.
4. Application forms received after the deadline will not be considered for short listing and no amount of fees will be refunded to the candidate.
5. Original TC/Migration certificate has to be submitted at the time of joining.

How to apply for admission to Ph.D. Programme in Even Semester 2024:

The application form and other relevant information for admission to Ph.D. Programme Even Semester 2024 can be downloaded from the Institute website: www.nituk.ac.in.

Duly filled Application form along with Fee submission proof and all the documents mentioned above should reach to the following address on or before **04.01.2024** by 05:00 PM.

Assistant Registrar (Academics)
NIT Uttarakhand,
Srinagar Garhwal
Distt.- Pauri garhwal,
Uttarakhand - 246174

Important Dates:

Last date for receipt of application form.	04.01.2024
Date of displaying the list of eligible candidates for written test on Institute website.	Within ten days from the last date
Date & time for written Test.	Will be notified on Institute website
Date and time of interview.	Will be uploaded separately on Institute website.

Visit institute website: www.nituk.ac.in regularly for more details and updates.

Disclaimer:

The statement made in the Information Brochure and all other information contained herein is believed to be correct at the time of publication. However, the Institute reserves the right to make any changes in and additions to the regulations, conditions governing the admission, requirements, seats, fees and any other information, or statements contained in this information brochure, at any time without notice. No responsibility will be accepted by the Institute for hardship or expenses encountered by its students / any other person for such changes, additions, omissions or errors, no matter how they are caused.

Registrar
NIT, Uttarakhand