



**NATIONAL INSTITUTE OF SCIENCE EDUCATION AND RESEARCH BHUBANESWAR**  
**Advt. No. : NISER / ACAD / PhD / 2024-25 (1)**

Date: 01<sup>st</sup> April 2024

**Notice for Admission to PhD Program: 2024-25 (Summer Session)**

Online applications are invited from Indian citizens for admission to Ph.D. program scheduled to commence from August 2024 in the following schools of NISER, Bhubaneswar.

1. School of Biological Sciences (SBS)
2. School of Chemical Sciences (SCS)
3. School of Computer Sciences (SCPS)
4. School of Earth & Planetary Sciences (SEPS)
5. School of Humanities and Social Sciences (SHSS)
6. School of Mathematical Sciences (SMS)
7. School of Physical Sciences (SPS)

**1. Eligibility**

<b>School</b>	<b>Minimum Educational Qualifications #</b>
<b>Biological Sciences</b>	55% or equivalent GPA in Masters or M. Tech or M. Pharm in any branches of Agricultural Sciences, Biology, Life Sciences, Pharmacy (any specialization), Veterinary Sciences, Computer Sciences, Bioinformatics and Biotechnology. Students with Master's degree in Physics, Chemistry or Mathematics having interest in pursuing a career in Biology are also encouraged to apply. Candidates with a 4 year / 8 semester Bachelor's degree program with a minimum of 75% marks in aggregate or equivalent grade are also eligible to apply for the program.
<b>Chemical Sciences</b>	55% or equivalent GPA in Master's in Chemistry or allied Chemistry fields. Student with Master's degree in any branches of Basic Sciences with undergraduate degree in Chemistry (or Chemistry as one of the subjects) or M.Tech in applied Chemistry or Computer Sciences with interest in pursuing a career in Chemistry are also encouraged to apply. Candidates with a 4 year / 8 semester Bachelor's degree program with chemistry as major subject with a minimum of 75% marks in aggregate or equivalent grade are also eligible to apply for the program.
<b>Computer Sciences</b>	55% or equivalent GPA in Masters in Mathematics or Masters in Computer Science, or M.Tech or M.E. in Computer Science/Electronics/Electrical Engineering or related fields. Candidates with a 4 year / 8 semester Bachelor's degree program with a minimum of 75% marks in aggregate or equivalent grade are also eligible to apply for the program.
<b>Earth &amp; Planetary Sciences</b>	55% or equivalent GPA in M.Sc./M.Tech/M.E in Physics/ Astronomy and Astrophysics/Space Science/Geology/ Applied Geology/Geoscience/Geological Sciences/ Geophysics/ Earth Science(s)/Atmospheric and Oceanic Sciences/ Chemistry/ Engineering Physics/ Electrical/ Electronics/Mechanical/Civil/ Computer engineering. In addition to the above criteria, candidates with M.Sc. degrees should possess a physical, mathematical, chemical science or geological sciences based Bachelor's degree. Candidates with a 4 year / 8 semester Bachelor's degree program in Engineering Physics/ Electrical/Electronics/ Mechanical/ Civil/Computer

	engineering with a minimum of 75% marks in aggregate or equivalent grade are also eligible to apply for the program.
<b>Humanities and Social Sciences</b>	55% or equivalent GPA in Masters in Social Sciences or in allied disciplines (Public Administration, Development Studies, Rural Management, Tourism, Archeology, Population Studies, Management). Candidates with a 4 year / 8 semester Bachelor's degree program majoring in any of the above subjects with a minimum of 75% marks in aggregate or equivalent grade are also eligible to apply for the program.
<b>Mathematical Sciences</b>	55% or equivalent GPA in Master's degree examination. Candidates with a 4 year / 8 semester Bachelor's degree program with a minimum of 75% marks in aggregate or equivalent grade are also eligible to apply for the program.
<b>Physical Sciences</b>	55% or equivalent GPA in Masters in Physics or M.E. / M.Tech in Applied Physics. Candidates with a minimum 75% marks in aggregate or its equivalent grade in a 4 year / 8 semester Bachelor's degree science program with physics as one of the subjects or in a 4 year B.E/B.Tech degree program are also eligible to apply for the program.

## **2. Requirement of Qualifying in National Level Examinations for pursuing PhD program**

**School of Biological Sciences** - Candidates should have qualified at least one of the National Level Examinations i.e. CSIR-UGC-NET/GATE/JEST/GPAT/DBT-BET/ICMR/JGEEBILS or any other equivalent national level examination valid for the academic year August 2024-July 2025.

**School of Chemical Sciences** - Candidates should have qualified at least one of these National Level Examinations i.e. CSIR-UGC NET/GATE valid for the academic year August 2024-July 2025.

**School of Computer Sciences** - Candidates should have qualified at least one of these National Level Examinations i.e. CSIR-UGC-NET/GATE/JEST valid for the academic year August 2024-July 2025.

**School of Earth & Planetary Sciences** - Candidates should have qualified at least one of these National Level Examinations i.e. CSIR-UGC-NET/GATE/JEST valid for the academic year August 2024-July 2025.

**School of Humanities & Social Sciences** - Candidates should have qualified at least one of the National Level Examinations i.e. UGC-NET/GATE/ICSSR fellowship or any other equivalent national level examination in the concerned discipline/subject applied for and valid for the academic year August 2024- July 2025.

**School of Mathematical Sciences** - Candidates should have qualified at least one of these National Level Examinations in Mathematical Sciences i.e. CSIR-UGC-NET/GATE/NBHM\* or any other equivalent national level examination valid for the academic year August 2024-July 2025.

*\*A student will be considered to be qualified in National Level Written Examination conducted by NBHM if he/she has received call letter from NBHM to appear in the interview for PhD fellowship 2024 (irrespective of getting selected for NBHM PhD fellowship 2024 or not).*

**School of Physical Sciences** – Candidates should have qualified at least one of these National Level Examinations i.e. CSIR-UGC-NET/GATE/JEST valid for the academic year August 2024- July 2025.

### **Important Note:**

(a) The cut off marks for national examination such as GATE/JEST/GPAT/NBHM/JGEEBILS/CSIR-UGC-NET etc. will be further decided by each School for the relevant subject area.

(b) Students having INSPIRE Doctoral Fellowship ONLY, without qualifying any of the above-mentioned national level written examination will NOT be considered for admission to PhD program in NISER.

(c) Candidates with GPA/CGPA in qualifying degree will be required to produce supporting documents from their respective University/Institute specifying the conversion into percentage, if it is not mentioned in their mark sheet.

### **3. Fellowship**

- ₹37,000/- as Junior Research Fellowship for the first two years, and subsequently ₹42,000/- for a maximum period up to another three years as Senior Research Fellowship, subject to fulfilment of all the academic requirements stipulated by the Institute from time to time.
- Students with external fellowship from agencies viz. CSIR, UGC, etc. will be eligible to draw fellowship as per the extant rules of the respective funding agencies. Such students will NOT be considered for NISER/DAE fellowship.

### **4. Research areas in different schools for the summer intake of Academic session 2024-25 are as follows:**

#### **School of Biological Sciences**

- Cell biology of TRP ion channels; Signaling in host-pathogen interactions through extra cellular vesicles.
- Microbiome-Gut-Adipose-Brain Axis and innate mucosal immunity.
- Membrane remodeling; Reconstitution Biology, Membrane biochemistry/biophysics.
- Molecular Genetics and Epigenetics of Ageing Disorders: Neurodegeneration and Cancer
- Molecular Microbiology – bacterial persisters and anti-bacterial resistance
- Angiogenesis and Tumorigenesis Regulation – Molecular mechanistic and prognostic studies of genes controlling multiple cancer hallmarks.
- Molecular Genetic Study of Protein Biosynthesis – Molecular mechanism of the non-canonical start codon selection in eukaryotes.
- Neurobiology – neuronal circuits in feeding and reproductive behaviour; Neurological disorders, Patch Clamp Electrophysiology, Ion channel Biology.
- Structural Biology - Mechanistic insights into the functioning of a histidine kinase; Super-resolution and cryo-electron microscopy of archaeal and bacterial cytoskeleton and cell division proteins; Viral cell-entry and replication protein complexes.
- Cellular Immunology: Infection Immunity and cancer Immunology.
- Pharmaceutical Biology and Structural Bioinformatics - Computational and experimental approaches (cell-based or animal) to identify and evaluate novel anti-cancer agents.
- Ecology and Evolution - Phylogenetics, Biogeography, Behavioral Ecology, Evolution, Bio-acoustics, Gut-microbial ecology, Community dynamics.
- Plant biology - Light signalling and flowering time control in plants; Pigment biosynthesis and physiology.

For detailed information on research areas, please visit <https://www.niser.ac.in/people/fac/sbs>

#### **School of Chemical Sciences**

- Bioinorganic Chemistry
- Organometallic chemistry
- Synthetic inorganic chemistry
- Inorganic functional materials for energy conversion and storage
- Transition metals (particularly base metals) catalyzed organic transformations
- Catalysis, reaction mechanisms
- Synthetic organic chemistry, bio-organic chemistry
- Heterocyclic chemistry, medicinal chemistry and asymmetric catalysis
- Experimental Physical and Materials Chemistry
- Porous materials, membrane science and photocatalysis
- Ultrafast Laser Spectroscopy (Transient Absorption, Fluorescence Upconversion and Supersonic-Jet Spectroscopy)
- Single molecule spectroscopy and imaging

- Solar energy conversion materials (Quantum dots, 2D materials and semi-conducting plasmonic materials)
- Nanoscience, catalysis and electrochemistry
- NMR spectroscopy - methods development
- Chiroptical Spectroscopy (MI-VCD, ECD and CPL Spectroscopy)
- Theoretical and computational chemistry

For detailed information on research areas, please visit <https://www.niser.ac.in/people/fac/scs>

### **School of Computer Sciences**

- Parameterized Algorithms
- Randomized Algorithms
- Sublinear Algorithms
- Machine Learning
- Secure Multiparty Computation
- Computational Geometry

For detailed information on research areas, please visit <https://www.niser.ac.in/people/fac/scos>

### **School of Earth and Planetary Sciences**

- Exoplanets and Planetary Formation
- Planetary Atmospheres
- Cosmochemistry and Laboratory Planetary Science
- Planetary Surface Mineral Physical Chemistry
- Petrology and Geodynamics
- Earthquakes and Crustal Deformation
- Regional Climatology

For detailed information on research areas, please visit <https://www.niser.ac.in/people/fac/seps>

### **School of Humanities and Social Sciences**

- Economics - Energy Economics, Environmental Economics, Public Finance
- Psychology - Organizational Behaviour, Mental Health and Wellbeing.
- Sociology - Tourism System, Public Policy, Social Development (with specific focus on education, health and livelihood), Human-wildlife Conflict, and Society-Science Interface.

For detailed information on research areas, please visit <https://www.niser.ac.in/people/fac/shss>

### **School of Mathematical Sciences**

Algebra, Algebraic Geometry, Algebraic Graph Theory, Cryptography, Differential Equations, Differential Geometry, Discrete Mathematics, Functional Analysis, Harmonic Analysis, Incidence Geometry, Number Theory, Probability Theory, Representation Theory.

For detailed information on research areas, please visit <https://www.niser.ac.in/people/fac/sms>

### **School of Physical Sciences**

For detailed information on research areas, please visit <https://www.niser.ac.in/people/fac/sps>

## **5. Selection Procedure**

- The selection committee of the respective schools will shortlist the candidates from the applications received by the deadline. Merely satisfying the minimum qualifications does not guarantee shortlisting. The schools may set additional criteria as deemed necessary.
- The short-listed candidates will be called for an interview, supplemented by a written test, if necessary, for the admission.
- Based on the academic record and the performance of the candidates in the selection process, the selection committee will recommend candidates for admission to the Ph.D. program.

All eligible candidates called for the Test / Interview will be reimbursed return travel fare equivalent to second-sleeper class railway fare by the shortest route from their place of residence to the Institute upon production of valid documents.

## 6. **How to Apply**

- The applicant must apply online at <https://ims.niser.ac.in/OnlineApplicationRegistrationAndLogin.action> following the stepwise instructions mentioned therein to complete the application submission process. Successful submission of the online application is entirely the candidate's responsibility. NISER will not bear any liability of an incomplete application or non-submission of any required supporting document.
- Candidates intending to apply for more than one school must fill up separate online application forms for each school with appropriate supporting documents.
- NISER does not demand any application fee from the candidates for the PhD program.

## 7. **Important dates**

- Online application portal will be activated on : 1<sup>st</sup> April 2024
- Last date for filling up online application : 30<sup>th</sup> April 2024\*
- Short-listed candidates list will be uploaded on NISER website : 6<sup>th</sup> – 8<sup>th</sup> May 2024

***\*For the School of Computer Sciences online application portal will close by May 30<sup>th</sup>, 2024.***

Tentative dates for test/interview are as follows:

- School of Biological Sciences : 10<sup>th</sup> – 11<sup>th</sup> June 2024
  - School of Chemical Sciences : 18<sup>th</sup> – 19<sup>th</sup> June 2024
  - School of Computer Sciences : 1<sup>st</sup> – 2<sup>nd</sup> July 2024
  - School of Earth & Planetary Sciences : 3<sup>rd</sup> – 5<sup>th</sup> June 2024
  - School of Humanities and Social Sciences : 4<sup>th</sup> – 5<sup>th</sup> June 2024
  - School of Mathematical Sciences : 10<sup>th</sup> – 12<sup>th</sup> June 2024
  - School of Physical Sciences : 3<sup>rd</sup> – 5<sup>th</sup> June 2024
- Each school will send the call letters to the candidates separately. Kindly refer to the website for the announcement of the short-listed and selected candidates.
  - The PhD first semester registration is scheduled to be held on 2<sup>nd</sup> August 2024, and classes commence soon after that.
  - If you have any further query, kindly send an email to [cpsbs@niser.ac.in](mailto:cpsbs@niser.ac.in), [cpsc@niser.ac.in](mailto:cpsc@niser.ac.in), [cpseps@niser.ac.in](mailto:cpseps@niser.ac.in), [cpseps@niser.ac.in](mailto:cpseps@niser.ac.in), [cpschss@niser.ac.in](mailto:cpschss@niser.ac.in), [cpsms@niser.ac.in](mailto:cpsms@niser.ac.in), [cpsps@niser.ac.in](mailto:cpsps@niser.ac.in) for Biological Sciences, Chemical Sciences, Computer Sciences, Earth and Planetary Sciences, Humanities & Social Sciences, Mathematical Sciences and Physical Sciences, respectively.
  - Applicants are encouraged to visit school web page for more information on research activities.

## **Checklist for application submission**

During online submission, you will need to have the following ready with you for uploading;

- *JPEG file of your passport size photo.*
- *JPEG file of your valid signatures.*
- *Birth Certificate/ 10th pass certificate in support of date of birth.*
- *Certificate in support of category (SC/ST), only if applicable.*

- *Certificate and mark sheets in support of passing qualifying examination i.e Master's degree OR 4 Years / 8 Semester Bachelor's degree, whichever is applicable. In case the original pass certificate is not issued by University then a certificate from the University on its letterhead with seal of the concerned authority certifying the completion of degree should be submitted.*
- *Certificate/document in support of qualifying national level examination(s) viz. CSIR-UGC NET/GATE/GPAT/DBT/ICMR/JEST/NBHM or any other as applicable.*

**Dean, Academic Affairs**