



राष्ट्रीय प्रौद्योगिकी संस्थान, राउरकेला
NATIONAL INSTITUTE OF TECHNOLOGY, ROURKELA

NITR/AC/RES/2021/M/0028

5th Jan., 2022

**Notice for Admission to PhD Program
Commencing in Spring (January) Semester of AY 2021-22
(with External Fellowship and without Institute Fellowship category only)**

Applications are invited **online** from eligible candidates for admission to PhD Program of the Institute in Spring (January) Semester of the Academic Year 2021-22. Admission will be given preferably to the applicants who have qualified for External fellowship. However, admission may also be considered without fellowship. Students with external fellowship like JRF-NET are especially encouraged to apply.

Sl.	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 Engineering, Bioprocess Engineering, Agriculture & Environmental Engineering, Biomechanics & Bio-transport.
2	Civil Engineering	CE	Geotechnical Engineering, Structural Engineering, Transportation Engineering, Water Resources Engineering, Environmental Engineering
3	Chemical Engineering	CH	All the conventional areas under Chemical Engineering
4	Ceramic Engineering	CR	Advanced Ceramics, Industrial 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 Design & Embedded Systems, Microwave & Radar Engineering, Signal & Image Processing, Communication and Networks, Electronics and Instrumentation
8	Electrical Engineering	EE	Power Electronics Converters & Control, Electrical Machines, High Performance Industrial Drives, Electric Vehicles and Battery management Systems, Renewable Energy, Power System, Smart Grid, High Voltage and Electrical Insulation, Power Quality Improvement, Control System, Energy Policies and Management, Energy Storage and Conversion, RF & Microwave, Wireless Communication & Networks, Signal & Image Processing, Computer Vision, Nanotechnology, Microelectronics, VLSI & Embedded Systems, Machine learning & AI, Sensors & IoT.

Sl. No.	Name of the Department	Code	Indicative Broad Area of Research Available
9	Earth and Atmospheric Science	ER	Geology, Applied Geology, Geophysics, Atmospheric & Ocean Sciences, Climatology
10	Food Process Engineering	FP	Food Quality & Safety, Food Process Design, Horticultural Process Technology, Food Grains and Oilseeds Process Engineering, Food Packaging and Storage Engineering, Dairy and Livestock Process Engineering
11	Humanities & Social Sciences	HS	Economics, English, Sociology/Anthropology, Psychology, Sanskrit and relevant subjects related to Humanities and Social Sciences
12	Industrial Design	ID	Robotics, HCI, DFMA, Product Design, CAD, Ergonomics Design, Acoustics, Vibration, Interaction Design, AR/VR etc
13	Life Science	LS	All areas of Life Science
14	Mathematics	MA	Numerical Analysis, Number Theory, Differential Equation, Fractional Calculus, Probability & Statistics, Mathematical Physics, Integral Equations, Stochastic Process, Functional Analysis, Fractal Theory, Soft Computing, Convex and Variational Analysis, Algebraic Combinatorics, Algebraic Graph Theory, Linear Algebra, Fluid Dynamics, Representation Theory, Control Theory
15	Mechanical Engineering	ME	Thermal, Cryogenic and Vacuum Technology, Industrial Engg. & Management, Production Engg., Machine Design and Material, Manufacturing Science
16	Metallurgical & Materials Engineering	MM	Physical Metallurgy, Mechanical Metallurgy, Nano-materials
17	Mining Engineering	MN	All specialization of Mining Engineering
18	Planning and Architecture	PA	Climate responsive Building Design, Construction Management, Urban Planning, Urban Design, Housing, Neighborhood Planning/Community Planning, Age friendly Neighborhoods/Cities, Environmental Psychology, Globalization, City-network, Network Analysis, Urban Amenities, Leisure Amenity, Age friendly Cities, Vulnerability Assessment.
19	Physics and Astronomy	PH	Nuclear Astro-physics, Solar & Space Physics, Nonlinear Dynamic & Complex System, Stellar Astrophysics, Soft Condensed Matter, Astrophysics & Cosmology, Functional Material, Astronomy & Astrophysics, Soft Matter & Polymer Physics, Low Temperature Physics, Functional Material, Theoretical Physics
20	School of Management	SM	Human Resource Management, Marketing Management, General Management, Entrepreneurship, Finance, Operations

B. Eligibility Criteria for PhD Program

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

- a) ME/MTech/MScEngg/MPharm/MArch/MPlan/MDes in relevant discipline with at least 6.5 CGPA or 60% marks or 1st class in both BE/BTech/BScEngg/MSc/BPharm/MCA/BArch/ BDes or equivalent, and ME/MTech/MScEngg/MPharm/ MArch/MPlan/MDes from a recognized Technical Institute or University.
- b) BE/BTech/BScEngg/MSc/BPharm/MCA/BArch/BDes or equivalent in relevant discipline with CGPA of 7.0 or 65% marks.
- c) MSc in Basic Sciences with CGPA 7.0 or 65% marks in relevant disciplines. For applicants with valid GATE/NET/GPAT or equivalent score, requirement may be relaxed by maximum 0.5 CGPA or 5% marks.
- d) MBBS/BVSc with CGPA 6.5 or 60% marks or 1st class.

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

- e) MA/MCom/MBA/MSc in Humanities and Social Sciences or Management or BTech with 6.5 CGPA or 60% marks or 1st class for PhD in Management, and Humanities and Social Sciences only.

In addition to the above eligibility criteria (based on BTech, BArch, MSc, MBA, MA, MCom, MTech, MArch, MPlan, MDes and MPharm, etc. examinations), the following additional criteria will also be applicable:

- a) A candidate should score minimum 6.5 CGPA or 60% marks or 1st class throughout career to be eligible for admission to PhD programme. The Departmental Research Committee (DRC), however, may make exception (marks < 60% or CGPA < 6.5) at its discretion in only one among the results of 10th, +2, BA, BSc, BCom, Diploma etc. (except qualifying degree) if the candidate has qualified in GATE/NET/GPAT or other national level fellowship tests like DST-INSPIRE, etc. or joined as JRF/SRF in any research project.
- b) For admission to Engineering and Science disciplines (except Life Science), a candidate should have passed Mathematics in +2 Science or Diploma.
- c) Science students admitted to PhD programme in Engineering/Physics/ Mathematics must have passed Mathematics at +3 level. Students without Mathematics at +3 level may be admitted under the condition that they will have to register for 14 credits of 1000 and 2000 level Mathematics and 1000 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 at +2 or +3 level for admission to PhD in Life Science department.
- e) Students without having qualifying degree in the primary discipline will be required to take up additional course work of 6 credits to gain adequate knowledge on the subject so as to be considered to qualify along with students with specialization in a primary discipline, unless explicitly exempted by the Senate. List of primary disciplines for specializations under various departments is given in Clause "D" below.

However, a higher shortlisting criteria (possibly different for different departments and for different categories of students) may be set by the Department during scrutiny of applications depending on 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 also 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 **31st January, 2021** 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 / Specialization / Discipline as equivalent with any of the above mentioned Degree / Specialization / 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 (any branch) / Medicine / Dental / Pharmacy / Veterinary OR a bachelor's degree in Engineering (any branch) / Medicine / Dental / Pharmacy / Veterinary with valid GATE / NET / BET / GPAT score OR a MSc degree in Biotechnology / Life Sciences / Physics / Chemistry / Allied Sciences with 1 st class in UG and PG degree with a valid GATE / NET / BET / GPAT score or any National level eligibility test.
Civil Engineering (CE)	MTech in Civil/Mining/Mechanical/Agricultural/ Chemical Engineering OR BTech (with GATE) in the above disciplines.
Chemical Engineering (CH)	MTech (in Chemical/Petroleum and Petrochemical/ Energy/ Environmental /Metallurgical and Materials /Ceramic/ Mechanical /Biochemical/Biotechnology/ Nanotechnology and any other relevant branch of Engineering, and Technology OR BTech (with GATE) OR MSc (with GATE in Chemical Engg).
Ceramic Engineering (CR)	BTech (with GATE) / MTech in Ceramic / Metallurgical and Materials / Chemical / Mechanical Engg. / Biomedical Engg / Nanotechnology / Biotechnology OR MSc (with GATE) in Physics / Chemistry / Materials Science / Nano Science.
Computer Science & Engineering (CS)	BTech (with GATE/Any National Level fellowship) / MTech in Computer Science and Engineering / Information Technology OR MCA OR MSc (with GATE/ Any National Level fellowship) in Computer Science / Information Technology.
Chemistry (CY)	MSc in Chemistry / Physics / Biochemistry / Biotechnology / Nanoscience and Nanotechnology / Bioinformatics / Industrial Chemistry / Applied Chemistry /

	Environmental Chemistry / Food Science and Technology / Nutrition OR MPharm OR BTech / MTech in Chemical / Ceramic / Metallurgical and Materials Engineering / Biotechnology.
Electronics & Communication Engineering (EC)	BTech (with GATE) / MTech in Electronics / Electrical / Electronics and Communication / Electronics and Telecommunication / Electronics and Instrumentation / Applied Electronics and Instrumentation / Electrical and Electronics Engineering.
Electrical Engineering (EE)	MTech/ME/M.S. in Electrical/ Electronics/ Communications/ Computer Science/ Instrumentation / Control Engineering or equivalent or Microelectronics/Solid-state Technology/MEMS/Nano Science/Nano Technology/Material Science/Engineering Physics or equivalent, relevant to the area of research OR BTech/BE in Electrical/Electronics/Communications/ Computer Science/ Instrumentation / Control Engineering or equivalent or Microelectronics/Solid-state Technology/MEMS/Nano Science/Nano Technology/Material Science/Engineering Physics or equivalent, and having a CGPA/CPI score of 8.00 (out of 10.0) and above with valid GATE score can apply for admission to PhD programme.
Earth & Atmospheric Science (ER)	MSc / MTech in Geology / Applied Geology / Geophysics / Environmental Science / Remote Sensing / Chemistry / Physics / Atmospheric Science / Meteorology / Oceanography / Mathematics OR related disciplines in Science OR BTech / MTech in Civil / Mining / Electronics and Computer Science Engineering.
Food Process Engineering (FP)	B. Tech with MTech 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)	MSc / MA in relevant subjects OR BTech / MTech in any branch of Engineering OR MBA. Candidates with UGC NET/JRF qualification will be preferred.
Industrial Design (ID)	BDes/BE/BTech with M.Des/ME/MTech in any discipline.
Life Sciences (LS)	MSc in Life Sciences / Botany / Zoology / Microbiology / Biotechnology / Biochemistry / Bioinformatics / MBBS / BVSc./ Bio-Physics / Food Science and Technology, BTech / Integrated MTech / MTech in Biotechnology or any branch of biological sciences, BPharm/MPharm, MS in any branch of biological sciences.
Mathematics (MA)	MSc in Mathematics / Statistics / Computer Science / Information Technology / MCA and First class Honours or equivalent in B.Sc. with Mathematics / Statistics as Honours subject. OR BTech / MTech in any branch of Engineering or equivalent.
Mechanical Engineering (ME)	BTech (with GATE)/MTech 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)	BTech/MTech in Metallurgy / Metallurgical and Materials Engineering / Ceramic / Chemical / Mechanical / Production / Manufacturing Engineering OR MSc in Physics/ Chemistry /Materials Science.
Mining Engineering (MN)	BTech/MTech in Mining / Civil / Environmental / Chemical / Electronics / Electrical / Instrumentation / Computer Science / IT / Mechanical / Metallurgical and Materials Engineering OR MSc in Geology / Geo-Physics / Environmental Science / Remote Sensing / Mathematics / Statistics / Chemistry / Physics.
Planning & Architecture (PA)	BArch with MArch/ MPlan / MCP / MURP / MUP / MTRP / MTech or equivalent (with GATE).
Physics and Astronomy (PH)	MSc in any branch of Science with Mathematics and Physics at B.Sc. level OR BTech in any branch of Engineering.

School of Management (SM)	Master degree in Technology, Business Administration, Arts, Science, Commerce, Pharmacy OR Bachelor degree in Technology in any discipline OR CA(FINAL) from ICAI OR LLM(LAW)
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E. Notes

1. Where regular mode of education is available for any Degree/Qualification, Degree/Qualification obtained through any mode other than regular mode, i.e. Distance Learning, Correspondence Course, etc. will NOT be considered for the purpose of admission to PhD program of the Institute.
2. For selection of research scholars in any engineering discipline, students with BTech degree will be given preference over students with MSc degree, even if the later may have an MTech 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/EWS/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. If the evaluation system is in grades, CGPA value will be considered and if the evaluation system is in marks, percentage value will be considered.
6. 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).
7. Selection will be made on the basis of academic records, 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 test and/or an interview does not guarantee admission.

F. Financial Support

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

1. If a student with Institute 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 receiving external fellowships or project fellowship will be governed as per the rules of the Sponsor / Funding Agency.
2. 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 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 PhD 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/-
TOTAL FEE		Rs.56,500/- (Rs. 49,000/- for SC/ST students)

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.

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 1st 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 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 s/he 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 December 31, 2021**.
- 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 PhD 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>**. The applicants are advised to:

- a) Read this advertisement and the instructions to fill up the online application form given in the online portal carefully,
- b) Pay non-refundable Application Fee of Rs. 500/- through SBI Collect only. No other mode of payment is acceptable. The applicants has to search SBI COLLECT -> ODISHA -> EDUCATIONAL INSTITUTIONS -> DIRECTOR NIT ROURKELA -> APPLICATION FEE PHD PROGRAMME. Note down the SB Collect Reference Number. Application fee once paid shall not be refunded under any circumstances.
- c) Fill up the online application form and enter the SB Collect Reference Number in the appropriate column of Application Fee section and submit the same.
- d) Sponsored candidates are required to submit the scanned copy of the sponsorship certificate while submitting online application.

Applicants are **NOT** required to send hard copy of the application form or any other document(s) to NIT Rourkela. 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/Local Sponsored candidates only) at the time of interview. They also need to produce original certificates from HSC onwards for verification.

J. Tentative Schedule

Sl. No.	Event	Tentative Date
1	Application form will be available in the Institute website for online submission	05.01.2022 (Thursday) to 21.01.2022 (Friday)
2	Publication of result of scrutiny in the website (announcement section)	31.01.2022 (Monday)
3	Test and/ Interview (Venue – NIT, Rourkela)/online	03.02.2022 (Thursday)
4	Publication of result of Interview in the website	09.02.2022 (Wednesday)
5	Admission (online mode)	14 -16.02.2022
6	Semester Registration	17.02.2022 (Thursday)
7	Starting of Class / Research work	18.02.2022 (Friday)

The list of selected candidates will be displayed in our Institute website www.nitrkl.ac.in and no postal intimation will be sent to the selected candidates. **The applicants are required to visit the “Announcement” section in the “Home Page” of the Institute website regularly for further updates.**

K. 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.150/- and Rs. 100/-, respectively. App based taxi services are also available from the Railway Station to the campus.

For any queries mail to:- admission@nitrkl.ac.in

Sd/-

Deputy Registrar (Academic)