



भारतीय प्रौद्योगिकी संस्थान भुवनेश्वर
Indian Institute of Technology Bhubaneswar
Admission into Ph.D. Programme (Spring Session 2023-14)

Indian Institute of Technology Bhubaneswar invites application for admission to Ph.D. Programme from eligible candidates for the year 2023-24 (Spring Semester) in the following categories:

1. Institute PhD Scholar
2. Sponsored PhD Scholar
 - a. Sponsored by External Organization
 - b. Sponsored GoI Fellowship
 - c. Sponsored Research project under IIT Bhubaneswar

Opening date for online application : 9th October, 2023

Last date for submission of online application : 23rd November, 2023 11:00 PM

1) School of Basic Sciences:

<i>Biosciences</i>	<p>Thrust Areas in Biophysical Chemistry, Biochemistry and Microbiology (i) Protein Chemistry & Spectroscopy, Structure-Function Elucidation of Various mycobacterial and mammalian Small Heat Shock Proteins, virulence and pathogenesis of Mycobacterium Tuberculosis, exploration of therapeutic potential of peptides, Investigation of Amyloid Fibrillation and their significance in preventing different amyloid diseases</p> <p>Thrust Areas in Cancer Biology (i) Role of AAA+ ATPases in cancer (ii) Cancer drug discovery (iii) Gastrointestinal (gastic/stomach, pancreatic and colorectal) cancers and gut microbiota (iv) Role of probiotics as biotherapeutics for colorectal cancer prevention</p> <p>Thrust Areas in Chemical and Molecular Biology (i) Structure function studies on peptide or protein binding G-protein Coupled Receptors, Molecular and Cellular Biology (ii) Rational Design of Peptide / Protein as Therapeutics (Antimicrobial / Antiviral / Anti-inflammatory) (iii) Computational Biology and Bioinformatics</p>
<i>Chemistry</i>	<p>Thrust Areas in Biochemistry and Biophysical Chemistry (i) Protein Chemistry & Spectroscopy, Structure-Function Elucidation of Various Small Heat Shock Proteins Related to Different Diseases (Cataract, Leprosy and Tuberculosis). (ii) AAA+ATPase, Screening and validation of Antibacterial and Anticancer drugs</p> <p>Thrust Areas in Inorganic Chemistry (i) Synthesis and Coordination Aspects of Homo and Heterometallic Complexes; Metal Based Anticancer/Imaging Agents; Functional Materials and Luminescent Materials; Nanoparticle Based Sensors. (ii) Coordination Chemistry with an application of magnetic</p>

materials, Supramolecular assembly, MRI contrast agents, Fluorescent Chemosensors for biological molecules, ions, hazardous chemicals and explosives.

Ionic liquids as electrolytes for Lithium Ion Batteries.

Thrust Areas in Organic Chemistry

(i) Heterocyclic Chemistry, Asymmetric synthesis using chiral pool approach; Enantioselective catalysis and new reaction methods; New molecular entities with biological properties; Dipolar Cycloadditions; C-H functionalization, Pericyclic reactions, Metathesis, Umpolung chemistry, Radical chemistry, traditional & newer functional group transformations for application in marine alkaloids synthesis, terpenoids and polyketide based natural products, Anticancer and Antimicrobial activities of plant-derived natural products.
(ii) Carbohydrate Chemistry, novel synthetic methods development, Bioactive Natural and Unnatural Products synthesis
(iii) Supramolecular Chemistry, Molecular Recognition through Solid State; Metal- Organic and Covalent Open Frame (MOF and COF) Compounds.

(iv) Polymer chemistry: Synthesis of Chiral Polymers and their applications in chiral induction; Synthesis of Achiral and Chiral Resins and their applications in synthesis; PIL stabilized metal nanoparticles and their applications; Polyelectrolyte-DNA interaction studies; PILs for gas separation membranes; Synthesis of MIPs and resins for nuclear waste treatment; Synthesis of (RAFT derived) ionic, pH, temperature and solvent responsive homo- and block copolymers towards their self-assembling for drug delivery.
(v) Design, Synthesis and Characterization of Peptides using CD, Fluorescence, ITC and NMR. Redesigning known drugs for other Therapeutic applications.

(vi) Enabling technologies for organic synthesis: Photocatalysis, Synthetic organic electrochemistry, Photoelectrochemistry, Transition metal catalysis, flow chemistry.

Thrust Areas in Physical, Theoretical and Computational Chemistry

(i) Time-resolved spectroscopy on molecules and materials: Developing spectroscopic tools and photomaterials; Harvesting triplets from Singlet fission; Photophysics of thermally activated delayed fluorescence; Long-range charge separation in emerging photomaterials.

(ii) Molecular modelling; Molecular Dynamics (MD) simulations.
(iii) Development and application of multi-configurational Quantum Mechanical Methods to study energetics and dynamics of bound and transient states; Investigation of photochemical reactions in the non-adiabatic ("beyond-Born- Oppenheimer") realm; Computational modelling of chemical reactions using quantum mechanical (QM) and mixed quantum mechanical - molecular mechanical (QM/MM) methods; Investigation of bacterial resistance toward beta-lactam based antibiotic drugs using QM/MM methods.

Physics

Thurst Areas:

(i) Accelerator based atomic, molecular and surface physics: Experimental Atomic-Molecular-Surface Physics, Molecular Electronics, Scanning Tunnelling Microscopy, nanomaterial, Biomolecules, Ion beam engineered quantum materials for energy and sensing applications, Design and fabrication of Accelerator based systems, Applications of energetic ion beam in atomic, molecular and surface phenomena, Synchrotron radiation based research, High energy charged particles use and associated instrumentation developments, Structural application, modification of materials and health/medical applications.

(ii) Atomistic Modeling and Molecular Simulations: Large Scale Quantum Simulations of Nanostructures, Quantum Transport in Graphene and 2-Dimensional layered Structures, Quantum Mechanics and Molecular Mechanics, Modeling of Biological Systems, Biophysics, Energy Materials, Magnetic Materials, Materials Modeling using Machine Learning.

(iii) Experimental Condensed Matter Physics:

(a) Surface and Interface Physics: Growth, modification, novel applications, and related fundamental and applied physics aspects leading to Quantum devices and technology. This includes microscopy methods (use and development of novel methods), such as SEM, TEM, AFM, STM, Small angle X-Ray, XRD, Raman, UV-Vis.), Synchrotron Radiation Research, Ion beam applications

(b) Strongly Correlated Electron Systems: High-temperature Superconductor, Multiferroics, and magnetoelectrics, topological phases of matter; Magnetism at the nanoscale, Anomalous Hall Effect in quantum materials, Bio Magnetism, 2D dilute magnetic semiconductors

(c) Materials growth related to Energy, Quantum technology, and Strategic areas.

(d) Device Physics: Fabrication, testing, and prototyping of low-dimensional, nanostructural, and quantum phenomena-based devices and associated electronics, the mechanical design of novel devices, Energy storage materials and devices, Flexible and Stretchable Devices, Biosensors, Neuromorphic devices and networks, photovoltaic and solar cell device, Light Emitting Devices

(e) Energy storage materials and devices, Flexible and Stretchable Devices, Biosensors, Neuromorphic devices and networks, 2D materials, TMDs, and heterostructures.

(f) Soft condensed Matter, 2D dilute magnetic semiconductor, photovoltaic and solar cell device, Light Emitting Devices, Bio Magnetism.

(g) Harsh Environment Electronic Materials and their applications, Laboratory grown diamonds and electronic grade Diamond Wafers, Indigenous development of electron microscope-related technology.

(iv) Experimental High Energy Physics: Rare B and charm decays

(v) Nanophotonics and Plasmonics: Coupling Photonic nanostructures to Nano waveguides and resonators; Semi-Classical

	<p>and Quantum Interferometers; Structured Light; Flexible and Wearable Photonics; Instrumentation for Industrial Applications; Agriphotonics; Optical Devices; Biosensing</p> <p>(vi) Theoretical Condensed Matter Physics/Statistical Mechanics: Quantum Dissipation & Decoherence, Open quantum system, Quantum Transport, Non-equilibrium Phenomena like the study of first passage properties (Classical & Quantum), persistence and related topics, Topological Order, Integrable systems</p> <p>(vii) Theoretical High Energy Physics: Classical and Quantum Gravity, Mathematical Physics, String Theory, Black Hole Thermodynamics and Phase transitions, AdS/CFT Correspondence, Quantum Field Theory, gauge theory, Mathematical aspect of QCD</p> <p>Computational soft matter and biophysics: phase transitions and critical phenomena, phase behavior and wetting phenomena of flexible and semi-flexible polymers, polymer nanocomposites, self-assembly of colloids, cellular uptake of deformable nanoparticles, and active matters.</p>
<i>Mathematics</i>	<p>Complex Analysis, Complex Dynamics and Fractals, Functional Analysis, Vibrational inequalities, Complementarity problems, Algebra, Combinatorial Matrix Theory, Spectral Graph Theory, Data mining, and Portfolio Analysis, Soft Computing, Optimization Theory, Numerical Analysis, Fluid Dynamics, Bio-fluid dynamics, Computational Fluid dynamics, Numerical Methods for PDEs, Probability Theory and Random Matrix Theory, Queueing Theory, Stochastic models, Applied Probability, Control of Queues.</p> <p>Number Theory, Stochastic Partial Differential Equations.</p>

2) School of Earth, Ocean & Climate Sciences:

<i>Atmosphere and Ocean Sciences</i>	<p>Satellite and Physical Oceanography; Ocean Dynamics; Monsoon; Extreme Weather Events; Atmosphere and Ocean Modeling; Atmospheric Aerosols and Climate; Energy and Climate; Urban Weather and Climate; Ocean Biogeochemistry; Machine learning applications in Climate Sciences.</p>
<i>Geology</i>	<p>Structural Geology; Landslides; Hydrogeochemistry; Ocean Chemistry: Geothermics; Environmental Geochemistry; Rock Mechanics; Unconventional energy; Paleooceanography and Paleoclimatology; Environmental Geology; Micropaleontology; Crust-mantle interaction; Mobility of metals; Mafic-ultramafic rocks; Geochemistry of marine deposits.</p>

3) School of Electrical Sciences:

<i>Computer Science</i>	<p>Artificial Intelligence, Machine Learning, Natural Language Processing, Internet-of-Things, Cyber-Physical Systems, Multi-Robot Systems, Distributed Systems, Algorithms, Computer Vision, Visual Surveillance, Intelligent Transportation Systems, Software Defined Networks, Cryptography and Network Security, Formal Methods for Testing and Verification, Languages, Compilers, High Performance Computing Architecture.</p>
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<i>Electronics and Communication Engineering</i>	Integrated Circuits and VLSI Systems, Semiconductor devices, Antennas and Arrays, Augmented and Virtual Reality, Biomedical Signal Processing, Cognitive Radio, Digital Signal Processing, Image and Video Processing, Computer Vision, Information Theory and Coding, RF and Microwave , Multimedia, Communication Systems, Optical Communication, Fiber Sensors, Speech Processing, Wireless Communications.
<i>Electrical Engineering</i>	Renewable Energy Systems, Micro-Grid and Smart-Grid, Power System Protection, Power Quality, Power System Operation and Planning, Power Electronics and Drives, Control System, Electric Vehicle, Electric Machine Design, High Voltage Engineering.

4) School of Humanities, Social Sciences and Management:

<i>Economics</i>	Open macroeconomics and Natural Resource Economics. Environmental Economics, Natural Resource Management and Rural Development, Climate Change, Mining Economics, Financial Management, Health Economics, Transportation Economics, Financial Economics, Behavioural Economics, Energy Economics & Health Economics, Finance, Political Economics, Public Economics, Development Economics, Labour Economics, Law and Economics, Dynamic Macroeconomic Modeling, Empirical Financial Analytics, Time-Frequency Financial Analysis, Empirical Industrial Organisation.
<i>English</i>	Commonwealth Studies, Indian Diaspora Literature, Travel Writings/Autobiographies/Memoirs, Indian Writing in English. Postcolonial World Literature, Native North American Literature, Indigenous Literature Written in English, Indian Writing in English, ELT, Cross-cultural Communication, Business Communication, Eco Lit, Memory Studies, Gender and Sexuality Studies, Nationalist Thought, Comparative Mythology and Culture Studies English Language Teaching, Applied Linguistics.
<i>Psychology</i>	Cognitive Science, Cognitive Science and Memory, Psychology of Cognition and Emotion, Cognitive Psychology, Cognitive Neuroscience, Psycholinguistics, Neurolinguistics, Social Cognition and Social Psychology, Positive Psychology, Forensic and Criminal Psychology, Cross Cultural Psychology, Cyber Psychology, Clinical Psychology, Mental Health of Marginalized Populations, Health Psychology, Cultural Psychology, Qualitative Research in Social Science, Community Psychology.
<i>Philosophy</i>	Applied Philosophy, Environmental Ethics, Indigenous Values, Existentialism, Phenomenology, Philosophy of Language, Indian Philosophy, Public Philosophy, Feminist Philosophy, Feminist phenomenology.

5) School of Infrastructure (Civil Engineering):

<i>1. Water Resources Engineering:</i>	Fluvial hydraulics, Hydrology, Watershed management, Flow through emergent and submerged rigid and flexible, Anthropogenic impacts on river basins, Physical and numerical modelling of flow and sediment transport; Application of Computational Fluid Dynamics
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	(CFD) in hydraulic design, Remote sensing, Glaciology, Disaster risk management.
2. Structural Engineering:	Structural Dynamics, Earthquake Engineering, Self-centering Systems, Analysis and design of reinforced concrete structures, Dynamic Soil-Structure Interaction, Concrete Technology, Mechanics of laminated composites, Solid and Structural Mechanics, Topology optimization, Meta-materials, Modeling of brittle and ductile fracture, Modeling of Residual stress in composites, Building Information Modeling (BIM) with Mobile Robotic Platform (MRP), Retrofitting of heritage structures, Structural Health Monitoring; Machine Learning and Deep Learning; Computer Vision techniques; Digital twin engineering, Smart Materials and Structures Non-local theory, and constitutive modelling, Energy efficient buildings, Static and dynamic instability of thin-walled structures.
3. Geotechnical Engineering:	Dynamics of Soil and Foundation, Offshore Geotechnology, Geotechnical Earthquake Engineering, Soil-structure Interaction, Geotechnics of Soil Erosion, Ground Improvement, Environmental Geotechnics.
4. Transportation Engineering:	Public Transportation, Non-motorized transportation, Green Transportation, Safety and Security aspects of Urban Traffic, Travel Behaviour, Traffic System Analysis, Transport Economics, Traffic Engineering, Intelligent Transportation System, Performance-Based Geometric Design of Highways, Road Safety, Alternative Materials for Road Construction, Bitumen Rheology and Ageing of Bitumen, Design of Low Energy Asphalt Mixes, Pavement Recycling, Design of Climate Resilient and Sustainable Pavements, Transportation Geotechnics, Pervious Concrete Pavements
5. Environmental Engineering:	Water and Wastewater Treatment, Solid Waste Management, waste to Energy Sustainable natural wastewater treatment.

6) School of Mechanical Sciences:

Mechanical Engineering	Fluid Mechanics, Turbulence, Computational Fluid Dynamics, Large Eddy Simulation, Fluid-structure interaction, Aero and hydrodynamic propulsion, Heat Transfer, Inverse Heat Transfer, Two-Phase Heat Transfer, Bio-Heat Transfer, Thermal System Optimization, Radiation Heat Transfer in Participating Medium, Conjugate Heat Transfer, Thermal energy storage system, modeling of cryopreservation, Atmospheric Radiation, Remote Sensing, Electronics cooling and Thermal Management, Aerodynamics Flow Control, Flapping wings, Wind Turbine, Experimental Combustion, Energy Systems, Sustainable Fuels, Reacting & Non-Reacting Flow Diagnostics, Combustion Modelling, Acoustics, Composite Materials, Sandwich Structures, Fracture Mechanics, Smart Composite Structures, Vibration, Solid Mechanics, Robotics, Biologically inspired robotics, Human assistive devices, Industrial Noise Control, Condition Monitoring, Multiscale methods for Fracture, Molecular Dynamics; Fracture in Multiphysics problems; structural dynamics, Non-linear elasticity, Mechanics of inflatable structures,
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	<p>Experimental modal analysis, Sensors, Discrete Element Modelling; Deformable granular materials; Discrete model for shape memory alloy, Biomedical image processing using Artificial Intelligence and Deep Learning, Autonomous underwater navigation and structural health monitoring using computer vision, Conventional Machining, Modelling & Simulation of Machining Processes, Sustainable Machining, Machining of Super alloys, Computer Aided Manufacturing, Cellular Manufacturing, Reverse Engineering, Laser Material Processing, Laser-based additive manufacturing/cladding, Pulse Heat Transfer in Manufacturing Analysis, Non-conventional Machining, Hybrid machining techniques, Machining of ceramic and hard materials, Surface texturing, Micro-machining and Tribology. Dissimilar high-strength alloy welding, Hot wire TIG welding of superalloys, Modelling of arc welding processes, residual stress and distortion control in welded structures, TIG cladding and laser treatment for cutting tool life enhancement, Residual stress control in multi-metallic wire arc additive manufacturing (WAAM), LVOF and HVOF based TBC and wear resistance coating, Modelling, and Friction stir welding (FSW) of Al and Mg alloys, FSW tool design, residual stress control in friction stir welded joints, investment casting of high-temperature alloys, manufacturability and synthesis of in-situ MMC of Al and Mg alloys, Incremental forming of hard metals, Post-processing of 3D-printed parts, Electrochemical 3D Printing (EC3DP), Metal Forming, Plasticity, Mechanical behavior of Materials.</p>
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7) School of Minerals, Metallurgical and Materials Engineering:

<p><i>Minerals, Metallurgical and Materials Engineering</i></p>	<p>Physical Metallurgy:</p> <p>Aluminium-based alloys and composites, Recycling of aluminium alloys, Semisolid metal processing, Processing, Characterization and Modelling of High Entropy Alloys; Light weight High Entropy Alloys; High-entropy alloy based composites; Specialty alloys for marine applications; Coatings for technological applications, Corrosion of advanced materials, Recrystallization behaviour and grain boundary engineering, High entropy alloy thin films; High entropy alloys for extreme environments</p> <p>Energy and functional materials:</p> <p>Photovoltaics with oxide perovskites and double-perovskites; Piezoelectric-polymer composites for energy harvesting; Materials for metal-ion batteries; Hydrogen storage materials; Energy materials, Batteries, Electro-spraying, Multi-ferroic oxide solar cells and Conventional solar cells. Ab-initio studies in functional and energy materials, Thermoelectric materials, Thermal and electrical properties of nanostructured materials, Biocomposites</p>
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	<p>Materials processing:</p> <p>Process metallurgy, Iron and Steel Making, Non-ferrous Extractive Metallurgy, Dissimilar joining: experiments and modeling in Friction Stir Welding, Additive Manufacturing, Hydrogen based alternative ironmaking processes; Powder metallurgy of nanocrystalline materials, Surface engineering; Stainless steel and Ferroalloy Production, Hybrid joining</p> <p>Mechanical metallurgy:</p> <p>Severe plastic deformation of light metals and alloys, Strain-rate sensitivity in metals and alloys, Superplasticity, Virtual characterization using crystal plasticity based finite element modelling; Tribology of aluminium alloys; Mesoscale experimental mechanics; Creep and fatigue of advanced materials</p> <p>Modelling, Simulation, Process control and Automation:</p> <p>Phase-field modelling of microstructural evolution; Implementation of crystal plasticity in the Abaqus package; Prediction of forming limit diagram using two-phase materials using crystal plasticity; Chaos analysis of dynamical systems; Kinetic and thermodynamic modeling of extractive Metallurgical processes; Process Optimization, Chaos control and dynamic process control, Nonlinear dynamical systems' control in iron and steelmaking; Application of AI techniques; Coupled FEM-DEM modelling.</p>
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Minimum Eligibility Criteria for Application:

An interested candidate meeting the below listed category wise minimum eligibility criteria may apply for the PhD programme. The minimum eligibility criteria do not guarantee either shortlisting or selection, for the admission. Applications not meeting minimum eligibility criteria will be rejected without any intimation and the application fee will not be refunded.

The minimum eligibility criteria refer to the minimum academic qualification to be met by the applicant at the time of applying for the admission. Relaxation up to 5% marks in all academic examinations is permitted only for SC/ST/PwD candidate categories, over General/OBC(NCL) categories, as per Govt. of India (GoI) guidelines. This is applicable to applicants under both Institute and Sponsored PhD Scholar categories.

Candidates possessing the minimum eligibility criteria are eligible to receive **Institute Research Assistantship** or **UGC/CSIR-NET Junior Research Fellowship (JRF)** or **any other doctoral fellowship offered by Govt. of India (GoI)**, as applicable, on joining the PhD programme.

Category 1 - Institute PhD Scholar

Institute PhD Scholar refers to the PhD student who receives **Institute Research Assistantship** sanctioned the Ministry of Education (MoE) and offered through the institute. Eligibility criteria for different schools are as follows.

School wise Eligibility Criteria:

School	Eligibility Criteria
All Engineering Schools [School of Electrical Sciences (SES), School of Infrastructure (SIF), School of Mechanical Sciences (SMS), School of Minerals, Metallurgical and Materials Engineering (SMM&ME)]	1. M. Tech./ME or equivalent degree in appropriate disciplines, with minimum 60% marks or 6.5 CGPA (in a 10-point scale). The candidate must be GATE qualified in an appropriate discipline. OR B Tech/BE or equivalent degree in appropriate disciplines with minimum 70% marks or 7.5 CGPA (in a 10-point scale). The candidate must be GATE qualified in an appropriate discipline. 2. Minimum 60% marks or 6.5 CGPA (in a 10-point scale) required in all other examinations from Class 10 onwards. A single relaxation up to 5% marks in secondary/higher secondary/equivalent is permitted.
School of Humanities, Social Sciences and Management (SHSS&M)	1. Minimum of 55% marks or 6.0 CGPA (in a 10-point scale) in Master's degree in appropriate Humanities and Social Sciences disciplines. 2. Minimum 55% marks or 6.0 CGPA (in a 10-point scale) required in all other examinations from Class 10 onwards. A single relaxation up to 5% marks in secondary/higher secondary/bachelor's degree/equivalent is permitted. 3. The candidate must be GATE or CSIR-UGC NET (LS) qualified in an appropriate discipline.
School of Basic Sciences (SBS)	1. Minimum 60% marks or 6.5 CGPA (in a 10-point scale) in Master's or equivalent degree in appropriate disciplines. 2. Minimum 60% marks or 6.5 CGPA (in a 10-point scale) required in all other examinations from Class 10 onwards. A single relaxation up to 5% marks in secondary/higher-secondary/bachelor's degree/equivalent is permitted. 3. The candidate must be GATE or CSIR-UGC NET (LS) qualified in an appropriate discipline.
School of Earth, Ocean and Climate Sciences (SEOCS)	1. Minimum 60% marks or 6.5 CGPA (in a 10-point scale) in Master's or equivalent degree in appropriate disciplines. OR B Tech/BE or equivalent degree in appropriate disciplines with minimum 70% marks or 7.5 CGPA (in a 10-point scale). 2. Minimum 60% marks or 6.5 CGPA (in a 10-point scale) required in all other examinations from Class 10 onwards. A single relaxation up to 5% marks in secondary/higher-secondary/bachelor's degree/equivalent is permitted. 3. The candidate must be GATE or CSIR-UGC NET (LS) qualified in an appropriate discipline.

GATE / NET Disciplines for PhD admission:

School Name	GATE Discipline	UGC-CSIR-NET (LS) Discipline
SHSS&M	1. Economics 2. English 3. Psychology 4. Philosophy	1. Economics 2. English 3. Psychology 4. Philosophy

SES	<ul style="list-style-type: none"> • Electrical Engineering (EE) • Instrumentation (IN) 	
	Computer Science and Information Technology (CS)	Computer Science and Applications (Code-87)
	<ul style="list-style-type: none"> • Electronics and Communication Engineering (EC) • Instrumentation Engineering (IN) • Electrical Engineering (EE) 	Electronic Science (Code-88)
SEOCS	<ul style="list-style-type: none"> • Geology (GG) 	Earth, Atmospheric, Ocean and Planetary Sciences
	<ul style="list-style-type: none"> • Atmosphere and Ocean Science (AS, CE, CS, GG, IN, ME, XE, PH, MA) 	<ul style="list-style-type: none"> • Earth, Atmospheric, Ocean and Planetary Sciences • Physical Sciences • Mathematical Sciences
SIF	Civil Engineering (CE)	
SMS	Mechanical Engineering (ME) Production Engineering (PI) Aerospace Engineering (AE) Chemical Engineering (CH) Biotechnology (BT) Biomedical Engineering (BM)	
SMMME	<ol style="list-style-type: none"> 1. Metallurgical Engineering (MT) 2. Mechanical Engineering (ME) 3. Engineering Sciences (XE) 4. Production and Industrial Engineering (PI) 	
SBS	<ol style="list-style-type: none"> 1. Physics 2. Chemistry 3. Mathematics <ul style="list-style-type: none"> • MA (Mathematics) • ST(Statistics) • CS (Computer Science and Engineering) 4. Biosciences <ul style="list-style-type: none"> • Biotechnology • Life Sciences 	<ol style="list-style-type: none"> 1. Physics 2. Chemistry 3. Mathematics <ul style="list-style-type: none"> • MA (Mathematics) • ST(Statistics) • CS (Computer Science and Engineering) 4. Biosciences <ul style="list-style-type: none"> • Life Sciences

In addition, the following categories of candidates will be **automatically shortlisted (they need not be GATE/CSIR-UGC NET (LS) qualified)** to appear for the written test:

- B.Tech. and Dual Degree /Equivalent students of IIT Bhubaneswar and other IITs having **CGPA >= 8.0**
- IISc M.Tech/M.Sc. degree holders with **CGPA>=8.5**

Category 2 - Sponsored PhD Scholar

There are three types of sponsored PhD scholars in the institute (**Self-sponsored category are not to be considered**). Eligibility criteria for each of these categories are as follows.

1. Sponsored by External Organization

PhD scholars joining under this category do not receive any financial support from the institute. They must be in continuous service for at least three (3) years in any one of the following categories of organizations where appropriate R&D facilities exist:

- a. Departments and Ministries of the GoI or any other government organizations
- b. Established industrial research and developmental organizations
- c. Recognized autonomous bodies and public undertakings
- d. Recognized universities/colleges.
- e. Established industries

Candidates under this category need not be GATE or CSIR-UGC NET (LS) qualified. All other academic qualifications under **Category 1** apply to these candidates. Candidates must submit Sponsorship Certificates as per the prescribed format at the time of application; otherwise their applications will not be considered.

2. Sponsored GoI Doctoral Fellowship (CSIR—UGC, DST-INSPIRE, DBT, ICMR etc.)

Candidates having CSIR-UGC NET (JRF) or any other doctoral fellowship offered by GoI are eligible to apply under this category. PhD scholars joining under this category receive financial support from respective GoI doctoral fellowships. They must meet the same minimum academic qualification applicable for **Institute PhD Scholar** as under **Category 1**. These candidates need not be GATE qualified.

3. Sponsored Research Project under IIT Bhubaneswar

Persons who possess the minimum prescribed qualifications as mentioned in **Category 1** and are already working in a sponsored project of the Institute as JRF/SRF/equivalent availing minimum fellowship as that of Institute PhD scholar shall be eligible for applying to the Ph.D. program under this category. These candidates must be GATE/CSIR-UGC NET (LS) qualified.

For this category of candidates, the followings also apply:

- A. They receive assistantship from the fund available in the project under the personnel/manpower budget head (to be referred as Project Fund now onwards) and the fellowship amount is at least equal to that of Institute PhD scholar.
- B. The remaining period of the project fund (in a single project) as well as the remaining tenure of the same project should be at least 2 years from the date of enrolment in the PhD program in the Autumn/Spring Semester as per the academic calendar (if selected).

Category 3 - Joint MSc-PhD Students of IIT Bhubaneswar (only for Autumn Semesters admission)

(Refer to **MSc regulation – Modalities for Enrolment in PhD Programme** for more detail)

This programme is applicable for bright and motivated students pursuing MSc programmes at IIT Bhubaneswar. Applicants must have completed third semester. Students securing CGPA ≥ 8.5 after their third semester are automatically shortlisted for appearing the selection test for joining the PhD programme in the following Autumn semester. They are required to submit a declaration towards joining the PhD program within two weeks of declaration of the third semester result. Students who have not submitted the said declaration in time will not be considered for selection test.

Their selection test will be conducted along with the Autumn semester PhD admission of the institute. There will be a discipline wise cap of 10% of the sanctioned strength (rounded upward) on the number of students who can avail this option. They will be enrolled for the PhD programme in the Autumn semester, if selected after the selection tests.

Selection Procedure:

All shortlisted candidates (**except the candidates under Category-2 (Sl. No. 1)**) will have to appear for both the written test and the interview. The Ph.D. selection to be based on **40%** weightage in a written test and **60%** weightage in an interview. The schools can fix cut-offs for written test and/or interview based upon the requirements. The final selection will be based on combined performances in the written test and interview. For the candidates under **Category-2 (Sl. No.1)**, the selection will be based on interview performance only. There will be no written test for Category-2(Sl. No.1) candidates.

Application Fee:

For General, General (EWS) and OBC Candidates : Rs. 500/- (Rupees Five Hundred Only)

For SC/ST/PwD Candidates : Rs. 250/- (Rupees Two Hundred Fifty Only)

N.B.

- **Application Fee (Non- refundable): USD 50 for all category (Foreign Nationals).**
- **Application fee once paid shall not be refunded under any circumstances.**
- **Female candidates are exempted from payment of application fee.**
- **Mere fulfilment of minimum eligibility criteria does not entitle a candidate to be shortlisted.**