

INFORMATION BROCHURE

For Admission to
Ph.D. (Full Time & Part Time) Programme
(Spring Semester 2020-21)



INDIAN INSTITUTE OF TECHNOLOGY ROORKEE
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01. INTRODUCTION

Indian Institute of Technology Roorkee is one of the foremost institutes of national importance in higher technological and engineering education and basic and applied research. Since its establishment, the Institute has played a vital role in providing the technical manpower and know-how to the country and also in pursuit of cutting edge research in Science, Technology, and subsequently in Architecture, Management and Humanities & Social Sciences. The Institute ranks amongst the best technological institutions in the world and has contributed to all sectors of technological development. It has also been considered a trend-setter in the area of education and research in the fields mentioned above.

The Institute has completed more than 172 years of its glorious existence. It was converted into an IIT on September 21, 2001 by an Ordinance issued by the Government of India, which declared it as the nation's seventh Indian Institute of Technology, an "Institution of National Importance".

The Institute offers Bachelor's Degree courses in 12 disciplines of Engineering and Architecture and 5 integrated Masters programmes in different disciplines of engineering and science apart from 48 Postgraduate courses in various disciplines of Engineering, Applied Science, Architecture and Planning, Management and Humanities & Social Sciences. The Institute offers doctoral degree in all Departments and Research Centres.

1.1 LOCATION:

IIT Roorkee is situated at the foothill of Himalayas, in Hardwar district, within the state of Uttarakhand. It is the gateway to the pilgrim centres of Haridwar, Rishikesh, and Char Dham (Gangotri, Yamnotri, Badrinath and Kedarnath), and tourist attraction cities like, Dehradun and Mussoorie. Roorkee is well connected to Delhi by rail and road. It is situated on National Highways 58 and 73 and is on Amritsar-Howrah main rail route. Nearest airport to Roorkee is Dehradun's Jolly Grant airport but most preferable airport nearest from Roorkee is the New Delhi International Airport which is about 180 kilometers away.

1.2 CAMPUS:

The Institute has three campuses. The main campus is at Roorkee in Uttarakhand and the second one is 50 km away at Saharanpur and third is the Greater Noida Campus Centre in Uttar Pradesh. The campus at Roorkee is spread over 356 acres of landscaped lush greenery. Nestled within this are several heritage buildings, modern academic departments, nineteen hostels,

messes, hospital, school, banks, community centres, indoor and outdoor sports facilities which include three sports stadiums, a modern swimming pool, yoga bhawan, students' clubs and several activity centres and other buildings. The Department of Paper Technology is located in a 25 acre campus at Saharanpur. A 10 acre campus is being developed as an extension centre at Greater Noida.

02. ABOUT DOCTORAL RESEARCH:

Keeping in view the long tradition of academic excellence, the following institutional goals have been laid for doctoral research:

- *To develop deep and broad understanding of fundamentals and state of the art of knowledge in the chosen field through courses and self-study,
- *To develop synergy between creativity, innovation and the frontiers of knowledge in the chosen field of study,
- *To develop ability and skills to carry out independent research and development to face the challenges posed to mankind on specific problems, and
- *To develop abilities to identify new possibilities in the given Indian social context and to undertake research and development through one's own initiatives.

The Degree of Doctor of Philosophy is granted for research work in areas recognized by the Academic Departments / Centres of the Institute. The research work shall be an original work characterized either by the discovery of facts, or by a fresh approach towards the interpretation and application of facts, or development of equipment making a distinct advancement in instrument technology. It shall evince the candidate's capacity for critical examination and sound judgment and shall represent original contribution to the existing knowledge. The Institute is also recognized as one of the centres in the country for Ph.D. programmes under QIP. Facilities for enrolling for the Ph.D. programme as a part time candidate are also available.

03. IMPORTANT DATES:

Start of Online Application (Website Open)	October 12, 2020
Last Date for submission of Online application (Website Closure)	October 29, 2020 (5:00 p.m.)

Candidates are requested to apply **online only**. Hard copy of the application need not be submitted. Physical application will not be considered.

04. Ph.D. ADMISSION CATEGORIES & REQUIREMENTS

4.1 CATEGORY OF THE Ph.D. STUDENTS:

Applicants for admission to the Ph.D. programme shall be classified under any one of the following categories which will be decided and recommended by DRC/CRC.

4.1.1 Full-time Research Scholar (FTRS)

- a. Institute Assistantship Research Scholars (IARS)
- b. Externally Funded Research Scholar (EFRS)
 - Fellowship
 - Foreign Nationals
 - Project Funded
- c. In-service External Research Scholar (ISERS)

4.1.2 Part-time Research Scholar (PTRS):

- a. In-Service Internal Research Scholar (P-ISIRS)
- b. In-Service External Research Scholar (P-ISERS)

4.2 COMMON MINIMUM ELIGIBILITY CRITERIA FOR Ph.D. ADMISSION:

An applicant belonging to the above category should possess the following minimum qualifications in appropriate areas to be eligible to apply for admission for the Ph.D. programme of the Institute.

1. Master's degree with minimum Cumulative Grade Point Average (CGPA) of 6.0 on a 10 point scale, or 60% marks for the General and OBC category.

For SC / ST or PWD candidates, the minimum CGPA requirements may be relaxed to 5.50 on a 10 point scale or to 55% marks.

Post Graduate Degree in Basic Science Or Graduate/Post Graduate Degree in Professional Course selected through a process described through any one of the following:

- a. Scholars who are selected through national Eligibility Tests-UGC NET including lectureship (Assistant Professorship) and GATE.

- b. The selection process through National Level Examinations conducted by MHRD and its Agencies and Institutes such as UGC/IIT/IISc/IISER etc.
2. For candidates other than Centrally Funded Technical Institutes (CFTIs), B.Tech / B.Arch / B.Pharm degree or equivalent with a GATE / GPAT/NET score and a minimum CGPA of 7.50 on a 10 point scale or 75% marks, irrespective of the category.

For graduates from CFTIs, the minimum CGPA requirement is relaxed to 7.0 on a 10 point scale or 70% marks.
3. CGPA or percentage of marks in aggregate, in case marks are awarded, of all years / semesters will be considered. If the CGPA is awarded on a scale other than a 10 point scale, proportionate concession to a 10 point scale will be considered.
4. The requirement of GATE / GPAT / JRF / NET score is not applicable to candidates in ISERS or P-ISIRS or P-ISERS category.
5. Bachelors or Masters from IITs with a CGPA 8.0 and above on 10 scale point scale are exempted from the requirement of GATE / GPAT / JRF /NET.
6. Candidates pursuing Master's programs in Engineering or Architecture / Planning in the IIT Roorkee have CGPA 8.50 and above, shall have a choice of lateral entry to the Ph.D. program after completing first two semesters of the Master's program.
7. Candidates with MBBS / BDS degree from an Indian Universities / Institution shall have minimum CGPA of 6.0 on a 10 point scale, or 60% in the qualifying degree, irrespective of the category. They are exempt from the GATE / GPAT / JRF / NET requirement.
8. Candidates with Master of Surgery (MS)/ Doctor of Medicine (MD) degree from a Indian University / Institute are exempt from the minimum CGPA as well as the GATE / GPAT / JRF / NET requirement.
9. Candidates with a medicine degree from an overseas university / institute should have qualified the Foreign Medical Graduate Examination conducted by the National Board of Examination.

10. Candidates with Overseas Citizen of India (OCI) / Person of Indian Origin (PIO) status will be treated at par with Indian Nationals in the General Category.

Note:

(1) Candidates under OBC-NC and Economically Weaker Sections (EWS) category must submit a copy of valid certificate as per GOI issued by a competent authority. Reservation shall be applicable as per the GOI Norms.

(2) For details regarding EWS please go through the link: <https://dopt.gov.in/sites/default/files/ewsf28ft.PDF>

4.3 ADDITIONAL INFORMATION TO IN-SERVICE EXTERNAL RESEARCH SCHOLAR (ISERS) AND PART-TIME RESEARCH SCHOLARS (PTRS)

At the time of registration, the candidates should have at least two years' experience in a Government / Semi-Government organization / Public Sector Undertaking, AICTE / UGC recognized educational institute, or a registered company with an annual turnover of more than Rs. Twenty Crores. They should have permission from the employer for pursuing the Ph.D. program with adequate leave of absence to complete the course work requirements. This requirement of leave of absence is waived off for candidates working within 100 km of the institute. Candidates in P-ISIRS category should, in addition, be regular employees of the institute.

Note: The eligibility conditions given above are the absolute minimum. Departments / Centres may prescribe any requirements over and above these. Reservation is applicable as per extant policies of the Government of India and prescribed by the Board of Governors.

4.4 MINIMUM EDUCATIONAL QUALIFICATION FOR ADMISSION TO Ph.D. PROGRAMME IN DIFFERENT DEPARTMENTS / CENTRES

A. ROORKEE CAMPUS

1. Hydro and Renewable Energy

- (i) B.Tech. / M.Tech. or equivalent in Civil / Electrical / Mechanical / Industrial / Chemical / Electronics / Computer / Agricultural / Environmental / Biotechnology/Instrumentation Engineering or Equivalent and related disciplines.

- (ii) M.Sc. in disciplines consistent with research areas of the department.

2. Architecture & Planning

- (i) Bachelor's Degree in Architecture or Planning followed by Master's Degree in any specialization.
- (ii) Bachelor's Degree in Civil Engineering followed by Master's Degree in any specialization of Planning.

3. Department of Biotechnology

- (i) Master's degree in any disciplines of Science.
- (ii) Bachelor's / Master's degree in medical sciences, engineering, pharmacy, veterinary and related disciplines.
- (iii) MD / MS in Ayurveda

4. Department of Civil Engineering

- (i) Bachelor's degree in Civil Engineering.
- (ii) Bachelor's degree in Civil Engineering and Master's degree in research areas relevant to the different groups of the Department (Environmental, Geomatics, Geotechnical, Hydraulics, Structural and Transportation).
- (iii) Bachelor's degree in any branch of engineering with Master's degree in relevant research areas of the above groups of Civil Engineering, having mathematics at the Bachelor's level.
- (iv) Bachelor's / Master's degree in any branch of engineering but having 8 years of work experience in the research areas relevant to the above groups of the department.
- (v) For Geomatics Engineering group, MCA (with mathematics as one of the subjects in Bachelor's level) shall also be eligible for applying.

5. Department of Chemical Engineering

- (i) B.Tech. / M.Tech. or equivalent degree in Chemical Engineering.
- (ii) B.Tech. / M.Tech. or equivalent degree in any branch of Engineering / Chemical Technology and interdisciplinary areas.
- (iii) M.Sc. in disciplines consistent with the research areas of the department.

6. Department of Chemistry

M.Sc. or equivalent degree in Chemistry / Physics / Applied Chemistry / Industrial Chemistry / Pharmaceutical Chemistry / Biochemistry or B.Tech in Polymer Technology / Chemical Science and Technology.

7. Department of Computer Science and Engineering

- (i) M.E. / M.Tech. in Information Technology/ Computer Science & Engg. / Software Engg. or equivalent.
- (ii) M.Tech. / ME in Electrical Engineering/ Electronics and Communications Engineering or equivalent.
- (iii) B.E. / B.Tech. in Computer Sc. & Engg. / Information Technology or equivalent.

8. Department of Electronics and Communication Engineering

- (i) ME. / M.Tech. in Microelectronics / VLSI / Microwaves / Communication Systems / Control Systems / Instrumentation / Circuits & Systems or equivalent
- (ii) B.E. / B.Tech. in Electronics & Communication / Electrical Engg. Or equivalent.
- (iii) M.Sc. in Physics / Instrumentation / Electronics.
- (iv) B.Tech + M.Tech in Computer Science

9. Earthquake Engineering

- (i) B.Tech. / M.Tech. or equivalent degree in Civil Engineering/ Earthquake Engineering.
- (ii) M.Sc. / M.Tech. in Geophysics/ Physics / Mathematics / Geology for research areas in Engineering Seismology and Seismotectonics.

10. Department of Earth Sciences

M.Sc / M.Sc.Tech / M.Tech. degree in Geology / Geophysics / Applied Geology / Applied Geophysics / Geological Technology / Geophysical Technology / Geosciences / Applied Geosciences / Petroleum Geology / Petroleum Geophysics.

11. Department of Electrical Engineering

- (i) B.Tech. / M.Tech. or equivalent degree in Electrical Engineering.

- (ii) B.Tech. / M.Tech. or equivalent degree in a branch of Engineering consistent with the research areas as mentioned by the Department from time to time.
- (iii) M.Sc. in a discipline consistent with the research areas as mentioned by the Department from time to time.

12. Department of Humanities and Social Sciences

- (i) M.A. or equivalent degree.
- (ii) Master's degree in Science/Graduate Degree in Engineering / Technology with 60% marks (or equivalent grade) may be considered for research areas consistent with the academic background and special interests.

13. Hydrology

- (i) Master's degree in Civil Engg. / Water Resources Development / Hydrology.
- (ii) Master's degree in Agricultural Engg. / Environmental Engg. / Instrumentation / water use management
- (iii) M.Sc. / M.Tech. in Geology / Geophysics / Soil Science / Forestry or natural Resources/ Chemistry / Meteorology / Atmospheric Physics / Mathematics / Nuclear Physics & Environmental Sciences
- (iv) M.Sc. Hydrology with Mathematics at Bachelor's level

14. Department of Management Studies

- (i) B.E. / B.Tech. or equivalent, M.E. / M.Tech. or equivalent qualifications.
- (ii) M.Sc. / M.A. / M.Com.
- (iii) Master's in Management/M.B.A. or equivalent.

15. Department of Mathematics

- (i) M.A. / M.Sc. / M.Tech. / Int. M.Sc. (5 years) in Mathematics / Applied Mathematics / Industrial Mathematics / Statistics / Operations Research / Applied Operations Research / Mathematics and Computing or equivalent.
- (ii) M. Stat. / M. Math.
- (iii) B.Tech. in Maths and Computing / B.S. Maths (4 years) from IITs / IISc.

16. Department of Mechanical & Industrial Engineering

- (i) B.Tech. / M.Tech. degree or equivalent degree in Mechanical / Industrial / Production Engg.
- (ii) B.Tech. / M.Tech. degree in Aerospace / Chemical / Civil / Electrical / Metallurgical Engg. may be considered for research areas consistent with the academic background and special interests.

17. Department of Metallurgical and Materials Engineering

- (i) Candidates with Bachelors or Master's Degree (B.E. / B.Tech. / M.E. / M.Tech. / equivalent) in Metallurgical Engineering, Metallurgical and Materials Engineering, Materials Science and Engineering, Ceramics Engineering, Polymer Engineering.

18. Department of Physics

- (i) M.Sc. in Physics / Applied Physics or equivalent.
- (ii) M.Sc. in Chemistry / Mathematics / Biophysics / Geophysics / Computer Science / Electronics or equivalent, provided Physics was a subject at B.Sc. level.
- (iii) B.Tech. in Electrical / Electronics / Chemical / Metallurgical / Nanotechnology / Engineering Physics or equivalent.
- (iv) M.Tech. (Solid State Electronics Material), M.Tech. (Photonics), M.Tech. (Nanotechnology), M.Tech. (Applied Optics), M.Tech. (Optoelectronics and Optical Communication) or equivalent.
- (v) Integrated M.Sc. in Photonics or equivalent.

19. Water Resources Development & Management

B.E. / B. Tech. / M.E. / M.Tech. in Civil, Environment/Electrical, Mechanical /Agricultural or equivalent degree.

M.Sc. Degree in Agricultural / Biological / Environmental / Natural / Social Sciences / Environmental Planning or equivalent consistent with research areas of the department.

20. Institute Instrumentation Centre

M.Sc. / M.Tech.in Physics, Applied Physics, Material Science, Chemistry, Electronics & Nanotechnology with NET/GATE.

21. Centre for Transportation (CTRANS)

M.Tech. / M.Arch. / M.Planning / M.Des. / MBA or equivalent degree in Civil Engg. / Mechanical Engg / Industrial Engg. / Production Engg. / Computer Science & Engg. / Chemical Engg. / Infrastructure Systems/ Biotechnology / Architecture / Planning / Urban Engg. / Business Administration / Automobile Engg. / Mechatronics Engg.

22. Centre for Disaster Mitigation & Management

M.Tech. (Civil, Mechanical & Industrial, Chemical, Computer Science), M.Arch. & M.Planning or equivalent. Or

M.Tech. in Geological Technology, Geophysical Technology, Biotechnology or equivalent. Or

M.B.A. or M.C.A. in Computer Science or M.Sc. in Physics, Geophysics, Geology, Mathematics, Environmental Sciences (with Maths in B.Sc.), M.Tech. Bio-technology or equivalent.

23. Centre for Nanotechnology

(i) B.E. / B.Tech. or M.E. / M.Tech. in Nanotechnology / Metallurgy / Chemical / Polymer / Mechanical / Biotechnology / Engineering Physics / Engineering Chemistry / Electronics / Electrical/ Computer Science and Engineering / Civil / Energy / Environmental / Agriculture or equivalent.

(ii) M.Sc. / Int. M.Sc. / M.S. in Science / Engineering, B. Pharm / M. Pharm.

(iii) MBBS/MD/BDS/MDS or equivalent.

B. SAHARANPUR CAMPUS

1. Applied Science & Engineering

(i)	M.Sc. / M.S. / M.A. (Science / Engineering / Humanities).
(ii)	B.E. / B.Tech./ M.E./ M.Tech. in any branch of engineering or equivalent.

2. Paper Technology

(i) M.Sc. /M.S. (Science/Engineering) .

(ii) BE / B.Tech / B.Pharm / M.E. / M.Tech. / M.Pharm. in any branch of engineering or equivalent.

3. Polymer and Process Engineering

- (i) M.Sc. / M.S. / MBA (Science/ Engineering / Management).
- (ii) BE / B.Tech / B.Pharm / M.E. / M.Tech. / M. Pharm in any branch of engineering or equivalent.

05. APPLICATION FEE:

1. **Application Fee per department (non-refundable): Rs. 200/- for General / Economically Weaker Sections (EWS) / OBC category and Rs. 100/- for SC / ST / PD category candidate.** The candidates can deposit the requisite application fee by using net banking or debit/credit card facilities. Additional charges will be applicable as per the rule of the concerned bank. **The Fee will not be accepted through any other mode.**
2. **If candidate opts for more than one department / centre, then application fee should be paid in accordance to the number of department / centre.**

06. COURSE FEE STRUCTURE

For details of course fee structure, please visit the following link:
<https://www.iitr.ac.in/dosw/Data/Corrigendum.pdf>

The fee will be charged each semester as per Institute rules / norms applicable from time to time. Details can be obtained through e-mail at: arsw@iitr.ac.in

07. INSTRUCTION FOR ONLINE APPLICATION & OTHERS

For admission to Ph.D. programmes in Spring Semester of the session 2020-21, candidates need to register and fill the application ONLINE only by accessing the website www.iitr.ac.in **on or before October 29, 2020 (5:00 p.m.)**.

Before applying online, candidates are required to keep ready the following documents for uploading:

Sl.No.	Particulars	Size
1	Soft copy of colour photograph (only in JPEG)	Upto 500 KB
2	Soft copy of signature (only in JPEG)	Upto 500 KB
3	EWS/OBC/SC/ST Category Certificate (PDF) (If applicable)	Upto 5 MB
4	10 th Certificate/Marksheet (in single PDF)	Upto 5 MB
5	12 th certificate/Diploma and Marksheet (in single PDF)	Upto 5 MB
6	Bachelor's Degree or Final/Consolidated Marksheet (in single PDF)	Upto 5 MB
7	Master's Degree or Final/Consolidated Marksheet (in single PDF), if applicable	Upto 5 MB
8	Experience certificate(s) and No Objection Certificate (NOC) for In-Service candidates (in single PDF) (If applicable)	Upto 5 MB
9	GATE score card / NET score card / Fellowship award letter (in single PDF) (If applicable)	Upto 5 MB

Note: Candidates appeared or appearing in the qualifying degree can upload all the available marksheets upto pre-final year/semester (in single pdf) upto 5 MB.

Candidates must follow the following Steps while filling online Application Form:

- a) Register
- b) Login
- c) Fill personal details.
- d) Upload documents as mentioned above.
- f) Department apply & payment.
- g) Submit.

Candidates can download Application form for their own record.

The candidates are advised to read each and every instruction given in this Information Brochure very carefully before applying Online.

1. **Selection Criteria:**

- Selection process is purely based on merit.
 - Selection process shall be conducted online.
 - Stipulated dates for a written test and /or interview shall be communicated by the concerned departments/centres to the shortlisted candidates. Simultaneously, the dates shall be uploaded in the portal of each department/centre.
2. The prescribed qualifications and experience are the minimum required and the mere fact that a candidate possesses the same will not entitle him/her for being called for an interview.
 3. Departments / Centres of the Institute reserve the right to restrict the number of candidates to be called for interview to a reasonable number, on the basis of qualifications and/or experience.
 4. Provision exists to apply in one or more departments / centres. Accordingly, a candidate can submit his/her application in one or more departments through **single online application**.
 5. All entries should be carefully made while applying online. IIT Roorkee will not be responsible for wrong entries. Candidates shall be sole responsible for the correctness and authenticity of the information / documents provided in the online application.
 6. Eligibility of candidate with regard to qualification & experience shall be calculated / considered with reference to last date of the online application.
 7. Candidates must fill/enter their CGPA or percentage of marks as issued by their institute/college/university. Candidate must not convert their CGPA into percentage and vice-versa.
 8. Online application submitted by the candidates shall be considered final and binding. Requests for making correction in the online application shall not be entertained.
- Candidates should submit complete online application in all respect. No

correspondence / communication will be entertained for incomplete application.

10. The last date for submission of online application shall not be extended. Accordingly, no request shall be entertained for accepting the application after the last date. IIT Roorkee will not be responsible for technical error while making the online application / payment of fee. Therefore, candidates are advised to submit their application well in advance without waiting until the last date
11. Online applications will be scrutinized; relevant documents will be checked / verified for their authenticity.
12. Admission will be offered subject to availability of seats, faculty in the Specialization and the Institute Assistantship.
13. Students shall be governed by ordinance/ regulations in vogue.
14. The Institute has the right to cancel, at any stage, the admission of the candidate who is found admitted to a course to which he/she is not entitled, being unqualified or ineligible in accordance with the rules and regulations in force.
15. Disputes if any, arising out of or relating to any matter whatsoever, concerning the aforesaid shall be subject to the exclusive jurisdiction of Roorkee Court.
16. The Institute reserves the right to verify the antecedents or documents submitted by the candidate at any time during their period of study. In case it is found that the documents submitted by the candidate are not genuine, then his/her admission shall be terminated, and disciplinary / criminal proceedings will be initiated.
17. Merely applying for / being shortlisted / appearing for the interview / written test /or subsequent processes do not imply that a candidate will necessarily be offered admission in IITR. No request for considering the candidature in department, other than in which applied, will be entertained.

18. Candidates are advised to fill their correct and active e-mail addresses in the online application as all correspondence will be made by the Institute through online only. All information regarding Test / Interview will be uploaded on the respective department's website only. No separate communication will be made. Further, for any updates, please visit the Institute/department website regularly, for subsequent amendments in the advertisement and results. The Institute shall not be responsible for the failure of candidates with respect to visiting the website on any ground.
19. The candidates should ensure that they fulfil all the eligibility conditions as specified. Their admission will be purely provisional subject to confirmation that they satisfy the prescribed eligibility conditions. Mere issue of call letters to the candidates will not imply that his/her candidature has been found eligible.
20. After joining, Hostel and mess facilities will be provided as per the availability.
21. All candidates are advised to visit regularly the Institute's website for further information.
