



# राष्ट्रीय प्रौद्योगिकी संस्थान राउरकेला

## NATIONAL INSTITUTE OF TECHNOLOGY ROURKELA

No. - NITR/AC/RES/2019/M/0760

Date – 26/04/2019

### Notice for Admission to Ph. D Program Commencing in Autumn (July) 2019-20 Semester

Applications are invited **online** from eligible candidates for admission to Ph. D Program of the Institute in Autumn Semester 2019-20 commencing from July, 2019. Admissions will be given preferably to the applicants who are eligible for Institute fellowship or have qualified for external fellowships. However, admission may also be considered without fellowship. Students with external fellowship like JRF-NET are especially encouraged to apply.

Sl. No.	Name of the Department	Code	Indicative Broad Area of Research Available
1	Biotechnology and Medical Engineering	BM	Medical Electronics & Instrumentation, Biomaterials & Tissue Engineering, Cell & Molecular Biology, Bioprocess Engineering, Agriculture & Environmental Engineering, Biomechanics & Bio transport.
2	Civil Engineering	CE	Geotechnical, Water Resources, Environmental, Transportation & Structural Engineering
3	Chemical Engineering	CH	Newtonian rheology, Energy & Environmental Engineering., Nano-Technology, Catalysis, Green Catalysis, Mass Transfer, Heat Transfer, Computational Fluid Dynamics, Molecular Simulations for Energy, Environment & Healthcare, Interfacial Phenomena, Waste to Advanced Materials, Bio-pollution Control, Sensor, Process Control
4	Ceramic Engineering	CR	Structural Ceramic, Industrial Ceramic, Electro-Ceramics, Nano-Bio Ceramics
5	Computer Science & Engineering	CS	All specializations of Computer Science & Engineering
6	Chemistry	CY	Inorganic, Organic, Physical, Materials, Bio-Inorganic, Organometallic, Biophysical Chemistry, Nano Science, Environmental, Computational, Theoretical Chemistry, Solid State, Biochemistry
7	Electronics & Communication Engineering	EC	VLSI & Embedded Systems, Signal & Image Processing, Instrumentation & Control, Microwave & Radar Engineering, Wireless Communication, Biomedical Instrumentation

Sl. No.	Name of the Department	Code	Indicative Broad Area of Research Available
8	Electrical Engineering	EE	All specializations of Electrical Engineering, Power System, Power Electronics & Drives, Control and Automation, Electronics System and Communication,
9	Earth and Atmospheric Science	ER	Geology, Geophysics, Atmospheric & Ocean Sciences
10	Food Process Engineering	(FP)	Transport Process and Kinetics, Food Quality & Safety, Post-Harvest Operations, Food Packaging and Storage Engineering, Product Development and Ingredients Innovation
11	Humanities & Social Sciences	HS	Economics, English, Sociology, Anthropology, Psychology, Sanskrit
12	Industrial Design	ID	Product Design, Ergonomics Design, Manufacturing, Vibration, Noise Control, Meta-material, Acoustics, CAD, Human Simulation, Bio-Mechanical, Occupational Health & Safety, Human Factors, Geometric Modelling
13	Life Science	LS	All areas of Biological Science/Life Science
14	Mathematics	MA	Numerical Analysis, Algebra, Number Theory, Fluid Dynamics, Differential Equation(ODE & PDE), Partial Differential Equation & Integral Equation
15	Mechanical Engineering	ME	Mechanical, Machine Design, Production/ Thermal, Cryogenic, Mechatronics, Robotics, Mechanical Vibrations, Automobile, Manufacturing, Industrial Management, Aerospace, Aeronautical Engineering, Composites, Tribology, Fluid Flow and Heat Transfer
16	Metallurgical & Materials Engineering	MM	Physical Metallurgy, Process Metallurgy, Computational Metallurgy, Surface Engineering & Thin Films
17	Mining Engineering	MN	All specialization of Mining Engineering
18	Planning and Architecture	PA	Urban & Regional Planning, Housing, Urban Design, Neighborhood Planning
19	Physics and Astronomy	PH	Experimental & Theoretical Condensed Matter Physics, Theoretical High Energy Physics, Quantum Optics, Theoretical and Experimental Soft Matter, Theoretical Non-Linear Dynamics
20	School of Management	SM	HR, Marketing, Operations Management & Finance

### B. Eligibility Criteria for Ph. D Program:

The minimum qualification required for admission to Ph. D programs in Engineering, Science, Planning & Architecture, Management, and Humanities & Social Sciences is one of the following:

- a) M.E./M.Tech./M.Pharm in relevant discipline with at least 6.5 CGPA or 60 percent marks in aggregate in both B.Tech. (or M.Sc./B.Pharm/ MCA or equivalent) and M.Tech. levels from a recognized Technical Institute or University.

- b) B.E./B.Tech./B.Pharm/MCA or equivalent in relevant discipline with CGPA of 7.0 or 65 percent marks in aggregate.
- c) M.Sc. in Basic Sciences with CGPA 7.0 or 65 percent marks in aggregate in relevant disciplines. For applicants with valid GATE/NET/GPAT score, requirement may be relaxed upto 0.5 CGPA or 5% marks.
- d) M.B.B.S./B.V.Sc. with CGPA 6.5 or 60 percent marks in aggregate.

Further, candidates having the following qualification can also apply for Ph. D in Management and Humanities & Social Sciences:

- e) M.A. / MBA / M.Com. / M. Sc. in Humanities and Social Sciences or Management with 6.5 CGPA or 60 percent marks in aggregate.

In addition to the above eligibility criteria (based on B. Tech., M.Sc., MBA, MA, M. Com., M. Tech., and M. Pharm., etc. examinations), the following additional criteria will also be applicable:-

- a) A candidate should score minimum 60% marks or 6.5/10 CGPA throughout career to be eligible for admission to Ph. D program. The DRC, however, may make one exception (marks <60% or Grade < 6.5/10) at its discretion from among the results of 10<sup>th</sup>, +2, BA, B.Sc., Diploma etc. (except qualifying degree) if the candidate has qualified GATE/NET/GPAT or other national level fellowship tests like DST-INSPIRE, RGNF etc.
- b) For admission to Engineering and Science disciplines (except Life Science), a candidate should have passed Mathematics in +2 Science.
- c) Science students admitted to Ph. D program in Engineering need Mathematics in +3 level. Students without Mathematics in +3 level may be admitted under the condition that they will have to register for 16 credits of 100 and 200 level Mathematics and 100 level Computer Science courses (Theory and Practical) in addition to their normal course requirement, and secure at least C grade in each course.
- d) A student should have passed Life Science or Biological Science either in +2 or +3 level for admission to Ph. D in Life Science department.
- e) Students without adequate background in the primary discipline will be required to have 10% extra marks (1.0 CGPA) to qualify over students with specialization in a primary discipline, unless explicitly exempted by the Senate. List of primary disciplines for specializations under the various departments is given in Clause "D" below.

However, a higher short listing criteria (possibly different for different departments) may be set by the Department during scrutiny of applications depending on the departmental requirement, number and quality of applicants. Therefore, merely satisfying the minimum eligibility criteria does not guarantee a candidate to be called for interview and mere attending an interview does not guarantee admission.

### C. Applicants Awaiting Results:

- a) For thesis based Postgraduate degrees [(M. Tech. (Research), MS or equivalent)], a student is permitted to submit the final result within one year from the date of thesis submission. However, one documentary evidence (proof of thesis submission) from the candidate's Institute/University is required to be submitted at the time of admission.
- b) For all course based degrees [B. Tech., M. Sc., MBA, M. Tech. (Regular), etc.] results need to have been published before admission is granted. In exceptional cases when a university will not be in a position to publish result by the time of admission, submission of qualifying degree result may be permitted till **31<sup>st</sup> August, 2019**, but not beyond.

#### D. Qualifying Degrees and Primary Disciplines for Admission:

Different academic eligibility across the departments has been made considering the departmental requirement, availability of candidates in the respective departments and uniform growth of all departments in the Institute.

Onus of proving a Degree / Specialisation / Discipline as equivalent with any of the above mentioned Degree / Specialisation / Discipline shall lie with the applicant claiming equivalency. However, decision of the Institute shall be final and binding in this matter.

Department	Academic Eligibility / Primary Disciplines
Biotechnology and Medical Engineering (BM)	A Master's degree in Engineering with minimum CGPA of 6.5/10.0 (or 60% aggregate) <b>OR</b> a Bachelor's degree in Engineering or Science (4 year programme) with a minimum CGPA of 8.0/10.0 (or 75% aggregate) and JRF/95 percentile or higher in GATE score <b>OR</b> a Master's degree in Medicine/Dental/Veterinary/Pharmacy with minimum CGPA of 6.5/10.0 (or 60% aggregate) <b>OR</b> Bachelor's degree in Medicine/Dental/Veterinary Science/Pharmacy with a minimum CGPA of 8.0/10.0 (or 75% aggregate) with GATE (any subject) <b>OR</b> a Master's degree in Science or an Allied area while satisfying each of the following three criteria: (a) Minimum CGPA of 8.0/10.0 (or 75% aggregate) in the Master's degree, (b) First division in Bachelor's degree, and (c) JRF/95 percentile or higher in GATE score.
Civil Engineering (CE)	M.Tech. in Civil/Mining/Mechanical/Agricultural/ Chemical Engineering <b>OR</b> B.Tech ( <b>with valid GATE</b> ) in the above disciplines.
Chemical Engineering (CH)	B.Tech/M.Tech. in Chemical / Petroleum and Petrochemical/ Polymer/ Environmental / Metallurgical & Materials / Ceramic / Mechanical / Biochemical / Mining Engineering/ Nanotechnology/ Biotechnology / any other relevant branch of Engineering and Technology.
Ceramic Engineering (CR)	B.Tech/M.Tech in Ceramic / Metallurgical & Materials / Chemical / Mechanical Engg. / Biomedical Engg /Nanotechnology/Biotechnology <b>OR</b> M.Sc. in Physics / Chemistry / Materials Science/ Nano Science.
Computer Science & Engineering (CS)	B.Tech. ( <b>with GATE</b> ) /M.Tech in Computer Science & Engineering / Information Technology <b>OR</b> MCA <b>OR</b> M.Sc. ( <b>with GATE</b> ) in Computer Science / Information Technology.
Chemistry (CY)	M.Sc. in Chemistry / Physics / Biochemistry / Biotechnology / Nanoscience & Nanotechnology / Bioinformatics / Industrial Chemistry / Applied Chemistry / Environmental Chemistry / Food Science & Technology / Nutrition <b>OR</b> M.Pharm <b>OR</b> B.Tech / M.Tech in Chemical / Ceramic / Metallurgical and Materials Engineering / Biotechnology.
Department	Academic Eligibility / Primary Disciplines

Electronics & Communication Engineering (EC)	B.Tech. <b>(with GATE)</b> /M.Tech in Electronics / Electrical / Electronics & Communication/ Electronics & Telecommunication/ Electronics & Instrumentation/ Applied Electronics & Instrumentation/ Electrical and Electronics Engineering.
Electrical Engineering (EE)	B.Tech. <b>(with GATE)</b> / M.Tech in Electrical / Electronics / Electrical & Electronics / Electronics & Communication / Instrumentation Engineering/ Instrumentation & Control.
Earth & Atmospheric Science ( ER )	M.Sc / M.Tech in Geology / Applied Geology / Geophysics / Environmental Science / Remote Sensing / Chemistry / Physics / Atmospheric Science / Meteorology / Oceanography / Mathematics <b>OR</b> related disciplines in Science <b>OR</b> B.Tech / M.Tech in Civil / Mining / Electronics and Computer Science Engineering.
Food Process Engineering (FP)	B. Tech with M.Tech in Food Processing Engineering / Food Technology / Agricultural Process Engineering / Post Harvest Engineering / Agricultural Engineering or any other relevant branch of Engineering/Technology.
Humanities and Social Sciences (HS)	M.Sc. / MA in relevant subjects <b>OR</b> B.Tech/M.Tech in any branch of Engineering <b>OR</b> MBA. Candidates with UGC NET/JRF qualification will be preferred.
Industrial Design (ID)	B.Des./BE/B.Tech with M.Des/ME/M.Tech in any discipline.
Life Sciences (LS)	M.Sc. in Life Sciences/ Botany/ Zoology/ Microbiology/ Biotechnology/ Biochemistry/ Bioinformatics / MBBS/ BVSc./Bio-Physics /Food Science & Technology, B.Tech/ Integrated M.Tech/M.Tech in Biotechnology or any branch of biological sciences, B.Pharm/M.Pharm, MS in any branch of biological sciences.
Mathematics (MA)	M.Sc. in Mathematics / Statistics / Computer Science / Information Technology / MCA and First class Honours or equivalent in B.Sc. with Mathematics / Statistics as Honours subject. <b>OR</b> B.Tech / M.Tech in any branch of Engineering or equivalent.
Mechanical Engineering (ME)	B.Tech <b>(with GATE)</b> /M.Tech in Mechanical / Machine Design / Thermal / Cryogenic / Mechatronics / Robotics / Mechanical Vibrations / Automobile / Production / Manufacturing / Industrial Management / Aerospace/ Aeronautical Engineering / Composites / Tribology / Fluid Flow and Heat Transfer.
Metallurgical & Materials Engineering (MM)	B.Tech/M.Tech in Metallurgy / Met. & Mat. / Ceramic / Chemical / Mechanical / Production / Manufacturing Engineering <b>OR</b> M.Sc. in Physics/ Chemistry /Materials Science.
Mining Engineering (MN)	B.Tech/M.Tech in Mining/ Civil/ Environmental/ Chemical/ Electronics/ Electrical/ Instrumentation/ Computer Science/ IT / Mechanical/Metallurgical & Materials Engineering <b>OR</b> M.Sc. in Geology/ Geo-Physics/ Environmental Science/ Remote Sensing/ Mathematics/ Statistics/ Chemistry/ Physics.
Planning & Architecture (PA)	B. Arch. with M. Arch. / MCP / MURP / MUP / MTRP / M. Tech. or equivalent <b>(with GATE)</b> .
Physics and Astronomy (PH)	M.Sc. in any branch of Science with Mathematics and Physics at B.Sc. level <b>OR</b> B.Tech. in any branch of Engineering.
School of Management (SM)	Master degree in Technology, Business Administration, Arts, Science, Commerce, Pharmacy <b>OR</b> Bachelor degree in Technology in any discipline.

### E. Notes:

1. Where regular mode of education is available for any Degree/Qualification then Degree/Qualification obtained otherwise than through regular mode, i.e. Distance Learning, Correspondence Course, etc. will NOT be considered for the purpose of admission to Ph. D program of the Institute.
2. For selection of Research scholars in engineering disciplines, Students with B. Tech. degree will be given preference over students with M.Sc. degree, even if the latter may have an M. Tech. Degree.
3. Students with any other relevant background may be eligible, but only with approval of the Senate or Chairman, Senate on the recommendation of the Departmental Research Committee (DRC).
4. There is no relaxation in academic requirement for SC/ST/OBC/PH/PWD students, because the minimum academic requirements have been set to meet the basic challenges of the academic program. Also, the academic eligibility shall be same across all studentship categories (Institute fellowship, External fellowship, Project fellowship, Sponsored, etc.).
5. The required CGPA/percentage should be the aggregate of CGPA/percentage based on all subjects of all semesters/years.
6. Rule for conversion from CGPA to percentage or vice-versa, if prescribed by Degree Issuing Institute/University will be accepted. However, if no such rule is prescribed by Degree Issuing Institute/University, conversion will not be allowed.
7. Students of one discipline may seek admission in a related department which will be considered on the basis of merit of the individual case(s).
8. Selection will be made on the basis of academic record, relevance of qualification, **candidate's research interest**, existing research programs and facilities of the departments, and performance of the candidate in tests and/or interviews. Therefore, merely attending a tests and/or an interview does not guarantee admission.
9. Scrutiny Criteria may be different for different category of students.

## F. Financial Support:

Institute Fellowships are available to the Ph. D students of all the departments. Prevailing rate of fellowship is given in the following table, which is likely to be revised upward:

Program	Eligibility	Duration	Rate of Fellowship
Ph. D	M. Tech. / M. Pharm / M. Arch. / M. Des. / MD / MS / MDS / M. V. Sc. (or) B. Tech. / B. Arch. / B. Des. / B. Pharm. / MBBS / B. V. Sc. / BDS / M.Sc. / MA / M.Com / MBA / MCA with a valid GATE/NET/GPAT score	1 <sup>st</sup> & 2 <sup>nd</sup> year	Rs. 25,000/- p.m.
		3 <sup>rd</sup> , 4 <sup>th</sup> & 5 <sup>th</sup> year*	Rs. 28,000/-* p.m.

\* Subject to clearing the Progress Seminar to be conducted by the department.

Payment of Institute fellowship is effective from date of Semester Registration, but will be paid only after submission of all required documents by the scholars. Financial support is initially for a



period of one year and will be renewed on year to year basis on satisfactory performance/progress.

However, fellowship **will not be awarded** to candidates above 32 years of age for Ph. D (35 years for SC/ST and women candidates) on the date of admission. This restriction shall not apply to fellowships awarded by external agencies or sponsored projects.

#### **Individual External Fellowships:**

Candidates with individual external fellowships (CSIR-NET/UGC-NET/DST-INSPIRE/RGNF/ICSSR/Women Scientist, etc.) are especially encouraged to apply. The selection process will be same as that for other candidates. The rate and mode of payment of fellowship to such students will be governed as per the rules of the Sponsor / Funding Agency.

#### **Important Note:**

If a student with Institute fellowship or project fellowship leaves the Institute in the mid-session on his own accord without completing the program, the entire amount paid to him/her towards fellowship **need to be returned** by the student before leaving the Institute. S/he will not receive any certificate from the Institute unless s/he refunds the fellowship received in full. Students with project fellowship may not be required to refund only if sponsor's rule permit him leaving the project without refunding fellowship. Students receiving external fellowships will be governed as per the rules of the Sponsor / Funding Agency.

All students, with or without fellowship or receiving any other financial support are required to assist faculty members of their department in teaching and research activity. They may be required to take theory, tutorial and laboratory classes, assist in student projects or other R & D activities as assigned by the HOD/Coordinator.

### **G. Fee Structure:**

Fees to be paid at the time of admission to Ph. D Program is as follows:-

#	Fee Particulars	Amount
1.	Admission fee (One time)	Rs.2500/-
2.	Tuition fee	Rs.7500/- [ Nil for SC/ST students]
3.	Other fees (Exam., Library, Electricity etc.)	Rs.3000/-
3.	Student activity fee	Rs.2000/-
5.	Hostel Seat Rent	Rs.5000/-
6.	Medical fee	Rs.2000/-
7.	Caution Money (One time) (Refundable if program is completed)	Rs.10000/-
8.	Hall Establishment fee	Rs.5000/-
9.	Mess Advance	Rs.19500/-
<b>TOTAL FEES</b>		<b>Rs.56,500/- (Rs. 49,000/- for SC/ST students)</b>

**Notes:**

1. The above fee is only for the 1st semester. For remaining semesters the approximate fee will be Rs.44,000/- per semester (Rs.36,500 /- for SC/ST students) which is inclusive of Mess dues. However, **the Institute reserves the right to amend the fee structure from time to time, which will be implemented with immediate effect for all students irrespective of the date of admission.**
2. Fee will be paid by the selected students online in the Institute payment portal details of which will be notified along with selection result. In case of exigencies, fee may be paid through Debit/Credit Card or demand draft drawn in favour of “Director, NIT, Rourkela” and payable at any bank in Rourkela which will be collected on-spot during admission.

#### **Refund of Fee:**

If a student is removed or withdraws/leaves himself/herself from the Institute after admission without completing the entire program, all fees paid including the caution money deposit will be forfeited by the institute. Mess advance may be refunded after deduction of dues, if any. This clause is applicable even before formal registration to the 1<sup>st</sup> semester and starting of classes.

#### **H. Sponsored / Local Sponsored Candidates:**

The Institute welcomes candidates from reputed academic institutes, industry, R & D Institutions, and from Government organizations.

- a) A sponsored candidate is expected to work full time in the Institute till completion of his/her program, or at least 3 years (2 years for M. Tech (Res)) from beginning in the Institute. However, in deserving cases, if facilities exist at his/her place of employment and his/her job assignment matches with the research problem, s/he may be permitted to work at the place of employment after satisfying minimum residential requirement (normally 6 months to a year).
- b) Local sponsored candidates (working in and around Rourkela having permanently non-transferable jobs) must have enough time and flexibility in their job assignment in order to continue the program applied for. Their working hours to be suitably adjusted in the sponsoring organization so that he/she can work on his/her studies at NIT Rourkela for at least 120 days and 500 hours per semester [25 days and 75 hours in case the scholar has a Co-Supervisor in his/her work place, his research work is related to his work in the job place and availability of adequate research facility in the work place].
- c) Sponsored candidates must have completed at least two years of continuous service in the sponsoring organization, which must be an institution of repute employing good number of engineering/science professionals. The completion of two years continuous service shall be counted **as on June 30, 2019**.
- d) Sponsored students are expected to serve their sponsoring organization on completion of their degree in NIT, for at least 3 years after completion of the academic program.

**Sponsored candidates may apply for Ph. D program of any discipline.**



## I. Application Fee and Procedure:

Interested candidates satisfying the eligibility criteria may submit their **online application at <http://eapplication.nitrkl.ac.in>**.

- a) Read this advertisement and the instructions to fill up the online application form given in the online portal carefully,
- b) Fill up and submit the online application form accordingly, and
- c) Prepare Demand Draft / Banker's Cheque drawn in favor of "Director, NIT Rourkela" and payable in any bank in Rourkela for application fee of Rs.500/-. Payment through the online application portal is not available currently.
- d) **Take print-out of the online application form and send the same along-with the DD/BC by Regd./Speed Post** [not by hand or courier] to the following address. Write "your name and Application ID" on the backside of the DD/BC and "Application for Ph.D" on the envelope for proper identification.  
Address - Dy. Registrar [Academic]  
National Institute of Technology  
Rourkela – 769 008 [Odisha]
- e) Sponsored candidates are required to submit the scanned copy of the sponsorship certificate while submitting online application.

**Applicants are NOT required to send any other document along with print out of the application form and DD/BC.** However, candidates who will be called for interview will be required to submit signed copy of the application form, a set of photo copies of all certificates and original sponsorship certificate (for sponsored candidates only) at the time of interview. They also need to produce original certificates from HSC onwards for verification. The signed copy of application form along with a set of photo copies of all certificates will be forwarded to the Academic Office by the department for record.

## J. Tentative Schedule:

Sl. No.	Event	Tentative Date
1	Application form will be available in the Institute website for online submission	01.05.2019 (Wednesday) to 19.05.2019 (Sunday)
2	Receipt of Print-out and DD/BC by post	27.05.2019 (Monday)
3	Publication of result of scrutiny in the website (announcement section)	04.06.2019 (Tuesday)
4	Test and/ Interview (Venue – NIT, Rourkela)	21.06.2019 (Friday)
5	Publication of result of Interview in the website	01.07.2019 (Monday)
6	Admission (Physical presence of candidate is required)	17.07.2019 (Wednesday)*
7	Semester Registration	22.07.2019 (Monday)
8	Starting of Class / Research work	23.07.2019 (Tuesday)

\* Hostel will be allotted on the day of admission and students are required to stay in the campus to complete the mandatory pre-requisites [Enrollment, Provisional Registration, Bio-Metric Registration] for Semester Registration.

**Applicants are required to visit the “Announcement” section in the “Home Page” of the Institute website ([www.nitrkl.ac.in](http://www.nitrkl.ac.in)) regularly for further updates.**

#### **K. Accommodation:**

The Institute has two Guest Houses (South Block and North Block) with AC rooms. Accommodation on twin-sharing basis may be provided on payment basis subject to availability of rooms. Interested applicants may contact in the following details for advance booking.

Contact Person: Mr. M. K. Das, Manager [Guest House]

Telephone: 0661-2464000, 2464040

Besides, a number of budget and luxury hotels are also available near the Railway Station some of which also offer online reservation facility.

#### **L. How to reach the Institute:**

Rourkela is located in the Howrah-Mumbai main Train route. Train connections are also available from Bhubaneswar and Ranchi. Night AC/Non-AC bus services are available from all major cities of Odisha (Bhubaneswar/Berhampur/Balasore, etc.). The Institute is located around 8 km. away from the Railway Station and 2 km away from Sector-3 Bus Stop. Usual rate of auto fare at present is Rs.140/- and Rs. 80/-, respectively. App based taxi services are also available from the Railway Station to the campus.

Sd/-

उप कुलसचिव (शैक्षिक)

**Dy. Registrar (Academic)**