



# राष्ट्रीय प्रौद्योगिकी संस्थान – रायपुर

**NATIONAL INSTITUTE OF TECHNOLOGY RAIPUR**  
**(Institute of National Importance)**

G.E. Road, Raipur – 492010 (C.G.)

Phone: (0771) 2254200

Fax : (0771) 2254600

E-mail: director@nitrr.ac.in

Website: www.nitrr.ac.in

---

## 1. *ELIGIBILITY FOR PH.D. ADMISSIONS*

### 1.1 *Educational Qualifications*

The Minimum qualifications for admission to the Ph.D. programme shall be:

A Master's degree in Engineering/Technology/Science/Management/ Humanities and Social Science, Architecture/ Planning or any other equivalent qualification recognized by the institute. Minimum 60% marks or 6.5/10 CGPA /CPI at Master's degree is essential for admission in Ph.D. programme of the institute.

The concerned department will judge suitability of the candidate for pursuing Ph.D. in particular discipline based on his/her specialization in Master's Degree. Decision of the Institute shall be final in this regard.

Candidates who are appearing in qualifying examination are also eligible to apply. However, they have to produce a certificate of passing the qualifying examination as stated above on the day of interview.

### 1.2 *Other Conditions*

- A candidate should apply for full time/ sponsored/ self financed/ part time candidature on the prescribed form on or before due date fixed for the same.
- There is no age limit for the applicant.
- Candidates are advised to refer Ph.D. ordinance available in the institute website ([http://nitrr.ac.in/downloads/ordinance/Ph.D.%20Ordinance%2020\\_05\\_16.pdf](http://nitrr.ac.in/downloads/ordinance/Ph.D.%20Ordinance%2020_05_16.pdf)) to make sure their eligibility on full time/ sponsored/ self financed/ part time category.

## 2. *SELECTION PROCESS*

- (i) Shortlisting of candidates for Ph.D. program will be done on the basis of objective type written examination.

- (ii) Candidates who are regular faculty and staff member of NIT Raipur who have successfully completed their probation period need not to appear in written entrance examination. Similarly, UGC/CSIR (JRF)/NET/Teacher Fellowship holder/M. Phil. passed candidates need not to appear in written entrance examination.
- (iii) All other eligible candidates will be shortlisted based on their performance in written examination.
- (iv) All shortlisted candidates along with candidate of category (ii) above will be called for interview for final selection.

### **3. RESERVATION/RELAXATION**

Number of seats for Ph.D. admission is not fixed. Hence preference will be given to OBC/SC/ST/PH candidates over OC candidates if all other things remain the same.

### **4. DATE OF WRITTEN EXAMINATION AND INTERVIEW**

The list of candidates found eligible to appear in entrance examination, dates of entrance examination, Interview and final result will be displayed in the institute website [www.nitr.ac.in](http://www.nitr.ac.in) and no intimation will be sent to the candidates by post. The candidates are advised to visit Institute website regularly.

### **5. SCHOLARSHIP**

The award of scholarship/fellowship to full time candidates will be applicable according to Central Government/MHRD norms.



# राष्ट्रीय प्रौद्योगिकी संस्थान – रायपुर

NATIONAL INSTITUTE OF TECHNOLOGY RAIPUR

(Institute of National Importance)

G.E. Road, Raipur – 492010 (C.G.) Website: - www.nitr.ac.in

## Year 2018

Sr. No.	Department	Broad Research Areas
01	Applied Geology	Petrology/Geo chemistry Hyper spectral Remote Sensing application for mineral mapping Microwave Remote sensing application in subsurface geology. Hydrogeology
02	Architecture	Town planning, Sustainable architecture, History of architecture, Space syntax Analyses, Energy in Architecture, Climatology.
03	Biomedical Engineering	Biosignal processing, Medical image processing & analysis, Machine learning, Soft computing, Data analytics, Information retrieval, Tissue engineering, Biomechanics Computational neuroscience, Microfluidics, Biomaterials, Biomedical instrumentation, Foot biomechanics, Biomedical sensors, Biomedical optical system, Optical tomography, Optimization, Inverse problems.
04	Biotechnology	Drug targeting & drug development, waste and biomass valorization, Drug Design and Development, Chemical Engineering and Biochemical Engineering, Environment Biotechnology, Biocatalyst, Biopolymer, Nanotechnology base tool development.
05	Chemistry	<ol style="list-style-type: none"> <li>1. Analysis of Nuclear fuel Materials, Luminescence, Biosorption. Corrosion, DNA Binding &amp; Drug design, Environment Science Synthesis, Characterization and application of Nanoparticles carbon nano dots and graphene dots.</li> <li>2. Nanomaterials &amp; Nano Composites.</li> <li>3. Environmental &amp; Analytical Chemistry, Nano Science, Micro-extraction of drug [Antidepressant]</li> <li>4. Nanomaterial, Polymer Synthesis Catalysis.</li> <li>5. Heterocyclic Compound, Medicinal Chemistry, Organic Synthesis.</li> <li>6. Crystal Engineering, Hydrogen Bonding, Coordination polymer, Metal organic framework.</li> </ol>
06	Chemical Engineering	Bio-nanocomposites, Reactive separation Biofuels, Electrochemistry, Nanotechnology, Energy, Waste water treatment, Advanced oxidation process, heterogeneous fentorn process, CFD, Catalysis, Food Technology. Biotechnology, Polymers, Biodegradation, Membrane separation, Nono-composities, Process optimization.

Sr. No.	Department	Broad Research Areas
07	Civil Engineering	<ol style="list-style-type: none"> <li>1. Structural Engg.</li> <li>2. Geotechnical Engg.</li> <li>3. Water Resource Engg.</li> <li>4. Earthquake Engg.</li> <li>5. GIS &amp; Remote sensing</li> <li>6. Soil structure Interaction</li> </ol>
08	Computer Application (MCA)	<p>Artificial Intelligence, Machine learning, Soft computing, IOT. Wired &amp; Wireless Networks, Information Security. Heuristic and Metaheuristic Techniques (Such as swarm Intelligence Techniques and Evolutionary Algorithms) for Combinatorial optimization problems. Soft computing, Biomedical signal processing.</p>
09	Computer Science & Engg	<p>Internet of Things, Vehicular Ad-hoc Network, Machine Learning, Big Data Analysis, Soft Computing, Security in cloud Computing, Sentiment Analysis in Social Media, Deep Learning, Evolutionary Computing, Data Mining, Wireless Sensor Networks, Mobile and Wireless Communication, Real time distributed system.</p>
10	Electrical Engineering	<p>Power System, Power-Electronics, Power-Quality. Smart Grid, Optimization applications, Control Systems. Medical Signal and Image processing, Biometrics, Speech Signal processing, Biomedical Instrumentation. Power System Protection, Distribution System FACTS, AI Application to power system. Application of AI Techniques in Power System. Power System Protection, Microgrid protection. Power Electronics Applications in Power System, Renewable Energy System and Hybrid Electric Vehicles. Design and Development of Power Electronic Converter for Vehicular and Renewable Energy Application. Renewable Energy. High Voltage Engineering. Electrical Drives, Soft Computing, Power Quality.</p>
11	Electronics & Telecommunication Engg	<ol style="list-style-type: none"> <li>1. Image Processing Parallel &amp; High Performance Computing, Data mining.</li> <li>2. Wireless Sensor Networks, AI, Machine learning, Data Communication Networks.</li> <li>3. Lightweight Cryptography, Hardware Trojan.</li> <li>4. Image/Video Processing, Multimedia Security, Computer Vision.</li> <li>5. Digital Signal processing, Soft Computing.</li> <li>6. Machine learning, Pattern Recognition, Optimization, Signal processing.</li> <li>7. VLSI &amp; Nano Technology, MEMS.</li> <li>8. Wireless Communication.</li> </ol>

Sr. No.	Department	Broad Research Areas
12	Humanities	Indian Literature in English. English Literature, American Literature, Language Studies, Linguistics, Psycholinguistics, Phonetics Neurolinguistics, English Literature. Translate studies & Regional literature, Indian writing in English. English language teaching, Behaviour Studies.
13	Information Technology	Data Science, Computer Network and wireless communication, Software engineering, Computer graphics, Security & Cryptography, Data mining and Machine learning, Distributed Systems and Algorithms, Image processing, Bioinformatics, etc.
14	Mathematics	Linear Algebra, Functional Analysis, Fluid Mechanics, Cryptography, Probability & Statistics, Operation Research, Mathematical Modeling, Differential Equations.
15	Mechanical Engineering	Thermal Engineering, Computational Fluid Dynamics, Heat Transfer and Vibration Analysis, Structural Mechanics, Solid Mechanics for Composite Structure, Computational Mechanics, Smart Material, Tribology, Production Engineering, Welding Technology, Industrial Engineering, Supply Chain Management, Production and Operation Management etc.
16	Metallurgical Engineering	Multi Components Alloys, Degradation of Metallic materials in aques & high temperature environment, Development of high temperature materials, Structure property correlation, Welding, Corrosion, Solidification technology, Foundry, Metal matrix composite, Process development, Computational material design, Phase transformation, Image processing of metallurgical images, Thin films.
17	Mining Engineering	Slop & Stability, Rock Mechanics, Blasting & Rock Excavation, Mine Planning & Optimization, Surface Mining, Environment modeling.
18	Physics	<ol style="list-style-type: none"> <li>1. Luminescence</li> <li>2. Structural and electrical characterization of Perovskite materials, Perovskite and inorganic Solar cells, Nanobiotechnology: Materials and their applications.</li> <li>3. Theoretical condensed matter physics.</li> <li>4. Electronic and optical properties of materials (DFT Study).</li> </ol>