



Office of the Dean Academic
Indian Institute of Engineering Science and Technology, Shibpur
(Formerly Bengal Engineering & Science University, Shibpur)
P.O :Botanic Garden, Howrah – 711 103, West Bengal, India
Telephone: (033) 2668-4561-63, 2668-0521-25, Fax: (033) 2668-0637
Website : <https://www.iiests.ac.in>

No. 1897/Exam

Date: February 24, 2021

Admission to PhD Programme December Cycle, Session 2020–21

Applications are invited for admission to the PhD programme (December Cycle, Session 2020–21) of the Institute through **online** mode in all disciplines of Engineering & Technology, Science, Architecture, Town & Regional Planning, and Humanities & Social Sciences. For eligibility criteria, submission deadlines, seat matrix and other details please visit: www.iiests.ac.in

The applicants are required to fill-in the form from the following link.

<https://forms.gle/UmSpGso9Q1hgrx5n6>

The applicants are also required to download a pdf copy of PhD admission form attached with this notice, fill in the form and upload a copy of the same while submitting the online application.

Last date of online submission is March 15, 2021.

Sd/-
Dr.Nirmalya Kumar Bhattacharyya
Deputy Registrar (Academic)

No. 1897/1(8) Exam

Date: February 24, 2021

Copy forwarded for information and necessary action to:

1. PS to the Director
2. All Deans
3. All Heads of the Departments/Schools/Centers
4. The Chairman-SPGC
5. The Professor-In-Charge(Admission)
6. The Deputy Registrar(Finance)
7. The Academic Section-File
8. Institute Website



Deputy Registrar (Academic)
IEST, Shibpur



INDIAN INSTITUTE OF ENGINEERING SCIENCE AND TECHNOLOGY, SHIBPUR

(Formerly Bengal Engineering and Science University, Shibpur)

Contact : +91 (033) 2668 4561 to 63, Fax : +91 (033) 2668 2916

Web: www.iests.ac.in, Email : phd_admission@iests.ac.in

Application Form for Admission To Ph.D. Program: December Cycle Session 2020–21

Applicant's Name (in Capital Letter) :

Father's / Mother's Name :

Date of Birth :

Gender :

Aadhar no/Voter ID/PAN/Passport No:

Category (OC/EWS /OBC (NCL)/ SC/ST):

Whether PwD (Yes/No) :

Application Category (Institute fellowship/Individual Fellowship/Sponsored Research Project/Sponsored Candidates):

Applied for online Interview (Name of the Department/Centre/School):

Contact Details

Address for Communication:

Mobile No:

Email:

Payment Details

Transaction reference No & Date:

Amount :

Details of GATE/NET Exam Qualified & Experience

GATE Score: Year : Subject :

NET Score : Year : Subject :

Research Experience (if any):

Why do you want to pursue a Ph.D. and why in IEST, Shibpur

Statement of Problem(SOP) about proposed research work

Sl. No	Name of Examination	Name of School / College/Institute/University	Year of Passing	Discipline/Specialization	Marks (%) / CGPA
1					
2					
3					
4					

Title of the Master's Thesis

Declaration: I do hereby declare that the information furnished in this application is true to the best of my knowledge. If later on any provided information is found incorrect my application / admission will be rejected and I shall be liable to any other action as the institute may deem fit. If selected, I promise to abide by the rules and regulations of the Institute.

Signature of the Applicant

Information Brochure

Admission to Ph.D. Program

December Cycle, Session 2020–21

Indian Institute of Engineering Science and Technology, Shibpur

भारतीय अभियांत्रिकी विज्ञान एवं प्रौद्योगिकी संस्थान, शिवपुर
ভারতীয় প্রকৌশল বিজ্ঞান এবং প্রযুক্তিবিদ্যা প্রতিষ্ঠান, শিবপুর

Formerly Known as Bengal Engineering and Science University, Shibpur

Howrah - 711103, West Bengal, India

NIRF Ranking (Year–2020)
Engineering – 21; Architecture –6; Overall –43



Website: www.iiests.ac.in

February, 2021

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1 IMPORTANT INFORMATION

Applications are invited for admission to the Ph.D. Program (Regular, Individual Fellowship i.e. CSIR/UGC/DBT/ICMR/INSPIRE etc., Sponsored Research Project & Sponsored Candidates categories of the Institute) in the December cycle of Session 2020–21 in all disciplines of Engineering, Technology, Science, Architecture, Town & Regional Planning, and Humanities & Social Sciences. Admission to the candidates in the reserved category will be done as per the notification of the Government of India. Applicants are required to apply online only at www.iests.ac.in

Application fee is Rs.1500/- for OC/OBC(NCL)/EWS and Rs.1000/- for SC/ST/PwD candidates.

The candidates are advised to read each and every instruction given in this Information Brochure very carefully before applying online.

- a. A candidate with M.Tech./M.E./Integrated M.Tech /M.Arch./M.Plan./M.T.R.P./M.Sc./M.A./M.Phil. and/or B.Tech. degree fulfilling minimum eligibility criteria (Section 5, page no. 6 to 8) can **apply to any one of the Departments/Centres/Schools** listed in the Table (page no. 8 to 13). No request for considering the candidature in department, other than in which applied, will be entertained.
- b. **A candidate can apply more than one Departments/Centres/Schools. Separate application to be made by paying requisite fee for each application**
- c. Selection of candidates will be based on an initial screening followed by their performance in the online mode of interview/counseling for this cycle for all categories of admission. *Appearing in the online interview/counseling process does not give the guarantee of selection. Candidates have the sole responsibility to be present in the online interview/counseling process on the scheduled date and time. Institute shall not entertain any appeal in this regard for failing to appear at the scheduled online interview/ counseling process for any reason.*
- d. Mere fulfilling of eligibility requirements does not ensure shortlisting. Institute reserves the right to restrict the number of candidates to be called for interview/ counseling process. Depending on the number of applications received, Institute/Department(s) may set the criteria higher than the minimum eligibility requirements for shortlisting candidates for online interview/counseling process.
- e. IEST, Shibpur shall not be responsible for wrong entries and technical error(s) while making the online application/payment of the fee.
- f. Admission shall be offered subject to the availability of seats, faculty members in the respective specializations and availability of Institute Fellowships.
- g. All candidates are advised to visit regularly the Institute website (**www.iests.ac.in**) for any updates about subsequent amendments in the advertisement and results. **No correspondence in any form in this regard will be made by the Institute with an individual candidate.**
- h. The admission shall be purely provisional subject to the confirmation that they satisfy the prescribed eligibility conditions.
- i. Hostel accommodation is not guaranteed. A limited number of hostel accommodations are available which will be allocated on a preferential basis.

- j. **Age limit:** Maximum age limit prescribed for the award of Institute Fellowship Category is 30 years as on the last date of receiving application. Relaxation in upper age limit: (i) 05 years is applicable for SC/ST/Persons with Disability (PwD) and Female applicants (i.e. 35 years as on the last date of receiving application) and (ii) 03 years is applicable for OBC (NCL) applicants (i.e. 33 years as on the last date of receiving application). For other categories of admission to Ph.D. Program, the age limit shall be as per guidelines of funding agency.
- k. **Reservation for SC/ST/OBC(NCL)/EWS/PwD Categories:** The Institute shall follow the reservation policies of the MHRD, Govt. of India. Certificate for EWS/OBC(NCL)/SC/ST/PwD will be as per Govt. of India Rules. For OBC (NCL) category, the format for certificates must be as per DoPTOM No.36036/2/2013-Estt (Res) dated 30.05.2014 and for EWS category, the format for certificates must be as per DoPTOM No.36039/1/2019-Estt (Res) dated 31.01.2019. ***OBC (NCL)/EWS certificate must be issued on or after April 1, 2020.***
- l. Students shall be governed by Ph.D. ordinance/ regulations in vogue.
- m. If selected, all the original documents will be verified during physical reporting for admission. If anything found wrong, applicant's admission shall stand canceled.

Instructions to Fill the Online Application Form

- Fill up the ONLINE application form with appropriate data with the following:

<https://forms.gle/UmSpGso9Q1hgrx5n6>

- In the online application form: (i) the candidate has to write within 100 words why he/she wants to pursue Ph.D. and why in IEST, Shibpur; (ii) he/she has to write a Statement of Problem (SOP) within 500 words about his/her proposed research work. Please note that you have to upload your digital photograph and signature in image format.
- **Download a pdf copy of PhD admission form the Institute website (www.iests.ac.in) under PhD admission section.** Fill up the form and upload a copy of the same while you are submitting the online application. You have to submit the original copy of this application form if selected for admission.
- Payment of application fee has to be made in the following Institute's Bank account only and upload the scan copy / pdf copy of the receipt while you are submitting online application.

Bank Name: UCO Bank

Branch name: BESU Branch

MICR No.: 700028178

Account Type: Savings Account

Account Number: 23690110000489

Account Name : IEST SHIBPUR- STUDENTS FEE COLLECTION

IFSC Code: UCBA0002369

Please note that:

- ❖ **Candidates must fill/enter their CGPA or percentage of marks as issued by their institute/college/university. Candidate must not convert their CGPA into percentage and vice-versa.**

- ❖ **Online application submitted by the candidates shall be considered final and binding. Requests for making correction in the online application shall not be entertained.**

Please note that sending of hard copy of the application form is not required.

Additional instructions to the candidates with B. Tech.–M.Tech.

Dual Degree Candidates are advised to fill up the ‘Academic Qualification’ option in the online application format as

- Graduate degree: Fill up the CGPA / % Marks up to 8th Semester (year of passing: 8th Semester Examination year).
- Post Graduate degree: Fill up the CGPA / % Marks of the 7th to 10th Semester (year of passing: 10th Semester Examination year).

Important Dates[#]:

Sl. No.	Event	Date
1	Online application starts	Institute website publication date
2	Last date of submission of online application with payment of application fee	15.03.2021 (11:59 pm)
3	Publication of shortlist of candidates to be called for online interview/ counseling in the Institute website	To be notified in the institute’s website
4	Date(s) of online Interview/ counseling	
5	Publication of final list of selected candidates for Ph.D. admission, December cycle 2020 in the Institute website	
6	Date(s) of admission	

[#]Please visit the Institute website (www.iiests.ac.in) regularly for any updates about subsequent amendments in the advertisement and results. **No correspondence in any form in this regard will be made by the Institute with an individual candidate.**

The dates given above are tentative. Any changes in the dates will be indicated on the website.

2. THE INSTITUTE

Indian Institute of Engineering Science and Technology, Shibpur (IEST, Shibpur) started its journey in 1856 as Calcutta Civil Engineering College and emerged as a premier engineering college in the pre-independence India. It was renamed as Bengal Engineering College, Shibpur in 1920. The College received the status of a Deemed University in 1993 and was subsequently transformed to Bengal Engineering and Science University, Shibpur in 2004. The institute has been upgraded to an Institute of National Importance by the amendment of NITSER Act of the Parliament in 2014 and renamed as Indian Institute of Engineering Science and Technology, Shibpur. The Institute has fifteen departments of Engineering, Architecture, Science and Humanities & Social Science disciplines. In addition, it has five Schools and two Centres dedicated for imparting education and conducting research in interdisciplinary fields. One of the remarkable strengths of the Institute is the pool of excellent faculty members. State-of-the-art research facilities and other academic resources are helpful to undertake fruitful and relevant research at the Institute. The century-old legacy of the Institute has produced illustrious

alumni who made remarkable contributions in different fields across the globe. The current (2019) NIRF ranking of the Institute is 19 in Engineering with overall ranking of 36.

3. MISSION-VISION

The Vision of IEST, Shibpur is to become one of the best Institutes in the world in providing the state-of-the art multi-disciplinary research ambience that will usher innovative world class technologies developed towards realizing the goal of Developed India.

IEST, Shibpur functions as an Institute of higher learning and advanced research. Prime activities include creation and dissemination of knowledge; producing engineers, scientists, and entrepreneurs of highest quality equipped with the latest technologies and developing innovation technology solutions for the cause of the society.

4. Ph.D. PROGRAMS

The Doctor of Philosophy (Ph.D.) is recommended for those research scholars who are really interested in leadership careers in academia, research institutions, research industries and important decision making bodies of government. After completion of the program, they are expected to be involved in knowledge generation activities.

5. ELIGIBILITY CRITERIA FOR Ph.D. ADMISSIONS:

The Ph.D. program shall be open to candidates of any Nationality and candidates with the following qualification shall be eligible for admission to the Ph.D. Program of the Institute:

5.1 Minimum qualifications for all categories:

Candidates possessing M.Tech. / M.E. / M.Sc.(Engg.) / M.Arch. / M.U.R.P. / M.Plan. / M.T.R.P. / M.Sc. / M.A. / M.Phil. or an equivalent postgraduate degree in the relevant branch from a recognized University/Institute with minimum 60% marks or 6.5 CGPA on a ten point scale (throughout from class X to the qualifying degree) are eligible to apply for admission in the relevant departments.

For SC/ST/ Person with Disability (PwD) category, a minimum 55% marks or 6.0 CGPA on 10 point scale (throughout from class X to the qualifying degree) is required.

Note: CGPA will not be converted into percentage marks and vice versa.

5.2 Categories of admission:

5.2.1 Regular Candidates with Institute fellowship:

The maximum age is 30 years as on the last date of receiving application. Relaxation of 5 years is applicable for SC/ST/ Person with Disability (PwD) /Female candidates and 3 years as on the last date of receiving application. Selection will be based on an initial screening followed by online interview. To be eligible for Institute Fellowship, the candidates: (i) must have completed Master's programme in Engineering/ Technology/Architecture/management with GATE fellowship or (ii) must have qualified GATE/NET for Science/Humanities discipline.

Candidates possessing B.Tech./B.E./B.Sc.(Engg.)/B.Arch./B.Plan. or an equivalent Degree in the relevant branch from a recognized University/Institute with minimum of 80% aggregate marks or 8.5 CGPA on a

10point scale (throughout from class X to the qualifying degree) and a valid GATE score are eligible to apply for admission in the relevant departments/schools/centres.

Candidates, who are already working in a research project in the Institute and **satisfying the minimum eligibility criteria as mentioned in 5.1 and 5.2.1**, may be allowed to appear in the online interview and if selected, a no objection certificate (NOC) from the Principal Investigator (PI) of the concerned project is needed for availing the institute fellowship and in such cases, he/she will be treated as a regular candidate and has to enroll afresh.

5.2.2 Candidates with Individual Fellowship (CSIR–NET JRF/UGC–NET JRF/ICMR/DST-INSPIRE etc.):

Candidates who are qualified for the Individual Fellowship category (i.e. CSIR/ UGC/ ICMR/ DST-Inspire etc.) and who fulfill the minimum eligibility criteria as prescribed in the **Section 5.1** are eligible to apply for admission in the relevant departments/schools/centres. They must have a valid offer letter of the fellowship issued by the respective funding agency. They are exempted from appearing in the interview, but they have to appear in the counseling process. Selection will be based on an initial screening followed by online counseling process. Note that appearing in the counseling process does not give the guarantee of selection. **Candidates admitted under this category will not be entitled to the award of institute fellowship.** The maximum age will be considered as per prevailing norms of the respective funding agency.

5.2.3 Candidates from Sponsored Research Project:

Candidates who are already working in a research project in the Institute, appointed through the Office of the Dean (R&C) and applying for Ph.D. under Sponsored Research Project category, must fulfill the minimum eligibility criteria as prescribed in the Section 5.1. They have to appear in the online counseling process, provided they work in the same sponsored project. If selected, a no objection certificate (NOC) as per supplied format (Form I-D, Annexure IV) from the PI of the concerned project is needed for enrolment in the Ph.D. program. The minimum remaining period of the project as well as tenure of the said project employee should be at least 2 years from the date of interview of the Ph.D. program. **The Institute will not provide any assistantship /fellowship to such a research scholar.**

5.2.4 Sponsored Candidates

Sponsored candidates who are regular faculty/ regular staff members of this Institute or regular faculty members of Govt./Semi Govt. /reputed academic institute or regular employee of reputed industrial or research organization having adequate R&D facilities and who have fulfilled the eligibility criteria as prescribed in the Section 5.1 and have a minimum of two years of professional work experience are eligible to apply for admission to Ph.D. programme in the relevant departments/schools/centres. **The Institute shall not provide any assistantship /fellowship to such a research scholar.** They have to qualify in the online interview process.

The eligibility criteria of the candidates having only B.Tech. / B.E. degree (for Sponsored category):

- B.Tech. / B.E. candidate seeking admission to the Ph.D. programme having 02years experience in the reputed industry with R&D facility and having at least 80% marks or 8.5 CGPA on the scale of 10 throughout her/his academic career.
- B.Tech. / B.E. candidate having more than 06 years and less than 10 years experience in the

reputed industry with R&D facility and having at least 70% marks or 7.5 CGPA on the scale of 10 throughout her/his academic career.

- B.Tech. / B.E. candidate having 10 years or more experience in the reputed industry with R&D facility should have at least 60% marks or 6.5 CGPA on the scale of 10 throughout her/his academic career.

Category A:

Candidates will have **to produce a NOC as per supplied format (Form I-A, Annexure I or for Institute employee: Form I-B, Annexure II) at the time of interview from her/his employer stating clearly that, in the event of her/his being offered an admission, she/he shall be granted a leave of appropriate kind at least for a period of three years to enable her/him to undertake doctoral research at the Institute. The Institute will not provide any assistantship /fellowship to such a research scholar.** They have to qualify in the online interview process.

Category B:

Notwithstanding anything contained last paragraph above, the Institute may, in its own discretion, permit a candidate belonging to this category to take admission in the PhD programme if she/he is granted a minimum of six months' study leave (**Form I-C, Annexure III**) to enable her/him to complete such part or parts of the course requirement as the SPGC may decide. Under such a case the employer should provide an assurance that necessary permission shall be granted and facilities shall be extended to the candidate to carry out and complete her/his doctoral research at the parent organisation. Under such a case, a co-supervisor from the employing organisation may be assigned. The scholar may be permitted to complete the remaining part of the course requirement by taking such online courses as may be permitted by the SPGC.

After necessary coursework requiring regular attendance at the Institute is completed, a scholar admitted under this category may be allowed to work from her/ his parent organisation, i.e. the organisation where he holds a regular substantive appointment.

5.3 Research Areas:

Broad areas of research available in the different Departments/Centres/Schools are listed below:

Name of the Department / Center / School	Allied branches	Research Specializations
Core Departments		
Aerospace Engineering and Applied Mechanics	Civil Engineering/ Mechanical Engineering	Structure, Robotics, Mechatronics, Fluid Power System, CAD/CAM, Automation, Turbulence, Hydromechanics, Fluid Mechanics, Bio-mechanics, Earthquake Engineering, Soil dynamics, Computation Mechanics, Hydraulics and Hydraulic Structure, Earthquake Engineering, Structural Engineering, Plasticity, Fracture, Fatigue, Micro fluidics, Thermal Engineering, CFD, Solid Mechanics, FEM, Aerodynamics, Flight Mechanics, Green Fuels for propulsion & combustion, Computational Fluid Dynamics, Aircraft icing, Heat transfer modeling,

		Structural Dynamics and Vibration, Nonlinear Dynamics and Aeroelasticity.
Architecture, Town and Regional Planning	Civil Engineering	Architectural / Urban Conservation, Bamboo as a Design Element, Behavioural Architecture, Building information modelling (BIM), Cities and Climate Change, Climate Resilient Urban Design and Smart cities, Disaster Studies - Mitigation, Resilience (Including Cultural Heritage, Risk Reduction, Vulnerability Assessment, Critical Infrastructure Protection(CIP), Disaster Resistant Architecture, Energy efficiency and conservation in buildings, GIS and Remote Sensing, History and Theory of Architecture, Housing, Intelligent and Green building, Project Management, Rapid Visual Screening, Regional Infrastructure Planning and Development, Socio-ecological Resilience of River Deltas, Thermal Comfort and Stress in Built Environment, Tourism Planning, Urban Design, Urban Studies / Urban Informality, Urban Transportation Planning.
Chemistry		Coordination and Bioinorganic Chemistry, Non-Linear Optical properties of Different Molecular Systems: Quantum mechanical modelling and computation, Synthetic Organic and Organometallic Chemistry, Synthesis and Supramolecular Chemistry, Electronic Structure Theory (Relativistic and Nonrelativistic), Chemical Dynamics in Condensed Phases, Organic Synthesis and Structural investigation (Hydrogel, Organogel, Polymer and Application), Photoelectrochemistry, Heterogeneous catalysis & mesoporous materials, Bioinspired Coordination Chemistry and Homogenous Catalysis, Experimental spectroscopy and microscopy, Naturally abundant transition metal catalysis, C-H bond activation reactions, Asymmetric synthesis, Green synthesis using benign metal and non-metal catalysts, Synthetic Organic Chemistry, Natural products, Heterocyclic chemistry, Method development, Organocatalysis.
Civil Engineering	Applied Mechanics, Aerospace Engineering, Construction Engineering/ Technology, Earthquake Engineering and Structural Dynamics, Environmental Science, Environmental Biotechnology, Ocean Engineering, Offshore Engineering Transportation Planning,	Environmental Engineering, Geotechnical Engineering, Structural Engineering, Transportation Engineering, Water Resources Engineering.

	Urban Planning	
Computer Science and Technology	Computer Science and Engineering/Information Technology	Data Mining, Artificial Intelligence, Embedded Systems, Machine Learning and Pattern Recognition, Bioinformatics, Next Generation Sequencing, Hardware Architecture for Network Routing Schemes, Internet-of-Things (IoT), Machine Learning and its Application, Digital Image Processing and Analysis, Document Image Analysis, Image Processing and Pattern Recognition, Computer Vision, Machine-based Translation, Social Network Analysis, Natural Language Processing and its Application, Data Mining and Pattern Recognition, Cryptology, Hardware Security, Defect Tolerance and Testing of Nanoscale circuits, IoT and machine learning, Wireless Network and security, IoT security: Security analysis of Healthcare and Smart Home IoT devices, Design of decentralized access control mechanism for IoT systems using block chain technology, Design of light-weighted cryptosystems for resource constraint IoT devices. Smart city applications: design of robust, energy-efficient, QoI-aware data collection and forwarding mechanisms using properties from biological networks, Mobile crowd sensing /Participatory sensing: QoI estimation, reputation scoring, modeling automated decision-support framework, incentive mechanism, Computer Architecture, Cellular Automata, Secured Hardware Design, Vehicular ad hoc network, Disaster management, Network security, Discrete and Combinatorial Geometry, Digital Geometry, Approximation Algorithm.
Electrical Engineering	Electrical and Electronics Engineering, Instrumentation Engineering	Control System and Instrumentation, Power and Energy Systems, Power Electronics, Machines and Drives
Electronics and Telecommunication Engineering		Wireless Networks (spectrum sharing models for heterogeneous networks in 5G and B5G networks, green communications), Free Space Optical Communication using High Speed Optical Networks, 2D Material based nano-sensor development, Electrical biosensors, chemical sensors and related signal processing, Planar Antenna and components, Telecommunication, Microwave Devices AND Antenna, Electromagnetics, VLSI architecture design of real-time signal and image processing systems, Antenna Engineering.
Humanities and Social Sciences		Management studies, English & cultural studies, English & cultural studies
Information	CST, ETC, Mathematics,	CAD for Microfluidic Biochips, Biomolecular

Technology	School of VLSI	Computation, Cellular Automata, Cloud Computing, Wireless Sensor Networks, Cyber Security, Cyber Physical Systems, Digital Geometry, Hardware Security, Image Processing, Internet of Things, Machine Learning and applications, Nanoscale Technologies and Computing, Signal Processing and Communication Systems, VLSI Design and Test, Multi and many core, Network-on-Chip, High performance computing.
Mathematics	Mathematical Sciences, Physics	Relativity, Cosmology, Astrophysics, Mathematical Biology, Ecological Modelling, Fuzzy Mathematics, Fluid Dynamics, Nonlinear Water Waves, Nonlinear Dynamics and its application, Artificial neural network, Theory of Elasticity, Thermoelasticity, Functional Analysis, Quantum Mathematics, Reliability Theory, Operations Research, Advance Optimization, Information Theory, Entropy Optimization Fuzzy System.
Mechanical Engineering	Production Engineering, Manufacturing Process/Science/Technology, Industrial Engineering, Power Engineering, Engineering Design, Alternative/Renewable Energy.	Fracture Mechanics, Tribology, Non Destructive Testing, Composites, Numerical Heat Transfer/ Computational Fluid Dynamics, IC engine and combustion, Numerical Heat transfer and Fluid flow, Refrigeration, Nonlinear Dynamics and Vibration Control, Non-Traditional Manufacturing, Renewable and Alternative Energy Technologies, Renewable Energy, Greenhouse Technology, Non-Traditional Manufacturing, Combustion, Nonlinear Dynamics, Biomechanics.
Metallurgy and Materials Engineering	Materials Science and Engineering / Materials/ Mechanical/ Production Engineering, Aerospace / Chemistry/ Physics, Electrical/ Electronic/ Ceramics Engineering Computer Science and Technology/ IT	Development of microstructure and texture in steels through thermomechanical processing, Precipitation behaviour in microalloyed steel and its effect on texture and mechanical properties, Study on fracture surface and subsurface to explore the mechanisms of defect initiation and propagation and its control in metals and alloys, Development and Processing of alloys for Aerospace applications, Thermo-mechanical simulation of Aluminium and its alloys, Grain Boundary Engineering for Development of High Performance Varistor, Development of Metal Matrix Nano-Composites, Evaluation of Advanced Steels for Tribological Applications, Alloy Design, Application of Machine Learning in Materials Science, Structure-Property Correlation of Engineering Materials.
Mining Engineering	Electronics And Telecommunication Engineering/ Electrical Engineering/ Occupational Safety/ Ergonomics/	Application of IOT in Underground Coal Mines, Strata Control in Underground Coal Mines, Optimization in Mining Systems, Mines Safety, Carbon Capture and Storage, Mining and Mining Machinery with Ergonomics, Application to Augment Safety Std, Bioremediation, Biorecovery and Biomining,

	Mineral Processing/Mining Machinery/ Mineral Processing/ Environmental Engineering/Mechanical Engineering/ Metallurgical Engineering/Civil Engineering/Chemical Engineering/Information Technology/Materials Science and Technology/Environmental Science/ Applied Geology/Geology/Chemistry	Environmental Pollution Control and Mine Waste Management, Processing Mine Waste for Valuables, Extraction of metal values tailings/ low grade ores/Value added products from mine waste, Design and optimization of Mineral Dressing process/equipment, Sustainable Development framework of Mine/Mine closure, Low grade Coal washing, Mineral processing, Bulk Material Handling and Transport, IOT application in Material Handling Plant/Mineral processing Plant, Coal analysis.
Physics	Condensed Matter Physics, Nuclear Physics, Atomic Physics and High Energy Physics	Fiber and Waveguide Optics / Photonics, Optical/dielectric materials, Synthesis and study of physical properties of nanocomposites/ Ultrasonic study of chemical kinetics, High Energy Physics/Cosmology, Theoretical Atomic Physics Atomic Physics in Plasmas, Laser-atom interactions, Solid state Physics/ Nano Science, Plasma Physics, Carbon nanotube, graphene, nanomaterials, thin films, polymers, sensors, detectors, Experimental Nuclear Physics, Experimental condensed matter physics, Theoretical condensed matter physics.
Centres		
Centre for Healthcare Science and Technology	Aerospace Engineering and Applied, Mechanics, Chemistry, Electronics and Telecommunication Engineering, Information Technology, Metallurgy & Materials Engineering, Mining, Physics	Biomedical engineering
Centre of Excellence in Green Energy and Sensor Systems	Renewable Energy Science and Technology, Chemistry, Electronics Science and Engineering, Physics, Electrical Engineering, Materials Science, Nanoscience, Information Technology	Advanced Solar Cells (Si and non-Si based), Optical/Gas/Biosensors, Semiconductor Devices, Electrical and Electronics Circuits, Energy Storage Devices, Piezoelectric Nanogenerators, Artificial Photosynthesis.
Schools		
School of VLSI Technology	Electronics and Communication Engineering, Electrical Engineering, Applied Electronics and	Semiconductor Devices, Device Modelling and 3D Integration, Micrfabrication, Fault Diagnosis using Machine learning, Memresistor based Logic and Circuit Design, Emerging Devices, Circuits and Systems, Analog-Mixed Signal Circuit Design and

	Instrumentation, Computer Science and Engineering, Information Technology or Equivalent	Testing, 3D IC Testing
School of Community Science and Technology	Chemistry, Life Sciences, Biotechnology	Process Engineering, Waste to energy Concept, Agro waste utilisation for production of food ingredients, Fermentation technology for production of food ingredients.
School of Mechatronics and Robotics	Mechatronics	Therapeutic Respiratory devices

5.4 Seat Matrix:

The Institute fellowships are available in the following Departments/Centres/Schools:

Name of the Department / Center / School	OC	EWS	OBC	SC	ST	OCPWD	EWSPWD	OBCPWD	SCPWD	STPWD	Total
Departments											
Aerospace Engineering and Applied Mechanics	4	1	2	2	1						10
Architecture, Town and Regional Planning	3	1	2	1							7
Chemistry	2	1	2	1	1	1					8
Civil Engineering	5	1	3	2	1						12
Computer Science and Technology	2		1	1	1		1				6
Electrical Engineering	4	1	2	1	1						9
Electronics and Telecommunication Engineering	2		1	1	1			1			6
Humanities and Social Sciences	1		1								2
Information Technology	2	1	2	1		1					7
Mathematics	3	1	2	1							7
Mechanical Engineering	3	1	2	1							7
Metallurgy and Materials Engineering	2		1	1							4
Mining Engineering	1		1	1							3
Physics	3		2		1				1		7
Centres											
Centre for Healthcare Science and Technology			1								1
Centre of Excellence in Green Energy and Sensor Systems	1										1
Schools											
School of VLSI Technology		1									1
School of Community Science & Technology	1										1
School of Mechatronics & Robotics			1								1
Total	39	9	26	14	7	2	1	1	1		100

Note: In absence of any applicant from PwD category, the seat reserved for PwD category will be filled by the candidate(s) who belong to the same category (without PwD).

5.5 Fees and other details for the Ph.D. program

Every Research Scholar shall be required to pay the following fees at the time of joining. All Fees may be revised as per the decisions of the Institute authority. The candidates will be notified about such revisions through the Institute website.

Sl. No.	Item	Amount per semester (Rs.) [#]
1.	Enrolment Fee (One time and non-refundable)	3,000
2.	Research scholar Activity Fee	500
3.	Infrastructure Maintenance Fee	2,500
4.	Examination Fee (One time and non-refundable)	1,000
5.	Tuition Fee	7,500
6.	Institute Caution Money (One time and refundable)	3,000
Total		17,500.00[#]

[#]In addition to above an amount equals to the yearly premium for enrolling in compulsory medical insurance scheme of the students shall have to be paid. The exact amount of yearly insurance premium shall be intimated at the time of admission.

Semester registration is must for all categories of research scholar as per academic calendar of the Institute. Defaulters with pending dues are not allowed to pursue further academic activities of the Institute. In future, the payment method may change.

Joining the Ph.D. Programme

1. On receiving the offer for admission, if a candidate fails to take admission in the respective course on scheduled date and time, the offer for admission to the Ph.D. course made to him/her will stand canceled.
2. The research scholar admitted should report to the respective Head of the Department along with the Provisional Admission Certificate issued by the Dean (Academic). Supervisors will be allotted as per article 14 of the PhD ordinances 2019 of the institute

5.6 Delay in joining the Institute

Any research scholar who is unable to join the Institute on the scheduled day must send an application for extension of the offer (not more than two weeks), countersigned by his/her guardian clearly stating the reason of delay. In case of illness, a medical certificate must be attached. Decision of final admission will be guided by PhD ordinance.

5.7 Compliance to Institute Rules

All students shall be guided by the PhD Ordinance of the Institute. [Ref: <https://www.iiests.ac.in>]

All students are bound by the Institute Rules and must obey such orders as may be issued from time to time by the appropriate authority. Serious breach of Institute Rules may entail removal from the Institute. For vacations and holidays the academic calendar notified at the beginning of each semester shall be followed.

The Campus of IEST, Shibpur is RAGGING FREE zone. At the time of admission, each student shall be required to furnish an undertaking in non-judicial stamp paper of ₹10.00 and signed by a notary in a prescribed format (text will be made available in the website) that the student shall not indulge in any form of ragging. Appropriate action including expulsion from the Institute may be taken against the erring students.

6. CAMPUS

The Institute has a beautiful green campus covering an area of about 49 hectares situated on the bank of the river Hooghly. It is located next to the AJC Bose Indian Botanical Garden and opposite to the Kolkata Port. The campus has a number of academic and administrative buildings, library, accommodations for staffs and students, guest house, auditorium, swimming pool, students amenities, banks, school, hospitals and general services.



A portion of The Institute Campus

Institute: Academic Area

The four-storied main academic building accommodates most of the engineering departments, department of Human Resources Management, Office of the Dean and Office of the Controller of Examinations. The eight-storied Science and Technology building accommodates other engineering departments, architecture and science departments, and various centers and schools. SOCSAT is located inside a heritage building. Offices of the Director, Deans, Registrar, and other administrative offices are also located in this building.



Main Academic Building

Students Amenities

Office of the Dean of Students Welfare facilitates all students including the M.Sc. students to use different facilities available at the campus. The students of this Institute are encouraged to participate in sports and games, various cultural activities like music, photography, dramatics, paintings, model making, creative writing, debating, as well as to explore innovation and incubation of business plans, etc. All students are encouraged to participate in games or some form of physical training. The students are advised to join the athletics Club and at least one of the societies in the Students' Activity Centre. The campus has the following amenities for the students

- Centre for Creative Expressions with different hobby clubs
- R. N. Banerjee Student Recreation Centre
- Institute Hall: A Multipurpose Auditorium
- Gymnasium
- Oval and Lords - Two sports grounds
- Swimming Pool
- Alpona Banerjee Memorial Centre for Innovation
- Basketball court
- Student canteens /cafeteria as well as food kiosks
- Shanti-Neer: A Meditation Centre
- Tagore Green Business Incubation Centre

Health Service

The Institute has a hospital with Medical Officers and other supporting staff to serve the primary medical needs of the campus inmates. It provides 24hours ambulance service. The hospital has an ID Ward to effectively isolate students suffering from infectious diseases. However, for serious cases the patients are referred to suitable city hospital.



Oval Ground



Gymnasium



Swimming Pool



Hospital Building



Research scholar' Amenities Centre



Meditation Centre

Other Services

The Institute is provided with uninterrupted power supply and Water supply. In addition, the Institute has its own captive generation plant and also water supply sources. There are three nationalized banks with ATM service inside the campus. The Institute has a well managed guesthouse. The students can purchase their stationary items from two shops located near the main academic building.

7. CENTRAL FACILITIES

Computer Centre

All departments, schools and centres of the Institute have computing facilities for their students. In addition, there is a Central Computer Centre which provides computing facilities for UG & PG courses and research works. The Computer Centre along with the departments, schools, centers, offices and hostels are connected to a campus wide fibre optic network. The entire campus including the hostels is Wi-Fi enabled.

Library

The Institute has a separate library building which is kept open from 9:00am to midnight. The library provides online search facilities (OPAC) of its database from any computer connected to the Internet and also from the computers in the library dedicated for the users. Currently, the library has more than 1.4 lakhs text and reference books, and 40,000 bound volumes of journals. It also has a huge collection of documents including patents, standards, technical reports and pamphlets. The library possesses a good

collection of old and rare books and journals of the nineteenth century. The library is a member of the Indian National Digital Library in Engineering Science and Technology (INDEST) and UGC-INFONET Digital Library Consortium of Information and Library Network (INFLIBNET) Centre and provides online access to full text of journals including American Society of Civil Engineers (ASCE), American Society of Mechanical Engineers (ASME), Economic and Political Weekly, IEEE /IIEE Electronic Library (IEL Online), ISID, JCCC@INFLIBNET, JSTOR, Science Direct, Springer Link and many others. It subscribes a large volume of e-books. The library also has different software which helps the students to write papers and reports in correct English with the plagiarism checking.

Workshop

The Workshop Complex has nine engineering workshops including Carpentry, Smithy, Welding and Painting, Fitting, Machine, Foundry and Pattern, Boiler, Electric, Automobile, and Project Model to offer workshop practice.



Workshop



Central Library

8. HOSTEL ACCOMMODATION

Hostel accommodation facilities may be provided as per norms of the institute, subject to availability.

Annexure I

FORM I-A
No Objection Certificate for Admission into Ph.D. Program
(Sponsored Candidates: Category A)
(Should be typed on the letter head of the sponsoring organization)

Reference No.

Date:

To
The Dean, Academic
Indian Institute of Engineering Science and Technology, Shibpur
Howrah 711103

Sub: Sponsoring an Employee for Ph.D. Program

Dear Sir,

We hereby sponsor the candidature of Mr./Ms./Mrs. -----, Designation: -----
----- who is a regular employee in our organization, for joining Ph.D. Program
in the Department of ----- at your Institute as a full-time student.

It is certified that he/she has completed two years of service in our organization as a regular employee.
He/she has gained experience in the field(s) -----.

If selected, we shall relieve him/her from his/her duties to join the program during the first three years of
the Ph.D. Program.

Signature and Seal of the Sponsoring Authority

Annexure II

FORM I-B
No Objection Certificate for Admission into Ph.D. Program (Institute Employee)

Reference No.

Date:

It is certified that we have no objection if Mr./Mrs/Ms. -----,
Designation: -----, a regular employee/staff member of this Institute,
working in the department of -----, is applied for admission into the Ph.D. Program
in the department of ----- at this Institute.

If selected, he/she shall be allowed to attend classes/research work without affecting normal duties assigned to him/her.

Signature of Head of the Department

Signature of Registrar

Annexure III

FORM I-C
No Objection Certificate for Admission into Ph.D. Program
(Sponsored Candidates: Category B)
(Should be typed on the letter head of the sponsoring organization)

Reference No.

Date:

To
The Dean, Academic
Indian Institute of Engineering Science and Technology, Shibpur
Howrah 711103

Sub: Sponsoring an Employee for Ph.D. Program

Dear Sir,

We hereby sponsor the candidature of Mr./Ms./Mrs. -----, Designation: -----
----- who is a regular employee in our organization, for joining Ph.D. Program
in the Department of ----- at your Institute as a full-time student.

It is certified that he/she has completed two years of service in our organization as a regular employee.
He/she has gained experience in the field(s) -----.

If selected, we shall relieve him/her from his/her duties to join the program during the first six month of
the Ph.D. Program to complete the PhD course work. We also providing an assurance that necessary
permission shall be granted and research facilities shall be extended to the candidate to carry out and
complete her/his doctoral research from our organisation. In addition to this a co-supervisor from our
organisation also may be assigned to him.

Signature and Seal of the Sponsoring Authority

Annexure IV

FORM I-D
No Objection Certificate for Admission into Ph.D. Program
(Sponsored Research Project candidates)

Reference No.

Date:

To
 The Dean, Academic
 Indian Institute of Engineering Science and Technology, Shibpur
 Howrah 711103

Sub: No objection Certificate

Dear Sir,

We have no objection if Mr./Mrs/Ms. -----, a research scholar/ Project fellow working under the project: -----(title of the project), project code----- (DRC project code) funded by ----- (name of the funding agency), Sanction letter no. -----, in the Department/School/Centre of -----, is admitted to the Ph.D. Program of the Institute.

It is certified that the minimum remaining period of the sponsored project as well as total tenure of appointment of the said project employee must not be less than two years from the date of joining the PhD programme.

If selected, we shall allow him/her to attend classes/research work during the Ph.D. program without affecting normal project work assigned to him/her.

Signature of Project Investigator
(Name)

Signature of Dean (R & C)

For any specific inquiry regarding Ph.D. admission December cycle2020, please mail us at phd_admission@iiests.ac.in

Professor Binay Krishna Ghorai, Professor In-Charge of Admission, IEST, Shibpur
Mr. Shib Shankar Basak, Assistant Registrar, Academic, IEST Shibpur

Indian Institute of Engineering Science and Technology, Shibpur

PO-Botanic Garden, Shibpur,
Howrah 711 103, West Bengal
Phone: +91 (033) 2668 4561 to 63
Fax: +91 (033) 2668 2916
Institute Website: *www.iiests.ac.in*