

Indian Institute of Technology Roorkee



INFORMATION BROCHURE

Ph.D. Admission for Autumn Semester 2019-20

About IIT Roorkee:

Indian Institute of Technology - Roorkee is among the foremost of institutes of national importance in higher technological education and in engineering, 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 in pursuit of research. 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 field of science, technology, and engineering.

The Institute had celebrated its Sesquicentennial in October 1996 and now completed more than 170 years of its existence. It was converted to IIT on September 21, 2001 by an Ordinance issued by the Government of India declared it as the nation's seventh Indian Institute of Technology, an "Institution of National Importance".

The Institute offers Bachelor's Degree courses in 10 disciplines of Engineering and Architecture and Postgraduate's Degree in 47 disciplines of Engineering, Applied Science, Architecture and planning. The Institute has facility for doctoral work in all Departments and Research Centres.

The Institute admits students to B.Tech. and B.Arch. courses through the Joint Entrance Examination (JEE) conducted at various centres all over India.

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 centers 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.

Important Dates:

Start of Online Application (Website Open)	March 05, 2019
Last Date for submission of Online application (Website Closure)	March 25, 2019 (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.

Important Instructions:

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

1. 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.
2. 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.
3. Provision exists to apply in one or more departments / centers. Accordingly, a candidate can submit his/her application in one or more departments through **single online application**.
4. 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.
5. Eligibility of candidate with regard to qualification & experience shall be calculated / considered with reference to last date of the online application.
6. Online application submitted by the candidates shall be considered final and binding. Requests for making correction in the online application shall not be entertained.
7. Online application found incomplete in any form will be summarily rejected. No correspondence / communication will be entertained in this regard.
8. 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.
9. Online applications will be scrutinized, relevant documents checked / verified for their authenticity.
10. Admission will be offered subject to availability of seats, faculty in the Specialization and the Institute Assistantship.

11. Students shall be governed by ordinance/ regulations in vogue.
12. The Institute has the right to cancel, at any stage, the admission for the candidate who is found admitted to a course to which he/she is not entitled, being unqualified or ineligible in accordance with the statues and regulations in force.
13. 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.
14. 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.
15. 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 other than in which applied will be entertained.
16. 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 e-mail only. Test/Interview schedule will be emailed in due course to the candidates in their registered e-mail. No separate letter (Hard copy) will be sent for this purpose. Further, for any updates, please visit the Institute website regularly, for subsequent amendments in the advertisement and results.
17. The candidates should ensure that they fulfill 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.
18. After joining, Hostel and mess facilities will be provided as per the availability.

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.**

Course Fee Structure:

For details of course fee structure, please visit the following link:
https://www.iitr.ac.in/academics/pages/Doctoral_Programmes.html

The fee will be charged each semester as per Institute rules/ norms applicable from time to time. Details can be obtained from Assistant Registrar (Evaluation) through mail at: arevaluation@iitr.ac.in

Instruction for Online Application:

For admission to Ph.D. programmes for Autumn Semester of the session 2019-20 candidates need to register and fill the application ONLINE only from March 05, 2019 by accessing the website www.iitr.ac.in on or before March 25, 2019 (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	Upto 500 KB
2	Soft copy of signature	Upto 500 KB
3	EWS/OBC/SC/ST Category Certificate (PDF) (If applicable)	Upto 3 MB
4	10 th & 12 th level Marksheet (in single PDF)	Upto 3 MB
5	UG Mark sheet and Provisional UG Degree Certificate or Final UG Degree Certificate (in single PDF)	Upto 3 MB
6	PG Mark sheet and Provisional PG Degree Certificate or Final PG Degree Certificate (in single PDF)	Upto 3 MB
7	Mark sheet of previous semester(s) for candidates appearing in the qualifying degree exam (in single PDF)	Upto 3 MB
8	Sponsorship & experience certificates and No Objection Certificate (NOC) for sponsored candidates (in single PDF) (If applicable)	Upto 3 MB
9	GATE score card / NET score card / Fellowship award letter (in single PDF) (If applicable)	Upto 3 MB

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

Step 1: Apply for Ph.D. programmes

- Register
- Login
- Apply online.
- Upload documents as mentioned above.
- Finalize Application Form
- Pay fee online using option "Proceed for Payment"

Candidates can download Application form for their own record.

Name of Departments / Centres:

Roorkee Campus

- Alternate Hydro Energy Centre
- Architecture and Planning
- Biotechnology
- Civil Engineering
- Chemical Engineering
- Chemistry
- Computer Science & Engineering
- Electronics and Communication Engg.
- Earthquake Engineering
- Earth Sciences
- Electrical Engineering
- Humanities and Social Sciences
- Hydrology
- Management Studies
- Mathematics
- Mechanical and Industrial Engg.
- Metallurgical and Materials Engg.
- Physics
- Water Resources Development and Management

- Institute Instrumentation Centre
- Centre for Transportation Systems
- Centre for Disaster Mitigation & Management
- Centre for Nanotechnology

Saharanpur Campus

- Applied Science & Engineering
- Polymer & Process Engineering
- Paper Technology

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.

1. Full-time Research Scholar (FTRS)

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

2. Part-time Research Scholar (PTRS):

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

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.

- 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. However, candidates with M.Sc / M.A / M. Com must, in addition, have either a valid GATE score or must have qualified JRF / NET.

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.

- For candidates other than Centrally Funded Technical Institutes (CFTIs), B.Tech / B.Arch / B.Pharm degree or equivalent with a valid GATE / GPAT 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.

- 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.
- The requirement of a valid GATE / GPAT / JRF / NET score is not applicable to candidates in ISERS or P-ISIRS or P-ISERS category.
- Bachelors and Masters from IITs with a CGPA 8.0 and above on 10 scale point scale are exempt from the requirement of GATE / GPAT / JRF / NET.
- 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.
- GATE / GPAT / JRF / NET, if applicable, shall be valid at the time of registration.
- 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.

9. 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.
10. 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.
11. 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 with postgraduate degree in professional courses can be admitted with Institute Assistantship. The condition of GATE / NET qualification is not mandatory.
- (2) 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.
- (3) For details regarding EWS please go through the link: <https://dopt.gov.in/sites/default/files/ewsf28ft.PDF>

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.

PROVISION OF WAIVER FOR COURSE WORK:

The candidates with following criteria may be eligible for course work waiver on recommendation of Student Research Committee (SRC):

Masters Degree holders (M.Tech/ M.Arch./ MURP/ M.Sc./ MBA) from IITs, IIMs, IISc and/or IISERs with CGPA 8.5 or more.

Besides, the student should have started PhD within two years of the completion of masters degree (M.Tech/ M.Arch./ MURP/ M.Sc./ MBA) from the Institutes as mentioned above.

The waiver will be applicable if admission is sought within the relevant stream or discipline with respect to the post-graduate degree and is recommended by the SRC.

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

A. ROORKEE CAMPUS

1. Alternate Hydro Energy Centre

- i. B.Tech. / M.Tech. or equivalent in Civil / Electrical / Mechanical/ Industrial / Chemical / Environmental / Agricultural / Computer / Electronics Engineering
- ii. M.Sc. in disciplines consistent with research areas of the centre.

2. Architecture & Planning

Master's degree in Architecture in any of the specializations offered by recognized Institutions of Architecture / Master's degree in Building Science / Technology with a Bachelor's degree in Architecture / Master's degree in Planning in any of the specializations offered by the recognized Institutions of Planning with a Bachelor's degree in either

Architecture or Planning (B.Planning) or Civil Engineering.

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. B.Tech / M.Tech. or equivalent degree in Civil Engineering. Candidate having an M.Tech. Degree but not having a Bachelor's degree in Engineering must have studied Mathematics at the Bachelor's level.
- ii. B.Tech. / M.Tech. degree in any branch of Engineering may be considered for research areas consistent with the academic background and experience.
- iii. M.Sc. Degree in any branch of Science or MCA (with mathematics at the Bachelor's level for both M.Sc. and MCA) may also be considered for research areas in Geomatics Engineering.

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

- i. M.Sc. or equivalent degree in Chemistry/ Physics.
- ii. M.Sc. in Bio-technology or M.Sc. in Biochemistry

7. Department of Computer Science and Engg.

- 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 / any branch of 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 of Management/M.B.A. or equivalent.

15. Department of Mathematics

- i. M.A. / M.Sc. / M.Tech. in Mathematics/ Applied Mathematics/ Industrial Mathematics / Statistics / Operation Research / Applied Operation Research/ Mathematics and Computing.
- ii. M.Stat. or Equivalent

16. Department of Mechanical & Industrial Engg.

- 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 Engg.

B.Tech / M.Tech or equivalent relate to the following disciplines:

Metallurgical Engg, Materials Engg, Nanotechnology, Engg Physics, Engg Chemistry, Ceramics, Polymers, Corrosion, Mechanical, Production & Industrial Engg., Chemical Engineering and Electrochemical Engg.
Or

1. M.Sc. degree in Physics, Chemistry, Materials Science.
2. Candidates with a M.Sc. degree, Mathematics as a subject at B.Sc. degree level is an essential requirement.

Note: Candidates having a degree in Industrial Engineering only, shall not be eligible for admission to the Doctor of Philosophy programme in the Department of Metallurgical and Material Engg.

18. Department of Physics

- i. M.Sc. in Physics/ Applied Physics
- ii. M.Sc. in Chemistry/ Mathematics/ Biophysics/ Geophysics/ Computer Science, provided Physics was a subject at B.Sc. level.
- iii. B.Tech. or equivalent in Electrical / Electronics / Chemical/ Metallurgical / Engineering Physics.

Candidates at Category (ii) and (iii) may be considered for research area consistent with the academic background and special interests.

19. Water Resources Development & Management

(i) Water Resources Development

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

(ii) Irrigation Water Management

Master's Degree in Agricultural Sciences / Social Sciences / Chemical Engineering / Biological Sciences / Environmental Sciences / Engineering / Natural Sciences with at least one paper of Mathematics at the graduate level.

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.

22. 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 Metallurgy / Chemical / Polymer / Mechanical / Biotechnology / Physics / Chemistry / Electronics / Electrical / Civil or equivalent
- (ii) M.Sc. / M.S. (Science / Engineering)
B. Pharm / M. Pharm.

B. SAHARANPUR CAMPUS

1. Applied Science & Engineering:

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

2. Pulp & Paper Engineering:

- (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.
