



NATIONAL INSTITUTE OF SCIENCE EDUCATION AND RESEARCH BHUBANESWAR
Advt. No: **NISER / ACAD / PhD / 2022-23 (2)**

Notice for Admission to Ph.D Program: 2022-23 (Winter Session)

Applications are invited from Indian citizens for admission in the PhD program scheduled to commence from 1st **January, 2023** 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 Humanities & Social Sciences (SHSS) - *Psychology* discipline only
5. School of Physical Sciences (SPS)

1. Eligibility

School	Minimum Educational Qualifications
Biological Sciences	60% 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.
Chemical Sciences	60% or equivalent GPA in Masters 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.
Computer Sciences	60% or equivalent GPA in Masters in Computer Science/Mathematics/Electronics/Electrical Engineering or related fields.
Humanities & Social Sciences	55% or equivalent GPA in Masters in Psychology.
Physical Sciences	60% or equivalent GPA in Masters in Physics or M.E/M.Tech in Applied Physics.

2. Requirement of Qualifying in National Level Examinations for pursuing PhD programme

School of Biological Sciences – Candidates should have qualified at least one of the National Level Examinations i.e. CSIR-UGC-NET (LS or JRF) /GATE/ JEST/ GPAT/ DBT/ ICMR/ JGEEBILS or any other equivalent national level examination valid for the academic year 2022-2023.

School of Chemical Sciences – Candidates should have qualified at least one of these National Level Examinations i.e. CSIR-UGC NET (LS or JRF)/ GATE valid for the academic year 2022-2023.

School of Computer Sciences – Candidates should have qualified at least one of these National Level Examinations i.e. CSIR-UGC-NET (JRF)/ GATE/ JEST valid for the academic year 2022-2023.

School of Humanities & Social Sciences – Candidates should have qualified at least one of the National Level Examinations i.e. UGC-NET (LS or JRF)/ ICSSR fellowship or any other equivalent national level examination valid for the academic year 2022-23 in the concerned subject/discipline only.

School of Physical Sciences – Candidates should have qualified at least one of these National Level Examinations i.e. CSIR-UGC-NET (JRF only)/ GATE/ JEST valid for the academic year 2022-23.

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) *As per HBNI Ordinance, student having DST INSPIRE Doctoral Fellowship ONLY, without qualifying any other national level written examination as mentioned above at S.No 2, will not be considered for admission to Ph.D program in NISER.*
- (c) *Candidates with GPA in qualifying degree may need to produce the conversion note (in case it is not mentioned in their mark sheet) from their institution towards calculation of percentage.*

3. Fellowship

1. Students with institute fellowship from NISER will be eligible to draw ₹31,000/- for first two years, which will subsequently be enhanced to ₹35,000/- for remaining three years, subject to the condition that he/she fulfills all the requirements of the Institute that will be stipulated from time to time.
2. 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.

4. Research Areas for some Schools

School of Biological Sciences

- Regulation of cell adhesion and signaling in gastric cancer progression. (Dr.Asima Bhattacharyya Lab)
- Regulation of cell structure and functions by thermosensitive TRP ion channels (Dr. Chandan Goswami)
- Understanding the Translational Control mechanism in Eukaryotes (Dr Pankaj V. Alone Lab)
- The gut microbiota and its role on gut-adipose-brain axis to understand health in humans, mice, and organoid models using experimental and/or bioinformatic approaches (PalokAich)
- Interaction of light and auxin in shaping development in plants; Role of splice variant of constans, CO like and GIGANTEA in the regulation of Florigen (Dr. Kishore C. Panigrahi Lab)
- Neuroendocrine regulation, Neural circuitry of energy balance and reproduction (Dr. Praful S. Singru Lab)
- Cellular Regulation of morphogenesis and degradation of complex cell shapes (Dr. Renjith Mathew Lab)
- Mechanism and regulation of nuclear remodeling: Role of dynamin related protein and Endoplasmic reticulum. (Dr.AbdurRahaman)
- Molecular Genetics and Epigenetics of Ageing Disorders: Neurodegeneration and Cancer (Dr.Debasmita P. Alone)
- Molecular Microbiology: Functional significance of membrane proteins and mechanisms underlying bacterial persistence (Dr.Harapriya Mohapatra)
- Molecular Genetics of Gallbladder cancer; Angiogenesis and Tumorigenesis Regulation (Dr. Manjusha Dixit)
- Protein Engineering and Structure-Function-Dynamics studies on polysaccharide lyase. (Dr.Rudresh Acharya)
- Cell based models for characterizing small molecules in the area of drug discovery (Dr. V. BadireenathKonkimalla Lab)
- Understanding the interplay of sexual and natural selection shaping the evolutionary trajectory of acoustically communicating insect communities. (Dr.Rittik Deb)
- Host-gut microbiota interaction: Consequences of these interactions on host sexual selection and speciation? (Dr.Rittik Deb)
- Ion channel dysfunction underlying neurological disorders. (Dr. Swagata Ghatak)
- Functional genomic analysis of fruit pigment biosynthesis, accumulation and degradation in plants. (Dr.Himabindu Vasuki)

NOTE: The final number of seats filled will be the prerogative of the School and will depend upon several factors but not limited to vacancies in individual labs, suitability and aptitude of the candidate for a particular

research area etc. For more information please visit: <https://www.niser.ac.in/sbs/page/faculty-and-area-research>. Number of student intake in these advertised areas will depend on the availability of seats with individual PIs.

School of Computer Sciences

- Randomized Algorithms
- Sublinear Algorithms
- Parameterized Algorithms
- Machine Learning
- Information Theory
- Secure Multiparty Computation

School of Humanities & Social Sciences

Psychology

School of Physical Sciences

- **Condensed Matter Theory:**
Strongly correlated electron systems and many body theory, Study of the entanglement content of ground states of quantum magnets, Computational approaches to lattice models, Dirac and Weyl Physics in Topological Insulators and Graphene, Study of strong correlations in Ultracold Bosons, Multiscale Material Modelling Simulations within ab initio electronics structure and model Hamiltonian, Electronic Structure Theory, Theoretical nanoscale science, Quantum information theory, Game Theory.
- *Statistical Mechanics and Soft Matter:* Disordered complex systems, non-equilibrium statistical mechanics, active matter, polymers, colloids, stochastic processes in biology.
- **Condensed Matter Experiment:**
Domain wall dynamics, Skyrmionics&Topotronics, Spin pumping and Inverse Spin Hall effect, Organic Spintronics, Compensated/Antiferromagnetic spintronics, Anomalous and topological Hall effect in non-trivial magnets, Spin triplet supercurrent generation, Induced superconductivity in confined Geometry, Josephson Junction physics, Ion beam based Nanomaterials Research, Nanophotonics/Plasmonics, Semiconductor Device Physics, Medical Diagnostic Devices, Ultrafast dynamics, Nonlinear and Time-resolved terahertz spectroscopy, Quantum Optics and Cold Atom Research, Coherent Rydberg Excitation in Atomic Vapor, Nonlinear Optics and Lasers, Optical Parametric Oscillators and Amplifiers, Soft Matter & Biophysics, Fluid Dynamics.
- **High Energy Theory:**
Relativistic dissipative fluid dynamics, Physics of heavy ion collisions, quark gluon plasma and QCD matter, Study of Hot and dense nuclear matter, Finite temperature field theory, Numerical relativistic hydrodynamics and magneto hydrodynamics, Lattice QCD, Black Holes, String Theory, Fluid-Gravity correspondence.
- **High Energy Experiment:**
Quantum Chromo dynamic (QCD) phase diagram, Transport properties of QCD matter and various signatures of Quark Gluon Plasma, Dark Matter Search, CP violation, Neutrino oscillation, Physics related to the Top quark and Beyond Standard Model (BSM) Higgs boson(s) at the Large Hadron Collider (LHC).
- **Cosmology and Astrophysics:**
Observational Cosmology, Epoch of reionization, Galaxy formation and evolution, N-body simulations, CMB observations, dust polarization, primordial gravitational waves, starlight polarization.

5. Selection Procedure

- The selection committee of the respective schools will short-list the candidates among those who meet the minimum educational qualifications and satisfy additional criteria which each school may set 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 of the school will recommend candidates to the Chairman, Academic Council for admission to the Ph.D. program.
- All candidates called for the Test / Interview will be paid to and fro single, second-sleeper class railway fare by the shortest route from their place of residence to the Institute. They have to produce evidence (railway ticket) in support of their claim.

6. How to Apply

- The application form has to be filled up online at <https://www.niser.ac.in> and candidates should follow stepwise instructions mentioned to complete the application submission process. At the

time of application, along with this online form, the candidate should upload soft copy of the supporting documents as per the eligibility criteria.

- Candidates intending to apply for more than one school should fill up separate online application forms for each school with appropriate supporting documents.
- Two sealed letters of reference in the prescribed format with signature of the referee on the envelope should be produced by the student at the time of interview. The copy of the reference letter is available online.
- NISER does not demand any application fee from the candidates who apply for Ph.D program.

7. Important dates:

- Online application will be activated on – **08 November 2022**
- Last date for filling up online application – **22 November 2022**
- List of candidates short-listed for test/interview will be uploaded on NISER website as soon as the scrutiny is over. Dates of selection tests/interviews are as follows:

School of Biological Sciences	: 15 th – 16 th December 2022
School of Computer Sciences	: 30 th November – 1 st December, 2022.
School of Chemical Sciences	: 20 th – 21 st December 2022.
School of Humanities & Social Sciences	: 2 nd December 2022
School of Physical Sciences (SPS)	: 15 th – 16 th December 2022

- Each school will send the call letters to the candidates separately. Kindly refer to the website for the announcement of the selected candidates.
- The registration is scheduled to be held before commencement of classes. The dates will be communicated in due course of time.
- If you have any further query, kindly send an email to cpsbs@niser.ac.in, cpsc@niser.ac.in, cpseps@niser.ac.in, cpshss@niser.ac.in and cpseps@niser.ac.in for Biological Sciences, Chemical Sciences, Computer Sciences, Humanities & Social 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. 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 or any other as applicable.

07 Nov 2022

Dean, Academic Affairs