INDIAN INSTITUTE OF ENGINEERING SCIENCE AND TECHNOLOGY, SHIBPUR

PhD Admissions in July 2017

On-line applications are invited from Indian nationals for admission to the PhD programme, July 2017 as JRF.

Eligibility:

Essential: Post Graduate Degree in basic Science with NET/GATE/SLET qualification or Graduate Degree in Professional Course with NET/GATE/SLET qualification or Post Graduate Degree in Professional Courses.Minimum marks required in the qualifying degree examination is 60% or equivalent CGPA.

[Note: i) Graduate Degree holder in professional course may apply in exceptional cases and required to take more courses to fulfill the prerequisite as per our regulations

ii) For candidates other than post graduate in professional courses NET/GATE/SLET is a must for getting the scholarship]

Desirable: Matching specialization in the Master degree as per the broad area of research as specified by the department/school/center is desired.

For self sponsored candidates NET/GATE/SLET is not mandatory

Age: For Institute scholarship: 32 years as on 1 July 2017.

No age bar for the candidates who wants to pursue the PhD programme without any scholarship as self sponsored candidate. They will not have any claim to institute scholarship.

[Note: For SC/ST/PwD and women candidates an overall minimum of 55% marks (or equivalent in the Grade point system) and an age relaxation up to 5 years are applicable]

Reservation for SC/ST: As per rules

Above eligibility is the minimum requirement only. Good academic career and higher qualification is preferredand mere eligibility does not ensure a call for admission test and/or Interview. A screening of applications willbe made to prepare a short list of candidates who will be called for admission test and/or Interview. Further screening will be done after the admission test to select the candidates for the interview.

Application (Fees etc.)

- An applicant may make separate applications (with separate draft for each application) to more than one unit if he/she fulfills the eligibility criteria for that unit.
- Applicants need to pay Rs. 300/- (Rs. 150/- for the SC/ST/PwD/Women candidates) by demand draft/pay order addressed to "REGISTRAR, IIEST, Shibpur" and payable at Kolkata.
- The draft (details given by the candidate in the application form) along with the copy of the completed application form together will be treated as admit card and the draft(s) would be collected from the candidates during the test.

Test:

- A common admission test for all candidates.
- Candidates applied for multiple units (dept./centre/school) need be appear in the common test and hand over all the drafts.
- 1½ hr MCQ type with two and a half marks for each correct answer and minus half marks for each wrong answer.
- Question will be based on Secondary+ level Arithmetic, logical reasoning and English.

Interview:

- There will be separate interviews in the unit level and candidates clearing the common test could appear multiple interviews if he/she has applied for those units.
- Interview will be held in the respective Department/School//Centers and interaction would be based on the general and broad area of research interest of the aspirants.

Areas of research: The broad area of the research is included but not limited to the areas shown in Appendix I as well as the PhD Brochure.

Important Dates:LAST DATE OF APPLICATION: 25 May 2017 (Dates may change: Consult www.iiests.ac.in for latest information under the current admission section for the PhD programme)

Application: i) On-line Application starts ii) Notification of Shortlisted Candidates forTest	Date & Time of the TEST and venue	Notification of Shortlisted Candidates after test for interview	Date & Time i) Interview ii) Publication of the result	Admission cum enrollment
i) 11 May 2017 ii) 1 June 2017 (in the notice board of the respective Unit/website)	**Friday: 9 June 2017: 12:00 PM to 1:30 PM** Venue: (To be notified)	16 June 2017 5:30 PM (in the Notice board of the respective unit /Website)	i) 21 to 23 June 2017. 10 AM onwards in the respective unit. ii) Publication of the result in the notice board of the respective unit and onthe website: 5:30 PM on 25 June 2017	26 to 29 June 2017 from 11 AMonwards. (verification of the of the original documents (Office of the Dean (academic)) followed by payment of fee (UCO Bank, BESU Barnch) and enrollment(Office of the Dean (academic))

Note: Vacant seats after admission will be filled-in from the wait-listed candidates. Date of publication to fill-in the vacant seats is 4 July 2017. The date of admission for such candidates is 6 July 2017.

Documents for admission:

Candidates selected for admission/enrollment (26 to 29 June, 2017) must come prepared with all original certificates for verification of documents. They are also supposed to submit the photocopies of all their certificates, two passport size photographs and certificate for the blood group. The programme starts on 17 July 2017.

Verification CHECKLIST for admission

The candidates are supposed to show the original mark-sheets and certificates and submit the copies of the following

i) M.E/M.Tech/M.Sc/MA mark-sheet (Appropriate Master Degree Mark-sheet/certificate) or B.E/B. Tech certificate (as the case may be)
ii) GATE/NET/SLET Score card/Selection letter; if applicable
iii) Proof of date of birth.
iv) Community certificate (SC/ST) from a competent authority; if any
v) PWD certificate from the competent authority
vi) Migration Certificate (in original)

APPENDIX I

The broad areas of research offered by the units are given to help the aspirants choosing their field of research. These areas may be indicated at the time of interview by the selected candidate for a focused discussion and choice of supervisor.

Department / School / Centre	**Sl. No.**	**Broad Area**
Aerospace engineering and applied mechanics	1	Fibre-reinforced composite. FEM
	2	Mechatronics, Robotics, Automation CAD/CAM, Fluid Power, System and Control
	3	Turbulence, Fluid mechanics, Aerodynamics
	4	Material Design/ Biomechanics
	5	Earthquake Engg & Structural/Soil Dynamics
	6	Earthquake Engg & Structural Dynamics
	7	Fluid Mechanics, Hydraulic Structures
	8	Plasticity, Fatigue, Fracture
	9	Microfluidics, CFD, Themo-Fluid Engg
	10	CFD, Fluid Mechanics, Heat Transfer
Architecture, Town and Regional Planning	1	Urban & Regional Planning
	2	Remote Sensing &GIS
	3	Housing
	4	Environmental Planning
	5	Architecture
	6	Architectural / urban heritage conservation
	7	Cultural heritage disaster risk mitigation and management
	8	Urban disaster risk mitigation and management
	9	Vulnerability studies with respect to built environment
	10	Architectural history and theory
	11	Urban studies
	12	Sustainable Planning
	13	Mathematical Models in Planning
	14	Transportation Planning
	15	Planning in Ecologically Fragile Areas
	16	Disaster resistant architecture
	17	Rural Planning
	18	Landscape Urbanism
	19	Environmental Planning and Conservation
	20	Environmental urbanism
	21	Thermal Performance and Energy Efficiency of Vernacular Architecture
Centre for Healthcare Science and Technology	1	Early cancer diagnosis, Stem cell and Regenerative medicine
	2	Biomaterial, 3D printing, Tissue Engineering, Nanotechnology
	3	Neurodegenerative disease, cancer therapy, medicinal chemistry
	4	Safety Engineering
Chemistry	1	Synthesis of thin film semiconductors and their applications
	2	Theoretical Chemistry (Electronic Structure Theory and Chemical Dynamics in condensed phases)
	3	Synthetic organic and organometallic chemistry

	4	Coordination and Bio-inorganic Chemistry
	5	Photoelectrochemistry
	6	Corrosion – Electrochemistry
	7	Design and Synthesis of Chemical Sensor and Chemodosimeter
	8	Synthesis of hydrogel and organogel and their applications
	9	Nano-materials/Heterogeneous catalysis
	10	Homogeneous Catalysis and Bio-inspired Coordination Chemistry
	11	Synthesis of different types of nano materials and their various applications
Civil Engineering	1	**Environmental Engineering** - Industrial Water Pollution Control - Heavy metal removal by nano-membrane - Removal of emerging contaminants - Eco-toxicity of emerging contaminants. - Advanced Materials for Water and wastewater treatment
	2	**Structural Engineering** - Earthquake Engineering - Stochastic Structural analysis - Structural Dynamics, - Wind Engineering - Composite Structure and Materials - Vibration Control - Structures under uncertainty - Structural Health Monitoring
	3	**Transportation Engineering** - Cost effective pavement materials - Pavement design modeling - Traffic Engineering - Transportation Planning
	4	**Water Resources Engineering** - Climate Change, - Urban Hydrology - Application of Remote Sensing and GIS
	5	**Geotechnical Engineering** - Reinforced Soil - Environmental Geotechnical Engineering - Soil Dynamics - Geotechnical Earthquake Engineering - Ground Improvement - Dynamic Soil Structure Interaction - Deep Foundation
Computer Science and Technology	1	Video and Audio data Analysis
	2	Crop disease Analysis
	3	Data Management in energy-starved wireless network
	4	Data and Knowledge Engineering
	5	Image Processing and analysis
	6	Natural Language Processing
	7	Intruder detection, Hardware Trojan attacks and cellular automata
	8	Computational architecture for next generation sequencing
	9	Hardware architecture for routing scheme
	10	Application of digital geometry in image processing

	11	Big data analysis and application
	12	Machine learning data mining
	13	Internet of Things based security
	14	Approximate Computing/Stochastic Computing
	15	Internet of Things for Disaster Management
	16	5G Cellular Network
	17	Pattern recognition and image processing
Earth Sciences	1	Structural Geology
	2	Geohydrology
	3	Sedimentology
Electrical Engineering	1	Applications of Magnetostriction in Energy Harvesting
	2	Operation and Control of Distribution System with Electric Vehicles
	3	Analysis of distributed energy resources and micro grid
	4	Renewable Energy integration
	5	Tuning Methods for Cascade Control
	6	Matrix Converter as Frequency Changer
	7	Control Systems
	8	Development of Nano fluids for Power and Energy Applications
	9	Development of Intelligent Controller for Robotics Applications
	10	Application of Finite Element Method to problems pertaining to Electrical Machines.
Electronics & Telecommunication Engineering	1	Hardware software co-design in signal processing
	2	Electronic properties of nano structure and influence of microwave radiation
	3	Study on EMI
	4	4G communication
	5	Biomedical Application of EM theory
	6	VLSI architecture design for DSP
	7	Nano structure semiconductor based gas sensors Devices
	8	Communication in smart grid , Dynamic spectrum access/ Harvesting
Humanities and Social Sciences	1	Environmental Economics / Environmental Studies
	2	Management and Entrepreneurship
Information Technology	1	Hardware Security
	2	Study and design of algorithms for adhoc wireless sensor network
	3	Image analysis using geometric structural characterization
	4	Memristor based Design and Synthesis
	5	3D IC Test techniques and Hardware security
	6	Brain Image Analysis
	7	Memristive modeling and Neuromorphic Computing
	8	Design of Scalable Multi and Manycore Systems
	9	MIMO and Cooperative Diversity in 5G
	10	Outage Secrecy in Relay based multihop cognitive radio networks
	11	Crowdsourcing
	12	Study and Development of a Smart System for a Water Distribution Network
	13	Study and Design of Opportunistic Network
	14	Digital Microfluidic biochip design and test
Mathematics	1	Fracture Mechanics
	2	Astrophysics and Cosmology
	3	Fuzzy Optimization
	4	Fuzzy Mathematical Systems
	5	Thermo elasticity
	6	Neural Network

	7	Mathematical Biology
	8	Mathematical Ecology
	9	Mathematical Theory of Reliability
	10	Optimization, Operational Research
	11	Theory of Relativity
	12	Mathematical Analysis
	13	Fluid Mechanics
	14	Imprecise Mathematics
	15	Nonparametric Methods
Mechanical Engineering	1	IC engines fuels and Combustion
	2	CFD and Numerical Heat transfer
	3	Tribology and Bio-tribology
	3	Manufacturing, Cutting tool development using advanced materials
	4	Energy Technology / Renewable Energy
	5	Fracture Mechanics
	6	Non-conventional machining process
	7	Engineering ceramics
Metallurgy and Materials Engineering	1	Micro-alloyed fine pearlitic steel
	2	Magneto caloric effect in nanostructured systems.
	3	Metal Matrix nanocomposite
	4	Carbide-free bainitic ultrahigh strength steel
	5	Rheo Casting
	6	Al-Li Alloy
	7	Wear and Friction of Steels
	8	Metal Matrix nanocomposite
	9	Diffusion Bonding
Mining Engineering	1	Biomining-
	2	Coal Washing
	3	Engineering of overburden dumps
	4	Environmental Management/ Environmental Impact Assessment/ Mine Closure/ Environmental Pollution Control
	5	Geomechanics
	6	Geomechanics of carbon sequestration in saline aquifer
	7	GIS and Remote Sensing pplication
	8	Mine Ergonomics
	9	Mineral Beneficiation
	10	Quality Assuirance of Mined Coal
	11	Safety Analytics
	12	Stochastic Optimization of Mining Complexes and Mineral Value Chains
	13	Surface Mining
M. N. Dastur School of Materials Science and Engineering (MNDSMSE)	1	Computational Materials Design/ Nanomaterials and nanophase ceramics (bulk and coating) in biomedical application
	2	Polymer processing, Natural fiber based bio-composites, Polymeric Biomaterials
	3	Electro Chemistry, energy storage material, shape memory alloy
	4	Carbon based nano structure for super capacitor and water purification technology
Physics	1	Nanomaterials , Composites and Hybrids for Green energy generation
	2	Studies on compact stars
	3	Optical properties of Rare earth doped glasses and Rare earth Nano-materials
	4	Nuclear Physics applications to stellar evolution
	5	Theoretical Atomic Physics

	6	Nanomaterials, device Physics, & Instrument development
	7	Experimental Nuclear structure study in Sd-Pf region
Purabi Das School of Information Technology	1	Decision Making in Big Data Environment using Computational Intelligence
School of Community Science and Technology	1	Food Product Development
School of Management Sciences	1	Management Information System / Human Resource Management
School of Mechatronics and Robotics	1	Assistive devices for Physically Challenged People, Mechatronics / Robotics/ Orthotic and Prosthetic Devices, Innovative Product Development for Bio-medical Engineering, Bio-signals, Bio-mechatronics, Bio-robotics
School of VLSI Technology	1	DSP Architecture Design and Development
	2	Hardware system for Image and Video Watermarking.
	3	Cyber physical Systems Design Methodology and Architecture :An application to pervasive computing
	4	Approximate Computing
	5	Novel 2D Material and Device