

**National Institute of Technology, Uttarakhand**  
**Information Brochure of Ph.D. Programme**  
**Odd Semester-2020**



Applications are invited for admission to Ph.D. Programme (**Full Time (Sponsored) & Part Time only**) in **Odd Semester-2020**. Application form and Information Brochure can be downloaded from NITUK website [www.nituk.ac.in](http://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 of 1<sup>st</sup> class (C.P.I or C.G.P.A. greater than 6.75 on a 10 point scale if class is not provided) and GATE / NET (CSIR/UGC/LS) in the concerned subject or discipline.

**Or**

A Bachelor's degree with minimum of 1<sup>st</sup> class (C.P.I or C.G.P.A. greater than 6.75 on a 10 point scale if class is not provided) 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 candidates with two years of experience in reputed Academic/Industrial Organizations or Govt. funded Research Projects. However, fees structure, essential qualifications, other terms & conditions will be same as per Ordinances of the Institute.**

**Department/Subject wise list of Areas of Research in Ph.D. Programme is as under:**

Name of Department	Area of research
<b>CIVIL</b>	1. Structural Engineering.
	2. Structural and Nonstructural Behavior of Concrete.
	3. Non Destructive Testing of Materials and Retrofitting of Structures.
	4. Concrete Technology.
	5. Structural Dynamics.
	6. Earthquake Resistant Design.
	7. Structural Health Monitoring.
	8. Finite Element Method.
	9. Computational Structural Mechanics
	10. Advanced Building Materials.
	11. Transportation Engineering.
	12. Traffic Engineering
	13. Pavement Materials.
	14. Geotechnical Engineering.
	15. Analytical and Computational Studies on Underground Geo-Structures.
	16. LRFD methods for Reinforced Soil Structures.
	17. Lumped Parameter Modeling.
	18. Ground Improvement Techniques.
<b>CSE</b>	1. Cloud Computing and IoT, Video Processing, Bioinformatics, Deep Learning and AI, Machine Learning, Operational Research.
	2. Computer Vision, Image Processing, Machine Learning, Deep Learning, Salient Object Detection and Data Mining.
	3. Cryptography and Network Security, Pattern Recognition and Machine Learning.

	4. Cryptographic Key Establishment, Network Security, Secure Multicasting, Broadcast Encryption.
	5. Biometrics, Pattern Recognition, Image Processing, Visual Attention Modeling, Machine Learning.
	6. Sensor and IoT Networks, Deep Learning and AI.
<b>ECE</b>	1. Biomedical Signal and Image Processing, Hyperspectral Image Processing, Soft Computing Methods for Microwave and Millimeter-Wave Design, Evolutionary Techniques for System Identification, Evolving Deep Convolutional Neural Networks, Speech Signal Processing
	2. Control Systems, Robotics and automation, Computer Vision
	3. Optical communication, Optical sensor, Plasmonics, Surface Plasmon resonance sensor, Optical Amplifier.
	4. Analog Integrated Circuit and Signal Processing, Microelectronics, Analog Signal Processing, Current Mode Circuits Analog VLSI.
	5. Digital Signal Processing, Digital Image Processing, Speech Processing, Context - Aware computing, Human-Computer interaction, Machine learning.
	6. Antennas, Remote sensing, Digital Image Processing, Microwave Energy Harvesting, Microwave Hazards
<b>EEE</b>	1. Control scheme for various application in Power System and Power Electronics, various controllers (Fractional order controllers, Model predictive controllers, PID controllers, Kalman Filter LQR, LQG and state Observers). Multilevel Inverter and its control. Close loop control of DC-DC isolated, non-isolated converter, Bi-directional DC-DC converter.
	2. Electric Vehicle, Advance Electric Drives and its control.  Different types of Induction generator (DFIG, SFIG) and it's applied to induction generator. Renewable energy: Solar energy conversion system, Battery energy storage system and its control.  Power Electronics: Different types of DC-DC converter and DC-AC converter for Solar energy conversion system. Flexible AC Transmission System, Active Power Filter. Multilevel Inverter and its control. Close loop control of DC-DC isolated, non-isolated converter, Bi-directional DC-DC converter, Multi output DC-DC Converter Resonant Converter, Z-Source Inverter, and Rectifier.
	3. Power Systems: Smart Grid, Microgrid, FACTS, Distribution System Analysis, Application of optimization techniques in Power System, Integration issues of renewable energy sources (Wind, solar PV).
	4. Protection of Electrical Transmission/Distribution system.
<b>MEC</b>	1. Additive Manufacturing and CAD
	2. Renewable energy technologies, Alternative fuels, Combustion, heat transfer, Smart materials and Composite materials
	3. Manufacturing, Welding, Composites, Non-Traditional Machining
	4. Machining and manufacturing of materials.
	5. Alternate fuels in I C Engine, Renewable Energy Systems/sources,

	Battery operated vehicles, Thermal storage systems
	6. Active vibration Control, Vibration based Energy Harvesting, Smart and Composite Structures, Finite Element Modelling and Analysis
	7. Fluid flow, heat transfer, energy and environment.
<b>Chemistry</b>	1. Small Molecule Probes, Supramolecular Chemistry, Smart Functional Materials, Covalent Organic Frameworks, Soft & Hybrid Materials.
	2. Theoretical Chemistry, Synthesis and Characterization of Nanomaterials for Chemical Sensors, Membrane Science and Technology
	3. Inorganic chemistry, Coordination chemistry, Bioinorganic chemistry
	4. Inorganic Chemistry Organometallic Chemistry, Metal-Organic Framework Supramolecular Chemistry, Soft Materials
<b>Physics</b>	1. Material Science, Optical Materials and devices.
	2. Magnetic thin films and nanowires.
	3. Thin films, Spintronics, Nano-magnetism.
	4. X-ray scattering, charge and magnetic Compton Profile, ab-initio calculations, density functional theory, solar cell materials.
<b>Mathematics</b>	1. Mathematical Modeling and Simulation, Bio-fluids Mechanics, Bone Mechanics, Peristaltic Transport, Non-Newtonian Fluids, MHD Fluids, Nanofluids, Electrokinetic Transport, Computational Fluid Dynamics, Microfluidics and Pumping mechanisms for Bio-Inspired pumps.
	2. Computational Mechanics, Numerical Analysis, Fracture Mechanics, Smart Materials
	3. Nonlinear Waves, Hyperbolic systems of PDEs
	4. Mathematical Biology
	5. Summability theory and Approximation theory
<b>English</b>	1. Postcolonial literature, literature of Indian/South Asian diaspora, Indian English Writing, Film and Communication Studies
	2. Postcolonial Literature, Indian English Writing, Film Studies, Eco-critical Studies.

### **Selection Procedure:**

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 interview. Interview shall be conducted on the same day. The list of shortlisted candidates for written test will be uploaded on Institute's website: [www.nituk.ac.in](http://www.nituk.ac.in). No separate letter/communication will be made to any individual for written test. Reservation will be applicable as per Gol norms. Candidates are advised to visit the Institute website in this regard.

### **Important Points:**

- Candidates are required to Duly fill the Application form, deposit Fee and submit application along with all the supporting documents by registered or speed post to Assistant Registrar (Academic), NIT Uttarakhand on or before **31<sup>st</sup> July, 2020 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 and are required to mention the correct transaction ID along with date 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 on the day of reporting before written test. In case of failure to produce any original document, the candidate will not be allowed to appear in written test.
- 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.
- Candidates MUST specify broad areas of research in the application form in which he/she is interested to work.
- Full Time (Sponsored) Candidates may be one of the following:
  - Candidates having NET-JRF (CSIR/UGC).
  - Candidates 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 website.
- **Candidates are advised to visit Institute's website regularly to know the date of reporting for written test. No separate letter / communication will be made to any individual for written test.**
- 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 Odd Semester-2020.
- Research scholar selected for the Ph.D. Programme will have to complete the specified course work as per Ordinances.
- No accommodation is available for the part time/sponsored Ph.D. scholars in the hostel of the Institute.
- Candidates will not be given TA/DA/ any allowances for attending written test & interview.

- Institute does not guarantee the availability of supervisor in the area of research desired by the candidate. Candidates are advised to discuss with faculty of the Department to identify whether their research interest match with the experts available and whether any supervisor is willing to offer project in the desired area.
- The rules & regulations regarding Ph.D program are mentioned in the Ph.D Ordinances and the same is uploaded on Institute website.
- The selected candidates for Ph.D. Programme will be informed through an official letter by the Institute and the list will also be displayed on the Institute website.
- **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)

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

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

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

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**TOTAL**                      **Rs. 25,000/-**

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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:**

1. *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.*
2. *If the thesis is submitted after 31<sup>st</sup> December /30<sup>th</sup> 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:

- (i) Photo ID card (Aadhar Card/Driving License).
- (ii) High School (10<sup>th</sup> class) certificate.

- (iii) Under-Graduate degree certificate and all mark sheet(s).
- (iv) Post-Graduate degree certificate and mark sheet.
- (v) GATE score card or NET (CSIR/UGC/LS) qualifying certificate.
- (vi) Caste certificate (if applicable):
  - (a) 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).
  - (b) 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 1<sup>st</sup> April, 2020.**
- (vii) 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 1<sup>st</sup> April, 2020.**
- (viii) PWD certificate (if applicable), the Certificate (In Central Govt. Format) should be issued by the authorized medical authority.
- (ix) TC/Migration Certificate. Candidate who will not attach the copy of TC/Migration Certificate with the application form has to submit the original copy of the same within one month of admission in Ph.D Programme, otherwise the admission in the Institute will stand cancelled.
- (x) If employed, No Objection Certificate (NOC) from the current employer in support of your application must be attached with application form.
- (xi) All the publications (if any).
- (xii) Teaching/research experience certificate (if any).
- (xiii) Profile of the Organization/ Employer in case of SRS category candidate.
- (xiv)** Credentials including AICTE recognized short-term courses attended, research publications, professional qualifications etc.

- Note:**
- (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 produce original NoC in appropriate format at the time of reporting 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.**

#### **How to apply for admission to Ph.D. Programme in Odd Semester 2020:**

The application form and other relevant information for admission to Ph.D. Programme Odd Semester 2020 can be downloaded from the Institute website: [www.nituk.ac.in](http://www.nituk.ac.in).

Duly filled Application form alongwith Fee submission proof and all the documents mentioned above should reach to Assistant Registrar (Academic), NIT Uttarakhand on or before **31<sup>st</sup> July, 2020 by 05:00 PM.**

#### **Account details for payment of application fees online:**

SBI bank A/C No: **37530602667**

Name of A/C holder: **Director, NIT Uttarakhand**

IFSC Code: **SBIN0003181**

**Important Dates:**

Last date for receipt of application form.	<b>31<sup>st</sup> July, 2020 by 05:00 PM</b>
Date of displaying the list of eligible candidates for written test on Institute website.	<b>10<sup>th</sup> August, 2020</b>
Date, time and place of reporting for documents verification followed by written Test.	<b>Date:</b> Will be notified on Institute website <b>Time :</b> 9:15 AM <b>Place :</b> Academic Block NIT, Uttarakhand Govt. Polytechnic Campus Srinagar (Garhwal)
Date and time of interview at NIT, Uttarakhand.	Same day of written test at 3.00 pm
Venue of Interview	In the Committee room of the Department
Date of announcement of result on Institute website.	Maximum 10 days after Interview

Visit institute website: [www.nituk.ac.in](http://www.nituk.ac.in) regularly for more details and updates.

**How to reach NIT, Uttarakhand:** Please visit institute website [www.nituk.ac.in](http://www.nituk.ac.in) and click on **How to Reach** Quick link.

**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.

**-sd/-**  
**Registrar**  
**NIT, Uttarakhand**