ANNUAL REPORT

2016 – 2017

INDIAN INSTITUTE OF ENGINEERING SCIENCE AND TECHNOLOGY, SHIBPUR
HOWRAH – 711 103

An Institute of National Importance
under
Ministry of Human Resource Development, Government of India

From the Desk of the Director

Professor Ajoy Kumar Ray
Director

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It is a pleasure for me to bring out the annual report of the Indian Institute of Engineering science and Technology, Shibpur for the year 2016-17. At the outset I would like to extend my heartfelt thanks to the Honourable Chairperson and other members of the Board of Governors, the personnel of the Ministry of Human Resource and Development, the teachers, students, officers and the staff of our Institute and all other stakeholders for their immense support and sincere efforts to uplift this 160 years old Institute of glorious heritage so that it may become in near future one of the topmost global Institute of higher learning in science and technology.

During the last year, the progresses of our Institute in various areas of academics have been rapid and qualitative. 74 students have been awarded the Ph.D degree for their contributions in adding new knowledge. The faculty members have published 370 research papers in peer reviewed journals and there have been 293 presentations in conference proceedings. This year we have received new sponsored research projects worth Rs. 15 crores which is about 8% more than what we received in the previous year. All the Departments, schools and Centres have received projects from funding agencies like DST, SERB, AYUSH, DAE-BRNS, CSIR etc.

Our Institute participated in two schemes of TEQUIP Phase II, one meant for scaling up of post graduate education & research and one for establishing a Centre of Excellence. With a mandate to enhance post graduate research activities, TEQUIP II actively supported procurement of instruments, software and books. Instruments like Handheld GPS, Single frequency GNSS Receiver for DGPS, Arbitrary Function generator, Digital storage Oscilloscope software like ERDAS, Geomedia Professional etc. have been procured from this programme. PhD scholars have participated in different conferences throughout the globe. To promote industry-institute interaction, thirty three interaction programmes have been organised. Under management capacity enhancement programme, senior faculties and officers attended various training programmes conducted by premier management and academic institutes. The Centre of excellence for Microstructurally Designed Advanced materials was established in a space of about 5000 square feet under TEQUIP scheme.

We have developed a unique Microgrid System consisting of 10 kWp of solar PV, 1 KW of Wind generator and 15 kVA of Bio gas Generator has been established by the Centre of Green Energy and Sensor Systems. Solar Energy Corporation of India has awar5ded a contract for designing construction and maintenance of Solar PV Roof Top Systems on the roof tops of different buildings of IIEST, Shibpur.

Several faculty members of the institute have won recognition for their academic performance. To name some of them : Prof. Keya Mitra, has been nominated as Member of National Advisory Committee of the National Information Centre of Earthquake; Dr. Chaitali Ray was awarded "E P Nicholaides" best paper award fro the Institute of Engineers; Dr. Partha Bhattachrya was honoured with Young Scientist award by the Institute for Smart structure and Systems; Dr. Prasun Ghosal received the Best Paper award in 2nd IEEE International Symposiumon Nanoelectric and Information systems; Dr. Subrata Chakraborty acted as Section Editor of INAE Letter; Prof. Amitabha Basu Mallik received the prestigious INSA Teacher Award and many others have obtained National and International Awards.

There has been a tremendous expansion in the number of laboratories and other infrastructural facilities for academic growth of the Institute. Several existing laboratories have also been extensively modified. For example, the Hardware laboratory in Computer science and Technology has been modernised, in the School of Mechatronics and Robotics a new Infrastructure development on BIO-Mechatronics Activities has been made, in the Department of Physics, modern equipments like XRF and PL set up have been procured in the Department of Metallurgical Engineering FEG-SEM laboratory has been set up.

During the period under consideration, 4,903 books were added to the collection of of the Ramanujan Central Library. The access of full text scholarly electronic resources including ASCE journals, ASME digital library, JSTOR, RSC journals, AIP journals, IEL online etc. have been made available. The library has been subscribing seven subject collections of Elsivier's Science Direct and three bibliographical data base.

A large number of faculty members have visited Universities and Institutes of repute all over the globe and delivered invited lectures. The Institute has hosted a large number of distinguished academicians and industrialists during this period. To name a few : Professor Stephen Yue of McGill University, Canada, Prof. Andrew Charleson of the Victoria University, New Zealand, Prof. Robert Willie, from Johannes Kepler University, Austria and many others have visited our Institute.

It is heartening to mention that the students of this Institute have been performing extremely well, winning various awards and medals in different forums as will be found in the detailed reports. The Students' Senate has organised various cultural programmes and technical exhibitions. The first Space Club Astrophel has been formed vary recently.

The contributions of our Alumni have also been truly commendable in improving the infrastructure and providing support to the students. The institute is happy to extend collaboration to several other Institutes of both national and international repute.

I would like to thank and congratulate the team which has given its full effort to bring out this Annual report.

(Ajoy Kumar Ray)
Director

IIEST Shibpur – at a Glance

IIEST, SHIBPUR

An Institute of National Importance
(Formerly, B.E. College Shibpur 1856
B.E. College, Shibpur (D.U) – 1993
Bengal Engineering & Science University,
Shibpur – 2004 – 3.3.2014)
Website : www.iiests.ac.in

Visitor
Shri Pranab Mukherjee
President of India
Rashtrapati Bhavan
New Delhi – 110004

Chairperson, Board of Govrnors
Dr. K. Radhakrishnan
Ex-Chairman, ISRO and Advisor ISRO

Governance

IIEST Shibpur is governed by the Board of Governors, which consists of representatives of the Government of India, Government of West Bengal, and other nominees. The Chairman of the Board is nominated by the Government of India. The Director is the administrative head of the Institute. **IIEST Shibpur** an "Institute of National Importance", is governed by National Institutes of Technology, Science Education and Research (Amendment) Act, 2014 and statutes laid down by Government of India.

Academics

There are16 Departments,08Schools,03 Centres and 02 Cells

Departments

- Aerospace Engineering and Applied Mechanics
- Architecture, Town and Regional Planning
- Chemistry
- Civil Engineering
- Computer Science and Technology
- Earth Sciences
- Electrical Engineering
- Electronics and Telecommunication Engineering
- Human Resource Management
- Humanities and Social Sciences
- Information Technology
- Mathematics
- Mechanical Engineering
- Metallurgy and Materials Engineering
- Mining Engineering
- Physics

Schools

- Purabi Das School of Information Technology
- Dr M.N. Dastur School of Materials Science and Engineering
- School of Management Sciences
- School of Community Science and Technology
- School of Disaster Mitigation Engineering
- School of Ecology, Environment, and Human Settlement Management
- School of Mechatronics and Robotics
- School of VLSI Technology

Centres

- Centre of Excellence in Green Energy and Sensor Systems
- Centre for Healthcare Science and Technology
- Center for Advanced Research on Water

Cells

- Continuing Education Programme (C.E.P)
- Quality Improvement Programme (Q.I.P)

TEQIP Phase II

The Institute has received a Rs. Crores from TEQUIP Phase II for the following purposes :

1. Scholarships (PhD / ME).
2. Organising Conferences, Seminars and Workshops.
3. Interaction with Industry.
4. Faculty and Staff Development through Training.
5. Institutional Reform.
6. Institutional Management capacity enhancement.

Global Initiative of Academic Networks (GIAN)

Courses are conducted under this project of the Government of India.

Campus

141 acres of lush grean campus located near river side of Hoogly and is situated adjacent to the AJC Bose Indian Botanic Garden which boasts of the 250 year old Great *Banyan Tree* at Shibpur, Howrah West Bengal

Institute Buildings

The main academic complex is a four storied building covering about 22000 square mitre areas that accommodates most of the engineering departments, department of Human Resources Management, Office of the Dean and Office of Examinations.

The newly constructed eight-storied Science and Technology building with 14400 square mitre areas accommodates some of the existing engineering departments, science and management departments, and various centres and schools. Office of the Director, Offices of the Deans, Registrar, and other financial and administrative offices are also located in this building. Annexes to this building are now being constructed to accommodate future departments, schools, centres and offices.

Facilties & Support

150 + Classrooms, 140+ laboratories

- 16 hostel blocks for boys and 3 hostel blocks for girls
- Internet connectivity Central computer Center
- Central Library, E-Library, On-line access to journals
- Institute Hall (Auditorium),
- Botanic Garden Post office (Near),
- 3 Banks (SBI,UCO & UBI) in the Campus
- Many Banks and ATMs surrounding area
- Health Care Centre with many visiting specialist doctors
- South Howrah State General Hospital in the neighberhood.
- Yoga Centre,
- Campus school (Bengali Medium),
- Guest House, Food Court and Canteens,
- International standard Swimming –pool, Sports Grounds for cricket,, football, Courts for Basketball, Volleyball ,
- NCC Student Internship Progaramme (SIP)
- 'Oval' and 'Lords', Play Ground
- Students Centre for Creative Expression at Slater Hall
- R. N. Banerjee Students' Recreation Centre
- A well –equipped Gymnasium
- Wi fi facilities available in Hostels, Departments, Offices and other campus areas.
- Students activity centre to accommodate different students societies like photography, drama, music, creative model making etc.
- A Students' Innovation Centre
- Vivekananda Youth Club for Students
- Student canteen and staff canteen
- Shanti-Neer: A Meditation Centre

Campus Services

The Institute is provided with uninterrupted power supply from the Calcutta Electric Supply Corporation. Water supply is provided by the Howrah Municipal Corporation. In addition, the Institute has its own captive generation plant and also water supply sources. There are three agencies which look after the maintenance of various services in the campus: the Public Works Department (Maintenance) for maintenance of all buildings and roads, the Public Works Department (Electrical) to look after the maintenance of electrical services and a Public Health Engineering Department for maintenance of water supply and sewage disposal.

Central Facilities

In addition to the academic and supporting departments, there are Central Facilities as follows.

- Computer Centre
- Well equipped Central Library
- Press
- Workshop
- Laboratories

MOUs were held with various national and International Universities, Institutes and Industries during the recent period.

Content

Content- II

Introductory note with a brief history of the IIEST Shibpur

❖ Bengal Engineering College, commonly known as B.E.College started its journey as the Civil Engineering College on 12th February 1856. During this long journey, this pioneering Engineering College achieved one milestone after another. Since 1856 a number of other Departments were gradually included and have produced many reputed Engineers.

❖ There are various phases through which this institution has passed, over the last 150 yrs
❖ On January 24, 1857 the faculty of Civil Engineering was formed with the establishment of Calcutta University.
❖ On May 2, 1857 the Civil Engineering College was affiliated to the University.

❖ In November 1864 the Civil Engineering College lost its separate entity and independent existence and The Civil Engineering College became the Civil Engineering Department of the Presidency College and remained attached to it as an adjunct till 1879.

❖ In the year 1880 the College occupied the premises of the Bishop's College at Shibpur and from the 5th April 1880, the college under the name Government Engineering College, Howrah started functioning.

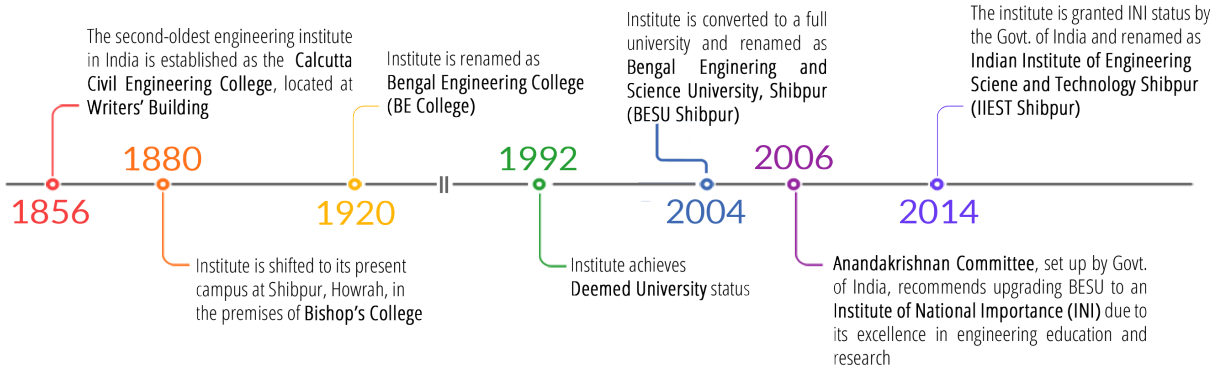
❖ On 18th May 1887, the name was changed to the Civil Engineering College Seebpore, gradually under went changes, namely, first Sibpur and then Shibpur.

❖ As a first step to reach the goal of including other Departments along with Civil Department the nomenclature of the college was changed from the 12th February 1920 to the Bengal Engineering College, Sibpur

❖ From March 24, 1921 in order to avoid postal delay the College was redesignated as the "Bengal Engineering College" which came to be popularly known as B.E.College.

❖ On 16.02.1993,the BE College was given the status of Deemed University and from October 1,2004 the Director was designated as the Vice-Chancellor and the Deemed University was given the status of a full fledged State University under the name Bengal Engineering and Science University, Shibpur.

❖ In recognition to the brilliant contribution of the **Bengal Engineering and Science University, Shibpur** towards advancing quality education and research in India during the last 158 years, this premiere institute has been transformed to **Indian Institute of Engineering Science and Technology, Shibpur (IIEST, Shibpur), an** *Institute of National Importance* by the NITSER (Amendment) Act of the Parliament in 2014.



VISION

The Vision of IIEST, 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. And to establish a unique identity for the institute amongst national and international academic and research organizations through knowledge creation, acquisition and dissemination for the benefit of society and humanity.

MISSION

IIEST, 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 latest technologies and developing innovation technology solutions for the cause of the society.

To generate high quality human and knowledge resources in our core areas of competence and emerging areas to make valuable contribution in technology for social and economic development of the nation. Focused efforts to be undertaken for identification, monitoring and control of objective attributes of quality and for continuous enhancement of academic processes, infrastructure and ambience. To efficaciously enhance and expand, even beyond national boundaries, its contribution to the betterment of technical education and offer international programmes of teaching, consultancy and research.

GOALS

The standing of an Institution of higher learning is judged by its research activities and contribution in the advancement of knowledge in the emergingareas. The Institute will make all efforts to strengthen collaborative research programmes in the following emerging areas with strong user

Advanced Technologies

Construction Productivity Analysis, Mechatronics, Industrial Knowledge Management Systems, Development & Condition Monitoring of Flow Devices.

Electronics & Communication

4 G Wireless & Mobile Networks Signal Processing, Optical Computation and Communication, Sensor Network, VLSI, Embedded Real Time System.

Energy Engineering

Bio-fuels, Solar Cells, Hybrid Renewal Energy Systems, Virtual Instrumentation, Distributed Energy System, Energy Audit, Development of Energy Efficient Devices & Technologies.

Progress at a Glance (2016 – 2017)

- IIEST, Shibpur signs MOUs with Department of Natural Resources and Mines, Queensland Government, Australia Australia through the Safety in Mines, Testing and Research station (SIMTARS).

- Indian Institute of Engineering Science and Technology, Shibpur, India (IIEST) and Hiroshima University Japan signed an academic and research agreement.

- The President of India, Shri Pranab Mukherjee inaugurated a Bio-Solar-Wind Microgrid Centre and Centre for Water and Environment Research at Indian Institute of Engineering Science & Technology (IIEST), Shibpur, West Bengal on May 19, 2017 in presence of Dr. K.Radhakrishnan, Chairperson, B.O.G, IIEST Shibpur, Sri Sovandeb Chattopadhyay,Hon'ble Minister in charge Power, Govt of West Bengal,and Director of IIEST Shibpur Prof. Ajoy Kumar Roy.

- Amidst a changing society, one need to continuously innovate to stay relevant, this in turn, delivers concepts and things of the future. In order to encourage the spirit of innovation amongst the students of IIEST, Shibpur the InnoVision Award for students was instituted by the alumni of B. E. 1990 / B Arch 1991 batch. The award will acknowledge the idea/concept and the exploration/execution coalescing into an innovative and visionary work. Such a work should be exciting by showing glimpses of a game-changing notion and at the same time, useful and responsive to the society at large. An MOU was signed between the batch representatives and Prof Santanu Kumar Karmakar, Dean of Alumni Affairs and External Relations. As per the MOU, the batch will initially donate about Rs 13 lakh for two such perpetual awards per year to both the undergraduate and postgraduate students of the institute for demonstrated excellence in innovation. More such awards may be added in future.

- **Government of India has honoured Prof.Ajoy Kumar Ray, Director of IIEST Shibpur with '*Padma Shri*' for his outstanding contributions in the field of Science and Engineering**.

- Dr. Chaitali Ray, Professor, Civil Engg. Dept. has received "e p nicolaides" prize (gold medal) from the institute of engineers.

- 31st Indian Engineering Congress as the subject prize best paper for the paper titled "Linear and non-linear analysis of fibre reinforced plastic bridge deck due to vehicle load" co-authored by my ME student Bibekananda Mandal.

- Sri Sandip Mondal, former postgraduate student and current research scholar, Department of Civil Engineering, received the Innovative Student Projects Award 2016 from the Indian National Academy of Engineering (INAE) for his M.Tech thesis on 'Application of Biotechnology in Concrete' under the guidance of Prof. Arun Kumar Chakraborty.

- Prof. Amitabha Basu Mallik of Met & Mat Engg has been awarded prestigious INSA Teachers Award, 2016.The Director, faculties and staffs of IIESTS congratulate Prof. Basu Mallik on his achievements.

- International Conference on Functional Nano-Materials (IC-FNM 2016) was held at IIEST, Shibpur on September 28th & 29th, 2016 Organized by CoE-TEQIP II and MND-SMSE of IIEST, Shibpur, India. The conference aims to provide a vibrant meeting ground for renowned scientists and young researchers from across the world who are involved in the exploration of functional nanomaterials and their applications. Besides presentations by inspiring speakers there will be poster sessions and ample scope for interaction and exchange of ideas. All works will be published as short communications after peer review in an edited conference proceeding. The conference is aiming for a broad participation from the fields of materials science, engineering, chemistry, physics, and life sciences.The conference will have 4 topical symposia covering nearly the entire range of functional nanomaterials.

- Mr. Janardan Kundu has been awarded 2nd prize in the category of Young Scientists' Conference as part of India International Science Festival.

- Dr. Prosenjit Saha, Assistant Professor, Dr. M.N. Dastur School of Materials Science and Engineering has been awarded with a research grant from SEED Division of Department of Science and Technology (DST), GoI under the Scheme for Young Scientists and Technologists (SYST)-2016. Dr. Saha has also been awarded with prestigious Early Career Research (ECR) Award 2016 from DST-SERB, GoI for executing a research project on "Cellulose nano scaffold for skin and bone replacement".

- The paper 'The effect of using rice hush ash as filler on moisture susceptibility of asphalt mix' authored by Sri Raja Mistry, Research Scholar and Dr. Tapas Kumar Roy, Assistant Professor of Civil Engineering department has revived best conference paper award 2016 in the International Conference on Applied System Innovation organized by 'IEEE and Taiwanese Institute of Knowledge Innovation' during 28 May -01 June 2016 at Okinawa, Japan.

- The IA-Chapter of the IEEE Kolkata Section, most of whose office bearers are from the department of Electrical Engineering, IIEST Shibpur, won the global "Outstanding Small Chapter Continued Performance Award (2016)" for their performance in the year 2015.

- An alumnus of BE College, Shibpur - now an IIEST - has offered to donate Rs 350 crore to set up a 200-bed hospital on the campus. This is more than the Rs 230 crore the Union government has sanctioned for the medical college to come up at IIT-Kharagpur. Mahadev Kundu, a 1968 batch Civil Engineering Graduate from BE College, works as a consultant in the US. His only wish is that the hospital be named after his wife, who is a very successful doctor there. The proposed name is Usha Kundu MD Medical College and Hospital. If this project comes true, it will put the country's first IIEST - a nearly 160-year-old institution - in a different league altogether.

- IIEST, Shibpur signs mous with Hiroshima University.

- EDU-RAND study for the best engineering colleges in India ranks IIEST, Shibpur at 13th position.

- This Institute is presently enjoying the Seventeenth Rank (**17th)** among the priemere Engineering Institutes of this country in the National Institutional Ranking Framework (https://www.nirfindia.org),or NIRF, launched by MHRD, GOI among all reputed Engineering Institutes including most IITS and NITS and other GFTI's in India. The Institute is governed by a BOG comprised of eminent personalities, with Dr. K. Radhakrishnan, former Chairman of ISRO, as its Chairperson

Name of Departments, Centers and Schools

Name of Departments

1.Aerospace Engineering and Applied Mechanics
2.Architecture, Town and Regional Planning
3.Chemistry
4.Civil Engineering
5.Computer Science & Technology
6.Electrical Engineering
7.Electronics & Tele Communication
8.Earth Sciences
9.Humanities and Social Sciences
10.Human Resource Management
11.Information Technology
12.Mathematics
13.Mechanical Engineering
14.Metallurgy And Materials Engineering
15.Mining Engineering
16.Physics
17.Dept. of Students' Activities

Name of the Schools

1.Purabi Das School of Information Technology (PDSIT)
2.Dr M.N. Dastur School of Materials Science and Engineering (MND-SMSE)
3.School of Management Sciences (SOMS)
4.School of Community Science and Technology (SOCSAT)
5.School of Disaster Mitigation Engineering (SDME)
6.School of Ecology, Infrastructure & Human Settlement Management (SEIHSM)
7.School of Mechatronics & Robotics (SM&R)
8.School of Safety & Occupational Health Engineering (SSOH)
9.School Of VLSI Technology (SOVLSIT)

Centres

1.Centre of Excellence in Green Energy and Sensor Systems
2.Centre for Health Care Science and Technology
3.Centre for Advanced Reaserch on Water

Cells

1.Continuing Education Programme (C.E.P)
2.Quality Improvement Programme (Q. I.P)

TEQUIP – Phase II

- Computer Centre
- Video Conferencing Facility

Board of Governors

Dr.Kopillil Radhakrishnan
Chairperson, Board of Governors
Former,Secretary, Department of Space and Advisor ISRO
Former Chairman, ISRO
e-mail : radhakr272@gmail.com

Shri R. Subrahmanyam, IAS
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Dr. Biman Bandyopadhyay
Secretary to BOG
Registrar,
Indian Institute of Engineering Science and Technology, Shibpur, Howrah -711103
e-mail : regis@iiests.ac.in

Finance Committee of IIEST, Shibpur

Sl. No.	Nomination under subsection of Statute 10	Name and Designation of nominated Persons	serve as
1.	(i)	Dr. Koppillil Radhakrishnan, Chairperson, BoG, IIEST, Shibpur	Ex-Officio Chairman
2.	(ii)	Prof. Ajoy Kumar Ray, Director, IIEST-Shibpur	Ex-officio Member
3.	(iii) (a)	Joint Secretary dealing with the Institute or his nominee, MHRD	Ex-officio Member
4.	(iii) (b)	Financial Advisor (Human Resource Development) or his nominee, MHRD	Ex-officio Member
5.	(iv)	Prof. S.K. Chattopadhyay, Professor, Department of Chemistry, IIEST and Member of BOG, IIEST, Shibpur	Member
6.	(iv)	Prof. Subrata Chakraborty, Professor, Civil Engineering Department and Member of BOG, IIEST, Shibpur	Member
7.	(v)	Dr. Biman Bandyopadhyay, Registrar, IIEST, Shibpur	Ex-Officio, Member Secretary

Building and Works Committee of IIEST, Shibpur

Sl. No.	Nomination under subsection of Statute 12	Name and Designation of nominated Persons	serve as
1.	(i)	Prof. Ajoy Kumar Ray, Director, IIEST-Shibpur	Ex-officio Chairman
2.	(ii)(a)	Director or Deputy Secretary or his nominee dealing with the Institute in the Ministry (MHRD)	Ex-Officio Member
3.	(ii)(b)	Director or Deputy Secretary or his nominee dealing with Finance of Institute in the Ministry (MHRD)	Ex-Officio Member
4.	(iii)	Prof. Sriman Bhattacharya, Deputy Director, IIT Kharagpur	Member
5.	(iv)	Dr. Biman Bandyopadhyay, Registrar, IIEST, Shibpur	Ex-Offico Member-Secretary
6.	(v)	Dean, Planning and Development or similar position	Member
7.	(vi) (a)	Chief Engineer, Civil, CPWD, Easter Zone or his nominee from Civil Engineering wing.	Member
8.	(vi) (b)	Chief Engineer, Electrical, CPWD, Easter Zone or his nominee from Electrical Engineering wing.	Member

Deans & Associate Deans

Prof. Amit Kumar Das
Dean, Academic Affairs
Professor, Department of Computer Science and Technology
e-mail: dean.ac@iiests.ac.in

Prof. Santanu Kumar Karmakar
Dean, Alumni Affairs & External Relations
Professor, Department of Mechanical Engineering
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Prof. Prabir Kumar Paul
Dean, Administrative Affairs
Professor, Department of Mining Engineering
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Director, School of Mechatronics and Robotics
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Prof. Amitava Basumallick
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Prof. Anirban Gupta
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Members of the Senate

Director, IIEST, Shibpur- Chairman of Senate

Prof. Ajoy Kumar Ray	director@iiests.ac.in

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Prof. Santanu Majumder	santanu@aero.iiests.ac.in
Prof. Rana Roy	rana@aero.iiests.ac.in

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Prof. Souvanic Roy	souvanic@arch.iiests.ac.in
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Prof. Swati Saha	swati@arch.iiests.ac.in
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Prof. Partha Sarathi Mukhopadhyay	parthasm@arch.iiests.ac.in

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Dr. Dwipesh Majumder	Assistant Professor	M.Sc., Ph.D	Theoretical condensed matter physics	7602207766 dwipesh@gmail.com
Dr. Sudipta Kanungo	Assistant Professor (INSPIRE)	M. Sc. Ph.D	Computational and theoretical condensed matter physics	8335813769 s.kanungo@physics.iiests.ac.in

School of community Science and Technology

Name	Designation	Highest Qualification	Specialization/ Research Area	Contact No./ E-mail
Prof. Partha Sarathy Roy	Professor & HOD	PhD	Marketing Management	9432257559 psroy740@gmail.com
Prof.D.K.Bhatta charyya	Visiting Faculty	PhD (Science)	Oil Technology	9231586943 dkb_olitech@yahoo.co.in
Prof. Parimal Chattopadhyay	Visiting Faculty	PhD (Engg.)	Food Technology, Biochemical Engineering	9331067308 parimalchattopadhyay@yahoo.com
Dr. Minakshi Ghosh	Assistant Professor (Contractual)	PhD (Science)	Analytical Chemistry/ Extraction Technology	9831118228 g_minakshi2000@yahoo.com
Dr. Jayati Bhowal	Assistant Professor (Contractual)	PhD (Science)	Biochemistry and Microbiology	9831672455 bjayati@yahoo.com jayatibhowal@gmail.com
Prof. Partha Sarathy Roy	Professor & HOD	PhD	Marketing Management	9432257559 psroy740@gmail.com
Prof.D.K.Bhatta charyya	Visiting Faculty	PhD (Science)	Oil Technology	9231586943 dkb_olitech@yahoo.co.in
Prof. Parimal Chattopadhyay	Visiting Faculty	PhD (Engg.)	Food Technology, Biochemical Engineering	9331067308 parimalchattopadhyay@yahoo.com
Dr. Minakshi Ghosh	Assistant Professor (Contractual)	PhD (Science)	Analytical Chemistry/ Extraction Technology	9831118228 g_minakshi2000@yahoo.com

Dr. M.N. Dastur School of Materials Science and Engineering

Name	Designation	Highest Qualification	Specialization/ Research Area	Contact No./ E-mail
Dr. S. Chatterjee	Director	Ph.D. (Engineering), PRS (in Science)	Phase Transformation, HSLA Steel, High Strength Steel, Diffusion Bonding of Similar and Dissimilar Materials, Friction Stir Welding of Similar and Dissimilar Materials	schatterjee46@yahoo.com directorsmse@gmail.com
Dr. N. R. Bandyopadhyay	Professor	Ph.D. (Engineering)	Physical Metallurgy of Steel, Materials Characterization, Nano-materials, Energy	nrb@matsc.iiests.ac.in nrbbesus@gmail.com

Name	Designation	Highest Qualification	Specialization/ Research Area	Contact No./ E-mail
			Materials	
Dr. Mallar Ray	Assistant Professor (Endowment)	Ph.D. (Engineering)	Experimental and theoretical investigations on semiconductor and hybrid nanostructures.	mray@matsc.iiests.ac.in
Dr. Arijit Sinha	Assistant Professor (Contractual)	Ph.D. (Engineering)	Nanomaterials Characterization, Composite Materials, Shape Memory alloys, Mechanical alloying	arijit@matsc.iiests.ac.in sinharijit@gmail.com
Dr. T.K. Roy	Visiting Professor	Ph.D. (Engineering)	Making, shaping and treating of steel and conceptual plan Project monitoring	tkroy.tatachair@gmail.com
Prof. R. K. Ray	Visiting Professor	Ph.D. (Engineering)	Physical Metallurgy and Materials Engineering	rkray@iitk.ac.in
Prof. Bhairab Chandra Mitra	Visiting Professor	Ph.D. (Engineering)	Polymer and Polymer Composites	bhairabchandramitra@rediffmail.com
Prof. Ajit Kumar Chakrabarti	Visiting Professor	Ph.D. (Engineering)	Metallurgical manufacturing (foundry, Machining, Welding, Surface Engg.), Extractive Metallurgy	akc1940@gmail.com
Dr. Prosenjit Saha	Assistant Professor (Inspire Faculty)	Ph.D. (Science)	Polymer Nanocomposites, Polymeric Biomaterials, Water Purification using Nanomaterials, Electrospinning and 3D printing of polymeric materials	prosenjit@matsc.iiests.ac.in, senjitiitkgp@gmail.com
Dr. Diptonil Banerjee	Assistant Professor (Contractual)	Ph.D. (Engineering)	Nanomaterials, Carbon nanotube, graphene, composite materials, field emission	nilju82@gmail.com
Dr. Swatilekha Ghosh	Assistant Professor (Inspire Faculty)	Ph.D. (Engineering)	Electrochemical Engineering, Plating Technology, Energy Storage Material, Electrode for Li & Na Ion Battery	slghosh@matsc.iiests.ac.in

School of Management Sciences

Name	Designation	Highest Qualification	Specialization/ Research Area	Contact No./ E-mail
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Shyamal Kumar Chakraborty	Visiting Professor	ME,PGDBM	Operations Management	26684561 extn:433 somsiiestsplacement.skc@gmail.com
Dr. Anjan Ghosh	Assistant Professor On Contract	FPM (Doctorate) IIM Calcutta	Strategic Management /Entrepreneurship /Innovation	9836037833 anjang10@email.iimcal.ac.in
Dr. Rana Basu	Assistant Professor On Contract	Ph.D.	Operations Management /Quality & Service Management	9432418698 rbasu.iitkgp@gmail.com
Dr. Rama Koteswar Rao Kondasani	Assistant Professor On Contract	Ph.D.	Marketing Management	9494913338 ramatnitrkl@gmail.com
Dr. Kaushik Kr. Bhattacharjee	Assistant Professor On Contract	Ph.D. (Engg)	Optimization	9836406144 / 9100246841 bhattacharjee.kaushik@gmail.com

Centre for Healthcare Science and Technology

Name	Designation	Highest Qualification	Specialization/ Research Area	Contact No./ E-mail
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Dr. Ananya Barui	Assistant Professor (Contractual)	PhD		+91 33 2668 – 4561 to 63
Dr. Pallab Datta	Assistant Professor (Inspire)	PhD	Biomaterials, Biofabrication and Drug Delivery	+91 33 2668 – 4561 to 63 contactpallab@gmail.com

School of VLSI Technology

Name	Designation	Highest Qualification	Specialization/ Research Area	Contact No./ E-mail
Prof. Hafizur Rahaman	Director	PhD. Post-doc(UK)	Logic Synthesis, VLSI Design and Test, CAD for Microfluidic Biochips, Nanotechnologies, Reversible Computing	+91-33-26684561/62/63 hafizur@vlsi.iiests.ac.in
Dr. Pranab Ray	Assistant Professor (Contract)	Ph.D (Engg.)	Biochip design Automation, Embedded System, Algorithm and data structures , VLSI physical design, Object oriented System Design, Computer Architecture, Microcontrollers	033-22270143 9433800260 ronmarine14@yahoo.co.in
Dr Sudip Ghosh	Assistant Professor (Contract)	Ph.D (Engg.).	Digital VLSI Design & VLSI Architectures, Digital Image Watermarking, Synthesis and Verification, VLSI Testing.	033-22191833 8017040884 sudip_etc@yahoo.co.in sudip.ghosh@vlsi.iiests.ac.in
Dr. Amretashis Sengupta	INSPIRE Faculty	Ph.D (Engg) and Post-doc	2-D materials based FET, atomistic simulations	033-26689016, 9434879016 a.sengupta@vlsi.iiests.ac.in, dr.a.sengupta@ieee.org
Mr. Partha Sarathi Gupta	Assistant Professor (Contract)	M. Tech.	Nanophotonics and novel 2D materials: Modeling and Simulation	9674128771 033-24152571 gupta_parthasarathi@yahoo.co.in
Dr. Indranil Hatai	Assistant Professor (Contract)	Ph.D (Tech.)	Digital VLSI Design, Digital Signal Processing, Wireless Communication, Biomedical System Design, Architectural Design of ICs.	7074715197 9474713304 indranil.hatai@gmail.com
Dr. Kasturi Ghosh	Project Faculty (SMDP-C2SD)	PhD (Engg)	Design and testing of Analog VLSI circuits	9475308870 kghosh@vlsi.iiests.ac.in

Centre of Excellence for Green Energy and Sensor System

Name	Designation	Highest Qualification	Specialisation / Research Area	Contact No. E - mail
Prof. Anup Mondal	Professor and Head Concurrently	Ph. D	Photovoltaics, Nanomaterials, Sensors	hod@cegess.iiests.ac.in

	Professor (Department of Chemistry)			
Prof. A. K. Barua	Visiting Faculty	Ph.D, D.Sc	Photovoltaics	baruaasok@gmail.com
Prof. R. Bhattacharyya	Visiting Faculty	Ph.D.	Photovoltaics and Sensors	raghubhatin@yahoo.com
Prof. H. Saha	Visiting Faculty	Ph.D.	Photovoltaics and Sensors	sahahiran@gmail.com
Prof. S.P. Gon Chaudhuri	Visiting Faculty	Ph.D. D. Sc	Green Energy and Technology	nbirt2008@yahoo.com
Prof. BibekBandyopadhyay	Adjunct Professor	Ph.D.	Solar energy Energy policy	9971157494 bbibek12@gmail.com
Prof. ParthaChaudhury	Visiting Faculty	Ph.D.	Photovoltaics	partha.iacs@gmail.com
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Dr. Nillohit Mukherjee	Assistant Professor (on contract)	Ph.D.	Nanomaterials and sensors	nilsci@yahoo.co.uk
Dr. Snehanshu Patra	Inspire Faculty	Ph.D.	Electrochemistry and Energy storage systems	patras218@gmail.com
Dr. Subhendu Guha (USA)	Distinguished Visiting faculty	Ph.D.	Photovoltaics	subhenduguha01@gmail.com

CAMPUS OVERVIEW

IIEST Shibpur – Historical Background

Indian Institute of Engineering Science and Technology, Shibpur owes its origin to the erstwhile Bengal Engineering College, the history of which goes to the nineteenth century when industries in the sense we understand today, were practically absent. Prompted by the idea of meeting requirement of trained engineering personnel for the Public Works Department, the then council of Education, Bengal, decided to open Civil Engineering classes and a Professorship in Civil Engineering was created at Hindu College, Calcutta, in the year 1843-44. A College of Engineering was started by the name of Civil Engineering College on 24th November, 1856, in the premises of the Writers Building, Calcutta.

With the establishment of Calcutta University on January 24, 1857, the college was affiliated to this university in May 1857. The first-degree examination in Bachelors of Civil Engineering was held in 1864 in which only 2 students graduated. In 1865, the college merged with Presidency College, Calcutta and from 1865 to 1869 the college functioned as the Civil Engineering Department of Presidency College. In 1880, the college was shifted to its present campus at Shibpur, Howrah, and was christened the 'Government College, Howrah,' in the premises of Bishop's College. It started imparting training in Civil as well as Mechanical Engineering. The college became wholly residential from the year 1889.

In 1921, the name of the college was changed to 'Bengal Engineering College' (popularly known as B.E.College). During 1921-43, the various departments of the college were reorganized on the recommendation of the 'Mukherjee Committee' under the Chairmanship of Sir R.N. Mukherjee, one of the most distinguished ex-students of the college. The first batch of students in Mechanical Engineering appeared in the degree examination in 1932. The degree course in Electrical Engineering was introduced during 1935-36 and that in Metallurgical Engineering in 1939. The department of Humanities started in 1945, Applied Mechanics in 1947, and Architecture, Town and Regional Planning department in 1949.

With the end of Second World War, the necessity of further expansion and the development of the college was felt and a 'Committee for the development of Higher Engineering and Technical Education in Bengal' under the Chairmanship of the Director of Public Instruction recommended two plans - one 'Immediate' and the other 'Five Year Plan' for the college. Under the 'Immediate' plan the committee made recommendations regarding the increase of student strength from 300 to 520, an improved curriculum, better teaching staff, a greater range of degree courses and a close liaison with industry. The objective of the 'Five Year Plan' was to upgrade the college to the status of a modern and well-equipped institution with facilities for postgraduate study and research.

The Roorkee Engineering College established in the year 1847 AD and recognized as the first Engineering College in India. The Government Engineering College, Pune established in the year 1854. The Bengal Engineering College established in the year 1856 as the second oldest

Engineering College in India. The first batch of degree course in Civil Engineering turned out in 1912 from Pune Engineering College whereas the first batch in Civil Engineering passed out from B.E.College, in the year 1864. Therefore, if we consider the year of establishment the B.E.College will be the third engineering college in India. However, considering the year of graduation our B.E.College stands as the 2nd oldest Engineering College in India. Please find enclosed the relevant documentary evidence from the University Website for your ready reference.

"The Govt. College of Engineering, Pune, which was established in the year 1854 is one of the oldest and premier engineering institutions in the country. Initially it started as the Poona Engineering class & Mechanical school to train subordinate officers for carrying out public work. Later the school became Poona Civil Engineering College and subsequently in the year 1911 the name was changed to the College of Engineering, Poona popularly known as COEP. The first batch of degree course in Civil Engineering turned out in 1912. Degree courses in Mechanical Engineering and Electrical Engineering were introduced in 1914 and 1932.

Roorkee College was Establish in 1847 AD as the first Engineering College in the British Empire. The College was renamed as THOMASON COLLEGE OF CIVIL ENGINEERING in 1854. It was given the status of a University by Act No. IX of 1948 of U.P., Govt. in recognition of its performance and its potential and keeping in view the needs of post-independent INDIA.Pt. JawaharLal Nehru, the first Prime Minester of India, presented the Charter in November 1949 elevating the erstwhile college to the first Engineering University of independent India."

A new building was constructed in the year 1949 and all academic departments were moved to the new building. In 1954, postgraduate courses in Civil, Mechanical, Electrical, and Metallurgical were introduced. A postgraduate certificate course in Naval Architecture was also introduced during this period. Doctoral programs were also introduced at this time and approved by Calcutta University to enhance research activities (which started as far back as 1901) in the college. During 1954-55, an agreement was concluded by this college and the University of Wisconsin, USA, whereby six guest professors from the USA joined the college and in exchange, five teachers from the college went to the USA as Research Associate. This scheme, known as Technical Co-operation Programme of the USA, helped the college in developing laboratories, postgraduate programmes and research facilities.

The college celebrated its gala centenary function inaugurated by Dr. B.C. Roy on the 25th of December 1956 and PanditJawarlal Nehru graced concluding session on 14th January 1957. The department of Electronics & Telecommunications Engineering was sanctioned in 1956. The department of Mining Engineering started functioning in 1956. The introduction of a Teachers' Training course during 1959-60 was a noteworthy event. The college started its first Computer Centre in 1976-77 and a Microprocessor Laboratory in this centre in 1979. The 125th Anniversary of the college was celebrated in December 11, 1981, with inauguration by Sri N. Sanjiva Reddy, the then President of India.

In 1982, a new degree course in Computer Science & Technology was started and with modernization of the facilities, this department started offering the Master of Engineering courses in 1988 and Master of Computer Applications courses in 1991.
The college was selected as a participating institute under the World Bank EIDP Project and an endowment in theamount of Rs. 200,000,000 was received for upgrading the teaching facilities and laboratories in the Electronics and Computer Science Departments. An E-mail facility was offered by the DOE under this project through which the university can have install access to information super highway.

The alumni of the college have occupied or are occupying top positions in various national and international organizations. In recognition of its yeoman's service to the nation for 143 years of its existence with its well organized infrastructure, the college was elevated to the status of a "Deemed University" in 1992 by the Ministry of Human Resource Development, Government of India on the recommendation of a UGC Expert Committee. As a result, Dr. SankarDayal Sharma, the President of India, inaugurated the University in March 1993.

In 2004, B.E. College (Deemed University) was converted into a full-fledged university by an act in the West Bengal Assembly and renamed as Bengal Engineering and Science University, Shibpur. In addition to the tradition engineering disciplines, the university started M.Sc curriculum in basic sciences.

In March 2014, Bengal Engineering and Science University, Shibpur was taken over by the Government of India and converted into an Institute of National Importance through an act of parliament and renamed as Indian Institute of Engineering Science and Technology, Shibpur.
In recognition to the brilliant contribution of the Bengal Engineering and Science University, Shibpur towards advancing quality education and research in India during the last 158 years, this premiere institute has been converted to **Indian Institute of Engineering Science and Technology, Shibpur (IIEST, Shibpur)**, an Institute of National Importance by the NITSER Act of the Parliament in 2014. Established with a mission to provide the best platform for multidisciplinary research with integrated application of engineering, scientific, and mathematical principles, IIEST, Shibpur is the first of its kind in India.

LOCATION

Indian Institute of Engineering Science and Technology Shibpur is located in the city of Howrah - just across the River Hoogly, from the city of Kolkata - and is well connected to other parts of the country by road, rail or air. The campus is situated adjacent to the *AJC Bose Indian Botanic Garden* which boasts of the *250 year old Great Banyan Tree*.

Kolkata has direct air services from/to Mumbai, New Delhi and Chennai with connectivity to all major cities in the country and direct train services from/to the entire metropolis and other major cities. Most of the domestic airlines have direct services to and from Kolkata to other important cities of India such as New Delhi, Mumbai, Chennai, Patna, Varanasi, Lucknow, etc. Kolkata also provides international flights to most of the countries in Southeast Asia.

It is around **20 minutes** away by car from the **heart of the city** and around **90 minutes** drive from the **airport**. The **Howrah Railway Station** is about **5 km away** from the institute.
For commuting from Kolkata to the institute campus, bus services are available. **Bus Route 55** connects the campus to **Esplanade via Howrah Station**, with buses plying every **15-20 minutes**.

Bus Route 213A plies between the institute and **Rabindra Sadan via the Vidyasagar Setu**

FLIGHTS TO KOLKATA

There are direct flights from/to Mumbai, New Delhi and Chennai with connectivity to all major cities in the country. Air India, Jet Airways, Jetlite, Kingfisher, Spicejet, Indigo, Go Air operate regular flights to and from Kolkata. Getting to the IIESTS from the airport (which may take around **90 minutes**) will cost around Rs. **350/- in a pre-paid taxi** available in the airport.

The most convenient mode of transport within Kolkata is the *Metro Rail*. Metered taxis are also available. There is also an extensive network of city bus service, and tramways.

CONTACT US

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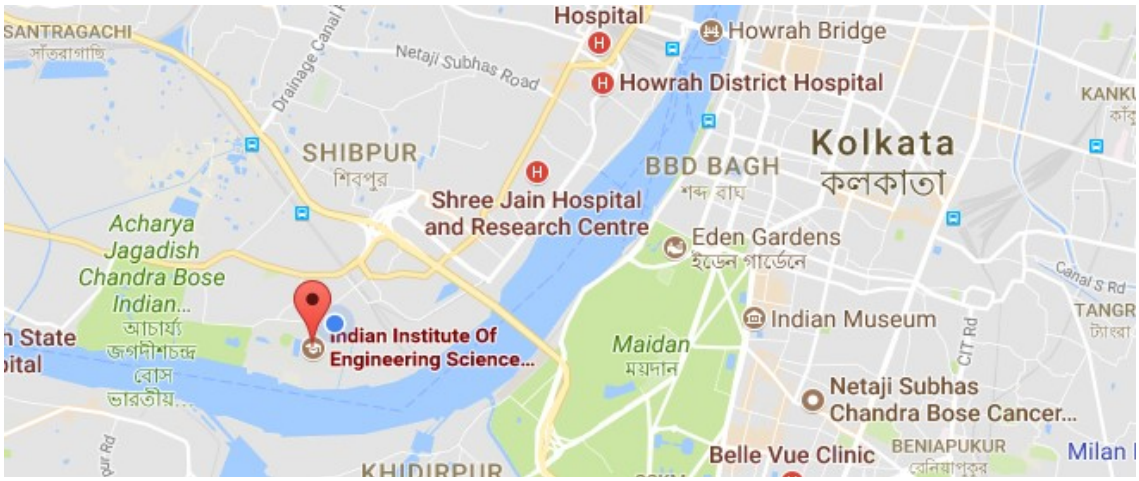


About The Campus

Main Academic Building

The main academic complex is a four-storied building covering about 22000 square meters area that accommodates most of the engineering departments, Department of Human Resources Management, Office of the Dean (Academic Affairs) and Office of Controller of Examinations.

Main building viewed from Parade Ground

First Lobby of Main Building

Science and Technology Building

The newly constructed eight-storied Science and Technology building with 14400 square metres area accommodates some of the existing engineering departments, science and management departments, and various centres and schools. Office of the Vice-Chancellor, Offices of the Deans, Registrar, and other financial and administrative offices are also located in this building. Annexes to this building are now being constructed to accommodate future departments, schools, centres and offices.

Eight-Storeyed Science & Technology Building

Above the main entrance of Science & Technology Building and Eight-Storeyed Building

Workshop Complex

The old Workshop complex where the former Bengal Engineering College was originally started in this campus is now a heritage building. Part of the workshop is housed in the adjoining building. The workshop complex is quite large, encompassing an area of about 8500 square metres. The Workshop Complex has nine engineering shops to offer trainings in different basic shop practices including Carpentry Shop, Smithy Shop, Welding and Painting Shop, Fitting Shop, Machine Shop, Foundry and Pattern Shop, Boiler Shop, Electric Shop, Automobile Shop and Project Model Shop

The main workshop complex

Road to Carpenting and Foundry Shops

Health Services

The Institute has a hospital to cater to the needs of the campus inmates with medical officers and other supporting staff. It provides 24 hours ambulance service. Besides, the hospital has an ID Ward to effectively isolate students suffering from infectious diseases such as chicken pox, mumps, measles etc. Outdoor treatment is available in two shifts: morning and afternoon except Sundays and holidays. Serious cases are generally transferred either to any city hospital or to the Students' Health Home, Kolkata, the institute having Universal Membership for the later. The institute hospital provides 24 hours ambulance service.

Banks

The Campus has branches of three banks - United Bank of India (UBI), UCO Bank, and State Bank of India (SBI) - along with associated ATM facilities.

Printing Press

The Institute has a modest printing press with necessary staff and machines. The press is utilised to print Institute news bulletins, seminars proceedings and other miscellaneous materials.

Campus Services and Management

- The Institute is provided with uninterrupted power supply from the Calcutta Electric Supply Corporation Limited.
- Water supply is provided by the Howrah Municipal Corporation. In addition, the Institute has its own captive generation plant and also water supply sources.
- There are three agencies which look after the maintenance of various services in the campus:
- The Public Works Department (Maintenance) for maintenance of all buildings and roads
- The Public Works Department (Electrical) to look after the maintenance of electrical services
- Public Health Engineering Department for maintenance of water supply and sewage disposal

WORKSHOP

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

Halls / Hostels of Students

The Institute, with a student population of more than 3200, has 17 hostels including two girls' hostels for UG students and one girls' hostel for PG and Research Scholars.
There are 9 multi-seated hostels for boys:

- A. C. Roy Hall (Hostel 7)
- D. Banerjee Hall (Hostel 8)
- A. K. Seal Hall (Hostel 9)
- Hostel 10
- Hostel 11
- Hostel 13 – exclusively for PG and Research Scholars
- Hostel 14
- Hostel 15
- Hostel 16

Multi seated Hostel 14

Hostel 14, with Vidyasagar Setu in the background

There are 5 single-seated halls for boys:

- Richardson Hall
- Macdonald Hall
- Sen Hall
- Sengupta Hall
- Wolfenden Hall

Richardson Hall

Macdonald Hall

There are 3 girls' hostels (single and multi-seated):

- Sister Nivedita Ladies Hostel
- Pandya Hall
- Lt. William Hall of Residence - for PG and Research Scholars

Sister Nivedita Ladies Hostel

Lt. William Hall for female PG & Research Scholars

Sports Grounds

There are two main sports grounds - named after the famous English stadiums - the Lords, and the Oval. Lords ground is for general purpose games and sports, and also serves as main venue for the Convocation Ceremony and the College Fest - REBECA. The Oval Ground is more well-maintained and is used for Physical Training, Sports Meets, and inter and intra-college Cricket and Football matches.

Lords Ground

Oval Ground

Pavilion, Oval

Shed, Oval

Basketball Court

The institute has a basketball court near the Hospital Building, opposite to Oval Ground. Basketball enthusiasts flock here in the evenings for friendly matches.

Basketball Court

A Firendly Basketball Match

Alumni Swimming Pool

The Alumni Swimming Pool is a wonderful gift from our alumni assocation, GAABESU, to the residents of the institute. It started operating from April 2013.

Swimming Pool entrance

Alumni Swimming Pool

Gymnasium

The centruy old heritage athletic club building houses the gymnasium. GAABESU, our alumni association, recently renovated the building, bought new equipments, and inaugurated the upgraded gymnasium in August 2014.

Gymnasium Entrance

Interior

Students' Amenities Centre

This is a common-room for students, just beside the Lords Ground. It serves multi purpose, and also houses the Drama Club of the institute. It was initiated with generous contribution from an alumnus of 1948 batch.

Slater Hall - Students' Centre for Creative Expressions

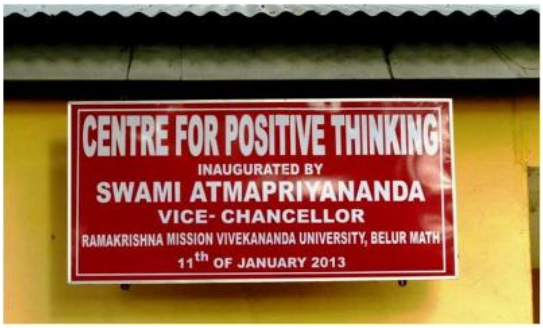
Slater Hall houses some of the clubs and societies of the institute, most notably the Music Club, the Debate Club, thr Photography Club and the Innovation Centre.

Students' Amenitites Centre

Slater Hall

Spiritual Development

The Vivekananda Youth Circle (for boys) and Sister Nivedita Study Circle (for girls) help in holistic personality development of the students. A meditation centre for students - PrasantaNeer (BABTECH Meditation Hall) – was designed, funded, and constructed in the year 2013 by an alumnus of 1974 batch.



Centre for Positive Thinking

Meditation Centre by the Bidisha Lake

Water Bodies

The campus has three large water bodies which add to its beautification. Of these, the Bidisha Lake has a connection to the River Ganges, and hence experiences the rise and fall of water level through tides.

Bidisha Lake, with the iconic Clocktower

Another view Bidisha Lake

Bidisha Lake, with the iconic Clocktower

Lake near First Gate

Institute Gates

The main gate of the institute (known as First Gate) was a gift from our alumni in the year 1956, when the institute completed a 100 years of its journey. The first gate leads to the main academic buildings, the Halls of Residence, and the Lords Ground. The second gate was reconstructed in the year 2013 to an impressive architectural structure. The new design was done by a student of Architecture Department, and the funding was from alumni of 1983 batch. The second gate leads to the hostels, ladies' hostels, Wolfenden Hall, Oval Grounds and Swimming Pool. A Third Gate is also present which opens to the Botanical Garden adjoining area, and is open for selected times of the day.

First Gate, also known as Centenary Gate

Second Gate

Netaji Bhavan

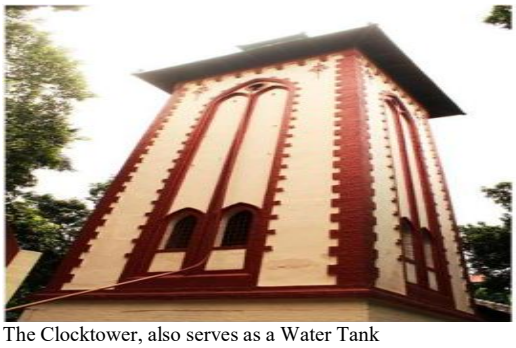
This is a building overlooking the Lords Ground, and serves multi-purpose. During festivities like Convocation, College Fests and Conferences, it can serve as reception area, as dining area or as a stage for street-theatres. In other times, it is a centre for UdyanSabpeyechhirAsar - an external body conducting children's programs in physical fitness exercise, games & sports, drawing and painting, and other cultural activities.

Way to Third Gate

Netaji Bhavan

Clocktower

The famous Turret Clock of the Clock Tower was installed in the year 1921. This iconic structure has always found its place in the logo of the institute. The clock was donated by Sir Rajendranath Mukherjee, an alumnus of 1883 batch, and chief engineer of the modern Howrah Bridge, and the Victoria Memorial.



The Clocktower, also serves as a Water Tank

Clocktower at Night

Graveyard

The instute has a graveyard adjacent to Pandya Hall and the Guest House. In here, graves dating back to 1852 and before can be found.

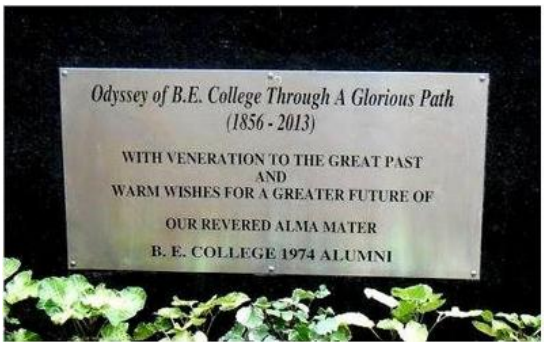
A curiously shaped tombstone

Overview of the Graveyard

Odyssery of B.E. College

This is a Gallery of Historical Events. The journey of our institute from 1856 to present day is carved in thirteen stone tablets. The 200 kg giant bell in the centre is over a century old. In 1820, it was installed in a tower beside the then Bishop's College. It is said that the renowned poet Michael Madhusudan Dutta - who stayed in Bishop's College during that time - used to wake up in the morning hearing the sound of this bell.

The stone tablet gallery



Odyssey Name Plaque

Army Barracks from World War II

These barracks, currently behind Hostel 15 and 16, were constructed to accomodate soldiers during Second World War. Later these were used as hostels from 1946 to 1954. Most of them are now used as staff quarters.

Lighthouse

Hiding from the public eye is an old lighthouse inside the campus. It is situated near the printing press.

Sign shows direction of Barracks

Lighthouse

ACADEMIC PROGRAMMES

PROGRAMMES OFFERED

- **Integrated Dual Degree**
- **Bachelor of Technology (B.Tech.)**
- **Bachelor of Architecture (B.Arch.)**
- **Master of Technology (M.Tech.)**
- **Master of Urban and Regional Planning (M.U.R.P.)**
- **Master of Science (M.Sc.)**
- **Master of Business Administration (M.B.A)**
- ***Ph. D. Programme*: Ph.D. Programmes are offered in Departments / Schools / Centrs in various course and interdisciplinary specializations.**

Integrated Dual Degree (B.Tech. - M.Tech.)

Integrated Dual Degree Programs are offered in several national and international institutes of repute along with the more traditional Undergarduate Degree Programs. These programs are gradually gaining greater acceptance from the employers, as students are equipped with greater skills required for today's knowledge-based industries. Engineering Science is a new concept of multidisciplinary program that emphasizes enhanced understanding and integrated application of engineering, science and mathematics. IIEST, Shibpur is now the only institute in the country to admit students only for Integrated Dual Degree Programs since 2014.

The Dual Degree Programs at IIEST, Shibpur are being carefully crafted after integrating inputs from leading national and international experts both from industries as well as academia. Here are some of the highlights of the program.

- Admission of students takes place in one of the parent Engineering Departments- Aerospace Engineering and Applied Mechanics, Architecture and Town Planning, Civil Engineering, Computer Science and Technology, Electrical Engineering, Electronics and Telecommunication, Information Technology, Mechanical Engineering, Metallurgy and Material Science, and Mining Engineering. The curriculum for the first two semesters is common across all the departments except the Architecture and Town Planning. After first year, limited number of students of all departments except Architecture and Town Planning, based on their academic performance and choice, get the option to change parent department.

- Departmental subjects are introduced from 3rd semester onwards. The curriculum is based on a unique mix of basic sciences, humanities, core engineering, and discipline-specific subjects.

- There are many choices of elective subjects, which may or may not be related to the parent discipline.

- Huge emphasis is given on the industrial projects to address real-life issues and problems faced by the industries. Students are encouraged and facilitated to undergo training and internship during summer vacation to industries and/or national and international universities/research laboratories.

- The students need to select specializations of M.Tech degree only after completion of six semesters, when they havesufficient knowledge of the discipline.

- The tentative M.Tech specializations that may be available for each discipline are given below. In most of the cases, the specializations are interdisciplinary in nature.

Department	**Specializations**
Aerospace Engineering	Aerostructure, Aerodynamics
Civil Engineering	Structural Engineering, Geotechnical Engineering, Transportation Engineering, Water Resources Engineering, Environmental Engineering
Computer Science and Technology	Computer Science and Engineering
Electrical Engineering	Power Electronics, Machines and Drives; Power and Energy Systems; Control Systems and Instrumentation
Electronics and Telecommunication	Microwave Communication, Communication and Signal Processing, VLSI and Micro-Electronics
Metallurgy and Material Science	Physical Metallurgy, Iron and Steel Technology, Surface Engineering
Information Technology	Information Communication and Visualization, Computing Science, Embedded Systems
Mechanical Engineering	Thermal Engineering, Machine Design, Production Engineering
Mining Engineering	Mining Engineering, Geomechanics, Geoinformatics, Environmental Engineering and Management

Other than B. Tech and M. Tech, there may be option for B. Tech and MBA for all engineering disciplines.

- The Master's level courses will commence from 7th semester and there will be seamless integration with the Bachelor's level courses.
- All students will be given scholarships in the 9th and 10th semesters.

Admission Policy

Admission Policy for Integrated Dual Degree (B. Tech. - M. Tech.) & Five-Year B. Arch program

Eligibility for Admission

Admission to the 5 -year integrated dual degree (for nine disciplines) and 5 year B. Arch courses will be done through JEE (Main) Paper I (for Engineering) and Paper II (for Architecture), examination conducted by the JEE Apex Board, under CBSE, MHRD, GOI, for Admission to Undergraduate (and Dual Degree B. Tech, M. Tech) Engineering Programmes in NITs, IITs and other Centrally funded Technical Institutions. For detailed information see www.jeemain.nic.in. For admission to IIEST, Shibpur 50% of the seats are reserved for candidates outside West Bengal and 50% are reserved for students domiciled in West Bengal as shown in the seat matrix. Admission to a 8 particular branch will be based on the AIR (All India Rank) obtained by a student in the JEE (Main) as well as marks/grade obtained in school leaving examination. Some other relevant information is given below. Students seeking admission to the course should be citizens of India. They should have appeared/passed Higher Secondary (10+2) Examination in General or Vocational stream of the West Bengal Council of Higher Secondary Education with English and Physics or any one of {Chemistry, Biology, Biotechnology or technical vocational subject} and any other 5th subject with an aggregate of

45% (for General) and 40% (for other categories) or equivalent examination of a recognized Board or Institute in India. For admission to the B. Arch course the rules area same except the aggregate of marks would be 50% for any category. For more and up to date information consult CBSE and JoSAA portals.

Reservations for SC/ST/PWD/OBC/Other categories

Reservations for the students of SC/ST/PwD/OBC/Other categories will be as per the Government rules. In addition to the normal intake, a limited number of foreign students, students from other States and Union Territories, and sons and wards of India- based staff posted abroad, may be admitted on the recommendation of MHRD, Govt. of India.

Joint Entrance Examination

Each eligible candidate shall be required to appear and to qualify at a written test (JEE Main) conducted by the CBSE. However, this is not mandatory for the foreign students.

Selection for admission

Candidates who reach qualifying standard at the written test will be offered admission by Joint Seat Allocation Authority or JoSAA in order of merit through online choice filling and multiple rounds of allocations. For details see the website of JoSAA (**jointseatallocationauthority.in**). Note that JoSAA is a collaborative effort of JAB (Joint Seat Allocation Board) and CSAB (Central Seat Allocation Board) to provide a common platform to the Engineering aspirants to apply India's best Institutes and alleviate the problem of multiple admissions etc.

IIEST Shibpur is offering 4-year B. Tech Programmes with a special option to complete the M. Tech by opting to stay for a minimum one more year (equivalent to the 5 year Dual-Degree programme being offered in many Institutes). This is specifically designed to cater for the need of the students who wishes to join Industry after completing their B. Tech degree or to join 2 – year full time M. tech programme anywhere in the world. However, there are students who wish to complete the M. Tech degree as well by opting for the same at the end of 3rd year and graduate at the end of 5th year with dual degrees; B. Tech and M. Tech. These graduates are in demand in research oriented organisations including some of the specialised insdutries. They may even join PhD programme of theInstitute in order to choose an academic career.In addition, seats are filled by foreign students nominated by the Government of India under various schemes. 50% of the seats are reserved for candidate from West Bengal. 3% of the seats are reserved for physically handicapped candidates.

All programmes (4Yr duration) are offering B.Tech* Degree except Architecure (5 Yr. Duration) which leads to B.Arch degree (* Option for M. Tech may be available)												
Sl. No.	**Institute Programme Code**	**Branch Name**	**Open**	**Open-PWD**	**SC**	**SC - PWD**	**ST**	**ST-PWD**	**OBC-NCL**	**OBC-NCL-PWD**	**Total Seat**	**State/All India Seats**
1	**417 - 5102**	**Architecture, Town andReginal Planning (B.Arch)**	**6**	**0**	**2**	**0**	**1**	**0**	**3**	**0**	**12**	**West Bengal**
			6	**0**	**2**	**0**	**1**	**0**	**3**	**0**	**12**	**Other than West Bengal**
2	**417 – 4101**	**Aerospace Engineering**	**9**	**0**	**3**	**0**	**1**	**0**	**5**	**0**	**18**	**West Bengal**
			8	**1**	**2**	**0**	**1**	**0**	**5**	**0**	**18**	**Other than West Bengal**
3	**417-4109**	**Civil Engineering**	**27**	**1**	**8**	**1**	**4**	**1**	**14**	**1**	**57**	**West Bengal**
			28	**1**	**8**	**0**	**4**	**0**	**15**	**0**	**56**	**Other than West Bengal**
4	**417-4110**	**Computer Science and Technology**	**18**	**0**	**5**	**1**	**3**	**0**	**9**	**0**	**37**	**West Bengal**
			18	**1**	**6**	**0**	**3**	**0**	**11**	**0**	**37**	**Other than West Bengal**
5	**417-4111**	**Electrical Engineering**	**18**	**1**	**5**	**0**	**3**	**0**	**10**	**0**	**37**	**West Bengal**
			18	**0**	**6**	**0**	**3**	**0**	**9**	**1**	**37**	**Other than West Bengal**
6	**417-4153**	**Electronics and Telecommunication Engineering**	**11**	**1**	**4**	**0**	**2**	**0**	**7**	**0**	**25**	**West Bengal**
			12	**0**	**4**	**0**	**2**	**0**	**7**	**0**	**25**	**Other than West Bengal**
7	**417-4146**	**Information Technology**	**18**	**1**	**5**	**1**	**2**	**0**	**9**	**1**	**37**	**West Bengal**
			18	**1**	**5**	**0**	**3**	**0**	**10**	**0**	**37**	**Other than West Bengal**
8	**417-4125**	**Mechanical Engineering**	**18**	**1**	**5**	**0**	**3**	**0**	**10**	**0**	**37**	**West Bengal**
			19	**0**	**6**	**0**	**2**	**0**	**9**	**0**	**37**	**Other than West Bengal**
9	**417-5156**	**Metallurgy and Materials Engineering**	**9**	**0**	**3**	**0**	**1**	**0**	**5**	**0**	**18**	**West Bengal**
			10	**0**	**2**	**0**	**1**	**0**	**5**	**0**	**18**	**Other than West Bengal**
10	**417-4130**	**Mining Engineering**	**9**	**0**	**2**	**0**	**1**	**0**	**5**	**0**	**17**	**West Bengal**
			9	**0**	**3**	**0**	**1**	**0**	**5**	**0**	**18**	**Other than West Bengal**
Total (column-wise)			**289**	**9**	**86**	**3**	**43**	**1**	**154**	**5**	**590**	

TWO-YEAR POSTGRADUATE COURSES IN ENGINEERING AND TECHNOLOGY

The Institute offers 4-semester full time postgraduate courses leading to Master of Technology (M. Tech) degree in 9 disciplines, namely, Civil, Electrical, Mechanical, Metallurgical, Mining, Electronics & Tele-Communication, Computer Science & Technology, Aerospace & Applied Mechanics, and Information Technology. A 4-semester Master of Urban and Regional Planning (MURP) is offered by the Department of Architecture, Town and Regional planning. A number of schools/centers under this Institute offer 4-semester full time PG courses leading to M. Tech. degree in Materials Engineering, VLSI Design, Mechatronics, and Biomedical Engineering.

The admission to these PG courses is done through CCMT for which the specialization and the seat matrix is given below.

Sl. No.	Department Name	Programme Name	OC	OBC	SC	ST	OC PWD	OB PWD	SC PWD	ST PWD	Total
1	Civil Engineering	a) Structural Engineering	8	4	3	1	0	0	0	0	16
		b) Soil Mechanics and Foundation Engg.	6	3	2	1	0	0	0	0	12
		c) Water Resources Engg.	4	1	2	0	0	0	0	0	7
		d) Highway & Traffic Engg.	4	2	1	0	0	0	0	0	7
		e) Environment Engg.	4	2	1	0	0	0	0	0	
2	Electrical Engineering	a) Electrical Mechines	3	2	1		0	0	0	0	6
		b) Power Systems	3	2	1		0	0	0	0	6
		c)Power Electronics & Drives	3	2	1		0	0	0	0	6
		d) Control Systems	3	2	1		0	0	0	0	6
3	Electronics & Communication Engineering	a)Digital Systems	4	2	1	1	0	0	0	0	8
		b)Microwave & Communication Engineering	4	2	1	1	0	0	0	0	8
		c)Communication Engg. & Signal Processing	9	5	3	1	0	0	0	0	18
4	Computer Sciece & Engineering	Computer Scince & Engineering	9	4	2	1	0	0	0	0	16
5	Aerospace Engineering and Applied Mechanics	a)Mechanics of Solids	8	4	2	1	0	0	0	0	15
		b)Mechanics of Fluids	5	3	2	1	0	0	0	0	11
6	Mechanical Engineering	a)Machine Design	5	2	1	1	0	0	0	0	9
		b)Heat Power Engineering	5	2	1	1	0	0	0	0	9
		c)Production Engineering	5	2	1	1	0	0	0	0	9
7	Information Technology	Information Technology	9	5	3	1	0	0	0	0	18
8	Metallurgy & Materials Engineering	a)Iron and Steel Technology	4	2	1	1	0	0	0	0	8
		b)Surface Engineering	4	2	1	1	0	0	0	0	8
9	Minning Engineering	a)Mining Engineering	9	5	3	1	0	0	0	0	18
		b)Geo-Informatics	9	5	3	1	0	0	0	0	18
10	Architecture Town & Regional Planning	Master of Urban & Regional Planning	7	4	2	1	0	0	0	0	14
11	School of Material Science & Engineering	Material Sc. & Tech.	9	5	3	1	0	0	0	0	18
12	School of VLSI Design	VLSI Design	9	5	3	1	0	0	0	0	18
13	Centre of Excellence for Green Energy & Sensor Systems	Renewable Energy Science & Technology	8	4	2	1	0	0	0	0	15
14	Centre for Healthcare Science and Technology	Biomedical Engineering	9	5	3	1	0	0	0	0	18

TWO-YEAR FULL TIME M. SC. PROGRAMME

These programmes are offered by the departments under the Faculty of Basic and Applied Sciences namely; Physics, Chemistry, Mathematics, Earth Sciences and the School of Community Science and Technology (SOCSAT).

Admission to the MSC programmes:

Fifty percent of the available seats to the MSc programmes are admitted through CCMN; the centralised counselling procedure for NITs and CFTIs with JAM as the mandatory requirement. The rest fifty percent are admitted through our own test 9 and interview process without JAM as mandatory requirement

ELIGIBILITY AND SEAT MATRIX (OUR ADMISSION PROCESS)

Department	Programme Name	Eligibilty	Jam Subject	Number of Seats									Special Eligibilty Criteria (if any)
				OC	OB	SC	ST	OC PWD	OB PWD	SC PWD	ST PWD	Total	
Physics	M.Sc. (Physics)	Physics (Honours/Major)	PH	8	4	2	1	1	0	0	0	16	Nil
Chemistry	M. Sc. (Chemistry)	Chemstry (Honours/Major)	CY	8	4	2	1	1	0	0	0	16	Nil
Earth Science	M.Sc. (Applied Geology)	Geology/ Applied Geology (Honours/Major)	GG	8	4	2	1	0	0	0	0	16	Geology as one of the subsidiary subjects with a minimum of 60% (CGPA=6.5 on a10 point scale) for OC/ OB and 55% (CGPA=6 on a10 point scale) SC/ST/PWD
		Physcics/Chemstry /Mathematis (Honours/Major)	PH / CY/ MA	8	4	2	1	0	0	0	0	16	
Mathematics	M. Sc. (Applied Mathematics)	Mathematis (Honours/Major)	MA	8	4	2	1	1	0	0	0	16	Nil
School of Community Science and Technology (SOCSAT)	M.Sc. (Food Processing and Nutrition Science)	Chemistry (Honours/Major)	CY	8	4	2	1	1	0	0	0	16	Nil
		Biological Science (Honours/Major)	BL										Chemistry as one of the subjects

*** A minimum of 60% (CGPA=6.5 on a 10 point scale) for OC/OBC and 55% (CGPA=6.0 on a 10 point scale) for SC/ST/PWD candidates in the Honours/Major subject mentioned in the table. Note: 1) The same number of seats are available through CCMN .**
2) The seats left vacant after CCMN admission will be filled in from the wait listed candidate of our admission process

ADMISSION PROCEDURE

CCMN

Candidates wish to apply through CCMN may do so using on-line mechanism. The candidates are selected by the CCMN authority (note that JAM is mandatory) and send their names to IIEST (and other Institutes taking part in CCMN) for admission. Note that 50% of the available seats will be filled through CCMN. For more details see the CCMN 2017 website.

ADMISSION: INSTITUTE'S ADMISSION PROCESS

Candidates meeting the eligibility criterion may apply on-line (see www.iiests.ac.in). Candidates appearing for the qualifying examination (Bachelor degree with Honours/Major) may also apply. The applications will be screened and a number of short-listed candidates will be called for the written test. Mere application with eligibiity may not be sufficient to get a call in the written test. Candidates qualified in the written test may be called for the interview for final selection. Provisional admission will be allowed for the selected candidates who are supposed to submit all the mark-sheets and copies of other credentials at the time of admission. Candidates appearing in the qualifying examination may also take admission, if selected

MBA

Admissions to PG programme (2-Year full-time AICTE approved MBA) in Management

The number of seats in different categories is shown in the following table:

Open	PH	OBC	SC	ST	Total
30	02	16	08	04	60

Eligibility:

- Bachelor's degree in any discipline from any recognized University/Institute with at least 55% marks in aggregate.

- A valid CAT/XAT/MAT/CMAT score. For, CAT/XAT the score will be a minimum of 65percentile. For MAT/CMAT the score will be a minimum of 85 percentile.
- A consistent and good academic record.
- Students appearing for their final year graduation examination may also apply. However, if selected, they will be provisionally admitted and the admission will be cancelled if they fail to produce the result of their final examinations satisfying the eligibility criterion.

Selection Procedure: It is a three-tier process, after the initial screening based on Academic record with weight allocated (shown in % within braces) in all the stages are as follows. The mere application does not guarantee a call in the GD/Interview.

1. CAT/XAT/MAT/CMAT score (50%).
2. Performance in the group discussion (20%).
3. Performance in the Interview (30%).

Applicants may be eliminated at any stage based on their performance. The weights of the different components are shown under three different categories (A, B and C).

- Performance in the national level test (CAT/XAT/MAT/CMAT)

Examination	Percntile			
	65 to <75	75 to <85	85 to <90	90 & above
CAT/XAT	20	30	40	50
MAT/CMAT	-	-	25	40

- Relative weight of components of GD

	Component	Weight
Performance in GD	Knowledge on the topic	10
	Co-ordination skill	5
	Leadership skill	5
	Total	20

FEES TABLE (Per Semester)

Item (Per semester basis)	Amount in Rs.
Registration Fee	500
Students Activity and others	500
Infrastructure Maintenance Fee	2500
Tuition Fee	50000
Examination Fee	1000
Total (per semester)	54,500
Caution Deposit (One time and refundable)	2000
Total at the time of admission	56,500

NOTE: FEES are NON-REFUNDABLE except caution deposit (if all other fees are paid)

Category wise Admission

Sr. No.	Programmes	OPEN		SC		ST		OBC		PWD	
		M	F	M	F	M	F	M	F	M	F
1	B. Arch.	6	3	4	0	1	1	4	1	0	0
2	B.Tech	199	37	66	18	35	7	148	21	5	1
3	M.Tech	98	16	44	3	9	1	57	7	0	0
4	MSc	44	35	5	10	0	1	14	19	1	0
5	MBA	3	4	0	0	0	0	1	0	0	0
6	MTRP	4	0	1	0	0	0	4	0	0	0

THE PH. D. PROGRAMME

The Ph.D. programme is offered by all the Deartments, Schools and Centres of this Institute under the three faculties, namely, Engineering, Basic and Applied Sciences and Social and Management Sciences. Usually, the admission is done in two cycles; one in July, referred to as 1st cylce and the other in January, referred to as 2nd cycle, in a year. Corresponding admission calls are given in the media and our website in the month of May and November, respecively.

ADMISSION PROCEDURE

PhD Admissions

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.
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.

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.

Broad areas of research

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

8 Urban disaster risk mitigation and management

9 Vulnerability studies with respect to built

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

Centre for Healthcare Science and Technology

1. Early cancer diagnosis, Stem cell and Regenerative
2. Biomaterial, 3D printing, Tissue Engineering,
3. Neurodegenerative disease, cancer therapy, medicinal
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

- **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

- **Structural Engineering**
  - Earthquake Engineering
  - Stochastic Structural analysis
  - Structural Dynamics,
  - Wind Engineering
  - Composite Structure and Materials
  - Vibration Control
  - Structures under uncertainty
  - Structural Health Monitoring

- **Transportation Engineering**
  - Cost effective pavement materials
  - Pavement design modeling
  - Traffic Engineering
  - Transportation Planning

Water Resources Engineering

- Climate Change,
- Urban Hydrology
- Application of Remote Sensing and GIS

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
12. Machine learning data mining
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
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

RESERVATIONS FOR SC/ST/PWD/OBC/OTHER CATEGORIES

Reservations for the students of SC/ST/PwD/OBC/Other categories will be as per the Government rules and shown in the seat matrix. In addition to the normal intake, a limited number of foreign students, students from other States and Union Territories, and sons and wards of India- based staff posted abroad, may be admitted on the recommendation of MHRD, Govt. of India.

SCHOLARSHIPS

Undergradute Level

The Institute offers a large number of scholarships to its students. Practically every meritorious and/or financially poor student may get scholarship. A number of scholarships offered by the Global Alumni Association of this Institute are also available to the students. For details, students are also advised to visit the website of the Global Alumni Association of this Institute, www.becollege.org

Dual Degree

The Institute offers a large number of scholarships to its students. Practically every meritorious and/or financially poor student may get scholarship. Full Scholarship for all students in the dual-degree courses will be available during 9th to 10th semester. A number of scholarships offered by the Global Alumni Association of this Institute are also available to the students.

Post Graduate Level

Besides the GATE scholarship for the M Tech students the Institute offers a large number of scholarships to its students. Practically every meritorious and/or financially poor student may get scholarship. Currently almost 50% of the students 13 are getting scholarships. **No Tuition Fee is to be paid by the students belong to SC/ST/PwD category. There are also provisions of loan scholarships offered by various banks.** A number of scholarships offered by the Global Alumni Association of this Institute are also available to the students. For details, students are also advised to visit the website of the Global Alumni Association of this Institute.

Performances in Examination 2016

Level & Programme	Total Number of Students Appeared in Final year		Total Number of Students Passed / Awarded Degree		Out of Total, Number of Students Passed with 60% or above	
	Total	Girls	Total	Girls	Total	Girls
Under Graduate						
Bachelor of Architecture	23	9	23	9	23	9
Bachelor of Engineering						
Aerospace Engineering and Applied Mechanics	14	0	14	0	13	0
Civil Engineering	93	3	91	3	82	3
Computer Science and Technology	63	18	63	18	52	14
Electrical Engineering	59	3	59	3	53	2
Electronics and Telecommunication Engineering	38	4	38	4	36	4
Information Technology	45	9	45	9	37	8
Mechanical Engineering	58	0	55	0	53	0
Metallurgy & Materials Engineering	16	2	15	2	15	2
Mining Engineering	28	0	27	0	23	0
Post Graduate						
Master Engineering						
Industrial Metallurgy	12	0	12	0	11	0
Geotechnical Engineering	8	0	8	0	8	0
Structural Engineering	11	1	11	1	11	1
Transportation Engineering	7	0	7	0	7	0
Master of Technology						
Civil Engineering	34	7	34	7	34	7
Computer Science and Engineering	14	8	14	8	14	8
Electrical Engineering	23	4	23	4	23	4
Electronics and Telecommunication Engineering	22	4	22	4	22	4
Engineering Mechanics	27	2	27	2	27	2
Geoinformatics	4	0	4	0	3	0
Information Technology (4 Semester)	15	6	15	6	15	6
Information Technology (6 Semester)	19	5	19	5	19	5
Mechanical Engineering	22	1	22	1	22	1
Metallurgy & Materials Engineering	12	2	12	2	12	2

Level & Programme	Total Number of Students Appeared in Final year		Total Number of Students Passed / Awarded Degree		Out of Total, Number of Students Passed with 60% or above	
	Total	Girls	Total	Girls	Total	Girls
Master of Technology						
Materials Engineering	13	0	13	0	13	0
Mechatronics	15	0	15	0	15	0
Renewable Energy Science & Technology	14	3	14	3	14	3
Safety and Occupational Health Engineering (4 Semester)	14	1	14	1	14	1
Safety and Occupational Health Engineering (6 Semester)	11	2	11	2	11	2
VLSI Design	18	4	18	4	18	4
Master of Business Administration	24	10	24	10	20	10
Master of Urban and Regional Planning	8	3	8	3	8	3
Master of Science						
Applied Geology	18	10	18	10	18	10
Applied Mathematics	23	8	23	8	23	8
Chemistry	24	11	24	11	23	11
Food Processing and Nutrition Science	18	14	18	14	18	14
Physics	20	8	20	8	20	8

PhD Awarded (Year 2016)

Department / Level & Programme	Total Number of Students Appeared in Final year		Total Number of Students Awarded Degree	
	Total	**Girls**	**Total**	**Girls**
PhD (Engineering)				
Aerospace Engineering and Applied Mechanics	2	0	2	0
Civil Engineering	1	1	1	1
Computer Science and Technology	5	1	5	1
Electrical Engineering	1	0	1	0
Electronics and Telecommunication Engineering	3	2	3	2
Information Technology	9	2	9	2
Mechanical Engineering	5	0	5	0
Metallurgy & Materials Engineering	3	0	3	0
Centre of Excellence for Green Energy and Sensor Systems	1	0	1	0
School of VLSI Technology	1	0	1	0
Purabi Das School of Information Technology	1	0	1	0
PhD (Management)				
Humanities and Social Sciences	2	1	2	1
PhD (Science)				
Applied Mathematics	15	5	15	5
Chemistry	11	4	11	4
School of Community Science & Technology	2	1	2	1
Physics	2	0	2	0

Annual Convocation

The **3rd Annual Convocation** of IIEST, Shibpur was held at 10.30 am on 4th March, 2017 at the Institute premises. An academic procession consisting of the Hon'ble Chief Guest, Chairperson, BOG, Director and other dignitaries along with the members of Board of Governors and Senate arrived at the convocation venue at about 10.30 am.

The convocation address was delivered by the **Chief Guest, Dr. Lazar Mathew,** Former Director, Defence Research and Development Organisation and Advisor, Medical Sciences, Engineering and Technolgy, PSG Institute of Adanced Studies.

Dr. K. Radhakrishnan, former Chairman & Advisor, ISRO and Chairperson, Board of Governors, IIEST, Shibpur presided over the Convocation.

The institute has conferred the degree of **Doctor of Science (Honoris Causa)** on **Prof. Erode Subramanian Raja Gopal,** INSA Emeritus Scientist, Department of Physics, Indian Institute of Science, Bangaluru and **Prof. Baldev Raj,** Director National Institute of Advance Studies, Indian Institute of Science, Bangaluru for their contribution in Science and Engineering respectively and the degree of **Doctor of literature (Honoris Causa)** was conferred on Dr. Arvind Subramanium, Chief Economic Advisor, Government of India, Ministry of Finance for his contribution in the field of Social Siecne.

The Institute also conferred **Distinguished Alumnus Award** to four distinguished alumni who have contributed significantly in their profession, namely i) **Smt. Ila Majumder** ii) **Prof. Arun Kanti Bandyopadhyay,** iii) **Sri Shyamal Kumar Mitra,** iv) **Prof. Sankar Kumar Som** and v) **Dr. Goutam Chattopadhyay.**

Award was conferred on four distinguished teachers, who have contributed significantly towards shaping the future of the students, namely **i) Prof. Shyamal Kumar De ii) Prof. Sambhunath Biswas, iii) Prof. Manindra Mitra** and **Prof. Partha Sakha Banerjee.**

Total number of Degree recipients in this Convocation was 962. Degrees and prizes were awarded in this Convocation to a total of 431 Undergraduate students of 10 courses, 457 postgraduate students from different courses and 74 Ph.D. Fellows who have completed their studies and passed the examinations during this period. Institute Medals was awarded to 35 candidates who have secured highest marks in different disciplines. **The President of India Gold Medal** was awarded to the student Sri Debagnick Ghosh of CST Department who secured 1st position among the undergraduates of all ten engineering disciplines. Some endowment medals were also awarded to the students who stood first in their respective disciplines or have secured highest marks in particular subjects.

Training and Placement

THE DEPARTMENT OF HUMAN RESOURCE MANAGEMENT

The erstwhile Training and Placement of the Institute was rechristened as Department of Human Resource Department in the year 1994 -95 and is headed by one Professor and other staff. To facilitate functioning of the department, a post of Placement Adviser has also been effected from 2016.

Activities of the Department:

The Department has its current activities in the following areas:

- Job Placements of students of the university though Campus and Off-campus selection processes.
- Internship of students at various industries and research institutes
- Vacational / Summer Training of the students
- Grooming up (Personality/Soft-Skill/ Performance Effectiveness) Programme for the Students
- Remedial Training for students.
- Facilitation for other options : Preparatory programme for competitive examinations and other educational options abroad
- Industry Interaction Programme / Academic collaborations
- Entrepreneurship Development
- Innovation & IPR awareness and facilitation
- Research & Consultancy
- Offering Ph.D. Programme.
- Career Counseling

Correspondence
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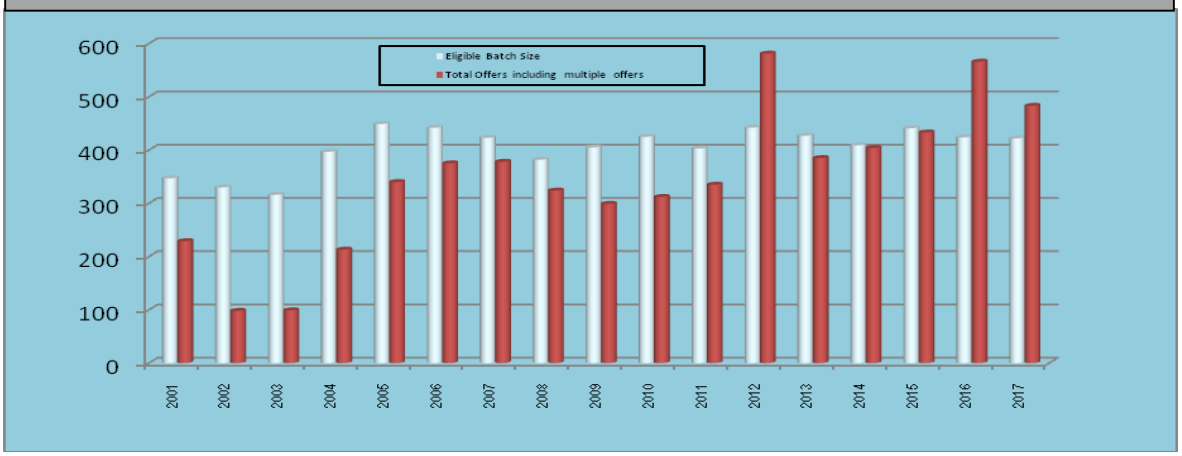
Phone: 91 33 2668 1073. Phone PBX: 91 33 2668 4561- 63 (Extn. 268),
E-mail: hodhrm@iiests.ac.in, hrmbesus@gmail.com

Glimpses of Activities

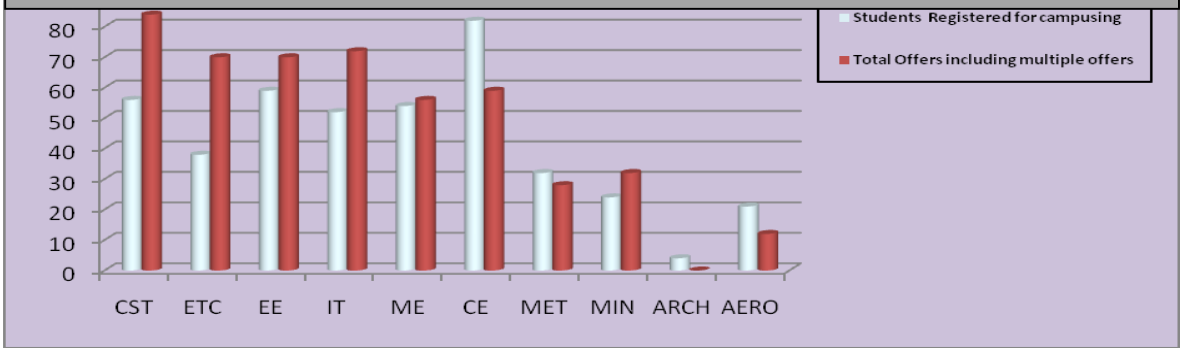
- **One month Placement Preparatory Program for students of IIEST, funded by TEQIP-II.**
- Entrepreneurship orientation for 2016 new entrants.
- Seminar- cum workshop on Innovation & IP Creation: imperatives of Professional Education, sponsored by NRDC
- Interactive session with Dr. P.B.S. Bhadoria of IIT-KGP on National Initiative for Design and Innovation (NID) for rural development
- National Entrepreneurship Development Programme on Micro –Solar Dome
- Students Interaction with representative NEN on app-based entrepreneurship learning module
- Reach the students' programme designed for incubate company Maybright
- Research Scholar of HRM dept. awarded with "Outstanding Paper Award" in Intellectual Property Rights in 24th West Bengal State Science & Technology Congress 2017
- Seminar on Technopreneurship – An Emerging Career Option By Dr. Partho Ghosh
- TCS- Student Felicitation (Best Student Award)
- Interaction Programme with various industries.

Placement Statistics for 2017 passout batch of IIEST, Shibpur

IIEST-Shibpur : Year-wise Eligible Batch Size vs. Total Offers made through On/Off-Campus Process for UG placement

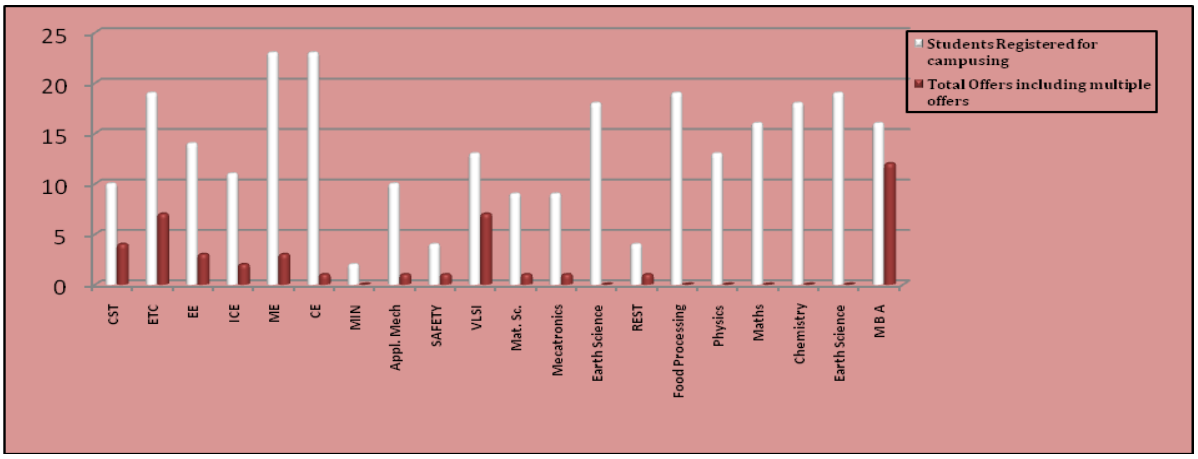


IIEST-Shibpur : Eligible Batch Size vs. Total Offers made through On/Off-Campus Process for UG placement - 2017 pass-out batch



*Students with backlog might not have been considered as eligible for Campus Selection by the recruiters.

IIEST-Shibpur : Year-wise Eligible Batch Size vs. Total Offers made through On/Off-Campus Process for PG placement – 2017 pass-out batch



Our Recruiters over recent years

COMPANIES VISITING IIESTS DURING RECENT YEARS FOR ON / OFF-CAMPUS RECRUITMENT PROCESS									
S.No	**Name of the visiting Company**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**
1	A.M.W.		■						
2	Aakash Institute						■	■	■
3	ABB Ltd.				■	■			
4	Accelaries Business Solutions P.Ltd.		■	■	■	■			
5	Accenture India		■	■		■	■	■	■
6	Adhunik Power	■							
7	ADP India.		■						
8	Adobe								■
9	Afcons Infrastructure Ltd.		■	■	■				
10	Alfatek Systems				■	■			
11	Aircon							■	
12	Airovent							■	
13	Alstom Ltd.				■				
14	Alstom Projects			■					
15	Amazon India			■		■	■		■
16	Anshin Software	■	■						
17	Ashiana	■							
18	Atos			■					
19	Avanseus Technologies								■
20	Axis Bank								■
21	Babtech Consultants			■					
22	Balmer Lawrie	■		■		■			
23	Bandhan Bank								■
24	Bengal Emta	■							
25	BHEL	■							
26	Blue Star		■		■	■	■	■	
27	BOC India	■	■	■	■				
28	Bridge&Roof Co.Ltd.						■		■
29	Britania Industries					■		■	■
30	Broad Ridge		■						
31	C.E.Testing		■	■					
32	Cadence					■			
33	Capgemini		■	■	■				
34	CapitalVia						■		
35	CES		■	■					
36	CESC	■	■	■	■	■	■	■	■
37	Coal India Ltd.	■	■	■				■	■
38	Coffee-day Beverages						■		
39	Cosmic Circuits		■	■					
40	CTS		■	■	■	■	■	■	■
41	Cybage							■	
42	Cuprum Bagrodia							■	
43	Cummins				■				
44	CVRCE								■
S.No	**Name of the visiting Company**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**
45	Daikin							■	

46	DCPL								
47	Deloittee								
48	DemagCranes&Comp.								
49	Direct-I								
50	Dolsera								
51	D X Corr								
52	DVC								
53	Digital Dynamic								
54	Egis India								
55	Electro Steel Castings								
56	Elegant Marine Services								
57	E-Tutor Home								
58	Energy Inratech								
59	Ericsson India								
60	Essab India								
61	Essar								
62	Essel Mining								
63	EXL Infotel								
64	EXL Service								
65	Fi-Tek								
66	Flur Daniel								
67	Foster Wheeler								
68	Foster Wheeler Bengal								
69	Future Generali Insurance								
70	Gontermann-Peipers								
71	Google								
72	GRSE								
73	G. E. Digital								
74	Haldia Petrochemicals								
75	Hiland Group								
76	Himadri Chemicals								
77	Hindalco								
78	Hindalco,Mumbai								
79	Hindustan Motors.								
80	Hindusthan National Glass								
81	HSBC								
82	Hyundai Motors								
83	IBM								
84	IES Academy								
85	Indian Army								
86	Indian Navy								
87	Infinity Infotech Parks								
88	Infosys Technologies								
89	Inoplexus								
90	Infoway								
91	I F B Agro Ltd.								
92	Interra Software								
93	Interview Street								
S.No	**Name of the visiting Company**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**
94	India Power Corpn. Ltd								
95	Indian Oil Corporation								
96	ITC Infotech.								
97	ITC Ltd.								

98	ITD Cementation								
99	Jaibalaji Group								
100	Jacobs								
101	JCAPCPL								
102	Jindal Steel Works								
103	Joy Mining Services								
104	JSL Stainless								
105	JUSCO (Tata Steel)								
106	KaramChandThapar								
107	KEC International								
108	Keross FZ-LLC								
109	Kharagpur Metal								
110	KONE								
111	Kovair Software								
112	L & T - ECC								
113	L & T Ltd.								
114	L&T Rambol								
115	Lafarge India								
116	Lahmeyer International								
117	Landis+Gyr.								
118	Lexmark International								
119	Linde Group								
120	Lister Technologies								
121	Lloyds & Steel								
122	M Junction								
123	M.N.Dastur								
124	Mahindra & Mahindra								
125	Mahishwari Mining								
126	Mani Group								
127	Maruti Udyog Ltd.								
128	Mather&Platt								
129	McNally Bharat								
130	Mecon Ltd.								
131	Meditab Software								
132	Micro-Soft								
133	Ministry of Power,Bhutan								
134	Mallak Group								
135	Mott. MacDonald								
136	Murugappa Group								
137	Mu-Sigma								
138	Neo-Metaliks								
139	Net Guru								
140	Nomura Fintech								
141	Ocenearing Engineering								
S.No	**Name of the visiting Company**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**
142	Odessa Technologies								
143	Orient Fans								
144	Otis Elevator								
145	Paharpur Cooling Tower								
146	Patton India								
147	Peri India								
148	Pinnacle Infotech Ltd.								

149	PIPL								
150	Polstar								
151	Pipavav								
152	Primetals Technologies								
153	Punj Lloyd								
154	PWC								
155	Reve Systems								
156	RILReliance India Ltd.								
157	Rice Group								
158	Rites Ltd.								
159	RS Software								
160	S.K. Samanta & Co.								
161	Samsung								
162	Samsung Electronics								
163	Samsung Engg.								
164	Sanmar Group								
165	Sankalp Semiconductor								
166	Sapient								
167	Schenek Process								
168	Scope								
169	Shapoorji & Pallonji								
170	Siemens								
171	Signotron								
172	Simplex Infra								
173	Singens								
174	Silab Tech								
175	Smart Prix								
176	SML ISUZU Ltd								
177	Snap Deal								
178	S & W								
179	Sova Ispat								
180	SP Algorithm								
181	Star Coolers								
182	Starlite Group								
183	State Bank of India								
184	Stup Consultant								
185	Tata Capital								
186	Tata Chemicals								
187	Tata Hitachi								
188	Tata Power								
189	Tata Steel								
190	Tata Tinplate								
S.No	**Name of the visiting Company**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**
191	Tavant Technologies								
192	Tata Consulting Engineers								
193	Tata Metalics								
194	Tata Blue Scope								
195	Tata Consultancy Services								
196	Tech Mahindra								
197	Techno Electric								
198	Tega Industries								
199	Telcon								
200	Texas Instrument								

201	TIL Ltd								
202	Titagarh Wagons Ltd								
203	Trishul Consultancy								
204	Uttam Galva								
205	Universal								
206	Vawsum								
206	Vedanta								
207	Vikram Solar								
208	Vikrant Forge								
209	Viraj Projects								
210	Visa Power								
211	Visa Steel								
212	Voith Paper								
213	Voith Hydro								
214	Voltas Ltd.								
215	W.Hunger Hydraulics								
216	WABAG								
217	Wacker								
218	WBPDCL								
219	WBSEDCL								
220	Wedoria								
221	Wipro								
222	WPIL Ltd.								
223	Z S Associates								
224	Zycus								

Besides, Final Placements, many students, pre-dominantly from Pre-final Year also had the opportunity for Vocational Training or Summer Internship Programme in reputed industrial / academic institutions - some of them also leading to Pre-Placement Offers.

List of Organisations for Vacational Industrial Training							
Sl. No.	**Name of the Organisation**	**2016**	**2017**	**Sl. No.**	**Name of the Organisation**	**2016**	**2017**
1	ABB india			40	Digital Dynamic Technology		
2	ABS Plaza , Hooghly			41	DRDO ,Chandipur		
3	Accenture			42	DRDO, Kanpur		
4	Adani Power Ltd.			43	Durgapur Steel Plant		
5	ADE ,Bangalore			44	Durgapur Steel power station, Burdwan		
6	Airport Authority of India			45	Durgapur Steel Thermal Power Station		
7	Amazon			46	Earnst & Young LLP		
8	Amec Foster Wheeler			47	East central Railways; Hajipur		
9	Archtecht Consultants			48	Eastern Coalfield		
10	Bharat Heavy Electrical Ltd.			49	Eastern Region Load Despatch Centre		
11	BHEL Kolkata			50	Ericsson		
12	Bihar Rajya Pul Nirman Nigam Ltd.			51	ERLDC Kolkata		
13	Bihar State Road Development Corporation Ltd.			52	Farakka Super Thermal		
14	Bitchem			53	Garden Reach Shipbuilders & Engineers Ltd.		
15	Bokaro Steel Plant , Jharkhand			54	GERMI		

List of Organisations for Vacational Industrial Training							
Sl. No.	**Name of the Organisation**	**2016**	**2017**	**Sl. No.**	**Name of the Organisation**	**2016**	**2017**
16	Bokaro Thermal Power Station			55	Globsyn Skill Development Ltd.		
17	Bridge & Roof Co. India Ltd.			56	Glocal Healthcare Systems (p) Ltd.		
18	BSNL Kalyani.			57	Goldman Sachs		
19	BSNL,Jharkhand			58	Haldia Development Authority		
20	C E S C Ltd.			59	Haldia Energy Ltd.		
21	C H R D			60	Haldia petrochemicals Ltd.		
22	Capacloud Training Solution (p) Ltd.			61	Hanon Climate System India Pvt.Ltd.		
23	Central Public Works Departments , kolkata			62	Hewlett Packard		
24	CHART,Durgapur			63	Hindustan Unilever		
25	Chittaranjan Locomotive Works			64	Holtec Consulting Pvt.Ltd.		
26	Coal India Ltd.			65	Hyundai		
27	Constell Consultants Pvt.Ltd.			66	I I S C O		
28	Cygnet Industries Ltd.			67	I X I A		
29	Damodar Valley Corporation			68	Iisc,Bangalore		
30	Deltron Equipment &systems Pvt. Ltd.			69	IISER Kolkata		
31	Development Consultants Pvt. Ltd.			70	IIT , Ropar		
32	IIT ,BHU			71	OTIS Elevator co.Ltd.		
33	IIT ,Delhi			72	P W C		
34	IIT,Kharagpur			73	Panchayat and Rural Development Govt. of w.b.		
35	IIT,Madras			74	Patratu Thermal Power Station		
36	Internshala			75	Power System Opration Corporation Ltd.		
37	IOCL , Barauni			76	Public Works Department		
38	IOCL , kolkata			77	PWD,Asansol		
39	IOCL, Kolkata			78	Rail Bhava , Delhi		
79	Irrigation &Waterways Govt. of W.B.			103	Rail Wheel Plant , Bel Bihar		
80	ITC , Munger			104	Railway Workshop , Liluah		
81	ITC Ltd.			105	Rajabazar Science College		
82	ITD Cementation			106	Rastriya Ispat Nigam Ltd.		
83	JSW			107	RDCIS ,Jharkhand		
84	Kedia Pipes			108	S.E.Railway , Kharagpur		
85	Larsen & Tubro			109	SAIL, Rourkela		
86	M.N. Dastur &co.Ltd. Pvt.			110	Shapoorji Palonji&co.pvt. Ltd.		
87	M.N.Dastur			111	Simplex Infrastructures Ltd.		
88	Mackintosh Burn Ltd.			112	Skybits Technologies Pvt.Ltd.		
89	McNally Bharat Engg.co.Ltd.			113	South Eastern Railways, Kharagpur		
90	Megatherm Group			114	State Bank of India		
91	Metal & Steel Factory			115	STUP Consultants		
92	Metro Rail Bhawan			116	T I L Ltd.		
93	Metro Railway Kolkata			117	Tata Hitachi		
94	Microsoft			118	Tata Power Company Ltd.		

List of Organisations for Vacational Industrial Training							
Sl. No.	**Name of the Organisation**	**2016**	**2017**	**Sl. No.**	**Name of the Organisation**	**2016**	**2017**
95	Morgan Stanley			119	Tata Steel		
96	Natural Thermal Power Corporation			120	Telecom Regulatory of India		
97	NetApp			121	Texas Instruments		
98	NHPC Darjeelig			122	The Bengal Park Chambers Hosing Development Ltd.		
99	NIT, Rourkela			123	TISCO , Jamshedpur		
100	North Bengal Construction Division,siliguri			124	Uttar Pradesh Rajkiya Nigam Ltd.		
101	NTPC			125	Variable Energy Cyclotron Centre		
102	OTIS Elevator co.Ltd.			126	West Bengal Power Development Co. Ltd.		
				127	West Bengal State Electricity Distribution Co. Ltd.		

Department wise Training and Placement

Computer Science and Technology

Students registered for campus interview: 56
Students with at least one offer: 48

Earth Sciences

One student (Arijit Bera) got placed as Assistant Geologist in NALCO, India.

One student (Debasish Kuiri) got placed as Trainee Geologist in Fugro Geotech, M.P.

One student (Mayukh Dey) got placed as Trainee Geologist in CE Testing.

Two students (George Biswas and Siperna Nayak) have joined Ph.D programme in National Geophysical Research Institute (NGRI), Hyderabad and in the Department of Earth Sciences, IIEST-S.

One student (Rupsha Chakrabarty) has joined as GIS Analyst in Infinium Solutionz Pvt. Ltd., (Adani Group) Ahmedabad

Humanities and Social Sciences

Partha Sarathy Roy:
Received training from TCGIBI, IIESTS, Howrah

Electrical Engineering

Sl. No.	Where training/Placement Undertaken	On campus/ Off campus	Went for Higher study
1	IBM GBS	On campus	University of California, San Diego
2	Accenture	On campus	Robotics Institute, Carnegie Mellon University
3	Vikram Solar Pvt. limited	On campus	IIT, Kharagpur
4	CESC limited	On campus	
5	HSBC	On campus	
6	Vedanta Resources LTD	On campus	
7	Mu Sigma	On campus	
8	Vedanta Resources	On campus	
9	PWC India	On campus	
10	Tata Steel Ltd.	On campus	
11	TECHNO ELECTRIC	On campus	
12	Otis Elevators India Limited	On campus	
13	PricewaterhouseCoopers	On campus	
14	IBM India Private Limited	On campus	
15	Cognizant Accenture Infosys	On campus	
16	BSNL	Off campus	

Information Technology

Sl. No.	Date of Visit	Company Visited	Student Intake	
			UG	PG
1		Microsoft	1	
2	17-Aug-16	ZS Associates	2	
3	30-Aug-16	PWC	5	
4	01-Sep-16	Dynamic Digital	1	
5	7-Sep-16	Microsoft	3	
6	8-Sep-16	Nomura Fintech	4	
7	9-Sep-16	Avanseus Technologies	2	
8	17-Sep-16	MU Sigma	1	
9	20-Sep-16	Accenture	11	
10	22-Sep-16	CTS	14	
11	23-Sep-16	Wipro	9	
12	27-Sep-16	IBM	7	1
13	4-Oct-16	Infosys	6	
14	5-Dec-16	DX Corr	2	
15	21-Dec-16	E-Tutorhome	1	
16	18-Jan-17	Reve System	1	
17	30-Jan-17	M junction	2	

Mechanical Engineering

The Department arranged summer internship and vocational/industrial training to the 4th and 6th semester undergraduate students in leading core industries and power plants. As on date, about 53 students were placed through campus interviews in various leading organizations. Some students also opted for higher studies like M. Tech. and MBA in leading institutions through qualifying examinations like GATE and CAT respectively.

Metallurgy and Materials Engineering

Adequate no. of students after 6th semester took training in different Integrated Steel Plants, private industries, CSIR Laboratories etc. More than 70% students of 8th semester got placement and the rest opted for higher studies.

School of Community Science and Technology

Training Scenario 2016-17

Module name	No.of Trainees	Traning Duration (Hrs)
Repair & Maintenance of Air Conditioner	38	600
Repair & Maintenance of Domestic Electronic Appliances	19	620
Plumbing	20	600
Electrician – Industrial	39	800
Welding Technology	60	800
Total	176	3420

Placement assistance of Trainees are provided after completion of the training programme into few companies like Weather Makers Pvt Ltd (A.C), Bharati Shipyard Ltd (Welding), Crystal restoration, Voltus Ltd, Blue Star Ltd, L.G Company, Unique Service center, Robotics, Patel Engineering Works, Hi-techno power consultants Ltd. and various Govt. Empanelled contractors like Genius Enterprise, Landscape solutions Pvt Ltd, S.R.Enterprise, World Electrics House, Sk. Nizzamuddin etc.
Out of the total 176 trainees, 70 candidates are placed in the said companies.

Training Programme

- Skill development / Vocational Training was given to the unemployed youth around the locality in Metiabruz, Kolkata", Garden Reach Shipbuilders & Engineers Limited (GRSE), Kolkata, a Govt. of India undertaking under the Ministry of Defense.

School of Management Sciences

2016 – Total Pass out 18 (Opted out of placement – 2)

Placement on Campus: 8

Placement off Campus: 4

VLSI

Training and Placement *(2014-2016 batch M.Tech. (VLSI Design)*

1.Subheccha Shyamal Banerjee - Global Foundries ,USA
2.Supratim Saha - Qualcomm International, Bangalore
3.Arijit Datta - Sankalp Semiconductors
4.Sayandip De - PhD, Eindhoven University of Technology,Netherland
5.Arko Dutta - PhD, Nanyang Technical University,Singapore
6.Shahid Iqbal Mallick - DxCorr, Bangalore
7.Sudeshna Chakraborty - PWC, Kolkata
8.Aritra Chatterjee - PWC, Kolkata
9.Shubhankar Mondal - BSNL, Kolkata

Centre of Excellence for Green Energy and Sensor System

Training and Placement

All the M. Tech. students of 1st batch (2014-16) are well placed

SL No.	Name	Designation	Name &Adress of Employer/Company
1	Dipak Kumar Saha	Sr. Project Engineer	Agni Power & Electronics Pvt Ltd, 114 Rajdanga Gold Park, Kol-700109
2	Kausturi Chatterjee	JRF	MeghnadSaha Inst. of technology
4	Sourav Nandi	Sr. Section Engineer	Eastern Railway, Howrah Division
6	MohdAlam	PhD Scholar	IIT Delhi
7	Dipak Kumar Mandal	JRF	Calcutta University, Rajabazar Campus
8	Ishita Chaturvedi		Airport Authority of India
9	Pritam Banerjee	Ph.D Scholar	IIEST, Shibpur
11	Saikat Ghosh	JRF	IIT KGP
12	Arup Dhar	PhD scholar	IIT KGP
13	Debayan Biswas	Solar Trainer	SLIEM, Salt lake
14	DebasishDey		Eastern Railway

Students' Activities

On recommendation of the first Review Committee (1953), PICSA department was started as the Proctorial Department in 1956 with the objective of improving the personal qualities of students and looking after their discipline, welfare, and extra-curricular activities. The department was later renamed as the department of Students' Activities with the redesignation of the Proctor in 1985 to Professor-in-charge of Students Activities. The department functions under the direct supervision of the Professor-in-charge of Students' Activities.

BROAD PERSPECTIVES

- Improving the personal qualities of students and looking after their discipline, welfare and extra-curricular activities.
- Election to the Students' Union, Sports, Cultural Activity, Quiz Fest, Tech Fest, Annual reunion, Seminars etc.
- Smooth and successful conduct of Additional Elective PT/NCC/NSS course for 1st year BE students.
- Supervision of Halls /Hostels is made regularly by Superintendents, selected specially from the Faculty members & Officers of the university community.
- Management and Supervision of Messes – through Joint Mess Committee.
- In order to create an environment conducive to foster growth of academic and cultural life in the University and to develop sound mental health of students by engaging themselves creatively within the University Campus, various societies like student's society for Artistic Expression, student's Society for Music and Dance, Students Society of scientific Expression have been formed and functioning under the overall guidance of this department.

The Campus has two of the best play grounds in the Eastern part of India - 'Oval' and 'Lords', which were modelled after the two famous cricket grounds in England during the pre-independence days. These play grounds provide ample opportunities to the students for excelling in games like cricket, football, basketball, badminton and so on. The Institute also has a swimming pool, designed and funded by the Alumni of our Institute, for the students, staff and teachers. In addition, the Institute has an excellent gymnasium with modern equipment donated by the Alumni. IIEST, Shibpur has a 'Students Centre for Creative Expression' where the students get the opportunity to perform dramatics, music, photography, quiz and debates, etc. through a number of Societies. The Students' Welfare and Recreation Centre has been set up with the benevolent donation from our Alumnus, Late R. N. Banerjee (1947 batch). The students organise cultural programs quite regularly through these societies. The students interested in scientific modelling and Robotics will find ample scope to develop innovative models, including robots. The students associated with 'Robo Darshan', the students Robotics club have developed a number of different types of Robots, including Robots with vision. There is also a Students' creative Software writing Society. Instruo, the Techno management Festival and Rebeca, the Students' Cultural festival are two important Annual Students events, where the Students from our Institute as well as from other Institutions including IITs participate in large numbers. The Institute encourages all kinds of innovative expressions – in cultural, sports or scientific and technicalideas.

HOSTEL AND MESS AFFAIRS


Presently total student strength – 3000 nos. (including UG & PG Day Scholars and Research Scholars).
Total No. of Halls / Hostels - 15
Only for UG Students - 09
UG & PG Combined - 03
Only for PG Students - 01
Exclusively for UG/PG Girls - 02

ATHLETIC CLUB

Functions:

- Smooth conduct of Additional Elective PT/NCC/NSS with 100 marks for 1st year BE students (1st Semester & 2nd Semester) with proper evaluation process with a view to all-round development of personality in growing age groups.
- Central facilities for students relating to Indoor & outdoor Games and Sports.

Sports & Games facilities available in University (managed through Athletic Club)

Multi-use Play Ground OVAL LORDS Used for PT/NCC/NSS classes, Football, Cricket, Athletics (300m Track with 6 lanes).
Out-door Tennis Court : Grass Court
Out-door Volleyball Court : Grass Court
Table Tennis Board
Badminton Court

Swimming Pool (for Swimming & Water Polo).

Gymnasium – 1 no. (Concrete)
Multi- Gym – 2 nos.
Central facility for Boys – 2 Nos. with 16 stations and 1 No with 12 stations.
Exclusively for Girls with vibrator apparatus – (placed in Ladies Hostel)
Weight Training apparatus - Sufficient Dumbell, Barbell, Weight Plate, Waist-Belt, Rope, Motorized Treadmill etc.

DEPARTMENT OF STUDENTS' ACTIVITIES

Faculty Position : 3
Officer : 1
Physical Training Instructor (Part Time) : 1
Football Coach (Part Time) : 1
Support Staff : 13

OUR MULTI-DIMENSIONAL SPORTS CULTURE

- National Level Participation
- Our venture towards Intra-mural activities
- Other Extra-mural events organized by IIEST, Shibpur.

National Level Participation:

- East Zone Inter-university Football (M) Tournament – Org. by AIU.
- East Zone Inter-university Cricket (M) Tournament – Org. by AIU.
- Vidyasagar Trophy Football Tournament – Org. by IFA, affiliated to AIFF (Inter-university of West Bengal).
- Ajoy Ghosh Trophy Cricket Tournament – Org. by CAB, affiliated to BCCI.
- All Bengal Inter-university Table Tennis Championships- Org. by WBTTA, affiliated to Table Tennis Federation of India.
- Inter-university Badminton Championships – Org. by WBBA, affiliated to Badminton Association of India.
- Chetan Devraj Inter-technical Institutes Cricket Tournament – Org. by BIT Mesra, Ranchi.

Our venture towards Intra-mural activities

- Inter-Deptt. Football competition for 1st semester boys.
- Inter-Deptt., Inter-year, Inter-Hostel Football tournament.
- Inter-year & Inter-Hostel Volleyball competition.
- Inter-Hostel Table-Tennis championships.
- University Athletic Meet.

Other Extra-mural Events

- Inter-Technical Institute Invitation Football Tournament.
- Inter-Technical Institute Invitation Cricket Tournament.

NATIONAL CADET CORPS (NCC) /PHYSICAL TRAINING (PT)/YOGA/NATIONAL SERVICE SCHEME (NSS)

The Institute provides NCC/PT/NSS as compulsory additional elective subject under extracurricular activity for all the first year students. All students must be enrolled in NCC/PT/NSS course. They will have to undergo physical training once in a week by specially trained Physical Instructor. Attendance will be given by Physical Instructor and 75% attendance is compulsory for each student. Marks will be given by Physical Instructor in consultation with the Dean (Student Affairs) depends upon the performance of the student and the same will be forwarded to the Controller of Examination by Dean (Student Affairs) after each semester examination.

ROBODARSHAN

ROBODARSHAN, the Robotics Society of IIEST Shibpur, is one of the most active student societies helping in inculcating among students the scientific temper & zeal to show how robotics is closely related to our daily world and how they make our lives easier by automaton.
Founded in 2009, the club became an official part of Centre for Creative Expressions in 2011 and since then the club has been progressing with leaps and bounds. The club now operates under HJBSIC-ROBODARSHAN, along with Student's Innovation Centre, under the able guidance of Prof. Syed Minhaz Hossain, our professor-in-charge as well as our mentor.

OpenHmnd

Nao by Aldebaran Robotics

Atlas by BostonDynamics

OpenHmnd is an initiative by the students of Indian Institute of Engineering Science and Technology, Shibput under robotics and innovation club of the institute Robodarshan to built an robot that have human level intelligence with an physical apperance similar to we fellow humans, this humanoid project is open source project anyone intersted can contribute for the advancement and development of the robot.

Autonomous Stabilization Of Quadcopter

Objective
This project has been made to be used in domestic purpose.
This project has been done to realize a cheap Quadcopter with autonomous hovering and landing capabilities . The basic objective has been to make it fully self sufficient and work autonomously.
The height is being mapped continuously using SONAR sensor.

BUILD AND WORKING PRINCIPLE
The build consists of a Quardcopter chassis fitted with brushless motors and escs

1) Microcontroller-A Rasberry Pi 2 has been used. It has :

a. A 900MHz quad-core ARM Cortex-A7 CPU
b. 1GB RAM
c. 40 GPIO pins
d. Camera Interface (CSI)
e. Micro SD card slot
f. 4 USB ports

2) An mpu6050 sensor

3) A WiFi dongle

4) Camera

5) Self-made gimbal with servo motors

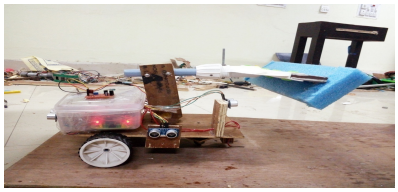
6) Battery-A 3s Lithium Polymer battery has been used for robust movement of the motors.

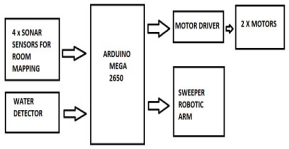
The quad-copter along with the wireless image processing can be used as a testing platform for flight control, navigation and real-time systems.

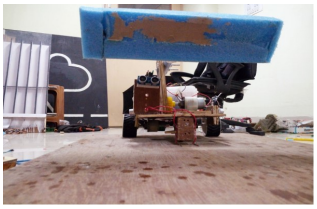
We can use it in military purposes such as surveillance and recognition via image processing and wireless communication system.

Quadcopter can be used in search and rescue missions in urban areas.

Autonomous Room Cleaning Robot







Objective

This project has been made to be used in domestic purpose.
This project has been done to realize a cheap bathroom cleaning machine which can work without human intervention. The basic objective has been to make it fully self sufficient and work autonomously.
The room is being mapped continuously using SONAR sensors. The inbuilt water detector detects for water and signals the inbuilt microcontroller. It then engages the sweeping blade and sweeps the water towards the far end of the room.
BUILD AND WORKING PRINCIPLE

The build consists of a robot chassis fitted with wheels for locomotion. A robotic sweeper arm has also been attached. The sensors consist of four SONAR sensors as well as a water detection sensor.
WHEELS - The wheels used have appropriate thread to have grip on the floor in water.
SWEEPER ARM - The cleaning arm consists of a conventional sweeper blade attached to a 1 DOF robotic arm.
WATER SENSOR - The conductivity of water has been used to detect water. There are two probes coming out on the floor to search for water.
ROOM MAPPING - The room has been mapped using four SONAR sensors to get the distances from the four walls of the room.
MICROCONTROLLER - An Arduino mega board has been used. The Mega 2560 is a microcontroller board based on the Atmega2560. It has 54 digital input/output pins (of which 15 can be used as PWM outputs), 16 analog inputs, 4 UARTs (hardware serial ports), a 16 MHz crystal oscillator, a USB connection, a power jack, an ICSP header, and a reset button. It contains everything needed to support the microcontroller; simply connect it to a computer with a USB cable or power it with an AC-to-DC adapter or battery to get started.
BATTERY - A 2s Lithium Polymer battery has been used for robust movement of motors.

Future Plan

The future plans may be to add a vision controlled robotic movement for commercial use as well as a dock for charging.
A large-scale implementation of this project is in progress where multiple quadcopters will supervise numerous moppers, vacuum cleaners and other waste management bots using Swarm Intelligence.
It is being planned to use this system throughout the campus of **IIEST Shibpur, Howrah** and make waste management completely autonomous and more efficient.

KRITI 2017 SCAGE

KRITI 2017 was organized by The Society for Creative Arts and Green Environment (SCAGE), IIEST Shibpur on 1st and 2nd of April 2017. The society also celebrated its second year with this grand event, which was completely based on learning and eventually immense potential inputs from the students.

The mentor of the society Prof. Aditya Bandyopadhyay & Honorable Guest Mr. Prahlad Acharya inaugurated the event. The organizing committee students also performed at the inauguration. This was followed by a mesmerizing performance by Shadow Artist Prahlad Acharya, who has also been a semifinalist in the India's Got Talent & and done shows on shadow art and magic all over the world.

About the Students' Senate
The Students' Senate of IIEST Shibpur is the house of representation of the students of Indian Institute of Engineering Science and Technology, Shibpur. It was formed on 20th August, 2015 and took the place of the Students' Union BECSU, which was dissolved in 2009.
The Students' Senate consists of several students' societies relating to academics, culture and sports. The societies under the students' senate are:

1. Academic Society of Aerospace Engineering and Applied Mechanics,
2. Students' Society of Architecture, town and regional planning,
3. Society of Civil Engineers,
4. Electrical Engineers' Society,
5. Academic Society of Electronics and Telecommunication Engineering,
6. Academics Society of Information Technology,
7. Society of Mechanical Engineering,
8. Academic Society of Metallurgy and Materials Engineering,
9. Society of Mining Engineers,
10. Cathersis- the Photography Society,
11. CodeIIEST- the Coding Society,
12. DebSoc- the Debating Society,
13. Euphony- the Music Society,
14. Les Thespians- the Dramatic Society,
15. LitSoc- the Literary Society,
16. Quiz Maniac Beings- the Quizzing Society,
17. Reflexo-Beta- the Dance Society,
18. Robodarshan- the Robotics Society,
19. Society for Creative Arts and Green Enviornment (SCAGE)
20. Society of Games and Sports.

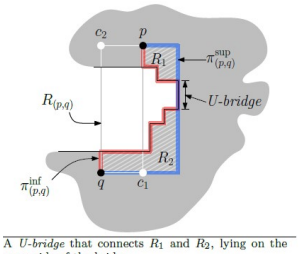
Basic Structure

All students of IIEST Shibpur are by default the members of their departmental academic societies and thereby the member of the Students' Senate. The membership of other societies viz. the cultural and sports societies are optional and according the internal regulations of those societies.

The members of each society elect the representatives of the society including a general secretary, an asst. general secretary and a treasurer. The General Secretaries of the societies form the General Council. The members of General Council elect the General Secretary, the Asst. General Secretary and the Treasurer of the Students' Senate. These people form the Executive Secretariat of the Students' Senate.

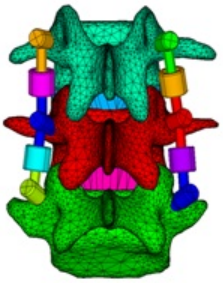
RESEARCH AND DEVELOPMENT ACTIVITIES

Research Highlights



A *U-bridge* that connects R_1 and R_2, lying on the same side of the bridge.

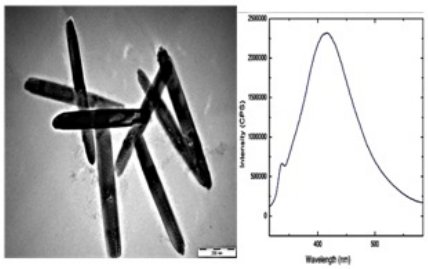
Generation, Decomposition and Analysis of the Isothetic Polygon in Digital Geometric Paradigm



Successful Design and Prototype Patient Specific Bon and Spinal Implants Development at IIEST

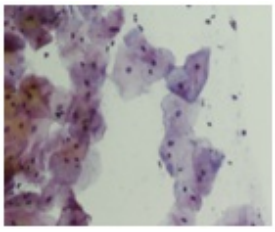
Bio-Medical Detection Unit for Food Toxins and Pathogenic Viruses

SAFE HOME: Monitoring system for Lone Elderly People – IIEST Innovation

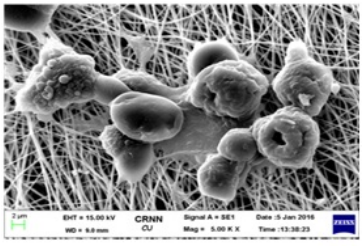


Development of Optical Nanofibers for Detection of Aflatoxin

Gas Leak Hunter
To detect the leakage from LPG Cylinder and stove in Kitchen. Low power signal conditioning unit and suitable packaging for different applications



Automated Early Cancer Diagnosis Systems for Habitual Smokers

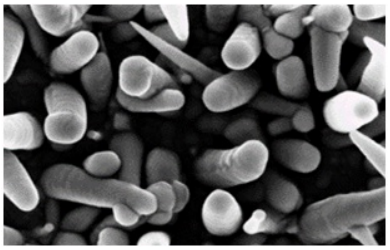


Nanofiber functionalized with Bioactive Agents for Accelerated Differentiation of Progenitor Cells

CEGESS: State of the Art Laboratory on Green Energy and Sensor System – Best in India

Green Transport: Solar Powered TOTO developed and demonstrated at IIEST

India's First: Ultrathin Monocrystalline Flexible Silicon Solar Cell with HARP



Laboratory Synthesized Wavelength Scale Silica Nanoparticles having Light Funneling Capability

Green Transport: Solar Powered Boat for Navigation and recreation

St Paul's Cathedral – The Idea of Whispering Gallery and Silica Sphere

The setup in which the Heat Exchanger is being developed

The Heat Exchanger with enhanced Heat transfer hanger is being developed

Consortium for Advanced Research Based on New Carbon (CARBON-C)

Solar Lantern

Research Area and Facilities

Architecture, Town and Regional Planning

Research Area

- Architecture and Built form.

- Computer Aided Architecture.
- Vernacular and Rural Architecture
- Energy and Building.
- Urban Design.
- Architectural Conservation.
- Housing and Human Settlement Planning.
- Transportation Planning.
- Remote Sensing and Geographical Information System.
- Environmental Planning and Management.
- Rural Planning and Development.
- Regional Planning and Development.
- Earthquake resilient Buildings and Builtform.
- Urban Planning/ Town Planning.
- Regional Planning.
- Urban administration, management and finance.
- Climate Change and Human Settlements.

Research Facilities

- Computer facilities for Remote Sensing and GIS
- CAD Simulation Laboratory
- Environmental Laboratory
- Acoustic Laboratory

Chemistry

Research Areas:

- Coordination, Bioinorganic & Biophysical Chemistry
- Molecular Recognition, Supramolecular Chemistry & Organic Synthesis
- Organometallic and Materials Chemistry
- Electrochemistry, Non-conventional Energy, Fuel Cell, Corrosion Science.
- Thin Film Semiconductors, Solar Photo-voltaic, Conducting Polymers & Photo-electrochemical Solar Cells
- Theoretical and Computational Chemistry, Theoretical Molecular Sciences
- Glycobiology
- Nano Science, Spectroscopies and X-ray Crystallography
- Homogeneous & Heterogeneous Catalysis
- Synthetic methodology, natural product synthesis and organocatalysis
- Computational biophysical chemistry

Research Facilities (name specific equipment / picture etc.)

- UV-Visible Spectrophotometer
- IR Spectrometer
- Spectrofluorimeter

- Optical Microscope with image analyzer
- TG-DTA-cum-DSC System
- Analytical cum Preparative HPLC with Mass Detector
- Vacuum Coating Unit
- Electrochemical Quartz Crystal Microbalance System
- Semiconductor Characterization System
- PAR Versastat-II Potentiostat and electrochemistry system
- Precision L-C-R Meter
- Gas Chromatograph
- BET Surface Area & Pore Volume Analyzer

Civil Engineering

Research area

Environmental Engineering

- Development of Domestic and Community-based Arsenic Removal Units and Installation at Arsenic-contaminated areas
- Testing and standardizing a low-cost domestic water filter for iron and arsenic removal
- Screening of public water sources for arsenic contamination
- Rapid assessment for fluoride contamination in West Bengal
- Development of new materials for arsenic removal
- Water treatment for surface water at village-level
- Technology for treatment of septic tank effluent
- Characterization of and energy recovery from municipal solid waste
- Antibiotic resistance development
- Advanced oxidation process

Geotechnical Engineering

- Application of stone columns as cost effective foundation system in soft soil
- Application of Jute Geotextiles in Civil Engineering
- Application of Geotube in Civil Engineering Construction
- Reliability in Geotechnical Engineering
- Analysis & Design of waste containment liner design for containment transport modeling
- Risk evaluation of pile foundation in liquefiable soil
- Study on liquefaction of soil for mutation and of mitigation strategy with special emphasis to microzonation of Kolkata
- Use of waste materials for Road Construction
- Behaviour of piles under complex loading

Structural Engineering

- Fibre Reinforced Composite Structures
- Concrete Technology (High performance concrete, Lightweight concrete, Geopolymer concrete, High-volume fly ash concrete, Self compacting concrete etc.)
- Reliability Analysis of Structures
- Structural Dynamics and Earthquake Engineering
- Computational Mechanics (FEM, BEM, SFEM)
- Structural Health Monitoring
- Corrosion of steel in concrete
- Vibration control

Transportation Engineering

- Highway Capacity and Level of Service
- Traffic Congestion Analysis
- Alternate Pavement Material
- Public Transport SystemPlanning
- Road Safety
- Design and Management of Rural Roads

- Rigid Pavement Design
- Pavement Distresses and Maintenance Management

Water Resources Engineering

- Water Resources Planning and Management
- Flood Hazard Mitigation
- Reservoir operation
- Stochastic Hydrology
- Storm Water Management
- River Hydraulics and Modeling
- Watershed Management
- Remote Sensing and GIS Applications
- Climate Change,
- Urban Hydrology

Research Facilities:

Environmental Engineering

- Atomic Absorption Spectrometer
- Gas Chromatography

Atomic Absorption Spectrometer

Geotechnical Engineering

- Pile Integrity Testing Setup
- Digital Triaxial Testing Setup
- Seismic Down Hole Testing System

Digital Triaxial Testing Setup

Structural Engineering

- Modal Testing Set-up
- Automatic Compression Testing Machine
- Corrosion Analysis Instrument
- NDT Facilities
- Composite Testing Lab
- Vibration Testing Facilities
- UTMs, CTMs

Automatic Compression Testing Machine

Transportation Engineering

- Field Asphalt Content Tester
- Light Falling Weight Deflectometer
- V Box
- Digital Camera for traffic survey
- True Speed Laser Gun

V- Box

True Speed Laser Gun

Water Resources Engineering

- Remote Sensing and GIS Setup
- High-performance Computing

Remote Sensing and GIS Setup

Some Recently Created Facilities

Composite testing facilities

100kN UTM

Vibration Control Testing Facilities

CAPO Test System

Hand Held Core Cutter

GPR for concrete testing

SASW test set up

Cutting of Carbon Fabric

Computer Science and Technology

Research area:

- The current research areas of the Department are as follows:
- VLSI Design and Testing for Sub-micron Technology
- Theory and Applications of Cellular Automata in Diverse Fields
- Information System for Control and Management Applications

- Mobile Computing
- Testing and synthesis of Quantum circuit, Reversible Circuit, Nano-Circuit and Digital Micro fluidic Bio-Chip
- Broadband Computing
- Image Processing including Document Image Processing and Content Based Image Retrieval VIII. Soft computing
- Computational geometry
- Data mining and Big Data Analytic XI. Wireless sensor network

Research facilities

Equipments:

Cluster and Distributed Computing Platform	HPC (High Performance Computing) Server - IBM P Series 8 CPU Server IBM eServer Blade Center with 12 Blade servers (running Linux, Unix, Windows OS) 3 High-End Workstations - 1 SGI Prism, 2 IBM Intelli Stations
PCs	About 150 high-end Desktop PCs (dual-core / quad-core)
Printers	Multiple networked printing stations
P/C with Robot Interface	Parallax Boe –Bot Robot Kit , Hex- Crawler Kit, Robot Arm
Wireless Explore Kit (WEK)	IEEE 802.15.4 Standard
Labview (Software)	National Instrument/ NI-DAQMX for Windows Vista, Vista X64 Edition, XP/2000.Also includes: Labview Signal Express
Microcontroller platforms	KEIL-based (sufficient number)
Function Generators	Yokogawa/ FC-300(15MHZ), Synthesized Function Generator (sufficient number)
Digital Signal Oscilloscopes (DSO)	Yokogawa/ DL-9505L 5GS/S 500MHZ (sufficient number)
FPGA / CPLD platform	Xilinx and Altera based
DSP platforms	Texas Instruments-based
Programmable Logic Controller platform	Siemens-based
8085 / 8086 based SDKs	Sufficient number
Workbench for hardware circuit design	Sufficient number
Insulation Tester	1 no.
Logic Probe & Pulser	5 nos.
Multimeter	6 nos.
Labview base Development system	1 no.
Multisim Interactive Circuit Teaching Environment	1 no.
Digital IC Tester	1 no.
Function Generator	10 nos.
Digital Trainer Kit	13 nos.
Standard 8085 microprocessor trainer kit	3 nos.
LAN –T Trainer	2 nos.
Oscilloscope	5 nos.
Advanced 8085 microprocessor trainer kit	2 nos.

VLSI System Trainer Equipment	3 nos.
EPROM Programmer	

Department of Earth Sciences
Research area :

Hydrogeology, Sedimentology, Basin Tectonics, Invertebrate Paleontology, Structural Geology.

Research facilities:

Binocular Microscope with photographic attachments, GPS, Petrological microscope (student model), Advance Research Grade Petrological microscope, Rock cutter (Manual and Digital), rock polishing machine, Hotplate, Spectrophotometer, ph meter & conductivity meter

Department of Electrical Engineering

Research area:

S. No.	Name	Designation	Specialization	Broad Research Area
1	S. Mallik	Visiting Professor	Electrical Machines	
2	B. Basak	Professor	Electrical Machines, Power Electronics & Drives	Drives, Energy
3	A. Chakrabarti	Professor	Power Systems, Networks	
4	D. Sarkar	Professor	Electrical Machines, electromagnetic Fields	
5	G. Bandyopadhyay	Professor	Power Systems, Computer Applications	(i)Use of Power Electronic Converters to Power System, (ii)Power Quality and (iii) Use of Distributed computing in P.S. problems
6	Jagadish Pal	Professor	Power Systems, Programming in C Language, LaTaX documentation	Power System Security Analysis
7	A. Sutradhar	Professor & Head	Instrumentation, Digital systems	Stochastic Control system, Multi-objective control, Smart instrumentation, Modeling and control of physiological processes
8	P. Syam	Professor	Power Electronics and Drives	Converter Topology, AC to AC power converter, Power Quality, Vector Control Drive
9	A.K. Maitra	Visiting Professor	Power Systems, Power System Protection	
10	C.K. Chanda	Professor	Power System, Electrical Machines	
11	A. Rouf	Professor	Electrical Machines, Non-Conventional Energy	
12	M. Sengupta	Professor	Electromagnetic	

			Electrical Machines and Drives	
13	D. Roy	Professor	Electrical Machines & Drives	
14	Aparajita Sengupta	Professor	Control Systems	Stabilization and Control of Uncertain Nonlinear and Time Delay Systems using Linear Matrix Inequalities AND application to physical systems.
15	K. Das (Bhattacharya)	Professor	Microprocessor & Power System Protection, Illumination Engineering, Digital Signal Processing and Embedded Systems, Utilization of Electric Power, Advanced Microcontroller Technology.	Power System Protection; Smart Grid Controls for Increased Efficiency of Distribution Networks Solar PV Energy Measurement and Instrumentation; Integration of Solar PV Distributed Generation into Conventional Electric and Smart Networks,
16	D. Ganguly	Asso. Professor	Power Electronics & Drives, Microprocessor Applications	Use of PLDs in efficient control of electric drives Power Quality estimation and improvement using digital platforms
17	A. Barman	Asso. Professor	Measurement, Illumination, Computer Programming and Simulation/ Open Source Software	
18	A. B. Choudhury	Asso. Professor	Power Systems	
19	Anindita Sengupta	Asso. Professor	Instrumentation, Control Systems	1.signal Processing 2.Real time control 3. Textile Instrumentation.
20	A. De	Asstt. Professor	High Voltage Engg., Power Systems	1.Power System Operation, Monitoring & Control 2.Power System Optimization 3.Applications of AI
21	K. Mukherjee	Asstt. Professor	Power Electronics / Electrical Machine Drives, Distributed Generation, Power Quality	
22	P. Chattopadhyay	Asstt. Professor	Power System, Condition Monitoring	i)Machine learning based smart monitoring ii)Nano-material applications in Power Sector iii)Thermal Image Processing
23	S. Parui	Asstt. Professor	Electrical Machines & Drives, Power Systems, Renewable Energy	Nonlinear Phenomena in Power Electronic Circuits
24	Bhaskaran Barman	Asstt. Professor	Power Electronics & Machine Drives	i) Power Electronics ii) Induction Heating
25	S. Dalapati	Asstt. Professor	Power Electronics and Drives; DSP/Microcontroller	(a)Power Electronics (b)Machine Drives (c)Microcontroller-based

			based Applications	applications (d)Linear control systems applications

Research facilities:

Sl. No.	Name/ particulars of the Equipment	Year of Purchase	Cost/ Funding	Remarks
1	Impedance Analyzer 120 MHz	2016	22 Lakhs/ CPRI Project	Research
2	Automatic Tan-delta Resistivity Measuring test set	2016	8.6 Lakhs/ CPRI Project	Research
3	Automatic Break down Strength Measuring Test set	2016	6.8 Lakhs/ CPRI Project	Research
4.	Sb-RIO and Labview Platform	2013	1.6 lakhs/TEQIP	PG Research/UG Laboratory

Humanities and Social Sciences

Research area:

Climate change and Consumption, Transport Demand Management, Forestry, Wetland Management, Marketing Management, Consumer Marketing, Industrial Marketing. Development Environment Anthropology, Anthropology of Globalization, Human Universals, , Policies and Environment, , Non-standard Logics, Fuzzy Set Theory , Rough Set Theory, , Mathematics and Culture , Logic of Diagrams, Functional Analysis, Topology. Knowledge Representation, ESP**, ELT,** Testing and Evaluation**, ,** Materials Production for ELT, English Renaissance Drama, Theatre Studies, Gender Studies, Legislative Protection for Women In their Workplace, Cultural Studies, Study of Urban Spaces, Science and Technology Policy, Critical Theory

Research facilities:

Softwares : SPSS & Prowess

BUSSU a multiple language learning software already procured from McGraw-Hill in 2016

Information Technology

Research area

Below we mention the selected areas of research contributions made by the department.

- Systems Architecture and Design of Computer Architecture, Design, Testing, Verification, Algorithms and VLSI CAD
- Theory and Applications of Cellular Automata in Distributed Computing, Random Number GenerationVLSI design & Test etc.
- Digital Image Watermarking and Signal Processing
- LBM and Additive watermarking using signal processing tools
- High Payload Spread Spectrum watermarking using Wavelets
- QIM watermarking for Access control and Error Concealment
- Optimized Spread Spectrum watermarking
- VLSI architecture for watermarking

Digital Geometry and Image Analysis

Shape Analysis

3D Image Analysis
Face Recognition
Document Image Analysis

Wireless and Mobile Communication, Sensor Network
PAPR reduction in Multicarrier System
Multiuser Detection in MC-CDMA
Channel estimation
Optimized system design
Efficient Routing protocol
Energy efficient WSN Management

Nanoscale Computing and system Design
Optimization of Architectural and Layout Level Design of 3D Nanoscale Systems
with major thrust on
Performance-centric, Power Aware Design of networks-on-Chips (NoC) and Performance
Centric Layout Design of 3D Integrated Circuits
Post Silicon Nanoscale Technologies and Computing
Memristive Technology, Modeling, and Simulation
DNA Computing

Information Management and Analytics
Crowdsourcing
Big Data Analysis
Computational Molecular Biology

Information Security
Secret Sharing
Chaos based image encryption
Digital image forgery detection
Remote user authentication using smartcard

Cognitive Radio Networks
Energy Harvesting, Outage
Probability and Secrecy Analysis in
Multihop Network

Image Watermarking and Secret Sharing on Compressed Sensing
Improved Watermark detection on multiplicative and additive noise
Secret Image Sharing for Progressive Quality Access

Compressed Sensing Image Reconstruction
Optimal Fussing for multichannel CS image Reconstruction

Lesion Detection on Retinal Images
Blood Vessel and Optic Disk Detection
Neovascularization Detection
Lesion Detection for gradation in Diabetic Retinopathy

Research facilities

Computing Facilities:

Model	Specification	Nos.
MAIL SERVER & FILE SERVER SUN SERVER	X Series 236 @ server (IBM) Intel Single Xeon DP Processor @ 3.2 GHz EM 64T	2
	SUN FIRE V215 SERVER PROCESSOR 2X ULTRA SPARC 111	1
ORACLE SERVER	Single or Dual Intel® Xeon® 3.0 GHz processors or Single or Dual Intel® Xeon® 3.2 GHz processors (dependent on model)	1
HP XW 4600Workstation	Intel Dual Core 3 GHZ	2
	I3 RAM 4GB Hard Disk 1TB	20
HP COMPAQ DX 7200MICROTOWER & DELL OPTIPLEX 780 Desktop	INTEL P-IV HT 3 GHZ & CORE DUO 2.80 GHZ 2GB DDR2 RAM	180
HP Compaq dx7400 MICROTOWER	INTEL CORE 2 DUO 1.60 GHZ 1 GB DDR2 RAM	
HP COMPAQ DX 7200 MICROTOWER	INTEL P-IV HT 3 GHZ	

➢Wireless Sensor network research facility have various type of sensors and microcontroller board.

Software:

- Windows 98 (SE)
- Red Hat Linux 703 professional
- Norton systems works
- Personal oracle 8015 (Win 98 compatible)
- Visual studio .Net professional (Single user)
- MS office XP (Prof)
- Macromedia flash
- ADOBE Photoshop CS2 version 9 educational paper license
- ADOBE Photoshop CS2 version 9 Edu media kit on CD
- Windows 2000 (OEM Pack)
- Win 2000 server plus (Academic editions) Client license
- Oracle 10G database std-I edition on linux
- McAfee Active Virus Scan P:1 Gold (101 user)
- Adobe Acrobat Professional 9
- Extra Cyber Emulator

- Matlab R2008a (Client Server) (30 user)
- Simulink (5 user)
- Signal Processing Toolbox(5 user)
- ATS for oracle std-I for 1 year
- Media for oracle in CD
- Internet developer suite on windows XP OS
- Sound forge (latest version) Edu full box on CD
- Rational Rose
- Microsoft windows XP prof. Upgrade OLP NL-AE
- Microsoft office 2003 prof. OLP NL-AE
- Microsoft studio 8 Edu paper license
- Microsoft windows XP prof. Media kit on CD
- Microsoft office 2003 prof. Media kit on CD
- Microsoft studio 8 Edu media kit on CD
- 1SE Design Suite Foundation 8.1i,9.1i,10.1i,11.1i, 12.1i, 13.1i
- Chip scope Pro
- Embedded Development kit
- Plan Ahead
- System Generator
- Accel DSP
- ModelSim XE Simulator

iii) **Electronics Equipment:**

Sl. No.	Name of the Item	Qty
1	Microcontroller Kit SDA 51	12
2	P-N Sequence generator	04
3	Function Generator	09
4	Test ROM for NIFC- 27	01
5	26 pin I/O connector	15
6	PMS DSP 320C 30Trainer KIT	06
7	Parallel Port Cable for DSP C-30	06
8	Input /Output Cable	06
9	Power Supply for SDA –51	12
10	8085 Microprocessor Trainer kit	18
11	8086 Microprocessor Trainer kit	06
12	Digital Trainer kit	08
13	Digital Communication Trainer kit	15
14	Traffic Light simulator Interface Kit (ALS -NIFC-11)	06
15	DAC for ADC Temperature Sensor Dual slope ADC interface for µP trainers(ALS-NIFC-10)	04
16	Interface to study A/D and D/A converter(NIFC-27)	02
17	JP6 of Interface card to Trainer Kit Connector	02
18	Test ROM for NIFC- 01and NIFC-11	01
19	CROSS COMPILER FOR DSP	01
20	DIGITAL STORAGE OSCILLOSCOPE	01
21	CATHODE RAY OSCILLOSCOPE	11
22	SPECTRUM ANALYZER	01
23	Vector Signal Generator	01
24	Spartan-3 AN FPGA Development Board	05
25	Spartan-3 FPGA Development Board	01
26	Virtex-5 FPGA Development Board	02
27	Vector Signal Analyzer	01
29	Agilent N5182A-403 Calibrated AWGN	01

Mathematics

Research area

Mathematical Biology , Operations Research, Fuzzy and Intuitionistic Fuzzy set Theory, Inventory, Transportation, Reliability Optimization, Information Theory, Portfolio Optimization, Fuzzy and Stochastic Optimization, Information, Optimization, Entropy Optimization, Mathematical Ecology, Dynamical systems, stability and bifurcation theory, population dynamics, mathematical modelling in ecology and epidemiology, management and conservation of fisheries, bio-economic modelling of renewable resources, Neural network, Nonlinear data analysis , Relativity, Cosmology, Astrophysics, Lie theory and Special Functions, Functional Analysis, Topology, Nonlinear Dynamics, Mathematical Economics, Quantum Information theory, Mathematical theory of Elasticity , Thermo elasticity, Thermo visco elasticity, Micropolar elasticity, Fracture Mechanics, Fluid Dynamics, Non-linear waves in Ocean, Computational Intelligence, Reliability Theory, Mathematical Statistics, Nonparametric Inference

Mechanical Engineering

- Numerical Heat Transfer
- Combustion
- Fluid flow analysis and bio-medical engineering
- Multi-phase Flow and CFD
- Alternative fuels
- Bio-fluid Dynamics
- Refrigeration
- Energy
- Renewable Energy
- Greenhouse Technology
- Tribology
- Bearing Lubrication
- Dynamics, Vibration and Control
- Composite Materials
- Ultrasonic NDT/Wave Propagation
- Application of finite element method for stress analysis in biomechanics
- Modeling of impact phenomena
- Fracture Mechanics
- CAD/CAM
- Non-traditional Machining
- Quality Management
- Modeling and optimization of manufacturing processes
- Quality Engineering

Mining Engineering

Principal research strengths of the department lies in the areas of

- Mining Geo-Spatials
- Occupational Safety and Health of Miners
- Environmental Management of Mining Operations
- Opencast mine planning and design
- Mineral Beneficiation

- Carbon Sequestration and Exploitation of Coal-Bed-Methane
- Ground Control and Underground Space Engineering
- Mine closure and policy formulation

Ever since the accordance of deemed university status to the institute the department has been running regular academic and sponsored research programmes. Academic research undertaken in the recent past focused on the following areas:

- Occupational health and safety
- Carbon Sequestration and Exploitation of Coal-Bed-Methane
- Mine closure planning
- Environmental modeling
- Rock mechanics , strata control and slope stability
- GIS / GPS and remote sensing application
- Mineral beneficiation
- Environmental appraisal and planning
- Mine system optimization
- IT application in Mining
- Rock blasting with explosives
- Simulation & behavioural modelling

Sponsored research carried out by the department hinged around the following focal points:

- Mathematical modelling on dust generation in large opencast coal mines
- Life of mine study of opencast mines
- Risk assessment of occupational injuries through epidemiological approaches in underground coal mines.
- Impact of sorption and diffusion properties on deliverability of coal-bed methane.
- Analysis of sorption properties of shale gas reservoirs
- Methodology for reserve estimation of coalbed methane
- Study of health condition and monitoring of haulage drive and mechanical ventilator in an underground coal mine.
- Benchmarking of large opencast project in India
- Techno-economic feasibility of high angle conveyor in large opencast mines in India.
- Sillimanite investigation in Purulia district, W.B.
- Economic analysis of impact of mechanised surface mining on natural resources and economy of iron ore mining belt of eastern India
- Development of a methodology for cumulative impact assessment of non coal mining projects
- Development of a methodology to integrate environmental economics in EIA of surface iron ore mines in eastern India
- Development of a GIS based information system for coal mining areas of West Bengal
- Quantitative risk assessment of mine workers – a useful management tool to improve mine safety performance.
- A tecno-economic study on processing of china clay of West Bengal
- Improving mine safety performance through GIS.
- Assessment of suitable rest break period for selective underground coal miners – an ergonomics approach

During the past decade the department had extended outreach services in the areas of Rock testing, Topographical survey, Surveying for railway corridor, Highway survey, Mine Planning, Volume computation, Blast vibration monitoring , Coal sampling , Slope satiability , sustainable development framework for mines.

Having analysed its resource strengths and the needs of the present day mining industry the department has identified the following major thrust areas for pursuing *avant garde* research:

- Mine Planning and IT application
- Mine Safety Engineering
- Geo-Informatics and Ergonomics
- Mine environmental Management and Mine Closure Planning
- Mineral Beneficiation
- Rock Mechanics Strata Control , Slope Stability Study
- Mineral Economics.

Research facilities:

GIS and Remote Sensing: The department has well established GIS and Remote Sensing research laboratories. The facilities include GIS software's like ARCMAP, ILWIS, GEOMEDIA etc. and Remote Sensing software's like ERDAS, ENVI etc. The department has AO scanner, AO plotter, workstations, handheld GPS and other associated software.
Safety and Ergonomics: The department has a good infrastructure for research and consultancy in the field of safety and ergonomics. The infrastructure include Oxylog consumption monitor, whole body vibration meter, hand arm vibration meter, mobile heart rate monitor. Asman Hygrometer etc
Rock Mechanics: The department has well established rock mechanics laboratory which includes, UTM, Rock drilling and cutting machines, Shear testing apparatus, Triaxial set up and software necessary for analysis.
Mine Planning: The department uses SURPAC and MINEX software for mine planning and design.
Survey: The department has well established survey laboratory. The equipment in lab includes, total station, electronic theodolite, DGPs and single frequency GPS.
Gas Flow Characterization: Adsorption isotherm measurement set up, High-pressure gas permeability measurement set up, Syringe pumps, Heluim Pycnometer, Thermogravimatric Analyzer, Gas Chromatographs, GEM reservoir simulator, COMET3 reservoir simulator, COMSOL multiphysics software

Physics

Research area (only mention broad titles without description in detail) :

- Synthesis and characterization of thermoelectric nanomaterials and composites
- Characterization of Fuel cells & its components
- Development and Spectroscopic characterization of Laser and Luminescent materials
- Photoluminescence, Fluorescence, Phosphorescence and Upconversion in rare earth doped glasses
- Synthesis and Optical properties of rare earth Nano-materials

- Processing and characterization of electroceramic materials used as capacitor dielectrics, sensors and actuators etc.
- Preparation & characterization of oxide glass by sol-gel route
- Preparation of nanocomposites and their structural, dielectric, thermal, magnetic and ultrasonic characterization.
- Physics and applications of Nano-crystalline solids
- Design and optimization of optical fibers for dense WDM system.
- Nonlinear pulse propagation through single mode optical fibers.
- Nuclear structure and nuclear astrophysics
- High energy physics
- Quantum field theory at finite temperature and density
- Atomic Physics in Plasmas, Laser-atom interactions.
- Spectroscopy of confined quantum systems, Many-body techniques in atomic physics.
- Nanostructure based Photonics, Photovoltaics and, Sensors.
- Experimental and Theoretical (Large Basis Shell Model (LBSM) and Particle Rotor Model (PRM) Calculation) studies of nuclear structure properties in the mass A~40, A~ 100 and A~150 regions.
- Spectroscopic study in A~40 region
- Theoretical studies of nuclear structure in the space above and below ^{132}Sn core.
- Preparation and Characterization of implanted target for nuclear experiments.
- Study of structural aspects, chemical kinetics and interfacial properties of the ultrathin films
- Plasma surface interaction,
- Plasma on biomedical application.
- Transport property of transition metal ions
- Carbon nanotubes, Graphene, Nanotechnology
- Collective excitation in fractional quantum Hall effect
- Non-equilibrium statistical mechanics and Quantum Chromodynamics.
- Nano-materials/biophysics

Research facilities:

- Microprocessor controlled 1800^{0}C box furnace
- Hydraulic pressing machine.
- HP LCR Meter
- Spectrophotometer (UV-Visible: 190-1100 nm)
- Luminescence Spectrometer
- Electric Furnace (1400^{0}C)
- Combined PL & EL setup
- IV-CV measurement with temperature variation
- Electro-Chemical setup for preparation of nanostructure materials
- CVD furnace for graphene synthesis
- Furnace for Oxidation/ annealing
- IBM- Z pro work station
- Dell T7500 work station
- Ultrasonic Pulse Receiver
- Spin Coater, Centrifuge & Hydrothermal Unit
- Tube Furnace
- UV-Vis Spectrophotometer (190-900 nm)
- Magnetic susceptibility measurement unit
- Closed cycle liquid helium cryostat
- Vacuum coating unit

- Magnet with power supply
- GM Counter and radioactive sample with lead shield
- Thermal conductivity measurement set up
- Z-scan instrument for measuring nonlinear properties of optical materials
- Linear stage setup for pulling fiber from micro to nano dimensions
- High precession Ammeter and source meter
- NaI detector with multichannel analyser
- Thermal chemical vapor system
- Plasma jet
- Indigenously developed PVC coated Chemical bench/Fume hood
- Computer interfaced I-V characteristics measurement setup—Agilent
- Computer interfaced LCR meter (1 MHz) --- Agilent
- 8 core Supermicro Workstation for serial programs. Equipment operational
- High performance parallel computing cluster with tentative capacity of 120 core. Under purchase process.
- Ab-initio electronic structure code name "VASP" under purchase procedure

School of community Science and Technology

Research area:

- Nanotechnology in food products
- Extrusion technology in food
- Development and evaluation of nutritionally enriched spread products
- Isolation and utilization of non oil constituent of oil bearing materials
- Technology Developments for Preparation of Low Cost Non-Dairy Food Products Enriched in Health-Benefit Ingredients
- Microbial fermentation process for production of valuable food ingredients
- Production of structured lipids
- Production of Microbial Enzymes and Microbial Colour from soil microbe for food uses.
- Production of Single Cell Proteins
- Utilization of membrane Technology for separation of food ingredients (phytochemicals and nutraceuticals)
- Utilization of food wastes for the production of value added products such as bioflavor, prebiotics, carbohydrates, alcohols etc.
- Studies on production and applications of Bioactive Peptide from microbial sources for health benefit

Mechanical Engineering

Research facilities:

3D Non-Contact Profilometer (Rtec Instruments make)	(created under DST-FIST)
Polishing Machine (Buehler make)	(procured under grant from DST-FIST)
Micro Balance (Sartorius AG make)	(created under DST-FIST)
Tribometer, UMT with Humidity Controller	(created under DST-FIST)
Tribometer with 150^0C Rotary Drive Humidifier	(created under DST-FIST)
Bio-mass Gasifier Set Up	(under TEQIP -II)
Exhaust Gas Analyzer and Diesel Smoke meter	(under TEQIP-II)

Metallurgy and Materials Engineering

Research Area:

- Ultra high strength steel, TWIP steel, Micro-alloyed high carbon steel
- Microstructure and texture in aluminium base alloy
- Aluminium based coating on steel
- Colour coated steel
- Diffusion bonding, Friction Stir Welding
- Wear of Materials
- Nano-structured materials
- Electronic Materials
- Biomaterials
- Composites

Research Facilities:

Up-gradation of research facilities in the Department of Metallurgy and Materials Engineering is a continuous process for creating a better environment for academics and research. A number of new equipment and instruments are acquired regularly for various laboratories, pertaining to rapidly expanding research horizons. A major research area for materials development and characterization comprises the broad fields of Metallography and Optical and Electron microscopy laboratories, the X-ray laboratory and the Differential Scanning Calorimetry (DSC) laboratory. The Physical Metallurgy laboratory, which has traditionally been the most important one in the Department, consists of an adequate sample preparation section, including Electro-polishers; a number of heat treatment furnaces with programmable control; high temperature (1700^{o}C) furnaces capable of powder sintering.

The optical microscopy section has been modernised with a number of Research grade microscopes with micro-hardness testing facility. The Scanning Electron Microscope with EDS system has given a new impetus to advanced research. For research in the field of Mechanical Metallurgy, the department has one Instron Testing machine. A laboratory scale Rolling mill, various hardness testers, Impact testing machine etc. are the other facilities in this area.

Recent additions have been made to augment the gamut of research areas. The Wear Testing facility enables investigations in the field of Tribology. Researches have been in progress in the field of nano-structured materials, produced by different routes. Planetary Ball Mills have been installed for the mechanical alloying route for powders. A device for evaluating magnetic properties of materials is another notable addition in the field of research on new materials. The X-ray diffraction unit for Phase identification and Texture study and the Differential Scanning Calorimeter for characterization are the important facilities, which are now used intensively for meaningful research.

The Department also has a computer laboratory with internet connectivity, which shall induce further in researches on simulation and modelling. The department has procured FESEM under DST-FIST grant which has been installed recently and working satisfactorily. Procurement of several other equipments, which is in the pipe line, shall further boost the research capability of the Department in near future. The Department can boast of a rich tradition of research, mostly with practical and industrial applications. Sponsored and Collaborative projects have been taken up and completed for organisations like Bhabha atomic Research Centre (BARC), Indian Space Research Organisation (ISRO), UGC, AICTE, Ministry of Steel, Govt. of India, Ministry of Defence, Govt. of India, Defence Research and Development Laboratory, Naval Research Laboratory etc. The important Projects of the Department are mentioned in a separate section to give a glimpse of the wide range of vigorous research activity of the faculty members of the small but dynamic Department

Name of Equipment **Pictures**

Twin Screw Extruder :

Twin screw extrusion is used extensively for mixing, compounding, or reacting polymeric materials. The flexibility of twin screw extrusion equipment allows this operation to be designed specifically for the formulation being processed. The configurations of the screws themselves may be varied using forward conveying elements, reverse conveying elements, kneading blocks, and other designs in order to achieve particular mixing characteristics.

Centrifuge:

In Centrifuges the centrifugal force is mechanically generated by turning the equipment containing the fluid in a circular path causing the fluids to separate. This method has been used in the laboratories and primitive industries for over a century. It has mainly been used to separate fluids in static state, i.e., specific volumes which needed to be separated.

Vacuum Tray Drier:

Under the condition of vacuum, the boiling point of raw material will decrease and make the pushing force become greater. Therefore for a certain amount of heat radiation, the conducting area of evaporator can be saved. The heat source for operation of evaporation may be low pressure steam or surplus heat steam. The heat loss of evaporator is less. During the period of drying, there is no impurity material mixing. It belongs to static drier. So the shape of raw material to be dried can not be destroyed.

Hot Air Oven

This electrical devices used in sterilization. The oven uses dry heat to sterilize articles. Generally, they can be operated from 50 to 300 °C (122 to 572 °F). There is a thermostat controlling the temperature. These are digitally controlled to maintain the temperature.

Laminer Flow

Horizontal Laminar Airflow Table Top
Workstation provides a HEPA filtered clean work area that is ideal for operations requiring a particle-free, bacteria-free, clean air environment.
.The clean work area provides an excellent work space for small laboratory appliances, microscopes, pipetting, or similar applications.

BOD Incubator

This electrical device helps to maintain temperature. Digitally controlled temperature regulator is present to preset the temperature as per the required incubation temperature.

Microwave

Reynolds apparatus

To determine the Reynold's number and hence the type of flow either Laminar or turbulent and also to determine upper & lower critical Reynold's number's & velocities.

Sieves Shaker with Brass Sieves

Used to agitate sieves for determining gradation in soils and finest modules in aggregates. Unique orbital motion ensures precise gradation. Quick release adjustable clamps secure sieves firmly in position. Hold feature on the 15-minute timer permits continuous agitation. Holds up to eight sieves plus a dust pan and accepts either eight or twelve inch sieves.

Colorimeter

A device used in colorimetry. In scientific fields the word generally refers to the device that measures the absorbance of particular wavelengths of light by a specific solution. This device is most commonly used to determine the concentration of a known solute in a given solution by the application of the Beer-Lambert law, which states that the concentration of a solute is proportional to the absorbance.

Microscope

An instrument used to see objects too small for the naked eye. The science of investigating small objects using such an instrument is called microscopy. Microscopic means invisible to the eye unless aided by a microscope.

Penetrometer

An instrument used to determine the penetration value of food products. Penetration value helps to determine the hardness and texture of the product.

Homogeniser

A device which helps to homogenize two immiscible phases by applying rotating force at high RPM.

Centrifuge

In Centrifuges the centrifugal force is mechanically generated by turning the equipment containing the fluid in a circular path causing the fluids to separate. This method has been used in the laboratories and primitive industries for over a century. It has mainly been used to separate fluids in static state, i.e., specific volumes which needed to be separated.

Micro- centrifuge

In Centrifuges the centrifugal force is mechanically generated by turning the equipment containing the fluid in a circular path causing the fluids to separate.

Refrigerator

An electrical equipment which helps to keep the food samples and chemicals cool in lower temperature.

Freezer

This electrical device helps to maintain cold temperature. Digitally controlled temperature regulator is present to preset the temperature as per the required incubation temperature.

Gas Liquid Chromatograph

A sophisticated instrument which helps in fatty acid analysis, flavor analysis of different samples.

Lyophiliser

An instrument which helps in freeze drying process of samples. Liquid Nitrogen is used to carry out the process.

Spectrophotometer

An instrument which gives spectrum measurement of various sample solution. This device is most commonly used to determine the concentration of a known solute in a given solution by the application of the Beer-Lambert law, which states that the concentration of a solute is proportional to the absorbance.

Sonicator

An instrument which involves the act of applying sound energy to agitate particles in a sample, for various purposes. Ultrasonic frequencies (>20 kHz) are usually used, leading to the process also being known as ultrasonication or ultra-sonication.

Dr. M.N. Dastur School of Materials Science and Engineering

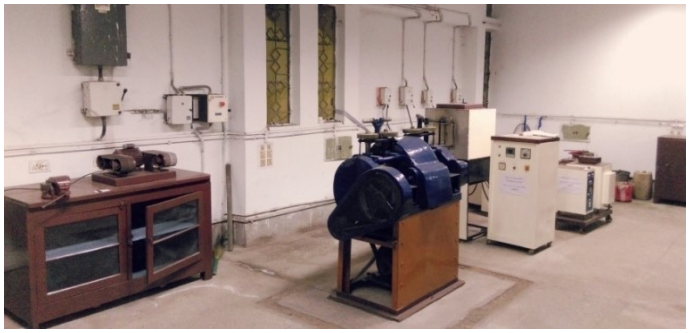
Research areas

- Carbon Nanostructure
- Composites Materials

- Field Emission
- Water Purification
- Ferrous and Non ferrous Alloys
- **Research facilities:**

Materials Processing and Heat Treatment Lab:

This laboratory houses several furnaces (details furnished below), a two-way high rolling mill, belt grinder, bench vice, abrasive cutting wheel and related accessories.



The rolling mill and high temperature furnaces in the 1.Materials Processing and Heat Treatment Lab.

Furnace Type	Maximum Temperature	Orientation
High Temperature Furnace	1200˚	Horizontal
Tube Furnace	750˚	Horizontal
Salt Bath Furnace	900˚	Vertical
Muffle Furnace	650˚C	Vertical

Metallographic Lab:

This laboratory houses the following:

- Polishing facilities (indigenously designed polishing wheels)
- Fritz P6 planetary ball mill
- Fritz P0 mono-mill

The polishing weels (left) and the ball mills (right) in the metallographic lab at MND-SMSE

Polymer Composite Lab:

This laboratory finds its use mainly in polymer based composite fabrication and houses the following instruments:

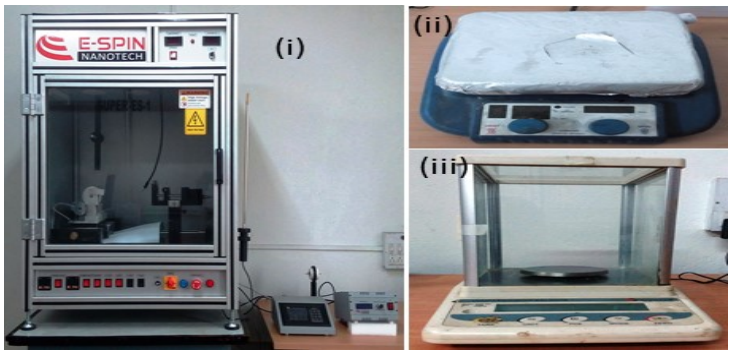
- Mechanical Stirrer (Remi RQ 120 max. speed 4000 rpm)
- Hot Air Oven
- Vaccum Oven
- Thermostatic bath
- Autoclave

Polymer Synthesis and Processing (PSP) Lab

This laboratory is involved in polymer synthesis and processing and houses the following instruments .

- Electrospinning unit -
- Magnetic stirrer
- High Precision Electronic Weighing Balance

Besides the laboratory is equipped with basic accessories needed for polymer processing including reagents and glassware



Polymeric Biomaterials Lab (PBL)

This laboratory is involved in the fabrication of biomaterials and cell culture and is equipped with the following instruments.

- B.O.D. Incubator Shaker
- Laminer Flow Hood
- Double Distillation unit

Besides above the laboratory is equipped with basic accessories needed for polymer processing including reagents and glasswares

Modelling and Optimization Lab

The modelling and optimization laboratory houses computational facilities that allow *ab-initio* modelling of materials along with multivariate optimization procedures. Density functional theory (DFT) based Materials Studio software with CASTEP and DMol3 packages enable calculations of band structure and density of states.

Besides Materials Studio there are software packages Matlab and Mathematica, using which Artificial Intelligence and Genetic Algorithm based computation are regularly performed.

Microscopy and Electrical Characterization Lab:

The microscopy laboratory houses:

- Optical microscope - Olympus CK 4OM and Olympus GX41
- LECO LM 100 Micro-Vickers tester
- I-V characteristics measurement facility – KEITHLEY 2602B system source meter.

The Olympus optical microscope (left), LECO LM 100 Micro-Vickers tester (centre) and the Keithley 2602B double channel source meter (right)

SMALL (Laboratory for Low-dimensional Advanced Material Synthesis)

Development of a variety of nanostructures, ranging from metal, semiconductor to conducting polymer and topological insulators like graphene are carried out using the different facilities available at SMALL. These include (but are not limited to) the following:

- General purpose and HF acid usage fume hoods (make: Labguard) with continuous supply of DI water, nitrogen, argon, etc that provides a clean environment for variety of chemical synthesis
- Glove box (MTI corporation) that can be evacuated and purged with different gases
- Single chamber PECVD (Hind Hi Vac) with turbo pump
- Optical microscope (Olympus)
- Microbalance (MetlerTolledo)
- Spin coater (Apex)
- Millipore DI water units – Elix and Direct Q both capable of supplying 18 MΩ-cm resistivity water
- Centrifuge (Tarson up to 14000 rpm, Remi up to 10,000 rpm)
- Hot Air oven
- Temperature controlled Ultrasonic bath (PiezoUsonic)
- Probe sonicator (PiezoUsonic)
- UV-visible spectrometer (Jasco V750) with integrating sphere.
- Photoluminescence spectrometer (Horiba JobinYvonNanolog) with quantum yield measurement facility.
- 325 nm HeCd laser
- Indigenously designed electrochemical etching unit with computer controlled interface.

The indigenously designed (left) and labguard (right) fumehoods and the Hind Hi Vac PECVD (centre) at SMALL

Computer Lab

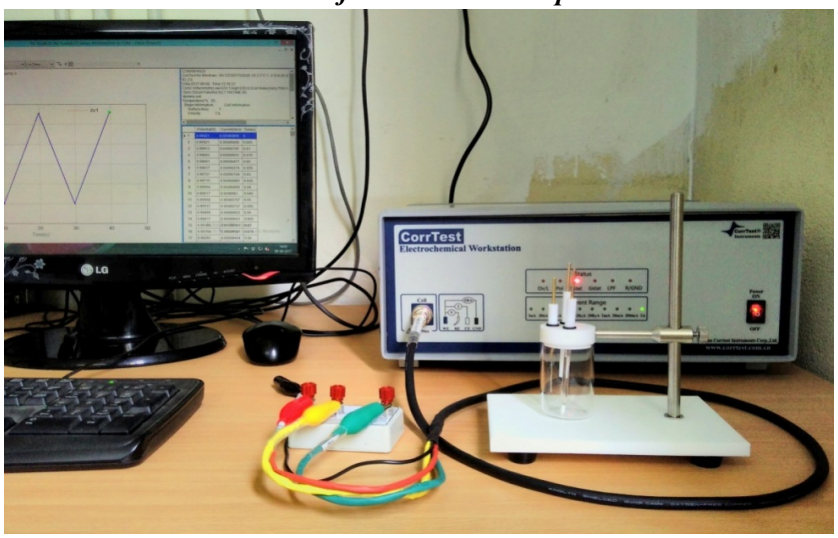
The student computer lab at MND-SMSE is aimed to provide basic computational facility to all the postgraduate students. The number of computers at present are inadequate and the students share the facilities. We intend to procure computers so that at least one computer may be allotted for 2 students.

Electrochemistry and Advanced Materials Laboratory

Electrodeposition and electroless-deposition of various metal and metal alloys. Electrochemical studies on various metallic systems in non-aqueous media like Ionic liquids. For the above mentioned study, the available equipments are listed below,

- Work bench for Electroless Deposition
- Electrochemical Workstation along with Accessories for a range of electrochemical study and characterization
- High precision micro-balance
- Digital pH-meter
- 2A-32V Regulated Power Supply for Electrodeposition

Work bench for Electroless Deposition



Electrochemical Workstation (single channel 2A- 21V potentiostat-galvanostat) along with Accessories for a range of electrochemical studies and characterization

2A-32V Regulated Power Supply for Electrodeposition, Digital pH-meter, High precision Micro-Balance (from left to right)

Besides this, laboratory is equipped with basic accessories needed for electrochemical study including reagents and glassware

School of Management Sciences

EBSCO and JGATE, SPSS and Prowess, CRISIL

Centre of Excellence for Green Energy and Sensor System

Research & Development:

- Establishment of state of the art fabrication and characterization facility of crystalline silicon solar cells.
- Establishment of state of the art fabrication and characterization facility of amorphous silicon solar cells.
- Efficiency enhancement of c- Si, a- Si and other thin film solar cells.
- New generation Solar cells and systems with novel nano- materials and green methods.
- New methodologies of solar energy storage (including super capacitors).
- Advanced solar photovoltaic systems for lighting and power plant applications.
- Smart Micro Grid System in the IIEST Campus
- Sensors (including bio-sensors, gas sensors, MEMS) based on novel materials (including quantum dots).
- Sensor systems and techniques for agricultural, environmental, automobile and healthcare applications.

Activities related to other departments:

- CEGESS have conducted the theory and practical classes on MEMS Technology for the students of School of Mechatronics & Robotics, IIEST Shibpur.

- Undergraduate students of Dept. of ETCE, IIESTs have taken their summer training and project work at CEGESS.

Research area

Photovoltaic

- Fabrication of crystalline silicon solar cells
- Fabrication of amorphous silicon solar cells
- Efficiency enhancement of c- Si, a- Si and other thin film solar cells.
- New generation Solar cells and systems with novel nano- materials and green methods.

- New methodologies of solar energy storage (including super capacitors).
- Advanced solar photovoltaic systems for lighting and power plant applications.
- Development of Smart Microgrid System in IIEST campus

Sensors

- Sensors (including bio-sensors, gas sensors) based on novel materials (including quantum dots and 2D carbon materials) and techniques for agricultural, environmental, automobile and healthcare applications.Sensor systems.

Faculty wise:

Prof. A. K. Barua

Silicon thin film solar cell including development of materials and device fabrication for amorphous, microcrystalline, micromorph solar cell, light trapping, development of advanced transparent conducting oxides and 3D solar cells

Prof. H. Saha

- Solar Cells and PV Systems, Sensors, MEMS and Systems
- Smart Microgrid with RES
- Photovoltaic Systems
- Silicon Solar Cells
- Storage Battery

Dr. R. Bhattacharyya

- Photovoltaics, photonics and Sensors

Prof. BibekBandyopadhyay

- Solar roof top PV- technology, policy, regulations and financing.
- Solar resource
- Solar thermal and photovoltaic power generation
- Solar fuels
- Energy policy

Prof. S.P.GonChoudhury

- Energy Policy and Administration
- Innovations in Renewable Energy
- Skill Development and Training
- Outreach activities

Prof. Anup Mondal

- Thin film solar cells
- Synthesis and Characterisationof Inorganic materials and devices
- Thin film Sensors

Prof. ParthaChaudhury

- Amorphous silicon and microcrystalline silicon based solar cells, amorphous silicon carbide thin films, silicon nanocrystals and silicon quantum dots and their device applications, enhancement of light absorption in thin silicon films by plasmonic or photonic route, nanopatterning by nano imprint lithography

Dr. SumitaMukhopadhyay

- Silicon thin film solar cell including development of materials and device fabrication for amorphous, microcrystalline, micromorph solar cell, light trapping, development of advanced transparent conducting oxides and 3D solar cells

Dr. Nillohit Mukherjee

- Fabrication of wide and narrow band gap thin film semiconductors, nanomaterials and modified metal oxide semiconductors for their applications in sensor technology, heterogeneous catalysis and third generation solar cells.
- Black silicon solar cells, Modified MOS based gas sensors, Catalysts for water splitting

Dr. Snehanshu Patra

Design of multifunctional materials for the application in Energy storage, conversion and bioelectrochemical systems**.** Artificial Photosynthesis and Vanadium Redox Flow Battery.

Research facilities

S.N.	Name of the Instrument	Make & Model No.	Date of Purchase	Purchase Head (Project)
1	Intel Core 2 Duo 2.93 Ghz Processor, Intel DG 41 Chipset M/B, 4 GB DDR2 RAM, 500 GB HDD(Segate), DVD Writer, Keyboard & Optical Mouse, 18.5" TFT Moniter, ATX Cabinet With 450w SMPS		27/05/2011	DST
2	LENOVO LAPTOP	59-067790	27/05/2011	DST
3	Spin Coating Unit	SCU2007A, Apex.Co.	23/08/2011	DST
4	S/W Package for High Performance FDTD Method Maxwell Solver And Versatile Waveguide Mode Solver		21/11/2011	DST
5	Horizontal Furnace System Ex -Addition of BBr3 To Boron Diffusion Tube	SVCS	23/08/2011	DST
6	Design And Development Of Clean Room		23/08/2011	DST
7	Ultra Capacitor	(MAXWELL) 0350-0270T11	24/02/2011	DST
8	Frost-free Refrigerator Double Door System	(SAMSUNG) RT26FCTR1 (255 Ltr.)	02/06/2011	DST
9	Digital Ultrasonic Cleaner - Accessories Digital Timer, Heater Etc.		25/04/2012	DST
10	PECVD System	HHV	23/08/2014	DST
11	Spectral Response/QE/IPCE Typical QuantamOfficency System		15/11/2012	DST
12	E-Beam & Resistive Evaporation System/ Thermal evaporation apparatus	AUTO 500, HHV	24/11/2011	DST
13	Table Top Metal Coater, Rotary Vane Pump, All Metal Vacuum Connection Kit, Replacement Exhaust Filter, Silver Target		18/06/2012	DST
14	Scanning Probe Microscope	Solver Next	28/01/2012	DST
15	Planetary Micro Mill Pulverisetle 7 Premium Line 280 VOLT A.C.	Fritsch,Pulverisctte7	17/02/2012	DST
16	CPU, MOTHER BOARD, HARD DISK DRIVE, RAM, DVD WRITER, KEYBOARD, MOUSE, CABINET WITH SMPS		12/07/2012	DST
17	Moniter, LED UPS		02/07/2012	DST
18	Laser Scriber	ARGUS, SSY50	17/02/2012	DST
19	Screen Printing Machine (2)	Horizon 03ix	17/02/2012	DST
20	Furnace System With Drying Furnace	HengliElectek co.	30/03/2012	DST

	With Conveyes Belt, Firing Furnace With Conveyes Belt	Ltd.		
21	Deionized Water System		22/11/2011	DST
22	Air Conditioning Work - (A) 2.0 TR Furred - In Unit Nonducted Split, Fancoil Unit Type (Furred - In Unit), (B) 1.5 TR Hi Wall Split Unit Nonducted Split, Hi - Wall Unit Type : 1.5 TR, © 2.0 TR HI - Wall Split Unit		05/10/2012	DST
23	(A) Design And Development Of Clean Room, (B) PU Antifungal Paintings		30/01/2013	DST
24	RF/Pulsed DC Sputlering System	MM1Q62MM203 (MM196/MM203/APT) Milman Thin films	29/11/11	DST
25	Chemical Work Bench		03/01/2013	DST
26	D14634685 PV17M Conductor Paste 2 Kg.	Solament	10/03/2013	DST
27	Sputlering Target ITO		04/06/2013	DST
28	UV VIS Spectrophotometer	Jasco, V-750	13/01/2015	DST
29	496 Digital Signal Processing Lock-In Amplifier		25/03/2015	DST
30	FDTD Solution Latest Version	Lumerical, Version 3	03/07/2015	DST
31	Thyristoised Temp. Controlled Substrate Heater For PECVD Chamser	CT 100	07/08/2015	DST
32	Sputlering Target Au Target		11/09/2015	DST
33	Wet Texturization Bench	Omicron scientific equipment Co.	14/09/2015	DST
34	Dcionized Water System with Digital Conductivity Meter		21/01/2016	DST
35	PECVD Chamber		19/08/2015	DST
36	Photo-lithography (MA6/BA6) with SCIL	MA6/BA6, SUSS Micro Tec	27/10/2016	DST
37	Ultrasonic Flow Meter		27/10/2016	DST
38	Solar Simulator and Spectral Response setup	Bentham PVE300	30/03/2012	MNRE
39	Terrestrial Solar Array Simulator		30/03/2012	MNRE
40	Reactive Ion Etching (RIE)	ION ETCH 150, HHV	17/02/2012	MNRE
41	PECVD	CT-100, CT-150, HHV	15/02/2012	MNRE
42	Water Chiller		29/03/2012	MNRE
43	HR FESEM	ZEISS, Sigma 0287	30/03/2012	MNRE
44	1. Auto Shutoff Valve 2. Tubling	SS316LEP	29/03/2012	MNRE
45	Gas Regulators		29/03/2012	MNRE
46	Gas Detectors		29/03/2012	MNRE
47	Gas Cylinder With Gas		29/03/2012	MNRE
48	Wet Scrubber		29/03/2012	MNRE
49	Water Chiller Capacity - 30 Ltrs		27/12/12	MNRE
50	Wet Scrubber		27/12/12	MNRE
51	10 KVA Static Converter (Online) 2. SMF Batteries 3. Battery Stand		29/03/2013	MNRE
52	Cryostat with Conductivity Measurement Setup		04/06/2013	MNRE
53	Supply Installation and Commissioning of Oil Free Air Compressor		20/12/2013	MNRE
54	Magnetron Sputtering		17/02/2012	MNRE
55	Pipe Lines For Gas Compressed Dry Air Chilled Water And Wet Scubber		20/02/2014	MNRE
56	1. Gas Cylinder with Gas (A) Hydrogen		29/03/2012	MNRE

	(6N) (B) 1 % Phosphine (PH3) In Silane (Sih4) © 1 % Diborane (B2H6) In 1% Helim (He)			
57	Four Probe Sheet Resistivity Measurement Setup	Jandel, RM 3000	08/02/2013	MNRE
58	Optical microscope with image analyzer	OPTIKA	09/04/14	MNRE
59	Data Acquistion System (DAS)		02/07/2015	MNRE
60	Mixed Signal Oscilloscope		02/07/2015	MNRE
61	3 Phase Power Meter		02/07/2015	MNRE
62	X4M53:PSCAD*4 Academic Five User Network 1. Resistive Laod Bank 3 Phase 2. Inductive Load Bank 3 Phase		25/05/2015	MNRE
63	Capacitive Load Bank 3 Phase		27/05/15	MNRE
64	VHF Power Supply		02/07/2015	MNRE
65	Minority Carier Lifetime Easurement System		02/07/2015	MNRE
66	Display Control Unit Power Supply	DCU 310	24/09/15	MNRE
67	MD Boost 250/750-20F + MD B 6C1 750/415-30F 1 GBT Based Boost Chopper + 1 GBT Based Inverter Stack		26.5.15	MNRE
68	1. Gas Testing Unit 2. Transfer of Instruments Gr. CO/SO_2, CH_4, O_2, H_2&Ar Gas Handling System For Sensor Hub 3. New Si H4 & Germen Gas Vent Line & Vent Line Block	Apollo Engineering	03.02.16	MNRE
69	Vanadium Redox Flow Battery	Big Pawar, China, Model – 1KW 6h, VRFB	26.11.15	MNRE
70	Compressor for Chilling Plant Specification		04.03.16	MNRE
71	2" Magnetron Sputtering Cathode		01.03.16	MNRE
72	Scrubber Unit		25/1/16	MNRE
73	Solar Simulator IV	PET SS150AAA	24/08/15	MNRE
74	Spares Parts For FESEM : 1. Stage Mot Cable Assy 2. Aperture 6 - Hole 7/10/20/30/60/120mm 3. Extractor Aperture 400mm 4. AL Sealer For Liner Tube 5. Front Aperture 40mm 6. Copper Searler DN 100 7. Exractor Pin		26/05/16	MNRE
75	L.T. Control Panel	M/S, Wills Electro Services	2.8.16	MNRE
76	1. Acquisition, Analysis & Control Software 2. Ethernet Based Acquisition & Control 3. Industry Standard Programmable Automation Control (PAC) Unit For Smart Control & Monitoring		26/05/16	MNRE
77	$5^1/_2$ Digit ProgammablePicoammeter/Voltage Source	KEITHLEY, Model : 6487/E (Sl.No. : 4120767)	07/07/16	MNRE
78	4KVA Solar PCU With MPPT CCU		16/02/16	MNRE
79	Underground Cable Laying: XLPEA1,4C,35 Sq. Mm. Depth 750 Mm, Width 350mm		20/09/16	MNRE
80	Surface Cable Laying of XLPE A1,4C,35 Sq. Mm.		20/09/16	MNRE
81	Modular PL Setup with Solid Sample Holder	PTI Quanta Master TM 400	02/06/16	MNRE
82	Precision Programmable Spin Coating	Spin NXG-P2	30/08/16	MNRE

	System			
83	1. Textured p-Type Wafer with one Side n-Diffused Prime Cz Mono Crystalline Wafers 2. Textured P-Type Wafer With One Side N-Diffused One Side Sillicon Nitride Coated Price Cz-Mono Crystalline Wafers		30/08/16	MNRE
84	10 KW Solar PV Power Plant		08/10/2015	WBREDA
85	1 KW Wind Turbine		08/10/2015	WBREDA
86	Bio Gas Generator 15 KVA	Siya Instrument	8.3.16	WBREDA
87	Synchroniser	Indusree, Model SKD 11	12.05.17	WBREDA
88	Multi-frequency, capacitance-voltage unit (CV)	4210-CVU	02.02.16	University Fund
89	XRD	RIGAKU, Ultima IV	--	--
90	Thickness profilometer	Dektak XT, BRUKER	17.02.2017	MNRE
91	Fourier-transform infrared spectroscopy (FTIR)	Perkin Elmer	02.07.2015	MNRE
92	Micro PCD	Sinton WCT-120	--	--
93	Dip coating unit	Xdip-SV1, Apex. Co.	10/11/2016	MNRE

Since the last seven years, these high end scientific instruments possessed by the CEGESS, being offered to use totally free of cost not only for IIEST students/faculty members but for the interested personnel from academics/industry approaching from all over the India.

Instrument Name	**Used by internals users (CEGESS)**	**Used by university (IIEST) internal users**	**Used by outside IIEST (Externals)**
FESEM: ZESIS	1500	500	150
XRD: Rigaku(Ultima IV)	15	16	17
FTIR: Perkin Elmer	240	122	20
UV-VIS: Jasco V-750	560	52	20
Thickness Profilometer	1200	150	64
Multi-frequency, capacitance-voltage unit: 4210-CVU	9	22	NA
Photoluminascence measurement setup (Spectrofluorometer): PTI QuantaMaster™ 400	37	16	7
Scanning Probe Microscope: SOLVER NEXT	343	36	29

Infrastructure:

- 1500 sq. ft. of class 10000 clean room for solar cell (both c-Si and a-Si) processing.
- 1500 sq. ft. of semi- clean room for wet chemical processes, contact printing and belt furnaces.
- 1500 sq. ft. of semi- clean room for housing sophisticated characterization facilities.
- 1500 sq. ft. sitting space for of faculty and research staff.
- 1000 sq. ft. for M. Tech Classes and Laboratory.
- Air Handling Unit (AHU) for the Clean Room and Gas cylinder Shed for housing specialty gases.

Centre for Healthcare Science and Technology

Research area

- Development of Smart Prognostic System for Early Indication of Cardiac Problem of a Patient
- Development of Electromagnetic device to treat brain tumour by generating local hyperthermia
- Neuro-regeneration by Calcium ion homeostasis by static electromagnetic filed for treatment of neurodegenerative diseases
- Peptide based drug development and targeted delivery for treatment of Alzhiemers' disease and malignant brain tumour.
- Smart polyvalent nanomedicines containing miRNA for targeted drug delivery to brain through nasal route to bypass blood brain barrier.
- Next generation sequencing of small human noncoding RNA and their functional analysis.
- Purification and characterization of bioactive compounds from medicinal plants and assessment of their immunomodulatory role and brain diseases.
- Automated Early Cancer Screening and Diagnosis Systems for Susceptible Individuals
- Cellular bioenergetics – important marker for early cancer diagnosis
- Development of Optical Nanofibers for Detection of Aflatoxin
- Bioprinting for vascular and vascularized tissue biofabrication
- Honey incorporated electrospun scaffolds to provide anti-oxidant, anti-bacterial and anti-inflammatory microenvironment for wound regeneration
- Fabrication of Biodegradable Honey-Based Scaffold for Ex-Vivo Expansion and Differentiation of Mesenchymal Stem Cell
- Successful Design and Prototype Patient Specific Bone and Spinal Implants Development at IIEST
- SAFE HOME: Monitoring system for Lone Elderly People – IIEST Innovation

Research facilities:

Bioinstrumentation and Biosensors:

- Patient monitoring system
- Pulse oximeter
- ECG
- EEG and Biopotential recording system
- Instrument for Cyclic Voltametry
- Electrical Safety Analyzer
- WBGT meter
- Lux Meter
- Video recorder
- High configuration Workstation
- Digital Storage Oscilloscope
- Spin coater
- 3D Scanner
- Spirometer
- Audiometer

- Signal generator
- Power source
- DSP Trainer Kits
- Microcontroller kit

Implants Characterization:

- Universal testing Machine
- Viscometer
- Goniometer

Biomaterials:

- 3D printer
- Electrospinning Set up
- Probe sonicator
- Fume Hood
- Vacuum oven
- Lyophilizer

Optics and Microscopy:

- Epifluorescent Microscopes
- Phase contrast and DIC microscope

Cell and Molecular Biology:

- Biosafety cabinets
- CO2 incubator
- Shaking BOD incubator
- Nephelometer
- Multiplate Reader
- UV Vis Spectrophotometer
- Gel Doc
- PCR
- Electrophoresis set up
- Centrifuges
- -86 Freezer
- -20 Freezers
- ASTM Grade I and II Water Systems

Purabi Das School of Information Technology (PDSIT)

Research area

- Digital Geometry and Image Analysis
- Shape Analysis
- Medical Image Analysis

Research facilities:

The PDSIT laboratory is equipped with 50 No of high configuration Desktop Computers.

- All computers are connected to Internet with the 1 Mbps. LAN Support.
- Department is equipped with WiFi connection.
- International Journal from IEEE, Elsevier, etc. is available on line.
- Laboratory is open from 8.00 AM to 9.00 PM.
- PDSIT has a Departmental Library.

Computing facilities in Promoda Lodh (Mobile Computing) laboratory**:**

Hardware and Software:

IBM X226 Server -- 2Nos.

IBM WebSphere Every place Access Server and client.

Wireless Equipment:

- IBM Think Pad W/High rate Wireless LAN
- Linkys Network Adapter
- IBM high rate Wireless
- Palm M505
- Palm Palm Portable , Palm Serial Cable, Palm Hatsync Cradle
- Palm Flash Memory Pre - Installed on Palm
- Palm Handheld Stylus Pack of 3,XIRCOM Wireless LAN Module
- i PACK- 2NOS.

Special purpose facilities available in the school:

- Laser Printers connected to Network.
- Scanner is available.
- Web Camera (for project purpose)
- Students have the scope to modify, configure or administrate any Server or Workstation

Name of the laboratory:

- Pramoda Lodh Advanced Technology Laboratory

VLSI

Research area:

- Digital VLSI Design
- Analog and Mixed Signals
- VLSI Testing
- Nanotechnology
- Bio-chip Design Automation
- NOC & SOC Design
- FPGA Synthesis and Testing
- VLSI Physical Design Automation
- Digital Watermarking
- Intelligent and Cognitive systems
- System on chip architectures
- Network on Chip
- 3D IC Design

Research facilities

EDA Tools

1. Mentor Graphics
2. Synopsys
3. Cadence
4. NI LabVIEW
5. Xilinx ISE 14.7 (for FPGA Applications)
6. Vivado Design Suite
7. Matlab
8. Synopsys TCAD
9. Comsol Multiphysics
10. Quantumwise ATK (DFT+SE , VNL GUI)

Hardware Devices and Design Kits

S.No.	Item/Description	Quantity
1.	Agilent 16802A Logic Analyzer	1
2.	Agilent 34410A 6.5 Digital Multimeter	4
3.	Agilent 33522A, 2-Channel, 250 MSa/s, 30MHz Function/Arbitrary Waveform Generator	1
4.	Agilent N9000A, 9 KHz-7.5 GHz, CXA Signal Analyzer	1
5.	Agilent E3631A, 0-6V, 5A/0-(+-)25V, 1A, Triple Output DC Power Supply	1
6.	Agilent E3620A, 0-25V, 0-1A, Dual Output DC Power Supply	1
7.	Agilent Logic Analysis Software	2
8.	Oscilloscope Logic Channels, Agilent DSO-X-MSO-X, 1GHz, MSO Upgradation	1
9.	Digital Storage Oscilloscope, Agilient DSOX3104A, Oscilloscope, 4 channel, 1GHz	1
10.	Agilent N2874A, Probe – 10:1 1.5GHz	2
11.	Agilent DSOXLAN, Module – LAN/VGA	1
12.	Universal Electronics Trainer Kit (Microlab-II)	1
13.	Project Board GL	20
14.	ARM mbed NXP LPC 1768 Microcontroller Kit	100
15.	Xilinx XUP Virtex-II Pro	5
16.	Xilinx XUP Virtex-II Pro Development System Software	5
17.	Digilent VDEC1 Board	5
18.	Digilent NEXYS-2 Board	1
19.	Xilinx Spartan 3E Kit	15
20.	Digilent DIO5 for the XUP-V2 Pro Board	5
21.	Digilent Analog I/O 1	5
22.	L.T.E. Switching Power Adapter	5
23.	Kingston 256MB PC1200 CL2.5-184-Pin DIMM (RAM)	5
24.	Xilinx Virtex-6 FPGA Embedded Kit	1
25.	Xilinx Platform Cable USB II	1
26.	Xilinx Virtex-6 LX130T Evaluation Kit	1
27.	Xilinx FMC Connectivity Mezzanine Card	1
28.	Xilinx Virtex-6 DSP Development Kit	1
29.	Xilinx Compact Flash Kingston 512MB (Memory Card)	10
30.	DIGILENT BASYS 3 XILINX ARTIX 7 FPGA Board	10
31.	DIGILENT PmodKYPD 16 button Hexadecimal Keypad	10
32.	DIGILENT PmodCLP 16x2 Character LCD	10
33.	DIGILENT Analog Discovery Potable Analog Circuit Design Kit	3
34.	DIGILENT ZYBO XILINX ZYNQ 7000 FPGA Board	5
35.	DIGILENT NEXYS 4 DDR Xilinx Artix 7 FPGA	5
36.	MicroSD Card with Adapter	5
37.	USB Cable	10
38.	NI ELVIS II+	1
39.	Server	8
40.	Workstation	29
41.	Desktop PC	49
42.	Redhat Linux OS	12

Academic and Research Infrastructure

In the School of VLSI Technology, We are using latest VLSI EDA tools and hardware in our VLSI and Embedded systems Laboratories. The UG/PG/Doctoral students from Information Technology/Computer Science/Electronic Engg./Electrical Engg are getting exposure with these

industry standard tools and equipment. In eastern India, only two or three university/institutes have this type of laboratory.

EDA Tools:

- ❑Mentor Graphics
- ❑Synopsys
- ❑Cadence
- ❑Xilinx ISE (FPGA Applications)
- ❑Vivado Design Suite
- ❑Matlab
- ❑Synopsys TCAD
- ❑Comsol Multiphysics
- ❑Quantumwise ATK (DFT+SE , VNL GUI)
- ❑NI LabVIEW

FPGA Board

- ❑FPGA Spartan 3E Kits
- ❑XUP Virtex-II Pro Board
- ❑Virtex 6 Pro Board
- ❑Video Decoder Board
- ❑ DIGILENT BASYS 3 XILINX ARTIX 7 FPGA Board
- ❑ DIGILENT ZYBO XILINX ZYNQ 7000 FPGA Board
- ❑ DIGILENT PmodCLP 16x2 Character LCD
- ❑ DIGILENT PmodKYPD 16 button Hexadecimal Keypad
- ❑ DIGILENT Analog Discovery Potable Analog Circuit Design Kit
- ❑ DIGILENT NEXYS 4 DDR Xilinx Artix 7 FPGA
- ❑ MicroSD Card with Adapter
- ❑ USB Cable
- ❑Other Accessories

Aerospace Engineering & Applied Mechanics

- •Analysis of structures under different loading
- •Fluid Dynamics and Turbulence
- •Computational Fluid Dynamics
- •Hydraulics and hydraulic structures.
- •Applications of Finite Element Method
- •Biomechanics
- •Robotics and Mechatronics
- •Earthquake Engineering, Dynamic Soil-structure interaction.
- •Dynamics of Structures
- Micro and Nanoscale Transport Processes

Research facilities:

- ▪Material Testing using UTM
- ▪Implant Testing using Knee Joint Simulator
- ▪Dynamic Analysis of Gait using Kistler Force Platform & Barograph
- ▪Dynamic Model Testing using Shaker Table and Cyclic Loading test setup
- ▪Aerodynamic Model Testing using Wind Tunnel.
- ▪Tilting Flume.
- ▪ Micro-Acoustic Doppler Velocimeter (16 MHz).
- ▪ Compressible Flow Bench
- ▪ Nozzle Pressure Distribution Measuring Setup
- ▪ Nozzle Performance Experimental Setup.
- ▪ Multifinger Dexterous Robot Hand
- ▪ Data Glove
- ▪ Grip Pressure Sensor

Under development : Fracture Mechanics Laboratory at Department of Aerospace Engineering and Applied Mechanics from the project sanctioned by Atomic Energy (DAE), BRNS, Government of India

Consultancy Work

Aerospace Engineering & Applied Mechanics

One consultancy work is done from the design group of Garden Reach Shipbuilders & Engineers Ltd. in 2016-17; with P.I. Dr. Amit Roy Chowdhury .

Architecture, Town and Regional Planning

- Preparation of Base Report on "Proposed Nabadwip Heritage Town" & Heritage Management Plan of Nawadip Heritage Town for Govt. of West Bengal.

- Renovation work in the Central Office of Howrah Municipal Corporation for HMC

Electrical Engineering

Sl. No.	Name of Faculty	Year of sanction	Sanctioning Authority	Sanctioned Amount (Rs. Lakh)	Institute overhead (Rs. Lakh)	As capacity
1.	Prof. A. K. Maitra & Prof. J. Pal	2010	Haldia Development Authority, West Bengal	Consultancy charge – Rs. 8.43524 Lakh (2016-2017)	Rs.2.54 Lakh (30%)	Prof. A. K. Maitra - Principal Investigator & Prof. J. Pal - Co-Investigator
2.	Prof. J. Pal & Prof. A. K. Maitra	2017 (Approved)	West Bengal Medical Services Corporation LTD.	Consultancy Charge - Rs.80 Lakh (2017-2019)	Rs. 24 Lakh (30%)	Prof. J. Pal - Principal Investigator & Prof. A.K. Maitra - Co-Investigator

Civil Engineering

Sl. No.	**Title of the work**	**Sponsoring agency**	**Period**	**Amount (Rs.)**	**PI / Consultant(s)**
1	Climate Smart Decision Support System (CSDSS) Graphical User Interface (GUI) for Malaysian Rice Irrigation Scheme under Putra grant GP-IBT/2013/9406300	UPM, Malaysia	6 Months (April 2016 to September 2016)	1,50,000	Ujjwal Saha
2	Investigation regarding excessive vibration in structural building at Vizag	netGuru Engineering Pvt. Ltd.	1 month	22,900	Aparna (Dey) Ghosh
3	Vetting of design and drawing of AIRP at Palla site, W.B	Effluent & Water Treatment Engineers Pvt. Ltd.	2 weeks	57,500	Aparna (Dey) Ghosh
4	Technical advisory service for a nuclear facility (Away from Reactor Spent Fuel Facility) at the Kudankulam Nuclear Power Project I & II,	DCPL Kolkata	Ongoing	18,00,000	A(Dey) Ghosh, Subrata Chakraborty and Krishnendu Bhowmick

Sl. No.	Title of the work	Sponsoring agency	Period	Amount (Rs.)	PI / Consultant(s)
	under Nuclear Power Corporation of India Ltd. (NPCIL)				
5	Vetting of Design and Structural drawing for Indirect Fume Extraction job at Rail Wheel Factory, Yelahanka, Bangalore	Eastern Metec(P) Ltd.	2017	1,38,000	Saibal Ghosh, Subrata Chakraborty and Soumya Bhattacharjya
6	Vetting of Design and Structural drawing of State Hut building at Dhakuria		2016	1,72,500	Saibal Ghosh, Subrata Chakraborty and Soumya Bhattacharjya
7	Expert opinion for arbitration between M/s Vinayak Rail Track and M/s GardenReach Shipbuilders & Engineers	Vinayak Rail Track and GardenReach Shipbuilders & Engineers	2016	57,500	Saibal Ghosh, Subrata Chakraborty and Soumya Bhattacharjya
8	Pedestrian underpass at Narkeldanga main road crossing EM bypass	M/s VardhamanEngg Works, Delhi	March,2017-May,2017	4,00,000	Prof. Saibal Ghosh, K. K. Chattopadhyay Soumya Bhattacharjya
9	Expert opinion for arbitration between M/s VRT and M/s GRSE	M/s VRT and M/s GRSE	December, 2016-February, 2017	50,000	Subrata Chakraborty, Saibal Ghosh, Soumya Bhattacharjya
10	Vetting of B+G+23 storied building at Kolkata,	J.C. Overseas,	December 2016-ongoing,	4,00,000	Saibal Ghosh, and Soumya Bhattacharya
11	Vetting of International guest house at IIT KGP	CPWD	July 2016-ongoing	3,00,000	Saibal Ghosh, K. K. Chattopadhyay and Soumya Bhattacharjya
12	Proof checking of North Bengal Gate	M/s UttarbangaUnnayanParshad	June, 2016-December, 2016	1,50,000	Subrata Chakraborty, Saibal Ghosh, Soumya Bhattacharjya
13	Vetting of Kalyani Auditorium	KMDA	June 2016-ongoing	2,50,000	Saibal Ghosh, Soumya Bhattacharjya
14	Third Party Consultancy for 400 Ft Viewing Tower in Howrah Belilius Park	M/s PanchadeepConstruction	August 2016-ongoing	24,00,000	Saibal Ghosh, Soumya Bhattacharya and S. K. Dalui
15	Design review of Suroor bridge at Pune- Satara Highway	M/s ITD Cementation	August, 2016-December, 2016	5,00,000	Saibal Ghosh,Prof. Soumya Bhattacharjya
16	Proof checking of Pipe bridge at Dhakuria	M/s IOL	June , 2016-August, 2016	1,00,000	Prof. Saibal Ghosh, Soumya Bhattacharjya

Sl. No.	Title of the work	Sponsoring agency	Period	Amount (Rs.)	PI / Consultant(s)
17	Vetting of DPR of tourism at Sabujdwip Hooghly,	M/s Sikaria Divinity Pvt. Ltd	August, 2016-October, 2016	3,00,000.00	Saibal Ghosh, Soumya Bhattacharjya
18	Vetting of State hut at Dhakuria	M/s Panchadeep Construction	July, 2016-December, 2016	2,50,000	Subrata Chakraborty, S. Ghosh, Soumya Bhattacharjya
19	Special repair of buildings at Turf view complex, Kolkata	Garrison Engineer, Alipore	March, 2016-May, 2016,	2,05,000	Prof. Saibal Ghosh, Prof. Soumya Bhattacharjya and Prof. S. K. Dalui
20	Vetting of WB Joint Entrance Board building	M/s Bridge & Roof	May, 2016-August, 2016	2,50,000	Prof. Saibal Ghosh, Prof. Soumya Bhattacharjya
21	Adequacy check for existing road pavement including recommendations after proper field investigations and design calculations for B B Sarani for the stretch Chinar Park crossing to Jatragachi in Newtown, Kolkata.	Civil Soluations	6 months	1,85,150	Prof. T.K.Roy
22	Feasibility Report on Shifting of Toilet of Chamber No. 4 at 1st Floor of Main Building, Hon'ble High Court, Culcutta	Kolkata West Division, PWD, Govt. of W.B.	1 month	1,20,000	Prof. K. K. Chottopadhyay, Prof. T.K. Roy, Prof. Asok Adak
23	Analysis of impact on environment and propose necessity of EIA study for the proposed conversion of 2 Naphtha Storage Tank to High Speed Diesel at POL storage Depot, Bharat Petroleum Corporation Limited, Shahjahanpur, UP.	Sonar Bharat Environment & Ecology Pvt. Ltd.	August to September, 2016	69,000	Asok Adak and Anirban Gupta
24	Strengthening and Widening to 2 lane/2-lane with paved shoulder configuration of Ghatakpukur – Malancha – Sarberia Section of Kolkata Basanti Road Distress in existing carriageway at certain locations – technical review	M/S Adhunik Infrastructures (Pvt.) Ltd. Kamalalaya Centre, Kolkata	8 months from 15.09.2016	7,47,500	Sudip Kumar Roy, Ambarish Ghosh and Sandip Chakraborty
25	Technical Vetting of DPR including estimate for the scheme named 'Widening and Strengthening of 2-lane Bituminous Ring Road starting from NH 2 at Gangpur to Burdwan Nadanghat Road near Raipur,	Burdwan Development Authority		4,62,000	Sudip Kumar Roy, Tapas Kumar Roy, Sandip Chakraborty

Sl. No.	Title of the work	Sponsoring agency	Period	Amount (Rs.)	PI / Consultant(s)
	Burdwan				
26	Road Safety Audit of 2-laning with paved shoulder of Ukhru – Toloi - Tadubi Road Project in NH-102A (115km) in Manipur at the stage of preparation of DPR	CE Testing Company Pvt. Ltd	6 months from 17.10.2016	57,500	Sudip Kumar Roy, Sandip Chakraborty
27	Alignment Plan for Grand Foreshore Road, Howrah	Howrah Municipal Corporation	6 months from14.07.2016	1,50,000	Sudip Kumar Roy & Sandip Chakraborty
28	Services for the Safety Audit for Preparation of Detailed Project Report for Construction of Traffic Dispersal System along Kona Expressway (NH-l l7)	RITES Ltd.	8 months from 11.11.2016	3,45,000	Sudip Kumar Roy, Sandip Chakraborty
29	Safety Consultant for 2 Lane Bridge at Km 8th in Kanderbera – Do Mohani Road over SuwarnRekha River in Jamshedpur	M/S Royal Infraconstru Ltd.,	From 09.06.2016	2,30,000	Sudip Kumar Roy, Sandip Chakraborty
30	Vetting of Estimates of various projects of Vidyasagar University	Vidyasagar University	12 months from 27.02.2016	1,28,884	Sudip Kumar Roy, Tapas Kr Roy
31	Safety Consultancy services during Development and Construction Phase of NH-34: for Project i) Barasat – Krishnagar Section from km 31.000 to 115.000 (84 km) and ii) Krishnagar – Baharampore Section from km 115.000 to 193.00 (78kms)	National Highway Authority of India	Continuing since 14.07.2014		Sudip Kumar Roy, Sandip Chakraborty, Tapas Kr Roy
32	Strengthening and Widening/Reconstruction of Koderma – Domchanch – Khorimahua – Jamua Road (SH 13) to two lane with paved shoulder under EPC Mode: Safety Consultant	Ram Kripal Singh Construction Pvt. Ltd.	Continuing from 15.05.2015	25,30,800	Sudip Kumar Roy, Sandip Chakraborty
33	State Technical Agency, PMGSY, West Bengal	National Rural Roads Development Agency	Continuing from 2002	Varying in each year	Sudip Kumar Roy, Tapas Kumar Roy, Sandip Chakraborty, Gautam Bhattacharya
34	Design, engineering, procurement, construction and completion of 7.4 km, 2(two) lane elevated Road between Jinjira Bazar and Batanagar on Budge Budge Trunk Road in Kolkata	M/S Larsen & Toubro Limited, Infrastructure IC	Continuing from May 2014	50,00,000	Ambarish Ghosh
35	Geotechnical Investigation for the Construction of Proposed RCC Bridge over River Bidya connecting	Highway Survey Division – III P. W.	Continuing from May 2015	39,00,000	Ambarish Ghosh

Sl. No.	Title of the work	Sponsoring agency	Period	Amount (Rs.)	PI / Consultant(s)
	Godkhali and Gosaba Bazar in the District of South 24 Parganas,	(Roads) Directorate			
36	Construction of Subway at Shalimar Railway Station	IRCON INTERNATIONAL LIMITED	Continuing from July 2016	80,000	Ambarish Ghosh
37	Soil Investigation for the Proposed Construction of Youth Hostel (Biswa Bangla Yuba Abas), at 4/1 Moore Avenue, Tollygunge, Kolkata	Kolkata Division, Social Sector, P. W. Dte., GoWB	Continuing from Jan 2016	3,25,000	Ambarish Ghosh
38	Soil Investigation for the Proposed Construction of three storied office building of SPF Tollygunge, two storied Group C staff quarters, three nos. four storied Group D staff quarters and single storied change room.	Kolkata Division, Social Sector, P. W. Dte., GoWB	Continuing from Jan 2016	1,25,000	Ambarish Ghosh
39	Soil Investigation for the Proposed Construction of Govt. Polytechnic at Behala, Kolkata	Kolkata Division, Social Sector, P. W. Dte., GoWB	Continuing from Jan 2016	3,05,000	Ambarish Ghosh
40	Soil Investigation for the Proposed Construction of an English Medium School of Sourindra Vidyapith, Behala, Kolkata	Kolkata Division, Social Sector, P. W. Dte., GoWB	Continuing from Feb 2016	1,20,000	Ambarish Ghosh
42	Technical Vetting of the Structural Modeling, Analysis, Design and Drawing of the Proposed Skywalk Bridge at Dakshineswar Temple in Kolkata	Adhunik Infrastructure (P) Ltd.	Continuing from May 2016	5,00,000	Ambarish Ghosh
43	Independent Assessment of effect of vibration, emanating from installation of driven piles in Sukhobrishti Project at Plot No. E1/E2 Action area III, New Town - Recommendations on feasibility of doing RCC during driving of piles nearby and providing guidance to the construction team	M/S Sapoorji Pallonji Pvt. Ltd	Continuing from Feb 2017	3,00,000	Ambarish Ghosh
44	Independent Assessment of effect of vibration, emanating from installation of Piles using a vibro-sinker at SIDDHA SUBURBIA Project, Baruipur, on the adjoining structures and	M/S Siddha	Continuing from Mar 2017	3,00,000	Ambarish Ghosh

Sl. No.	Title of the work	Sponsoring agency	Period	Amount (Rs.)	PI / Consultant(s)
	providing guidance to the construction team.				
45	Vetting of design Calculations for Design, Construction and Commissing of Arsenic cum Iron Removal Plant (AIRP) at NASIRKUL, KAMALPUR Zone-I, Nadia, W.B. Under Public Health Engineering Directorate, Nadia, Kalyani	Effluent and Watertreatment Engineers (P) Ltd., Kolkata-14	2016, 3 months	2,00,000	Debabrata Mazumder Chanchal Majumder
46	Performance Evaluation of Arsenic and Iron Removal Plants	WSSO, PHED, Govt. West Bengal	November 2016 - February 2018	10,56,000	Anirban Gupta
47	Vetting of Structural Drawing and Design of 5 Medical Colleges in West Bengal	Govt. of West Bengal	Continuing from Feb 2017	1,12,00,000	K. K. Chattopadhyay Ambarish Ghosh Sujit Kumar Dalui

Computer Science and Technology

Name of PI / Co-PIs	Title	Funding Agency	Total Quantum Support	Status
Manas Hira	Implementation of information system for Howrah municipal corporation (consultancy)	Howrah Municipal Corporation	8 Lakhs	Ongoing

Earth Sciences

- Prof. Bhabani Prasad Mukhopadhyay and Dr. Atin Kumar Mitra took active part as consultant geologist in preparing feasibility report on a geothermal power project in Kenya, Africa with TCE (TATA Consulting Engineers Ltd.)

Human Resource Management

- Project Name : Environmental and Social Screening for Augmentation of Kona Expressway , Sanctioning Authority: RITES Limited ; Year of Sanction: 2017

- Project Name : Preparation of DPR for Strengthening & Widening of Dankuni- Mogra-STKK Link Road-SH6-Kalyani Junction Package: SH13 Package:3, Sanctioning Authority: RITES Limited ; Year of Sanction: 2015

Humanities and Social Sciences

- Work is in progress for Academic Consultancy with CMERI, Durgapur for MSME Cluster Development at Bargachia in Howrah.

Metallurgy and Materials Engineering

- "Stainless Steel for Construction Segment" – sponsored by INSDAG – PI: Prof. S. Sadhukhan – Completed.
- "Welding & Fabrication of Steel work" – sponsored by INSDAG – PI: Prof. M. Ghosh, Co-PI: Prof. S. Sadhukhan- Completed.
- "Brand Ambassador of PMC Prestige TMT Bar" – sponsored by Purulia Metal Casting (P) Ltd. – PI: Prof. S. Sadhukhan – Completed.

Mining Engineering

Consultancy Work:

Sl No	Consultancy Type	Consultancy Title	Client Name	Year
1	Rock Mechanics and ground control	Analysis and interpretation of stress cell and extensometer data for Sarda Highwall mining project of SECL	Cuprum Bagrodia Ltd	2016
2	Rock Mechanics and ground control	Scientific study for stability of dragline dump at Mungoli OCM	Western Coalfields Ltd	2017
3	Rock Mechanics and ground control	Scientific study to assess the stability of barrier between Ukni and Niljai OCMs	Western Coalfields Ltd	2017
4	Mine closure	Verification of Mine closure activities at Gare Palma IV/4 and IV/5 mines	Hindalco Limited	2016
5	Mine closure	Verification of mine closure activities at Neyevelli Lignite Corporation Mines	NLC India Ltd	2016
6	Collect and analysis of 262 numbers Coal samples	Sampling and Analyses of Grades of Coal Seams/ Sidings of Collieries in the Command Area of Eastern Coalfields Limited	Coal Controller Ministry of Coal Govt. of India	2017
7	Mine Closure	Vetting of mine closure activities of Amelia North Coal Mine	Jaiprakash Associates Limited	2016
8	Mine system	Life of Mine of Dongri Buzurg	MOIL	2017

Centre of Excellence for Green Energy and Sensor System

Prof. BibekBandyopadhyay: Formulation of Tripura State Solar policy, Awarded by Tripura State Electricity Corporation Limited.September 2016-August 2017 (Project Code: TSECL/CEGEES/HS/024/16-17)

Prof. H. Saha

1) State bank of India, L H O, Kolkata
2) BHEL-ASSCP, Gurgaon
3) Tripura State Electricity Corporation Limited
4) CMERI, Durgapur
5) Garden Reach Ship Builders and Engineers limited
6) AARK Digital Pvt Ltd

Sponsored Research & Projects

Aerospace Engineering & Applied Mechanics

Sl. No.	Title of Research Project	Sponsoring Agency	Amount sanctioned Rs. in lakhs
1.	River bank erosion: effect of tidal flow and vegetative cover	DST	81
2.	Development of a unified model to simulate uniaxial and multi-axial LCF and ratcheting for nuclear piping materials	DAE, BRNS	41
3.	Design and Development of patient specific orthopadic implant at Indian content	DST	63

Architecture, Town and Regional Planning

Ongoing (Prof value)	Sponsoring agency
Comparative Appraisal of Thermal Performance of Traditional (Assam/Ikra) Type and Emerging Housing Typologies and Upgradation of Traditional Prototypes for Improved Thermal Behaviour in Different Sub-Climatic Zones of Northeastern India	Department of Science & Technology
Development of a Decision Support System for Planning of Capital Intensive Transportation Links (Bridges & Tunnels) in the North – East region based on Utility and Network Robustness Criteria	Department of Science & Technology

Chemistry

Ongoing (Prop value) in Lakhs	Sponsoring agencies
80	CSIR
422.23	DST
131	DST-SERB
30.58	MNRE
20.18	DST (W.B.)
60	DBT
47.67	BRNS_DAE

Civil Engineering

Sl. No.	Title of the work	Sponsoring agency	Period	Amount (Rs.)	PI / Co-PI(s)
1	Identification of Spatial Dispersion Pattern of Dredge Materials in a Coastal River Reach from Radioactive Tracer Experiments and Hydrodynamic Modeling	BRNS, BARC, Mumbai	2013-2017	34,55,197.00	Prof. Kalyan Kumar Bhar
2	Water, Sanitation and Hygiene Education Programme in School.	Water For People, USA	Oct 2015 -Sept 2016	20,44,400.00	Prof. Anirban Gupta

Sl. No.	Title of the work	Sponsoring agency	Period	Amount (Rs.)	PI / Co-PI(s)
3	Demonstration of Child Friendly Group Hand Washing Facilities in schools	UNICEF	Aug 2015 – Aug 2016	24,44,210.00	Prof. Anirban Gupta
4	Seismic Vulnerability Assessment of Existing Building to Supplement Rehabilitation practices with special emphasis to North Eastern Region	DST-TSD	2013-2016	63,44,000.00	Prof S Chakraborty Prof A (Dey) Ghosh
5	Industrial research on a clean process for delivering arsenic free safe water to affected communities in India	Innovate UK and GITA (DST)	2016-2018	25,11,770.00	Prof. Klayan Kumar Bhar Prof. ChanchalMajumder
6	Static and dynamic failure analysis of hybrid laminated composite stiffened plates for marine structures	Ministry of Shipping, Govt. of India	2016-ongoing	39,53,840.00	Prof. Chaitali Ray
7	Near surface Geophysical and Geotechnical Investigation for Site-specific Earthquake Hazard and Slope Stability studies in and around Gangtok via-a-via its Vulnerability and Risk Implications (VIS)	Ministry of Earth Science	2015-2018	37,62,000.00	Prof. Ambarish Ghosh
8	Performance evaluation of river Brahmaputra bed materials for use in construction of road embankment, subgrade and subbase.	DST, Govt. of India	2014-2017	39,55,400.00	Prof. Ambarish Ghosh
9	Development of Indian Highway Capacity Manual, INDO-HCM	CSIR-Central Road Research Institute, New Delhi	2012-2017	1,00,91,000.00	Prof. Sudip Kumar Roy, Prof. Sandip Chakraborty

Computer Science and Technology

Name of PI / Co-PIs	Title	Funding Agency	Total Quantum Support	Status
Amit Kumar Das	Content Based Image Retrieval (E-document)	Institute Sponsored	15 Lakh	Ongoing
Jaya Sil	Remote Health: A Framework for Healthcare Services using Mobile and Sensor-Cloud Technology	ITRA, Media Labs Asia, and DEITY	40.16 Lakhs	Sanctioned: 2013 (ongoing)
Sipra Das Bit, Saptarshi Ghosh	Post-Disaster Situation Analysis and Resource Management Using Delay-Tolerant Peer-to-	ITRA, Media Labs Asia, and DEITY	58.66 Lakhs	Sanctioned: 2013 (ongoing)

	Peer Wireless Networks			
Surajeet Ghosh	Design and Implementation of Pipeline Architecture for DNA Sequence Alignment	Department of Biotechnology, Ministry of Science & Technology, Govt. of India	Rs. 20,44,800/	Sanctioned: 2017 (ongoing)

Earth Science

Sponsored Research:

Completed (Prof value)	Sponsoring agency	Principal Investigator
Sedimentology-Rs /-20,58,500	ONGC (Completed in 2014)	Prof. Bhabani Prasad Mukhopadhyay.
Sedimentology-Rs /-21,16,000	DST (Completed in 2014)	Prof. Bhabani Prasad Mukhopadhyay

Ongoing (Prof value)	Sponsoring agency	Principal Investigator
Hydrogeology-Rs.22,22,000.00	West Bengal Power Development Corporation Ltd. (WBPDCL)	Prof. Bhabani Prasad Mukhopadhyay
Structural Geology-Rs.37,00,000.00	DST(SERB)	Dr.Atin Kumar Mitra

Electrical Engineering

Title & Broad area	Project Investigator	Year of Sanction	Sponsoring Agency	Total Amount (Lakhs of Rupees)
Development of Nano-structured Transformer Oil nono-fluids for Improvement of Thermal and Insulating Properties	Dr. Paramita Chattopadhyay	December 2014 - September 2017	Ministry of Power, Govt. of India, through CPRI, Bangalore	Rs. 79 Lakhs
Setting up of a Smart Microgrid at IIEST	Co-Investigator Konika Das (Bhattacharya)	April 2014- June June 2017	Ministry of power, GoWB	Rs.55 Lakhs

Humanities and Social Sciences

Partha Sarathi Roy

Undertaking a Project to develop cost-effective Bio-fertilizers in the Institutes' Incubation Centre

Information Technology

Dr. Malay Bhattarcharya:

Project titled "Crowdsourcing, Big Data Analysis and Bioinformatics" under the Visvesvaraya Young Faculty Research Fellowship worth INR 3.7 million from DeitY, Government of India from May 2016 to April 2021.

Mathematics

Ongoing (Prof value)	Sponsoring agency
Transmission dynamics and spread of infectious diseases: Modelling, Prediction and Control	CSIR
Developing fixed point theory and fixed point methods in applied mathematics. Ongoing (Prof value) Rs 883740	DST (West Bengal) (2014-2017)

Mechanical Engineering

Ongoing (Project)	Sponsoring agency
Development of a unified model to simulate uniaxial and multi-axial LCF and ratcheting for nuclear piping materials: Prof. P.P.Dey (P.I) of 41 Lakhs	B.R.N.S, Department of Atomic Energy, Government of India

Metallurgy and Materials Engineering

Sl No.	Title of the Project	Sponsoring Agency	Investigator (PI/Co-PI)	Project value
1.	Development of high strength multiphase steel through various processing conditions	Tata Steel Limited, Jamshedpur	PI: Dr. S. K. Ghosh	1.80 lakh
2.	Microstructure and mechanical properties of thermo-mechanically processed micro-alloyed high carbon steels	Tata Steel Limited, Jamshedpur	PI: Dr. S. K. Ghosh	1.97 lakh
3.	Development of 2000 MPa steels for Defence applications	Ordnance Factory Board, Govt. of India	PI: Dr. S. Chatterjee	30.00 lakh
4.	Influence of Silver and Tin on Microstructure and texture in Al-Zn-Mg Alloy	University Grants Commission, Govt. of India	PI: Dr. M. Ghosh	12.52 lakh
5.	Evolution of microstructure and texture in dissimilar alloys during Electron beam and Friction Stir Welding	Department of Atomic Energy, Govt. of India	PI: Dr. M. Ghosh	17.74 lakh
6.	Influence of silver and tin on microstructure and texture in Al-Zn-Mg alloys	DST-BELSPRO	PI: Dr. M. Ghosh	17.20 lakh
7.	Deformation and damage behaviour of automobile grade steels under cyclic loading	Tata Steel Limited, Jamshedpur	PI: Dr. D. Das	1.60 lakh
8.	Fatigue Property Evaluation and Microstructural Characterization of Hot Rolled Steels	Tata Steel Limited, Jamshedpur	PI: Dr. D. Das	14.85 lakh
9.	Wear performance evaluation of high strength microalloyed steels	Tata Steel Limited, Jamshedpur	PI: Dr. D. Das	1.97 lakh
10.	Micromechanism of Fatigue Failure of a Few High Strength Grade Steels Produced Through TSCR Route	Tata Steel Limited, Jamshedpur	PI: Dr. D. Das	14.85 lakh
11.	Development of diffusion bonded joints between Titanium alloy and micro-duplex stainless steel with intermediate materials	Fast Track for Young Scientist, DST, Govt. of India	PI: Dr. S. Kundu	14.00 lakh

Mining Engineering

Ongoing (Prof value)	**Sponsoring agency**
CBM reserves estimation for Indian coalfileds (20.95 crores total project value, IIEST share 7.31 Crores)	Ministry of Coal, GOI

Physics

No.	Ongoing (Prof value)	Sponsoring agency
1.	Synthesis and characterization of (1) ultra-long carbon naotubes and resist free fabrication of carbon nanotube field effect transistor (CNTFET) for sensor application and (2) carbon nanotube carpet for thermoelectric application. (Duration: 3 Yrs) P.I. Dr. Manish Pal Chowdhury and Co P.I: Prof. Dipali Banerjee *Rs. 42 Lakhs*	DST, Govt. of India
2.	Nonlinear Pulse Dynamics in Dispersion Managed Optical Fibers including Micro or Nano Dimensions (OFMN)". (Sanctioned in 2016) P.I.: Prof. M. Basu Rs. ~ 26 lakhs	DST, Govt. of India
3.	Generation of silent green energy with performance and efficiency enhancement using inorganic/organic hybridization and nano structuring in fuel cell system. Co P.I : Dr. Dipali Banerjee (in collaboration with J.U) Rs. 38,90,000/-	DST, Govt. of India
4.	Synthesis and characterization of low dimensional Bi-Te for thermoelectric application P.I : Dr. Dipali Banerjee (in collaboration with J.U) Rs. 36,90,800/-	DST, Govt. of India
5.	A Biotechnological approach for rapid detection of aflatoxin in food using optical nanofiber probes (Rs.43,04,600/-) Co P.I. Dr. S Mukherjee	DBT, GOI
6.	Investigation of effect of structure of jute and allied fibre products on sound insulation property. Co-PI (Total budget- Rs.1,78,05,960/- ; Institute budget- Rs.31,71,390/-) Co P.I. Dr. S Mukherjee	NASF, ICAR, GOI
7.	Non-thermal Plasma jet on blood coagulation and skin disease treatment (Duration: 3 years) P.I.- Dr. Abhijit Majumdar (in collaboration with IPGMER, Kolkata, W.B) Rs. 21,09,000/-	BRNS
8.	Solar Energy Hub at BESU (Rs. 8.5 Crore) Co-PI: Dr. Syed Minhaz Hossain (in collaboration with Center of Excellence for Green Energy and Sensor Systems, IIEST)	DST
9.	Physics Dept. has obtained the DST-FIST grant (Rs. 1.15 crore), (Ref. No. SR/FST/PSI-218/2016, Dated 16th December 2016).	DST
10.	Characteristics of light emission in Eu^{3+} doped Zinc Phosphate glass matrices, Govt. of India, Ref. No. EMR/2016/003103, dated 2nd March 2017 (Amount Rs. 28.11 Lakhs) P.I: Dr. Samar Jana	DST-SERB

11.	Emerging phases due to Spin-Orbit coupling in 5d oxides: revealed via first principles calculations (35 lacs) P.I. Dr. Sudipta Kanungo	DST

School of Community Science & Technology

Ongoing (Prof value)	Sponsoring agency
Creation of infrastructural facilities for running degree course in food processing technology" **Value:74.75 lakhs**	Ministry of Food Processing Industry Govt. of West Bengal

Dr. M.N. Dastur School of Materials Science and Engineering

Sl. No.	Title of Research Project	Sponsoring Agency	Year of Start and duration
01.	Development of natural green polymer based nanocomposite for artificial skin materials by electrospinning and 3-D printing technology **Value : Rs. 35.00 Lakhs**	DST Inspire, GoI	2015-2020 Five (5) years
02.	Development of nanofiber reinforced plant polymer based durable, fire-retardant biocomposites **Value : Rs. 31.00 Lakhs (Aprox.)**	SEED-DST, Under SYST Scheme, GoI.	2016-2019 Three (3) years
03.	Engineered Biomimetic Cellulose Nano-scaffold for Skin and Bone Replacement **Value : Rs 52.00 Lakhs**	DST-SERB, Under Early Career Research Grant, GoI	2016-2019 Three (3) years
04.	Synthesis of some one or two dimensional carbon nanostructures/related composites and its novel electronic applications by virtue of its amorphousness **Value : Rs 23.00 Lakhs**	DST-SERB, Under First Track Research Grant, GoI	2014-2017 Three (3) years
05.	Development of fire-retardant durable jute nano composites for high end structural applications **Value : Rs 78.00 Lakhs**	Ministry of Textiles, GOI	2016-2018 Two (2) years
06.	Exploration on the efficient electrode systems for rechargeable batteries **Value : Rs. 35.00 Lakhs**	DST Inspire, GoI	2016-2021 Five (5) years
07.	Development of high-strength low-carbon multiphase steels (YS~1000 MPa, UTS~1300 MPa and Elongation 40-50%) **Value : Rs 628.00 lakhs**	Ministry of Steel , Govt. of India	Three (3) years

VLSI

Ongoing Sponsored Research / projects

Project Title	Sponsoring agency	Duration
Modernization of VLSI Design Laboratory (Rs.17.80 lac.)	AICTE, INDIA	2013-2016
ASIC 1: Design and ASIC implementation of (i) Data Converter and (ii) Embedded DSP Architecture for Seismic Sensors (To be embedded with Versatile Data Acquisition and Signal Processing Platform with Emphasis on Seismic Sensors based Application) ASIC 2 : ASIC Implementation of Power Aware Reconfigurable Analog to Digital Converter (PARA)	SMDP-C2SD Programme, Diety, MCIT, Govt. of India	Starting February 2015. (5 Years)
2-Dimensional Channel Materials based Next Generation Nano-scale MOS devices (INR 35 Lakhs) -5 years	Department of Science and Technology	Starting Date: 01.04.2014 End Date: 31.03.2019

Centre of Excellence for Green Energy and Sensor System

Research Projects	Funding Agency	Sanctioned Amount	PI and Status	Area
Solar Photovoltaic Hub at BESU	DST	12.46 Crores	Prof. H. Saha (Ongoing)	Solar Cells and related next generation technologies
Advanced Research on thin Film Silicon Solar Cells and PV systems	MNRE	14.76 Crores	Prof. H. Saha (Ongoing)	Solar Cells, Solar Photovoltaic Systems, Energy Storage and related next generation technologies
Smart Micro-Grid at IIEST	WBREDA	55 lakhs	Prof. H. Saha (Ongoing)	Solar Photovolatic systems
Development of Multilayer TCO for High Efficiency Thin Film Solar Cell	DST	22.928 lakhs	Ongoing	Solar Cells and related next generation technologies
Realization of high efficiency Inter-digitated Back-Contact (IBC) Silicon HeteroJunction (SHJ) solar cells with novel front structure	DST	70.0 lakhs	Dr.Sumita Mukhapadhay (Ongoing)	Solar Cells and related next generation technologies
High Efficiency Triple Tandem and Heterojunction Silicon based Solar Cell Acronym: HETHSI	MNRE	96.0 Lakhs	Dr. Chandan Banarjee (Ongoing)	Solar Cells and related next generation technologies
Synthesis, Fabrication and Development of Graphene Based Gas Sensors for Detection of Ammonia (NH_3), Nitrogen Oxides (NOx) and Carbon Monoxide (CO)	DST-KIRAN	30.0 Lakhs	Dr. Sanhita Majumdar (Ongoing)	Gas sensors
Biointerfacesbased on chemically engineered Graphene oxide as a novel multifunctional platform for bioelectrochemical systems	DST-INSPIRE	35.0 Lakhs	Dr. Snehanshu Patra (Ongoing)	
Flexible super capacitors	DST-SERI	Rs.4056360/-	Dr. Nillohit	

based on carbon nano materials for energy storage			Mukherjee nd Dr. Sumita Mukhopadhyay (Ongoing)	
Selective carrier Tunneling Solar Cell for both n and p type silicon wafers	DST-CERI	2.6 Crores	Prof. H. Saha (Ongoing)	Solar Cells and related next generation technologies
Integrated Photobioelectrochemical systems for efficient CO_2 sequestering	DST-SERB (Early Career Research Award)		Dr. Snehanshu Patra (Accepted)	
Incorporation of DLN in a solar cell structure as a replacement of SiN	DST	Rs. 2102800/-	Prof. Partha Chowdhury (jointly with MSIT, Kolkata)	Solar Cells and related next generation technologies
Training of School Electrification in WB	WBREDA	Rs. 3,10,000.00/-	Prof. H. Saha (On going)	
Development of Generation Management Unit (Solar Smoother)	OZTRON	Rs. 1,00,000.00/-	Prof. H. Saha (On going)	Solar Cells and related next generation technologies
Development of Solar Cities	MNRE	5,00,000.00/-	Prof. H. Saha (On going)	Solar Cells and related next generation technologies
Formation of Tripura State Power Policy 2016	AGN	11,50,000.00/-	Prof. H. Saha (On going)	
Development of carrier selective tunneling rear contact on n-type and p-type Silicon Wafers for ultra-low surface recombination velocity and their implementation for lab scale (3" × 3") high efficiency (>20%) solar cells	DST-CERI	2,93,87,290.00/-	Prof. H. Saha (On going)	Solar Cells and related next generation technologies
Enhancement Baseline efficiency of c-Si solar cells by 0.2-0.3% through incorporation of Silicon Nitride nanoparticles on front surface	MOA(BHEL)	19,99,000.00/-	Prof. H. Saha (On going)	Solar Cells and related next generation technologies

Completed Project

Sl. No.	Name of Project	Funding Authority	Funding Amount (Sanction Amount)	Status
1	Development of an Intelligent recognizer for Component analysis of Man Hole Gas Mixture	DST(IDP/IND/02/2009)	16,50,000.00	Completed
2	Development of Special Solar PV Module Applications	Sova Power	2,50,000.00	Completed
3	Sensor Hub Activity on MEMs based gas sensor	DST	5,00,000.00	Completed
4	Solar City Programme	NKDA	8,65,652.00	Completed

5	Advanced Research on Thin Film Silicon Solar Cells And PV Systems	MNRE(31/40/2010-11/PVSE)	14,76,00,000.00	Completed on 30/06/2017
6	Solar Hub at BESU	DST (DST/TM/SERI/2k10/17)	12,32,00,000.00	Completed on 30/06/2017
7	Smart Micro Grid	WEBREDA (WEBREDA /SGP/63(2014)/BESU)	55,00,000.00	Completed on 30/06/2017

Centre for Healthcare Science and Technology

Project	Funding By
Development of Smart Prognostic System for Early Indication of Cardiac Problem of a Patient	DST-IDP
Enzymatic approach to control celiac disease leading to an alternative treatment strategy	DBT
Fabrication of Bio-degradable Honey Based Scaffold for Ex-Vivo Expansion and Differentiation of Mesenchymal Stem Cells	DST FAST TRACK
Biofabrication of Bioactive Scaffolds for Bone Regeneration	DST Inspire
Computed Aided Design, Analysis and Development of Patient Specific Prosthesis for Different Human Joints, Specifically Hip Joint on Indian Perspective.	DBT
Efficacy of Silicon Microchannel Cytosensor Platform for Electrical Profiling of Multiple Mammalian Cells Under Intervention Towards Diagnostic and Regenerative Applications.	SERB, DST
Multiple wireless sensor system for monitoring health status of elderly people- Prototype Development and field testing	DST, SEED
Nanostructured Immunosensor Array for Rapid, Portable and Sensitive Food Toxin Detection	DST Women Excellence Award
A Biotechnological approach for rapid detection of Aflatoxin using optical nanofibre	DBT
Development of Bone condition monitoring technique using Ultrasonographic sensor.	DST, SERB
Design and development of patient specific dental implant.	UGC
Low Cost Bench-Top Fluorescence Microscope with Integrated Algorithm for Early Cervical Cancer Risk Prediction	DST IDP
Multimodal Evaluation of Umbilical Cord Mesenchymal Stem Cells and their Trans-differentiation into Epithelial Cells under Honey Based Bio-matrix	ICMR
Zinc Protoporphyrin and its Synthetic Variants as Carrier of Trimethylamine N-oxide in Atherosclerosis	SERB, DST
Regulation of lineage specific differentiation of mesenchymal stem cell under bio-matrices with varied elastic properties	ICMR
The prospect of cancer therapy using an inorganic nanoconjugate comprising microRNA-34 family	DST Nanomission
Bioactivity guided fractionation of phytochemicals from medicinal plants against brain malignancy authenticated by DNA bar coding	AYUSH

Laboratories (2016 – 17)

Aerospace Engineering & Applied Mechanics

1. Strength of Materials Lab
2. Fluid Mechanics & Hydraulics Lab
3. Biomechanics Lab
4. CAD Lab
5. Low Speed Aerodynamics Lab
6. Aerospace Structure Lab
7. Thermodynamics Lab
8. High Speed Aerodynamics Lab
9. Mechanical Vibration Lab
10. Stability and Control Lab

Architecture, Town and Regional Planning

- Material Museum is used for permanent display of samples of building materials for acquaintance of the students.
- Construction Yard demonstrates various techniques of construction.
- Computer Aided Architectural Design Laboratory is used for learning and practice of CAD for the students and Multimedia Simulation Laboratory for Research and Development.
- Remote Sensing and GIS Laboratory facilitates training for the students of Town and Regional Planning in GIS, GPS and Remote Sensing technologies.

Chemistry

- Coordination & Bioinorganic Chemistry
- Glycobiology
- Electrochemical Nano Science, Fuel Cell and Solar Cells.
- Molecular Recognition & Organic Synthesis
- Synthetic Organic and Organometallic Chemistry
- Thin Film Semiconductors & Solar cells
- Theoretical and Computational Chemistry
- Theoretical Molecular Sciences
- Conducting Polymers & Photoelectrochemical Solar Cell
- Nano Imaging and Artificial photo synthesis

Civil Engineering

Name of the Laboratory	Purpose
1. Computer Lab	• To conduct regular laboratory classes according to undergraduate and postgraduate curricula • To provide testing facilities to outside agencies. • To undertaker research work.
2. Concrete Technology Lab	
3. Environmental Engineering Lab	
4. GIS Lab 5. Geotechnical Engineering Lab	
6. Geotextile Engineering Lab 7. Model Analysis Lab 8. Structural Engineering Lab	
9. Structural Dynamics Lab 10. Surveying Lab	
11. Transportation Engineering Lab	
12. Water Resources Engineering Lab	

Computer Science and Technology

Software Laboratories	Hardware Laboratories
Resources: Cs: 175 ervers : 20 S : Linux, Windows, Unix oftware: Oracle 10g, matlab, VLSI etc. Supporting the following courses: i) Data Structure ii) Object Oriented Technology iii) Discrete Structures iv) Operating Systems v) Algorithm vi) Analysis, Design & Management of Information Systems vii) Database Management System viii) Computer Networks ix) Systems Programming x) Computer Graphics xi) Compiler Design xii) Symbolic Logic & Artificial Intelligence xiii) Software Engineering xiv) VLSI Design xv) Electronic Design & Automation	Resources igital Circuit Experimentation Kit Microprocessor S/W Development Kits Embedded System Design Kits Programmable Logic Controller Cs PS Receiver Unit FID Reader Supporting the following courses: i) Digital Logic ii) Computer Organization iii) Microprocessor Based System Design iv) Embedded System v) Computer Control of Industrial Process vi) Digital Systems Design

Department of Earth Sciences

- Sedimentology
- Paleontology
- Rock cutting & polishing
- Structural Geology

Department of Electrical Engineering

Sl. No.	Name of the Laboratory	Area	Used by no of Students		UG/PG/Research
			Odd Sem	Even Sem	
1.	Basic Electrical Engg. Laboratory	Basic Electrical Engg.	90	90	
2.	Protective Relaying	Power System Protection		60 +	UG and Research
3.	Energy Lab	Power	Forthcoming (dual degree elective lab)		Forthcoming lab in dual degree program. UG, PG project students are working now
4.	Drives Laboratory	Drives	nil	60	UG
5.	Control Systems Lab	Control Systems	Expected 80+	Expecte d 80+	
6.	Smart Control Laboratory	Control Systems – Simulation and applications	Research Scholars – 2; PG – 1 UG -3		For research purpose and UG/PG project work
7.	Instrumentation Laboratory	Instrumentation	80		UG and Research.
8.	Industrial Electronics Research Laboratory	Power Quality, Converter Topology, Power Electronics and Drives	PG Scholars -3 PhD Scholars - 4		Research purpose

Humanities and Social Sciences

Language Lab	under construction
Cognitive Science Lab	under consideration

Mechanical Engineering

Set up developed in the Tribology Laboratory under DST-FIST in Mechanical Engineering Department

Information Technology

Laboratory description in the curriculum	Exclusive use / shared	Number of students	Number of experiments	Quality of instruments	Laboratory manuals
Computer Lab-I	Exclusive	66	40 / semester	All computers in the laboratory have dual core and core2Duo	Manuals for the laboratory instructions are uploaded on the website.
Computer Lab-II	Exclusive	66	40 / semester	All computers in the laboratory have P4 configuration	Manuals for the laboratory instructions are uploaded on the website.
Computer Lab-III	Exclusive	40			
Computer Lab-IV	Exclusive	50			
ME Lab I	Exclusive	10	9 / semester Used for research related works	All computers in the laboratory have Intel i5 configuration	
ME Lab II	Exclusive	10	9 / semester Used for research related works		
Electronics and Communication Lab	Exclusive	30	25	Instruments	
Research Lab	Exclusive	10			

Metallurgy and Materials Engineering

Instrument and Equipment facilities:

- Air Induction furnace for melting of steel
- Heat Treatment Furnaces,
- Jominy Hardenability Testing unit
- Grinding and Polishing facilities, Electropolisher
- Optical Microscopes, including Research microscopes (Carl Zeiss, Leica)
- Hardness Testers
- Micro-hardness Testers (Leica)
- Scanning Electron Microscope (JEOL) with EDS facility
- FE Scanning Electron Microscope (JEOL) with EDS & EBSD facility (Oxford)
- Differential Scanning Calorimeter (Perkin Elmer DSC 8000)
- Instron Testing machines - Static
- Charpy Impact Testing machine
- Diffusion bonding set-up for joining dissimilar metals
- X-ray Diffraction unit ((Philips)
- X-ray Diffraction unit ((Bruker)
- Planetary Ball Mill for nano-material preparation and Mechanical alloying
- Wear Testing machine
- Computer laboratory
- Magnetic hysterisis measuring device
- Friction stir welding Machine

Name of the Laboratories:

- Metallography Laboratory
- Testing of Metals Laboratory
- Heat Treatment Laboratory
- Corrosion Laboratory
- X-ray Laboratory
- SEM Laboratory
- Metal Casting Laboratory
- Smithy & Forging Laboratory
- Welding Laboratory
- Computer Laboratory
- Physics of Metals Laboratory
- Nanostructure processing Laboratory

Mining Engineering

MINERAL DRESSING / MINERAL BENEFICIATION LABORATORY

Name of Equipment	**Number of Equipment**
1.Pneumatic Cyclone Assembly	1 Lot
2.Jaw CRUSHER	1
3.Moisture Drier	1
4. Bucket Elevator	1
5.Jig machine pilot plant	1
6.Mozley Hydro cyclone Test Rig	1
7.Vibrating Screen with AC variable Speed drive	1
8.Ball Mill	1
9.Sieve Shaker (Different size)	2
10.Forth Floatation cell	1

11.Rod Mill	1
12.Screw Washer with AC variable speed drive	1
13. Microtrac Particle Size Analyzer	1
14. Weighing Scale (with density Gauge)	1
15. Weighing Balance (electronic)	1
17. Hydrocyclone test rig	1
18. Raymond Mill	1
19. Pulverizer	1

MINE ENVIRONMENTAL SCIENCE AND VENTILATION ENGINEERING LABORATORY

1.High Volume Dust Samplers	2
2.Gravimetric Dust Sampler	1
3.Sound Level Meter	2
4.Humidity/Temperature meter	1
5.Lux Meter	1
6.Nephelo Meter	1
7.PH Meter	1
8.Water analysis kit	1
9.uv-vis Spectro photo Meter	1
10.Whirlling hydro Meter	2
11.Anemo Meter	1
12.Methano Meter	1
13. Blast Vibration Meter	1
14.CO Detector	1
15. Flame Safety Lame	1
16. Gas Tasting Arrangement	1
17. Peristaltic Pump	1
18. Water Bath	1
19. Auto Clave	1
20. Nephelometer	1
21. Soil and Water Analysis Kit	1
22. Weather Monitoring System	1
23. Gas chromatograph	1
24. Crossing Point Apparatus	1
25. Atomic Absorption Spectrophotometer	1

UNDERGROUND MINING MACHINERY LABORATORY

1.Headgear Structure	2
2.Drumwinding System	1
3. Skip winding system	1
4.King Detaching Safety Hook	1
5. Armored Detaching Safety Hook	1
6.Electric Coal Drill Machine	1
7. Jack Hammer Drill Machine	2
8.Direct Rope Haulage Model	1
9.Endless Rope Haulage Model	1
10. Main & Tail Rope Haulage Model	1
11.Gate Belt Conveyor	1
12.Scraper Chain Conveyor	1
13.Shaker conveyor	1
14. Load Haul Dumper (LHD)	1
15.Side Discharge Loader (SDL)	1

16. Continuous Miner /Road Header	1
17.Jim Crow	1
18. Back Stay	1
19. Reliance Rope Capel	1
20.Single & Double C- coupling	2
21. Single & Double D - Coupling	2
22.Haulage Appliances (Stop Block , Jazz Rail, Crossings etc)	1
23.Different types of wire ropes	1
24.Different types of Gear	1
25. Long wall Panel Model	1

MINE SURVEY LABORATORY

1.Dual frequency GNSS Receivers for DGPS survey	1
2. Single frequency GNSS receivers for DGPS survey	1
3.Auto Level	5
4. Electronic Theodolite	3+3
5.Total Station	1+1
6. Prismatic Compass	2
7.GPS	2
8.Tripod	12
9.Staff	6
10. Ranging Rod	20
11.Engineers Chain	12
10. Measuring Tape(30m)	6

GIS / GPS LAB

1.Scanner AO size
2.ARC info software (3 user)
3.Workstation 4no's
4.ERDAS software (5 user)
5.Plotter AO size
6.SERVO UPS
7. Envi 5.0 (10 Users)
8. Envi 5.0 (10 Users)
9. Geomedia Professional
10. Raster to vector software
11. ILWIS

ROCK MECHANICS LAB

1.UnivarsaTestinsg Machine(U.T.M.)	1Nos
2.Poinst Load Testing Machine	1
3.Tri axial cell with pressure system	1
4.Brazilian Test apparatus	1
5.Proto Dyakonov apparatus	2
6.Slake Durability Test apparatus	1
7. Precision Vacuum oven apparatus	1
8.Rock cutting Machine	1
9 Rock polishing Machine	2
10.Schmit hammer	1

11.Rock permeability test apparatus	1
12.Shear testing apparatus	1

COMPUTER APPLICATION LAB

1.B.E. Computer Lab	25
2.M.E. Computer Lab	6
3.Surpac Software	
4.Minex Software	
5.Rock science Software	
6.GEM Software	
7.Whittle Software	

MINE DEVELOPMENT LABORATORY

Model for Shaft Sinking	1

BULK SOLID HANDLING LABORATORY (Elective II)

Weighing Scale (with density Gauge)
Vibrating Screen with AC variable Speed drive
Bucket Elevator
Hopper with Vibrating Feeder (Electro-magnetic type)

School of Community Science & Technology

- Food Processing and Preservation Lab.
- Microbiology Lab.
- Unit Operation Lab.
- Chemical and Biochemical Analysis Lab

Physics

Research Laboratories:

- Composite and Nanomaterial Research Laboratory
- LASER and Luminescent Materials Research Laboratory
- Fiber Optic Design Laboratory
- Electro-ceramics Laboratory
- Optical & Piezoelectric Materials Lab
- Nano material synthesis lab
- Low dimensional Solid State Physics Laboratory
- Plasma Physics Laboratory
- Nanomaterial and Surface Physics Laboratory
- Nuclear Physics Laboratory

- Theoretical and computational Physics Laboratory
- Ab-initio Material Simulation Research Lab.

Laboratories for PG & UG studies:

- General laboratory
- Electronics laboratory
- Advanced Optics laboratory
- Advanced Material Physics laboratory
- Nuclear physics laboratory
- UG (B.Tech) general laboratory

Dr. M.N. Dastur School of Materials Science and Engineering

Name of laboratories:

- Heat Treatment and Materials Processing Laboratory
- Metallographic Laboratory
- Polymer Processing Laboratory
- Modelling and Optimization Laboratory
- Microscopy and Electrical Characterization Laboratory
- SMALL (Laboratory for Low-dimensional Advanced Material Synthesis)
- Computer Laboratory
- Electrochemistry and Advanced Materials Laboratory

School of Management Sciences

- Computer Laboratory at U821

Centre of Excellence for Green Energy and Sensor System

Name of the laboratories of the center:

Solar photovoltaic fabrication laboratory

Advanced Characterization laboratory

Sensors design and development laboratory

Solar Photovoltaic Systems Laboratory

Advanced Computational laboratory

Renewable Energy Laboratory including Solar Cells, Wind, Solar Thermal etc.

Laboratory of Electrochemistry for Energy and Environment (L3E)

Solar Radiatiion Resources Assessment: Standard and Advanced System

Wet Texturization Bench

This is a simple easy to use semi- automatic wet chemical system having tanks made of PP, PVDF and with PVDF pneumatic valves. The temperature controlled bath with heaters are suitable to texture 156 mm sq. silicon wafers along with PSG removal.

Oxidation/ Diffusion Furnace

This is used for high temperature diffusion procesess including doping from solid and liquid dopant sources e.g.: $POCL_3$, BN. Thermal processes like dry oxidation and pyrogenic wet oxidation with external burning system takes place in such 3 stacked quartz reactor chambers.

Laser Scriber

This machine is suitable for scribing and cutting of monocrystalline silicon, multicrystalline silicon wafers. It consist of YAG crystal, krypton lamp, continuous pump, laser with Q switch as work light source and computer controlled two dimensional table that accurately moves according to the preset graphical tracks.

PECVD Cluster Tool

This tool can be used for horizontal deposition of amorphous and µcrystalline Si based doped, un-doped, and its alloy materials. Along with Magnetic / Robotic arm, residual gas analyser and RF power source, it is capable of depositing on substrate sizes of 100 mm diameter (CT-100) and 150 mm diameter (CT-150) at a maximum temperature of 300 degC.

Screen Printing Machine

The Horizon 03iX Platform offer speed improvements, enhanced yields and intelligent board support. The robust chassis and mechanical integrity is the foundation of the Industry Gold Standard 6-Sigma machine alignment capability of greater than 2 Cpk @ +/-12.5 microns. The two screen printing systems are used for taking the front and back contacts of c-Si solar cells to avoid cross-contamination.

Drying and Firing Belt Furnaces

The belt furnaces (2 nos. for front and back paste drying and one for co- firing) are used for making the contacts of c- Si solar cells). The thick film paste is dried at about 300 degC to remove much of the solvents. The firing process consists of four primaries of solvent volatization, burn-out, sintering at around 700-800 degC followed by wafer cool down.

Sputtering Unit

Two sputtering systems with 4" / & 6" magnetron sputtering cathodes are present. Each system has two cathodes with choice of DC, Pulsed DC and/or RF sputtering. Substrate rotation to give high uniformity. Quartz IR lamp based substrate heater control. PLC-PC based automation provides for complete process control including Substrate bias capability.

Reactive Ion Etching Unit

It is a standalone, PC controlled systemwith a shower head gas distribution of Argon (Ar), Oxygen (O_2), SF_6, CHF_3, and N_2 gas distribution. It has a stain less circular chamber that open at the front for substrate loading. Chamber has view port for viewing the plasma. The round substrate holder can accommodate 6inch diameter substrate and the gap can be adjusted between substrate holder and the gas shower-head manually. The chamber is extremely clean in design and reaches 10^{-9} mbar with the turbo-pump based pumping system. The RF power is provided by 600 W 13.5 MHz power supply. The system is completely automated and is PC controlled.

E-beam Evaporation Apparatus

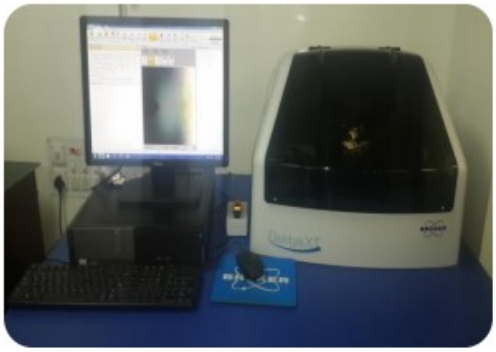
The HHV Auto500 front-loading deposition system can accommodate large-diameter substrates and allows a combination of resistance evaporation alongwith electron beam without breaking vacuum. Pumping system includes dry-running scroll and turbo pumps.

Optical microscope

Laboratory microscope for research applications having dye-cast frame with high stability and ergonomy, for transmitted and reflected light observation.

Thickness profilometer

This tool provides repeatable, accurate measurements on varied surfaces, from traditional 2D roughness surface characterization and step height measurements to advanced 3D mapping and film stress analyses. It is used for measuring thin film thickness, stress, and surface roughness and form in applications ranging from educational research verification to semiconductor process control.

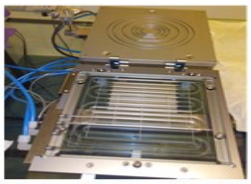


Bentham PVE300

Using a monochromatic probe and NMI traceable calibrated reference diodes, the PVE300 permits the quick and accurate determination of solar cell spectral response/ EQE, cell transmittance, reflectance and determination of IQE. It is compatible with all types of photovoltaic devices, from silicon to 3rd generation devices.

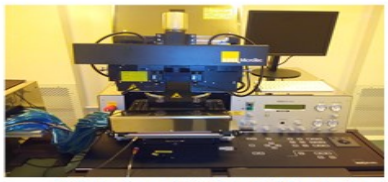
Substrate Conformal Imprint lithography (SCIL)

Surface Conformal Imprint lithography (SCIL) is a Nano Imprint Lithography (NIL) technique that combines the advantages of a soft working composite stamp for large area patterning of nano structures. The system can produce features as small as 30nm on a 200mm diameter wafer in just a few minutes.



Master Replication Tool

Numetic Controller



SCIL Imprint Tool (Mask Aligner)

Schematic illustration of the SCIL imprint and separation sequence

(a) The composite PDMS stamp (SCIL stamp) is fabricated using Replication tool for repli
of master pattern.
(a) The SCIL stamp is fixed on the stamp holder by vacuum.
(b) The imprint process starts from one side of the stamp.
(c) The imprint is completed by releasing the stamp holder vacuum grooves one by one.
(d) After curing of the resist, the separation process starts from the other side of the stam
(e) The separation process is completed by switching on the vacuum in the grooves one t

Four probe resistivity

The probe guidance system is kinematic and thus free of all lateral play. The needles are positioned by upper and lower jeweled guides, each needle being constrained by a spring-loaded ruby ball at each guide. 4-Point Probe Measurement of wafer sheet resistance, 4-Point Probe Measurement of epitaxial and diffused layer resistivity and 3-Point Spreading Resistance Measurement can be carried out. Further, the Multiposition Wafer Probe combined with the RM3000 Test Unit provides a high quality, easy to use system for measuring the sheet resistance and/or volume resistivity of wafers up to 200mm (8″) in diameter.

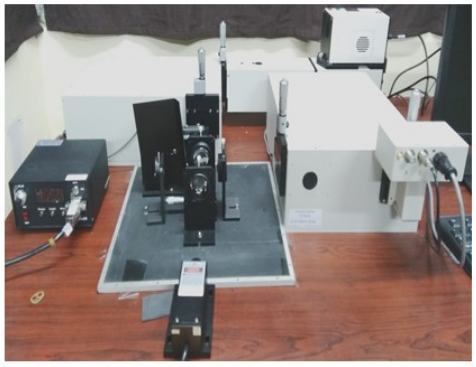
FESEM

The SIGMA Series of Field Emission Scanning Electron Microscopes (FESEM) delivers advanced analytical microscopy. Equipped with the GEMINI column with its in-lens secondary electron detection, the SIGMA series brings you unparalleled resolution, contrast and brightness for imaging highly topographical samples. Featuring high vacuum and variable pressure modes of operation we can obtain high definition imaging of conducting and non-conducting samples.

Scanning probe microscope

With the availability AFM and STM the system is capable to perform measurements depending on the working environment. With the analyzing modes like Lateral Force Imaging, Phase Imaging Mode, Force Modulation Mode, Adhesion Force Imaging, the tool can perform measurements on contact, semicontact and non-contact materials.

Photoluminescence (PL)



PL setup from Horiba scientific installed in the CEGESS Lab . A Xenon arc lamp (300-600 nm) and a CW Laser (405 nm) has been used as excitation sources in this system. Emission spectra can be measured from 300 nm to 900 nm range accurately. Solid, powder, and liquid samples can be measured using different sample holders.

Centre for Healthcare Science and Technology

Bioinstrumentation Laboratory

- Regenerative Medicine and Early Cancer Diagnosis Lab
- Neurobiotechnology Lab

Biosensors Laboratory

- Biomaterials, Implant Fabrication and Testing Lab

VLSI

Name of the laboratories

- Ganapati Sengupta VLSI Laboratory (Research Lab)
- SMDP-II Laboratory
- Advanced FPGA Lab.
- Advanced VLSI Design Lab.
- Chip to System Design (C2SD) Lab.
- Advanced Semiconductors and Computational Nanoelectronics Lab

Modernization of Academic, Laboratory:

Modernization of EDA and TCAD Laboratories under AICTE MODROBS grant

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10.P. S. Panigrahy, **P. Chattopadhyay**, "Improved Classification by Non Iterative and Ensemble Machine Learning in Motor Fault Diagnosis" Soft Computing (Springer) (under revision).

11.P. S. Panigrahy, **P. Chattopadhyay**, "Application of Non Parametric Machine Learning For Fault Diagnosis of Drive fed Induction Motor" Applied Artificial Intelligence (Taylor and Francies) (under review).

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2. P. Chaudhuri and **S. Parui**, Study of Nonlinear Phenomena in a Free-Running Current Controlled C′uk Converter, 2016 First International Conference on Advancement of Computer Communication and Electrical Technology,Murshidabad, West Bengal 21-22 October, 2016.
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5. U Mondal, **Anindia Sengupta,** S. khan, A. Paul, T Sil, A. Basu, R. Tiwari, S. Mukherjee, "Position Control of a DC Motor System for Tracking Periodic Reference Inputs in a Data Driven Paradigm", IEEE International conference on Intelligent Control Power and Instrumentation, (ICICPI),2016.
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9. S. Mitra, **P. Chattopadhyay**, "Challenges in implementation of ANN in embedded system," International Conference on Electrical, Electronics, and Optimization Techniques (ICEEOT), Chennai, March 3-5, 2016, pp. 1794-1798.
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15. Joydip Jana, HiranmaySamanta, **Konika Das (Bhattacharya)** and HiranmaySaha , "A Four Stage Battery Charge Controller Working on a Novel Maximum Power Point Tracking Based Algorithm for Solar PV System", 21st Century Energy Needs Materials, Systems and Applications (ICTFCEN) , IIT KGP, 17-19thNovember-2016.
16. SudiptaBasu Pal, D. Mukherjee, D.Paul, **K.Das (Bhattacharya),** "Characterisation of PV Modules Employing SuperCapacitors--A Scalable Method for Field Metrology, International conference of Renewable Energy and Power Quality, Malaga, Spain, April 2017.
17. Desham Mitra, **Ashoke Sutradhar**, " Design and Realization of a Multi-Objective Controller for a MIMO Coupled Tank System", Proc. of 2016 International Conference on Intelligent Control Power and Instrumentation (ICICPI), 21st-23rd October, 2016, pp 7-10.

Books / Monograms:

1. Book Chapter titled: "Optimization of Operational Standard Management Cost In Traditional and Hybrid Wind-thermal Systems" by S. Chanda and **A. De**, included as Chapter ET-08 in the book: "Engineering and Technology: Recent Innovations and Research - An International Edition", Published by: International Research Publication House, Delhi ISBN: 978-93-86138-06-4.
2. Book Chapter titled: " Maximization of Social Welfare by Optimal Allocation and Utilization of the Smart Power Grid Infrastructure: A Swarm Intelligence Approach" by S. Chanda and **A. De,** accepted for inclusion in the IET Book: "Swarm Intelligence - From Concepts to Applications", Institute of Engineering and Technology (IET), UK (Print: 978-1-78561-313-5, eBook: 978-1-78561-314-2) (in press)

Humanities and Social Sciences

Journal
Madhumati Dutta

1. 'The Indian Consumer, Climate Change and Reduction Strategies', The Social Scientist, Volume 43, Nos. 11-12, Nov-Dec 2015
2. 'Status of Energy Consumption in the Manufacturing Industry of Eastern India – A Decomposition Analysis', Journal of Industrial Statistics, Central Statistical Organization (CSO), Industrial Statistics Wing, Government of India, Vol. 5, No. 1, March 2016, 58-76 (with Gopa Ghosh)

3. 'Trends in Per Capita Household Expenditure and Its Implications on Carbon Emissions in Developed Versus Developing Countries', in International Journal of Management and Social Sciences, Volume 4(2), January 2015 (with Pragya Gupta), 81-92

Mallika Ghosh Sarbadhikary

4. 'Chor Ki Ghar Mor : *Volpone,* a study in avarice', *Journal of Indian Society for Theatre Research , 6,*2015, 325-342
5.' Communication and Business Environment', *Annual Journal of Institute of Company Secretaries of India (ICSI), XVII,* 2015, 24-56
6. 'The Indian Fox: *Volpone* and the victimhood of Celia', *Journal of Indian Association for Women's Studies, 26,* 2016 , 201-229

Conference:
Subhasis Bandyopadhyay
1. Subhasis Bandyopadhyay

Visited Purdue University at Calumet. Invited lecture on *Metabolic Rift., August, 2015*

Presented paper on 'Industrial land Acquisition in West Bengal ' at SPSS conference at Chicago, August, 2015

2. Given a talk on *The Real Meaning of Women Empowerment* at Scottish Church College, Kolkata on 7th May, 2017

Book
Madhumati Dutta
1. "Targeting Consumer Groups and What They Consume for the Mitigation of Climate Change in India", in Mohamed Behnassi and Katriona McGlad (eds.), Environmental Change and Human Security in Africa and the Middle East, in print, Springer, 2016
2. 'Crafting a Doctoral Thesis', in Lakshmi Sivaramakrishnan ed., Research Methodology in the Social Sciences, UGC and Burdwan University, in print, 2016

ePG-Pathshala of MHRD

Subhasis Bandyopadhyay

2017: 1. State, Market and Social Movement (SM-02)

2016: 1. Use of Parametric and Non-Parametric Statistics in Social Science (With B. Nayak)

2. Qualitative Software in Social Science Research

3. Application of Computer in Quantitative Studies in Social Science

Information Technology

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3. S. K. Mridha and M. Bhattacharyya, Is Dutch Auction Suitable for Decomposable Tasks in Competitive Crowdsourcing Markets?, Human Computation, 4(1):71-77, 2017, DOI: 10.15346/hc.v4i1.4.
4. S. Chatterjee, A. Mukhopadhyay and M. Bhattacharyya, Dependent Judgment Analysis: A Markov Chain based Approach for Aggregating Crowdsourced Opinions, Information Sciences, 396:83-96, 2017, DOI: 10.1016/j.ins.2017.01.036. (Latest IF: 4.832)
5. M. Bhattacharyya, T. Ghosh, S. Shankar and N. Tomar, The Conserved Phylogeny of Blood Microbiome, Molecular Phylogenetics and Evolution, 109:404-408, 2017, DOI: 10.1016/j.ympev.2017.02.001. (Latest IF: 4.419)
6. M. Bhattacharyya, S. Maity and S. Bandyopadhyay, Exploring the Missing Links between Dietary Habits and Diseases, IEEE Transactions on NanoBioscience, 16(3):226-238, 2017, DOI: 10.1109/TNB.2017.2654121. (Latest IF: 2.771)
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1.	The latent fingerprint in mass transport of polycrystalline materials (2016)	Heat and Mass Transfer, 52 (2) 217-225	Gopinath T, S. Kundu, S. Chatterjee	Nil
2.	Development of ternary iron vanadium oxide semiconductors for applications in photoelectrochemical water oxidation (2016)	RSC Advances (6) 4992-4999	H. Mandal, S. Shyamal, P. Hajra, A. Bera, D. Sariket, S. Kundu, C. Bhattacharya	Nil
3.	Effect of Bonding Temperature on Phase Transformation of Diffusion-Bonded Joints of Duplex Stainless Steel and Ti-6Al-4V Using Nickel and Copper as Composite Intermediate Metals (2015)	Metallurgical and Materials Transactions A 46 5756-5771	S. Kundu, G. Thirunavukarasu, S. Chatterjee and B. Mishra	Nil
4.	Diffusion Bonding of Duplex Stainless Steel and Ti Alloy with and without Interlayer (2014)	Materials Science Forum 783(7) 9-14	S. Chatterjee, S. Kundu, S. Sam, B. Mishra	Nil
5.	Diffusion Bonding of Microduplex stainless steel and Ti alloy with and without interlayer: Interface microstructure and strength properties (2014)	Metallurgical and Materials Transactions A 45 (1) 371-383	S. Kundu, S. Sam, B. Mishra and S. Chatterjee	2
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School of Community Science & Technology

Dr. Minakshi Ghosh

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02.	Studies of nutrient rich edible leaf blend and its incorporation in extruded food and pasta products	Materials Today: Proceedings, Elsevier	2016	3	3473–3483
03.	Effect of tamarind kernel powder incorporation in property and quality aspects of biscuit, bread and cake making	Archives of Applied Science Research	2016	volume 8, issue 1	30-39

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30. **Anindita Chakraborty** and Hafizur Rahaman, "Implementation of Combinational circuits via Material Implication using Memristors", *IEEE International Conference on Distributed Computing, VLSI, Electrical Circuits and Robotics (DISCOVER)*, 13-14 Aug, 2016.
31. **Anindita Chakraborty**, Aparna Dhara and Hafizur Rahaman, "Design of Memristor-based Up-Down Counter using Material Implication Logic", *2016 Intl. Conference on Advances in Computing, Communications and Informatics (ICACCI)*, pp. 294-299, Sept. 21-24, 2016, Jaipur, India.

Centre for Healthcare Science and Technogy

1. Early Cancer Risk Assessment in Smokers through Fuzzy Trend Analysis of Auto-Fluorescence Shift and Cyto-morphological Alteration , Future Oncology, 2016
2. Pre-cancer Risk Assessment in Habitual Smokers from DIC Images of Oral Exfoliative cells using Active Contour and SVM Analysis , Tissue and Cells, 2017
3. Autofluorescence signatures for classifying lung cells during epithelial mesenchymal transition. RSC Adv., 2016
4. Mukhopadhyay CD, Ruidas B, Chaudhury SS (2017) Role of Curcumin in Treatment of Alzheimer Disease. Int J Neurorehabilitation 4: 274. doi: 10.4172/2376- 0281.
5. Barnali Naskar, Ritwik Modak, Dilip K. Maiti, Michael G. B. Drew, Chitrangada Das Mukhopadhyay, Sanchita Goswami (2017) A Schiff base platform: structures, sensing of Zn(II), PPi in aqueous medium and anticancer activity. Dalton Transactions (Accepted, In press).
6. Determining the effect of aflatoxin b1 using hemoglobin of human blood as interacting medium by calculation of collision energy. Bhadra Preetha, Das Mukhopadhyay Chitrangada and Mukherjee Sampad (25th April, 2017) Int. J. Adv. Res. 5(4), ISSN: 2320-5407, 742-748
7. Amit Paul, Chitrangada Das Mukhopadhyay and Jaya Sil (2017) Gene selection for designing optimal fuzzy rule base classifier by estimating missing value, Applied Soft Computing, http://dx.doi.org/10.1016/j.asoc.2017.01.046, available online since 9th Feb, 2017.
8. Piyali Adak, Bipinbihari Ghosh, Antonio Bauz, Antonio Frontera, Alexander J. Blake, Montserrat Corbella, Chitrangada Das Mukhopadhyay and Shyamal Kumar Chattopadhyay (2016) Catecholase activity, DNA binding and cytotoxicity studies of a Cu(II) complex of a pyridoxal schiff base: synthesis, X-ray crystal structure, spectroscopic, electrochemical and theoretical studies, RSC Adv., 2016, 6, 86851, DOI: 10.1039/c6ra14059a
9. PK Srivas, K Kapat, P Dadhich, P Pal, J Dutta, P Datta, S Dhara, Osseointegration assessment of extrusion printed Ti6Al4V scaffold towards accelerated skeletal defect healing via tissue in-growth, 2017, Bioprinting 6, 8-17
10. Datta P, Ozbolat V, Ayan B, Dhawan A, Ozbolat IT, Bone Tissue Bioprinting For Craniofacial Reconstruction, Biotechnol Bioeng ., 2017

11. Peng W, Datta P, Ayan B, Ozbolat V, Sosnoski D, Ozbolat IT. 3D Bioprinting for Drug Discovery and Development in Pharmaceutics, Acta Biomater,2017
12. Simple Bisthiocarbonohydrazone as a Sensitive, Selective, Colorimetric, and Ratiometric Fluorescent Chemosensor for Picric Acid, ACS Omega, 2017
13. Dey S, Sarkar R, Chatterjee K, Datta P, Barui A, Maity SP. Pre-cancer Risk Assessment in Habitual Smokers from DIC Images of Oral Exfoliative Cells using Active Contour and SVM Analysis, Tissue and Cells, 2017
14. Datta P, Ayan B, Ozbolat IT, Bioprinting for Vascular and Vascularized Tissue Biofabrication, Acta Biomater, 2017
15. Ravnic DJ, Leberfinger AN, Koduru SV, Hospodiuk M, Moncal KK, Datta P, Dey M, Rizk E, Ozbolat IT. Transplantation of Bioprinted Tissues and Organs: Technical and Clinical Challenges and Future Perspectives, Annals of Surgery, 2017

Purabi Das School of Information Technology (PDSIT)

International Journal (2016-17)

1. Sarkar, A., A. Biswas, M. Dutt, P. Bhowmick, and B. B. Bhattacharya (2016). A Linear-Time Algorithm to Compute the Triangular Hull of a Digital Object. Discrete Applied Mathematics. In press, doi:10.1016/j.dam.2016.01.014,
2. Karmakar, N., A. Biswas, and P. Bhowmick (2016). Reeb Graph based Segmentation of Articulated Components of 3D Digital Objects. Theoretical Computer Science 624. DOI = 10.1016/j.tcs.2015.11.013, 25{40.A. Roy and M. Bhattacharyya, Identifying MicroRNAs related to Alzheimer's Disease from Differential Methylation Signatures, Gene Reports, 4:104-111, 2016, DOI: 10.1016/j.genrep.2016.04.006.
3. Bandyopadhyay, O., A. Biswas, and B. B. Bhattacharya (2016). Long-bone Fracture Detection in Digital X-ray Images Based on Digital-Geometric Techniques. Computer Methods and Programs in Biomedicine 123, 2-14.
4. Sarkar, A., A. Biswas, M. Dutt, and A. Bhattacharya (2016). Finding Largest Rectangle inside a Digital Object. In: 6th International Workshop on Computational Topology in Image Context: CTIC 2016, Marseille, France. Vol. 9667. Springer-Verlag. Lecture Notes in Computer Science (LNCS), pp.170-179.

International Conferences(2016-17)

1. A 3D Curve Skeletonization Method
   N Karmakar, S Mondal, A Biswas
   International Workshop on Combinatorial Image Analysis, 184-197
2. Karmakar, N. and A. Biswas (2016). Construction of an Approximate 3D Orthogonal Convex Skull. In: 6th International Workshop on Computational Topology in Image Context: CTIC 2016, Marseille, France. Vol. 9667. Springer-Verlag. Lecture Notes in Computer Science (LNCS), pp.180-192.
3. Sarkar, A., A. Biswas, S. Mondal, and M. Dutt (2016). Finding Shortest Triangular Path in a Digital Object. In: 19th IAPR International Conference on Discrete Geometry for Computer Imagery: DGCI'16, Nantes, France. Vol. 9647. Springer-Verlag. Lecture Notes in Computer Science (LNCS), pp.206-218.
4. Sarkar, A., A. Biswas, S. Mondal, and M. Dutt (2016). Finding Shortest Triangular Path in a Digital Object. In: 19th IAPR International Conference on Discrete Geometry for Computer Imagery: DGCI'16, Nantes, France. Vol. 9647. Springer-Verlag. Lecture Notes in Computer Science (LNCS), pp.206-218.
5. Automated Brain Tumor Diagnosis and Severity Analysis from Brain MRI

S Mukherjee, O Bandyopadhyay, A Biswas - … Computational Modeling of Objects Represented in …, 2016

Centre of Excellence for Green Energy and Sensor System

Journals

1.“Dealing with Dust - Some Challenges and Solutions for Enabling Solar Energy in Desert Regions”NibodhBoddupallia, Gurveer Singha, Laltu Chandra, BibekBandyopadhyay, Solar Energy, 150, 2017,166.
2.“The synergistic effect of air mass on outdoor performance for different PV module in India”Birinchi Bora, Arun Kumar, O.S. Sastry, Renu, MananderBangar, Takumi Takashima, B. Bandyopadhyay, International Journal of Green Energy, 13(6), 2016.
3.“Low-temperature electrodeposition leading to robust mesoscopic anatase TiO2 films" Snehangshu Patra, Christian Andriamiadamanana, Michal Tulodziecki, Carine Davoisne, Pierre-Louis Taberna, Frédéric Sauvage, Scientific reports 6, 2016,21588.
4.“Design of Laccase−Metal Organic Framework-Based Bioelectrodes for Biocatalytic Oxygen Reduction Reaction" Snehangshu Patra, Saad Sene, Christine Mousty, Christian Serre, Annie Chaussé, Ludovic Legrand, Nathalie Steunou, ACS Appl. Mater. Inter. 8,2016, 20012.
5.“Integrated photobioelectrochemical systems: A paradigm shift in Artificial photosynthesis" Pavel Majumdar, Deepak Pant,Snehangshu Patra, Trends in Biotechnology 35, 2017,285.
6.“Development of n-type microcrystalline SiOx:H films and its application by innovative way to improve the performance of µc-Si:H solar cell”, Gourab Das, Sourav Mandal, Sukanta Dhar, Sukanta Bose, Chandan Banerjee, SumitaMukhopadhyay, A. K. Barua,Journal of Materials Science: Materials in Electronics,28, 2017, 5746.
7.“Development of improved n-µc-SiOx:H films and its innovative application in silicon based single junction thin film solar cells”, Gourab Das, Sourav Mandal, Sukanta Dhar, Sukanta Bose, Jayasree Roy Sharma, SumitaMukhopadhyay, Chandan Banerjee, A.K.Barua, IEEE Journal of Photovoltaics,7(3), 2017, 892.
8.“Influence of excitation frequency and electrode separation on the growth of microcrystalline silicon films and their application in single junction microcrystalline solar cell”, Gourab Das, Sourav Mandal, Sukanta Dhar, Sukanta Bose, Jayasree Roy Sharma,SumitaMukhopadhyay, Chandan Banerjee, A.K.Barua, Journal of Materials Science: Materials in Electronics, 28(14), 2017, 10382.
9.“Role of dual SiOx:H based buffer at the p/i interface on the performance of single junction microcrystalline solar cells”, Gourab Das, Sourav Mandal, Sukanta Dhar, Sukanta Bose, SumitaMukhopadhyay, Chandan Banerjee, A.K.Barua, Materials Science in Semiconductor Processing, 66, 2017, 9.
10.“Synthesis of ITO nanoparticles at room temperature using plasma treatment process and use it as back reflector in a-Si flexible solar cell”, Gourab Das, Sourav Mandal, Sukanta Dhar, Balaji P Bhargav, SumitaMukhopadhyay, Chandan Banerjee, Asok K Barua, Surfaces and Interfaces 7, 2017, 83.
11.“Effect of oxide based graded buffer and bottom n-layer on the performance of the single junction amorphous silicon solar cells”, Gourab Das, Sourav Mandal, Sukanta Dhar, SumitaMukhopadhyay, Chandan Banerjee, A.K.Barua, Journal of Materials Science: Materials in Electronics, DOI: 10.1007/s10854-017-7517-y.
12.“Mesoporous TiO_2 microspheres synthesized via a facile hydrothermal method for dye-sensitized solar cell applications”, N. Santhosh, R. Govindaraj, M. SenthilPandian, P.Ramasamy, S.Mukhopadhyay, Journal of Porous Materials, 23(6), 2016, 1483.
13.“A review of inverter topologies for single-phase grid-connected photovoltaic systems”.Joydip Jana, HiranmaySaha, Konika Das Bhattacharya. Elsevier - Renewable and Sustainable Energy Reviews, 72, 2017, 1256.
14.“Argon Plasma Treatment of Silicon Nitride (SiN) for Improved Antireflection Coating on c-Si Solar Cells”, Hemanta Ghosh, SuchismitaMitra, HiranmaySaha, Swapan Kumar Datta, Chandan Banerjee, Material Science and Engineering B, 215, 2017, 29.
15.“Light harvesting properties of embedded tin oxide nanoparticles for partial rear contact silicon solar cells”, Hemanta Ghosh, SuchismitaMitra, Sukanta Dhar, Anupam Nandi,

Sanhita Majumdar, HiranmaySaha, Swapan Kumar Datta, Chandan Banerjee, Plasmonics, DOI: 10.1007/s11468-016-0443-7.

16. "Improvement of Photon Management in Partial Rear Contact Solar Cells Using a Combination of DBR and Mie Scatterers", SuchismitaMitra, Hemanta Ghosh, HiranmaySaha, Swapan Kumar Datta, Partha Chaudhuri, Chandan Banerjee, Optics Communications, 397, 2017, 1.
17. "Self-cleaning V-TiO2-SiO2 thin film coatings with enhanced transmission for solar glass cover & related applications" Deepanjana Adak, Sugato Ghosh, Poulomi Chakrabarty, Anup Mondal, HiranmaySaha, Rabibrata Mukherjee, Raghunath Bhattacharya, Solar Energy, 155, 2017, 410.
18. "Improvement of photon management in partial rear contact solar cells using a combination of DBR and Mie scatterers", S. Mitra, H. Ghosh, H. Saha, S. K. Datta, P. Chaudhuri, C. Banerjee, Optics Communications, 397, 2017, 1.
19. "Electrical transport in transverse direction through silicon carbon alloy multilayers containing regular size silicon quantum dots", Aparajita Mandal, ArindamKole, Arup Dasgupta,Partha Chaudhuri, Appl. Surf. Sc., 387, 2016, 1002.
20. "Study of the VHF Plasma Etching of Micro/Nano Patterned PMMA Coated on Ultra-Thin Flexible Glass Substrates", Aparajita Mandal, ArindamKole, Sean M. Garner, Partha Chaudhuri, Plasma Process. Polym. 13, 2016, 990.
21. "Blue and violet defect levels mediated absorption hot spots in tapered ZnO nanorods toward improved photocatalytic", Sukanta Bose, DebasishDey, Sudarshana Banerjee, Gufran Ahmad, Sourav Mandal, Asok Kumar Barua,Nillohit Mukherjee, J. Mater Sci, 2017, DOI: 10.1007/s10853-017-1393-y.
22. "Core-shell CuO-ZnO p-n heterojunction with high specific surface area for enhanced hotoelectrochemical (PEC) energy conversion", A.Dhara, B. Show, A.Baral, S.Chabri, A. Sinha, N. R.Bandyopadhyay, N. Mukherjee, Solar Energy, 136, 2016, 327.
23. B. Show, N. Mukherjee. A Mondal, "α-Fe_2O_3nanospheres: facile synthesis and highly efficient photo-degradation of organic dyes and surface activation by nano-Pt for enhanced methanol sensing", RSC Advances, 6, 2016, 75347.
24. "Hierarchical indium tin oxide (ITO) nano-whiskers: Electron beam deposition and sub-bandgap defect levels mediated visible light driven enhanced photocatalytic activity" ,Sudarshana Banerjee, Sourav Mandal, Asok Kumar Barua,Nillohit Mukherjee, Catalysis Communications, 87, 2016, 86.
25. "Correlation between morphology and nanomechanical behavior of ZnO thin films" Arijit Sinha,Nillohit Mukherjee,J. Inst. Eng. India Ser. D, 2016, DOI: 10.1007/s40033-016-0127-7
26. "Poly(vinylidene fluoride)/submicron graphite platelet composite: A smart, lightweight flexible material with significantly enhanced β polymorphism, dielectricand microwave shielding properties" Epsita Kar, Navoneel Bose, Biplab Dutta, Nillohit Mukherjee,Sampad Mukherjee,European Polymer Journal (Elsevier), 90, 2017, 442.
27. "N-acetyle cysteine assisted synthesis of core–shell Ag2S with enhanced light transmission and diminished reflectance: Surface modifier for c-SiNx solar cells"Sudarshana Banerjee, Bibhutibhushan Show, AvraKundu, JhumaGanguly, UtpalGangopadhyay, HiranmaySaha, Nillohit Mukherjee, Journal of Industrial and Engineering Chemistry, 40, 2016, 54.
28. "c-Si/n-ZnO-based flexible solar cells with silica nanoparticles as a light trapping metamaterial",ArijitBardhan Roy, Sonali Das, AvraKundu, Chandan Banerjee,Nillohit Mukherjee,Phys. Chem. Chem. Phys. 19, 2017, 12838.
29. "Light-harvesting properties of embedded tin oxide nanoparticles for partial rear contact silicon solar cells",Hemanta Ghosh, SuchismitaMitra, Sukanta Dhar, Anupam Nandi, Sanhita Majumdar, HiranmaySaha, Swapan Kumar Datta, Chandan Banerjee,Plasmonics2016,1 (DOI: 10.1007/s11468-016-0443-7).
30. "Optical and electrical effects of thin reduced graphene oxide layers on textured wafer based c-Si solar cell for enhanced performance"; Anupam Nandi, Sanhita Majumdar, Swapan K. Datta, HiranmaySaha and Syed Minhaz Hossain,J. Mater. Chem. C 5, 2017, 1920.

31.“Precursor dependent tailoring of morphology and bandgap of zinc oxide nanostructures”; Anupam Nandi, RittwikMajumder, Pratanu Nag, Swapan K. Datta, HiranmaySaha, Sanhita Majumdar, Journal of Materials Science: Materials in Electronics, 28, 2017, 10885.

Reference Module

1.“Enzymatic Electrocatalysis of CO_2 Reduction”, Pavel Majumdar, Mrinal K. Bera, Deepak Pant, Snehangshu Patra, Encyclopedia of Interfacial Chemistry: Surfaces and Electrochemistry, Reference Module in Chemistry, Molecular Sciences and Chemical Engineering: Elsevier; 2017.

Book / Book chapters:

1.Dr. S. P. Gonchaudhuri has written book on ‘Climate Related Issues’ which was officially released by the Chief Minister of Tripura.

Conference:

1.“Study of silver sulphide nanoparticle decorated Si-NW array on multi-c-Si wafer” Sudarshana Banerjee, Soma Ray, UtpalGangopadhyay, HiranmaySaha and Nillohit Mukherjee, Oral Presentation, in International conference on Functional Nanomaterials (IC-FNM 2016), Symposia A: Synthesis and characterization of functional nanomaterials, 39, 2016, to be published in Materials Today proceedings.

2.“ITO embedded Ag2S nanoparticles as back reflector layer for increasing optical path length within thin film silicon solar cells” Sudarshana Banerjee, Sukanta Dhar, Sourav Mandal, Chandan Banerjee, HiranmaySaha, Nillohit Mukherjee, Poster Presentation, in 26th Photovoltaic Science and Engineering Conference (PVSEC-26), Singapore, 1_4-0007, 123, 2016.

3.“An embryonic technique for better light trapping of back reflector solar cells: Silver sulphide nanoparticles embedded in ITO matrix” Sudarshana Banerjee, Sukanta Dhar, Sourav Mandal, Chandan Banerjee, HiranmaySaha, Nillohit Mukherjee, Oral Presentation, in Conference: Research Scholars Colloquium 2016, At IIEST, Shibpur, Volume: ISBN 978-93- 80813-44-8, pp. 213-214.

4."Effect of X/R Ratio on Low Voltage Distribution System Connected with Constant Speed Wind Turbine", Tathagata Sarkar, Anjankr Dan, Saikat Ghosh, CIEC-16, Kolkata, Jan 2016.

5."Enhancement of fault ride-through grid code of a vector-controlled doubly-fed induction generator for different types of fault", Anjankr Dan, Saikat Ghosh, Tathagata Sarkar, Konika Das Bhattacharya, HiranmaySaha, India Smart Grid Week 2016, Delhi, India, Mar 2016.

6.“A Novel Optimum Stable and Dynamic MPPT algorithm for Solar Photovoltaic Systems”, HiranmaySamanta, Joydip Jana, Arpan Sen, HiranmaySaha, TEQIP-II Sponsored NationalConference on Renewable Energy NCRE-2016, 27 July, 2016.

7.“Investigation of Optical Absorption Spectra and Scattering Efficiency of ZnO:Al Nanorods on Different Substrates", Jayasree Roy Sharma, SuchismitaMitra, HemantaGhosh, Sukanta Bose, Sourav Mandal, Gourab Das, SumitaMukhopadhyay, HiranmaySaha, A. K.Barua, ICSEP-2016, December 17-19, 2016, KIIT, Bhubaneswar.

8.“Numerical modeling of rear passivated carrier selective tunnel contact solar cell”,SuchismitaMitra, Hemanta Ghosh, Chandan Banerjee, Syed Minhaz Hossain, Swapan K. Datta,HiranmaySaha, 26th International Photovoltaic Science and Engineering Conference (PVSEC-26), Singapore,24-28 October 2016.

9.“Embedded Silicon nitride (SiN) nanoparticles as plasmonic back scatterers for crystalline silicon solar cell”, Hemanta Ghosh, SuchismitaMitra, Chandan Banerjee, Swapan Kumar Datta, Anup Mondal and HiranmaySaha, 26th International Photovoltaic Science and Engineering Conference (PVSEC-26), Singapore,24-28 October 2016.

10. “Nanostructured silicon nitride (Si-N) antireflection coating for c-Si solar cells”,Hemanta Ghosh, SuchismitaMitra, HiranmaySaha, Swapan Kumar Datta and Chandan Banerjee, 32nd European Photovoltaic Solar Energy Conference and Exhibition, Munich, 2016, 628.
11. “Development of selective gas sensors for manhole gas detection”Sugato Ghosh, Indranil Das, Deepanjana Adak, Nillohit Mukherjee, Raghunath Bhattacharyya, HiranmaySaha ‘Tenth International Conference on Sensing Technology (ICST 2016), Southeast University, Nanjing, P. R. China, November 11-13, 2016, Accepted as Oral Presentation & Presented. The paper was awarded as “BEST PAPER (1st Runner up)”.
12. “Study on AZO coated flexible glass as TCO substrate”, Shuvaraj Ghosh, Arindam Mallick, ArindamKole, ParthaChaudhury, Sean Garner and DurgaBasak, IEEE 2016 IEEE 43rd Photovoltaic Specialists Conference (PVSC) - Portland, OR, USA (2016.6.5-2016.6.10)] 2016 IEEE 43rd Photovoltaic Specialists Conference (PVSC), p. 634, DOI: 10.1109/PVSC.2016.7749676.
13. “Effect of layer variation of graphene on ITO thin film and its transmittance and sheet resistance study”; Anupam Nandi, Sukanta Dhar, SanhitaMajumder, Chandan Banerjee, Syed Minhaz Hossain, HiranmaySaha in Research Scholars Colloquium 2016, RSC-16 Proceedings, 221-222 (2016). (ISBN: 978-93-80813-44-8).
14. “Precursor dependent morphologies of microwave assisted ZnO nanostructures and their VOC detection properties”; Anupam Nandi, Pratanu Nag, HiranmaySaha and Sanhita Majumdar, Materials Today: Proceedings (Accepted).
15. “Piezoelectricity in amine functionalized reduced graphene oxide”; Dilip Roy, Anupam Nandi, ArijitBardhan Roy, Sanhita Majumdar, Sourav Mandal, Avrakundu and Syed Minhaz Hossain; Materials Today: Proceedings (Acceped)
16. “Opto-Electrical Property Study of RGO-ITO Composite Thin Film and Its Benefit over the Standard ITO Thin Film as Transparent Conducting Oxide”, Anupam Nandi, Sukanta Dhar, Sanhita Majumdar, Chandan Banerjee, Syed Minhaz Hossain, HiranmaySaha in 26th Edition of the International Photovoltaic Science and Engineering Conference (PVSEC-26) Singapore, October 2016.
17. “The Effects of Ultrasound: Bandgap Tailoring of ZnO”, Anupam Nandi, HiranmaySaha and Sanhita Majumdar, in XXI National Symposium on Ultrasonics (NSU 2016) S. N. Bose National Centre for Basic Sciences, Salt Lake City, Kolkata, November, 2016.
18. “Novel Synthesis Approach for the Outstanding Hydrogen Gas Detection by Graphene Coated Nanocrystalline SnO_2Burflower”, SanhitaMajumdara, Anupam Nandi, Pratanu Nag, HiranmaySaha in International Union of Materials Research Societies International Conference of Young Researchers on Advanced Materials (IUMRS-ICYRAM 2016) IISc., Bangalore, December, 2016.

Seminar / Workshops / Conferences / Training programme (2016 - 17)

Aerospace Engineering and Applied Mechanics

- Two days workshop on 'Astrodynamics and Aerospace Materials' on 10th and 11th August, 2016.
- One day workshop on 'Recent Advances in Aerospace Technology' on 16th January, 2017.
- Two days Workshop on 'Biomechanics, Implants and Related Medical Devices' on 14th – 15th March, 2017.

Chemistry

- Department organized a two-day National Symposium on "**Recent Advances in Chemistry & Industry (2017)**" on August 02 and 03, 2017 in association with the Indian Chemical Society, Kolkata, to commemorate the 156th Birth Anniversary of Acharya Prafulla Chandra Ray.

Civil Engineering

Sl.No.	**Title**	**Period / Duration**	**Collaborator / Sponsorer**	**No. of participant**	**Name of the coordinator(s)**	**Remarks**
1	Advanced Technologies for water and Wastewater treatment	23-28 May2016	TEQIP-II	40	Dr. Debabrata Mazumdar Dr. Chanchal Majumder Dr.Asok Adak	TEQIP-II
2	Modern Trends in Design and Maintenance in Rigid Pavements	07-09 April 2016	TEQIP	58	Dr. Tapas Kumar Roy Prof. Sandip Chakraborty Dr. PritamSaha	TEQIP
3	Basic Course on Valuation of Immovable Assets	17-18 June 2016	Institution of Valuers	112	Dr. Tapas Kumar Roy	
4	Climate Change Impact Analysis	May 23 – June 3 2016 (10 days)	KU, Leuven	40	Dr. UjjwalSaha	MHRD. GoI
5.	DFI-India 2016	September 9-10, 2016	Indian Geotechnical Society	100	Dr. Ambarish Ghosh	
6.	Geotechnics for Infrastructure Development	11th – 12th March 2016	Indian Geotechnical Society, Kolkata Chapter	50	Dr. Ambarish Ghosh	
7.	Role of Locals in Implementing Water, Sanitation and Hygiene (WASH) Sustainable Development Goals, 2015-2030	January 04-07, 2017	Global Water Alliance, USA	150	Dr. Anirban Gupta	Sponsored by International and National organisations

Computer Science and Technology

- One day workshop on Internet of Things, 15.02.2017
- Workshop on Big Data Analytics and Management, September 1-10, 2016

Department of Electrical Engineering

Name of Seminar / Workshop / Conference	Name of the Coordinator / Organizer	Date and duration	Sponsored by
Training Course for Junior Engineers of Calcutta Electric Supply Corporation (CESC) Ltd	D. Roy and A. B. Choudhury	20-25 March 2017	CESC

Earth Sciences

Contributions in Recent International and National Seminars & Conferences:

World Academy of Science, Engineering and Technology, Barcelona
International Journal of Geological and Environmental Engineering Vol:4, No:2, 2017
Recognition of a Thinly Bedded Distal Turbidite: A Case Study from a Proterozoic Delta System, Chaossa Formation, Simla Group, Western Lesser Himalaya, India
Priyanka Mazumdar, Ananya Mukhopadhyay

Comparison of Tidalites in Siliciclastics and Mixed Siliciclastic Carbonate Systems: An Outstanding Example from Proterozoic Simla Basin, Western Lesser Himalaya, India
Tithi Banerjee, Ananya Mukhopadhyay

Wave Agitated Signatures in the Oolitic Limestones of Kunihar Formation, Proterozoic Simla Group, Lesser Himalaya, India
Alono Thorie, Ananya Mukhopadhyay

Developments in Geosciences in the Past Decade-Emerging Trends for the Future & Impact on Society & Annual General Meeting of the Geological Society of India, 2017:

Influence of wave and tidal currents on the oolites and stromatolites of Kunihar Formation, Proterozoic Simla Group, Lesser Himalaya, India
Alono Thorie, Ananya Mukhopadhyay, Tithi Banerjee, Priyanka Mazumdar,

Tidal and fluvial controls on the internal architecture and sedimentary facies of a tide dominated depositional system, Proterozoic Simla Group, Western Lesser Himalaya: A journey from shallow marine to coastal marine depositional environment
Tithi Banerjee, Ananya Mukhopadhyay, Priyanka Mazumdar, Alono Thorie

National Geo-Research Scholars Meet 2016.Wadia Institute of Himalayan Geology:

New insights into the comparison of tidalites in siliciclastics and carbonate systems: An outstanding example from Proterozoic Simla Basin, Western Lesser Himalaya, India.
Tithi Banerjee, Ananya Mukhopadhyay, Alono Thorie , Priyanka Mazumdar

Anatomy of a thinly bedded distal turbidite: Insights from a Proterozoic fan delta system, Simla Group, Western Lesser Himalaya, India.
Priyanka Mazumdar, Ananya Mukhopadhyay, Tithi Banerjee, Alono Thorie

Reminiscence of algal activities (Microbially influenced sedimentary structures/MISS) from a storm-wave influenced Proterozoic siliciclastic tidal flat, Kunihar Formation, Simla Group, Himachal Pradesh.
Alono Thorie, Ananya Mukhopadhyay, Priyanka Mazumdar, Tithi Banerjee

Humanities and Social Sciences

1	*Social Impatience in Today's Society*, Talk by Prof. Alan Spector, Professor, Purdue University,	December 19, 2015
2	Thematic Interaction on Society, Science & Technology with Prof. Jon Agar	January 8, 2016
3	*Past, Present and Future of Our Food*, Short term course	January 2016
4	*It was Dark Before Dawn*, Talk jointly organized with Dept. of Electronics & telecommunication Engineering and delivered by Dr. Nipanjana Patra, University of California at Berkeley.	January 13, 2016
5	Inauguration of Initiative for Studies in Science Technology & Culture	February 18, 2016
6	Stress Management Workshop	July 22, 23, 2016
7	On Child Labour : An Interface between Academicians & Activists in collaboration with KnIDS and Ramakrishna Mission Vidyamandira, Belur Math	July 29, 2016

Information Technology

- Workshop on Advanced Applications of Algorithms (WoAAA) during December 21-23, 2016.
- Short term course on Advanced Wireless Sensor Network, 26th September to 29th September 2016
- Joint Co-ordinator Seminar on Information Security (seinfosec 2017) to be held in IIEST on 09-11 February, 2017.

Delivered Invited talk:

1. "Energy-Spectrum Efficient Cooperative Communication in Presence of Un-trusted Relay"- 3rd International Conference on Microelectronics, Circuits and Systems (MICRO-2016) , 9-10th July, 2016, Kolkata, India.
2. "Watermarking and Secret Sharing on Digital Images"- in 24th September, 2016 at Bankura Unnyani Institute of Engineering in 22-26th September, 2016.
3. "Optimization Techniques for Applications in Cognitive Radio and Image Processing" on "Role of Mathematics for Engineers" at Visvesvaraya Nationa Institute of Technology Napur on 27th September, 2016.
4. "Energy Efficient Cooperative Cognitive Radio Networks" on 3rd October, 2016 in the Seminar on Recent Trends in Wireless Communications and Signal Processing, 3rd-5th October, 2016, IIEST, Shibpur.
5. "Retinal Image Analysis: Integration of Signal Processing and Information Theory" on 5th October, 2016 in the Seminar on Recent Trends in Wireless Communications and Signal Processing, 3rd-5th October, 2016, IIEST, Shibpur.
6. "Energy-Spectral Efficiency in Cooperative Cognitive Radio Networks in Presence of Malicious Operations" on 6th October in Int. Conf. On Computational Science and Engineering (ICCSE 2016) organized by RCC Institute of Information Technology, Kolkata.
7. "Energy Efficient Relay Assisted Cooperative Cognitive Radio Networks"- 0n 27th October, 2016 in 1st Int. Conference on Advanced Computing (ICAC 2016) organized by MAKAUT (formerly WBUT) on 26-27th October, 2016.
8. "Energy Efficiency in Cooperative Cognitive Radio Networks in Presence of Malicious Operations", Second International Conference on Computing and Communication Systems (I3CS 2016), 11-12 November, 2016, NEHU, Shillong, India.

9. “Energy-Spectrum Efficiency Trade-off in Energy Harvesting Cooperative Cognitive Radio Networks”, 5th International Conference on “Computing, Communication and Sensor Network, (CCSN 2016), 24-25th December, 2016, Kolkata, India.

10. Energy-Spectral Efficiency in Cooperative Cognitive Radio Networks in Presence of Malicious Operations, uncertainties in wireless communication: Challenges and Opportunities, to commemorate Shannon Birth Centenary Celebration at National Institute of Technology, Silchar, Assam 2-25th February, 2017.

11. Energy Efficiency in Cooperative Cognitive Radio Networks in Presence of Malicious Operations, on 29th March in Symposium on Advanced Computing, Communication and Biomedical Engineering (ACCBE 2017), B. P. Poddar Institute of Management and Technology, 27-29th March, 2017.

12. Journey through 1G to 5G and Cooperative Cognitive Radio Networks, Seminar on Cognitive Radio and 5G Network in MAKAUT, 31th March, 2017.

Tutorial talk:

International Conference on Wireless Communication Signal Processing and Networking, SNS College of Engineering, Chennai, India, 22-24 th March, 2016.

Title of Talk: Cooperative Cognitive Radio Networks: Energy-Spectral Efficiency, Harvesting and Outage Secrecy

Mechanical Engineering

“**Tribology Frontiers Workshop**" was organized by Department of Mechanical Engineering during August 03-04, 2016. **Coordinator - Prof. S. K. Karmakar**, Sponsored by TEQIP-II.

A workshop titled “**Recent Advances in Automobile Engineering (RAAE)**" was organized by Department of Mechanical Engineering during September 28, 2016. **Coordinator: Dr. Aritra Ganguly**, Sponsored by TEQIP-II.

“**National Research Workshop on Energy Technologies**" was organized by Department of Mechanical Engineering during January 12-13, 2017. **Coordinator -Dr. Sudip Ghosh**, Sponsored by TEQIP-II.

Lecture Session on Power Plant (LSPP- 2016), 7th September, 2016 in the Department of Mechanical Engineering, IIEST Shibpur.

Metallurgy and Materials Engineering

1. Workshop on Materials Characterization: Principles and Practices – jointly organized with CoE from 25th July, 2016 to 05th August, 2016.
2. Colloquium on Nuclear Materials (CNM 2016) - 19th August, 2016.

Mining Engineering

Conducted Workshop	Title	Dept	Date From	Date to
Workshop	Workshop on Imperatives in Higher Education for Resource-based Industries	Mining Engineering	03.10.2016	04.10.2016

Physics

Seminar / Workshops / Conferences / Training programme

1. **Seminar/Lecture** on "*Are there quantum limits to diffusion in quantum many-body systems?*" by *Dr. Nandan Pakhira*, School of Mathematics & Physics, The University of Queensland, Australia, on 26th April (2016).
2. **Lecture** on "*Higgs Boson Physics and Silicon Detector Development at the CMS Experiment" Dr. Somnath Choudhury*, Indian Institute of Science, Bangalore, on 24th May (2016).
3. **Workshop** on "***National Graduate Physics Examination (NGPE)-Part C*** " in collaboration with *Indian Association of Physics Teachers (IAPT),* during 9th & 10th June 2016.
4. **Seminar/Lecture** on "*Are there quantum limits to diffusion in quantum many-body systems?*" by *Dr. Nandan Pakhira*, School of Mathematics & Physics, The University of Queensland, Australia, on 26th April (2016).
5. **Lecture** on "*Higgs Boson Physics and Silicon Detector Development at the CMS Experiment" by Dr. Somnath Choudhury*, Indian Institute of Science, Bangalore, on 24th May (2016).
6. **Workshop** on "***National Graduate Physics Examination (NGPE)-Part C***" in collaboration with *Indian Association of Physics Teachers (IAPT),* during 9th & 10th June 2016.

Dr. M.N. Dastur School of Materials Science and Engineering

- Organising a International Conference on "Functional Nano-Materials (IC-FNM-2016)" during to be held September 28-29th, 2016

VLSI

- **Sudip Ghosh**

SL. No.	TOPIC	HELD AT	DURATION
1.	Delivered an invited Lecture in the Faculty Development Programme (FDP) on "Integrated Circuits: Design & its Applications".	UIT , Allahabad	11th July to 15th July, 2016
2.	GIAN course in Digital IC Testing and Design for testability	IIEST,Shibpur	25th July – 5th August, 2016
3.	New FPGA and Programmable SoC Based VLSI Architecture for Histogram Generation of Grayscale Images for Image Processing Applications in 6th International Conference On Advances In Computing & Communications	Cochin, India	6-8th September, 2016
4.	Short term course on "ADVANCED WIRELESS SENSOR NETWORK"	department of IT , IIEST SHIBPUR	26 - 29th September 2016
5.	seminar on "RECENT TRENDS IN WIRELESS COMMUNICATIONS AND SIGNAL PROCESSING" sponsored by TEQIP-II	department of ETC, IIEST SHIBPUR	3-5th October,2016

- **Pranab Ray**

SL. No.	TOPIC	HELD AT	DURATION
1.	GIAN course in Digital IC Testing and Design for testability	IIEST,Shibpur	25th July – 5th August, 2016
2.	Lecture by Dr Pramod Meher of NTU,Singapore on Systems Architecture	IIEST,Shibpur	12th July, 2016

3.	TEQUIP lecture series on Emerging Technology	Jadavpur University	16th August, 2016
4.	Short term course on "ADVANCED WIRELESS SENSOR NETWORK"	department of IT , IIEST SHIBPUR	26 - 29th September 2016
5.	seminar on "RECENT TRENDS IN WIRELESS COMMUNICATIONS AND SIGNAL PROCESSING" sponsored by TEQIP-II	Department of ETC, IIEST SHIBPUR	3-5th October,2016
6.	TEQIPII - seminer on Digital VLSI Design	Bankura Unnayani Institute of Engineering	September,2016
7.	Radiation – A Key driver of the ESA Jupiter Icy Moon Explorer	Alumni Seminar Hall,IIEST,Shibpur	14th December,2016

- **Amretashis Sengupta**

SL. No.	TOPIC	HELD AT	DURATION
1.	"Two Dimensional Materials for Low Power Electron Devices and Clean Energy Application", Hanse-Wissenschaftskolleg Fellow lecture.	Delmenhorst, Germany	29 March, 2017

- **Partha Sarathi Gupta**

SL. No.	TOPIC	HELD AT	DURATION
1.	GIAN course on Charging and Spin Based Electronics: From Devices to Circuits and Systems	IIEST,Shibpur	13th June – 25th June, 2016
2.			

5. Indranil Hatai

SL. No.	TOPIC	HELD AT	DURATION
1.	Delivered invited talk on VLSI Design Techniques and future directions under TEQUIP	MCKV Institute of Engineering and Technology	July, 2016
2.	Delivered invited talk on FPGA design flow	MCKV Institute of Engineering and Technology	April, 2016
3.	Short term course on High power CMOS modeling	NIT Durgapur	10th March, 2016
4.	IEP on System Level Design on Platform FPGAs	IIT Delhi	7th -9th December, 2015
5.	Delivered invited talk on VLSI design	B.C. Roy Engineering College, Durgapur	October, 2015
6.	TEQIPII - seminer on Digital VLSI Design at	Bankura Unnayani Institute of Engineering	September,2016

6. Kasturi Ghosh

SL. No.	TOPIC	HELD AT	DURATION
1.	GIAN course on Charging and Spin Based Electronics: From Devices to Circuits and Systems	IIEST,Shibpur	13th June – 25th June, 2016
2.	IEP for Chip tapeout	IISc, Bangalore	4th July – 8th July, 2016

7. Subhajit Das			
SL. No.	**TOPIC**	**HELD AT**	**DURATION**
1.	GIAN course on Charging and Spin Based Electronics: From Devices to Circuits and Systems	IIEST,Shibpur	13th June – 25th June, 2016
2.	Mixed Signal SOC: from design to tape out (gdsII), a hands on course.	IISc, Bangalore	4th July – 8th July, 2016
8. Goutam Paul			
SL. No.	**TOPIC**	**HELD AT**	**DURATION**
1.	IEP on System Level Design on Platform FPGAs	IIT Delhi	7th -9th December, 2015

- Two weeks workshop on Charging and Spin Based Electronics: From Devices to Circuits and Systems, 13th June to 24th June, 2016
  Course Coordinator: Prof. Hafizur Rahaman, Professor of Information Technology and Director of School of VLSI Technology, IIEST, Howrah, India
  Local Gian Coordinator: Dr. Anirban Gupta, Professor of Civil Engineering and Associate Dean of Alumni Affairs and External Relations, IIEST, Shibpur, Howrah, India
  Faculty Member: Prof. Kaushik Roy, Edward G. Tiedemann Jr. Distinguished Professor of Electrical and Computer Engineering, Purdue University, School of Electrical and Computer Engineering, USA.
  Sponsored by: MHRD
  Venue: Seminar Hall, Dr. M.N. Dastur School of Materials Science and Engineering & School of VLSI Technology, IIEST, Shibpur, Howrah, India.

- Two weeks workshop on Testing and Design-for-Testability for Digital Integrated Circuits, 25th July to 05th August, 2016
  Course Co-coordinator and Host Faculty: Prof. Hafizur Rahaman, Professor of Information Technology and Director of School of VLSI Technology, IIEST, Howrah, India
  International Faculty Member: Prof. Krishnendu Chakrabarty, William H. Younger Distinguished Professor of Engineering, Department of Electrical and Computer Engineering, Executive Director of Graduate Studies (Electrical and Computer Engineering), Duke University, Durham, NC,USA.
  Sponsored by: MHRD
  Venue: Seminar Hall, Dr. M.N. Dastur School of Materials Science and Engineering & School of VLSI Technology, IIEST, Shibpur, Howrah, India.

Centre of Excellence for Green Energy and Sensor System

"One day Brain Storming Workshop on Silicon Solar Cells" - sponsored by DST, GOI on 31 Jan, 2017 at CEGESS, IIEST.

Academic Collaboration

Civil Engineering

- Research Collaboration with University Putra, Malysia and Dr. UjjwalSaha for the research project 'Weather Generator development under climate change impacts (WGen-Climate): Putra Grant GP-IBT/2013/9406300'
- Research and book publication collaboration with Professor Robin Chowdhury, Professor Emeritus, University of Wollongong, Australia and Dr. Goutam Bhattacharya
- Collaborative work with Dept. of Mechanical Engineering, IIT Kanpur.

Computer Science and Technology

- MOU with Department of Computer Science and Engineering, National Institute of Technology, Durgapur, West Bengal 713209, INDIA
- Dr. Saptarshi Ghosh of Computer Science has joined the Forum for Information Retrieval Evaluation, which organizes the FIRE conference annually. The next conference will be at ISI Kolkata, in December 2016. In collaboration with researchers from ISI Kolkata, Dr. Saptarshi Ghosh is organizing the track "Information Extraction from Microblogs Posted during Disasters" at the FIRE 2016 conference (link to the conference website: http://fire.irsi.res.in/fire/2016/home)

- INSDAG, Kolkata with Metallurgy and Materials Engineering Department of IIEST, Shibpur.
- Collaborations with Sanjeeban Hospital, Guru Nanak Institute of Dental Science and Research and Centre for Healthcare Science and Technology, Shibpur.

Physics

- CGCRI, Kolkata.
- Jadavpur University, Kolkata
- IACS, Kolkata.
- UGC-DAE- Kolkata Centre, UGC -DAE, Indore
- Institute for Plasma Research, Gandhinagar
- Saha Institute for Nuclear Physics (SINP), Kolkata
- Calcutta University
- IIT, Kharagpur
- S. N Bose National Centre for Basic Sciences, Kolkata.
- Indian Association for the Cultivation of Science, Kolkata
- Jawaharlal Nehru University, New Delhi.
- Inter University Accelerator Centre, New Delhi.
- Rutherford Appleton Laboratory, UK
- Augsburg University. Germany

Humanities and Social Sciences

- **Academic Collaboration:** Proposed With Purdue University Northwest.
- **Industrial Collaboration:** Started with CMERI for Cluster Development.

Computer Science and Technology

Sugata Das, Ph. D. Scholar	2015 IEEE International Conference on Computer Graphics, Vision and Information Security	Bhubaneswar, Odisha	Dept. of CSE, KIIT University	02.11.2015 - 03.11.2015	9,117.00
Sohini Roy, PG Student	3rd Inter. Confe. Symposium on Security in Computing and Communications (SSCC'15)	Kerala	SCMS School of Engineering & Technology, Kochi	10.08.2015 - 13.08.2015	16,676.00
Kunal Ashok Vyas, PG Student	Workshop on Big Data Analytics	IIT, Patna	Dept. of CST, IIT, Patna	20.08.2016 - 21.08.2016	3,510.00
Ph.D. Scholar	Workshop on Machine Learning & Data Mining (WMLDM- 2016)	ISI, Kolkata	Computer Vision & Pattern Recognition Unit, ISI, Kolkata	10.11.2016 - 11.11.2016	2,000.00
Isha Ganguli, Ph.D. Scholar	Workshop on Machine Learning & Data Mining (WMLDM- 2016)	ISI, Kolkata	Computer Vision & Pattern Recognition Unit, ISI, Kolkata	10.11.2016 - 11.11.2016	2,000.00

A chunk of Teachers Received National/International Travel Grant to attend conferences.

Electrical Engineering

- **Artificial Neural Network Based Adaptive Over-Current Relay**", **Inventors**: Dr. Paramita Chattopadhyay, Dr. PratyayKonar, Mr. SubhrajitMitra, **File. No.**: 201731019385, **Filing Date**: 02/06/2017 (This patent has been filed with financial support from TEQIP - II)
- The SB-RIO FPGA Based Board operational on the LabView Platform has helped in the Development of the Phasor Measurment Unit, very much an important Device in Smart Grid Networks. Also this set-up was used by the final year students to understand the Basics of signal Processing and Creating algorithms for Numerical relays, on the Virtual instrumentation Platform provided by LabView.

Information Technology

- MATLAB Software (10 users)
- Arbitrary Function Generator
- Digital Storage Oscilloscope
- Network Simulator
- LCD Panel
- Monochrome Frame Grabber
- Online Biometric Kit
- Sensor Laboratory Equipment
- High Performance Environment for Image Analysis and Image Understanding

Mechanical Engineering

Procurement of certain equipments for laboratory development and organizing workshops as well as field visits in the Department of Mechanical Engineering, IIEST, Shibpur.

Metallurgy and Materials Engineering

- New equipment such as (i) Vacuum Oven, (ii) Micro-hardness Tester with touch screen display, (iii) Automatic contact extensometer, (iv) Electro polisher and (v) Impedance analyser will be procured very shortly for the Department of Metallurgy and Material Engineering.
- The Faculties, Research Scholars and the UG and PG students as well as staff members have got support for attending conference, seminars, workshops and other academic programs and training programs in India and Abroad which help in the enhancement of performance and upgrade academic environment.

Alumni Contribution to the Departments

Metallurgy and Materials Engineering

Technical talk delivered by Dr. Suman Guha in the field of Mechanical Metallurgy.

VLSI

Dr. Arup Bhattacharyya (Alumni: 1960), Former *Senior Technical Advisor, IBM USA* and CEO, ADI Associates, USA, delivered a series lecture on "Non-Volatile Memory Design" during 25 Feb.-1st March 2017.

A global alumnus (GAABESU) is actively involved in overall development of the Institute.

- Soubhik Rakshit 5th semester student of CST has presented a paper titled "Importance of Missing Value Estimation in Feature Selection for Crime Analysis " in an International Conference on Internet of Things for Technological Development at Gandhinagar, Gujarat in April 2017. GAABESU Scholarship amount received - Rs 4900

Awards and Laurels received by the faculty members

Chemistry

- Dr. Chinmoy Bhattacharya, recipient of Young Faculty Research Award (GAABES USA)-2016.

- Dr. Jayanta Nanda awarded PBC Postdoctoral Fellowship by Council of Higher Education, Govt. of Israel *as an Outstanding Postdoctoral Researcher from China and India.*

- Dr. Arik Kar awarded "The follow-on support of Newton International Fellowship" in 2017 by the Royal Society, London, United Kingdom (6000 GBP /Year during 2017-2021).

- Ms. Piyali Adak, a Ph.D. student of the Department, awarded (oral paper presentation award) at 24th West Bengal State Science & Technology Congress, held at Science City, Kolkata on 28th February and 1st March 2017.

- Ms. Piyali Adak, a Ph.D. student of the Department, awarded outstanding paper award at in "1st Regional Science & Technology Congress-2016" held in November 13–14, 2016 at National Institute of Technical Teacher' Training and Research, Kolkata.

- Dr. Mrinal Kanti Bera awarded Equipment Subsidy from Alexander von Humboldt Foundation, Bonn, Germany Humboldt Post Doctoral Fellowship, Alexander von Humboldt Foundation, Bonn, Germany

Civil Engineering

- Dr. Tapas Kumar Roy and Sri Raja Mistry received Best conference paper award 2016 in the International Conference on Applied System Innovation Organized by 'IEEE and Taiwanese Institute of Knowledge Innovation'
- Dr. PritamSahawas awarded the Best paper presenter at National conference - Engineering Problems and Application of Mathematics (EPAM)-2016 at National Institute of Technology Agartala
- Dr. PritamSaha has received International Travel Support (ITS) from SERB-DST for attending Transbaltica 2017, an international conference, in VGTU Lithuania
- Dr. Chaitali Rayhas received "E P Nicolaides" Prize (Gold Medal) from The Institute of Engineers (I)

Computer Science and Technology

- Best paper award of Dr. Asit kumar Das in Information Technology, Electronics and Mobile Communication Conference (IEMCON), 2016 IEEE 7th Annual, pp. 1-9, 2016

Mechanical Engineering Department

- Prof. Uttam Rana received the Best Paper Award in CHEMCON 2016, CRE COMBUSTION session.

- Prof. Bijan Kumar Mandal along with his Ph.D scholar Pijush Kanti Mondal received best paper award for their paper titled Combustion and Performance Characteristics of a Diesel Engine Using Emulsified Diesel Prepared By Ultrasonicator, at IEEE International Conference on Advances in Mechanical, Industrial, Automation and Management Systems (AMIAMS - 2017) organized by Department of Mechanical Engineering, MNNIT, Allahabad, 3 - 5 February, 2017.

Information Technology

Name	Award Received	Given by	Year
Prof Arindam Biswas	Board Member of the Technical Committee 18 (TC18) of International Association of Pattern Recognition (IAPR).	International Association of Pattern Recognition (IAPR)	*2016*
Dr. Prasun Ghosal	the Best Paper Award in 2nd IEEE International Symposium on Nanoelectronic and Information Systems (IEEE iNIS 2016)		2016.
	Vice Chair, Executive Committee of IEEE computer Society (IEEE CS) Technical Committee on VLSI(TCVLSI)	ELSEVIER	2016
	Vice Chair, Steering Committee, IEEE iNIS (International Symposium on Nanoelectronic and Information Systems)		2016
	the Editor, IEEE Ethics and Policy in Technology eNewsletters (IEEE Internet Initiative newsletter and IEEE Future Directions newsletter		2016
	the Editor, IEEE Ethics and Policy in Technology eNewsletters (IEEE Internet Initiative newsletter and IEEE Future Directions newsletter		2016
	Associate Editor IEEE Consumer IEEE Consumer Electronics Magazine (Hardware Technology for CE) and VLSI Circuits and Systems Letter (VCAL).		2016
	Guest Editor, ELSEVIER Integration, The VLSI Journal, Special Issue On: Hardware Assisted Techniques for IoT and Big Data Applications		2016
Dr. Malay Bhattacharya	Young Engineers Award from IEI in 'Computer Engineering'		2016-17
Dr. Santi Prasad Maity	Best Paper award with co-author Ms. Ankita Pramanik in the Session of "Wireless Communications and Sensor Networks" in 3rd International Conference on Microelectronics, Circuits and Systems		9-10th July, 2016,
	Best Paper award with co-author Ms. Ankita Pramanik in 5th International Conference on "Computing, Communication and Sensor Network, (CCSN 2016)		24-25th December, 2016
	Best Paper titled "On Robust Watermark Detection for Optimum Multichannel Compressive Transmission" by IEEE Young Professions with co-author Mr. Anirban Bose at the first International Conference on Commputational Intelligence, Communication and Business Analytics (CICBA 2017)		24-25th MARCH, 2017

School of community Science and Technology

- Award for best poster presentation in Challenges in Product development of *medicinal* implants and devices, IIEST Shibpur, Dec. 2016 "Production of superior quality protein hydrolysate from edible oyster mushroom (*Pleurotus Ostreatus*)" by Bhaswati Goswami and Jayati Bhowal.

- Award for best poster presentation in Challenges in Product development of *medicinal* implants and devices, IIEST Shibpur, Dec. 2016 Cardio protective effect of long chain PUFAs (mainly 20:5, 22:6 and 18:3 GLA) containing soy yogurt against cholesterol induced liver damage in swiss albino mice" Samadrita Sengupta, Jayati Bhowal and D. K. Bhattacharyya
- Awarded First Prize in Research Scholars Colloquium 2016, 23 - 24 August, 2016 "Adoption of novel technology for developing antioxidant rich rice bran oil incorporated margarine" by Sanjukta Kar , D.K. Bhattacharyya, Minakshi Ghosh.

- Awarded Second Prize in Research Scholars Colloquium 2016, 23 - 24 August, 2016.

"Preparation of bakery products from interesterified fat products" by Dipannita Majumdar, D.K.Bhattacharyya, Jhuma Ganguly, Minakshi Ghosh.

- "Screening and isolation of enzyme producing bacteria from soil" by Manisha Maity, Jayati Bhowal, Research Scholars Colloquium 2016, 23 - 24 August, 2016

Dr. M.N. Dastur School of Materials Science and Engineering

N. R. Bandyopadhyay, Professor

- **Fellow**, West Bengal Academy of Science and Technology (WAST)
- **Fellow,** The Institution of Engineers (India)
- **Council Member,**The Institution of Engineers (India)
- **Past Chairman –** West Bengal State Centre, The Institution of Engineers (India)
- **Editor –in - Chief**, The Institution of Engineers(India) – Springer Series D Journal.
- **Former Chairman,** Metallurgical & Materials Engineering Division Board, The Institution of Engineers (India)
- **Former Chairman**, Committee for Advancement of Engineering and Technology (**CATE**), The Institution Of Engineers (India)
- **Vice-President,** Materials Research Society of India (MRSI)

Mallar Ray, Assistant Professor

- Guest Editor of International Conference on Functional Nano-Materials (IC-FNM 2016) issue of Materials Today: Proceedings, Elsevier Ltd.
- Editorial Advisory Board Member of the journal 'Nanotechnology and Nano Science,' Bioinfo Publications
- Life member, Materials Research Society of India (MRSI) – Membership No. LMB 927

Arijit Sinha, Assistant Professor

- Associate Editor of International Conference on Functional Nano-Materials (IC-FNM 2016) issue of Materials Today: Proceedings, Elsevier Ltd.
- Member of The Institution of Engineers (India) (**Membership Number: M 145718-1**), Metallurgical and Materials Engineering (MME) Division.
- Life Member of Electron Microscope Society of India (**Membership Number: LM 1211**).
- Life Member of The Indian Institute of Metals **(Membership Number: BO1-LM-50967**).
- Life Member of Materials Research Society of India (**Membership Number: LMB 2541**).

Prosenjit Saha, Assistant Professor (Inspire Faculty)

- Life Member, The Indian Institute of Metals (IIM), Membership No. 55083.
- Fellow Member, American Chemical Society (ACS, Membership No.- 31011465)
- Young Scientist Research Award from SYST-DST, GoI, 2016
- Early Career Research Award from SERB-DST, GoI, 2016.
- Biodata selected for Marquis Who's Who (https://cgi.marquiswhoswho.com/OnDemand/Default.aspx?last_name=saha&first_name=prosenjit)

Diptonil Banerjee, Assistant Professor

- Editorial Board Member of the journal 'Nanotechnology and NanoScience'(Bioinfo Publications)
- International Journal of Applied Nanotechnology' (Pub Publications)
- International Journal of Nanomaterials and Nanostructures' (Pub Publications)

Swatilekha Ghosh, Assistant Professor (Inspire Faculty)

- Life member, CRSI, Chemical Research Society of India, membership no. LM1804
- Life member, ECSI, The Electrochemical Society of India, membership no. LM-249
- Life member, MRSI, Materials Research Society of India, membership no. LMB2389

School of Management Sciences

Dr. Anjan Ghosh:

- IIM Calcutta SKS Best Doctoral Candidate Award 2017
- Academy of Management Annual Conference Best Paper Award 2017
- Paul R. Lawrence Fellowship, 2016
- Best Short Paper Award, (Strategy Process Interest Group) 2016

VLSI

Dr. Amretashis Sengupta: Awarded Hanse-Wissenschaftskolleg Fellowship (Germany) 2016-17

Centre of Excellence for Green Energy and Sensor System

- Dr. S. P. Gonchaudhurihas been selected by the Govt. of Tripura to act as the Chairman of State Solar Power Committee in the year 2016-17.
- Prof. BibekBandyopadhyay has received Global excellence award on renewable energy 2016 (Awarded by Energy and Environment Foundation, New Delhi: August, 2016)
- Journal editorship of Prof. BibekBandyopadhyay:Associate Editor of: Solar Energy, Renewable and Sustainable Energy Reviews, International Journal of Environment.

Awards and Laurels received by the students/scholars

- SuchismitaMitra (Research associate) received Bhaskara Advanced Solar Energy (BASE) Fellowship Program supported by the Department of Science and Technology, Govt. of India, and the Indo-U.S. Science and Technology Forum (IUSSTF) for a period of three months. For the Internship, she would be travelling to Arizona State University, USA.
- Sugato Ghosh (Research associate) received BEST PAPER (1st Runner Up) AWARD In 'Tenth International Conference on Sensing Technology(ICST 2016), Southeast University, Nanjing, P. R. China, November 11-13, 2016.
- Sugato Ghosh (Research associate) chaired a session "Sensors for Novel Applications II" In 'Tenth International Conference onSensing Technology (ICST 2016), Southeast University, Nanjing, P. R. China, November 11-13, 2016.
- Dr. Sourav Mandal (Research associate) has been awarded DST-INSPIRE faculty scheme.
- Sourav Mondal received Best paper award in European PV Conference, Munich, Germany, 2016
- SuchismitaMitrareceived financial support from DST-SERB to attend the Photovoltaic science and engineering conference-26 held at Singapore
- Hemanta Ghosh received financial support from DST-SERB to attend the 32nd European Photovoltaic Solar Energy Conference and Exhibition held at Munich, Germany.
- SudarshanaBanarjeereceived financial support from DST-SERB to attend the Photovoltaic science and engineering conference-26 held at Singapore.

Extension Activities and Societal outreach

Architecture, Town & Regional Planning

- National Workshop on Earthquake Resistant Practices for Undergraduate Students of Architecture held at IIT Kanpur during July 2017 to sensitize the students of architecture in earthquake resistant design practices through technical lectures followed by design studios.
- National Workshop on Earthquake Resistant Practices for Undergraduate Students of Architecture held at IIT Kanpur during June 2016 to sensitize the students of architecture in earthquake resistant design practices through technical lectures followed by design studios.
- Member, Curriculum Revision Committee, Department of Planning and Architecture, National Institute of Technology Rourkela.
- Member, Board of Undergraduate Education, Council of Architecture, New Delhi
- Member, National Advisory Committee, National Information Centre of Earthquake Engineering, IIT Kanpur.

Civil Engineering

- Arsenic removal units installed in remote villages and school of district Nadia, which are Serving more than 1000 families and 2500 school children
- Conducted Interactive Training Session on Disaster Management for Junior Engineers of W.B. Govt. Offices on 29.07.2016, at Administrative Training Institute, Salt Lake, Kolkata.
- Installed five arsenic and iron removal filters in 5 schools and gender-sensitive appropriate sanitation facilities in 9 schools in North 24 Parganas districtcatering to 11000 students.
- Conducted hygiene awareness camps in 10 schools.
- Installed an innovative design of group handwashing facility in 32 schools in Malda and South 24 Parganas districts.

Computer Science and Technology

- Computer Engineers' Society of Bengal Engineering College plays the host to most of the activities that are conducted round the year by the CST department, be it academic, cultural, sports or college festivals.

Humanities and Social Sciences

Partha Sarathy Roy :
Undertook extensive training would be entrepreneurs under Prime Minister's Employment Guarantee programme during 2002 and 2004. Presently associated with State Medicinal Plant Board for popularising Ayurvedic treatment.

Subhasis Bandyoapadhyay:

Introduced Participatory Discourse Development (PDD) in class room pedagogy that would benefit students finally in their placement procedure.Founded the Initiative for Studies in Science Technology and Culture (ISSTaC).

Mallika Ghosh Sarbadhikary

Coordinating Communicative English course in collaboration with British council, Kolkata
Departmental Initiative Initiated a social outreach program, ICCHE and extension activities involving students of this institute jointly with Subhasis Bandyopadhyay

Mechanical Engineering

- The Department of Mechanical Engineering is responding to the needs of local small scale industries when they seek guidance and support in resolving technological issues. However, no major and notable activity took place during the period concerned. The teachers of the Department regularly acts as external examiners for surrounding technical colleges and Universities and most professors also act as experts in selection and inspection committees of other Universities and Public Service Commission and Staff Selection Commission.

- 6-semester part time M. E. degree in Industrial Metallurgy for the practicing Engineers in Metallurgy and Mechanical by the Department.

- One of the faculty members of **Mininig Engineering Department** is secretary of the Model School run inside the campus.

Physics

"***National Graduate Physics Examination (NGPE)-Part C***" in collaboration with *Indian Association of Physics Teachers (IAPT),* during 9^{th} & 10^{th} June 2016, was organized and held in our Dept.

SOCSAT

- School of Community Science and Technology, IIEST Shibpur provided Skill development/Vocational Training to the unemployed youth around the locality in Metiabruz, Kolkata" , Garden Reach Shipbuilders & Engineers Limited (GRSE),Kolkata, a Govt. of India undertaking under the Ministry of Defense.

SOMS

- Students of School of Management Sciences (SOMS) of IIEST, Shibpur participated in a day long programme (Shaping Young Mind Programme) at IIM Calcutta under the auspices of AIMA (All India Management Association) and IIMC.
- Students of School of Management Sciences (SOMS) of IIEST, Shibpur had interactive sessions with five eminent speakers from Industry / World Bank.
- Centre for Healthcare Science and Technology offering ECG AND EEG Services to community.

Centre of Excellence for Green Energy and Sensor System

Short term Training to UG , PG and PhD students of different academic Institutions like

(i) ISM, Dhanbad
(ii) IIIT, Allahabad,
(iii) SSN, Chennai
(iv) Dept of ETCE, IIEST
(v) School of Mechatronics , IIEST
(vi) Vivekananda College
(vii) MSIT , TIG etc.

Prof. BibekBandyopadhyay delivered lectures on various aspects of Solar Technologies and national policy in USAID organized 'Utility Engineers' Training Program' in Jaipur (April '16), Kolkata (April '16), Ludhiana (April '16), Lucknow (May '16), and in 'Entrepreneurship Development Programs' in New Delhi (May '16) and Pune (July '16).

Foreign visits and Invited Lectures

Architecture, Town & Regional Planning

•Attended the 16th World Conference in Earthquake Engineering (16WCEE) at Santiago, Chile.

- Mitra, K. (2017). Seminar presentation titled Evolution of building bye laws vis-a-vis seismic safety: the case of Kolkata, held at the Department of Architecture, Sapienza University, May 9, 2017.
- Mitra, K. (2017). Seminar presentation titled Cities of the developing world with emphasis on urbanization in India in general and Kolkata in particular, held at the Department of Architecture, Sapienza University, May 8, 2017.
- Mitra, K. (2017). Seminar presentation titled Urban History of Kolkata from colonial to the contemporary held at the Department of Architecture, Sapienza University, May 8, 2017.

- Mitra, K. (2017). Seminar presentation titled Earthquake resistant traditional construction typologies in the seismically hazardous areas of India. An example of sustainable approach towards masonry monuments in a seismically hazard prone area in India. Department of Architecture, Sapienza University, May 4, 2017.

- Mukhopadhyay, P., Delivering introductory Lecture for the training program on New Practices for Cement Finished Construction by Treated Bamboo, conducted by Forum of Scientists, Engineers and Technologists (FOSET), held on Jun 10, 2017 at Kolkata

Chemistry

Foreign visits

- Dr. Chinmoy Bhattacharya visited Belorussian State University, Minsk, Belarus.
- Dr. Debabani Ganguly visited Kansas State University, USA.

Invited Lectures

- **Dr. Chinmoy Bhattacharya,** Invited Speaker in short term course on Pollution & Envirment, ISM-IIT**, Dhanbad, 2017.**

Civil Engineering

Sl. No.	Name of the Faculty	Place of visit including country name	Duration	Purpose
1	Prof. Asok Adak	Houston, USA UMBC, USA	June 5, 2016 to June 30,2016	Presenting paper in IC EST 2016 (Houston) and Collaborative research at UMBC
2	Prof. PritamSaha	Universidad Politécnica de Madrid, Madrid, Spain	May 23-26, 2016	o To present a paper o To chair a session
3	Prof. Soumya Bhattachrya	Tongji University Shanghai, China	5 days	Attending and presenting a paper in International conference APSSRA 2016
4	Prof. Tapas Kumar Roy	Houston, USA	6-10 June 2016	Attending International Conference

5	Prof. Subrata Chakroborty	Tongji University Shanghai China	May 28-30 2016	To chair a session and present a research paper in APPSARA 2016
6	Prof. Sujit Kumar Dalui	Jeju, Korea. (The 2016 World Congress on Advances in Civil, Environmental and Materials Research (ACEM16))	28th August to 1st September, 2016	To present conference paper
7	Prof. Sneha Murmu	Thammasat University, Bangkok, Thailand	22-24 Jan,2017	To present conference paper
8	Prof. Ujjwal Saha	KU, Leuven, Belgium	Nov-Dec 2016	Research Visit
9	Prof. Sudip Kumar Roy	Tongji University Shanghai China	11-15 July 2016	To present conference paper
10	Prof. Sudip Kumar Roy	Rome. Italy	Dec 15 -16, 2016	To present conference paper
11	Prof. Asok Adak	Rome. Italy	Dec 15 -16, 2016	To present conference paper
12	Prof. SandipChakroborty	Rome. Italy	Dec 15 -16, 2016	To present conference paper

Invited Lectures

- Dr. P. Saha delivered a lecture on "Pedestrian Safety and Infrastructure Solutions", presented at the conference *InfraVision East 2016:* Indian Chamber of Commerce, organized on 29th July, 2016 at Lalit Great Eastern, Kolkata.
- Dr. P. Saha chaired a session at The 7th International Conference on Ambient Systems, Networks and Technologies, May 23-26, 2016, Madrid, Spain, Session 14: Modeling and Simulation in Transportation Sciences IV.
- Dr. P. Saha chaired a session at The National Level Conference on Engineering Problems and Application of Mathematics-2016, June 11-12, 2016, NIT Agartala, Session 3: Civil Engineering Track.
- Dr. T.K. Roy Delivered Lecture on a short term training programme on "Testing of Pavement Materials" during 12-16 July 2017 organized by National Institute of Technical Teachers' Training and Research (NITTTR), Kolkata.
- Dr. Ujjwal Saha delivered an Invited lecture on "Disaster Mitigation and Climate Change' at NIT, Agarpara on 30th March 2017.
- Dr. Ujjwal Saha delivered an Invited lecture on "Management of Urban Water Systems considering the Impacts of Climate Change' on 10th September 2016 at IBC annual session.
- Dr. Subrata Chakraborty delivered a keynote address on Metamodelling Based Simulation for Efficient Seismic Reliability Analysis of Structures in the 3rd National Conference on Reliability and Safety Engineering (NCRS-2016), SSN College of Engineering, Chennai and the Chennai Chapter of Society for Reliability and Safety Engineering, Chennai 01-03, Dec, 2016
- Dr. Subrata Chakraborty delivered an Invited Lecture on Improved Super-elastic Isolation System using a Ferrous based Shape Memory Alloy (FNCATB), Structural Engineering Convention 2016, CSIR-SERC, Chennai Dec. 21-23, 2016.
- Dr. Subrata Chakraborty delivered an Invited Lecture on Equivalent Linearization Method for Nonlinear Stochastic Vibration Analysis: Application to some passive vibration control problem, One Week Workshop on "Computational Mechanics and Modelling" (CMM-2016) during November 12-16, 2016 at Mechanical Engineering Department, NIT Silchar.
- Dr. Subrata Chakraborty delivered an Invited Lecture on Reliability Analysis of Structures, National Workshop on Recent Advances in Civil Engg, Bankura Unnani Institute of Engineering, 26.10.2016
- Dr. Subrata Chakraborty delivered an Invited Lecture on Research Writing: PhD Thesis and Journal papers, Faculty Development Programme University of Engineering & Management, New Town, Kolkata, 1stJuly 2016.
- Dr. Subrata Chakraborty chaired a session at The 6th Asia-Pacific Symposium on Structural Reliability and Its Applications, May 28-30, 2016, Shanghai, China

- Dr. Sudip Kumar Roy delivered an Invited Lecture on Capacity and Level of Service, at National Workshop on Recent Advances in Civil Engg, Bankura Unnani Institute of Engineering, 25.10.2016
- Dr. Sujata Biswas delivered lecture for workshop on 'Sustainable Water Resources Development in minor irrigation sector, West Bengal' organized by State Agricultural Engineers Association, West Bengal on 3rd December, 2016.

Visitors to your Department (Indian & Foreign)

- Distinguished Lecture by Dr. Rajesh Seth, Professor, Department of Civil & Environmental Engineering, University of Windsor, Ontario, CANADA on Freshwater Resource Management & Issues In Canada In 21st Century on 8th May 2016
- Distinguished Lecture by Dr. AmalenduDasgupta, Former Professor, IIT Gwuahati and Director, Development Consultants (I) Pvt Ltd on Concrete Structure on 16th November 2016,
- Distinguished Lecture by Dr. AmitabhaDatta, Vice President, STUP Consultants Pvt. Ltd. Kolkata, on "Bridge Construction with a focus on Bigger dia Marine Piles and and Steel Girders on a Major River"on 18th January 2017
- Distinguished Lecture by Dr. Arun Banerjee, Formerly Principal Research Scientist, Lockheed Martin Advanced Technology Centre, Pal Alto, on High Fidelity, Time- Efficient Modelling of Articulated, Flexible Multibody Spacecraft on 5th August 2016.
- Distinguished Lecture by B. D. Mundra, Chairman – Emeritus of Simplex Infrastructures Limited on Construction Technlogy on 15 February 2017
- Special Lecture by Mr. Sandip Deb, National Vice – President, Institute of Valuers on Valuation of Real Estate Property for 4 days in January and February 2017

Computer Science and Technology

Foreign visits

- Visited Moscow to attend an In Int. Conference DIPDMWC for presenting a paper Lion BEAR: A Location Based Energy Aware Routing Scheme in DTNs, in July 2016.

- Visited Singapore to attend an Int. Conference IEEE TENCON for presenting a paper A Memory Efficient DNA Sequence Alignment Technique Using Pointing Matrix, in November 2016.

Invited Lecture

- Delivered Tutorial in IEEE Region 10 Symposium (TENSYMP) held in Bali, Indonesia during 9th-11th May, 2016.
- Delivered invited talk in Workshop on Emerging Prospects in Wireless Sensor Network held in Jadavpur University, 10th March, 2017.
- Delivered invited talk in a Short Term Course on "Emerging Trends in Signal and Image Processing, Computer Vision and Pattern Recognition" held in Department of Computer Science & Engineering, NIT Durgapur, 10th March, 2017.
- Delivered invited talk in Faculty Development Program on "Big Data Analytica and Machine Learning" held in Techno India, Salt Lake, 7th July, 2017.

Electrical Engineering

Name of the faculty	Institute visited	Duration and date of the visit	Purpose of visit with details / Details of the lecture delivered
Dr. Paramita Chattopadhyay	At *Institute for Intelligent Systems Research and Innovation*, **Deakin University , Australia**	26.3.2017 - 9.4.2017	Laboratory visit and collaborative Research Topic of the Lecture Delivered : Data Mining and Knowledge Discovery in Fault Diagnosis of Induction Motor"
Dr. Paramita Chattopadhyay	Florence University, Italy	6.6.2016 - 13.6.2016	For presenting Paper in IEEE 16 EEEIC

Humanities and Social Sciences

Madhumati Dutta
Invited Lecture, NMML, Nov 6, 2015
Mallika Ghosh SarbadhikaryInvited to deliver a series of lectures to postgraduate students of Maulana azad College on Ben Jonson and Marston ,2015-2016
Subhasis Bandyopadhyay
Visited Purdue University at Calumet. Invited lecture on *Metabolic Rift., August, 2015*
Presented paper on 'Industrial land Acquisition in West Bengal ' at SPSS conference at Chicago, August, 2015

Information Technology

Dr. Chandan Giri:

- Visited Hiroshima City University, Hiroshima on 23rd November, 2016.
- Attended Asian Test Symposiam 2016, at Hiroshima, November 21-24th, 2016.

Dr. Prasun Ghosal:

- Invited talk on **"Are We Ready for a Biomolecular Computer? Present Status and Challenges"** at Future Institute of Engineering and Management, West Bengal, India on March 29, 2017 in *Recent Trends in Bio-Electronics and DNA Computing (RTBDC 2017)*.
- Invited talk on **"Key Research Challenges on Future Generation Technologies for Nanoscale System Design and Computing"** at ABV-IIITM, Gwalior, India on November 18, 2016 during 4th INTERNATIONAL WORKSHOP/CONFERENCE ON COMPUTATIONAL CONDENSED MATTER PHYSICS AND MATERIALS SCIENCE (IWCCMP 2016), November 18-20, 2016.
- Invited talk on "**IoT and Hardware Security**" at Bankura Unnayani Institute of Engineering, Bankura, West Bengal, India on September 23, 2016 during Five Days National Workshop on Systems and Security (NWSS), September 22-26, 2016.

Dr. Arindam Biswas:

- Prof Arindam Biswas attended the conference International Symposium CompIMAGE'16 - Computational Modeling of Objects Presented in Images: Fundamentals, Methods, and Applications, Sep21-23, 2016, Niagara Falls, USA, as a session chair and also presented two papers.

- Prof Arindam Biswas attended the conference IWCIA-2017: (PC Member) 17th International Workshop on Combinatorial Image Analysis, June 19-21, 2017, Plovdiv, Bulgaria, Europe, as a session chair and presented one research work.

Dr. Sukanta Das:

- Visited Morocco to present papers in an International conference, ACRI 2016

Dr. Santi Prasad Maity:

- Attended IEEE WCNC 2017 Conference held in San Fransisco, CA, USA 19-22 nd March, 2017

Mathematics

- Dr. Ujjal Debnath, Scientific visit in the Department of Physics, Rikkyo University, Tokyo, Japan, during 07 – 15 March, 2017, invited lecture on "Accretion of Dark Energy onto Black Hole and Wormhole"

- Prof. Guruprasad Samanta visited in the Department of Mathematics and Biomathematics at Faculty of Science, University of South Bohemia, Czech Republic for collaborative research work from 2nd January 2017 to 27th January 2017 .
- Dr. Pritha Das attended the international conference- 9th ICRST, World Association for Scientific Research and Technical Innovation at Asian Institute of Technology (AIT), Bangkok, Thailand, 29-30 Dec. **2016.**

Mechanical Engineering

- Prof. Debasis Datta visited the city of Munich, Germany during June 13-17, 2016 to attend the 19th World Conference on Non-Destructive Testing (19th WCNDT, 2016) and present a paper there titled FEA BASED SIMULATION OF ULTRASONIC WAVE PROPAGATION IN ISOTROPIC AND ORTHOTROPIC MEDIA at the International Congress Centre, Munich, Germany.

- Prof. Debasis Datta visited the Broomfield Hospital, Essex, UK during June 20-24, 2016 to discuss the possibility of collaborative research on Prosthesis Design and Development with the Orthopaedic Department of the Hospital; Also gave an Invited Lecture on Design of Femoral Stems in THR (Total Hip Replacement) Surgery as per the invitation of Dr. Chris Rees, Consultant Surgeon and Clinical Lead of the said Hospital.

- Prof. S.K.Karmakar was invited as speaker of a workshop on "Recent trends in Electromechanical System" organized by Bankura Unnayani Institute of Engineering held during October 18-22, 2016 (delivered lecture on 22.10.2016)

- Prof. S.K.Karmakar was invited as Keynote Speaker on the National Conference on "Recent Advances in Tribology and Maintenance (RAITM-2017)" held during February 10-11, 2017 in the Department of Mechanical Engineering, NIT Rourkela

- Prof. S.K.Karmakar attended and presented a Paper entitled "Development and Validation of Finite Element Model of a Human Cervical Spine under Physiologic Loads" in The 9th International Conference on Engineering and Applied Sciences (TICEAS), organized by Higher Education Forum (HEF) held at Singapore during February 21-23, 2017. Also, he chaired a session in TICEAS 2017.
- Prof. S.K.Karmakar visited Department of Mechanical Engineering, National University of Singapore, Kent Ridge, Singapore - 117575, on invitation to explore the possibilities of collaborative research in multidisciplinary areas in general and Mechanical Engineering in particular during February 24-25, 2017.

- Dr. Subhas Chandra Mondal delivered an invited talk on “Development of Nanocarb 110 Hardfacing Advanced Materials” on 7th September, 2016 in 34th ISER International Conference on "Nanoscience, Nanotechnology and advanced Materials" organized by İSER during 7-8 September, 2016 at Chennai, India.

- Dr. Subhas Chandra Mondal delivered an invited talk on “Machining Characteristics of Nano-structured Hardfacing Materials” on 30st Octoberr, 2016 in two days National Workshop on Machining and Machinability of Advanced Materials (NWMMAW-2016) organized by CSIR-CMERI Durgapur during 29-30 October, 2016.

- Dr. Bijan Kumar Mandal Presented a paper in the International Conference on Engineering and Applied Science, 21 - 23 February 2017 at Singapore.

- Dr. Bijan Kumar Mandal visited different laboratories in the Department of Mechanical Engineering at National University of Singapore, Singapore from 24 – 25 February, 2017.
- Dr. Sudip Ghosh *Advanced Repowering Options for Coal Power Plants: Simulated Performance and Economic Assessment Study*, Workshop on Emerging Technologies in Thermal Power, Jadavpur University, Oct 04, 2016

- Dr. Sudip Ghosh *Biomass Based High-Efficiency Systems for Distributed Rural Generation*, National Workshop on Recent Advances & Developments in Energy Sector (NWRADES 2016), Jadavpur University, 3rd September 2016

- Dr. Aritra *Ganguly Applications of Solar Energy for Protected Cultivation and Cold Storage* National Research Workshop on Energy Technologies (NWRET) held in 12-13 January 2017.

Mining Engineering

- Prof P. Dutta attended 13th Global Greenhouse Gas Conference (GHGT-13) at Lausanne, Switzerlan, November 2016
- Prof P. Dutta attended as Moderator of Technical sessions at Carbon Capture Utilization and Storage Conference at Chicago, USA during April 2017
- Prof N.C. Dey and Prof S. Mukhopadhyay attended International Conference and presenting papers at Australia, February 2017.
- Prof S.Sinha Lecture on "'Assessment of sicio impact of mine closure " short term course for middle level executives of coal and allied industries at IIT KGP

School of Community Science and Technology

- Oral presentation in *First Food Chemistry Conference - Shaping the Future of Food Quality, Health and Safety,30 October - 1 November 2016, Amsterdam, The Netherlands* "Exploration On Bioflavour From Oranges Of Darjeeling Hill, Eastern Himalaya" by Debarati Roy, Sandipan Ray, Mousumi Poddar Sarkar, Dipak Kumar Bhattacharya, **Jayati Bhowal**.

Dr. M.N. Dastur School of Materials Science and Engineering

- **Prof. N. R. Bandyopadhyay**, **Plenary lecture** in 1st International Conference on Engineering Materials and Metallurgical Engineering (ICEMME) during held 22-24th December, 2016 organized by Bangladesh Council of Scientific and Industrial Research (BCSIR) in Dhaka, Bangladesh.
- **Dr. Mallar Ray, Invited lecture** in 1st International Conference on Engineering Materials and Metallurgical Engineering (ICEMME) held during 22-24th December, 2016 organized by Bangladesh Council of Scientific and Industrial Research (BCSIR) in Dhaka, Bangladesh.
- **Arijit Sinha, Invited talk** in the 4th International Conference on Advances in Materials and Materials Processing (ICAMMP-IV) during 5-7th November 2016 organized by Department of Metallurgical and Materials Engineering, IIT, Kharagpur.
- **M. Ray, Invited Lecture** at National Institute of Technology, Raipur in the Workshop on Advanced techniques on Materials Characterization, January 22-23, 2016 (Topic: Spectroscopy for beginners)
- **M. Ray, Invited Lecture** at Workshop on Materials Characterization: Principles and Practices, July 25-August 5, 2016, IIEST, Shibpur (Topic: Fundamentals of absorption and emission spectroscopy)
- **Arijit Sinha**, Invited talk in 29th National Convention of Metallurgical and Materials Engineering & National Seminar on Green Technologies for Iron & Steel Production, 30-31st January, 2016, organized by The Institution of Engineers (India), Durgapur. (Topic: Recovery Behaviour of Cryogenic Treated on the Shape Recovery Behavior of Martensitic Ti-Ni Alloy)
- **Arijit Sinha**, Invited talk in 2nd national seminar on "Recent Trends and Future Advancements in Manufacturing Technology (RTFAMT 2016)", 23th April, 2016, organized by Swami Vivekananda Institute of Science and Technology, Kolkata. (Topic: Manufacturing: Correlation between Processing, Property and Performance).
- **Arijit Sinha**, Invited Speaker on "Scratch Testing in the Sub-micron Scale" in Workshop on Materials Characterization: Principles and Practices, July 25-August 5, 2016, IIEST, Shibpur, Howrah, India, Organized by Centre of Excellence (CoE) TEQIP II, Indian Institute of Engineering Science and Technology, Shibpur
- **D. Banerjee**, In The Regime of Technology Where small means large.
- Emerging trends of Advance Science and Humanities for the applications in Technology.*Techno India Batanagar, Batanagar Campus;*22nd April 2016.
- **D. Banerjee**, Carbon Important Nanomaterials. Recent Advances in Materials Science (RAMS-2017).
- **D. Banerjee**, Amorphous Analogue of Crystalline Carbon Nanostructures: Disorder and Defects for the Good. International Conference on Advanced Materials for Power Engineering (ICAMPE-2016).

VLSI

- Prof, Hafizur Rahaman has been invited by Dhaka University, Bangladesh on 13-14 May 2016 and delivered a keynote on "Quantum Circuit Mapping Techniques from Reversible Circuit" at Senate Hall on 13th May 2016.
- Prof. Hafizur Rahaman delivered lecture on Digital Microfluidic Biochips :Design Automation Issues and Scopes for Cyberphysical Application in the UGC Refresher Course on 13 December 2016, Jadavpur University.
- Dr Amritasish Sengupta -Invited speaker, "Two Dimensional Materials for Low Power Electron Devices and Clean Energy Application", Hanse-Wissenschaftskolleg Fellow lecture, held at Delmenhorst, Germany, 29 March, 2017.
- Professor Hafizur Rahaman – Invited speaker , "Digital Microfluidic Biochips:Design Automation issues and scopes for cyberphysicsl application"-at Refresher course on VLSI Design and Nanotechnology: Issues and Challenges ,15th December,2016 at UGC HRD centre, Jadavpur University,Kolkata
- Dr Pranab Roy – Invited Speaker, ", "Digital Microfluidic Biochips: Design Automation issues and scopes for cyberphysicsl application " at Refresher course on VLSI Design and Nanotechnology: Issues and Challenges 15th December,2016 at UGC HRD centre, Jadavpur University ,Kolkata.
- Invited Speaker ,"VLSI Physical Design methodology" - TEQIP seminer on Digital VLSI Design at
- Bankura Unnayani Institute of Engineering TEQIP Seminer.September,2016
- Dr Sudip Ghosh – Invited Speaker at "FACULTY DEVELOPMENT PROGRAMME" jointly organized by United Institute of Technology, Allahabad & Dr. A.P.J. Abdul Kalam Technical University, Lucknow on "INTEGRATED CIRCUITS : DESIGN AND ITS APPLICATIONS" from 11th to 15th JULY 2016.
- Dr Indranil Hatai – Invited Lecture: March 2017 "SOC based Embeded system design" in DIATM, Durgapur, West Bengal
  Invited Lecture: June 2017 "SOC design using Verilog" in MCKV, Lilluah, West Bengal
  Invited Lecture: July 2017 "VLSI System Design" in Vidyasagar University
- Invited Lecture: September TEQIP seminer on Digital VLSI Design at Bankura Unnayani Institute of Engineering TEQIP Seminer.September,2016
- Teaching assistant ship for the NPTEL online course "VLSI Physical Design" in March-April 2017

Centre of Excellence for Green Energy and Sensor System

Dr. Snehangshu Patra:

- VlaamseInstellingvoorTechnologischOnderzoek (VITO), Belgium
- Paul Sabatier University, Toulouse, France
- EMA, Montpellier, France

Dr. R. Bhattacharyya

- Workshop on "VLSI Design & Nanotechnology Issus and challenges" Organized by Dept. of ETCE, Jadavpur university, Kolkata,Nov 28th 2016 "Nanotechnology based Sensing Devices"
- BML Munjal University Gurgaon, Indo-Uk workshop on Thinfilm Devices, 26-07-2016.
- International conference on Solar energy PV, ICSEP-2016,KIIT University, Bhubaneswar, Dec 17th 2016 "Self Cleaning of Solar panels: Various Approaches'.
- NAM workshop on Trends in Solar Energy Generation, Amity University, Dubai,27-29th March,2017."Self-Cleaning of Solar panels: Multidisciplinary Approaches"
- 10th National conference on Solid State Chemistry & Allied Areas, ISCAS 17, DTU,New Delhi, July 1st,2017 "Tailoring Thinfilms for Self Cleaning of Solar Panels"

Industry – Institute Interaction

Civil Engineering

- Co-ordinated Bentley software and STAAD.Pro demonstration program with M/s Bentley in 2016-2017.
- Involved in various Industrial consultancy, testing and inspection work.

Electrical Engineering Department

- Refresher Course for CESC Junior Engineers, held twice during 2016 - 2017.
- Darjeeling Ropeway Fitness, Certification by a group of Experts Civil, Electrical from IIEST, Shibpur.

Earth Sciences

- Department is collaborating with ONGC for drill-site training of student & research work.
- Department collaborating with different opencast and underground mining companies for training of the postgraduate students.
- Faculty members are carrying out different research projects funded by the industrial organizations like ONGC , WBPDCL(mentioned in the "Sponsored Projects").
- Faculty members are involved with consultancy work with industry like Tata Consultancy of Engineers.

Human Resource Management

Participation of HRM Department Faculty Member in Academic and Corporate Activities

- Mentoring Students entrepreneurship Projects
- Offered Course on IPR for M.Sc. Students at Kolkata University as Guest Faculty.
- Served as Member of CII Eastern Region Innovation Task Force
- Participation in Training and Placement meets organised by various industries.

Humanities and Social Sciences

Partha Sarathy Roy

- As per the guidance of Faculty Entrepreneurship Programme of IIESTS, NRDC- IIESTS, supported by Tagore Centre for Green Technology Business Incubation, enrolled in the Incubation Programme for Start-up venture, in the field of Organic Farming .
- Proposed Joint Academic & Research Programme, in the field of Higher Studies pertaining to Rural Development with NIRDPR, Guwahati, Hyderabad

Subhasis Bandyopadhyay

- A project on MSME cluster development in Howrah in association with CMERI, Durgapur is in the pipeline

Mechanical Engineering Department

- The department maintains close liaison with the leading industries and arranges for summer internship and industrial training to the 4^{th} and 6^{th} semester UG students. Also, a visit was organized at Sagardighi Thermal Power Station under WBPDCL for the then final year UG students of the department under the financial assistance from TEQIP-II.

- The department of Mechanical Engineering is collaborating with many organizations like NTPC, DVC, Tata Steel, Honda Motors, Tata Motors, AIR INDIA, Blue Star, Voltas, M.N. Dastur, PWC etc. to arrange for the summer internship and vocational Training of the 4th and 6th Semester undergraduate students.

National Workshop in Recent Advances in Automobile Engineering (RAAE 2016) - ME

Tribology Frontiers Workshop (TFW) 2016 - ME

Metallurgy and Materials Engineering

- *Colorado School of Mines,* Golden, USA
- Tata Steel Limited, Jamshedpur
- IIT, Kharagpur
- IIT, Kanpur
- NML, Jamshedpur
- Jadavpur University
- INSDAG, Kolkata
- Ptof. S. Sadhukhan – an incubate at Tagore Centre for Green Technology Business Incubation Centre (TCGTBI) under IIEST, Shibpur and one of the Directors of COSTEEL Pvt. Ltd. for advanced research and production of coloured stainless steel products.

Industrial Collaboration

- Tata Steel Limited, Jamshedpur

Mining Engineering

Industry personnels are regularly taking classes for our students

The faculty members of the department are regularly delivering lectures at different workshops with industry personnels in places like IIT Kgp.

School of Community Science and Technology

- Corporate Social Responsibility (CSR) project to impart "*Skill development/Vocational Training to the unemployed youth around the locality in Metiabruz, Kolkata*" by Garden Reach Shipbuilders & Engineers Limited (GRSE), Kolkata, a Govt. of India undertaking under the Ministry of Defence. Value: 57.00 lakhs
- A Tripartite MOU with Garden reach Shipbuilders & Engineers Ltd. (GRSE) and Kolkata Police has been signed on 9th June 2014(2014-2017 and extendable to 2 years).

Dr. M.N. Dastur School of Materials Science and Engineering

- **Industry-Institute Interaction:** A MOU has been signed between IIEST-Shibpur and Amersil Ketex Pvt. Ltd., Kharagpur for undertaking research work on Fire-retardant Polymer Jute Composites.

Centre of Excellence for Green Energy and Sensor System

Prof. BibekBandyopadhyay:

- Independent Director: West Bengal Green Energy Development Corporation Ltd. (2014-2017)
- Member of Governing Council: West Bengal Renewable Energy Development Agency. (2014-2016)
- Distinguished Visiting Professor: National Institute of Technology Arunachal Pradesh
- Member Expert Committee: Solar City Program, Ministry of New and Renewable Energy, Govt. of India.
- Member, Project Evaluation Committee of Global Innovation and Technology Alliance (GITA) and Department of Science and Technology, Govt. of India.
- Member Monitoring Committee for Solar Thermal Research Program: Ministry of New and Renewable Energy, Govt. of India.
- Senior Adviser, USAID PACE D Technical Assistance Program.
- Member, Governing Council of Indira Gandhi Technological University for Women, Delhi. (2014-2016)
- Member, Expert Committees, University Grants Commission (2013-2016)
- Member of the Advisory Board: International PV Module Reliability Forum, USA
- Member: Non-Conventional Energy Section of Mechanical Engineering Division of the Bureau of Indian Standards.

New Academic & Research Initiatives

Architecture, Town & Regional Planning

- Visited Industrial Design Centre (IDC), IIT Bombay on June 7-9, 2017, utilising CPDA grant, for reviewing possibilities of opening of Master of Design courses at IIEST Shibpur and to undertake laboratory visit to Bamboo Studios to examine the possibilities of bamboo related collaborative research

Academic Collaboration

- Sapienza University, Rome
- Member: International Editorial Board, Projects For: Series of Publications, Sapienza Universita di Roma
- International External Reviewer Research Development Fund Proposals at Xi'an Jiaotong-Liverpool University (XJTLU), China.

Chemistry

Academic Collaboration: National and International

- Dr. Nikhil R. Jana, Centre for Advanced Materials, Indian Association for the Cultivation of Science, Kolkata
- Dr. Somobrata acharya, Centre for Advanced Materials, Indian Association for the Cultivation of Science, Kolkata
- Dr. Partha P. Parui, Department of Chemistry, Jadavpur University, Kolkata
- Prof. Ryan M. Richards and Dr. Brian J. Trewyn, Department of Chemistry and Geochemistry, Colorado school of Mines, CO, USA
- Dept. of Chemistry, University of Calcutta, Department of Chemistry
- The Chinese University of Hong Kong, People's Republic of China
- School of Chemistry, The University of Nottingham, University Park, England, UK.
- ISOF-CNR, Bologna BO, ITALY
- Department of Organic Chemistry, University of Murcia, Campus de Espinardo, 30100 Murcia, Spain
- Departament de Química, Universitat de les IllesBalears, Crta. De Valldemossa km 7.5, 07122 Palma, Baleares, Spain.
- Dr. BiswaChoudhuryPranab, Scientist,University of California , San Diego,
- Prof. S.Lahiri, SINP,
- Dr. Debmalya Ray, DRDO, Kanpur
- (Prof. UrmiChatterjee, University of Calcutta
- Dr. Ashis Kumar Satpati, BARC, Mumbai,
- Dr. S. Kumar, Central Electrochemical Research Institute (CECRI-CSIR), Karaikudi,
- Dr. Surojit Pande, BITS, Pilani
- Prof. Samir Kumar Pal, *Department of Chemical, Biological and Macromolecular Sciences, S. N. Bose National Centre for Basic Sciences, Kolkata*
- Professor Yauhen A. Straltsou**,** Head of Electrochemistry Department, Department of Chemistry, Belarusian State University (BSU), Minsk, BELARUS,
- Prof. Anatoly I. Kulak**,** Deputy Director of the Institute of General and Inorganic Chemistry, Belarusian National Academy of Sciences (IGIC NASB); Head of the Electrochemistry and Photochemistry Department, Institute of General and Inorganic Chemistry (IGIC NASB), Minsk, BELARUS.
- Paula Brandão, *Departamento de Química*,*CICECO-Instituto de Materiais de Aveiro*,*Universidade de Aveiro, 3810-193 Aveiro, Portugal*
- Bas de Bruin, Homogeneous Catalysis Group, van 't Hoff Institute for Molecular Sciences, University of Amsterdam, Science Park 904, 1098 XHAmsterdam, The Netherlands
- Dr. Parimal Paul (CSIR-Central Salt & Marine Chemicals Research Institute,
- Gijubhai BadhekaMarg, Bhavnagar, Gujarat-364002, INDIA

- Professor H. K. Fun of University of Malaysia
- BIT, Mesra, Ranchi, Jharkhand, India
- CSIR-CGCRI, Kolkata, India
- School of Materials Science, University of New South Wales, Sydney, Australia.
- IIT, Guwahati, India
- Saha Institute of Nuclear Physics, Kolkata, India
- Centre for Renewable Energy, Northeastern University, Boston, USA.

Industrial Collaboration

- MoU was signed between IIEST and Indian Paint Association on April, 2017 with a view to open Industry specific 2 years M.Sc. course in Coating Science and Technology

Earth Sciences

- **Academic Collaboration :** Ongoing research collaboration with Department of Earth Sciences, IIT Kanpur and Department of Geography, Chattyogram University, Bangladesh

Information Technology

Academic Collaboration

- University of Central Florida, Orlando
- University of North Texas, USA
- University of Lincoln, UK
- Indian Institute of Technology, Roorkee
- Indian Institute of Technology, Indore
- National Institute of Technology, Rourkela
- Collaborative work started with ECE Department Northeastern University, USA
- **Dr. Kaushik Roy Chowdhury, Associate Professor,** Northeastern University, USA

Mechanical Engineering

Academic Collaboration

- Prof. P.P. Dey is working in collaboration with CGCRI and has produced Master Degree Thesis with Joint Collaboration.
- Dr. Aritra Ganguly is working with Dr. D.N. Basu of IIT Guwahati which has resulted in publication of two SCI journals during the period.
- Prof. S. Chakrabarti is collaborating with Jadavpur University, Kalyani Government Engineering College, College of Engineering and Management, Kolaghat, Dr. Sudhir Chandra Sur Degree Engineering College, and Heritage Institute of Technology with respect to paper publication, writing of books and supervision of Ph.D. students.
- Also, many of the faculty members are undertaking joint research activities with leading academic institutions like IIT, NIT, Jadavpur University and laboratories of DRDO which result in joint research publications in various reputed international journals.
- Student visits to Sagardighi Thermal Power Plant (STPP) and Purulia Pump Storage Plant (PSPP) were also organized under cooperative arrangements with WBPDCL.

Mining Engineering

- Academic Collaboration MOU with Department of Natural Resources and Mines, Queensland Government, Australia
- Industrial Collaboration : Regular consultancy work is undertaken on industrial problems

Dr. M.N. Dastur School of Materials Science and Engineering

Academic Collaboration:

- **University of Calcutta, Kolkata**
- **CSIR-CGCRI, Kolkata**
- **CSIR-CMERI**
- **SINP, Kolkata**
- **NIT, Durgapur**
- **NIT Warangal**
- **IIT, Khargpur**
- **Mahatma Gandhi University, Kottayam**
- **IPGMER (SSKM Hospital, Kolkata)**
- **IJIRA, Kolkata**
- **NIRJAFT, Kolkata**

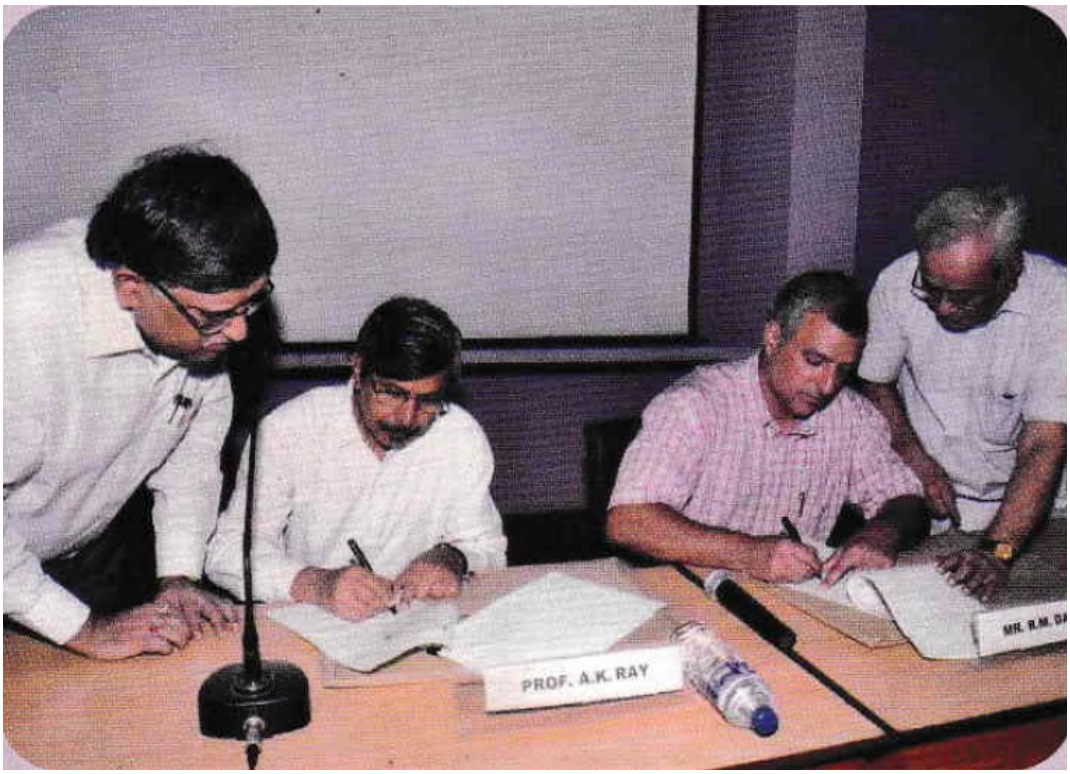
Industrial Collaboration:

School has been awarded for Joint Research Project from DST, SEED Division for research on June Composite in collaboration with industrial partner KE-AMERSIL Pvt. Ltd, Kharagpur.

IIEST-Shibpur and Amer-Sil Ketex Private Limited have signed a Memorandum of Understanding (MoU) on July 12th, 2017 in relation to the industry-institute collaborative research project on development of fire-retardant jute nano-composites currently being undertaken at Dr. M. N. Dastur School of Materials Science and Engineering in IIEST, Shibpur. The Managing Director of Amer-sil Ketex, Mr. SK Roy handed over a cheque of INR 7,03,800/- to the project team from IIEST as first instalment. Amer-sil Ketex will act as an industrial partner by funding 30% (~24 Lakhs) of the total project cost to subsequent development and commercialization of the technology. Rest of the project cost will be funded by Ministry of Textiles, Govt. of India. IIEST faculty members, Prof. S Chatterjee, and Dr. Prosenjit Saha are involved as investigators with this project along with Dr. BC Mitra as technical advisor.

Signing of MoU between Amer-sil Ketex Pvt. Ltd. and IIEST-Shibpur. The project team from IIEST was present at the office of Amer-sil Ketex in Kharagpur

Memorandum of Agreement (**MoA**) between **MNDSMSE**, **BESU, Shibpur (Presently IIEST, Shibpur)** and **M.N.Dastur & Co (P) Ltd, Kolkata was signed** on 10.07.2013 **for continuous research activities in the School.**



Rustam Dastur (CMD), M. N.Dastur & Co. Pvt. Ltd., signing the MOA with the then Vice- Chancellor Prof. Ajay K. Ray for carrying out breakthrough research in Steel Technology

VLSI

Academic Collaboration

- Department Computer Science and Engineering, Duke University, Durham, USA (Research Professor)
- Department Computer Science, University of Bristol, UK (Royal Society Programme)
- Department of Computer Science, University of Bremen, German (DST-DAAD Programme)
- ACM Unit, Indian statistical Institute, Kolkata, India (DST Programme)
- Department of Computer Science and Engineering, IIT Karagpur, India (India Chip Programme, PhD Collaboration)
- Department of Electronics and Communication Engg., IIT Karagpur, India (India Chip Programme)
- Department of Electronics and Communication Engg., IISC., Bangalore, India (India Chip Programme)
- Institute of Radio Physics, Calcutta University, Kolkata, India (Research Collaboration, Clean Room Facility)
- Department of Electronics Science, Calcutta University, Kolkata, India (Research Collaboration, Clean Room Facility)
- Department of Electronics and Communication Engg., National Institute of Technology Durgapur, India (India Chip Programme, Research Collaboration)
- Department of Electronics and Tele-communication Engg., Jadavpur University, Kolkata (India Chip Programme, Research Collaboration)

- Calcutta University, Kolkata (India Chip Programme, Research Collaboration)

Research Initiatives:

- Initiative has been started to establish "Centre of Excellence for Microfluidics and Nanobiosensor Based Applications" in collaboration with IIT Kharagpur and ISI Calcutta under DIT, Nanotechnology Initiative Mission
- Amritasish Sengupta: Added computational study of 2D materials for application in Lithium/ Sodium ion batteries as another area of research during HWK fellowship.
- Initiative has been taken to establish High Voltage Chip fabrication Lab in collaboration with Hiroshima University, Japan (MoU has been signed between Hiroshima University and IIEST Shibpur on 21 November 2017).

Industrial Collaboration

- Sankalp Semiconductors
- ARM India
- VECC (R & D organization)

Centre of Excellence for Green Energy and Sensor System

Details of MOU Signed (2016-2017)

Sl. No.	Name of MOU	Date of commencement
1	IIEST and University of Calcutta	21.06.2017
2	IIEST and BHEL	23.02.2017
3	IIEST and Heritage Institute of Technology, Kolkata	06.12.2016
4	IIEST and NISE	28.09.2016
5	IIEST and AARK DIGITAL PVT LTD	17.01.2017
6	IIEST and National Institute of Technology ,Silchar	02.02.2016
7	IIEST and Synchro Electronics	--
8	IIEST and Vikram Solar	07.11.2016

Academic Collaboration

- SSN Institute, Chennai
- IIT, KGP
- KIIT, Bhubaneswar
- IIIT, Ahmedabad
- IACS, Kolkata
- Jadavpur University
- MSIT College
- ISM, Dhanbad
- Dept of Applied Physics, Calcutta University Submitted joint Project to DST, GOI on OFF-GRID Access to Electricity
- With IIT, KGP and other Institutes as a member of the Consortium for the International collaborative Project "Indo UK CERI".
- Collaboration with VITO, Belgium on "Artificial Photosynthetic Systems",
- NISE
- Aliah University

Industrial Collaboration

- Sova Power Limited , Durgapur
- Agni Power Pvt limited, Kolkata
- Synchro Electronics, Kolkata
- Vikram Solar and WEBSOL for the DSTPhase II Project
- AARK DIGITAL for development of SPV Subsystems
- Oztron Energy Systems, Australia
- Hind Hi Vac. Ltd, Bangalore

Computer Science and Technology

Title: Thought Concentration Controlled Dexterous prosthetic arm for Handicapped. The Patent Office Journal, Kolkata, India,.
Application No - 201631017174, Publication Number: 26/2016 Publication Date: 26 - 06 - 2016.
Name of the Inventors: Biswarup Neogi, Samit Biswas, Bipasha Chakrabarti, Abhijit Das, Sudipta Paul, Sudipta Ghosh, Debasish Kundu, Swati Barui

Metallurgy and Materials Engineering

Sl. No.	Obtained/ Filed	Patent Registered National/ International	Patent Title	Patent Type Product / Process	Patent Number	Patent Grant Year	Institution/ Joint	Joint with Academic Institute/ R&D Institute/ Institute
1.	Obtained	National	A process for combined chemical polishing and etching of plain carbon steels, low alloy steels and cast iron samples - The Gazette of India, February 21, 2004	Process	192123 Application date: 10.04.1997 Application No.: 624/Cal/97	1997	Self	Inventor: Prof Sanjoy Sadhukhan
2.	Obtained	National	Development of microalloyed ultra high strength steel	Product	235705 Application date: 04.04.2007 Application No.: 551/KOL/2007	2007	Patentee: Metal & Steel Factory, Ishapore	One of the inventors is Prof. Dr. Subrata Chatterjee
3.	Applied for	International	Development of Low-Carbon Copper-Bearing Ultra-High-Strength Steels on a Laboratory Scale	Product	NA	NA	Patentee: Colorado School of Mines	One of the inventors is Prof. Dr. Subrata Chatterjee

Centre of Excellence for Green Energy and Sensor System

- HiranmaySaha, Joydip Jana, Abhijit Das. A remote monitoring device for solar photovoltaic systems (Application No.- 201731005209 filed on 14/02/2017).

- HiranmaySaha, HiranmaySamanta, Joydip Jana. A novel P&O MPPT technique based five stage battery charge controller for solar photovoltaic systems (Application No.- 201731018941 filed on 30/05/2017).

- Application No.201631028208 A, Production Of Novel Nano Silicon Nitride Coated Crystalline Silicon Solar Cells With Controllable Reflectivity, Chandan Banerjee, HiranmaySaha, Swapan Kumar Datta, Hemanta Ghosh and SuchismitaMitra.

Technology Developed / Innovations (2016 – 2017)

Department of Architecture, Town & Regional Planning

- Involved in development of bamboo-constructed related technology as a recognition of which selected as an Alternate Member of the Panel for Timber and Bamboo (CED 46:P6) under the National Building Code Sectional Committee, CED 46 since November 2016.

Civil Engineering

Technology Developed and Innovation

- Application of functionalized carbon nanocomposite for removal of dissolve organic matter (DOM) from drinking water.
- Development of model for treatment of pond water to make it suitable in rural areas.
- Indirect photolysis of organoarsenical feed additives - mechanism of transformation.
- Recovery of phosphorus from poultry litter by acid wash followed by lime precipitation method.
- Degradation of herbicide using UV/H_2O_2 and examining the effects of water quality on the degradation process.
- Cationic and anionic surfactant removal by advanced oxidation process and observe the biodegradability of the transformed product.
- Detecting occurrence of antibiotics in wastewater in Howrah city.
- Examining the extent of antibiotic resistance in microorganism in wastewater.
- Manufacturing of nanofiber membrane using electrospun technology.
- In relation to the sediment transport problems in estuaries, radiotracer experiments were performed in sea near Hooghly and hydrodynamic models were developed.
- An innovative design of modular handwashing basins for schools has been developed and installed
- Utilization of Rice husk ash as alternative and effective filler material for the design mix of binder course in flexible pavements.
- Utilization of mixed waste plastic for making polymer modified bitumen
- An efficient fragility analysis procedure in adaptive response surface method framework has been explored for stochastic artificial wind load
- An efficient robust design optimization procedure under uncertainty in adaptive response surface method framework has been explored for stochastic wave load
- Probabilistic Fatigue life assessment of Jubilee bridge, Bandel and a steel bridge near Dumdum, Kolkata, West Bengal, India has been done
- Robust Design Optimization of a railway bridge hollow pier under uncertain-but-bounded type variables has been explored
- Robust Design Optimization of a steel conveyer gallery under uncertainty has been explored
- A new Robust Mix Design Optimization Procedure of Rice Husk Ash based concrete has been developed considering uncertaint
- Development of cost effective hybrid composites
- Study of thermal and moisture degradation of composites

Department of Electrical Engineering

- "**Artificial Neural Network Based Adaptive Over-Current Relay**", **Inventors**: Dr. Paramita Chattopadhyay, Dr. PratyayKonar, Mr. SubhrajitMitra, **File. No.**: 201731019385, **Filing Date**: 02/06/2017

- "**High Performing Transformer Oil Nano Fluid** ", **Inventors**: Dr. Paramita Chattopadhyay, Dr. Kalyan Kr. Chattopadhyay, Ms. M. M. Bhunia (Under Filing)

Humanities and Social Sciences

- Proposed patent for making low-cost Bio-fertilizers.

Dr. M.N. Dastur School of Materials Science and Engineering

- C. Josh and **M. Ray,** "Formation of thin film of luminescent silicon nanocrystals floating on water surface" Under process for Indian patent.

- S. Chowdhury, S. Chatterjee and **M. Ray**, "Light emitting crystalline silicon nanostructures encapsulated in a solid block of polymer" Under process for Indian Patent.

Centre of Excellence for Green Energy and Sensor System

- Successfully fabricated MEMS Microheater based LPG Sensor and demonstrated to DST, GOI appointed Review committee consisting of eminent and distinguished scientists of India at DST_CSIR Sensor Hub at CGCRI, Kolkata (probably 1st time in India such demonstration).
- Data logging and Remote Monitoring Unit for Solar PV Systems in open platform
- High Efficiency MPPT Charger for SPV System

Visitors to the Departments of IIEST, Shibpur (Indian & Foreign)

Architecture, Town & Regional Planning

- Dr. Anil Roy, Faculty of Planning, CEPT University, Ahmedabad
- Ms. Ahana Ghosh, Indian Institute of Human Settlements, Bangalore
- Prof. Soumyen Bandyopadhyay, School of Architecture, University of Liverpool

Chemistry

- Professor Goverdhan Mehta, FNA, FRS, University Distinguish Professor & Dr. Kallam Anji Reddy Chair, School of Chemistry, University of Hyderabad.
- Mr. Olaf Iversen, Consul General of German Embassy in Kolkata visited on 08-06-2017 for the official handover of the FTIR Spectrophotometer funded by Alexander von Humboldt Foundation, Germany to Dr. Mrinal Kanti Bera, Assistant Professor (FRP), Department of Chemistry, IIEST, Shibpur.
- Dr. Avijit Paul, Department of Chemistry, NIT, Kuruskhetra.

Computer Science and Technology

1. Somenath Chakraborty from Mentor Graphics Kolkata delivered a technical talk on - "*EDA design flow and compilation of Hardware Languages*".
2. Kanad Priya Basu from Occidental College, Los Angeles delivered a technical talk on - "Earthquake Modeling with Local Regression Process".

Electrical Engineering

Name of Visitor	Designation	Institute	Foreign/ Indian	Purpose of visit
Prof. Akhtar Kalam	Professor, Leader, Smart Energy Research Unit	Victoria University, Melbourne, Australia	Foreign	To deliver a talk on Smart Grid
Mr. Surajit Banerjee	Senior Manager	ERLDC, POSOCO, A Govt. of India Undertaking	Indian	To deliver a talk on Phasor Measurment Unit Deployment in Indian Utilities
Professor Saifur Rahaman,	President-elect IEEE PES, Joseph Loring Professor and Director,	VT Advanced Research Institute, USA	Foreign	lecture on " Role of Smart Buildings in the Development of a Smart City "

Humanities and Social Sciences

Dr. Alan Spector, Professor of Behavioural Sciences, Purdue University, Northwest, 2015, 2016
Dr. Subhasis Mukhopadhyay, Associate Professor (Retd .) of Biophysics, Calcutta University, 2016
Dr. Pradosh Nath, Chief Scientist (Retd.), NISTADS, 2016
Soumya Sen Sharma, Sr. Scientist, CMERI, 2016
Dr. Partha Protim Chattopadhyay, Director, NIFFT, 2016
Dr. Bula Bhadra, Professor of Sociology at C.U. 2016-17

Information Technology

- Prof. Swadesh De, IIT Delhi, Delivered lecture on the short term courseon Advanced Wireless Sensor Network, on 29th September 2016.
- Prof. Robert Wille, Professor and Head, Department for Integrated Circuit and System Design, Johannes Kepler University Linz, Austria during 17-19 December 2016
- Prof. KrishnenduChakraborty, IEEE Fellow, Duke University, USA visited during 25 July - 05August 2016.
- Dr Deepayan Bhowmik, Dept. of Computing at Sheffield Hallam University, UK, January, 2017.

Mechanical Engineering

- Dr. Lakshman Hazra Engineering Manager, KPIT Technologies Limited Japan delivered a talk on "Higher studies and internship scope in Japan" in the Conference Hall of the department on 6th January 2017.
- Mr. Goutam Ganguly Former Deputy General Manager DPL visited the Department and gave a lecture on power plant on 7th September 2016.

Metallurgy and Materials Engineering

Dr. Manish Ray – DMRL, Hyderabad, as INAE-AICTE Professor
Dr. Jayanta Kr. Saha – INSDAG, as INAE-AICTE Professor
Mr. Keith Dicks-Application Expert, Oxford Instruments, UK - to train in newly purchased and installed FEG SEM system attached with EDS and EBSD facility as well as to deliver lecture on the occasion on Regional EBSD Workshop-Kolkata held on 30th June, 2016 jointly organized by Oxford Instruments India Pvt. Ltd. and Department of Metallurgy and Materials Engineering, IIEST, Shibpur.

Physics

- **Seminar/Lecture** on "*Are there quantum limits to diffusion in quantum many-body systems?*" by *Dr. Nandan Pakhira*, School of Mathematics & Physics, The University of Queensland, Australia, on 26th April (2016).
- **Lecture** on "*Higgs Boson Physics and Silicon Detector Development at the CMS Experiment" Dr. Somnath Choudhury*, Indian Institute of Science, Bangalore, on 24th May (2016).
- **Workshop** on "***National Graduate Physics Examination (NGPE)-Part C*** " in collaboration with *Indian Association of Physics Teachers (IAPT),* during 9th & 10th June 2016.
- **Seminar/Lecture** on "*Are there quantum limits to diffusion in quantum many-body systems?*" by *Dr. Nandan Pakhira*, School of Mathematics & Physics, The University of Queensland, Australia, on 26th April (2016).
- **Lecture** on "*Higgs Boson Physics and Silicon Detector Development at the CMS Experiment" by Dr. Somnath Choudhury*, Indian Institute of Science, Bangalore, on 24th May (2016).
- **Workshop** on "***National Graduate Physics Examination (NGPE)-Part C***" in collaboration with *Indian Association of Physics Teachers (IAPT),* during 9th & 10th June 2016.
- Professor Surajit Sen, Senior Fulbright Fellow Department of Physics, State University of New York, Buffalo, USA

Dr. M.N. Dastur School of Materials Science and Engineering

- **Dr. Kuruvilla Joseph**, Sr. Professor and Dean (SA), Department of Chemistry, Indian Institute of Space Science and Technology (IIST), Department of Space, Government of India Thiruvananthapuram.
- **Dr. Bidhan Pramanick**, Bio-MEMS Laboratory, Dept. of Mechanical and Aerospace Engineering, UC Irvine, CA and Postdoctoral Research Investigator, School of Engineering and Science, ITESM, **Mexico.**
- **Prof. Debes Bhattacharyya**, Distinguished Professor, The University of Auckland, New Zealand.
- **Dr. Sri Bandyopadhyay,** Senior Visiting Fellow, School of Materials Science and Engineering, University of New South Wales, Sydney, Australia

VLSI

- The University has been privileged to receive a good number of important visitors both from India and abroad. Following illustrious visitors have visited the School of VLSI Technology.
- Prof. Kaushik Roy, Edward G. Tiedemann Jr. Distinguished Professor of Electrical and Computer Engineering, Purdue University, School of Electrical and Computer Engineering, USA.
- Prof. Krishnendu Chakrabarty, William H. Younger Distinguished Professor of Engineering, Department of Electrical and Computer Engineering, Executive Director of Graduate Studies (Electrical and Computer Engineering), Duke University, Durham, NC,USA.
- Prof. Bhargab B. Bhattacharya, ISI, Kolkata.
- Prof. Santanu Mahapatra ,IISc,Bangalore.
- Dr.Indranil Chatterjee, Radiation Scientist, Airbus, USA.
- Prof. Mitiko Miura Mattaush, Professor, Hiroshima University.
- Dr. Arup Bhattacharya, Former Scientist, IBM, USA

Centre of Excellence for Green Energy and Sensor System

Sl.No.	Name of the visitor	Institute/ Company	Contact
1.	Prof. Vikram Kumar	Emeritus Professor, IITD	Vikram Kumar <vkmr47@gmail.com>
2.	Dr. Rajiv Sharma	Senior Advisor, DST	Rajiv.dst@nic.in
3.	Dr. Sanjay Bajpai	Senior Advisor, DST	sbajpai@nic.in
4.	Dr. Vineet Saini	Scientist D , DST	vineet.saini@nic.in
5.	Prof. Subhendu Guha	Ex. Chairman, United Solar, USA	subhenduguha01@gmail.com
6.	Dr. B. Bhargava	ONGC	Bharat Bhargava <bhargavabh@gmail.com>
7.	Dr. Sudip Bhattacharya	Consultant, NISE	<sudipbhattacharya54@gmail.com>
8.	Prof. J. K. Rath	IITM	jkr@iitm.ac.in
9.	Prof. V. K. Jain	Amity University	vkjain@amity.edu
10.	Prof. J.N. Roy	IITKGP	jnroy@atdc.iitkgp.ernet.in
11.	Dr. PrabirKantiBasu	IITB	<prabirbasu@iitb.ac.in>
12.	Dr. Kunal Ghosh	IIT Mundee	kunalghosh.mandi@gmail.com
13.	Dr. B. R. Singh	IIIT Allahabad	
14.	Mr. C.M.S Rauthan	NPL	cms.rauthan@nplindia.org
15.	Prof. Vamsi Krishna	IITD	vamsi@ces.iitd.ac.in
16.	Dr. Anil Kumar	CSIR_CEERI-Pilani	akumar1758@yahoo.co.in
17.	Dr. Sanjay Srivastava	NPL	srivassk@nplindia.org
18.	Prof. P. Ramsamy	SSN	ramasamyp@ssn.edu.in
19.	Dr. Sushil Kumar	NPL	skumar@mail.nplindia.ernet.in skumar@nplindia.org
20.	Mr. Avinash Hiranandani (MD)	Renewsys	avinash.hira@renewsysindia.com
21.	Dr. Kastuv Chakrabarty	Lanco Solar	kaustuv.chakrabarty@lancogroup.com
22.	Dr. A.K. Saxena	BHEL_ASSCP	aksaxena@bhel.in
23.	Dr. S. P.Singh	BHEL-Asscp	spsinghin@gmail.com
24.	Dr. S. R. Reddy	BHEL-Asscp	SANGALA RAGHUNATH Reddy <sangalaraghunath@gmail.com>
25.	Dr. Ivan Saha	VIKRAM SOLAR	ivan.saha@vikramsolar.com
26.	Dr. Vandana	NPL	vandana1@nplindia.org
27.	Dr.Mukul Das	ISM, Dhanbad	das_mkdas@yahoo.co.in
28.	Dr S.Mahato	SINP, Kolkatta	som.phy.ism@gmail.com
29.	Dr. A. De	NITTTR, Kolkatta	anuradhade52@yahoo.com
30.	Dr D. Sararngi	Vikram Solar (ex)	debajyoti.sarangi@gmail.com

General Facilities & Services

Ramanujan Central Library

Preamble

The Institute library has the distinction of being one of the oldest and largest resourceful technical libraries in the eastern India. The library not only caters to the basic information needs of faculty members, research scholars and students of this Institute but also provides information and documentation services to researchers of neighbouring universities and research institutes. The Library is open from 9.00 A.M. to 10.30 P.M. from Mondays to Fridays and 10.00 A.M. to 6.30 P.M. on Saturdays and Sundays. The library provides open access services for books and other documents to its members including students.

Collection

During the period under review 4,903 books were added in the library collection. The number of books and other documents issued to the members in the above period is 40,798. The library boasts of having a good collection of old and rare books and bound journals of the nineteenth century.

Computerization

The library has already computerized its entire housekeeping operations and now offered services through the integrated library management system – LibSys4 and introduced system generated bar-coded membership card with photograph for speedy charging and discharging of books. The library is providing online search facilities (WebOPAC) of its collection through the website of the Institute for remote access. The library has strengthened its electronic reading room services by setting up a digital library with 48 desktop computers from TEQIP II funding. Library is already upgrades its main server and integrated library management software, introduced electronic surveillance system (CCTV) and in the process of introducing Attendance Management System and RFID based charging and discharging system for better collection management and efficient services to its members.

Services offered

- Web based library services
- Access to electronic resources
- Lending Service
- Reading Room Service
- Reference Service
- Digital Question Papers Access Service
- Inter Library Loan Service
- Plagiarism Checking Service
- Institutional Digital Repository Service
- Services to Alumni and distinguished visitors

Electronic Resources

The facilities in the Library have been significantly improved by the way of introducing scholarly electronic resources. The access of e-resources – *ASCE Journals, ASME Journals, IEL Online, American Chemical Society (ACS), American Institute of Physics (AIP), American Physical Society (APS)*, *Royal Society of Chemistry (RSC), Springer Link, Taylor & Francis Journals*, *JSTOR, Economic and Political Weekly, and ISID* database available through the E-SHODH SINDHU Consortium is continued. The subscription of seven subject collections (namely, Chemistry; Computer Science; Earth and Planetary Sciences; Engineering; Physics and Astronomy; Materials Science; and Mathematics) of Elsevier's *Science Direct* database is also continued.

Bibliographical Services

The library is subscribing three bibliographical databases, namely Indian Citation Index, Scopus and Web of Science (1965 to present) for providing reference and citation services to its users. The library staff members make the users aware about pros and cons of these online citation and bibliography services and help them in using these tools.

Participation in Seminars/Conferences/Training Programmes

Dr. H.P. Sharma, Librarian (Actg.) and Sri Indrajit Ghosh, Information and Data Entry Assistant (Contractual) has participated in the Regional Workshop on Institutional Digital Repository for National Digital Library (NDL) of India Project (under NMEICT, Ministry of Human Resource Development, Government of India) held at Central Library, University of Calcutta, Kolkata during March 10-11, 2017.
Sri Indrajit Ghosh, Information and Data Entry Assistant (Contractual) has participated in the National Workshop on Open Source Software for Library Management (OSSLM-2016) held at Central Library, IIT Kharagpur during June 13-18, 2016.

Central Workshop

The Central Workshop was developed as a core facility, to carry out practical classes and mechanical fabrication works as and when required. Down the years, the Workshop underwent changes in character as well as in the place it occupied in the perception of the people it was meant to serve, yet it continues to serve a large cross-section of this Institute. A basic training in central workshops satisfies the requirement for all streams of engineering during their first or second semester Second year mechanical engineering, aerospace students; attend the machine shop practice class in workshop.

Workshop extends its facilities to the UG and PG students to carry out fabrication work of their projects and research activities of PhD students.

The workshop has following well equipped shops: Machine Shop, forging & Welding Shop, Fitting Shop, Electrical Shop, Carpentry Shop. All shops are well equipped with latest machinery, material and equipment.

Apart from conventional machines like lathe, milling, shaper, drilling, grinding etc machine shop under central workshop has CNC machining center, CNC Milling with ATC, Center-less grinding Machine, Universal milling machine with retrofit. The central workshop is headed by Superintendent of Workshop.

VISION

In the present age when science and technology form the backbone of industry, a technocrat is expected to acquire greater level of skills and knowledge. He has to confront the complexities of competitive manufacturing and very fast development in the design of machinery and innovations in production methods. Engineering curriculum should therefore conform to the above need effectively. The main purpose of an engineering workshop is to provide the basic working knowledge of the production and the properties of different material used in industry and to appraise the students of basics and applications of various types of tools, equipments, machinery and techniques used in manufacturing to facilitate shaping of these materials into useful products and components.

The central workshop should provide a good theoretical background as well as sound practical hands on practice to a student. The objective of the central workshop is to expose students to basics of manufacturing as it plays a direct role in improvement of quality of human life and creating wealth for the nation. This knowledge is highly essential for pragmatic supervision and control of productive operations in future life
It covers:

- Importance of manufacturing
- Relation between materials and manufacturing
- An overview of manufacturing processes
- Product manufacturing
- Importance of product assembly and inspection
- An overview of manufacturing planning
- Manufacturing automation and computer aided manufacturing for industry.

Computer Center

BACKGROUND

The Centre had its modest beginning in 1976 in the premises of the Electrical Engineering Department with a TDC-316 machine operated through punched cards. In 1992, the centre became a separate central computing facility, complete with servers and networked computers, on two floors of the block III of the main administrative building. Presently the Computer Centre has been temporarily located at the second floor of A. K. Seal Hall for a short period. The centre is under the process of rennovation and very soon it will be shifted to the new Technology building near the main administrative building, to provide adequate regular computing infrastructure, as well as high performnace computing facilities for the students, research scholars, faculty members and staffs.

RESOURCES / FACILITIES

At present, in its temporary location, the centre primarily caters for the computing needs of UG curriculum. There are two laboratories: Laboratory-I and Laboratory-II, each equipped with 30 nos. of Pentium 4 pcs. These are connected through LAN to a central server. The pcs are provided with Internet facilities also.

HARDWARE

- 2 nos HP Prolient DL145 Rack Server
- HP Blade Centre
- 150 nos of Desktop PC
- 3 nos Laser Printer
- Scanner
- Multi Utility Print/Scan/Copier
- Wallmount Projector
- Internet Gateway Server

SOFTWARE

- OS: Redhat Linux, Windows XP
- Compilers : GNU compilers for C/ C++ and Java

SHORT-TERM COURSES/TRAINING PROGRAMS

The centre offers short-term courses for students on programming, as well as basic computer training programmes for staff.

Sophisticated Analytical Test Facility (SAIF)

The Sophisticated Analytical Instruments Facility (SAIF), formerly known as RSIC, is established by Department of Science and Technology (DST). The purpose of establishing this center is to provide data collection facility from sophisticated analytical equipments to scientific communities for their advanced research by paying nominal charges. The SAIF centre at IIEST Shibpur has started on 2016. To start with, three major instruments namely, Single Crystal X-ray Diffractometer, NMR, and High Resolution Mass Spectrometer have been approved by DST for the SAIF centre at IIEST Shibpur. The Single Crystal X-ray Diffractometer has already been installed at IIESTS and operational.

Data collection facility: To provide data collection facility to the samples received from different Institutes/Universities/National Labs/Colleges/Industries other than IIESTS.

Develop Capabilty: To acquire and develop capability for preventive maintenance and repair of sophisticated instruments.

Short term Course: To organize short term courses/workshops on the use and application of various instruments and analytical techniques.

Training: To train technicians for maintenance and operation of sophisticated instruments to undertake design and development of instruments/accessories of existing instruments.

HOSPITAL

The Institute has a hospital to cater to the needs of the campus inmates with medical officers and other supporting staffs. It provides 24 hours ambulance service. Besides, the hospital has an ID Ward to effectively isolate students suffering from infectious diseases such as chicken pox, mumps, measles etc. Outdoor treatment is available in two shifts: morning and afternoon except Saturday afternoon, Sunday and holidays. Serious cases are generally referred/ transferred either to any city hospital or to the Students' Health Home, Kolkata, and the institute having Universal Membership for the later. The Institute has also initiated Contributory Medical Scheme from September 2015 for the benefit of its employees and their dependents. The medical unit has a very important role for smooth running of this medical scheme.

Medical Officers:

1. Dr. Rubi Golder: 9433805865
2. Dr. Rabi Dulal Pal (Contractual): 9432888023

Dr. Golder is available from Thursday to Saturday and Alternate Wednesday.
Dr. Pal is available from Wednesday afternoon to Saturday morning during OPD hours.
OPD Hours: Morning: 7:30 AM – 10 AM & Afternoon: 4:30 PM – 6:30 PM
Saturday Afternoon and Sunday OPD closed.
For CMS bill related issues (approval) employees and beneficiaries are requested to attend the hospital during OPD hours.

There is a Contributory Medical Scheme (CMS) availble for employees of IIEST Shibpur.

Institute Guest House

The Institute has one Guest House situated inside the Campus having 10 (Ten) Double-bedded A.C. Room and 2 (Two) Single-bedded A.C. Room. There is also an A.C. Lounge. Presently Shri S. N. Datta, Deputy Registrar and Finance Officer (Acting) is the In-charge of the Guest House. The Guest House was started with the generous donations from the alumni of the Institute on 24th November, 1968. After upgradation to Indian Institute of Engineering Science and Technology, Shibpur, a plan has been chalked out for its extension and will be implemented in near future.

Contacts : Indian Institute of Engineering Science and Technology, Shibpur
Institute Guest House
P.O. – Botanic Garden
Howrah – 711 103
Ph. : (033) 2668-2223
E-mail : iiestguesthouse@gmail.com

Banks

In the IIEST Shibpur campus there are three Banks are operating their services namely SBI, UBI and UCO.

INDIAN INSTITUTE OF ENGINEERING SCIENCE AND TECHNOLOGY
SHIBPUR, HOWRAH - 711 103

INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31ST MARCH 2017

Amount in Rupees

Particulars	Schedule	Current Year	Previous Year
INCOME			
Academic Receipts	9	14,98,95,438	12,30,68,263
Grants / Subsidies	10	77,65,52,449	72,72,90,110
Income from Investments	11	2,94,26,934	3,60,03,367
Interest earned	12	90,21,920	71,80,689
Other Income	13	79,43,711	95,27,184
Prior Period Income	14	----	7,13,250
TOTAL (A)		**97,28,40,452**	**90,37,82,863**
EXPENDITURE			
Staff Payments & Benefits (Establishment expenses)	15	62,36,33,006	68,42,50,186
Academic Expenses	16	15,10,93,134	8,67,22,033
Administrative Expenses	17	6,95,34,888	6,17,54,538
Transportation Expenses	18	7,60,857	11,50,836
Repairing & Maintenance	19	1,62,51,625	1,36,18,052
Depreciation		8,38,59,315	5,90,63,374
Finance Costs	20	64,232	68,602
Other Expenses	21	15,17,060	----
Prior Period Expenses	22	14,71,350	34,06,209
TOTAL (B)		**94,81,85,467**	**91,00,33,830**
Balance being excess of Income over Expenditure (A-B)		2,46,54,985	(62,50,967)
Transfer to / from Designated Fund			
Building fund			
Others (specify)			
Balance being Surplus / (Deficit) carried to Capital Fund		**2,46,54,985**	**(62,50,967)**

Significant Accounting Policies	23
Contingent Liabilities and Notes to Accounts	24

Finance Officer Registrar Director

INDIAN INSTITUTE OF ENGINEERING SCIENCE & TECHNOLOTY

SHIBPUR, HOWRAH - 711 103

RECEIPTS AND PAYMENTS ACCOUNTS FOR THE YEAR ENDED 31st MARCH 2017

Amount in Rupees

	RECEIPTS	CURRENT YEAR	PREVIOUS YEAR		PAYMENTS	CURRENT YEAR	PREVIOUS YEAR
I	Opening Balances			I	Expenses		
	a) Cash Balances	28,796	1,91,793		a) Establishment Expenses	62,49,49,776	67,38,39,642
	b) Bank Balances				b) Academic Expenses	14,75,81,890	8,53,26,783
	i. Current Accounts	7,99,75,646	(6,80,90,248)		c) Administrative Expenses	6,98,77,756	6,10,27,154
	ii. Deposit Accounts	58,45,17,307	18,09,37,380		d) Transporatation Expenses	7,60,857	11,50,836
	iii. Savings Accounts	11,81,64,956	10,40,49,748		e) Repairs & Maintenance	1,60,27,775	98,63,336
	iv. Howrah Treasury PF	11,12,74,756	11,94,66,666		f) Prior Period Expenses	----	----
	c) Cheques in hand	----	1,15,98,417		g) Other Expenses	15,17,060	----
II	Grants Received			II	Payments against Earmarked/Endowment Funds	31,88,007	51,70,073
	a) From Govt. of India	99,90,75,000	92,12,25,000				
	b) From State Govt.	----	----	III	Payments againsts Sporsored/Scheme	40,49,44,864	30,03,60,714
	c) Form UGC-Non Plan	----	1,00,00,000				
	d) From Other Sources (Details)	----	----	IV	Payments against Sporsored/Fellowship/ Scholarship	5,30,31,607	3,74,17,852
III	Academy Receipts	14,98,95,438	12,30,68,263	V	Investments and Deposits made		
IV	Receipts against Earmarked /Endowment Funds	4,76,35,628	2,63,16,402		a) Out of Earmerked/ Endowments Funds	6,30,92,321	57,45,000
					b) Out of Own Funds (Investments - Others)	----	----
V	Receipts againsts Sporsored/Scheme	40,92,27,074	31,37,40,449	VI	Term Deposits with Schedule Banks	----	2,57,76,801
VI	Receipts against Sporsored/Fellowship/ Scholarship	2,65,31,042	5,47,89,355	VII	Expenditure on Fixed Assets and Capital Work-in-progress		
VII	Income on Investments from				a) Fixed Assets	9,78,88,082	9,10,04,521
	a) Earmarked/Endowment Funds	15,64,541	9,96,761		b) Capital Works-in-Progress	----	----
	b) Other Investments	1,946	1,946	VIII	Other Payments including Statutory Payments	14,76,30,351	15,89,45,239

..... Contd.

Amount in Rupees

	RECEIPTS	CURRENT YEAR	PREVIOUS YEAR			PAYMENTS	CURRENT YEAR	PREVIOUS YEAR
VIII	Interest Received on				IX	Refunds of Grants	----	----
	a) Bank Deposites	59,11,907	18,80,571					
	b) Loans & Advances	----	----		X	Deposit and Advances	14,76,01,209	7,45,98,010
	c) Savings Bank Accounts	90,21,920	71,80,689					
	d) Provident Fund	3,25,49,271	----		XI	Other Payments (Finance Cost)	64,232	68,602
					XII	Other Payments (Including Prior Period / weite off)	5,306	1,83,36,769
IX	Investments Encashed	----	----		XIII	Adjustment of Opening Deposit Balance	58,45,17,307	----
X	Term Deposit with scheduled Banks encashed and	14,46,71,224	43,40,80,465					
	Term Deposits for earlier years brought into							
	Receipts and Payments Account							
XI	Other Income (Including Prior Period Income)	94,99,725	88,69,855		XIV	Closing Balances		
						a) Cash Balances	6,650	28,796
XII	Deposit and Advances	2,59,40,676	3,59,51,414					
XIII	Miscellaneous Receipts including Statutory Recripts	22,62,71,968	15,11,78,948			b) Bank Balances		
						i. Current Accounts	3,97,72,530	7,99,75,646
XIV	Any Other Receipts (including prior period / write	----	51,58,918			ii. Deposit Accounts	----	58,45,17,307
	back)					iii. Savings Accounts	36,93,56,788	11,81,64,956
						iv. Howrah Treasury PF	20,99,44,453	11,12,74,756
						c) Cheques in hand	----	----
		2,98,17,58,820	2,44,25,92,792				2,98,17,58,820	2,44,25,92,792

Finance Officer Registrar Director

INDIAN INSTITUTE OF ENGINEERING SCIENCE AND TECHNOLOGY
SHIBPUR, HOWRAH - 711 103

BALANCE SHEET AS ON 31ST MARCH 2017

Amount in Rupees

SOURCES OF FUNDS	Schedule		Current Year	Previous Year
CORPUS / CAPITAL FUND	1		1,88,00,58,767	1,58,32,61,798
DESIGNATED / EARMARKED / ENDOWMENT FUNDS	2		20,80,75,556	15,88,19,325
CURRENT LIABILITIES & PROVISIONS	3		47,78,03,895	40,20,86,836
TOTAL			**2,56,59,38,218**	**2,14,41,67,959**

APPLICATION OF FUNDS	Schedule		Current Year	Previous Year
FIXED ASSETS	4		1,10,84,76,927	86,36,63,644
- Tangible Assets		1,09,78,87,134		
- Capital Work in Progress		----		
- Intangible Assets		1,05,89,793		
INVESTMENTS FROM EARMARKED / ENDOWMENT FUNDS	5		24,43,43,520	18,39,48,215
- Long Term		24,43,43,520		
- Short Term		----		
INVESTMENTS - OTHERS	6		1,67,10,155	19,70,33,124
CURRENT ASSETS	7		1,12,24,64,760	78,27,10,691
LOANS, ADVANCES & DEPOSITS	8		7,39,42,855	11,68,12,284
TOTAL			**2,56,59,38,217**	**2,14,41,67,958**

SIGNIFICANT ACCOUNTING POLICIES	23	
CONTINGENT LIABILITIES AND NOTES TO ACCOUNTS	24	

Finance Officer Registrar Director

Separate Audit Report

सत्यमेव जयते

[Confidential]

भारतीय लेखा तथा लेखा-परीक्षा विभाग
महा निदेशक, लेखा-परीक्षा का कार्यालय,
केन्द्रीय, कोलकाता

INDIAN AUDIT AND ACCOUNTS DEPARTMENT
OFFICE OF THE DIRECTOR GENERAL OF AUDIT,
CENTRAL, KOLKATA.

No: OA II (AB)/AR/2016-17/IIEST / 580
Date: 08/03/18

A copy of the Separate Audit Report alongwith Annexure on the accounts of the **Indian Institute of Engineering Science and Technology, Shibpur,** for the year 2016-17 is forwarded to the **Director, Indian Institute of Engineering Science and Technology, Shibpur, P.O.-Botanic Garden, Howrah 711103,** for information and necessary action.

Arrangement may please be made for preparation of Hindi Version of the Separate Audit Report with Annexure at your end and sending the same directly to the Ministry.

It may please be ensured that the Audited Accounts and the Separate Audit Report along with Annexure are placed before the apex body for consideration and adoption before the same are sent to the Government for being placed in Parliament.

Two copies of the printed Annual Report for the year 2013-14 to 2016-17 (both English and Hindi Version) containing the Audited Accounts and the Separate Audit Report along with Annexure, as laid before Parliament, may please be forwarded to this office for necessary action at this end.

Encl.: As stated

08/03/2018
Dy.Director (Inspection)

जि. आई. प्रेस बिल्डिंग, 8 किरण शंकर राय रोड (1म मंजिल), कोलकाता-700001
Govt. of India Press Building. 8, Kiran Sankar Roy Road, Kolkata- 700001
Phone : 2254-0221, (Gram: ACCOUNTCENT) POST BOX: 2699, Fax No.: 033 22135377

Separate Audit Report of the Comptroller & Auditor General of India on the Accounts of the Indian Institute of Engineering Science and Technology, Shibpur, Howrah, for the year ended 31 March 2017

We have audited the attached Balance Sheet of the Indian Institute of Engineering Science and Technology, Shibpur, Howrah, as at 31 March 2017, the Income and Expenditure Account and Receipts and Payments Account for the year ended on that date under Section 19(2) of the Comptroller and Auditor General's (Duties, Powers and Conditions of Service) Act, 1971 read with Section 22(2) of the National Institute of Technology, Science Education and Research (Amendment) Act, 2014. These financial statements are the responsibility of the Institute's Management. Our responsibility is to express an opinion on these financial statements based on our audit.

2. This separate Audit Report contains the comments of the Comptroller and Auditor General of India (CAG) on the accounting treatment only with regard to classification, conformity with the best accounting practices, accounting standards and disclosure norms, etc. Audit observations on financial transactions with regard to compliance with the Law, Rules & Regulations (Propriety and Regularity) and efficiency-cum-performance aspects, etc., if any, are reported through Inspection Reports/CAG's Audit Reports separately.

3. We have conducted our audit in accordance with auditing standards generally accepted in India. These standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatements. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by the Management, as well as evaluating the overall presentation of financial statements. We believe that our audit provides a reasonable basis for our opinion.

4. Based on our audit, we report that:

i. We have obtained all the information and explanations, which to the best of our knowledge and belief were necessary for the purpose of our audit;

ii. The Balance Sheet and Income and Expenditure Account/Receipt and Payment Account dealt with by this report have been drawn up in the format prescribed by the Ministry of Human Resource Development, Government of India vide order No. 29-4/2012-FD dated 17 April 2015.

iii. In our opinion, proper books of accounts and other relevant records have been maintained by the Indian Institute of Engineering Science and Technology, Shibpur, Howrah as required under Section 22(2) of the National Institute of Technology, Science Education and Research (Amendment) Act, 2014 in so far as it appears from our examination of books.

iv. We further report that

Comments on Accounts

A Balance Sheet

1.1 Liabilities

1.1.1 Current Liabilities and Provisions (Schedule-3):₹47.78 crore

The above head was understated by ₹0.48 crore due to non-inclusion of expenditure incurred by Central Public Works Department (CPWD) for various construction works for ₹4.88 crore against release of fund of ₹4.40 crore. This also resulted in understatement of Fixed Assets-Capital Work in Progress (Schedule-4) by ₹0.48 crore.

1.2 Assets

1.2.1 Fixed Assets (Schedule-4): ₹110.85 crore

a) The above head was overstated by ₹2.67 crore due to incorrect inclusion of repair and maintenance charges of ₹2.67 crore under the head 'Building' resulting in overstatement of Corpus/Capital Fund by ₹2.67 crore.

b) The above head was overstated by ₹1.50 crore due to incorrect capitalisation of advance for construction works made to CPWD under the head 'Buildings' amounting to ₹1.50 crore. This also resulted in understatement of Loans, Advances and Deposits (Schedule-8) by ₹1.50 crore.

1.2.2 Current Assets (Schedule-7): ₹112.25 crore

Inclusion of negative cash at bank of ₹0.65 crore in respect of one bank account SBI-31906556458 instead of showing as Book Overdraft under Current Liabilities (Schedule-3), led to understatement of both assets and liabilities by ₹0.65 crore. Despite mention in previous Audit Report, no rectification was done.

1.2.3 Loans, Advances and Deposits (Schedule-8): ₹7.39 crore

a) The above head was understated by ₹2.87 crore due to non-inclusion of receivable amount arising from negative balances of ₹0.15 crore under five Endowment Funds (Schedule-2), ₹0.36 crore under Sponsored Fellowships and Scholarships (Schedule-3b) and ₹2.36 crore under 12 head of accounts of Statutory Liabilities (Schedule-3).

Such violation of Format of Accounts prescribed by MHRD led to the understatement of Designated/Earmarked/Endowment Funds (Schedule-2) by ₹0.15 crore and Current Liabilities and Provision (Schedule-3) by ₹2.72 crore. Despite mention in previous year's Audit Report, no rectification was made.

b) The above head was understated by ₹0.24 crore due to non-inclusion of accrued interest earned from security deposit of ₹0.42 crore kept with the Calcutta Electricity Supply Company Limited (CESC Ltd.) up to end of 31 March 2017. This also resulted in understatement of Corpus Fund by ₹0.24 crore. Despite mention in previous year's Audit Report the Institute had not taken any corrective action.

B. Income and Expenditure Account

2.1 Expenditure

2.1.1 Depreciation (Schedule-4): ₹18.20 crore

The above head was overstated by ₹0.03 crore due to the following:

a) Inclusion of repair and maintenance charges of ₹2.67 crore under the head 'Building' resulting over charge of depreciation @ 2 per cent by ₹0.13 crore.

b) Over charging of depreciation by ₹0.03 crore due to incorrect capitalization of ₹1.5 crore under 'Building' for Eight Storied Ladies Hostel @ 2 per cent.

c) Short charging of depreciation by ₹0.13 crore as electronic journals valued ₹0.43 crore @ 40 per cent depreciation was included under the head 'Library Books and Scientific Journal' @10 per cent depreciation.

The net impact of the above comments is understatement of Excess of Income over Expenditure by an amount of ₹0.03 crore.

C. General

3.1 Though there were 327 gifted books worth ₹0.97 lakh received during the year 2016-17, no disclosure was made in the Notes on Accounts (Schedule-24) or exhibition in Fixed Assets (Schedule-4D).

3.2 Non-accountal of Margin Money of ₹0.97 crore in Deposit Account (Schedule-7) for letter of credit opened for procurement of foreign equipments. This resulted in understatement of above head. Despite mention in previous year's Audit Report the Institute had not taken any corrective action.

3.3 In violation of the format of Accounts prescribed by the MHRD, the Institute had kept cash balance of Earmarked Fund of ₹58.37 lakh in the General Account and exhibited Assets of ₹2022.39 lakh against Earmarked Fund balance of ₹2080.76 lakh (Schedule-2). This resulted in discrepancy of ₹58.37 lakh between Fund balance of Earmarked Fund and Assets created out of Earmarked Fund. Despite mention in previous year's Audit Report the Institute had not taken any corrective action.

3.4 Though there were 65 Endowment Funds valuing ₹10.04 crore as on 31 March 2017, Institute could utilise ₹0.14 crore from 13 No. of Funds. Despite mention in previous year's Audit Report, Institute did not take any proactive measure for utilization of funds.

3.5 Institute had provided depreciation at Written Down Value (WDV) method till 2013-14 as per Companies Act, 1956. However, Institute had started charging of depreciation at Straight Line Method as per the rate prescribed by the MHRD since 2014-15. But, Institute did not disclose the impact of change in the method of charging depreciation in the 'Notes on Accounts'. Thus, audit could not ascertain the actual value of assets as on 31 March 2017 due to change in rate and method of charging of depreciation. Despite mention in previous years' Audit Reports, the Institute did not take any rectificatory measures.

3.6 The Institute was set up in a land measuring 114 acres at Shibpur. Despite mention in previous years' Audit Reports, annual account for the year 2016-17 neither included the value of land in Fixed Assets nor disclosed status of land in the 'Notes on Accounts'.

3.7 Format of Accounts as prescribed by the MHRD regarding payment of retirement benefits envisaged that the same has to be calculated on actuarial basis and suitable provision is to be made and all subsequent payment is to be made from such provisions. Despite mention in previous years' Audit Reports, the Institute did not make provision for retirement benefits based on actuarial method during the year 2016-17.

3.8 The Institute did not provide the annexure that showed the details of Bank Accounts as per the format prescribed by the MHRD.

3.9 Prior Period Expenses (Schedule-22): ₹14.71 lakh

The above head remained understated by an amount of ₹9.91 lakh due to non booking of Hardware Maintenance AMC for the year 2015-16 instead of that entire amount was included under Maintenance of Campus LAN'.

3.10 Inclusion of the amount of ₹17.64 crore as receivable Plan grants from MHRD though there was no sanction from MHRD. Booking of excess expenditure as receivable grant

without having any sanction from the Ministry had also resulted in overstatement of Capital/Corpus Fund by ₹17.64 crore. Despite mention in previous year's Audit Report the Institute had not taken any corrective action.

D. Grants-in-Aid

The Institute is mainly financed from the Government of India. During the year 2016-17, the Institute had received Plan grants of ₹9990.75 lakh (including receivable grants of ₹108.75 lakh of previous year). Out of the total Plan grant, the Institute had utilised ₹9571.51 lakh resulting in an unspent balance of ₹419.24 lakh for the year ended 31 March 2017.

E. Net Effect:

The Net Effect of the comments given in the preceding paragraph is that both the Assets and Liabilities of the Institute was understated by ₹1.57 crore as at 31 March 2017 and Excess of Income over Expenditure was understated by ₹0.03 crore for the year ended 31 March 2017.

F. Management letter

Deficiencies which have not been included in the Audit Report have been brought to the notice of the Director, IIEST Shibpur, through a management letter, issued separately for remedial/corrective action.

v. Subject to our observations in the preceding paragraphs, we report that the Balance Sheet, Income and Expenditure Account and Receipts and Payments Account dealt with by this report are in agreement with the books of accounts.

vi. In our opinion and to the best of our information and according to the explanations given to us, the said financial statements read together with the Accounting Policies and Notes on Accounts, and subject to the significant matters stated above and other matters mentioned in Annexure to this Audit Report, give a true and fair view in conformity with accounting principles generally accepted in India.

a. in so far as it relates to the Balance Sheet, of the state of affairs of the Indian Institute of Engineering Science and Technology, Shibpur as at 31 March 2017 and

b. in so far as it relates to Income and Expenditure Account of the Surplus for the year ended on that date.

For and on behalf of the C&AG of India

8.3.18

Place: Kolkata
Date: 08.02.18

(P.K.Singh)
Director General of Audit
(Central) Kolkata

Annexure

A. Adequacy of Internal Audit System

Internal Auditing System is inadequate due to the following:

1. The Internal Audit wing of the Institute had conducted Internal Audit. But the Internal Audit wing was inadequately staffed. Moreover, Internal Audit Manual was not in use.

B. Adequacy of Internal Control System

Internal Control System is inadequate in the following areas:

1. The Institute had no centralized purchase department.
2. No fidelity bond was taken from employees handling cash and stock.
3. There was no policy for rotation of employees dealing cash, stock and valuables.
4. Identity cards were neither renewed periodically nor got back from the employees at the time of retirement.
5. Cheque protectors were not used in the Institute.

C. System of physical verification of Assets and Inventories.

Institute had not conducted physical verification of Fixed Assets and Inventories for the year ended 31 March 2017. Institute also had not prepared centralized Fixed Assets Register as per GFR-40. Thus, in absence of physical verification report and centralized Fixed Assets Register, audit could not ascertain the value and existence of fixed assets as mentioned in annual accounts for the year ended 31 March 2017. Despite mention in previous year's Audit Report, Institute had not taken any corrective measures.

D Regularity in payment of statutory dues:

The Institute is regular in payment of statutory dues.