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उत्तिष्ठित जाग्रत प्राप्य वरान् निबोधत

INDIAN INSTITUTE OF ENGINEERING SCIENCE AND TECHNOLOGY, SHIBPUR

भारतीय अभियांत्रिकी विज्ञान एवं प्रौद्योगिकी संस्थान, शिवपुर

वार्षिक रिपोर्ट

२०१४ – २०१५

Annual Report 2014-2015

भारतीय अभियांत्रिकी विज्ञान एवं प्रौद्योगिकी संस्थान, शिवपुर

हावड़ा - ७११ १०३

Indian Institute of Engineering Science and Technology (IIEST), Shibpur, Howrah – 711 103

ANNUAL REPORT

2014 – 2015

INDIAN INSTITUTE OF ENGINEERING SCIENCE AND TECHNOLOGY, SHIBPUR

HOWRAH – 711 103

From the Desk of the Director

Professor Ajoy Kumar Ray
Director

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It is a great pleasure for me to bring out the Annual Report of our Institute for the year 2014-15. IIEST, Shibpur started its journey way back in 1856 as the second oldest Engineering Institute of the country but as an Institute of National Importance, it was dedicated to the service of the nation one year back by the Hon'ble President of India. It has been a heartening experience for me to be witness to a rejuvenated Institute where the Academic community are giving full effort to achieve excellence in the sphere of teaching, learning, creation and dissemination of knowledge.

Our Institute has always laid great stress on research activities. Along with quality teaching, the Faculty members are devoting their energy to quality research as well. In the last year, there have been 357 publications in peer reviewed journals. The doctoral programme is gaining momentum and 51 Fellows have been awarded Ph.D degree in the last convocation. The Institute has also witnessed an excellent growth in the number of sponsored research projects in the recent past. At present, research projects worth Rs. 57.63 Crores and consultancy projects worth Rs. 13.37 crores are being pursued in different departments.

In keeping with tradition, this year too several faculty members have been lauded and have won recognition for their superior academic performance. To mention a few of them, Prof. Subrata Chakraborty of Civil Engineering has received the ISET V. H. Joshi award for significant contributions in Structural Dynamics, Dr. Chirosree Roychowdhury of Electronics and Telecommunication Engineering has received the Young Scientist Platinum Jubilee award from National Academy of Science and has been elected as Associate Editor of IEEE Sensors journals. Many others like Prof. S. das bit and Prof. J. sil of Computer Science and Technology, Prof. Sudip Kr Chattopadhyay of Chemistry, Dr. Sukanta Das of Information Technology have also received awards and recognitions from various bodies. Many of our Faculty members have attended International conferences, chairing sessions and delivering invited lectures. To name a few: Prof. Subrata Chakraborty presented a paper at the ICVRAM conference at the University of Liverpool, UK, Prof. Hafizur Rahaman delivered a talk at the University of Bremen, Germany and bpresented papers at the International Symposium on Circuits and Systems at Australia, Dr. Sukanta das presented a paper at the International Workshop on Cellular Automata in Japan and also at Krakow, Ploand.

There has been a substantive growth in the number of laboratories and other Infrastructural facilities for academic growth of the Institute. Several existing laboratories have also undergone extensive modifications .Department of Aerospace Engineering and Applied Mechanics has developed a high speed flow laboratory and a propulsion laboratory. Department of Computer Science and Technology has developed a new embedded system laboratory. Department of Physics has developed a Nuclear Physics laboratory. School of Materials Science and Engineering has modernized Nano semiconductor laboratory. All other Departments, schools and Centres are engaged in developing modern laboratories with latest equipments.

The period under review has witnessed a wide range of academic events organized by various Departments that includes a number of National and International seminars and workshops. Eminent personalities like Prof. Sunney I. Chan from Institute of chemistry, Taipei, Prof. Rolf Drechslar and Dr. Robert Willie from University of Bremen, Germany, Dr. F. Banfi from the Department of Mathematics and Physics, University of Cattolica del Sacro Cuore, Italy etc. have visited our Institute and delivered lectures.

Our students have been performing extremely well both in academic as well as in extra curricular activities. Best Ph.D Thesis award was received by Dr. Kamalika Datta of Information Technology at Design Automation and Test in Europe. Sonali Das, Research Associate in the Centre of Excellence for Green Energy and Sensor System has been awarded the prestigious Bhaskara Advanced Solar Energy Fellowship by DST, W. Majilya, S. Bhattacharya and S. Pathak from the Department of Electrical Engineering were awarded the First prize for the best B. Tech thesis by Deity, MCIT. Some of the students have gone abroad to present papers in International Conferences. Soumi Bhattacharya, Senior Research Fellow of Civil engineering visited Trinity College Dublin as visiting researcher; Dibyadyuti Pramanik of Physics Department presented her work at the Euroschool on Exotic Beams at Padova, Italy.

The Institute has always been taking initiatives in social outreach programmes. The School of Community Science and Technology has been involved in a Corporate Social Responsibility scheme of the Government of India with the Garden Reach Shipbuilders and Engineers Ltd. in association with Kolkata Police for imparting Vocational training to the unemployed youth in and around the Garden Reach area of Kolkata. The Equal Opportunity Cell of the Institute has been organizing remedial coaching classes and training for examinations leading to entry into services for students belonging to reserved categories and the non creamy layer of the society.

The process of strengthening the Ramanujan Central Library of the Institute continued throughout the period under review. A detailed plan was prepared for interior design, internal refurbishment, decoration etc was prepared and its execution has started. Access of full text electronic resources including ASCE journals, ASME digital library and IEL online available through INDEST-AICTE Consortium was continued. Access to JSTOR, Institute of Physics and Royal society of Chemistry journals are provided through UGC-INFONET Digital library consortium.

We are also starting new academic initiatives. In the Center of Excellence for Green Energy and Sensor systemsa post graduate course on Renewable Energy science and Technology has been started. A Centre of excellence for Microstructurally Designed Advanced Materials Development has been developed with financial assistance from TEQUIP-II programme.

From the Annual report of various Departments, Schools, Centres and Administrative sections, it is clearly manifested that after being recognized as an Institute of National importance our Institute is consistently moving ahead in all activities at a very fast pace, creating real manpower and thus serving the Nation.

I would like to extend my heartiest thanks and congratulations to all Faculty members, students' officersand staff of the Institute for working together harmoniously towards achieving excellence. My special thanks to the team who worked tirelessly to bring out this Annual Report

(Ajoy Kumar Ray)
Director

Content

Introductory note with a brief history of the University

❖ 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 which 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 become the Civil Engineering Department of the Presidency College and remained attached to it as an adjunct till 1879.

❖ The Civil Engineering College become 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.

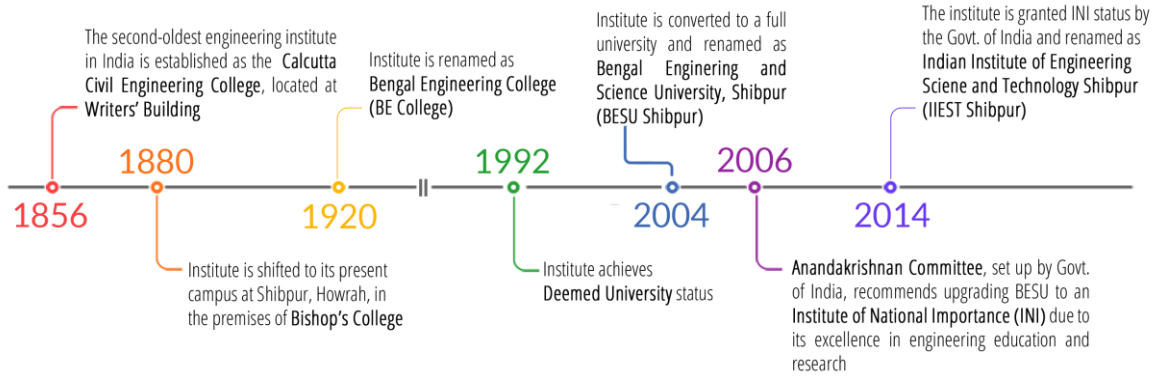
❖ On 18th May 1887, the name was changed to the Civil Engineering College Seebpore, gradually under went changes, namely, first Sibpur and then Shibpur.

❖ 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.

IIEST Shibpur



IIEST Shibpur - history at a glance

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.

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.

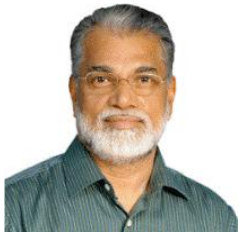
The Second Oldest Engineering College in India

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. 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."

Chairman of the Board of Governers of IIEST, Shibpur



Dr.Kopillil Radhakrishnan is the Chairman of the Board of Governers of IIEST, Shibpur. Dr. Radhakrishnan is an internationally acclaimed scientist and the former Chairman of the Indian Space Research Organization. When India's Mangalyaan successfully settled into Mars Orbit on September 24, 2014, the country became the first and only nation to have done so on its maiden attempt under the leadership of Dr Radhakrishnan, He also has headed several other landmark missions such as the spaceflight of an Indian cryogenic engine, the launch of the heaviest and tallest GSLV Mark II, and the successful reentry of the unmanned crew module. Dr Radhakrishnan is one of the 2014 top ten scientists chosen by the prestigious journal Nature. He was also the recipient of Padma Bhushan in 2014 for his outstanding contribution to the field of space science and technology.

Dr. Radhakrishnan was born on August 29, 1949 at Irinjalakuda, Kerala. He graduated in Electrical Engineering from Kerala University, completed his PGDM from Indian Institute of Management, Bangalore and obtained Doctorate for his thesis titled "Some Strategies for Indian Earth Observation System" from Indian Institute of Technology, Kharagpur. He is a Fellow of Indian National Academy of Science (FNASc), Fellow of Indian National Academy of Engineering (FNAE); Honorary Life Fellow of The Institution of Engineers, India; Honorary Fellow of The Institution of Electrical and Telecommunication Engineers, India; and Member of International Academy of Astronautics.

Starting his career as an Avionics Engineer in Vikram Sarabhai Space Centre, he held several decisive positions in ISRO in the domains of space launch systems, space applications and space programme management. He had commendably held the post of Director, Vikram Sarabhai Space Centre, the lead centre for launch vehicle technology in ISRO and Director, National Remote Sensing Agency. In his brief stint (2000-2005) in the Ministry of Earth Sciences, he had also been the Founder Director of Indian National Centre for Ocean Information Services (INCOIS) and the first Project Director of Indian National Tsunami Warning System. He also held several important positions at the international level including Vice Chairman of Intergovernmental Oceanographic Commission (2001-05), Founder Chairman ofIndian Ocean Global Ocean Observing System (2001-06) and Chairman of the Working Group of the Whole UN-COPUOS STSC (2008-2009).

Since October 2009, Indian Space Programme have carried the signatures of the strong leadership of Dr. Radhakrishnan with focused thrust towards (a) space applications for societal services and national imperatives; (b) creation, management and sustenance capability and capacity for space systems; (d) undertaking new and path-breaking missions (e) development of several critical technologies ; and most importantly (f) ensuring synergy of 16,000 strong ISRO Team with Indian Industry, Academia, User community and several National R&D Laboratories.

Prof. Ajoy Kumar Ray, Director, IIEST, Shibpur

Brief Resume
of
Prof. Ajoy Kumar Ray

Prof. Ajoy Kumar Ray joined Bengal Engineering and Science University, Shibpur as its Vice Chancellor with effect from 01.03.2009. He is also the first Director of Indian Institute of Engineering Science and Technology (IIEST), Shibpur with effect from 4th March, 2014. Currently he is on lien from IIT Kharagpur, where he is a Professor of Electronics and Electrical Communication Engineering and former Head, School of Medical Science and Technology at IIT Kharagpur**.**

As Vice Chancellor of BESU Shibpur, he has brought major transformation of the university, in diverse areas of academics – education, research, sponsored research and many outreach programs.

Prof. Ray had his Bachelor's degree from Bengal Engineering College, Shibpur, followed by M.Tech and Ph.D from Electronics and Electrical Communication Engineering Department of IIT Kharagpur. He joined IIT Kharagpur as a Faculty member in 1980.

He has successfully completed more than twenty research projects, sponsored by several agencies, like Defence Research & Development Organization, Department of Atomic Energy, Department of Science and Technology and so on. He has also worked on several consultancy projects of multinational and national industries. Prof. Ray was the Principal Investigator of research projects, sponsored by Intel Corporation during 1997 – 2004. During the course of this research project, Prof. Ray was the co inventor of six US patents jointly with Intel Corporation. Prof. Ray was the Chief Investigator of a number of Medical Imaging projects sponsored by Texas Instruments at the School of Medical Science and Technology at IIT Kharagpur. As a part of this project, he, along with other team members have filed six USA patents jointly with Texas Instruments.

Prof. Ray was associated with the University of Southampton as Senior Research Fellow during 1989-90 and led the research group on 'Image and Video Processing' of Avisere Inc., USA during 2004-2005.

He has co-authored about 150 research papers in International journals and International Conferences. He has authored five books published by International Publishing Houses, such as John Wiley, Tata McGraw Hill, Prentice Hall of India and Taylor and Francis Publication, including one in Chinese.

In addition, under his leadership, his group in the School of Medical Science and Technology has initiated a number of medical projects on 'Molecular Imaging' and Image Processing, Medical Instrumentation, etc. Prof. Ray is the Fellow and Member of many professional bodies and is involved with a large number of Universities in various academic bodies.

He has been associated with Nehru Museum of Science and Technology, IIT Kharagpur as Secretary and Chairman from 1991 – 2006.

His current research interest includes Medical Imaging and Image Processing, Pattern Recognition and Machine Intelligence.

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Prof. Hafizur Rahman Professor, Department of Information Technology Director, School of VLSI Technology	Member	Department of Information Technology IIEST Shibpur, Howrah – 711103 Email: rahaman_h@yahoo.co.in, rahaman_h@it.becs.ac.in
Prof. Santi Prasad Maity Professor, Department of Information Technology	Member	Department of Information Technology IIEST Shibpur, Howrah – 711103 email: spmaity@yahoo.com , santipmaity@it.becs.ac.in Phone: 033-26686151
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Prof. Binayak S. Choudhury Professor, Mathematics Department Dean of Faculty Council for Post graduate studies in Basic and Applied Sciences	Member	Department of Mathematics, IIEST Shibpur, Howrah – 711103 Ph. 033-26684561 to 63 (ext- 525) Email: binayak12@yahoo.co.in, binayak@math.becs.ac.in
Prof. Jagabandhu De Professor and Head, Mathematics Department	Member	Department of Mathematics, IIEST Shibpur, Howrah – 711103 Ph. 033-26684561 to 63 (ext- 219) Email: jagabandhu_de@yahoo.com

Prof. Guruprasad Samanta Professor, Department of Mathematics	Member	Department of Mathematics, IIEST Shibpur, Howrah – 711103 Email: g_p_samanta@yahoo.co.uk
Prof. Murari Mitra Professor, Mathematics Department	Member	Department of Mathematics, IIEST Shibpur, Howrah – 711103 Ph. 033-26684561 to 63 (ext- 219) Email: murarimitra@yahoo.com
Prof. Tapan Kumar Roy Professor, Mathematics Department	Member	Department of Mathematics, IIEST Shibpur, Howrah – 711103 Ph. 033-26684561 to 63 (ext- 526) Email: roy_t_k@yahoo.co.in
Tapan Kumar Kar Professor, Mathematics Department	Member	Department of Mathematics, IIEST Shibpur, Howrah – 711103 Ph. 033-26684561 to 63 (ext- 529) Email: t_k_kar@yahoo.com
Prof. Sanat Kumar Majumder Professor, Mathematics Department	Member	Department of Mathematics, IIEST Shibpur, Howrah – 711103 Ph. 033-26684561 to 63 (ext- 219) Email: majumder_sk@yahoo.co.in
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Prof. Sisir Kumar Guha Professor, Department of Mechanical Engineering	Member	Department of Mechanical Engineering IIEST Shibpur, Howrah – 711103 Ph. 033-26684561 to 63 (ext- 279) Email: sk_guha@rediffmail.com
Prof. Santanu Kumar Karmakar Dean, Alumni Affairs & External Relations Professor, Department of Mechanical Engineering	Member	Department of Mechanical Engineering IIEST Shibpur, Howrah – 711103 Email: skk@mech.iiests.ac.in
Prof. Debasis Datta Professor, Department of Mechanical Engineering	Member	Department of Mechanical Engineering IIEST Shibpur, Howrah – 711103 Ph. 033-26684561 to 63 (ext- 298) Email: ddatta@mech.becs.ac.in
Prof. Sujoy Kumar Saha Professor and Head, Department of Mechanical Engineering	Member	Department of Mechanical Engineering IIEST Shibpur, Howrah – 711103 Ph. 033-26684561 to 63, 2668-0521 to 25 (ext - 780), (M) - 9830493430 Email: sujoy_k_saha@hotmail.com, sujoyks@yahoo.com

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Prof. Chaitali Ray Professor, Department of Civil Engineering Area of work : Structural Engineering)	Member	Department of Civil Engineering IIEST Shibpur, Howrah – 711103 Email : chaitali@civil.becs.ac.in, chaitalirayjana@yahoo.com Ph. No. : +91 33 2668 – 3223 (Extn. :664
Prof. Ambarish Ghosh Professor, Department of Civil Engineering Director, School of Disaster Mitigation Engineering	Member	Department of Civil Engineering IIEST Shibpur, Howrah – 711103 Email: ambarish@civil.becs.ac.in, ghosh1968@yahoo.co.in Ph. No. : 9831286527(M)
Prof. Sudip Kumar Roy Professor, Department of Civil Engineering Director, School of Ecology Infrastructure and Human Settlement Management	Member	Department of Civil Engineering IIEST Shibpur, Howrah – 711103 Email : sudip@civil.becs.ac.in, sudip33172@gmail.com Ph. No. : +91 33 2668 – 4561 to 63 (Extn. :666)
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Debabrata Mazumder Associate Professor, Department of Civil Engineering	Member	Department of Civil Engineering IIEST Shibpur, Howrah – 711103 Email : debabrata@civil.becs.ac.in, dmazumder@hotmail.com Ph. No. : +91 33 2668 – 4561 to 63 (Extn. :654)
Shyamal Kumar Chattopadhyay Member Professor, Department of Chemistry Associate Director, Research Consultancy Cell	Member	Department of Chemistry IIEST Shibpur, Howrah – 711103 Ph. 033-26684561 to 63 (ext- 500) Email: shch20@hotmail.com
Prasanta Kr. Nandi Professor and Head, Department of Chemistry	Member	Department of Chemistry IIEST Shibpur, Howrah – 711103 Phone: 91-33-2668-4561 to 63 (extn.: 512/517) Email: nandi_pk@yahoo.co.in, nandi.prasanta8@gmail.com

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Sudip Kumar Chattopadhyay Associate Dean,Academic Affairs Professor, Department of Chemistry	Member	Department of Chemistry IIEST Shibpur, Howrah – 711103 Email: sudip_chattopadhyay@rediffmail.com, sudip@chem.iiests.ac.in, sudipkchattopadhyay@gmail.com
Amit Kumar Das Professor, Department of Computer Science and Technology	Member	Department of Computer Science and Technology IIEST Shibpur, Howrah – 711103, Ph. 033-26685131 Email: amit@cs.becs.ac.in
Uma Bhattacharya Professor, Department of Computer Science and Technology	Member	Department of Computer Science and Technology IIEST Shibpur, Howrah – 711103, email: ub@cs.becs.ac.in Phone: 26686151
Prof. Pratik Dutta Associate Professor & Head, Department of Mining Engineering	Member	Department of Mining Engineering IIEST Shibpur, Howrah – 711103 Ph. 033-26684561 to 63 (ext- 477) Email: dutta.pratik@gmail.com
Prof. Apurba Kishore Dutta Professor, Department of Mechanical Engineerin	Member	Department of Mechanical Engineering IIEST Shibpur, Howrah – 711103 Ph. 033-26684561 to 63 (ext- 798) Email: apurbakdutta@yahoo.com

Name of Depertments, Centers and Schools, Heads of the Depertments and Professor-in-charge

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. School of Materials Science & Engineering (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)

The Center in the university

1. Computer Centre
2. Video Conferencing Facility
3. Centre of Excellence

Centre of Excellence

1. Health Care Science and Technology
   Coordinator - Professor Jayanta Chakraborty
2. Green Energy and Sensor Systems
   Coordinator - Professor Hiranmoy Saha

Name of the Heads of Departments

1. Aerospace Engineering and Applied Mechanics – Prof. Subhasis Bhaumik
2. Architecture, Town and Regional Planning - Prof. Swati Saha
3. Chemistry - Prof. Prasanta Kumar Nandi
4. Civil Engineering - Prof. Subrata Chakraborty
5. Computer Science & Technology - Prof. Biplab Kumar Sikdar
6. Electrical Engineering - Prof. Jagadish Pal
7. Electronics & Tele Communication – Prof. Santanu Das
8. Earth Sciences - Prof Bhabani Prasad Mukhopadhyay
9. Humanities and Social Sciences - Prof. Mallika Ghosh Sarbadhikary
10. Human Resource Management - Prof. Manas Kumar Sanyal
11. Information Technology - Prof. Arindam Biswas
12. Mathematics - Prof. Jagabandhu De
13. Mechanical Engineering - Prof. Bijan Kumar Mondal
14. Metallurgy And Materials Engineering - Prof. Swarup Kumar Ghosh
15. Mining Engineering - Prof. Pratik Dutta
16. Physics - Prof. Samar Jana

Name of the Directors / Professor-in –charge of Schools

1. Purabi Das School of Information Technology - Prof. Arindam Biswas
2. School of Materials Science & Engineering - Prof. Subrata Chatterjee
3. School of Management Sciences - Prof.Prabir Kumar Paul
4. School of Community Science and Technology - Prof. Sujay Mukherjea
5. School of Disaster Mitigation Engineering - Prof. Ambarish Ghosh
6. School of Ecology, Infrastructure & Human Settlement Management – Prof. Sudip Kumar Roy
7. School of Mechatronics & Robotics –Prof. Debjani Ganguly
8. School of Safety & Occupational Health Engineering - Prof. B.K.Bhattacharya
9. School Of VLSI Technology - Prof. Hafizur Rahman
10. Director of Research and Consultancy – Prof. Subrata Chatterjee

Distinguished Professors who have joined this Institute in recent period:

1. Steel Chair Professor
   Dr. (Prof.) Subir Kumar Bhattacharyya
   Department : Metallurgy And Materials Engineering

2. Bijoy Ashu Chair Professor
   Prof. Madhujit Mukhopadhyay
   Department : Civil Engineering
   Ph. No. : 033 2422 8047 (Ext. No.-371), (M)-9831171782
   e-mail address : mmadhujit@yahoo.com, mmadhujit@gmail.com

3. Honorary Emeritus Scientist
   Prof. Chitta Ranjan Mahata

4. Honorary Distinguished Professor
   Prof. Amitabha Ghosh
   Former Director, IIT Kharagpur,
   Senior Scientist, Indian National Science Academy, BESUS and Honorary Distinguished Professor, IIT Kanpur
   Ph. No.: (O)- 033 2668 0521 (Ext. No.-441), (R)-2668 2424
   e-mail address : amitabha@iitk.ac.in

5. Honorary Distinguished Professor
   Prof. Asok Kumar Mallik
   Former Professor, IIT Kanpur

6. Metalogic Systems Emeritus Chair of the Centre of Excellence-in memory of Professor Sankar Sebak Baral
   Prof. Hiranmoy Saha

7. Prof. C.R. Mahata
   Honorary Emeritus Scientist, BESUS

8. Dr. Nikhilesh Bandyopadhyay
   Former HOD, Coated Product Group, Tata Steel, Jamshedpur
   As Tata Steel Chair Professor, Dept. of Matellurgy and Materials Engineering, BESUS

9. Prof. Sabyasachi Sarkar
   Former Professor of Chemistry, IIT, Kanpur
   As Honorary Emeritus Professor, BESUS

10. Dr. Dipankar Chakraborty
    Former Professor and HOD, Dept. of Electronic and Telecommunication Engineering, BESUS
    As Adjunct Professor, Centre for Health Care Science and Technology

11. Prof. Shankar lall Maskara
    Former HOD, Dept. of E & TC, IIT, Kharagpur
    As Adjunct Professor, Department of E & TC , BESUS

12. Prof. Achintya Haldar
    Professor of Civil Engineering and EM & da Vinci Fellow
    University of Arizona, Tuscon, USA
    As Honorary Distinguished Visiting Professor of BESUS

13. Prof. Srikumar Mallick
    Former HoD of Electrical Engineering
    As Adjunct Professor of Electrical Engineering Department of BESUS

14. Prof. U. K. Chatterjee
    As Adjunct Professor, Department of Metallurgy and Materials Engineering of BESUS

15. Prof. Jayanta Kumar Chakraborty
    Former Professor of AE & AM, BESUS
    As Adjunct Professor, Centre for Health Care Science and Technology

16. Dr. S. P. Gon Chaudhuri
    Former Director of Institute of Cultivation of Science
    As Adjunct Professor of CEGESS, BESUS

Professor-in-Charge

1. International Relations and Alumni Affairs of the University : Prof. Santanu Karmakar
2. Computer Networking : Prof. Manas Hira
3. Library : Prof. Sudip Kumar Chattopadhyay
4. Furniture: Prof. Sudipta Mukhopadhyay
5. Internal Quality Assurance Cell : Professor Indra Nath Sinha

Administration

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Prof. Ajoy Kumar Ray
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Registrar
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University Engineer
Shri Subrata Kar
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Shri Usha Shankar Bhattacharyya
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Assistant Librarian
Shri Sushil Kumar Barman
Ph. No.- 91-33-2668-4561,(extn. no.-291)
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Assistant Controller
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Department of Aerospace Engineering & Applied Mechanics

About the department

The department of Applied Mechanics was established as a separate major engineering department in 1947 and subsequently the Drawing Section was attached to it in late fifties. Over the years the department garnered enough human resources in the areas of fluid mechanics and structures. With effect from 2008 the department has been renamed as the Department of Aerospace Engineering and Applied Mechanics. The department runs regular postgraduate programme in engineering mechanics and started undergraduate programme in Aerospace Engineering from academic session 2010 – 11 with an intake of 30 students.

Academic Programmes :

Undergraduate Level :
Degree offered : B.E. in Aerospace Engineering
Sanctioned students intake : 30
Additional intake through lateral entry : Nil.

Postgraduate Level :
Degree offered : M.E. in Engineering Mechanics
Sanctioned students intake : 54
Additional intake through other programmes : Nil.
Specializations in : Mechanics of Solid & Mechanics of Fluid.

Doctoral Level :
Degree offered : Ph.D.
No. of candidates enrolled : 12
Registered : 03 in 1st year
02 in 2nd year
04 in 3rd year
03 in pre-submission stage

Faculty position: Sanctioned faculty post: 27 Vacant post: 11

Name	Designation	Highest Qualification	Specialization/ Research Area	Contact No./ E-mail
Dr. S. Bhaumik	Professor & Head	Ph.D.	Robotics, Mechatronics, Fluid Power System, CAD/CAM, Automation	9836044278 sbhaumik_besu@yahoo.co.in, subhasis@aero.iiests.ac.in
Dr. B.N. Datta	Professor (Re-employed)	Ph.D.	FM, Hyd. Machines, FPE	2668-9782 bndatta2004@yahoo.com
Dr. S.K. Mukherjea	Professor	Ph.D.	FM, CFD	9831209985 mksujay@gmail.com mksujay@lycos.com skmukherjea@appmech.becs.ac.in

Dr. S. Halder	Professor	Ph.D.	Solid Mech., FEM	9830671153 salilhaldar@lycos.com
Dr. A.K. Bhattacharya	Associate Professor	Ph.D.	Hyd., Water Resources Engg.	9831046091 amartyakumar@yahoo.co.in
Dr. B. Bhattacharyya	Associate Professor	Ph.D.	Numerical Methods, Biomech.	9433235720 basubec@yahoo.com
Dr. M.C. Manna	Associate Professor	Ph.D.	Vibration, Dynamics	9433228694 mcmbecdu@lycos.com
Dr. A. Roychowdhury	Professor	Ph.D.	Biomech., Solid Mech., FEA	9830465710 arc_98@rediffmail.com
Dr. N. Nandi	Associate Professor	Ph.D.	Hyd. , Water Resources Engg.	9830354744 nityananda@mailcity.com
Dr. K. Debnath	Professor	Ph.D.	Fluid Dynamics, Hyd.	9830434409 debnath_koustuv@yahoo.com
Dr. P.K. Das	Associate Professor	Ph.D.	Earthquake Engg, Struc. Dyn.	9433429156 / 7890099664 drpkdbesu@gmail.com
Dr. S. Majumder	Professor	Ph.D.	Solid Mechanics, Biomechanics	9433477867 majumder.santanu@gmail.com
Dr. R. Roy	Professor	Ph.D.	Earthquake Engg, Soil-structure interaction	9433154976 rroybec@yahoo.com
Dr. N. Khutia	Assistant Professor	Ph.D.	FE, Fracture Mech.	9883263316 niloy@mailcity.com niloy@aero.iiests.ac.in
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Dr. P. Halder	Assistant Professor	Ph.D.	CFD, High Speed Compressible Flows (Hypersonics), Magnetohydrodynamics & Aero Propulsion	9836277025/ 9434368954 pabicmeri@gmail.com / pabitrah@aero.iiests.ac.in
Sri K. Bhowmik	Assistant Professor	M.Sc (Engg)	Solid Mechanics, FEM	9051327240 krishnendub@aero.iiests.ac.in, krishnendu.besu@gmail.com, krishnendu.iiests@gmail.com

Awards and Laurels:

Dr. Rana Roy – Selected as Life member in European Association of Earthquake Engineering, Work Group 8: Irregular and Complex Structures (EAEE: WG 8), on nomination.

Research Area:

a. Analysis of structures under different loading
b. Fluid Dynamics and Turbulence
c. Computational Fluid Dynamics
d. Applications of Finite Element Method
e. Biomechanics
f. Robotics and Mechatronics
g. Earthquake Engineering, Dynamic Soil-structure interaction.
h. Dynamics of Structures
i. Micro and Nanoscale Transport Processes

Research Facilities:

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

Name of the Laboratories:

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

Consultancy Work:

- Design of two chimneys of 40 m and 75 m height, of DESCON Consultancy Services.
- Project on Entrepreneurship Development Cell (along with HRM Deptt.) (Sponsoring Agency – AICTE).
- Project on Centre for green TBI (Sponsoring Agency - NSTEDB, DST, Govt. of India).
- Calibration of Flow-meter (Kolkata Municipal Corporation)
- Consultancy in Fan Vibration Analysis in Cooling tower for Paharpur Cooling Towers Ltd., Kolkata, India. September, 2014 (Cost Rs. 100000/-).

Support Staff Position:

Sanctioned technical post :

Technical Assistant – 7 (vacant – 6)
Laboratory Assistant – 3 (vacant – 1, Retd. on November, 2014)
Instrument Mechanic – 1
Mechanic – 1 (vacant – Retd. on January, 2014)
Draughtsman – 1 (vacant)

Technical staff profile

Name	Designation	Highest Qualification	Contact No.	E-mail
Asis Ghosh	Laboratory Assistant	B. Sc.	9433477829	g_asis1@yahoo.co.in (Retd. on 30.11.2014)
Arun Kr. Nandi	Laboratory Assistant	B. Sc.	9433452131	asttn.56@gmail.com
SharmilaSengupta	Laboratory Assistant	M. Sc.	9836031804	ssg1956@gmail.com
AmalenduSahoo	Technical Assistant I	M. E.	9432647772	Sahoo_amalendu@rediffmail.com
JayantaKundu	Instrument Mechanic	B.Sc.	9830456467	jkkundujayanta@gmail.com

Ongoing Sponsored Research/ Projects:

Sl. No.	Title of Research Project	Sponsoring Agency	Amount sanctioned Rs. in lakhs
1	DST-FIST Project	DST	98.5
2	Inelastic Response of Reinforced Concrete Structures during Severe Earthquake	BRNS, BRC Mumbai	7.14
3	Computer Aided Design, Analysis and Development of Patient Specific Prosthesis for different Human Joints, specially Hip Joint on Indian Perspective	AICTE	6.9
4	Guideline Development for Bridge Pier Scour in Cohesive Bedded Rivers	DST, N. Delhi	24
5	Turbulence in rough bed free surface flow using double averaged Navier Stokes Equations	DST, N. Delhi (R & D Project)	30
6	Patient Specific Shoe Bed designing for Diabetic Patient	DST, Govt. of India	11
7	Multifingered Dexterous Robot Hand	BRNS, DAE	
8	Wind Tunnel Project Based on Flow Visualization Techniques & Data Reporting and Aero modeling Laboratory Development	Funded by UGC XII Plan – June 2014	9.83
9	Development of a unified model to simulate uniaxial and multi-axial LCF and ratcheting for nuclear piping materials. (Sanctioned in 2015 but not yet received)	BRNS, Department of Atomic Energy (DAE)	37

Details of publications of each faculty member: (2014 – 2015)

Journal : 21
Conference : 19

Seminar/ Workshops/ Conferences/ Training programme organized by the department : RC Aircraft Design, Fabrication & Flying Workshop (February 2014).

Technology Development / Innovations :

1. Development of "Aerodynamic Lift Drag Measurement and Data Acquisition System" - Experimental set up for Wind Tunnel facility funded by the department – June 2014.

Advancements under TEQIP – Phase II

Instrument name:

1. Viscous Analogue Apparatus (Hele Shaw): funded by TEQIP, cost Rs. 5,98,561/- April, 2015
2. Aircraft Longitudinal Roll and Yaw Control Experimental Set up : for Aircraft Stability and Control Laboratory funded by TEQIP (Cost. Rs. 4,93,666.75/-) February, 2014
3. Quad rotor Aircraft Experimental Setup : for Aircraft Stability and Control Laboratory funded by TEQIP (Cost. Rs. 2,13,542.50/-) February, 2014
4. Emissivity Measurement Apparatus : funded by TEQIP, cost Rs. 4,59,760/- February, 2013
5. ANSYS Academic Research CFD (5 tasks) : funded by TEQIP, cost Rs. 6,69,070/- November, 2012
6. Pro Engineering : funded by TEQIP, cost Rs. 3,22,740/- November, 2012.

Foreign visits and Invited Lectures :

1. Professor Niloy Khutia attended, presented a paper and chaired a session in "Asian Conference on Mechanics of Functional Materials and Structures (ACMFMS 2014)" held at Nara, Japan, 10 – 13 October, 2014.
2. Dr. Sujay Kumar Mukherjea attended and presented a paper in IMECE, 2014, in Montreal, Canada.
3. (a) Sri Subhomoy Chatterjee presented a paper in Boston, USA and
(b) Sri Sandipan Roy presented a paper in Tokyo, Japan.
4. Dr. Salil Haldar presented "Invited Lecture" in 58th Congress, Indian Society of Theoretical & Applied Mechanics, An International Conference held in Alliance University, Bangalore.
5. Dr. Rana Roy acted as Keynote Speaker in Structural Engineering Convention 2014 (SEC 2014) at IIT, Delhi, 22 – 24 December, 2014. He Chaired a Technical session in SEC 2014.
6. Dr. Amit Roy Chowdhury presented "Invited Lectures" in NIT, Raipur, August, 2014 & in MNIT, Jaipur, November, 2014.

Visitors to Department (Indian & Foreign) :

1. Professor B.S. Majumder, Retired Professor, ISI Kolkata.
2. Professor Arun Mishra, Chairman, Dept. of Mechanical and Aerospace Engg., McGill University, Montreal, Canada.

Alumni contribution to the Department : Not very specific.

Training and Placement :
10 Students were placed in different industries through Training & Placement Cell of the Institute. (Exl Services, IBM, Infosys, CTS and Accenture)

Extension Activities and Societal outreach :
School of Community Science and Technology, IIEST for undertaking extension activities and societal outreach programs.

New Academic/ Research Initiatives :
In the field of Nano fluid convection (CFD), Uniaxial and multi-axial LCF for Nuclear Pipe and Aero modeling.

a) Academic collaboration :
3rd Year students visited IIT, Kanpur on March, 2015 for training in Flight Mechanics Laboratory.
Academic Collaboration in process with McGill University, Montreal, Canada.

Publications : 2014 – 2015
Journal Publications:

1. **Roy, R.,** Ghosh, D and Bhattacharya, G. (2015). "Influence of Strong Motion Characteristics on Permanent Displacement of Slopes", Landslides, Springer, DOI 10.1007/s10346-015-0568-3 (available online).
2. Basantia S.K., Md Abu Bakkar, **Khutia N.**, Das D., (2015). Simulation of LCF Characteristics of AA6063 Al Alloy under Different Aging Conditions", 4th Internationalconference on Material Processing and Characterization (ICMPC-2015), Materials Today: Proceedings, Elsevier (In Press).
3. Das, M., Talukdar, R G, **Bhowmik, K.,** Roy, S. and **Majumder, S.**, 'Comparison of interface stress-strain analysis of molar teeth with solid and porous dental implant', International Journal of Applied Engineering Research (IJAER); pp.10502-10506; Volume 10, Number 11 (2015).
4. Talukdar, R.G., Das, M., **Majumder, S., Roychowdhury, A.,** (2015). Optimization of Solid UHMWPE with porosity as a cervical disc implant. International Journal of Applied Engineering Research (IJAER); Volume 10, Issue 11, pp.10511-10515.
5. **Debashis Pal** and Suman Chakraborty, "Fluid flow induced by periodic temperature oscillation over a flat plate: Comparisons with the classical Stokes problems", Physics of Fluids 27, 053601 (2015)
6. ParthaSarathi Banerjee, Rururaj Pradhan, **Amit Roychowdhury,** Santanu Kumar Karmakar (2015), "Investigation Of Stresses Developed In Natural And Implanted

Human Cervical Spine By Finite Element Method", Journal of Advanced Medical and Dental Sciences Research, Vol. 3, Issue 1, January-March 2015.

7. Roy S., Panda D., **Khutia N., Roychowdhury A.,** (2014), Pore geometry optimization of titanium (Ti6Al4V) alloy, for its application in the fabrication of customized hip implants, International Journal of Biomaterials, Hindawi Publishing Corporation, Volume 2014, Article ID 313975, Volume 12, Pages 1-13.
8. **Khutia N.,** Dey P. P., Sivaprasad S., Tarafder S., (2014). Development of new cyclic plasticity model for 304LN stainless steel through simulation and experimental investigation. Mechanics of Materials, Elsevier, Volume 78, Pages 85-101.
9. **Khutia, N.** and Dey, P.P. (2014) 'Material parameter optimisation of Ohno-Wang kinematic hardening model using multi objective genetic algorithm', International Journal Computational Materials Science and Surface Engineering, Vol. 6, No. 1, pp. 50–74, Inderscience.
10. **Roy, R.,** Thakur, P and Chakraborty S. (2014). "Spectral Matching of Real Ground Motions: Applications to Horizontally Irregular Systems in Elastic Range", Advances in Structural Engineering, Multi-Sc. U. K., Vol. 17, No.11, 1623-1638.
11. **Roy, R.,** Thakur, P. and Chakraborty, S. (2014). "Scaling of Ground Motions and Its Implications to Plan-asymmetric Structures", Soil Dynamics and Earthquake Engineering, Elsevier, Vol. 57, No. 1, pp. 46-67.
12. Kalita, K., and **Halder, S**. "Static Analysis of Transversely Loaded Isotropic and Orthotropic Plates with Central Cutout." Journal of The Institution of Engineers (India): Series C: 1-12.
13. **S. Haldar and D. Sengupta.** 'Bending of cylindrical shell panels'. Journal of Technology.
14. Bhaumik, S. and **Das, P.K.** (2014). "Effect of Asymmetric Community Structures under Near-fault Ground Motion", International Journal of Advancements in Mechanical and Aeronautical Engineering (IJAMAE), Volume I : Issue 3, pp. 7 – 11.
15. Dipankar Chatterjee, Bittagopal Mondal, **Pabitra Halder** (2014), Hydromagnetic Mixed Convective Transport in a Vertical Lid-Driven Cavity including a Heat Conducting Rotating Circular Cylinder, Numerical Heat Transfer Part A, 65: 48–65, 2014.
16. Dipankar Chatterjee, **Pabitra Halder,** Sinchan Mondal, Supratim Bhattacharjee (2014), Magnetoconvective transport in a vertical lid-driven cavity including a heat conducting square cylinder with Joule heating, Numerical Heat Transfer Part A, 64: 1050-1071, 2013.
17. Dipankar Chatterjee, **Pabitra Halder** (2014), MHD Mixed Convective Transport in a Square Enclosure with Two Rotating Circular Cylinders, Numerical Heat Transfer Part A, 65: 802–824, 2014.
18. **Debnath, K.,** and Chaudhury (2014). "Flume experiments to study equilibrium scour hole profile in circular bridge pier in clay sand mixed sediments." Journal of the Indian Geological Congress, 6(2), 31-40.
19. Dutta, I. and **Debnath, K.** (2014). "Volume of fluid model of open channel contraction" Journal of the Institution of Engineers (India): Series C, Springer, 95(3).
20. Roy S., Chatterjee, A and **Debnath, K.** (2014). "Numerical study of turbulence characteristics over rough bed" International Journal on Theoretical and Applied Research in Mechanical Engineering,, 3(1), 44-49.
21. Aditya Bandopadhyay, Uddipta Ghosh, **Debashis Pal**, Kaustav Chaudhury and Suman Chakraborty, "Electrokinetic Maneuvering of Bubble-Driven Inertial Micro-Pumping

Systems", International Journal of Micro-Nano Scale Transport, Vol. 5, Number 1, p. 13 - 21 (2014).

Conference Publications

1. Roy, A. and **Roy, R.** (2014), "Seismic Behaviour of RC Elevated Water Tanks with Shaft Staggings: Effect of biaxial interaction and Ground Motion Characteristics", Structural Engineering Convention, Indian Institute of Technology, Delhi, India, Dec. 22-24.
2. Banerjee, A.K., Pramanik, D. and **Roy, R**. (2014), "Investigating Seismic Demand due to Bi-directional shaking per IDA based Fragility Curve", International Conference on computational Mechanics and Simulation, CSIR-SERC, Chennai, India, Dec. 10-13.
3. Paul, P., **Das, P.K.** and Sarkar, P. (2014). "Studies on Identifying Critical Joints in RC Framed Building Subjected to Seismic Loading", Proc. of Structural Engineering Convention (SEC 2014), An International Meet, IIT, Delhi, Advances in Structural Engineering, Dynamics, volume Two, pp. 977 – 988.
4. Bhaumik, S. and **Das, P.K.** (2014). "Response of R/C Asymmetric Community Structures under Near-fault Motion", Proc. of Structural Engineering Convention (SEC 2014), An International Meet, IIT, Delhi, Advances in Structural Engineering, Dynamics, volume Two, pp. 955 – 962.
5. Roy S., Pradhan R., **Khutia N.,** Das D., **Roy Chowdhury A.,** 2014 . FE modeling and analysis from micro CT data of porous Ti6Al4V material. International conference on Advanced Materials and Energy Technology held at IIEST, Shibpur on 17th to 19th Dec, 2014.
6. Basantia S. K., Bakkar Md Abu, **Khutia N.,** Das D. D., 2014. Simulation of Low Cycle Fatigue Characteristics of Under Aged AA6063 Al-alloy, International Conference on Advanced Materials and Energy Technology (ICAMET 2014), IIEST, Shibpur from 17th to 19th December, 2014.
7. Singh R. B., **Khutia N.,** Dey P.P., Sivaprasad S., 2014. Evaluation of uniaxial and multiaxial fatigue of carbon steel through experiment and simulation using advanced kinematic hardening models, Asian Conference on Mechanics of Functional Materials and Structures (ACMFMS 2014), Nara, Japan from 10th to 13th October, 2014.
8. **Khutia N.,** Dey P.P., Sivaprasad S., 2014. Modification of Ohno Wang cyclic plasticity model through simulation and experimentation of 304LN stainless steel specimen. Asian Conference on Mechanics of Functional Materials and Structures (ACMFMS 2014), Nara, Japan from 10th to 13th October, 2014.
9. Roy S., **Khutia N.,** Das D., **Roy Chowdhury A.,** 2014. FE analysis and deformation behavior of laser based porous Ti6Al4V using static loading condition, Asian Conference on Mechanics of Functional Materials and Structures (ACMFMS 2014), Nara, Japan from 10 to 13 October, 2014.
10. Roy S., **Khutia N.,** Das D., **Roy Chowdhury A.**,"Deformation Behavior of Solid and Porous Ti6Al4V Alloy under Static Loading Condition using FE Analysis", "Microstructure and Materials " March 12-13th , 2014, held at Bengal Engineering and Science University, Shibpur, Howrah, West Bengal.
11. Singh S. K. and **Debnath, K.** (2014) "Laboratory Investigation of Turbulent Flow Structure over a Submerge Cubic obstacle" Proceedings of the International conference on Fluid Mechanics and Fluid Power (FMFP), IIT Kanpur, 12-14 Dec. 2014.
12. Singh S. K. and **Debnath, K.** (2014) "Structure of turbulence flow dynamics over a submerged cube" submitted to International Conference on Theoretical, Applied, Computational and Experimental Mechanics (ICTACEM), IIT Kharagpur (West Bengal), 29-32 Dec. 2014.

13. Barman K. and **Debnath, K.** (2014) "Effect of Submergence around hemispherical obstacle" for International conference on Fluid Mechanics and Fluid Power (FMFP), IIT Kanpur , Dec. 2014
14. Barman K, and **Debnath, K.** (2014) "Turbulence characteristics in the wake region of single and double in-line hemispherical obstacles in the presence of surface waves" for the International Conference of Theoretical, Applied, Computational and Experimental Mechanics (ICTACEM), 29-31 Dec. 2014.
15. Chatterjee, S., **Majumder, S., Roychowdhury, A.**, 2014. Homogenization of interfacialstrain profile hip–implanted femur by lowering effective stiffness of the implant material. International Conference on Advanced Materials and Energy Technology, December 17-19, Indian Institute of Engineering Science and Technology, Shibpur, p72.
16. Pradhan, R., Roy., **S., Majumder, S., Roychowdhury, A.,** 2014. Finite element analysisof hard coated surface on UHMWPE based cervical spine implant. International Conference on Advanced Materials and Energy Technology, December 17-19, Indian Institute of Engineering Science and Technology, Shibpur, p.79.
17. Rana., M., Biswas, J.K., **Majumder, S.,** Karmakar, S.K., **Roychowdhury, A.,** 2014. Effect of ligaments on range of motion at lumber spine for natural and implanted condition : A finite element study. International Conference on Advanced Materials and Energy Technology, December 17-19, Indian Institute of Engineering Science and Technology, Shibpur, p.80.
18. **Mukherjea, S.K.,** Ghosh, S. and **Datta, B.N.** (2014), Study of the Effect of Tangential Point Blowing on the Incompressible Boundary Layer Flow Around a Circular Cylinder, ASME 2014 conference held in Montreal, Canada in November 2014.
19. **Mukherjea, S.K.** and Pande, B., Aerodynamic Simulation of Evacuated Tube Transport Trains with Suction at Tail, ASME 2014 conference held in Montreal, Canada in November 2014.

Department of Civil Engineering

About the Department

The University started its journey with the Department of Civil Engineering in 1856. Civil Engineering College, as the University was known at that time, began with ten students and two teachers in Civil Engineering with the objective of producing finest Civil Engineers in the country. Now, more than 157 years' old, Department of Civil Engineering remains the premier department of this University. During these years, the department has produced Civil Engineers who contributed immensely in shaping the pre- and post-independence India. Feeling the need of research and development, it started Master of Engineering in Civil Engineering programme in 1954. Currently it offers Master of Engineering and PhD programmes in five specializations: Environmental Engineering, Geotechnical Engineering, Structural Engineering, Highway and Traffic Engineering and Water Resources Engineering. Apart from teaching and research it is also actively engaged sponsored projects and industrial consultancy at national and international levels. At the societal level, the department has developed and successfully implemented technology solutions that helped thousands of rural people in getting pollution free water and thus living safely.

Academic Programmes

Undergraduate Level

Degree offered: B.E., Integrated Dual Degree
Students' intake: 100
Additional intake through lateralentry in 3rd Semester :

Postgraduate Level (Regular)

Degree offered: MTech.
Students' intake: 38 (GATE)

Specializations: Environmental Engineering, Geotechnical Engineering, Highway and Traffic Engineering, Structural Engineering and Water Resources Engineering

Postgraduate Level (Part time)

Degrees offered:M.E. in Environmental Engineering,
M.E. in Geotechnical Engineering
M.E. in Structural Engineering,
M.E. in Transportation Engineering,
M.E. in Water Resources Engineering
Students' intake: 39

Doctoral & Postdoctoral Research Programme

Degree offered: Ph.D.
No. of candidates: Enrolled: 27; Registered: 12, Submitted: 01, Awarded: 01

Faculty position Sanctioned: 34
Vacant: 06
Faculty profile (in the following table)

SL No.	Name	Designation	Highest Qualification	Specialisation/ Research Area	Contact No. E-mail
01	Saibal KumarGhosh	Bijoy – Ashu Chair Professor	Ph.D.	Structural Engg., Conc. Tech.	2668-4561 (Extn. 659)
02	Gautam Bhattacharya	Professor	Ph.D.	Geotech. & Highway Engg.	2668-4561 (Extn. 281)
03	Kalyan Kr Chattopadhyay	Professor	Ph.D.	Geotech. & Structural Engg.	2668-4561 (Extn. 660)
04	AjitLalGuha	Professor	Ph.D.	Structural Engg. & Mgmt.	2668-4561 (Extn. 678)
05	Kalyan Kumar Bhar	Professor & Head	Ph.D.	Water Resources Engg.	2668-4561 (Extn. 674)
06	Subrata Chakraborty	Professor	Ph.D.	Structural Engg.	2668-4561 (Extn. 673)
07	Anirban Gupta	Professor	Ph.D.	Environmental Engg.	2668-4561 (Extn. 675)
08	Sudip Kumar Roy	Professor	Ph.D.	Transportation Engg.	2668-4561 (Extn. 666)
09	AmbarishGhosh	Professor	Ph.D.	Geotechnical Engg.	2668-4561 (Extn. 653)
10	Chaitali Ray	Professor	Ph.D	Structural Engg.	2668-4561 (Extn. 661)
11	Aparna (Dey) Ghosh	Professor	Ph.D.	Structural Engg.	2668-4561 (Extn. 663)
12	DebabrataMazumber	Professor	Ph.D.	Environmental Engg.	2668-4561 (Extn. 654)
13	Sugato Pal	Assoc. Professor	M.E.	Structural Engg.	2668-4561 (Extn. 714)
14	DebashisMoitra	Assoc. Professor	PhD	Geotechnical Engg.	2668-4561 (Extn. 711)
15	PratipBandyopadhyay	Assoc. Professor	M.E.	Environmental Engg.	2668-4561 (Extn. 657)
16	Arun Kumar Chakraborty	Assoc. Professor	MTRP	Structural Engg.	2668-4561 (Extn. 645)
17	Pranab Kumar Lai	Assoc Professor	M.E.	Water Resources Engg.	2668-4561 (Extn. 667)
18	PrasantaChakraborty	Asst. Professor	M.E.	Structural Engg.	2668-4561 (Extn. 715)
19	Ashis Kumar Bera	Asst. Professor	Ph.D.	Geotechnical Engg.	2668-4561 (Extn. 655)
20	SujataBiswas	Asst. Professor	Ph.D.	Water Resources Engg.	2668-4561 (Extn. 672)
21	Tapash Kumar Roy	Asst. Professor	Ph.D.	Geotech. & Transport. Engg.	2668-4561 (Extn. 668)

22	ChanchalMajumder	Asst. Professor	Ph.D.	Environmental Engg.	2668-4561 (Extn. 661)
23	SoumyaBhattacharjya	Asst. Professor	Ph.D.	Structural Engg.	2668-4561 (Extn. 715)
24	SandipChakraborty	Asst. Professor	M.E.	Transportation Engg.	2668-4561 (Extn. 672)
25	Asok Adak	Asst. Professor	Ph.D.	Environmental Engg.	2668-4561 (Extn. 658)
26	Sujit Kumar Dalui	Asst. Professor	Ph.D.	Structural Engg.	2668-4561 (Extn. 822)
27	SnehaMurmu	Asst. Professor	M.E.	Water Resources Engg.	
28	UjjalSaha	Asst. Professor	M.E.	Water Resources Engg.	
29	PritamSaha	Asst. Professor	Ph. D.	Transportation Engg.	

Awards and laurels

Dr. Anirban Gupta along with four India scholars of International Exchange Programmehave participated in a global competition of the U.S. State Department's Alumni Innovation Engagement Fund (AEIF 2014). Their project entitled **Mobile Apps 4 Climate Change**has been shortlisted out of 1000 proposals submitted worldwide and this is the only project from India that was chosen out of 53 projects selected globally.

Prof. SubrataChakraborty received Indian Society of Earthquake Technology (ISET) V. H. Joshi Award for Significant Contributions in Structural Dynamics for the year 2014.

R S Niranjam, N S Ajeesh Kumar, SoumyaBhattacharjya got the third best paper award for the paper "Robust Design Optimization of Bridge Pier including Parameter Uncertainty in Monte Carlo Simulation Framework in the National Conference on Emerging Technology and Applied Sciences (NCETAS 2015)

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

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

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: (Major equipment / picture etc.)

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
- Hand-held Falling Weight Deflectometer
- V Box
- Digital Camera for traffic survey
- Laser Distometer

Field Asphalt Content Tester

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

Laboratories

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 undertake 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	

Consultancy work:

CONSULTANCY PROJECT				
Third party consultancy for 100MGD Water Transmission Project from Hooghly River (at Rani DevendrabalaGhat) to New Town, Rajarhat	Simplex Infrastructure	2013-15	₹ 416 lac	Ongoing
Vetting of pavement design of strengthening and widening to part of Kolkata – Basanti Road (SH-3) for the project of West Bengal Highway Development Corporation Limited	M/S Solo Consulting Services Pvt. Ltd.	2014	₹ 0.75 lac	
Vetting of bearing design for bridge project, funded	M/s Oriental, Project	2015	1 lac,	
Vetting of BOQ for Mega Food Park Project at Tripura,	M/s Sikaria Mega Foodpark (P) Ltd, Project	2014	Rs. 6 lacs,	
Traffic Study for proposed elevated connector between Belghoria Expressway and Kalyani Expressway	Executive Engineer, P. W. (Roads) Directorate, Govt. of W Bengal	2014	₹ 2.60 lac	
Safety Consultant for Four laning of Krishnagar – Baharampore Section and Barasat – Krishnagar Section of NH-34	National Highways Authority of India	2014	₹116.00 lac	
Consultancy Services for Safety Engineering: for Strengthening & Widening / Reconstruction of Chandrapura – Bhandaridah - Phusro Railway Crossing – Kathara - Gomia Road	Ram Kripal Singh Construction (P) Ltd., Ranchi, Jharkhand	2014	₹20.00lac	
Vetting of Design and Drawings of Arsenic cum Iron Removal Plant	PHE DTE, West Bengal	2014	₹ 1.12 lac	
Design of Pavement of Habra-Kumra Road and NaihatiJirat	Executive Engineer, Barasat	2014	₹ 5.50 lac	

Road	Highway Division II, PW (Roads) Directorate, Govt. of West Bengal			
Assessment of vibration emanating from installation of Sheet Piles using a vibro-sinker at 52/1, Shakespeare Sarani, Kolkata -700 017	M/S Express DevconPvt. Ltd			
Analysis of Bottom Ash and Steel Plant Slag Material in Ash Dyke as substitute of Sand	**NSPCL**	2014-15	1.2Lac	
Vetting of Design & Drawing of " Design, Construction and Commissioning of R.C.C. Intake Jetty with Pump House along with the Sub-Station Building all Civil and Electro-mechanical works complete, near GourangaGhat Road Panihati Municipality	Traders and Engineers Pvt. Ltd.	2014-15		
Planning and Design of Hospital Building at LALBAGH, MUSHIDABAD	M/s Fortune Multi-specialty Hospital Pvt. Ltd.	2014-15		
Vetting of detail design of substructures and superstructure of Chandan Nagar ROB of KMDA Flyovers and ROBs excluding span between P19 and P20 along with the proposed road including the minor bridge over river Saraswati	M/S Larsen & Toubro Limited, Construction Infrastructure IC	2014-15		
Vetting of detail design of substructures and superstructure of Kalyani ROB of KMDA Flyovers and ROBs	M/S Larsen & Toubro Limited, Construction Infrastructure IC	2014-15		

Support staff position:
Sanctioned technical post: 13
Technical staff profile (in the following table)

Name	Designation	Highest Qualification	Contact No./ E-mail
ShriTinkariPatra	Superintendent (Tech)	B.Sc. DCE	2668-4561(Extn.769)
ShriDipak Kumar Roy	Superintendent (Tech)	B.Sc. DCE	2668-4561(Extn.283)
ShriRanjan Kumar Biswas	Superintendent (Tech)	B.Sc. DCE	2668-4561(Extn.283)
ShriSwapan Kumar Roy	Lab. Asst.	B.Sc.	2668-4561(Extn.254)
ShriIndranathChakraborty	Jr. Superintendent	DCE	2668-4561(Extn.665)
ShriSajal KumarChakraborty	Tech. Asst. I	B.Sc. (Hons.)	2668-4561(Extn.283)
Mrs. AmritaBandyopadhyay	Tech. Asst. I	B.Sc. (Hons.), MCA	2668-4561(Extn.677)
Shri Amar Tarafder	Tech. Asst. II	DCE	2668-4561(Extn.282)
ShriMohini MohanDebsharma	Tech. Asst. II	DCE	2668-4561(Extn.282)
Md. ShafiulAlam (in Lien)	Tech. Asst. II	B.E. (C.E.)	2668-4561(Extn.761)
ShriSwarupShovan Mukherjee	Tech. Asst. II	DCE	2668-4561(Extn.282)

Sponsored Research (Ongoing):

Title	**Principal Investigator**	**Funding Agency**	**Amount (Rs. In Lakhs)**
International			
Assessment of effects of arsenic pollution on health in rural Bengal and development and implementation of sustainable technology solution.	Kalyan Kumar Bhar ChanchalMajumdar	UKIERI(UK-India Education and Reasearch Initiative)	£ 40000
Demonstration of Integrated Fluorosis Mitigation Approaches in Malda	Anirban Gupta	UNICEF	(Rs.12,01,865)
Water, Sanitation and Hygiene Education Programme in	Anirban Gupta	Water For People, USA	Schools (Rs. 29,79,000)

Development of Indian Highway Capacity Manual (Indo-HCM)	Sudip Kumar Roy SandipChakraborty Tapas Kumar Roy	CSIR-CRRI	Rs. 100.45 Lakhs
Identification of Spatial Dispersion Pattern of Dredge Materials in a Coastal River Reach from Radioactive Tracer Experiments and Hydrodynamic Modeling	Kalyan Kumar Bhar	BRNS	Rs. 35lakhs
Static and Dynamic failure analysis of laminated composite stiffened plates for marine structures	Chaitali Roy	Ministry of shipping	Rs. 39.53 Lakhs
Passive control of seismically excited short period structures by the compliant liquid column damper	Aparna (Dey) Ghosh	DST	Rs. 36 Lacs
Performance evaluation of river Brahmaputra bed materials for use in construction of road embankment, subgrade and subbase	AmbarishGhosh	DST	Rs. 39.554 Lakhs
Seismic Vulnerability Assessment of Existing Building to Supplement Rehabilitation practices with special emphasis to North Eastern Region	SubrataChakraborty	DST, GOI	63 Lakhs

Industry Institution Interaction

- Induction Programme for Enhancing Efficacy in Industrial Project under TEQIP II, during March 11, 18, 25 and April 01, 2015.
- Special training programme for climate change downscaling techniques, during 27-30 October (4 days) 2014
- Organized In-Service Training Programme for PWD Engineers on Seismic retrofitting of Deficient Buildings & Structures
- Observation of World Water Day
- National Workshop on "Advances in the Design and Construction of Bituminous Pavements' during May 27-2, 2014 at Indian Institute of Engineering Science and Technology, Shibpur,
- Workshop on "Road Safety Audit" for the engineers involved in Development and Construction of NH 34 during January 30-31, 2015 at Krishnagar

No. of publications:

Journal Publication: 43
Conference Publication: 31

List of Publications

Journals

1. Metya, S. and Bhattacharya, G. (2014), "Probabilistic Critical Slip Surface for Earth Slopes Based on the First Order Reliability Method", Indian Geotechnical Journal, Springer, 44(3), 329-340.
2. Roy, R., Ghosh, D. and Bhattacharya, G. (2015), "Influence of Strong Motion Characteristics on Permanent Displacement of Slopes", Journal of International Consortium on Landslides, Springer, (DOI: 10.1007-S10346-015-0568-3. ---published on line on March 6, 2015
3. Mondal, D. P., Ghosh (Dey), A. and Chakrabarty, S. (2014) "Fluid viscous damper in mitigation of structural vibration effect due to underground blast." *Int. J. Materials and Structural Integrity (Inderscience Enterprises Ltd.)* 8 (4), 273-290.
4. Mondal, D. P., Ghosh (Dey), A. and Chakrabarty, S. (2014) "Control of underground blast induced vibration of structures using fluid viscous damper" *Journal of Vibration Engineering and Technologies*, 2 (1), 27-33.
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Books and Book Chapters

Patents / Invention Disclosure / Technology Transfer / Copyright

Seminar / Workshops / Conferences / Training programme organized by the department (2014 - 15)

- Induction Programme for Enhancing Efficacy in Industrial Project under TEQIP II, during March 11, 18, 25 and April 01, 2015.
- Special training programme for climate change downscaling techniques, during 27-30 October (4 days) 2014
- Organized In-Service Training Programme for PWD Engineers on Seismic retrofitting of Deficient Buildings & Structures
- Observation of World Water Day
- National Workshop on "Advances in the Design and Construction of Bituminous Pavements' during May 27-2, 2014 at Indian Institute of Engineering Science and Technology, Shibpur,
- Workshop on "Road Safety Audit" for the engineers involved in Development and Construction of NH 34 during January 30-31, 2015 at Krishnagar

Technology Developed and Innovation

Advancements under TEQIP – Phase II
Foreign visits and Invited Lectures

Departmental Faculty Members

- Prof. Kalyan Kumar Bhar and Dr. ChanchalMajumder visited Queen's University, Belfast during 5th July to 20th July 2014 on the part of collaborative Research Project 'Assessment of effects of arsenic pollution on health in rural Bengal and development and implementation of sustainable technology solution.
- Prof. SubrataChakraborty visited University of Liverpool, UK. And presented a paper titled Adaptive response surface method based efficient Monte Carlo simulation in the 2nd IntConf on Vulnerability and Risk Analysis and Management (ICVRAM2014), 13 - 16 July 2014.
- Prof. Aparna (Dey) Ghosh attended and presented paper at the 6th World Conference of Structural Control and Monitoring at Barcelona, Spain
- Prof. Sudip Kumar Roy attended 27th Pan Pacific Congress of Real Estate Appraisers, Valuers and Counselors organized by Singapore Institute of Surveyors

and Valuers on 21-24 September, 2014 at Singapore with the funding from TEQIP. Dr. Roy along with his scholar presented the paper titled "Valuation of Highways for the purpose of Acquisition".

- Dr. Tapas Kumar Roy attended International Conference on "International Geotechnical Conference" during October 2014 at Berlin, Germany.
- Dr. Asok Adak received Raman Fellowship and visited University of Maryland Baltimore County for Post-Doctoral Research during July 2013 to June 2014.

International Visit by Students

- Sri SubhadeepMetya, a PhD Scholar (INSPIRE FELLOWSHIP) of the DST, Govt. of India was one of the 40 selected candidates from all over the world to attend the prestigious international school LARAM on "Landslide Risk Assessment and Mitigation" established in 2005 by the University of Salerno, Italy during September 1 to 13, 2014
- Soumi Bhattacharyya, Senior Research Fellow, Department of Civil Engineering working on an experimental project funded by DST, visited Department of Civil, Structural and Environmental Engineering, Trinity College Dublin as a 'visiting researcher' to conduct experimental studies on vibration control of structures from 29th June, 2014 to 23rd July,2014
- SohamMitra visited University of Windsor, Ontario , Canada for summer internship during1st June-19th July,2014
- ParthaSaha, Sayanta Barman and AbhrakantiSaha visited Wayne State University , Detroit , USA for summer internship during 29th May-30th July, 2014

Invited Lectures

- Prof. SubrataChakraborty delivered a keynote address in the *International Conference on RECENT TRENDS & CHALLENGES IN CIVIL ENGINEERING (RTCCE-2014)* at Motilal Nehru National Institute of Technology Allahabad during Dec. 12-14, 2014.
- Prof. SubrataChakraborty delivered invited Lecture on Analytical Seismic Vulnerability Assessment of Existing Buildings: Special Emphasis to NE Region, *Seminar on Current Trends in Infrastructure Development,* 21.6.2014 Aliah University, Kolkata.
- Prof. SubrataChakraborty delivered invited lecture on Relaibility Analysis of structures at a Refresher Course on Recent Advances in Civil and Structural Engineering, Department of Civil Engineering, Jadavpur University, Jan 2015.
- Prof. SubrataChakraborty delivered invited lecture on "Seismic Vulnerability of existing structures", in the training programme on Disaster Management for Assistant Engineers & Sub-Assistant Engineers (Civil) of PWD, Government of WB, February-March, 2015.
- Prof A (D) Ghoshdelivered an invited lecture in the *PWD Seminar on Highrise Buildings* on April 24, 2014.
- Prof A (D) Ghosh delivered an invited lecture at Jadavpur University in the UGC sponsored refresher course on *Recent Advances in Civil and Structural Engineering, Jan 2-22, 2015.*
- Dr. SoumyaBhattacharjya Delivered invited lecture on "Seismic Retrofitting of Steel Structure", in the In-house training programme on Disaster Management for Assistant Engineers & Sub-Assistant Engineers (Civil) of PWD, Government of WB, February-March, 2015.

Visitors to your Department (Indian & Foreign)

- Prof. BiswajitBasu, Department of Civil, Structural and Environmental Engineering Trinity College Dublin
- Rowshon Kamal and MrNkululekoDlamini of University Putra Malaysia

Alumni Contribution to your Department
Training and Placement
Extension Activities and Societal outreach

High Schools in North 24 Parganas were provided with Arsenic Removal Filters and suitable sanitation arrangements including health and hygiene education. One fluoride removal filter has been installed which is serving safe water to the people of Nalagola in Malda district.

Academic Collaboration

Science Foundation of Ireland sponsored collaborative project on *Liquid dampers for vibration control of structures* with Trinity College Dublin.

Student achievement

- The team of ShiladityaBiswas and Arghyadip Das (final year CE Students) ranked second in the KONARK CEMENT AADHAR QUIZ 2015 (Top three teams Rs. 50,000; Rs 25,000 and Rs 15,000/ along with job offers from OCL India Ltd.)

- Sri SubhadeepMetya, a PhD Scholar in the Department of Civil Engineering and a recipient of the INSPIRE FELLOWSHIP of the DST, Govt. of India, under the supervision of Dr. Gautam Bhattacharya, Professor of Civil Engineering, was one of the 40 selected candidates from all over the world to attend the prestigious international school LARAM on "Landslide Risk Assessment and Mitigation" established in 2005 by the University of Salerno, Italy. Students from top universities like University of California, USA; University of Cambridge, UK; University of Illinois at Chicago, USA; ETH Zurich, Switzerland have been selected for the school. He attended the school during September 1 to 13, 2014.

- Soumi Bhattacharyya, SRF of Civil Engineering working on an experimental project funded by DST, visited Department of Civil, Structural and Environmental Engineering, Trinity College Dublin as a 'visiting researcher' to conduct experimental studies on vibration control of structures from 29th June, 2014 to 23rd July,2014

- SohamMitra visited University of Windsor, Ontario, Canada for summer internship during1st June-19th July,2014. ParthaSaha, Sayanta Barman and AbhrakantiSaha visited Wayne State University , Detroit , USA for summer internship during 29th May-30th July, 2014

Department of Chemistry

About the Department

The more than hundred years old department has a glorious past. The Department, besides engaging itself in undergraduate teaching has a heritage of conducting research in various fields. A well-known Physical Chemist, was the Head of the Department of Chemistry & Metallurgy and the first Vice-Principal (Academic) of the College. Under his direct supervision and through his encouragement, faculty members and several research students made significant contributions in soil chemistry, corrosion, chemical exploration of medicinal plants and a way of coal and petroleum products. At present the faculty members are involved in research in the frontier areas of Chemistry and Chemical Physics, which include Coordination & Bioinorganic Chemistry, Carbohydrate Chemistry, Electrochemistry & Corrosion Science, Fuel Cell Technology, Molecular Recognition & Supramolecular Chemistry, Structural Chemistry, Catalysis, Synthetic Organic & Organometallic Chemistry, Thin Film Semiconductor, Solar Photo-voltaic & Photo-electrochemical Cells, Non-linear Optical Phenomena: Modeling & Computation, Non-equilibrium Statistical Mechanics, Relativistic & non-relativistic Electronic Structure Theory. The two year (four semesters) M. Sc. Course in Chemistry offered by the department is designed to satisfy the needs of academia and industries. The department is endowed with a number of research projects sponsored by various funding agencies. The department has also been selected for MHRD special grant and DST-FIST and UGC-SAP programme. About seventy research students under the Ph.D. program are currently working in the various fields of chemical sciences

Academic Programmes:

Under graduate level: Nil

Post graduate level:

Degree offered: M.Sc.

Sanctioned students' Intake: 30

Additional intake through other programmes: Nil

Specialization: Physical Chemistry, Inorganic Chemistry & Organic Chemistry

Doctoral & Post Doctoral Research Programme

Degree offered: **Ph.D. (Science)**

No. of candidates enrolled: 16

No. of candidates registered: 24

No. of candidates awarded: 25

No. of Post Doctoral candidates **:** 04 (D S Kothari/UGC/CSIR)

Faculty position

Sanctioned Faculty Post: **15** Vacant Post: **02**

Faculty profile (in the following table)

Name	**Designation**	**Highest Qualification**	**Specialization/ Research Area**	**Contact No. E.mail**
Dr. S. P. Goswami	Professor	Ph.D.	Molecular Recognition and Supramolecular Chemistry	9433301414 spgoswamical@yahoo.com
Dr. B. Adhikary	Professor	Ph.D.	Nanomaterials and Co-ordination Chemistry	033 25385701 adhikarybibhu@yahoo.com
Dr. (Mrs.) J. Dutta	Professor	Ph.D.	Electrochemical Nanoscience, Fuel Cells, Solar Cells	09830029798 jayati_datta@rediffmail.com
Dr. A. Mondal	Professor	Ph.D.	Thin film semiconductors and solar cells	9681420714 anupmondal2000@yahoo.co.in
Dr. S. K. Chattopadhyay	Professor	Ph.D.	Coordination Chemistry, Bioinorganic Chemistry	9874339079 shyamalchattopadhyay@gmail.com
Dr. P. K. Nandi	Professor & Head	Ph.D.	NonLinear Optics: Modeling and Computation	9432177021 Nandi_pk@yahoo.co.in
Dr. B. K. Ghorai	Professor	Ph.D.	Synthetic Organic, Organometallic and Materials chemistry	9433843142 bkghorai@yahoo.co.in
Dr. Sudip Kr. Chattopadhyay	Professor	Ph.D.	Theoretical Molecular Sciences	9433144725 sudip_chattopadhyay@rediffmail.com
Dr. A. K. Mahapatra	Professor	Ph.D.	Design, Synthesis and Recognition of Bio-active Molecules	9434508013 akmahapatra@rediffmail.com
Dr. (Mrs.) J. Ganguly	Assistant Professor	Ph.D.	Carbohydrate Chemistry	gangulyjhuma@yahoo.com
Dr. C. Bhattacharya	Assistant Professor	Ph.D.	Photoelectrochemical Solar Cells, Conducting Polymers, Corrosion Science	09433639041 c.bhattacharya@rediffmail.com
Dr. P. Biswas	Assistant Professor	Ph.D.	Coordination and Bioinorganic Chemistry, catalysis, nanomaterials	09433135103 biswaspapu@rediffmail.com
Dr. N.D. Paul	Assistant Professor	Ph.D.	Ligand Design and Studies of their oordination Chemistry, Application of 'Redox	08902431148 ndpaul@gmail.com

			Non-Innocent' & Cooperative Ligands in Catalysis,'Redox-Active' Transition Metal Complexes in Molecular Electronic Application, Mechanistic investigation using Density Functional Theory (DFT) Coupled with Different Spectroscopic Techniques.	

Awards and Laurels received by the faculty members:

1. Prof. Sudip Chattopadhyay received the 2014 Young Faculty Research Award sponsored through BECAA-WMA and GAA-BESU Shibpur US Foundation.

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

1. Coordination & Bioinorganic Chemistry
2. Glycobiology
3. Electrochemistry, Non-conventional Energy, Fuel Cell, Corrosion Science.
4. Molecular Recognition & Organic Synthesis
5. Synthetic Organic, Organometallic and Materials Chemistry
6. Thin Film Semiconductors, Solar Photo-voltaic, Photo-electrochemical Solar Cells
7. Theoretical and Computational Chemistry, Theoretical Molecular Sciences
8. Conducting Polymers & Photoelectrochemical Solar Cell
9. Inorganic Chemistry and Bioinorganic /Biophysical Chemistry, Chemical Darwinism, and Analytical and Environmental
10. Energy, Nano Science, Spectroscopies and X-ray Crystallography

Research Facilities: (name specific equipment / picture etc.)

1. Spectrofluorimeter
2. Luminescence Spectrometer
3. Atomic Absorption Spectrophotometer
4. Potentiostat – Galvanostat
5. Optical Microscope with image analyzer
6. TG-DTA-cum-DSC System
7. Vacuum Coating unit
8. Electrochemical Quartz Crystal Microbalance System
9. FTIR with FT-Raman Spectrophotometer
10. Analytical cum Preparative HPLC with Mass Detector
11. Microwave Synthesizer
12. Chemisorption and Physisorption Measuring Unit
13. Fuel Cell / Solar Characterization System
14. Semiconductor Characterization System
15. Monochromator / Radiometer
16. UV-Visible Spectrophotometer
17. Hall Effect Setup
18. Ion-Chromatograph
19. PGSTAT 12 with Frequency Response Analyzer

20. AUTOLAB 30 Potentiostat/Galvanostat
21. PAR Versastat-II Potentiostat and electrochemistry system
22. Precision L-C-R Meter

Name of the Laboratories:

1. Coordination & Bioinorganic Chemistry
2. Glycobiology
3. Electrochemical Nano Science, Fuel Cell and Solar Cells.
4. Molecular Recognition & Organic Synthesis
5. Synthetic Organic and Organometallic Chemistry
6. Thin Film Semiconductors & Solar cells
7. Theoretical and Computational Chemistry
8. Theoretical Molecular Sciences
9. Conducting Polymers & Photoelectrochemical Solar Cell
10. Nano Imaging and Artificial photo synthesis

Consultancy work:

Development of nanotechnology for the de-salination of sea water "- a consultancy project from DESNOZ Inc., Raleigh, NC, USA (project cost: 4.8 Lakh) (S Sarkar)

Support Staff position:

Sanctioned technical Post: **08** Vacant: **03**

Technical staff profile (in the following table):

Name	**Designation**	**Highest Qualification**	**Contact No.**
S. Munshi	Technical Assistant- II	M.Sc.	9432307325
R. Halder	Technical Assistant - II	B.Sc. (2 years)	9547215236
B. Das	Sore Helper	Madhyamik	9674774122
J. Ali	Sr. peon	Madhyamik	9733930005
J. Roy	Helper 1	Class-VIII	9231897280

Ongoing Sponsored Research / projects: (mention area)

Ongoing (Prop value) in Lakhs	**Sponsoring agencies**
73.4	**CSIR**
14.6	**UGC**
334.2	**DST**
110.4	**DST-SERI**
30.6	**MNRE**
14.7	**DST (W.B.)**
14.6	**DBT**
25.0	**BRNS**
9.0	**AICTE**
5.0	**Cormoz Inc. USA**

Industry – Institute Interaction:

Development of nanotechnology for the de-salination of sea water "- a consultancy project from DESNOZ Inc., Raleigh, NC, USA

Details of publications: (2013 - 14)

Journal: 104
Conference: 27

Seminar / Workshops / Conferences/ Training programme organized by the Department (2014-15):

Recent Trends in Chemical Sciences [A Symposium in Commemoration of the 154th Birth Anniversary of Acharya Prafulla Chandra Ray] held on 5th August, 2015 at Department of Chemistry, IIEST Shibpur Cosponsored by M/s Thermo Fischer Scientific India Pvt. Ltd.

Advancements under TEQIP – Phase II: Provides Two PhD fellowships

Foreign visits and Invited Lectures

Foreign Visit by <u>Prof. Jayati Datta</u>

Chair person and Invited speaker, BIT's 4th Annual World Congress of Nano Science and Technology, 2014, Qingdao, China, **October, 28-31, 2014**

Training and Placement: 20

New Academic / Research Initiatives

Academic Collaboration

1. Dr. Nikhil R. Jana, Centre for Advanced Materials, Indian Association of Cultivation of Science, Jadavpur, Kolkata. (**Prof. B.K.Ghorai**)
2. Prof. Pralay Maity, School of Materials Science and Technology, Indian Institute of Technology (BHU), Varanasi, UP. (**Prof. B.K.Ghorai**)
3. Central Salt and Marine Chemicals Research Institute, Gijubhai, Badheka Marg, Bhavnagar 364002, Gujarat, India (**Prof. B. Adhikary**).
4. **Dr. C. Bhattacharyya started collaboration with (i) BARC, Mumbai, (ii) CECRI-CSIR, Karaikudi (iii) BITS, Pilani**
5. Prof. Debasis Das, Department of Chemistry, University of Calcutta. (Prof. **S. K. Chattopadhyay)**

List of details of publications of each faculty member:

Dr. Nanda Dulal Paul

1. D. Sengupta, P. Ghosh, T. Chatterjee, H. Datta, **N. D. Paul**, S. Goswami, ***Inorg. Chem.* 2014**, *Doi: 10.1021/ic501656s*.

2. Nanda D. Paul, P. Gualco. B. de Bruin, *Willey-VCH.* (***Invited Book Chapter***) (in press).

Dr. Papu Biswas

1. Amit Kumar Dutta, Sudipto Das, Partha Kumar Samanta, Shounak Roy, Bibhutosh Adhikary, **Papu Biswas**, ***Electrochimica Acta***, **2014**, *144*, 282–287.
2. Suvendu Samanta, Sudipto Das, **Papu Biswas**, ***Sensors and Actuators B***, **2014**, *202*, 23– 30.
3. **Papu Biswas**, Pradip Bag, Amit Kumar Dutta, Ulrich Flörke, Kamalaksha Nag, ***Polyhedron***, **2014**, *75*, 118–126.
4. **P. Biswas**, P. Bag, A. K. Dutta, U. Flörke, K. Nag, ***Polyhedron***2014, 75, 118–126.
5. S. Samanta, S. Das, **P. Biswas, *Sensors and Actuators B***, **2014,** 202, 23–30.
6. A. K. Dutta, S. Das, P. K. Samanta, S. Roy, B. Adhikary, **P. Biswas, *ElectrochimicaActa*, 2014**, 144, 282–287.
7. S. Samanta, P. K. Samanta, S. Dutta, **P. Biswas, *SpectrochimicaActa Part A: Molecular and Biomolecular Spectroscopy*, 2015**,147, 262–269.
8. S. Samanta, A. K. Dutta, **P. Biswas, *Indian Journal of Chemistry*, 2015**,Vol. 54A, 478-483

Prof. Binay K. Ghorai

1. D. Jana, S. Boxi, P. P. Parui and **B. K. Ghorai**, ***Org. Biomol. Chem.***, **2015**, DOI: 10.1039/C5OB01564B
2. D. Jana and **B. K. Ghorai**, ***Bull. Chem. Soc. Jpn.***, **2015**, *88*, 89–96
3. D. Jana and **B. K. Ghorai**, ***Bull. Chem. Soc. Jpn.***, **2015**, *88*, 89–96.
4. D. Jana and **B. K. Ghorai**, ***Tetrahedron Lett*. 2014**, *55*, 5203–5206.

Prof. Prasanta Kumar Nandi

1. P. Banerjee and **P.K. Nandi** (**2015**) ***Chem. Phys. Lett***. **637**, **164–171**.
2. K. Hatua and **P.K. Nandi** (**2015**) ***Chem. Phys. Lett***. **628** , **1–8**.
3. K. Hatua and **P.K. Nandi** (**2015**) ***J. Mol. Model*** **21**: **254 (p-1-9).**
4. K. Hatua and **P.K. Nandi (2015) *J. Theor. Comput. Chem.*, 14, 15500021-20.**
5. **P. K. Nandi,** K. Hatua, A. K. Bansh, N. Panja and T. K. Ghanty **(2015) AIP Conf. Proc., 1642, 526 - 529**; doi: 10.1063/1.4906734.
6. K. Hatua and **P. K. Nandi (2014) J. Mol. Model.**, **20**, **2440 -2449.**
7. K. Hatua and **P. K. Nandi (2014) *J. Theor. Comput. Chem.*, 13, 14500391- 12.**

8. S. Goswami, S. Das, K.. Aich, **P. K. Nandi**, K.Ghoshal, C. K. Quah, M. Bhattacharyya, H.-K. Fun and H.A. Abdel-Aziz (**2014**) ***RSC Adv.*** ,**4**, **24881-24886.**

9. S. Goswami, A. Manna, S. Paul, A.K. Das, **P.K. Nandi**, A.K. Maity and P. Saha (**2014**) ***Tetrahedron Letters*** **55, 490 – 494.**

10. S. K. Sau, T.K. Manna, A. Giri and **P.K. Nandi** (**2014**) ***International Journal of Science, Engineering and Technology***. **2 1415-1421**.

11. S. K. Sau, T.K. Manna, A. Giri and **P.K. Nandi** (**2014**) **International Journal of Engineering and Innovative Technology. 4 71-77**.

12. S. K. Sau, A. Giri, T. K. Manna and **P. K. Nandi (2014)** ***Int. J. Adv. Tech. Eng. Sc.*** **2, 229 – 234.**

Prof. Ajit Kumar Mahapatra

1. A. K. Mahapatra, R. Maji, K. Maiti, S. K. Manna, S. Mondal, S. S. Ali, S. Manna, P. Sahoo, S. Mandal, M. R. Uddin and D. Mandal, ***RSC Advances*** **2015**, **5**, 58228-58236.

2. A. K. Mahapatra, K. Maiti, S. K. Manna, R. Maji, S. Mondal, C. D. Mukhopadhyay, P. Sahoo and D. Mandal ***Chemical Communications***, **2015**, **51**, 9729 - 9732.

3. A. K. Mahapatra, P. Karmakar, J. Roy, S. Manna, K. Maiti, P. Sahoo and D. Mandal ***RSC Advances*** **2015**, **5**, 37935-37942

4. A. K. Mahapatra, S. Mondal, S. K. Manna, K. Maiti, R. Maji, M. R. Uddin, S. Mandal, D. Sarkar, T. K. Mondal and D. K. Maiti , ***Dalton Transactions*** **2015**, *44*, 6490-6501.

5. A. K. Mahapatra, K. Maiti, R. Maji, S. K. Manna, S. Mondal, S. S. Ali and S. Manna, ***RSC Advances 2015***, *5*, 24274-24280.

6. A. K. Mahapatra, S. K. Manna, B. Pramanik, K. Maiti, S. Mondal, S. S. Ali and D. Mondal, ***RSC Advances*** **2015**, *5*, 10716-10722.

7. A. K. Mahapatra, R. Maji, K. Maiti, S. K. Manna, S. Mondal, C. D. Mukhopadhyay, S. Goswami, D. Sarkar, T. K Mondal, C. K. Quah and H. K. Fun, ***Sensors & Actuators: B. Chemical*** **2015,** *207*, 878-886.
8. A. K. Mahapatra, S. Mondal, K. Maiti, S. K. Manna, R. Maji, S. Mandal, S.Goswami, D. Mondal, C. K. Quah and H.K. Fun ***RSC Advances*** **2014**, *4*, 56605-56614
9. A. K. Mahapatra, K. Maiti, S. K. Manna, R. Maji, C. D. Mukhopadhyay, B. Pakhira, S. Sarkar, ***Chemistry–An Asian Journal*** **2014**, *9*, 3623-3632.
10. A. K. Mahapatra, S. K. Manna, K. Maiti, R. Maji, C. D. Mukhopadhyay, D. Sarkar, T. K. Mondal **RSC Advances., 2014,** *4*, 36615-36622.
11. A. K. Mahapatra, S. K. Manna, C. D. Mukhopadhyay and D. Mandal, ***Sensors and Actuators B: Chemical***, **2014**, *200*, 123-131
12. A. K. Mahapatra, R. Maji, K. Maiti, S. S. Adhikari, C. D. Mukhopadhyay and D. Mandal, ***Analyst*****, 2014**, *139*, 309-317

Prof. Bibhutosh Adhikary

1.A.K. Dutta, S. Das, P. K. Samanta, S. Roy, **B. Adhikary**, P. Biswas , ***Electrochimica Acta.*** **2014,**144 ,282–287

2. A. K. Dutta, S. K. Maji, K. Mitra, A. Sarkar, N. Saha, A. B. Ghosh, **B. Adhikary,** ***Sens. Actuat. B Chem.*** 2014, 192, 578–585.

3. A. K. Dutta, S. K. Maji, **B. Adhikary,** ***Mat. Res. Bull***. **2014,** 49 , 28–34.

Dr. Chinmoy Bhattacharya

1. S. Shyamal, P. Hajra, H. Mandal,J.K. Singh, A.K. Satpati, S. Pande and **C. Bhattacharya**, **ACS Appl. Mater. Interface, 2015**, 7(33),18344–18352 **.**
2. H. Mandal, S. Shyamal, P. Hajra, B. Samanta, P. Fageria, S. Pande, **C. Bhattacharya**, **Electrochimica Acta, 2014**, *141*, 294-301.
3. P.Hajra, S.Shyamal, H. Mandal, P.Fageria, S.Pande , **C. Bhattacharya, Electrochimica Acta**, **2014**, *123*, 494-500.

Prof. Jayati Datta

1) A. Datta, A. Mondal, **J. Datta**, ***J. Power Source***, **2015,** *283*, 104.

2) P. Hazra, A. Jana, M. Hazra, **J. Datta**, **RSC Advance, 2014,** *4*, 33662-33671

3) A. Dutta, **J. Datta**, **J. Mater. Chem. A**, **2014,** *4*, 3237.

4) A. K. Mandal, A. Jana, A. Datta, P. M. Sarma, B. Lal , **J. Datta**, **J. Natural Resources and Development, 2014**, *4*, 64-75.

Prof. Anup Mondal

1. A. Ghosh, **A. Mondal,** ***Applied Surface Science*** **2015,** *328*, 63–70.
2. B. Show, N.Mukherjee, **A. Mondal,** ***RSC Adv.*** **2014,** *4*, 58740–58751.
3. S. Jana, **A. Mondal,** ***ACS Appl. Mater. Interfaces*** **2014,** *6*, 15832−15840.
4. A. Ghosh, B. Show, S. Ghosh, N. Mukherjee, G. Bhattacharya, S. K. Datta, **A. Mondal,** ***RSC Adv.*** **2014,** *4*, 51569–51575.
5. S. Jana, P. Bera, B. Chakraborty, B. C. Mitra, **A. Mondal,** ***Applied Surface Science*** **2014,** *317*, 154–159.
6. S. Jana, S.Samai, B. C. Mitra, P. Bera, **Anup Mondal,** ***Dalton Trans.*** **2014,** *43*, 13096–13104.
7. G. Mondal, P. Bera, A. Santra, S. Jana, T. Mondal, **A. Mondal**, S. I. Seok and P. Bera, ***New J. Chem.*** **2014,** *38*, 4774—4782.
8. S. Jana, G. Mondal, B. C. Mitra, P. Bera, **A. Mondal,** ***Chemical Physics*** **2014,** *439*, 44–48.
9. S. Jana, B. C. Mitra, P. Bera, M. Sikdar, **A. Mondal**, ***Journal of Alloys and Compounds***, **2014**, 602 42–48

Prof. Shyamal Kumar Chattopadhyay

1. P. Chakraborty, J. Adhikary, B. Ghosh, R. Sanyal, **S. K. Chattopadhyay**, A. Bauzá, A. Frontera, E. Zangrando, D. Das, ***Inorg. Chem.* 2014,** *53*, 8257-8269.
2. S. Mondal, P. Adak, C. Das, S. Naskar, B. Pakhira, A. J. Blake, A. L. Rheingold, E. Sinn, C. S. Eribal, S. K. Chattopadhyay, ***Polyhedron***, **2014**, *81*, 428-435 .
3. S. Mondal, C. Das, B. Ghosh, B. Pakhira, A. J. Blake, M. G. B. Drew, **S. K. Chattopadhyay**, ***Polyhedron***, **2014,** *81*, 428-435(***invited publication for Prof. V. M. Leovac special issue)***.
4. T. Samanta, L. Dey, J. Dinda, **S. K. Chattopadhyay**, S. Seth, ***J. Mol. Str.* 2014,***1068***, 58-70.
5. B. Ghosh, S. Naskar, S. Naskar, A. Espinosa, S. C. K. Hau, T. C. W. Mak, R. Sekiya, R. Kuroda, **S. K. Chattopadhyay**, ***Polyhedron***, **2014**, *72*, 115-121.
6. J. Dinda, T. Samanta, A. Nandy, K. Das Saha, S. Seth, **S. K. Chattopadhyay**, C. W. Bielawski, ***New. J. Chem.*, 2014**, *38*, 1218-1224.
7. T. Samanta, S. K. Seth, **S. K. Chattopadhyay**, P. Mitra, V. Kushwah, J. Dinda, ***Inorg. Chim. Acta***, **2014,** *411*, 165-171.

Prof. Shyamaprosad Goswami

1. S. Das, **S. Goswami**, K. Aich, K. Ghoshal, C. K. Quah, M. Bhattacharyya and H.-K. Fun, ***New J. Chem.***, **2015**, Accepted Manuscript, DOI: 10.1039/C5NJ01468A.
2. S. Paul, **S. Goswami** and C. D. Mukhopadhyay, ***New J. Chem.***, **2015**, Accepted Manuscript, DOI: 10.1039/C5NJ01297J.
3. K. Aich, **S. Goswami**, S. Das, C. D. Mukhopadhyay, C. K. Quah and H.-K. Fun, ***Inorg. Chem.***, **2015**, *54*, 7309-7315.
    A. K. Das, **S. Goswami**, C. K. Quah and H.-K. Fun, ***New J. Chem.***, **2015**, ***39***, 5669-5675.
4. S. Paul, A. Manna and **S. Goswami**, ***Dalton Trans.***, **2015**, ***44***, 11805-11810.
5. **S. Goswami**, K. Aich, S. Das, B. Pakhira, K. Ghoshal, C. K. Quah, M. Bhattacharyya, H.-K. Fun and S. Sarkar, ***Chem.–Asian J.*, 2015**, *10*, 694-700.
    A. Manna and **S. Goswami**, ***New J. Chem.***, **2015**, ***39***, 4424-4429.
6. K. Aich, **S. Goswami**, S. Das and C. D. Mukhopadhyay, ***RSC Adv.***, **2015**, ***5***, 31189-31194.
7. **S. Goswami**, S. Das and K. Aich, ***RSC Adv.***, **2015**, ***5***, 28996-2900.
8. **S Goswami**, K. Aich, S. Das, C. D. Mukhopadhyay, D. Sarkar and T. K. Mondal, ***Dalton Trans.***, **2015**, ***44***, 5763-5770.
    A. K. Mahapatra, S. K. Manna, K. Maiti, S. Mondal, R. Maji, D. Mandal, S. Mandal, Md. R. Uddin, **S. Goswami**, C. K. Quah and H.-K. Fun, ***Analyst***, **2015**,***140***, 1229-1236.

9. M. Mitra, C. Kulsi, K. Chatterjee, K. Kargupta, S. Ganguly, D. Banerjee and **S. Goswami**, ***RSC Adv.***, **2015**, ***5***, 31039-31048.
10. **S. Goswami**, A. K. Das, U. Saha, S. Maity, K. Khanra and N. Bhattacharyya, ***Org. Biomol. Chem.***, **2015**, ***13***, 2134-2139.
11. **S. Goswami**, S. Maity, A. C. Maity, A. K. Das, B. Pakhira, K. Khanra, N. Bhattacharyya and S. Sarkar, ***RSC Adv.***, **2015**, ***5***, 5735-5740.
12. **S. Goswami**, S. Paul and A. Manna, ***New J. Chem.***, **2015**, ***39***, 2300-2305.
13. A. K. Mahapatra, R. Maji, K. Maiti, S. K. Manna, S. Mondal, C. D. Mukhopadhyay, **S. Goswami**, D. Sarkar, T. K. Mondal, C. K. Quah and H.-K. Fun, ***Sens. Actuators B: Chem.,*** **2015**, *207*, 878-886
14. A. K. Mahapatra, S. Mondal, K. Maiti, S. K. Manna, R. Maji, D. Mandal, S. Mandal, **S. Goswami**, C. K. Quah and H.-K. Fun, ***RSC Adv.***, **2014**, ***4***, 56605-56614.
15. **S. Goswami**, A. Manna, M. Mondal and D. Sarkar, ***RSC Adv.***, **2014**, ***4***, 62639-62643.
16. **S. Goswami**, S. Chakraborty, M. K. Adak, S. Halder, C. K. Quah, H.-K. Fun, B. Pakhira and S. Sarkar, ***New J. Chem.***, **2014**, *38*, 6230-6235.
17. **S. Goswami,** R. Chakrabarty, S. Dey and H.-K. Fun, ***RSC Adv***., **2014,** *4*, 49663-49671.
18. **S. Goswami,** S. Maity, A. C. Maity and A. K. Das, ***Sens. Actuators B: Chem***., **2014,** *204*, 741-745.
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20. **S. Goswami**, S. Paul and A. Manna, ***RSC Adv.***, **2014**, ***4***, 43778-43784.
21. **S. Goswami**, A. Manna, S. Paul, A. K. Maity, P. Saha, C. K. Quah and H.-K. Fun, ***RSC Adv.***, **2014**, ***4***, 34572-34576.
22. **S. Goswami**, A. K. Das, B. Pakhira, S. B. Roy, A. K. Maity, P. Saha and S. Sarkar, ***Dalton Trans.***, **2014**, ***43***, 12689-12697.
23. **S. Goswami,** S. Paul and A. Manna, *Tetrahedron Lett.*, **2014,** *55*, 3946-3949.
24. **S. Goswami**, A. K. Das, A. Manna, A. K. Maity, P. Saha, C. K. Quah, H.-K. Fun, and H. A. Abdel-Aziz, *Anal. Chem.*, **2014**, *86*, 6315-6322.
25. **S. Goswami**, S. Das, K. Aich, P. K. Nandi, K. Ghoshal, C. K. Quah, M. Bhattacharyya, H.-K. Fun and H. A. Abdel-Aziz, ***RSC Adv.***, **2014**, ***4***, 24881-24886.
26. **S. Goswami**, A. Manna and S. Paul, ***RSC Adv.***, 2014, ***4***, 21984-21988.
27. **S. Goswami**, S. Chakraborty, A. K. Das, A. Manna, A. Bhattacharyya, C. K. Quah and H.-K. Fun, ***RSC Adv.***, **2014**, ***4***, 20922-20926.
28. **S. Goswami**, S. Chakraborty, S. Paul, S. Halder, S. Panja and S. K. Mukhopadhyay, ***Org. Biomol. Chem.***, **2014**, ***12***, 3037-3044.
29. **S. Goswami**, K. Aich, S. Das, S. B. Roy, B. Pakhira and S. Sarkar, ***RSC Adv.***, **2014**, ***4***, 14210-14214.
30. **S. Goswami**, S. Maity, A. C. Maity, A. K. Maity, A. K. Das and P. Saha, ***RSC Adv.***, **2014**, ***4***, 6300-6305.
31. S. Dey, D. Sain and **S. Goswami**, ***RSC Adv.***, 2014, ***4***, 428-433.

32. **S. Goswami**, A. K. Das, A. K. Maity, A. Manna, K. Aich, S. Maity, P. Saha and T. K. Mandal, ***Dalton Trans.***, **2014**, ***43***, 231-239.
33. **S. Goswami**, A. Manna, S. Paul, A. K. Das, P. K. Nandi, A. K. Maity and P. Saha, ***Tetrahedron Lett.,*** 2014, *55*, 490-494.
34. **S. Goswami**, S. Das, K. Aich, D. Sarkar and T. K. Mondal, ***Tetrahedron Lett.,*** **2014**, *55*, 2695-2699.
35. **S. Goswami**, A. K. Das, A. Manna, A. K. Maity, H.-K. Fun, C. K. Quah and P. Saha, ***Tetrahedron Lett.***, **2014**, 55, 2633-2638.
36. **S. Goswami**, M. K. Das and A. Manna, ***Tetrahedron Lett.,*** **2014**, *55*, 2707- 2710.
37. S. Goswami, A. K. Das, K. Aich, A. Manna, H.-K. Fun and C. K. Quah, *Supramol. Chem.*, 2014, 26, 94-104.

Department of
Computer Science and Technoligy

Vision and Mission of the Department

VISION

To be recognized globally for excellence in academic programs and innovative, applied and socially relevant research

MISSION

To provide the students with a firm foundation of both the theory and practice of Computer Science and Technology through a comprehensive undergraduate and post-graduate curricula, and to strengthen creativity, nurture innovation, and develop the ability to carry out research and solve real -world problems.

About the department

The Department of Computer Science and Technology (CST), established in 1982, is the 2nd youngest of the ten Engineering departments in the institution. The CST department, since its inception, has maintained a steady growth in every sphere of its activities and played an important role in bringing a vibrant and forward looking academic environment within the University. It is a premier department offering high quality undergraduate and postgraduate engineering courses as well as providing an excellent infrastructure and facilities for advanced research and consultancy.

The importance of introducing a separate discipline on Computer Science and Technology was felt back in mid 70s. To serve the growing need of manpower with specialization in Computer Design and Applications a proposal to start the new discipline was submitted to MHRD and the approval was obtained in 1981. The new department started functioning from within the Electrical Engineering department and admitted the first batch of Bachelor of Engineering (BE) students in July 1982 and a separate CST department came into existence in August 1984. In January 1988 Master of Computer Application (MCA) course was introduced; the first in Eastern region. The full time Master of Engineering (ME) course in Computer Science and Technology started from July 1992. The department conferred its first Ph D degree in January 1999.

This department has been accredited by the National Board of Accreditation (NBA) as 'A' grade department for 5 years (1999-2004). The department is also acquired ISO 9000 certification in 1999-2000. The department was DST-FIST sponsored in 2004. More recently, in 2012 the department was ranked at 10 in a nationwide survey conducted by Silicon India.

Academic Programmes

Undergraduate Level

Degree offered : ***Bachelors of Engineering (BE)***

Sanctioned students' intake : ***60***

Additional intake through lateral entry in 3rd Semester : *6*

Post Graduate Level

Degree offered : ***Master of Engineering (M.E.)***

Sanctioned students' intake : ***16 (GATE)***

Doctoral & Post Doctoral Research Programme

Degree offered : ***PhD (Engineering)***

No of Candidates enrolled : 08

No. of Candidates registered: 11

No. of Candidates awarded: …

Faculty Position

Sanctioned faculty post ……. Vacant Post ……

Faculty profile

Name	**Academic Qualifications**	**Designations & Date of Joining**	**Research Publications**	**Specialisation / Research Area**	**E - mail**
Biplab Kumar Sikdar	PhD(BESU) 2003 M.Tech (CU) 1990 B.Tech (CU) 1988 BSc(Phys) (CU) 1985	Professor & HOD Joined: 02-09-1997	Journal: 20 Book:1 Conf: 80	Cellular Automata	biplab@cs.iiests.ac.in
Abhik Mukherjee	PhD (BECDU) 2003 ME (JU) 1994 BE (JU) 1991	Associate Professor Joined: 29-01-2000	Journal: 18 Conf: 15	Real Time Systems	abhik@cs.iiests.ac.in
Amit Kumar Das	PhD (BECDU) 1998 ME (CU) 1982 BE (CU) 1979	Associate Professor Joined:25-08-1985	Journal: 10 Conf: 35	Image Processing	amit@cs.iiests.ac.in
Apurba Sarkar	M.Tech (IIT Guwahati) 2003 B.Tech (CU) 2001	Assistant Professor Joined:12-08-2003	Conf: 2	Digital Geometry, combinatorial Geometry, Computational	sarkar@cs.iiests.ac.in

				Geometry, Image & shape Analysis	
Ashish Kumar Layek	ME (BESU) 2001 BE (BESU) 1999	Assistant Professor Joined:07-11-2013	Conf: 1	Wireless Telecommunication and Networking	ashish@cs.iiests.ac.in
Asit Kumar Das	PhD (BESU) 2011 M.Tech (CU) 2002 B.Tech (CU) 1996 BSc (Maths)(CU)1993	Assistant Professor Joined: 09-01-2006	Journal: 10 Book:1 Conf: 24	Data Mining, Pattern Recognition	akdas@iiests.ac.in
Jaya Sil	PhD (JU) 1996 ME(JU) 1986 BE (CU) 1984	Professor Joined: 15-11-2003	Journals: 30 Conf: 120	Machine Learning, Image Processing	js@cs.iiests.ac.in
Malay Kule	M.Tech (CU) 2005 B.Tech (CU) 2003 BSc (Phys)(CU) 2000	Assistant professor Joined: 08-10-2013	Conf:3	Defect Tolerance & Testing of Nanoscale Circuits	malay@cs.iiests.ac.in
ManasHira	M.Tech(IITKGP) 1991 B.Tech(IIT KGP) 1989	Associate Professor Joined: 30-12-1994	Journal: 1	Theoretical Computer Science	manas@cs.iiests.ac.in
Samit Biswas	M.Tech. (KU) 2006 B.E.(BU) 2004	Assistant Professor Joined:05-09-2013	Conf: 10	Digital Image Processing and Analysis	samit@cs.iiests.ac.in
Saptarshi Ghosh	PhD (IIT KGP) 2013 M.Tech. (IITKGP)2007 B.E. (BESU) 2005	Assistant Professor Joined: 25-07-2007	Journals: 5 Conf: 11	Information Retrieval, Machine Learning.	sghosh@cs.iiests.ac.in
SekharMondal	PhD (BESU) 2007 M.Tech. (CU) 1993 B.Tech (CU) 1991	Associate Professor Joined: 01-03-2000	Journal: 3 Conf: 25	Image Processing and pattern Recognition	sekhar@cs.iiests.ac.in

Sipra DasBit	Ph.D (JU) 1997 M.E.(JU) 1986 B.E.(CU) 1984	Professor Joined: 23-02-1988	Journal: 15 Book:2 Book Ch:1 LNCS: 6, Conf: 40	Mobile Computing, Wireless Sensor Network, Delay Tolerant Network	sb@cs.iiests.ac.in
Somnath Pal	M.E. (CU) 1983 B.E. (CU) 1981	Associate Professor Joined: 31-07-1986	Journal:08 Conf: 14 Book Ch: 1		sp@cs.iiests.ac.in
SulataMitra	PhD (BESU) 2005 M.Tech. (Ranchi Univ)1996 B.E.(CU)1986	Professor Joined: 01-02-2000	Journal: 12 Book/Book ch: 4, LNCS: 1, Conf: 35	Mobile computing, QoS issues in cellular network, Ad-hoc network, Multihomed mobile network	sulata@cs.iiests.ac.in
Surajeet Ghosh	M.E. (WBUT) 2005 B.Tech. (KU) 2002	Assistant Professor Joined:11-09-2013	Journal: 1 Conf: 9	Computer Architecture	surajeet@cs.iiests.ac.in
Susanta Chakroborty	PhD (CU) M.Tech (CU) 1985 B.Tech (CU) 1983	Professor Joined:17-11-2005	Journal:16 Conf: 38 Book Ch:2	Bio-chip, Quantum Computing, Video Image Processing, Big-data application	sc@cs.iiests.ac.in
Tamal Pal	ME (BESU) 2011 B.Tech (GCETTB)2007	Assistant Professor Joined:09-09-2013	Conf: 2	Image Processing, Wireless Multi-media Sensor Network	tamal@cs.iiests.ac.in
Uma Bhattacharya	PhD (CU) 1995 ME (JU) 1983 B.Tech (CU) 1979	Professor Joined:20-07-1987	Journals: 7 Book ch: 3 LNCS: 3, Conf: 30	Mobile Network	ub@cs.iiests.ac.in

Awards and Laurels received by the faculty members

Amit Kumar Das	**Patent Awarded** – Method and Apparatus for Image Retrieval – (US Patent Number: US 2003/0198387 A1) – Inventors: Tinku Acharya, Bhabotash Chanda, Amit Kumar Das, Sanjoy Kumar Saha Oct 23, 2003.
Abhik Mukherjee	Special Mention as one among best five papers in EAIT-2014 Session Chair of ICINCO-2014, September 2014 at Technology University, Vienna, Austria
Jaya Sil	INSA Scientist Exchange Programme. Best project award in Outreach area for the project on : "Remote Health: A Framework for Health care Services using Mobile and Sensor-Cloud Technologies" [Sponsoring Authority: Information Technology Research Academy (ITRA)].
Saptarshi Ghosh	Humboldt Postdoctoral Fellowship in July 2014. Dr. Ghosh will carry out research under this fellowship at the Max Planck Institute for Software Systems in Saarbrücken, Germany, in the areas of Social Computing and Data Mining.
Sipra DasBit	Best Paper Award in Wireless Vitae, 2011
Surajeet Ghosh	Best Paper Award at the 2013 IEEE International Conference on Computational Intelligence and Computing Research (ICCIC), December 2013.
Susanta Chakraborty	INSAJSPS fellowship Publicity Chair & Program Committee member of 6thIEEE International workshop of Reliability Aware system Design and Test (RASDAT), India, January, 2015.

Research areas

The current research areas of the Department are as follows:

i. VLSI Design and Testing for Sub-micron Technology
ii. Theory and Applications of Cellular Automata in Diverse Fields
iii. Information System for Control and Management Applications
iv. Mobile Computing
v. Testing and synthesis of Quantum circuit, Reversible Circuit, Nano-Circuit and Digital Micro fluidic Bio-Chip
vi. Broadband Computing
vii. Image Processing including Document Image Processing and Content Based Image Retrieval
viii. Soft computing
ix. Computational geometry
x. Data mining
xi. Wireless sensor network

Research facilities (name specific equipment / picture, infrastructure etc)

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

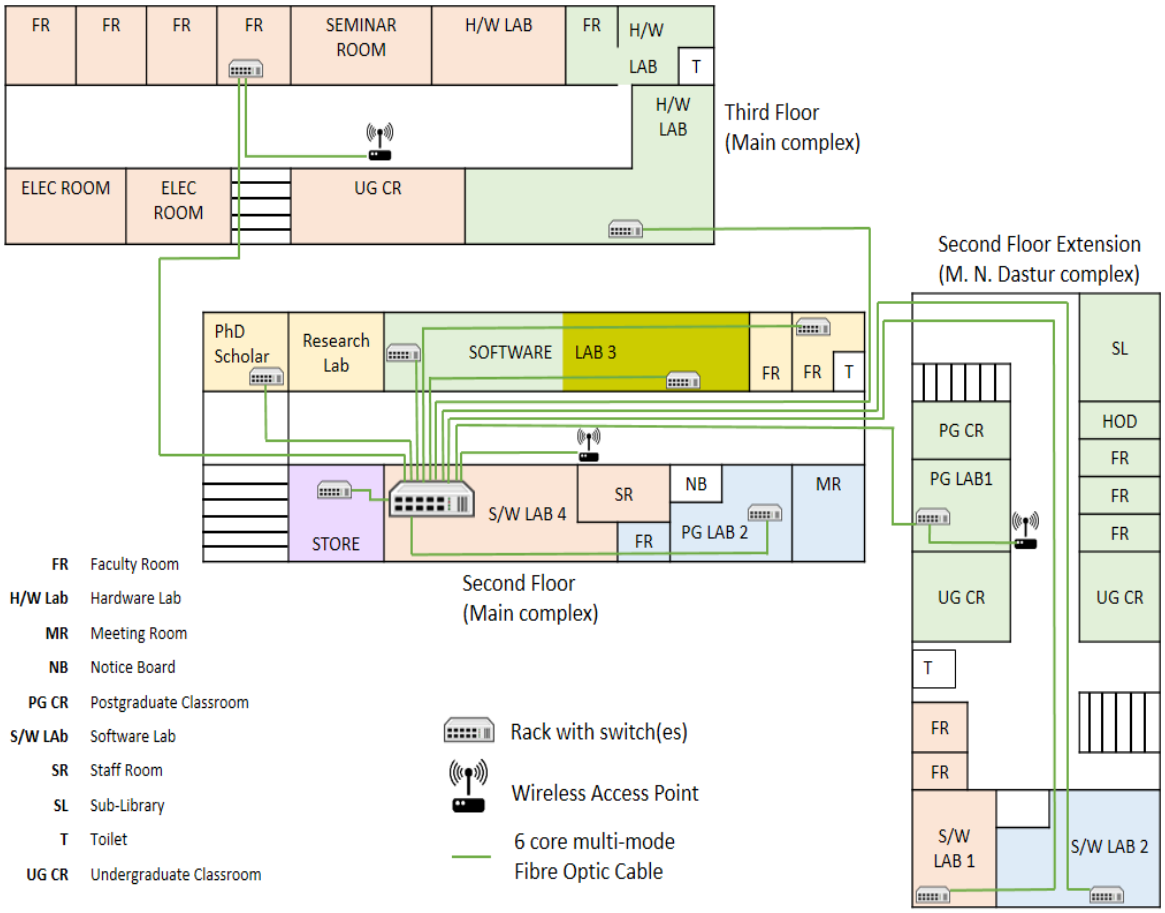
Network

The Department has 24-hour Internet access through Gigabit Ethernet backbone (Internet connection through NIC under National Knowledge Network). The entire department is covered under WiFi network created by multiple access points

Departmental sub-library

In addition to the Central Library of the Institute, the Department has a small but well-stocked library containing more than 1100 text and reference books on all topics included in the course curriculum of the Department.

Departmental LAN



Detailed facilities in the laboratories

Undergraduate

Software Laboratories	Hardware Laboratories
Resources: • **PCs**: 150 • **Servers** : 20 • **OS** : Linux, Windows, Unix • **Software**: Oracle 9i, matlab, CASE Tool, 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	Digital Circuit Experimentation Kit, Microprocessor S/W Development Kits, Embedded System Design Kits, Programmable Logic Controller, PCs, GPS Receiver Unit, RFID 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

Post-graduate and Research

The Department has four research laboratories that are specifically used by postgraduate students, research scholars and faculty members. These laboratories are equipped with 4 servers and 30 PCs. Additionally, the postgraduate students and research scholars working in hardware-related areas also utilize the Hardware laboratory.

Consultancy Work:

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

Support staff position:

Technical staff profile

Name	Designation	Highest Qualification	E- mail
Bimal Prasad Jana	Supdt. Tech. (teaching)	LEE	bjana@cs.iiests.ac.in
Susanta Kumar Chakravorty	Supdt. Tech. (teaching)	DEE	schak@cs.iiests.ac.in
PradipKumar Roy	Tech. Asst. – Grade I	DEE	pkr@cs.iiests.ac.in
SumitraBagchi	Tech. Asst. – Grade I	MCA, BSc (Physics)	bagchi@cs.iiests.ac.in
SarbaniBarari	Tech. Asst. – Grade II	Diploma in Electronics & Telecommunication Engineering, BSc	sarbani@cs.iiests.ac.in
SujataMisra	Tech. Asst. – Grade II	Diploma in Computer Science & Technology, BSc	sujata@cs.iiests.ac.in
Rumeli Bose	Tech. Asst. – Grade II	M.Tech	rumeli@cs.iiests.ac.in

Non-technical staff profile

Name	Designation
JudhistirMandal	Senior Assistant
Jahar Pal	Senior Peon
Rama Roy	Senior Peon
Bijon Sarkar	Helper Gr. – III

Recently Completed and Ongoing Sponsored Research / projects:

The following table lists some of the recently completed or continuing R&D projects undertaken by the faculty members of the Department.

Name of PI / Co-PIs	Title	Funding Agency	Total Quantum Support	Status
Abhik Mukherjee	Alignment and Ejection studies of Precision Guided Missiles	DRDO (RCI)	8 Lakhs	Completed
Abhik Mukherjee	Guidance, Control &Target Tracking strategies for a Precision Guided Missile	DRDO (RCI)	8 Lakhs	Completed
Abhik Mukherjee	Conceptual Design of NGC loop for PGM	DRDO(RCI)	10 Lakhs	Completed
Amit Kumar Das	Strategic Air Guidance	ADA, Bangalore	8.5 Lakhs	Completed
Amit Kumar Das	Content Based Image Retrieval (E-document)	Institute Sponsored	15 Lakh	Ongoing
Biplab Kumar Sikdar	Sponsored Cellular Automata Research Projects	Intel, Fujitsu	22 Lakhs	Completed
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)
Sekhar Mandal	De-noising MEMS Vibrating Gyro Using Wavelet Transform	DRDO	9 Lakhs	Completed
Sipra Das Bit, Saptarshi Ghosh	Post-Disaster Situation Analysis and Resource Management Using Delay-Tolerant Peer-to-Peer Wireless Networks	ITRA, Media Labs Asia, and DEITY	46.29 Lakhs	Sanctioned: 2013 (ongoing)

Details of publications of each faculty member

The research publications by the faculty members of the Department of Computer Science and Technology, during the **last four years upto March 2015**, are listed below

Dr. Amit Kumar Das

Journals

1. Sekhar Mandal, Amit K. Das, Partha Bhowmick, Bhabatosh Chanda, *A Unified Algorithm for Identification of Various Tabular Structures from Document Images*. IJDLS 2(2): 27-54 (2011)

2. Conferences:

3. Samit Biswas, Amit Kumar Das, *Writer Identification of Bangla Handwritings by Radon Transform Projection Profile*, Document Analysis Systems 2012: 215-219
4. Samit Biswas, Amit Kumar Das, *Fuzzy graph modeling for text segmentation from land map images*. ICVGIP 2012: 75.
5. Samit Biswas, Amit Kumar Das: Text segmentation from scanned land map images using radon transform based projection profile. SoCPaR 2011: 413-418

Dr. Biplab Kumar Sikdar

Journals

1. Nirmalya Sundar Maiti, Soumyabrata Ghosh, Biplab K. Sikdar, Parimal Pal Chaudhuri: *Rule Vector Graph (RVG) To Design Linear Time Algorithm for Identifying the Invertibility of Periodic-Boundary Three Neighborhood Cellular Automata*. J. Cellular Automata 7(4): 335-362 (2012)
2. Nazma Naskar, Sukanta Das, Biplab K. Sikdar: *Characterization of Nonlinear Cellular Automata Having Only Single Length Cycle Attractors*. J. Cellular Automata 7(5-6): 431-453 (2012)

Conferences

1. Mamata Dalui, Keshav Gupta, Biplab K. Sikdar, *Directory based cache coherence verification logic in CMPs cache system*. MES 2013: 33-40
2. Sukanta Das, Avik Chakraborty, Biplab K. Sikdar, *Counting Cycles in Reversible Cellular Automata*. ACRI 2012: 11-19
3. Nasiruddin Khan, Ilora Maity, Sukanta Das, Biplab K. Sikdar, *A Cellular Automata Based Scheme for Energy Efficient Fault Diagnosis in WSN*. ACRI 2012: 234-243
4. Sukanta Das, Anindita Sarkar, Biplab K. Sikdar, *Synthesis of Reversible Asynchronous Cellular Automata for Pattern Generation with Specific Hamming Distance*. ACRI 2012: 643-652
5. Mamata Dalui, Biplab K. Sikdar, *An Efficient Test Design for CMPs Cache Coherence Realizing MESI Protocol*. VDAT 2012: 89-98
6. Bibhash Sen, Manojit Dutta, Divyam Saran, Biplab K. Sikdar, *An Efficient Multiplexer in Quantum-dot Cellular Automata*. VDAT 2012: 350-351
7. Indrajit Banerjee, Prasenjit Chanak, Biplab Kumar Sikdar, Hafizur Rahaman, *DFDNM: A Distributed Fault Detection and Node Management Scheme for Wireless Sensor Network*. ACC (3) 2011: 68-81
8. Gunjan Bhattacharya, Ilora Maity, Biplab K. Sikdar, Baisakhi Das, *Exploring Impact of Faults on Branch Predictors' Power for Diagnosis of Faulty Module*. Asian Test Symposium 2011: 226-231
9. Mamata Dalui, Biplab K. Sikdar, *An Efficient Test Design for Verification of Cache Coherence in CMPs*. DASC 2011: 328-334
10. Baisakhi Das, Gunjan Bhattacharya, Ilora Maity, Biplab K. Sikdar, *Impact of Inaccurate Design of Branch Predictors on Processors' Power Consumption*. DASC 2011: 335-342
11. Ilora Maity, Gunjan Bhattacharya, Sukanta Das, Biplab K. Sikdar, *A cellular automata based scheme for diagnosis of faulty nodes in WSN*. SMC 2011: 1212-1217

Dr. Uma Bhattacharya:

Journals

1. Abhijit Sharma, Pratik Sharma, Rituparna Chaki, Uma Bhattacharya, *Reducing Call Blocks in Cellular Network with non-uniform traffic conditions*, International Journal Foundations of Computing and Decision Sciences, vol. 39, No. 4, 2014.
2. A. Sharma, P. Kar, P. Biswas and U. Bhattacharya, *Adaptive Call Admission Control Scheme with Optimal Resource Allocation for Multi-Class Cellular Networks*, International Journal of Autonomous and Adaptive Communications Systems (IJAACS), Inderscience Publishers, 2014 (Accepted – in process)
3. Ditipriya Sinha, Uma Bhattacharya and Rituparna Chaki, *CLAR: A novel cluster oriented agent based routing protocol for MANET*, International Journal on Foundations of Computing and Decision Sciences Vol. 38, No. 1, 2013. DOI number is 10.2478/v10209-011-0018-5.
4. M.Chatterjee, A.Sharma and U. Bhattacharya, *Fault Tolerant Routing for Minimizing Congestion in WDM Optical Networks Based on de Bruijn Graph*, The Mediterranean Journal of Computers and Networks, SoftMotor Ltd., U.K., 2013
5. Ditipriya Sinha, Uma Bhattacharya and Rituparna Chaki, *A CRT based encryption methodology for secure communication in MANET*, International Journal of Computer Applications (IJCA) Vol.39, No.-16, 2012. DOI number is 10.5120/4904-7406.
6. M. Chatterjee, S. Sanyal, M. Nasipuri, U. Bhattacharya, *A wavelength assignment algorithm for de Bruijn WDM networks*, International Journal of Parallel, Emergent and Distributed Systems (IJPED), Taylor & Francis, UK, 2012
7. Ditipriya Sinha, Uma Bhattacharya And Rituparna Chaki, *A Novel Distributed Clusterized*
8. *Approach Towards Building An Agent Based Routing Topology For MANET*, International Conference on Wireless & Mobile Networks (WiMoN-2011) will be published by Springer (LNCS) in Communications in Computer and Information Science (CCIS) Series in 2011.

Conferences

1. Ira Nath, Monish Chatterjee , Uma Bhattacharya, *A Survey on Regenerator PlacementProblem in Translucent Optical Network*, Published in the International Conference onCircuits, Systems, Communication and Information Technology Applications (CSCITA),Pages:408-413, Publisher: IEEE, April 2014.
2. Abantika Chowdhury, Abhijit Sharma, Uma Bhattacharya, *Overview of Location management in PCS network: A survey*, ICACNI, KIIT University, Bhuvaneswar, Orissa, 23-25 June, 2015, accepted on February 2015.
   A. Sharma, S. Konai and U. Bhattacharya, *New Call and Handoff Call Management Scheme for Reuse Partitioning Based Cellular Systems*, IEEE International Conference on Recent Advances and Innovations in Engineering (ICRAIE-2014), Jaipur, India 09-11, May – 2014.
3. Abhishek Bandyopadhyay , Debdutto Chakraborty , Uma Bhattacharya and Monish Chatterjee, *On Improving Static Routing and Wavelength Assignment in WDM All-Optical Mesh Networks*, ICACNI 2015 , accepted on Feb, 2015.
4. Abhishek Bandyopadhyay, Mohtasham Raghib, Uma Bhattacharya, Monish Chatterjee *Dynamic Survivable Traffic Grooming with Effective Load Balancing in WDM All-Optical Mesh Networks* , ICACCI 2014.
5. Abhijit Sharma, Uma Bhattacharya, *Load Balancing Scheme for Wireless Cellular Networks*, 7th International Conference on Ubiquitous Information Management and Communication (ICUIMC), Kota Kinabalu, Malaysia, 2013.

6. Ditipriya Sinha, Uma Bhattacharya And Rituparna Chaki, *A Secure Routing Scheme in MANET with CRT based Secret Sharing*, Proceedings of 15th International Conference of Computer and Information Technology,2012 (ICCIT 2012).
7. Abhijit Sharma, Uma Bhattacharya, *An Efficient Scheme to Reduce Call Blocking in Cellular Networks*, IEEE 1st International Conference on Mobile Services, Hawaii, 2012.
8. Abhijit Sharma, Uma Bhattacharya, *An Efficient Call Admission Control Scheme to Reduce Call Blocking in Mobile Cellular Systems*, IEEE International Conference on Communication, Networks and Satellite (ComNetSat), 2012.
9. Abhijit Sharma, Avijit Roy, Suman Ghosal, Rituparna Chaki, Uma Bhattacharya, *Load Balancing in Cellular network: A Review*, 3rd International Conference on Computing Communication & Networking Technologies (ICCCNT), Coimbatore.

Dr. Sekhar Mondal

Journals

1. **S.Mondal, A. K. Das, P. Bhowmick, B. Chanda, *A unified Algorithm for Identification of Various Tabular Structures from Document Images*, International Journal of Digital Library Systems, Volume 2(2), April-June 2011, pp. 27-54.**
2. **Kasturi Ghosh, A. Roy, S. Mondal, B. N. Roy, *Parametric Deviation Based Analog Test and Diagnosis System*, Journal of Circuits, Systems, and Computers, Volume 20, No. 7, pp. 1-18, 2011.**

Conferences

1. **Paramita De, S. Mondal, Partha Bhowmick, *Identification of Annotations in Electrical Drawings*,5th International Conference on Signal and Image Processing, January, 08-10 (2014), Bengaluru, India (accepted).**
2. **R. Datta, P. P. Chattopadhyay, S. Mondal, *Constitutional and Spatial Characterization of Bainitic Micro-Structure by Image Analysis*, International Conference on Emerging Application of Information Technology; EAIT 2011, Feb. 19--20, Kolkata, India, pp. 214-216, 2011.**
3. **Paramita De, S. Mondal, Partha Bhowmick, *Recognition of Electrical Symbols in Document Images using Morphology and Geometric Analysis*, International Conference of Image Processing (ICIIP 2011) IEEE Press, Nov. 3--5, Himachal Pradesh, India, 2011.**
4. **Sanjib Sur, Avishek Dan, S. Mondal, Partha Bhowmick, *Handwritten Bangla Character Recognition in Machine-printed Forms using Gradient Information and Haar Wavelet*, International Conference of Image Processing (ICIIP 2011) IEEE Press, Nov. 3--5, Himachal Pradesh, India, 2011.**

Somnath Pal

Journals

1. Sourav Mandal and Somnath Pal, *A Three-Pass Algorithm for Generation of BE-Matrices from IUPAC Names*, International Journal of Chemoinformatics and Chemical Engineering,3(2), 2013.
2. Sanjay Ram and Somnath Pal, *An Efficient Algorithm for Automating Classification of Chemical Reactions into Classes in Ugi's Scheme*, International Journal of Chemoinformatics and Chemical Engineering,2(2), 1-14, 2012.

Dr. Jaya Sil

Journals

1. *Knowledge extraction using data mining for multi-class fault diagnosis of induction motor*, Neurocomputing, Volume 166, 20 October 2015, Pages 14–25
2. *No-Reference Image Quality Assessment using Interval Type 2 Fuzzy Sets*, Applied Soft Computing, Volume 30, May 2015, Pages 441–453
3. *Improved Bees Algorithm for Protein Structure Prediction Using off-lattice Model*, Springer Advances in Intelligent Systems and Computing Volume 378, 2015, pp 39-52

4. *Levy Distributed Parameter Control in Differential Evolution for Numerical Optimization*, Springer Verlag, Natural Computing 2015, Pages 1-16
5. *Simultaneous feature selection and clustering with mixed features by multi objective genetic algorithm*, International Journal of Hybrid Intelligent Systems, IOS Press, 11 (2014) 41–54
6. **Santi P. Maity, Seba Maity, Jaya Sil and Claude Delpha, *Optimized Spread spectrum watermarking for fading-like collusion attack with improved detection*, Special Issue on Wireless Personal Communications Journal, Springer Verlag, vol. 69, no. 4, April (II), 2013.**
7. Nandita Sengupta, Jaydeep Sen, Jaya Sil and Moumita Saha, *Designing of On Line Intrusion Detection System Using Rough Set Theory and Q Learning Algorithm*, Elsevier Neurocomputing Journal, vol. 111, 161-168, July, 2013
8. **Santi P. Maity, Seba Maity, Jaya Sil and** Claude Delpha, *Perceptually Adaptive MC-SS Image Watermarking using GA-NN Hybridization in Fading Gain*, International Scientific Journal on Engineering Applications of Artificial Intelligence, Elsevier, 2013.
9. **Santi P. Maity, Seba Maity, Jaya Sil and Claude Delpha, *Optimized Spread spectrum watermarking for fading-like collusion attack with improved detection*, Special Issue on Wireless Personal Communications Journal, Springer Verlag, vol. 69, no. 4, April (II), 2013.**
10. Santi P. Maity, Seba Maity, Jaya Sil, Claude Delpha, *Collusion resilient spread spectrum watermarking in M-band wavelets using GA-fuzzy Hybridization*, The Journal of Systems and Software, Elsevier Science Direct, vol. 86, pp47-59, 2013.
11. Santanu Phadikar, Jaya Sil, Asit Kumar Das, *Rice diseases classification using feature selection and rule generation techniques*, Computers and Electronics in Agriculture, pp 76-85, vol. 90, 2013.
12. Ranita Biswas and Jaya Sil, *An Improved Canny Edge Detection Algorithm Based on Type-2 Fuzzy Sets*, Procedia Technology, Elsevier, 4 (2012) 820 – 824, 2012.
13. Indrajit De and Jaya Sil, *Entropy based fuzzy classification of images on quality assessment*, Journal of King Saud University – Computer and Information Sciences, Elsevier, 24, 165–173, 2012.
14. P. Dey, S. Dey, S. Datta and J. Sil, *Dynamic Discreduction Using Rough Sets*, Applied Soft Computing, Elsevier Science Direct, 11 (2011), 3887–3897.
15. Indrajit De and Jaya Sil, *ANFIS Tuned No-Reference Quality Prediction of Distorted / Decompressed Images featuring Wavelet Entropy*, International Journal of Computer Information Systems and Industrial Management Applications ISSN 2150-7988 Volume 3 (2011) pp. 298-305.
16. Suparna Biswas, Jaya Sil and Nandita Sengupta, *Background Modeling and Implementation using Discrete Wavelet Transform - A Review*, ICGST-GVIP Journal, Volume 11, Issue 1, March 2011
17. Jaya Sil and Asit K Das, *Variable Length Reduct Vs. Minimum Length Reduct - A Comparative study*, Procedia Technology, Elsevier, 00 (2011) 1 – 10.
18. Kankana Mukhopadhyay, Jaya Sil and N.R. Banerjea, *A Competency Based Management System for Sustainable Development by Innovative Organizations: A Proposal of Method and Tool*, Vision, 15, 2 (2011): 153-162

Conferences:

1. P. Konar, M. Saha, J. Sil and P. Chattopadhyay, *Fault Diagnosis of Induction Motor Using CWT and Rough-Set Theory*, IEEE Symposium on Computational Intelligence in Control and Automation (CICA), pp. 9-15, 16 – 19 April 2013.
2. Santi P. Maity, Seba Maity, Jaya Sil, Claude Delpha, *Dynamic allocation for watermark payload in MC-CDMA system under fading attack*, IEEE National Conference on Communications (NCC), 2013.
3. Amit Paul and Jaya Sil, *Gene Selection for Classifying Patients using Fuzzy Importance Factor*, IEEE International Conference on Fuzzy Systems (FUZZ-IEEE), Hyderabad, India, 2013
4. D. Dutta, P. Dutta, and J. Sil, *Simultaneous continuous feature selection and K- clustering by multi objective genetic algorithm*, IEEE Int. Advance Computing Conf. (IACC 2013),IEEE Press, Ghagiabad, UP, India, pp. 937–942, Feb. 2013. doi: 10.1109/IAdCC.2013.6514352.

5. P. Konar, S.Bhawal, M. Saha, J. Sil and P. Chattopadhyay, *Rough set based multi-class fault diagnosis of induction motor using Hilbert Transform*, International Conference on Communications, Devices and Intelligent Systems (CODIS), pp-337-340, Dec 2012.
6. Nandita Sengupta and Jaya Sil, *Comparison of Performance for Intrusion Detection System using Different Rules of Classification*, ICIP 2011 CCIS 157, pp.87-92, Springer-Verlag, 2011.
7. Indrajit De and Jaya Sil, *No Reference Image Quality Assessment by Designing Fuzzy Relational Classifier using MOS Weight Matrix*, D.-S. Huang et al. (Eds.): ICIC 2011, LNBI 6840, pp. 361–369, Springer-Verlag Berlin Heidelberg 2011.
8. Maity, Seba Sil, Jaya Maity, Santi P. Delpha, Claude, *Fuzzy-GA Hybridization in M-band Wavelets for Collusion Resilient Optimized SS Watermarking*, 10.1109/EuVIP.2011.6045527, pp-205-210, EUVIP 2011.
9. Indrajit De and Jaya Sil, *No reference image quality Assessment using Fuzzy Relational Classifier*, H. Deng et. Al. (Eds): AICI2011, Part I, LNAI 7002, Springer-Verlag, pp. 551-558, 2011.
10. Nandita Sengupta and Jaya Sil, *Evaluation of Rough Set Theory Based Network Traffic Data Classifier Using Different Discretization Method*, IEEE International Conference on Intelligent Information Networks, pp. 110-114, 2011.
11. Santanu Phadikar, Jaya Sil and Asit K Das, *Classification of Rice Leaf Diseases Based on Morphological Changes*, IEEE International Conference on Network Communication and Computer (ICNCC 2011), pp 389-393, 2011.
12. Nandita Sengupta and Jaya Sil, *Comparison of Different Rule Calculation Method for Rough Set Theory*, IEEE International Conference on Network Communication and Computer (ICNCC 2011), pp 400-404, 2011.
13. Sen, P. Banerjee and J. Sil, *Feature Selection of Network Traffic Data to Develop Intrusion Detection System*, Proceedings of the first International Conference on SCICT 2011, pp. 197-201, 2011

Dr. Susanta Chakraborty:

Book Chapters:

1. S. De, S. Bhattacharyya and S. Chakraborty (eds. S. Bhattacharyya and P. Dutta), "*Multilevel Image Segmentation by a Multiobjective Genetic Algorithm Based OptiMUSIG Activation Function*", vol. 1, pp. 122 – 162, *Handbook of Research on Computational Intelligence for Engineering, Science and Business, IGI Global, 2012.*
2. S. De, S. Bhattacharyya and S. Chakraborty (eds. B. K. Tripathy and D. P. Acharjya), "*Efficient Color Image Segmentation by a Parallel Optimized (ParaOptiMUSIG) activation Function*", ***Global Trends in Knowledge Representation and Computational Intelligence, IGI Global.***

Journals:

1. Bikromadittya Mondal and Susanta Chakraborty "A Comprehensive Fault Dignosis Technique for reversible Circuit" ***Electrical Engineering Journal, Elsevier, 2014.***
2. Nabanita Das, SusantaChakraborty, and ParthaSarathiDasgupta " Optimized Routing and Pin-Constrained design of digital Micro-Fludic Bio-Chip" *International Journal on Information Theory(IJIT), Vol3, No1, January, 2014.*
3. S. De, S. Bhattacharyya and S. Chakraborty, "*Genetic Algorithm Based Automatic Clustering Technique Using Fuzzy Intercluster Hostility Index*,**" *IEEE Transactions on Fuzzy Systems***. (Communicated).
4. S. De, S. Bhattacharyya and S. Chakraborty, "*Multilevel Image Segmentation by NSGA II based OptiMUSIG Activation Function",* ***Foundations of Computing and Decision Sciences.*** (Communicated).
5. Sourav De , Siddhartha Bhattacharyya, Susanta Chakraborty "Color image segmentation using parallel OptiMUSIG activation function" Applied Soft Computing Journal, vol-12, no-10, pp. 3228 – 3236, 2012.

Conferences:

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2. Samit Biswas, Amit Kumar Das and Bhabatosh Chanda, "Text segmentation from bangla land map images", Image Processing Communications, Vol.- 19(1):21–34, 2014.
3. Samit Biswas, Sekhar Mandal, Amit Kumar Das and Bhabatosh Chanda, "Land map images binarization based on distance transform and adaptive threshold", Document Analysis Systems (DAS), 2014 11th IAPR International Workshop on, vol., no., pp.334,338, 7-10 April 2014
4. Sayan Mandal, Samit Biswas and Amit Kumar Das, "Land Map Image Dataset: Ground-truth and Classification using Visual and Textural Features", Image Processing & Communications, Vol. - 19(4):37–55, 2014.
5. Sayan Mandal, Samit Biswas, Amit Kumar Das, and Bhabatosh Chanda, "Binarisation of colour map images through extraction of regions", In Computer Vision and Graphics - International Conference, ICCVG 2014, Warsaw, Poland, September 15-17, 2014. Proceedings, pages 418–427, 2014.
6. Samit Biswas, Sekhar Mandal, Amit Kumar Das and Bhabatosh Chanda**,** *Land Map Images Binarization based on Distance Transform and Adaptive Threshold*, DAS-2014, Tours – Loire Valley, France, (Accepted for Publication)
7. Samit Biswas, Amit Kumar Das, *Text Segmentation from Land Map Images*, Pattern Recognition and Machine Intelligence (PReMI 2013), ISI kolkata, pp: 521-529, ISI, Kolkata.
8. Samit Biswas, Amit Kumar Das, *Fuzzy Graph Modeling for Text segmentation from Land Map Images*, In: Proceedings of the Eighth Indian Conference on Computer Vision, Graphics and Image Processing, ICVGIP '12, Bombay, India, pp. 75:1-75:7. ACM, New York, NY, USA (2012). DOI 10.1145/2425333.2425408.
9. Samit Biswas, Amit Kumar Das, *Text Extraction from Scanned Land Map Images*, IEEE/OSA/IAPR International Conference on Informatics, Electronics & Vision, Dhaka, Bangladesh, pp. 231-236, May 2012.
10. Samit Biswas, Amit Kumar Das, *Writer Identification of Bangla handwritings by Radon Transform Projection Profile*, DAS-2012, Gold Coast, Queensland, Australia, pp: 215-219, March 2012.
11. Samit Biswas, Amit Kumar Das, *Content Independent Writer Identification using Occurrences of Writing Styles for Bangla Handwritings*, NCVPRIPG-2011, IEEE CS Press, pp.154-157, December 2011.
12. Samit Biswas, Amit Kumar Das, *Text Segmentation from Scanned Land Map Images using Radon Transform based Projection Profile*, SoCPaR-2011, pp. 413 –418, Dalian, China, October 2011.

Surajeet Ghosh

Conferences:

1. S. S. Ray, **S. Ghosh**, R. Prasad, "Low-Cost Hierarchical Memory-Based Pipelined Architecture for DNA Sequence Matching", *India Conference (INDICON), 2014 Annual IEEE,* 11-13 Dec. 2014
2. S. S. Ray, A. Bhattacharya, **S. Ghosh**, "A Fast Range Matching Architecture with Unit Storage Expansion Ratio and High Memory Utilization using SBiCAM for Packet Classification", *India Conference (INDICON), 2014 Annual IEEE,* 11-13 Dec. 2014
3. S. S. Ray, A. Chatterjee, **S. Ghosh**, "A Novel Approach for Prefix Minimization using Ternary Trie (PMTT) for Packet Classification", *IEEE TENCON 2014*, 22nd-25th Oct. 2014
4. S. S. Ray, A. Chatterjee, S. Ghosh, *A Hierarchical High-throughput and Low Power Architecture for Longest Prefix Matching for Packet Forwarding*, Proc. of IEEE International Conference on Computational Intelligence and Computing Research, (Available in IEEE Xplore Digital Library), Madurai, pp. 628-631, 26th-28th Dec. 2013.
5. S. Ghosh, S. S. Ray, S. Mandal, *High Through-put Scalable Query Processing Architecture using STCAM*, Proc. of IEEE International Conference on Computational Intelligence and Computing Research, (Available in IEEE Xplore Digital Library), Madurai, pp. 650-653, 26th-28th Dec. 2013,
6. S. Saha Ray, S. Ghosh, *Smart Ternary Content Addressable Memory (STCAM) Architecture*, IEEE International Conference on Advanced Communication Control and Computing Technologies (ICACCCT) (Available in IEEE Xplore Digital Library), Ramanathapuram, pp. 434 – 438, 23-25 Aug. 2012.
7. S. Ghosh, J. Ghosh, S. Saha Ray, *Architecture of Configurable K-way C-access Interleaved Memory*, International Conference on Process Automation Control and Computing (ICPACC) (Available in IEEE Xplore Digital Library), Coimbatore, 20-22 July 2011.

Tamal Pal

Conferences:

1. T. Pal, A. Srivastava, *Shape Classification Of Medical Images Using Fuzzy Logic*, ICCET 2010, Jodhpur Institute of Engineering & Technology.
2. A.Srivastava, T.Pal, *Handling Inconsistency In Designing A Classifier Using Unsupervised Learning And Rough Set Theory*, ICCET 2010, Jodhpur Institute of Engineering & Technology.

Malay Kule

Conferences:

1. Malay Kule, Hafizur Rahaman, Bhargab B. Bhattacharya, *On Finding a Defect-Free Component in Nanoscale Crossbar Circuits,* Fourth International Conference on Eco-friendly Computing and Communication Systems *(Elsevier)*, ICECCS2015, NIT Kurukshetra, India. (Communicated)
2. Tamoghna Mandal, Malay Kule, *An Improved Cryptanalysis Technique based on Tabu Search for Knapsack Cryptosystem*, 1st International Conference on Next Generation Computing Technologies *(IEEE)*, NGCT-2015, Dehradun, India. (Communicated)
3. Supravo palit, Saptarshi Neil Sinha, Mostafiz Amin Molla, Atreyee Khanra, Malay Kule, *A Cryptanalytic Attack on the Knapsack Cryptosystem using Binary Firefly Algorithm,* IEEE International Conference on Computer & communication Technology (ICCCT) -2011, Allahabad, India, pp. 428 – 432, 2011.
4. Saptarshi Neil Sinha, Supravo palit, Mostafiz Amin Molla, Atreyee Khanra, Malay Kule, *A*
5. *Cryptanalytic Attack on Knapsack Cipher using Differential Evolution Algorithm,* IEEE RAICS2011, Bangalore, Kerala, India, pp. 317 – 320, 2011.
6. M Kule, S Sen, A Salman, H Rahaman, *Simulation of Symmetric Functions with optimal*
7. *Solution through Defective Nanoscale crossbar Circuits using Greedy Method*, ICCET2010,
8. pp. E-102 – E-106, Jodhpur, India.

Patents / Invention Disclosure / Technology Transfer / Copyright

Patent Awarded – Method and Apparatus for Image Retrieval – (US Patent Number: US 2003/0198387 A1) – Inventors: Tinku Acharya, Bhabotash Chanda, **Amit Kumar Das**, Sanjoy Kumar Saha Oct 23, 2003.

Seminar / Workshops / Conferences / Training programme organized by the department (2013 - 14)

(1) Social Media Analysis and Data Mining (June 2013)

A short term **TEQIP-II sponsored** course coordinated by **Dr. Saptarshi Ghosh** and **Dr. Asit Kumar Das** on **Social Media Analysis and Data Mining** was organized by the Department during June 10-14, 2013. About 60 participants attended the course, both from academic institutions as well as from the industry, including organizations such as BESU, IIT Kharagpur, WBUT, NIT Durgapur, ManipalUniversity, TCS Innovation Labs and others. The course had invited talks on relevant topics, from eminent faculty members from BESU, IIT Kharagpur, ISI Kolkata, IIT Patna, IIM Kolkata, TCS Innovation Labs etc. Also included were three demonstration sessions, conducted by research scholars from IIT Kharagpur and ISI Kolkata and researchers from TCS Innovation Labs, Kolkata.

(2) Workshop on Nanotechnology & Biochip (July 2014)

A **TEQIP-II sponsored** three-day Workshop coordinated by **Prof. Susanta Chakraborty, Dr. SulataMitra** and **Mr. Malay Kule** on **Nanotechnology & Biochip** was organized by the department of Computer Science and Technology in July 2014.

The workshop invited embedded talks and tutorials on cutting edge topics related to hybrid nanotechnology systems, synthesis, testing, fault diagnosis, placement and routing of nanoelectronic circuit along with digital micro-fluidic biochip, nano-biochip and reliability aware design of CMOS. It was also focused on synthesis, testing and fault diagnosis of quantum reversible circuits and quantum cryptography. The key objective of the workshop is to provide an informal forum for creative discussion and debate in these areas.

More than 60 participants attended the course, both from academic institutions as well as from the industry, including organizations such as IIEST Shibpur, Calcutta University, WBUT, Simplex Infrastructure Ltd. and others. The course had invited talks on relevant topics, from eminent faculty members from IIEST Shibpur, ISI Kolkata, IIT Mumbai, IIT Guwahati, IIM Kolkata and IBM Semiconductor Research Group, Bangalore.

(3) A **ISTE workshop** on **Computer Programming**, Under the National Mission on Education through ICT, MHRD, New Delhi, was Jointly Conducted by Indian Institute of Technology, Bombay and Indian Institute of Engineering Science and Technology (Formerly Bengal Engineering and Science University), Shibpur, Howrah and was coordinated by **Mr. Surajeet Ghosh** on behalf of department of CST **from May 20th 2014 to June 21st 2014** (One week of equivalent work online from 20th May 2014 to 15th June and Physical participation at IIEST from 16th – 21st June 2014).

Technology Developed / Innovations

The following programme specific improvements were made based on the recommendation and justification by the members of Board of Studies where experts from various renowned institutes were present.

MODIFICATION	DESCRIPTION
New Electives	1.Peripheral Devices and Interfaces(CS703/2) 2.Advanced Algorithms(CS704/1) 3.Introduction to Bioinformatics and Data Management (CS704/2) 4.Broadband Computing (CS704/3) 5.Information Security (CS704/6) 6.CAD for VLSI (CS802/1) 7. Peripheral Devices and Interfaces Lab(CS753/2) 6.CAD for VLSI Laboratory (CS852/1) 8.Data Mining Lab(CS852/2) 9.Mobile Computing Lab(CS 852/3) 10.Soft Computing Lab(CS852/4)
Old Electives	1.Principles of Programming Language(CS705/1) 2.Modelling and Simulation(CS705/2) 3.Parallel Algorithm(CS705/3) 4.Computational Geometry(CS705/4) 5.Software Quality Assurance and Management(CS706/1) 6.Information and Coding Theory(CS706/2) 7.Multimedia Technology(CS 706/3) 8. Advanced Computer Architecture(CS706/4) 9.Real Time System Design(CS 804/4)
Compulsory to Elective	1.Computer Graphics(New: CS 704/7 Old:CS701) 2.Computer Control and Industrial process (New:CS703/1 Old:CS701)
Elective to Compulsory	Information and Coding Theory (New:CS702 Old:CS706/2)
New Theory/Lab	1.Programming Paradigm (CS403) 2. Programming Paradigm Lab (CS453) 3.Embeded System (CS602) 4.Embeded System Lab(CS 652)
Old Theory/Lab	1.Discrete Structure Lab(CS454) 2.Object Oriented Technology(CS403) 3. Object Oriented Technology Lab(CS453) 4.Electronic Design Automation(CS 404) 5. Electronic Design Automation Lab(CS 452) 6.Analysis Design and Management of Information system(CS601) 7. Analysis Design and Management of Information system Lab (CS651) 8.System Programming (CS605) 9.System Programming Lab(CS654)

	10.Artificial Intelligence and Expert System(CS803/1) 11.Computer Control and Industrial Process lab(CS753) 12.Computer Graphics Lab(CS751)
MODIFICATION	**DESCRIPTION**
Theory /Lab shifted to different semester	1.Compiler design (New:CS603,Old:CS703,7th Semester to 6th Semester) 2.Software Engineering (New:CS701,Old:CS801, 8th Semester to 7th Semester) 3. Software Engineering Lab (New:CS751,Old:CS851, 8th Semester to 7th Semester)
Updated Theory	1.Computer Organization and Architecture (CS 402,formerly 'Computer organization') 2. Computer Organization and Architecture II (CS 502,formerly 'Computer Architecture') 3.Artificial Intelligence (CS 801,formerly 'Symbolic logic and artificial intelligence' CS802)
Software Lab update	Part of System Programming Lab(CS654) is included with Operating System Lab(CS551)
Hardware Lab update	Some experiments of 'Computer Organization and Architecture' Lab(CS452) are modified and one experiment is newly included

Foreign visits and Invited Lectures

The faculty members of the Department are regularly invited for delivering lectures/talks at other reputed academic institutions. The following table gives some examples of such invited lectures/talks in recent past.

Faculty	Topic	Programme / University / Institute	Year
Abhik Mukherjee	Control Systems and Systems Biology	WBSU, Barasat	2015
Asit Kumar Das	Application of Data Mining & Rough Set Theory in Signal Processing	Workshop on VLSI, Communications and Signal Processing: Design and Implementation, College of Engineering & Management, Kolaghat	2013
Jaya Sil	Removal of Uncertainty in Feature Extraction of Bone Scintigraphy using Type 2 Fuzzy Logic	Silesian University, Poland	2012
	Rough Set Theory	Kalyani University	2013
	Artificial Neural Network	Heritage Institute of Technology, Kolkata	2013
	Data Mining with Big Data	Centre for Mobile Computing, Jadavpur University	2014
Saptarshi Ghosh	Socio-technological networks in the online and off-line worlds	Workshop on Social Computing, IIT Kharagpur	2012
	Recent issues in Indian Railways: Congestion, Delay and Accidents	Invited poster at IBM Collaborative Academia Research Exchange (I-CARE), New Delhi	2013
	Online Social Networks: Network evolution and topical content search	Short Term Course on Recent Advances in Network Algorithms, Department of CSE, IIT Guwahati	2013
	Utility of Online Social Networks as Sources of Topical Information	Workshop on Introduction to Opportunistic Mobile Networks and its Applications, NIT Durgapur	2014
Sipra Das Bit	Wireless Sensor Networks	NIT Rourkela	2011
	Energy Efficiency in Wireless Sensor Networks	Heritage Institute of Technology, Kolkata	2012
	Energy Saving Security mechanism in Wireless Sensor Network	Kalyani Govt. Engineering College	2013
	Energy Saving Techniques in Wireless Multimedia Sensor network	Centre for Mobile Computing, Jadavpur University	2014
Susanta Chakraborty	Quamtum Computing & Nano-electronice	22nd West Bengal State Science & Technology Congress, North Beng. Univ.	2015
	Synthesis, fault diagnosis & redundancy in reversible circuit	4th IEEE workshop on Reliability Aware System Design and Test (RASDAT)	2015
	Synthesis and Redundancy of Balanced Ternary Logic Function in Quantum Circuit	Nara Institute of Science and Technology, Nara, Japan	2013
	Mathematical model for Scientific and Technological Application	RCCIIT, Kolkata	2013
	Digital Micro-fluidic Bio-Chip	Department of CSE, IIT Guwahati	2014
Samit Biswas	Computer Vision and Graphics	Warsaw, Poland	2014
Surajeet Ghosh	A Novel Approach for Prefix Minimization using Ternary Trie (PMTT) for Packet Classification	Bangkok, Thailand	2014

Visitors to the Department (Indian & Foreign)

Role of Mathematics in Computer Science – Invited talk Series (2013-14)

The Department organized a series of invited talks on "Role of Mathematics in Computer Science" which included reputed speakers from various disciplines. The following invited talks were arranged during 2013-14.

Speaker	Topic
Professor Ajoy Ray, BESU Shibpur	Group Theory
Murari Mitra, Department of Mathematics, BESU Shibpur	Probability Models in Computer science
Sourav Sen Gupta, ISI Kolkata	Number Theory for Information Security
Angshul Majumdar, IIIT Delhi	Collaborative Filtering in Recommender Systems
Sayan Bhattacharya, MPI-INF, Germany	Auctions and Approximations
Goutam Paul, ISI Kolkata	Cryptography
Tyll Krueger, Wroclaw University of Technology, Poland	Stochastic models of cancer evolution
Sushmita Ruj, ISI Kolkata	Some Mathematical Tricks to Secure Wireless Sensor Networks

Alumni Contribution to the Department

- In July 2014, ***Nirupam Roy***, ***Sanjib Sur*** and ***Souvik Sen*** (all from class of 2007), presented three different research papers at the world's most prestigious mobile systems conference: ***MOBISYS 2014***. That is 12.5% of all the papers accepted at MOBISYS. Nirupam Roy and Sanjib Sur are pursuing PhD at University of Illinois at Urbana Champaign and University of Wisconsin-Madison respectively. Souvik Sen is a Research Scientist at Hewlett-Packard Labs.
- ***Bibaswan Chatterjee*** (2013), secured first position (All India Rank 1) in ***GATE 2013***. ***Suryakant Agarwal*** (also from 2013), secured All India Rank 7 in ***GATE 2014***.
- ***Sanjib Ghosh*** (1999) has five patents to his name, assigned to institutions like ***Cadence Design Systems***, ***Oracle America*** and ***Sun Microsystems***. The details can be found at http://patents.justia.com/inventor/sanjib-ghosh

Higher Studies details of the passed out students

Sl. No.	Name of the students	Institution	Year of passing
1	Ahmar Md. Hasmi	IIT, Bombay	2014
2	Zahira Nasrin	IIT, Kanpur	
3	Anirban Majumder	IIT, Kanpur	
4	Anupama Naskar	IIM, Lucknow, MBA	
5	Arpan Das	IIT, Delhi	
6	Romit Das	Chennai Mathematical Institute	
7	Purnata Ghosal	IIT, Madras, MS	
8	Priyanka Mondal	IISC, Bangalore	2013
9	Bibaswan Chatterjee	IISC, Bangalore (Secured First place in GATE, CSE stream)	
10	Suman Dutta	IISC, Bangalore	
11	Joydip Mondal	IIT, Roorki	
12	Puja Biswas	IIT, Kanpur	
13	Souvik Sinha Deb	IIT, Bombay	
14	Ayan Ghatak	IIT, Kanpur	
15	Sayantan Marik	IIT, Kanpur	
16	Adirupa Saha	IISC, Bangalore	2012
17	Amarta Chowdhuri	IIT, Delhi	
18	Rahul Mitra	IIT, Bombay	
19	Sahisnu Majumder	IIT, Roorki	
20	Tuhin Sharma	IIT, Roorki	
21	Abhishek Chanda	Rutgers University, Rutgers, New Jersey	
22	Md. Mobashir	National University of Singapore	
23	Amit Saha	IIT, Delhi	
24	Abhishek Dan	IIT, Bombay	2011
25	Sanjib Sur	University of Wisconsin–Madison	
26	Rikhiya Ghosh	Rensselaer Polytechnic Institute	
27	Joydeep Sen	IIT, Kanpur	
28	Srirupa Chatterjee	University of Tulsa, Tulsa, Oklahoma, United States	
29	Pritam Banerjee	IIM, Ahmadabad	
30	Satarupa Biswas	IIT, Delhi	

Departmental Societal Activities

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. Some of the recent events hosted by COENSOBEC are highlighted:

- **ProgramIIEST** - a symposium of programmers and designers, powered by Mozilla (28-29 Mar 2014)
- **Firefox OS: Renaissance of Mobile App Technology (FORMAT)** - a two-day event focusing on developing web apps for Firefox OS (22-23 Mar 2013)
- **Microsoft India AppFest 2013** (26 Feb 2013)
- **Hello to Web Apps** by Google Developers Group (9 Feb 2013)
- **MozTI@BESU (Mozilla Transposing Ideas in BESU)** - A two-day long event on Open-Source software development (5-6 Jan 2013)
- **BESU Programming Contest** in association with InterviewStreet (14 Oct 2012)
- Non-technical events include Fresher's Welcome, Final Year Farewell Ceremony and Faculty vs Student sports matches

Department of Electrical Engineering

About the department

The Department of Electrical Engineering is one of the oldest in this 'ancient-new' University. Started in 1912, undergraduate degree course was introduced in this department from 1935-36 and postgraduate course from 1955. The first Ph.D. was produced by this department in 1959. The number of Ph.D.s awarded from this department has now been grown to 29 out of which 24 had been in last 10 years. From 1989, the Ministry of Human Resource Development declared this department as one of the QIP Centres for Post Graduate Studies and Research.

The faculty and other staff members of the department are committed to imparting excellent education at par with national / international seats of learning. An extraordinary pool of talents exists in fields as diverse as Electrical Machines, Power Systems, Control Systems, Power Electronics and Instrumentation. Research activities in the department are on a climbing ramp. The department has been included in the 'National Mission on Power Electronics Technology' (NaMPET), a project launched by DIT, MCIT, Govt. of India. In this programme, it shares the limelight with three IITs, IISc. and Anna University. Under NaMPET the department has received a grant of approximately Rs. 2 crores to spearhead research on Power Electronics. The department was chosen to carry out research under the SAP-DRS scheme of UGC in the area of smart control and instrumentation systems at a total project cost of almost Rs. 52 lakhs. The department has also executed the DST-FIST project under which a grant of Rs. 1.5 crores had been received. It has also received its share of about Rs. 1.2 crores under the TEQIP scheme. Other research activities include condition monitoring of electrical equipment, application of soft computing tools to electrical machine and power system related problems, design of robust controllers for defense applications, biomedical instrumentation, analytical instrumentation, power quality studies, embedded technology etc.

Academic Programmes:

Undergraduate Level

Degree offered	**B. E. (Electrical Engineering)**
Sanctioned students' intake	**60**

Additional intake through lateral entry in 3rd Semester 6

Post Graduate Level

Degree offered **M.E. (Electrical Engineering)**

Sanctioned students' intake **24**

Additional intake through other programmes (i.e. QIP) **2**

Specialisations in **(a) Control Systems**
(b) Electrical Machines
(c) Power Electronics
(d) Power Systems

Doctoral & Post Doctoral Research Programme Ph.D.(Engg)

Degree offered : **PhD (Engineering)** :

No of Candidates enrolled : **6**

No. of Candidates registered: **4**

No. of Candidates awarded: **2**

Faculty Position:

Sanctioned faculty post **28** Vacant Post **2** (One adjunct Professor should not be counted, sr. no 1)

Faculty profile (in the following table)

Sr.No.	Name	Desig-nation	Highest Qualification	Specialisation / Research Area	Contact no.	E-mail id
1.	S. Mallik	**Adjunct Professor**	M.E.E.	Electrical Machines	94331 68523	srikumar_mallik@hotmail.com
2.	B. Basak	Professor	Ph.D.	Electrical Machines, Power Electronics & Drives	94331 39874	biswarup_basak@yahoo.com
3.	A. Chakrabarti	Professor	Ph. D.	Power Systems, Networks	98302 02924	a_chakraborti55@yahoo.com
4.	D. Sarkar	Professor	Ph. D.	Electrical Machines, electromagnetic Fields	94332 41826	debasissrkr@yahoo.co.in
5.	G. Bandyopadhyay	Professor	Ph. D.	PowerSystems, Computer Applications	94338 19668	gautamkabi@hotmail.com
6.	J. Pal	Professor & HOD	Ph. D.	PowerSystems, Computer Applications & Expert Systems	94331 83992	jagadish_pal@hotmail.com
7.	A. Sutradhar	Professor	Ph. D.	Instrumentation, Digital systems	94771 23351	asee1@rediffmail.com
8.	P. Syam	Professor	Ph. D.	Solid state devices	98368 93676	prasidsyam@yahoo.co.uk
9.	A.K. Maitra (reemployed)	Professor	Ph. D.	Power Systems, Power System Protection	94770 02145	ashokmaitra@gmail.com

10.	C.K. Chanda	Professor	Ph. D.	Power System, Electrical Machines	94332 69567	ckc_math@yahoo.com
11.	A. Rouf	Professor	M.Tech.	Electrical Machines, Non-Conventional Energy	94330 98388	rauf_a@hotmail.com
12.	M. Sengupta	Professor	Ph. D.	Electromagnetic Electrical Machines and Drives	033 26685869	mainak.sengupta@gmail.com
13.	D. Roy	Professor	Ph. D.	Electrical Machines & Drives	98364 84873	dbr_roy@yahoo.co.in
14.	Aparajita Sengupta	Professor	Ph. D.	Control Systems	98747 47610	aparajitasg@rediffmail.com
15.	K.Das(Bhattacharya)	Professor	Ph. D.	Microprocessor & PowerSystem Protection	93393 00765	poopoolee50@hotmail.com
16.	D. Ganguly	Asso. Professor	M.E.E.	Power Electronics & Drives, icroprocessor Applications	98303 06490	ganguly.debjani@gmail.com
17.	A. Barman	Asso. Professor	M.E.E.	Measurement, Illumination, Computer Programming and Simulation/ Open Source Software	94324 93108	amalburman@yahoo.com, ab@ee.iiests.ac.in
18.	A.B. Choudhury	Asso. Professor	Ph. D.	Power Systems	94331 69967	ab_choudhury@yahoo.com
19.	Anindita Sengupta	Asso. Professor	Ph. D.	Instrumentation,Control Systems	94320 83954	aninsen2002@yahoo.com
20.	A. De	Asstt. Professor	Ph. D.	High Voltage Engg., Power Systems	94332 69572	abhinandan.de@gmail.com
21.	K. Mukherjee	Asstt. Professor	Ph. D.	Power Electronics / Electrical Machine Drives, Distributed Generation, Power Quality	98746 93920	kaushikk_mukh@rediffmail.com,
24.	P. Chattopadhyay	Asstt. Professor	Ph. D.	Power System, Microprocessor, ConditionMonitoring	92316 64811	paramita_chattopadhyay@yahoo.com
25.	S. Parui	Asstt. Professor	Ph. D.	Electrical Machines & Drives, Power Systems	94332 51764	sp_74107@yahoo.com
26.	Bhaskaran Barman	Asstt. Professor	M.E.E.	Power Electronics &Machine Drives	94345 28673	Barman_bec@rediffmail.com
27.	S. Dalapati	Asstt. Professor	Ph. D.	Power Electronics and Drives; DSP/Microcontroller based Applications	80175 16567	suvarundalapati@yahoo.co.in

Awards and Laurels received by the faculty members :

1. **Dr. Kaushik Mukherjee** : Was offered and availed of 'Visiting Professor' assignment, related to R&D activities, in the Centre of Hybrid and Automotive Research and Green Energy (CHARGE), University of Windsor, Canada during June - July 2014. Ms. Xiaomin Lu, doctoral candidate in Centre for Hybrid Automotive Research and Green Energy, University of Windsor visited BESU, Shibpur, EE Dept. and performed research with Kaushik Mukherjee for one and half months (December 2013-January 2014). She has received her PhD degree eventually in October 2014 with Dr. Narayan Kar, Associate Professor, University of Windsor, Canada as her supervisor and Dr. Kaushik Mukherjee as her co-guide. Mr. K. L. V. Iyer, another doctoral candidate at Centre for Hybrid Automotive Research and Green Energy, University of Windsor is currently visiting IIEST Shibpur, EE Dept. (December 2014 – February 2015) to perform collaborative research with Dr. Kaushik Mukherjee.

2. Prime Minister's Fellowship (CII-DST) was won by **Mr. S. K. Nanda**, a Ph. D. scholar under **Prof. M. Sengupta**

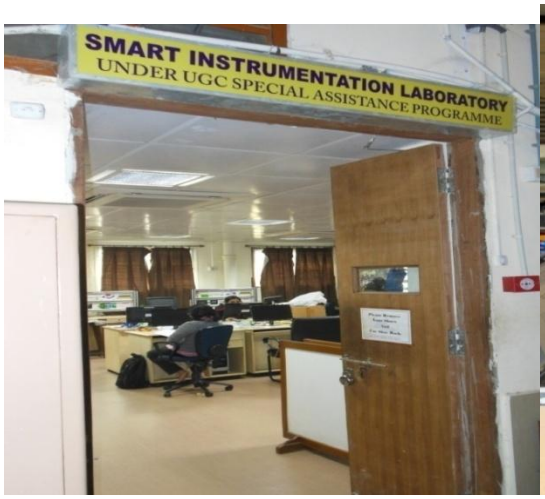
3. Tata Rao Award for Best Paper in Institution of Engineers (I) by **Prof. C. K. Chanda.**

4. Best Paper award in the Second Michael Faraday IET India Summit by **Prof. Anindita Sengupta.**

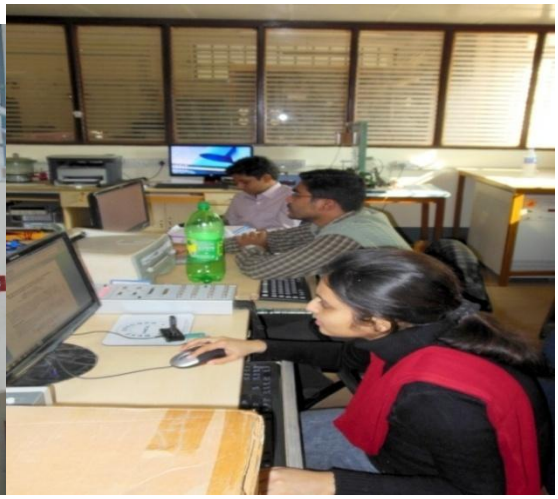
Research area

1. Power Electronics
2. Application of Advanced Signal Processing and Soft-computing Techniques in Condition Monitoring of Induction Motor.
3. Smart Energy Saving Device for Power Factor Control.
4. Identification of Physiological Processes and Analysis, Synthesis and Design of Controllers for Drug Delivery System.
5. Robust Control applications in aerospace and ballistic problems
6. Stability, Economic and Optimum Operation and Control of EHV Power Transmission System
7. Robust Control and Nonlinear control
8. Smart & Analytical Instrumentation (Specially textile instrumentation)
9. Advanced Signal Processing application in control system
10. Power Quality and the application of digital platforms for spectral analysis
11. Electrical Machines and Drives, Electrified Vehicle Powertrain components, Distributed generation, Power Electronics for power systems

Research facilities: (name specific equipment / picture, infrastructure etc)

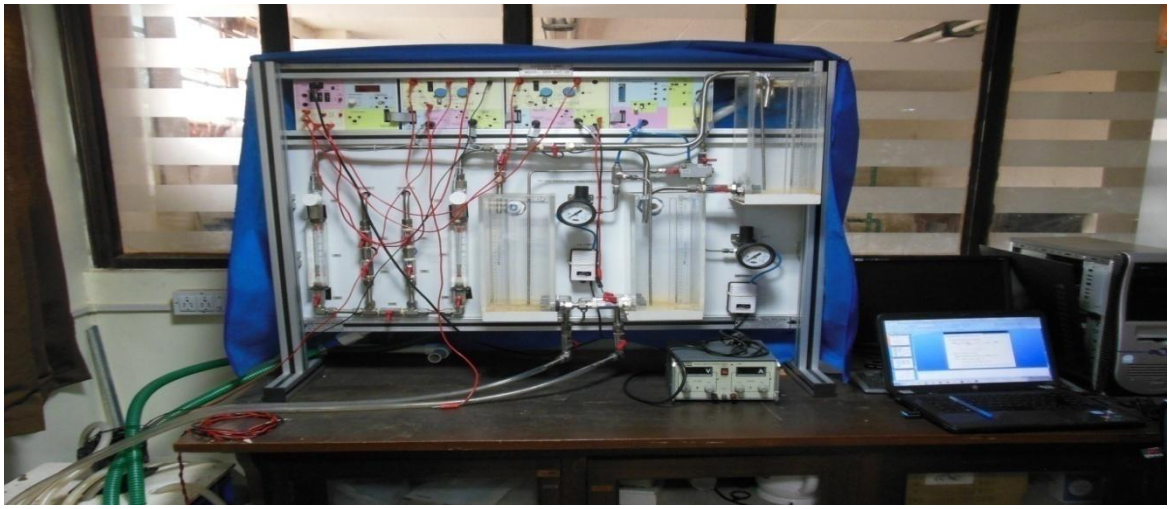


Entrance of Smart Instrumentation Lab

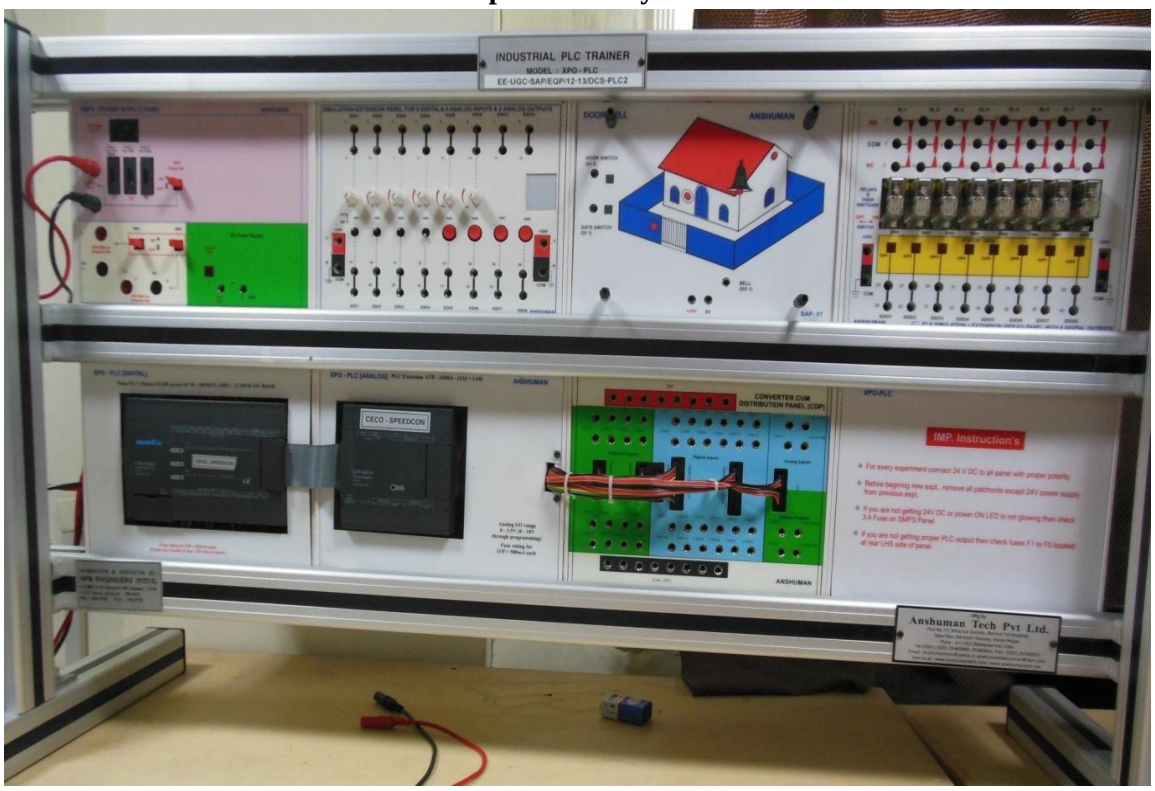


Students working in the lab on PCs

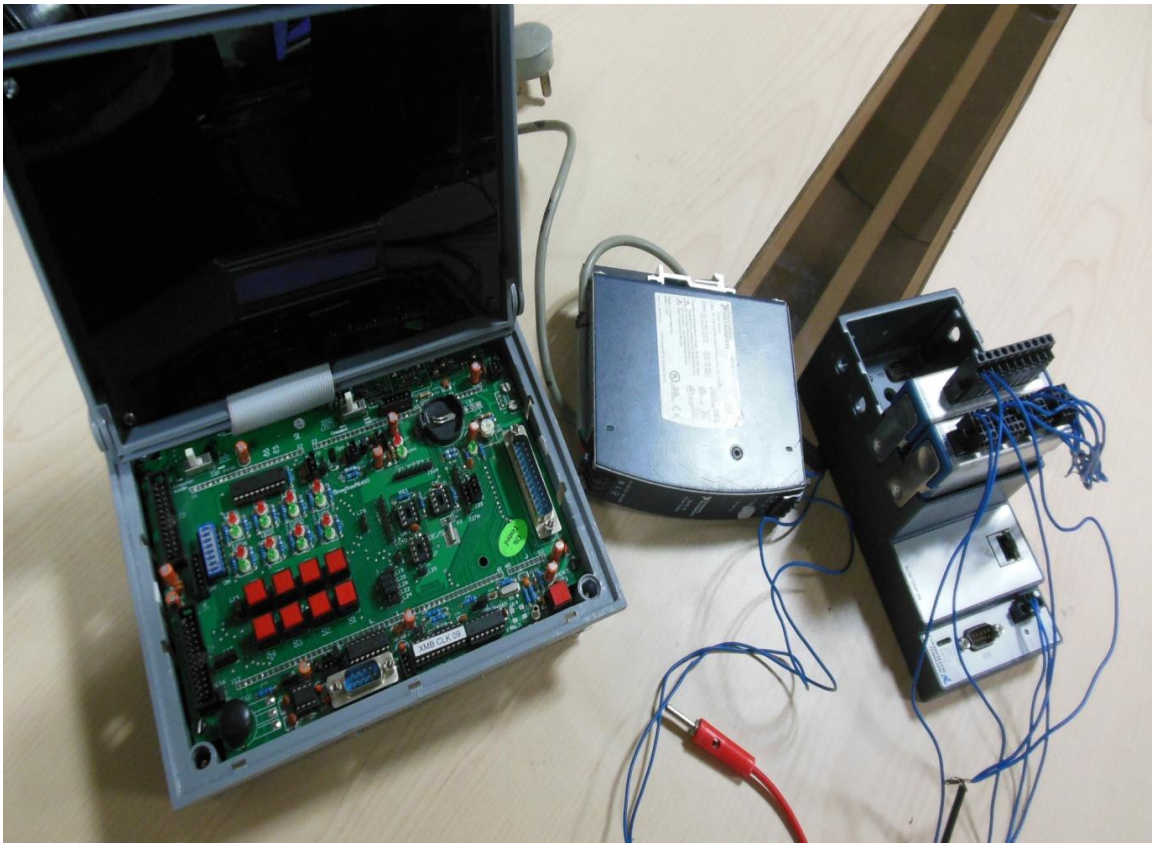
Students working in the lab on PCs



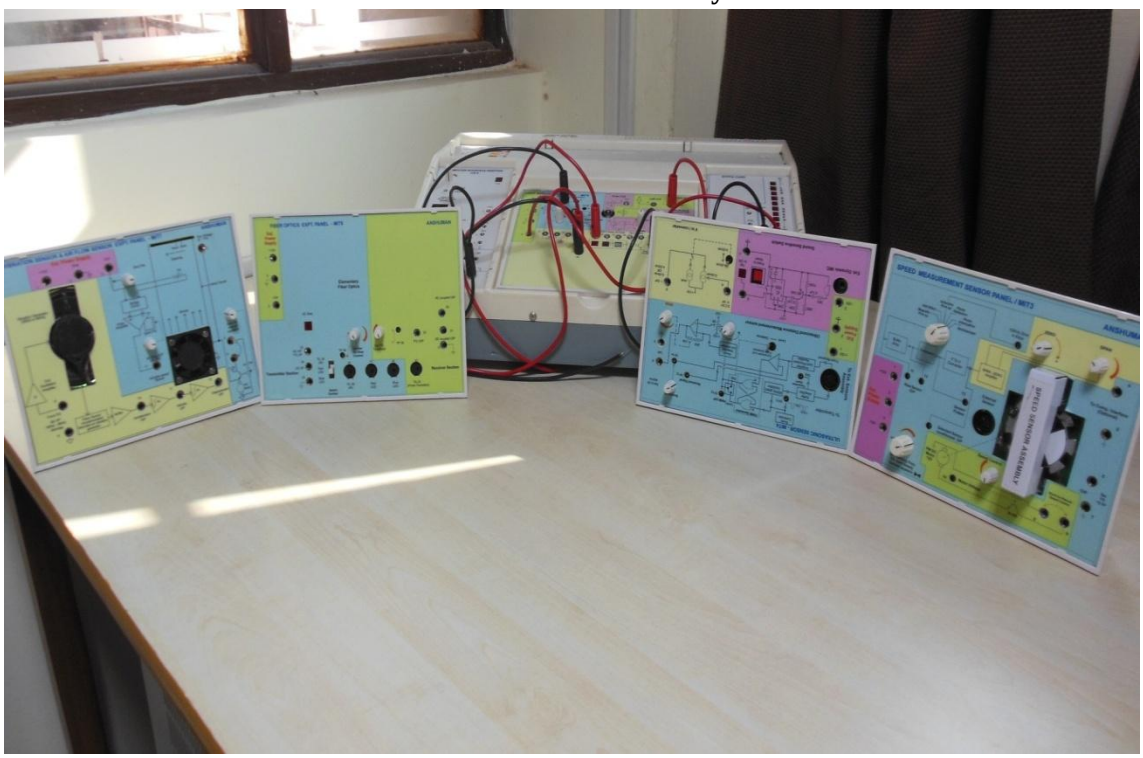
Coupled Tank System



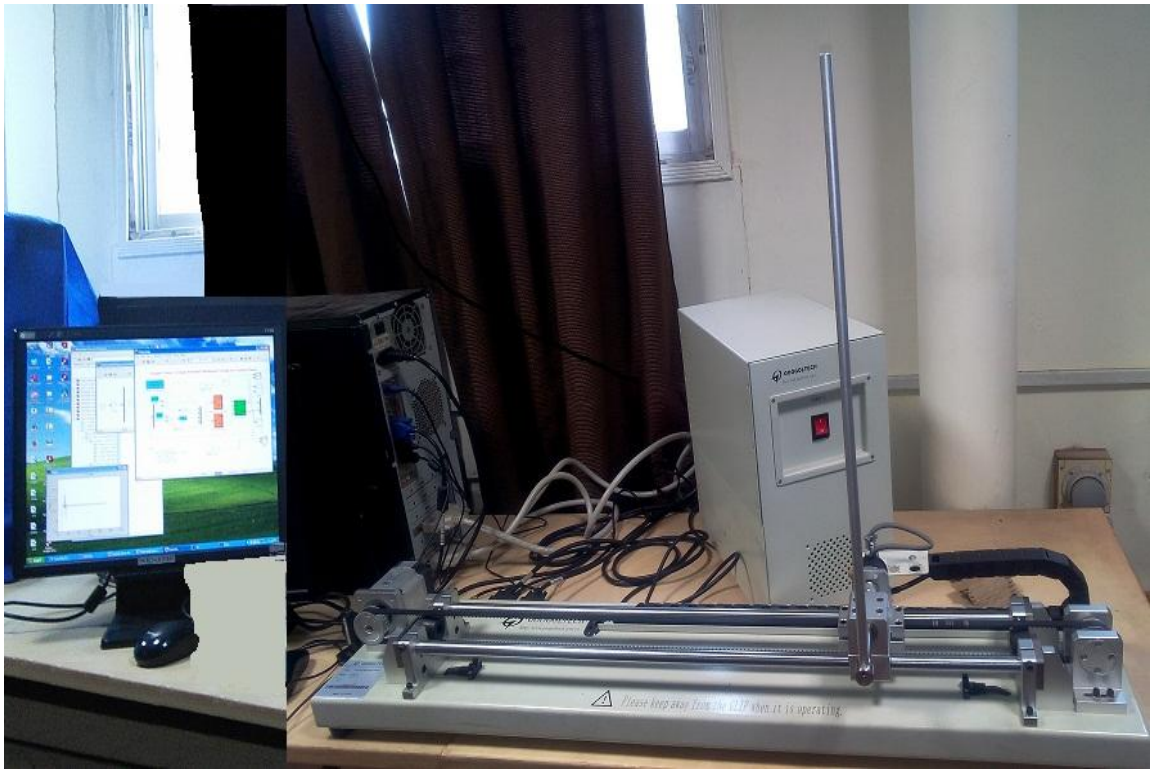
PLC unit



FPGA Board and NI cRIO system



Assorted Sensor kits and amplifiers



Inverted Pendulum System with real time control

A DSP-based Hardware-in-loop (HIL)system called dSPACE

Name of the Laboratories:

1. Electrical Machine Laboratory
2. Power System Laboratory
3. Drives Laboratory
4. Power Electronics Laboratory
5. Process Control and Instrumentation Laboratory
6. Calibration Laboratory
7. Microprocessor Laboratory
8. Circuits & Measurement Laboratory
9. Control System Laboratory
10. Energy Systems Laboratory
11. Simulation Laboratory
12. Industrial Electronics Research Laboratory
13. Relay Laboratory
14. Basic Electrical Engineering Laboratory
15. Condition Monitoring Laboratory
16. Advanced Power Electronics Laboratory
17. High Voltage Laboratory
18. Smart Control Laboratory

List of Consultancy projects with industry:

Sl. No.	Name of Faculty	Year of sanction	Sanctioning Authority	Sanctioned Amount (Rs. Lakh)	Institute overhead (Rs. Lakh)	Dept. Infrastructure from Institute O/H (Rs. Lakh)	As capacity
1.	Dr.A.K.Maitra Dr.J.Paul	2014	Haldia Development Authority	1058.2347	-	NIL	PI & CI
2.	Dr.A.K.Maitra Dr.J.Paul	2014	Digha Sankarpur Development Authority	296.44935	-	NIL	Jt. PI
3.	Dr.A.K.Maitra Dr.J.Paul	2014	Talgachhaari – 1 Gram Panchayat	7.72643		NIL	PI & CI
4.	A.K.Maitra,(EE), D. Moitra(CE) & A. Roy Choudhury (AE)	2014	Conveyor Ropeways Pvt. Ltd.	1.65	0.495	NIL	P.I.
5.	A.K.Maitra, S.K.Mallick, A.Rouf (EE), & Saibal Ghosh (CE)-PI	2014	Rani Bala Ghat Water Works	300.0	90.0	NIL	Co-Investigator
6.	J,Pal & A.k.Maitra	2014	NRS Medical College & Hospital	1.0	0.3	NIL	Joint P.I.
7.	A.K.Maitra	2015	Assessment of condition 400kV SF6 C.B-INDO NOBIN PROJECTS LIMITED	2.92	0.876	NIL	P.I.

Support Staff position:

Technical staff profile:

Name	Designation	Highest Qualification	Contact No.	e-mail id
B. Dey	Technical Assistant	L.E.E.	98747 18826	
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P. K. Das	Technical Assistant (Grade II)	D.E.E	94 338 43324	pradipkdaselec@ rediffmail.com
A. Pal	Technical Assistant (Grade II)	D.E.E	94331 55457	amit_raju_pal@sify.com
P. S. Baruri	Technical Assistant (Grade II)	D.E.E	91439 17487	mr.dekacom@rediffmail.com
S. K. Ray	Mechanic	Workman's Permit (Dir. Of Electricity, Govt. of WB)	94336 02932	roysamir26@yahoo.in
B. Santra	Instrument Mechanic	JDE & NCVT (Govt. of India)	98748 04896	Bablu_Santra@yahoo.com

List of Funded Research Project:

Sl. No.	Title	Project Investigator	Sponsoring Agency	Total Amount (Lakhs of Rupees)
1	National Mission on Power Electronics Technology (NaMPET) : Phase II - Started around middle of 2012	M. Sengupta, P. Syam, D. Ganguly & K. Mukherjee	Department of Electronics and Information Technology, Govt. of India	93
2	Spectral Standardization of Potentised Homeopathic Medicines	C. R. Mahata, (Principal Investigator) A. Sutradhar, P. Syam, D. Ganguly	CCRH	26.2
3	Study of Non-linear phenomena in Electrical Drives	S. Parui	AICTE	10.5
4	Development of Nano-structured Transformer Oil nono-fluids for Improvement of Thermal and Insulating Properties under *National Perspective Plan for R&D in Indian Power Sector (**NPP**) Scheme*	P. B. Chattopadhyay	Central Power Research Institute (CPRI), Bangalore (Ministry of Power, Govt. of India)	79
5	Development of a sensor integrated multi-filgered dexterous robot hand with data glove interface	D. Ganguly (Co-Investigator)	DAE/ BARC	61
6	Development of an efficient staple yarn characterization unit with multi-sensor fusion and field programmable gate array (FPGA) based data reduction card.	Anindita Sengupta (Principal Investigator) Konika Bhattacharyya (Co-Investigator)	DST-IDP	31.094
7	Embedded Systems in Instrumentation and Control (2011-2016)	A. Sutradhar, (Co ordinator) Aparajita Sengupta(Dy. Co ordinator)	UGC-SAP DRS I	51.25
8	Analysis and Development of a single-axis controlled repulsive type magnetic bearing	D. Roy (Principal Investigator) A.B. Choudhury(Co-Investigator)	DST-SERB	38.498
9	Design and development of computerized instrument for testing bending behavior of semi-rigid fabric with special reference to technical textiles	Anindita Sengupta	DST-IDP	30.086
10	Analytical and Experimental Investigations on Control of State-of-The-Art Induction Heating Units	M. Sengupta , B. Barman	DST	36.05
11	Smart microgrid	K. Das Bhattacharya (Co-Investigator)	WBREDA, Dept. of Power, GoWB	55.0

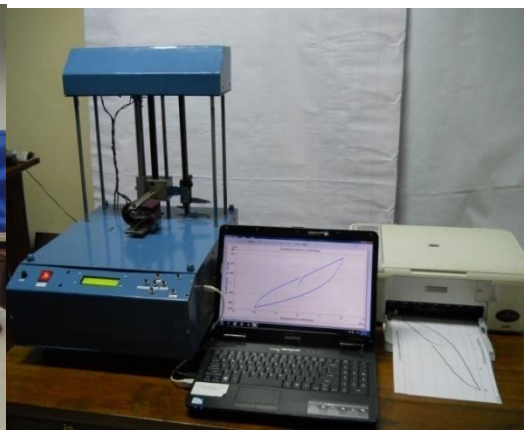
Industry – Institute Interaction

An **Institute Industry Interface Workshop** was held on February 12, 2015 at National Institute of Research on Jute And Allied Fibre Technology (NIRJAFT), 12 Regent Park, Kolkata 700 040 to present and promote two testing equipments namely 'Fabric Flexural Rigidity Tester' and 'Yarn Characterization Unit' which are designed and developed by the joint effort of Dr. **Anindita Sengupta**, Associate Professor, EE Department, Indian Institute of Engineering Science and Technology (IIEST), Shibpur, Howrah and **Dr. Surajit Sengupta**, Principal Scientist, M P Division, NIRJAFT, Kolkata in collaboration with M/s Tech (Style) India, Howrah with the assistance of Department of Science and Technology (DST), Ministry of Science and Technology, Govt. of India. The workshop was inaugurated by Chief Guest **Hon'ble Prof. Ajoy Ray, Founder Director, IIEST, Shibpur** & former Vice-Chancellor, Bengal Engineering and Science University, Howrah in presence of Guest-of-Honour **Hon'ble Dr Subrata Gupta, Jute Commissioner and Chairman-cum Managing Director, Govt of India.**, **Hon'ble Dr. Debasis Nag, Director, NIRJAFT Hon'ble Dr B C Mitra, Ex-Director, NIRJAFT, Kolkata** and other dignitaries from academic institute and industries.

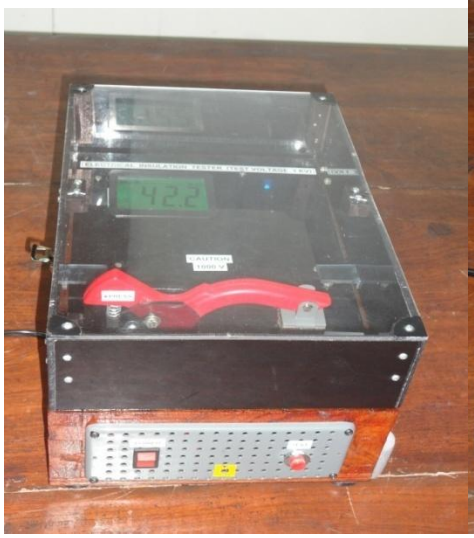
Inaugural Session of Industry Institute Workshop

Demonstration of Developed Instrument Under collaborative Project in presence of Director, IIEST, Shibpur and other Dignitaries

A yarn Characterization Unit



Fabric Rigidity Tester



Fabric Insulation Tester

Instrument Developed under the collaborative project of IIEST, Shibpur and NIRJAFT, ICAR, Kolkata.

Details of publications of each faculty member

Journal

1. J. K. Moharana, **M.Sengupta** and **A.Sengupta,** "Design and Implementation of a PI-Controller on a 10kVA STATCOM prototype", International Journal of Power and Energy Conversion, Inderscience 2014.

2. Nanda S.K., **Sengupta M**. and **Sengupta A**., " Modelling, Simulation, Fabrication, Experiments and Real-Time Linear State Variable Feedback Control of Cuk Converter using Pole Placement Technique", Journal of the Institution of Engineers (India)(Accepted) series B, vol. 95, no. 2, May.2014

3. P. Konar, **Dr. P. Chattopadhyay**, "Multi-Class Fault Diagnosis of Induction Motor Using Hilbert and Wavelet Transform", **Applied Soft Computing (Elsevier)**, REF No.: ASOC-D-14-00116 May, 2015.

4. P. Konar, **P. Chattopadhyay**, "Feature Extraction Using Wavelet Transform For Multi-Class Fault Detection of Induction Motor", Journal of the Institution of Engineers (India): Series B, vol. 95. No. 1, 2014, pp 73-81.

5. P. Konar, J. Sil, **P. Chattopadhyay**, "Knowledge Extraction using Data Mining for Multi-Class Fault Diagnosis of Induction Motor", **Neuro Computing (Elsevier)**, REF No. NEUCOM-D-14-01746 (in press).

6. **Anindita Sengupta**, Subhasish Roy, Surajit Sengupta," Development of a low cost yarn parameterization unit by Image Processing**"**, Journal of Measurement, **ELSEVIER**, vol. 59, pp.96-109,2014.

7. Ujjwal Mondal, **Anindita Sengupta** and Ananya Roy, "Repetitive controller: an advanced Servomechanism for periodic reference input" International Journal of Dynamics and Control, **SPRINGER**, DOI 10.1007/s40435-014-0144-z, January 4, 2015.

8. Ujjwal Mondal, **Anindita Sengupta** and Rajeev R. Pathak, "Servomechanism for periodic reference input: Discrete wavelet transform-based repetitive controller:, Transactions of the Institute of Measurement and Control, **SAGE**, DOI: 11.1077/0132331013562657, pp.1-9, December 20, 2014

9. Subhasish Roy, **Anindita Sengupta**, Surajit Sengupta, "Determination of Diameter Spectrogram and Neps for yarn parameterization using Image Processing", International Journal of Electrical, Electronics and Computer Engineering, ISSN No.2277-262, pp. 72-76, 2013.

10. Rimi Paul, **Anindita Sengupta**, Rajeev Ranjan Pathak, "Wavelet based denoising technique for liquid level system", Elsevier Journal of Measurement, vol. 46, pp.1979-1994, 2013.

11. Surajit Sengupta and **Anindita Sengupta**, "Electrical resistance of jute needle-punched non woven fabric- effect of punch density, needle penetration and area density", The Journal of the Textile Institute(Taylor & Francis),vol. 104, no.2,pp.132-139,2013**.**

12. Partha Kayal, **C.K. Chanda**, "Optimal Mix of Solar and Wind Distributed Generations considering performance improvement of electrical distribution network". Renewable Energy, **Elsevier**.

13. Tapan Kumar Chattopadhyay, Sumit Banerjee, **C.K. Chanda**, "Simple Approach on Voltage Stability Index of Distribution Systems for Loads of Different types", International Review of Electrical Engineering (IREE), Vol 9, No 5 (2014)

14. Partha Kayal, **C.K. Chanda**, "A Multiobjective Approach to integrate solar andf wind energy sources with electrical distribution network", Solar Energy (Accepted),Elsevier.

15. **K. Bhattacharya**, "On the Role of Supercapacitors towards Characterization of PV Generators", International Journal of Advanced Research in Electrical, Electronics and Instrumentation Engineering, vol.3, Issue 8, August 2014.

16. Xiaomin Lu, K.L.V. Iyer, **Kaushik Mukherjee, K**. Ramkumar and N. C. Kar, "Investigation of Permanent Magnet Motor Drives Incorporating Damper Bars for Electrified Vehicles", **IEEE Transactions on Industrial Electronics in** Accepted on September 2014.

17. C. Sarkar, **A. De**, **C. K. Chanda** and S. Goswami, "Kruskal's Maximal Spanning Tree Algorithm for Optimizing Distribution Network Topology to Improve Voltage Stability", **Electric Power Components & Systems Journal, Taylor & Francis Publication** (ISSN 1532-5008), May 2015 (accepted for publication, in Press), **Impact Factor: 0.66**

18. S. Chanda and **A. De,** "Optimal stabilization of social welfare under small variation of operating condition with bifurcation analysis"**, Journal of The Institute of Engineers, India (series B), Springer Publication,** January 2015 (accepted for publication, in Press)

19. S. Chanda and **A. De**, "A Multi-Objective Solution Algorithm for Optimum Utilization of Smart Grid Infrastructure towards Social Welfare", **International Journal of Electrical Power and Energy Systems (Elsevier)**, (ISSN 0142-0615), Volume 58, June 2014, pp. 307–318, **Impact Factor: 3.432**

20. **Sarkar, D.** and Naskar, A.K., "Computation of thermal condition in an induction motor during reactor starting" International Journal of Electrical Power and Energy Systems, Elsevier, 44 (2013) 938–948.
21. **C. Sarkar** and A.K. Naskar, "Computation of thermal condition in an induction motor during plugging", Int. J. Power and Energy Conversion, Inderscience, Vol. 5, No. 2, pp.172–196, 2014.
22. A.K. Naskar and **D. Sarkar**, "Computation of Thermal Condition in an Induction Motor during Direct-On-line Starting", Journal of Electrical Engineering, Politehnica Publishing House, Romania, vol.14, No.3, pp.1-12, 2014.

23. A.K. Naskar and **D. Sarkar**, "Use of 3-dimensional finite elements for computation of temperature distribution in the Stator of an Induction Motor during Direct-On-Line Starting" has been accepted for publication in Russian Electrical Engineering, Springer, Russia, Vol. 85, No. 7, 2014.

24. A.K. Naskar and **D. Sarkar**., "New approach for computational analysis of temperature rise phenomena in the rotor of an induction motor", Energy System, Springer, vol.6, No.2, pp. 221-247, 2015.

25. A.K. Naskar and **D. Sarkar**., "Computational analysis of three dimensional steady state heat conduction in the rotor of an induction motor by finite element method" has been accepted for publication in Latin American Applied Research, Argentina, 2015.

26. **S. Dalapati**, "A predictive algorithm for minimising dead-time distortions in sine-wave VSI with L-C output filter," published in International Journal of Power Electronics, Vol. 5, No. 5/6, 2013, pp. 392 – 429.

27. Xiaomin Lu, K.L.V. Iyer, **Kaushik Mukherjee,** K. Ramkumar and N. C. Kar, "Investigation of Permanent Magnet Motor Drives Incorporating Damper Bars for Electrified Vehicles", accepted for publication in **IEEE Transactions on Industrial Electronics**, September 2014.

28. S. B. Chaudhury, M. Sengupta and **Kaushik Mukherjee,** "Experimental study of induction motor misalignment and its online detection through data fusion", **IET Journal Elect. Power Appl**., vol.7, no.1, Jan. 2013, pp. 58-67.

29. Xiaomin Lu, K.L.V. Iyer, **Kaushik Mukherjee,** N. C. Kar, "A Novel Two-Axis Theory-Based Experimental Approach Towards Determination of Magnetization Characteristics of Line-Start Permanent Magnet Synchronous Machines", *IEEE Transactions on Magnetics*, vol. 49, no. 8 Part I, 2013 (Digital Object Identifier: 10.1109/TMAG.2013.2259152), pp. 4733-4737.

30. Xiaomin Lu, K.L.V. Iyer, **Kaushik Mukherjee,** N. C. Kar, "Development of a Novel Magnetic Circuit Model for Design of Premium Efficiency Three-Phase Line Start Permanent Magnet Machines With Improved Starting Performance ," *IEEE Transactions on Magnetics*, vol. 49, no. 7, 2013 (Digital Object Identifier: 10.1109/TMAG.2013.2242869), pp. 3965-3968.

31. **Kaushik Mukherjee**, K. L. V. Iyer, Xiaomin Lu and N. C. Kar, "A Novel and Fundamental Approach Toward Field and Damper Circuit Parameter Determination of Synchronous Machine", **IEEE Transactions on Industry Applications,** vol. 49, No. 5, Sept-Oct. 2013, pp. 2097-2105.

Conference

B. **Barman**, **M. Sengupta**, "Design, fabrication, simulation and testing of repulsion type levitation prototype", IEEE-PEDES 2014, Dec. 2014, IIT Bombay.

C. **Barman**, **M. Sengupta**, " Design, fabrication, simulation and testing of a Phase modulated resonant transition converter", IEEE-PEDES 2014, Dec. 2014, IIT Bombay.

1. **S.Parui** and **B. Basak**, Effects of Input Voltage Ripple in the Bifurcation of Current Mode Controlled DC Drive, International Conference on Control, Instrumentation, Energy and Communication (CIEC 2014), January 31-February 2, 2014, University of Calcutta, published in CD-ROM.

2. **S. Parui** and **B. Basak**, Evolution of New Types of Borderline Trajectories in State Space in Current Mode Controlled DC-DC Converter due to Switching Delay, International Conference on Control, Instrumentation, Energy and Communication (CIEC 2014), January 31-February 2, 2014, University of Calcutta, published in CD-ROM.

3. P. S. Panigrahy, P.Konar, **P.Chattopadhyay**, "Broken Bar Fault Detection using Fused DWT-FFT in FPGA Platform", International Conference on Power, Control and Embedded Systems (ICPCES-2014), December 28-29, 2014.

4. **Anindita Sengupta**, Arunima Mukherjee, Rimi Paul, Ananya Roy, Application of MRPID controller on Liquid level system: A performance study, Proceeding of IEEE international conference on Control, Instrumentation, Energy and Communication(CIEC-14), 31 January-2 February,India,2014.

5. Ujjwal Mondal, **Anindita Sengupta**, Rajeev Ranjan Pathak, DWT based Repetitive controller for tracking of periodic reference signal, Proceeding of IEEE international conference on Control, Instrumentation, Energy and Communication(CIEC-14), 31 January-2 February,India,2014.

6. Subhasish Roy, **Anindita Sengupta**, Surajit Sengupta "Yarn Hairiness Evaluation Using Image Processing" in the Proceeding of IEEE international conference on Control, Instrumentation, Energy and Communication(CIEC-14), 31 January-2 February,India,2014.

7. Ujjwal Mondal, **Anindita Sengupta**, Abhirup Basu, Sangeeta Bose, Upananda Saha, "Finite Dimensional Robust Repetitive Controller for Tracking Periodic Reference Input", IEEE International Conference on Electrical, Computer and Communication Technologies, SVS College of Engineering, Coimbatore, India, 5 - 7 March, 2015.

8. Ujjwal Mondal, **Anindita Sengupta**, "Robust Servo Performance of Repetitive Controller for Periodic Reference Signals", 6th IEEE POWER INDIA International Conference, Delhi Technological University, Delhi, 5-7 December 2014.

9. **Anindita Sengupta**, Surajit Sengupta and Subhasish Roy, "Determination of the Yarn Parameters using Image Processing", Proceedings of International conference on Natural Fibers, August 1-3, 2014 at National Library, Kolkata, India.

10. Surajit Sengupta, Sanjoy Debnath, **Anindita Sengupta** and Tarun kr.Kundu, "Flexural Behaviour Testing for Technical Textiles" Proceedings of International conference on Technical Textiles and Nonwoven, November 6-8,2014 at IIT, Delhi.

11. Rimi Paul, **Anindita Sengupta** (Accepted) "Selection of best wavelet for Discrete Wavelet Transform based PID controller connected with liquid level System and its performances analysis" (ICIC 2015), to be held on 28-30 May, 2015 at College of Engineering, Pune.

12. Abhishek Dhar, **Anindita Sengupta** (Accepted) "Sliding Mode Control Algorithm and its Implementation with Coupled Tank System", International Conference on Energy Power and Environment, ICEPE 2015, to be held on 12-13 June,2015 at NIT Meghalaya.

13. Shouvik Chakraborty, Sachidananda Sen**, Ashoke Sutradhar** and **Anindita Sengupta** (Accepted)"Estimation of Tire-Road Friction Coefficient and Frictional Force for Active Vehicle Safety System" (ICIC 2015) to be held on 28-30 May, 2015 at College of Engineering, Pune.

14. Subhasish Roy, **Anindita Sengupta**, Surajit Sengupta, "Determination of Diameter Spectrogram and Neps for yarn parameterization using Image Processing", in the Second Michael Faraday IET India Summit: MFIIS-2013, , M 1-7.pp.1.23-1.28.,Kolkata, November 17, 2013.

15. Subhasish Roy, **Anindita Sengupta**, Surajit Sengupta, Raktim Maity, "Yarn Parameterization Based on Image Processing", Proceedings of IEEE international conference on Signal Processing, Computing and Control(ISPCC), 26-28 September,India,2013.

16. Arunima Mukherjee, **Anindita Sengupta**, "Selection of Optimum Wavelet Filter and Proper Level of Decomposition to design an MRPID Controller Connected to a Liquid Level System", Proceedings of National Conference on Recent Trends in Energy Systems(NCRTES-2013),5th-6th April 2013.

17. Chattopadhyay, T.K., Banerjee, S., **Chanda, C. K.**., "Voltage stability analysis of distribution networks under critical loading conditions", Power and Energy Systems Conference: Towards Sustainable Energy, 2014

18. Chattopadhyay, T.K. , Banerjee, S., **Chanda, C.K**., "Impact of shunt capacitor on voltage stability analysis of distribution networks under critical loading conditions" , First International Conference on Automation, Control, Energy and Systems (ACES), 2014.

19. Saha, S.K., Banerjee, S., **Chanda, C.K.**, "Status of all branches of distribution networks in chronological order using distributed generation at optimal position", 1st International Conference on Non Conventional Energy (ICONCE), 2014.

20. Chattopadhyay, T.K., Banerjee, S., **Chanda, C.K.**, "Impact of distributed generator on voltage stability analysis of distribution networks under critical loading conditions" , First International Conference on Automation, Control, Energy and Systems (ACES), 2014.

21. Chattopadhyay, T.K., Banerjee, S., **Chanda, C.K.**, "Impact of distributed generator on voltage stability analysis of distribution networks under critical loading conditions for composite loads", International Conference on Electronics, Communication and Instrumentation (ICECI), 2014.

22. Kayal, Partha, Khan, Chandra Mohan, **Chanda, C.K.**, "Selection of distributed generation for distribution network: A study in multi-criteria framework", International Conference on Control, Instrumentation, Energy and Communication (CIEC), 2014.

23. Krishna Chandra Meher; **C.K. Chanda**, "Modified GSO for Combined Economic Emission Load Dispatch with Valve Point Effect", International Conference on Advances in Electronics, Computers and Communications 2014 (ICAECC) in Reva University on 10.10.2014.

24. *K. Bhattacharya et al, "Application of Phasor Measurement Unit in Adaptive Protection for Loss of Excitation in a Generator", 6*th IEEE POWER INDIA International Conference, 5^{th}-7^{th} Dec, 2014.

25. *K. Bhattacharya et al," Design & Implementation of MPPT Algorithm for Battery Charging with Photovoltaic Panel Using FPGA",* 6th IEEE POWER INDIA International Conference, 5^{th}-7^{th} Dec, 2014.

26. *K. Bhattacharya et al, "*A simple on-line method of characterizing PV Cells/Modules using Supercapacitor", The 6^{th} World Conference on Photovoltaic Energy Conversion, (WCPEC-6), Nov 23-27, 2014.

27. Datta, **D. Ganguly**, T. Patra, S. Akhuli, "Experimental results on low cost microcontroller based DC drive implementation", Second International Conference on Electrical Energy Systems (ICEES - 2014), SSN College of Engineering, Kalavakkam, India, 7-9 January, 2014.
28. **D. Biswas, P. M. Adhikari and A. De, "An Artificial Neural Network based Power Swing Classification Technique", Proceedings of the 2014 Annual IEEE India Conference (INDICON 2014), included in IEEE XPLORE digital library**

29. **S. Chanda and A. De, "Social Welfare Maximization with a State Space based Model and Methodology", Proceedings of the 1st IEEE International Conference on Automation, Control and Energy Systems (ACES 2014), to be included in IEEE XPLORE digital library**
30. **S. Chanda and A. De, "Small Signal Stability Optimization Technique of Real Time OPF Model for Modern Power Networks" Proceedings of the 1st IEEE International Conference on Automation, Control and Energy Systems (ACES 2014), to be included in IEEE XPLORE digital library**
31. A.K. Naskar and **D. Sarkar**., "Numerical Analysis of Three Dimensional Steady State Heat Conduction in the Rotor of an Induction Motor by Finite Element Method", International Conference on Control, Instrumentation Energy & Communication (CIEC14), CU, Kolkata, IEEE, January 31-February 2, 2014.

32. A.K. Naskar and **D. Sarkar**., "Computational Analysis of 3-dimensional Transient Heat Conduction in the Stator of an Induction Motor during Reactor Starting using Finite Element Method", Fifth International Conference on Power Electronic and Instrumentation Engineering (PEIE2014),Chandigarh, ACEEE, March 21, 2014.

33. Bhattacharya, N.K, **D. Sarkar**, "Approximate Analysis Of Transient Heat Conduction In The Rotor Of An Induction Motor During Star-Delta starting" 4^{th} International Conference On information Comunication and Embeded Systems (ICICES2014), February 27-28, 2014.

34. Bhattacharya, N.K, and **Sarkar, D**., "Temperature Rise in the Stator of an Induction Motor during Star Delta Starting" International Conference on Computation of Power, Energy, Information and Communication (ICCPEIC-2013), April 17-18, pp 1-8, 2013.

35. A. Dasgupta, **S. Dalapati** and **P. Syam**, "Stepless current commutation in a three phase to three phase matrix converter," in Proc. International Conference on Control, Instrumentation, Energy and Communication, 2014, pp. 306 – 310.

36. R. Banerjee, **M. Sengupta** and **S. Dalapati**, "Design and implementation of current mode control in a switched reluctance drive," in Conf. Rec. IEEE International Conference on Power Electronics, Drives and Energy Systems (PEDES) 2014.

37. Xiaomin Lu, K.L.V. Iyer; **K. Mukherjee,** N. C. Kar, "Study of permanent magnet machine based flywheel energy storage system for peaking power series hybrid vehicle control strategy", IEEE Transportation Electrification Conference and Expo (ITEC), 2013 (Digital Object Identifier: 10.1109/ITEC.2013.6573470), pp. 1-7.

38. K. L. V. Iyer, X. Lu, **K. Mukherjee**, and N. C. Kar, "Design of a Novel Copper-rotor Line Start Permanent Magnet Machine Tailoring Skin and Proximity Effects for Improved Starting Performance", Proc. of the 12th Joint MMM/Intermag-IEEE Conference, Chicago, USA, 2013.

39. X. Lu, K. L. V. Iyer, **K. Mukherjee**, and N. C. Kar, "Development of a Novel Magnetic Circuit Model for Design of Premium Efficiency Three-Phase Line Start Permanent Magnet Machines with Improved Starting Performance", Proc. of the 12th Joint MMM/Intermag-IEEE Conference, Chicago, USA, 2013.

40. X. Lu, K. L. V. Iyer, **K. Mukherjee**, and N. C. Kar, "A Novel Two-axis Theory based Approach towards Determination of Magnetizing Characteristics of Line Start Permanent Magnet Machine and its Effects on Stability and Starting Performance", Proc. of the 10th Latin American IEEE Workshop on Magnetism, Magnetic Materials, and Their Applications, in Buenos Aires, Argentina, 2013.

41. Subimal Bikash Chaudhury, **M. Sengupta** and **K. Mukherjee**, "Air-gap flux analysis of misaligned induction motor under different load conditions", Paper ID 39 (Technical Session II: Motor Drives I), National Power Electronics Conference (NPEC), Indian Institute of Technology, Kanpur, 2013.

Patents / Invention Disclosure / Technology Transfer / Copyright

a) One Indian patents has been filed **(897/KOL/2014 dated 29.08.2014)** entitled "**A yarn Characterization Unit"** in the names of **IIEST, Shibpur** and **Indian Council of Agricultural Research** with the Inventors as **Dr. Anindita Sengupta, Mr.Subhasish Roy,** Dr. Surajit Sengupta.

b) One Indian patents has been filed (**1118/KOL/2014 dated 01.11.2014)** entitled "**A system for testing dynamically bending behavior of semi rigid fabrics and a method of such testing**" in the names of **Indian Council of Agricultural Research** and **IIEST, Shibpur** with the Inventors as Dr. Surajit Sengupta. Dr. Sanjay Debnath and Dr. **Anindita Sengupta.**

Member of the team of inventors with the following details: M. Hurst, K.L.V. Iyer, N. C. Kar, M. Kazerooni, X. Lu, **K. Mukherjee**, "Method and apparatus for seamless power transfer", **US patent publication no. US20130285453 A1, publication date October 31, 2013, application number US201313869141,** filing date April 24, 2013, also published as WO2013160753 (A1).

Seminar / Workshops / Conferences / Training programme organized by the department

(i) A 6-day short-term course on Power Electronics, intended for faculty members and scholars of other institutes as well as industry personnel was organized in June 2014.

(ii) Two short term courses were held in December 2014 and March 2015 for CESC junior engineers.

(iii) These refresher courses, each of 6 days duration covered theoretical and laboratory-based aspects of Electrical Engineering.

(iv) An **Institute Industry Interface Workshop** was held on February 12, 2015 at National Institute of Research on Jute And Allied Fibre Technology (NIRJAFT), 12 Regent Park, Kolkata 700 040 to present and promote two testing equipments namely 'Fabric Flexural Rigidity Tester' and 'Yarn Characterization Unit' which are designed and developed by the joint effort of Dr. **Anindita Sengupta**, Associate Professor, EE Department, Indian Institute of Engineering Science and Technology (IIEST), Shibpur, Howrah and **Dr. Surajit Sengupta**, Principal Scientist, M P Division, NIRJAFT, Kolkata in collaboration with M/s Tech (Style) India, Howrah with the assistance of Department of Science and Technology (DST), Ministry of Science and Technology, Govt. of India. The workshop was inaugurated by Chief Guest **Hon'ble Prof. Ajoy Ray, Founder Director, IIEST, Shibpur** & former Vice-Chancellor, Bengal Engineering and Science University, Howrah in presence of Guest-of-Honour **Hon'ble Dr Subrata Gupta, Jute Commissioner and Chairman-cum Managing Director, Govt of India.**, **Hon'ble Dr. Debasis Nag, Director, NIRJAFT Hon'ble Dr B C Mitra, Ex-Director, NIRJAFT, Kolkata** and other dignitaries from academic institute and industries.

Seminars arranged by Dept. of EE, IIEST with IEEE-IAS Kolkata Chapter are as follows

Sl. No.	Speaker & Affiliation	Date	Topic	Venue	No. of Attendees
1.	**1) Ms. Xiaomin Lu** Doctoral student, CHARGE, University of Windsor, Canada **2) Dr. Soumitra Das** Research Associate, Department of Electrical Engineering, Indian Institute of Science Bangalore, India	8th January 2014	1)A. Electrified Vehicles and their powertrains B. Parameter estimation of a line-start Permanent magnet Synchronous Machine 2) PWM techniques for three-level neutral point clamped inverters	Seminar Hall, Dept. of Electrical Engineering, IIEST Shibpur, Howrah-711103.	52 (with 8 IEEE members)
2.	**Mr. Ananda Majumdar** General Manager-Marketing & Product Development – MV Motors, Marathon Electric Motors Ltd., Kolkata, India	10th September 2014	Impact of variable speed drives and energy efficiency on induction motors, mainly from a manufacturer's perspective	Seminar Hall, Dept. of Electrical Engineering, IIEST Shibpur, Howrah-711103.	27 (with 6 IEEE members)
3.	**Mr. Subhadeep Sen** Scientific Officer-D, Control Engineer, Nuclear Power Corporation of India Ltd. KGS-3&4, Kaiga, Karnataka, India	13th October 2014	Nuclear Reactor Engineering	Seminar Hall, Dept. of Electrical Engineering, IIEST Shibpur, Howrah-711103.	32 (with 5 IEEE members)
4.	**Mr. Arijit Basuray** Managing Director and CEO, Neo-Teletronix Pvt. Ltd., Kolkata, India	14th November 2014	Pulsed Power and its application in Electrical Testing	Seminar Hall, Dept. of Electrical Engineering, IIEST Shibpur, Howrah-711103.	36 (with 5 IEEE members)

Advancements under TEQIP – Phase II

8 students are persuing their doctoral program under the financial assistance of TEQIP- Phase II.
Instruments purchased under this project

1.	Altera Cyclone II/III based FPGA BOARD
2.	DS1104 R&D Controller Board (dSPACE) for real time interfacing

Foreign visits and Invited Lectures

Invited lecture on 'Embedded Systems' at Sir J C Bose School of Engineering (Supreme Knowledge Foundation), Mankundu, West Bengal (January 2015)

Invited lecture on 'Power Semiconductor Devices' at Abacus Institute of Engineering & Management(A JV of JIS & Techno India group), Mogra, West Bengal (January 2015)

May 19 – July 11, 2014 – To the Centre of Hybrid Automotive Research and Green Energy, University of Windsor, Canada, as a Visiting Professor.

May 20 – July 5, 2015 - To the Centre of Hybrid Automotive Research and Green Energy, University of Windsor, Canada, as a Visiting Professor.

Visitors to your Department (Indian & Foreign)

Ms. Xiaomin Lu, doctoral student at the Center for Hybrid Automotive Research and Green Energy (CHARGE), University of Windsor, Canada, visited Dept. of EE, IIEST Shibpur for collaborative research under the supervision of Dr. Kaushik Mukherjee, Asst. Professor, EE, IIEST, during December 2013 – January 2014.

Mr. K. L.V. Iyer, doctoral student at the Center for Hybrid Automotive Research and Green Energy (CHARGE), University of Windsor, Canada, visited Dept. of EE, IIEST Shibpur for collaborative research under the supervision of Dr. Kaushik Mukherjee, Asst. Professor, EE, IIEST during December 2014 – February 2015.

Training and Placement

36 students are getting placement in different multinational/national level company like M.N.Dastur, CESC, Voltas, Haldia Petrochemicals etc. 5/6 student have gone to abroad for higher studies.a large fraction amongst rest went to different IITs, IISC etc to persue their master degree course.

Department of Electronics & Telecommunication Engineering

About the department

The Department of Electronics and Telecommunication Engineering started its journey in July, 1965 after its nucleation from the Department of Physics & Telecommunication from the erstwhile Bengal Engineering College. The first batch of Graduates & Post Graduate passed out in 1971 & 1974 respectively. The Department offers Bachelor of Engineering (B.E.) course in Electronics & Telecommunication Engineering for a duration of 4 years (8 Semesters). 5-year Integrated Dual degree B.Tech and M.Tech. program has started to be offered since 2014 onward. Master of Engineering (M.E.) programs of 4 semester duration (2 years) are offered for three specializations, viz. Digital Systems & Instrumentation, Microwave Communication, and Communication & Signal Processing. Department also offers Ph.D. degree in Electronics and Telecommunication Engineering in various fields.

Considerable effort has been put forward during the last couple of years towards setting up new undergraduate and postgraduate laboratories and augmenting the facilities in the existing laboratories. The department does a commendable performance in research and development works. A high number of research projects worth nearly Rs 2.5 crore are carried out during the current financial year with the assistance of various funding agencies leading to high volume quality publications in international journals and conferences.

Academic Programmes :

Undergraduate Level

Degree offered	Bachelor of Engineering (B.E.)
Sanctioned students' intake	40

Undergraduate Level

Degree offered	Dual degree B.Tech. & M.Tech.
Sanctioned students' intake	44

Post Graduate Level

Degree offered	Master of Engineering (M.E.)
Sanctioned students' intake	8 + 8 + 18 = 34
Additional intake through other programmes (i.e. QIP)	Nil
Specialisations in b) Microwave Communication c) Communication and Signal Processing	a) Digital Systems and Instrumentation

Doctoral & Post Doctoral Research Programme

Degree offered : Ph.D. (Engineering)

No of Candidates enrolled 8

No. of Candidates registered 5

No. of Candidates awarded 6

Faculty position :

Sanctioned faculty post: 18 Vacant Post : 6

Faculty profile

Name	Designation	Highest Quali-fication	Specialisation / Research Area	Contact No. & E-mail
Dr. Sekhar Ranjan Bhadra Chaudhuri	Professor	Ph. D.	Design & Dev. of Small Antenna, Network & Information Security, Digital System Design	prof.srbc@gmail.com prof_srbc@yahoo.com
Dr..Baidynath Ray	Professor	Ph.D.	Signal Processing, Image Processing and VLSI design and testing	bnr@telecom.becs.ac.in
Prof. Arabinda Roy	Associate Professor	M.E.	Microprocessor based system, Signal Processing, Power Electronics	arabinda@telecom.becs.ac.in oruroy@yahoo.co.in
Dr. Monojit Mitra	Professor	Ph.D.	Fabrication of Microwave Device Like IMPATT, its Characterization and System development	monojit_m1@yahoo.co.in
Dr. Santanu Das	Professor	Ph.D.	Planar circuits, & antennas, metamaterial, RFID	santanumdas@yahoo.com santanumdas@gmail.com
Dr. Susanta Kumar Parui	Associate Professor	Ph.D.	Microstrip and CPW based Printed Circuits and antennas, Frequency selective surfaces (FSS), Electro-magnetic bandgap structures (EBG), Defected ground structures (DGS)	arkapv@yahoo.com
Prof. Ayan Banerjee	Associate Professor	M.Tech.	VLSI Architectures Design for Communication & Biomedical Engineering, DSP architecture design using CORDIC	ayanb12@gmail.com
Dr. Chirasree Roychoudhury	Assistant Professor	Ph.D.	Electrical biosensors with electronic interface, electrical studies of biological cells	chirasreepram@yahoo.com
Dr. Tamaghna Acharya	Assistant Professor	Ph.D.	Wireless Communication and Networks, Dynamic spectrum access and software defined radio networks, Green communications	tamaghna_acharya@yahoo.com
Dr. Partha Bhattacharyya	Assistant Professor	Ph.D.	Nanomaterial based Chemical Sensors, MEMS	pb_etc-besu@yahoo.com

			based Sensors and Its Signal Processing, Low Power VLSI Design	
Prof. Debasis Mitra	Assistant Professor	M.Tech.	Applied Electromagnetics and Antenna Engineering	debasisiit@gmail.com , debasis.mitra@telecom.becs.ac.in
Prof. Ankita Pramanik	Assistant Professor	M.E.	Error Control Coding, Image Processing, GPS, MIMO, STBC	pramanikankita@gmail.com

Awards and Laurels received by the faculty members :

- Dr. Chirasree RoyChaudhuri received Young Scientist Platinum Jubilee Award from National Academy of Science(NASI), 2014
- Best oral paper Award for the paper "Modulation of Alcohol Sensing Performance of Anodically Grown TiO_2 Nanotube Array by a Novel Stoichiometry Variation Technique" authored by Arnab Hazra, Partha Bhattacharyya, Young Scientist Colloquium-2014, Organized by Materials Research Society of India (Kolkata chapter), 12th September, 2014, Saha Institute of Nuclear Physics , Kolkata, India.
- Best poster paper Award for the paper "Development of efficient BTX sensor based on ZnO nanoflower like structures" authored by Debanjan Acharyya, Partha Bhattacharyya, Young Scientist Colloquium-2014, Organized by Materials Research Society of India (Kolkata chapter), 12th September, 2014, Saha Institute of Nuclear Physics , Kolkata, India.

Research Areas :

1. Microwaves and Antennas
- Planar circuits and antennas
- Microwave avalanche devices
- IMPATT amplifiers and oscillators
- Meta-materials and its applications
- Phased array antennas
- Electromagnetic band-gap materials
- Surface integrated waveguides (SIW)
- RFID and its applications

2. Microelectronics, Devices and VLSI
- Biosensors
- MEMS based pressure and conductivity sensors
- Nanostructured semiconducting metal oxides for sensor applications
- Chemical sensors
- MEMS based gas sensors and its CMOS integration
- VLSI design and testing
- VLSI based signal processing
- VLSI Architectures for Communication and Biomedical Engineering

3. Communication and Signal Processing
- Wireless Ad-hoc and sensor networks
- Cognitive Radio networks
- Hardware efficient FIR filter design
- Space-time coding for wireless communication
- DSP algorithms
- Design of CDMA spreading codes
- Medical imaging
- Sensor signal processing
- CORDIC based DSP architectures

Research Facilities :

Areas	Equipments / Set up	Design Softwares / Tools
Microwaves and Antennas	• Network Analyser (10 MHz – 20 GHz) • Signal Generator (10 KHz – 20 GHz) • Power Meter (DC – 26 GHz) • PCB fabrication set up by photolithograpy • Prototype fabrication by milling process • Radiation characteristics measurement by shielded chamber	• IE3D • HFSS • CST studio • FDTD • Empire
Microelectronics, Devices and VLSI	• E-Beam Evaporation System • Mass Flow controller & Mass flow Meter • Spin Coating Unit • Dip Coating Unit • Laminar Flow Clean Bench • Millipore water purification system • Gas line manifold • Temperature Controlled annealing Furnace (1050°C) • Portable Ph meter, range 1-14 ph • Temperature Controlled Oven (upto 300°C)	• T-spice • Comsol • Coventorware • Intellisuite • Supreme
Communication and Signal Processing	• Spectrum analyzer (9 kHz – 3.0 GHz) • Vector signal generator (10 KHz – 3 GHz) • Arbitrary function generator • DSO (500 MHz)	• MATLab

Name of the Laboratories:

Basic Electronics Engg. Lab	Waveguides and Antenna Lab
Network Theory Lab	Wireless Communication and Networking Lab
Electronic Devices Lab	Digital Image Processing & Computer Vision Lab
Analog Electronics Lab	Microwave and Radar Engineering Lab
Analog Communication Systems Lab	VLSI Design Lab
Digital Electronics Lab	Opto-Electronics & Optical Communication Lab
Microelectronics Lab	Thin film/Sensors Lab
Digital Communication Lab	RF and Microwave measurement Lab
Integrated Circuits and Systems Lab	Control Engineering Lab
Microprocessors and Microcontrollers Lab	Audio & Video Engineering Lab
Electronic Instrumentation and Measurements Lab	Power Electronics Lab
Digital Signal Processing Lab	Nano-thin films & solid state gas sensor devices
Advanced Microprocessors Lab	Semiconductor device/sensor characterization lab.

Support staff position:

(i) Sanctioned technical post : 10 Vacant : 4

(ii) Technical staff profile

Name	Designation	Highest Qualification	Contact No.	E-mail
Mr. Rajat Mukherjee	Technical Asst.	Diploma in Electrical Engg.	9432367342	mukherjeera.2009@rediffmail.com
Mr. Brindaban Patta	Jr. Technical Asst.	Diploma in Electronics Engg.	9830970287	brindaban_patta@yahoo.co.in
Smt. Indrani Santra	Jr. Technical Asst	Diploma in Electronics Engg.	9434223985	indrani.santra08@gmail.com
Mr. Biswajit Samanta	Jr. Technical Asst	Diploma in Electronics Engg.	9002322109	biswajit_samanta21@rediffmail.com
Mr. Pradip Mistry	Jr. Technical Asst	Diploma in Electronics Engg.	9432269081	pradip.mistry75@gmail.com
Mr. Dibyendu Pal	Sr. Mechanic	H.S.	9831342357	paul.dibendu@rediffmail.com
Suvankar Bose (Contractual)	Technical Support Staff	Diploma in Electronics Engg.	9432353671	suvankar1@yahoo.co.in
Mouli Das (Contractual)	Technical Support Staff	Diploma in Electronics Engg.	9433900278	mouli.mouli2008@gmail.com
Ratna Ghosh (Contractual)	Technical Assistant	AMIE in Electronics & Telecommunication	9051952993	ratna_vlsi@yahoo.co.in

Ongoing Sponsored Research / projects :

Name of Project	PI	Sponsoring agency	Prof value in Rs. Lakh	Duration
Nanostructured Immunosensor Array for Rapid, Portable and Sensitive Food Toxin Detection	C.RoyChaudhuri	DST, SERB	18	2013-16
Efficacy of silicon microchannel cytosensor platform for electrical profiling of multiple mammalian cells	C.RoyChaudhuri	DST, SERB	54.6	2012-15
Establishment of MEMS Design Center under National Program on Micro and Smart Systems(NPMASS)	C.RoyChaudhuri	ADA	17	2009-14
Development of Metal-Insulator-Metal based Volatile Organic Compound Sensor for Monitoring of Ripeness of Orange	Dr. Partha Bhattacharyya	INSA	15	2013-16
A novel Metal-Insulator-Metal (MIM) device for detection of early spoilage of potato during Storage	Dr. Partha Bhattacharyya	DST	14.5	2012-14
Development of a Chemical Sensor to Monitor the Spoilage of Potato in the Cold Storage	Dr. Partha Bhattacharyya	CSIR	14	2011-14
Current mode FPAA Design	Dr. B.N. Ray	SERC-DST	29.33	2010-14
CMOS VLSI Design	Dr. B.N. Ray	SERC-DST	16	2011-14

Studies on Retro-directive –Array For Space Applications	Dr. S.R. Bhadra Chaudhuri	ISRO	17.46	2013-15
Design and Development Of Substrate Integrated Wave-guide (SIW) based RF circuits and compo-nents Using Meta- materials in Ku-band Application	Dr. Susanta Kumar Parui	DST-SERC	31	2011-15
Development of Microstrip Phased Array Antenna System for Eliminating Scan Blindness by Using Defected Ground Structures	Dr. Susanta Kumar Parui	CSIR	20	2012-15
Design and development of printed antennas on paper substrates for RFID applications	Dr. Santanu Das	AICTE	15	2013-16
TOTAL			**261.89**	

Details of publications of each faculty member :

Journal – 44
Conference – 31
Books/Monograms – 04

List of publications – **Annexure I**

Patents / Invention Disclosure / Technology Transfer / Copyright :

1. A process for forming an undoped p-type TiO2 based sensor device for accurate sensing of low ppm ethanol at low temperature, Partha Bhattacharyya, Arnab Hazra Indian Patent application no.- 1285/KOL/2014 (Filed on 11.12.2014).
2. A process for forming a TiO2 Nanotube based room temperature (27ºC) alcohol sensor device, Partha Bhattacharyya, Arnab Hazra, Indian Patent application no.- 1286/KOL/2014(Filed on 11.12.2014).
3. Non-invasive wireless sensor system for monitoring of elderly people staying alone, C.RoyChaudhuri, N.Samanta, A.Chanda, Indian patent filed, June 2015

Seminar / Workshops / Conferences / Training programme organized by the department

Date	Title of Workshop/Seminar/Lecture etc.	Organizing chair / Convener	Speaker	Participanats
28.01.2015	A lecture on " Looking Ahead to 5G; Building a virtual zero latency gigabit experience"	Dr. S. Das	Dr. Amitava Ghosh - North America Radio Systems Research, Technology and Innovation office of Nokia Networks	UG, PG students, Research scholars, Faculties
05-10 Jan. 2015	Workshope on "Advances in Microwave and Antenna Engineering (AMAE 2015)"	Dr. S. Das, Dr. S.K. Parui	From IIT KGP, DRDO Bangalore, IIT Guwahati, J.U. Kolkata, NIT Durgapur, Radio Physics Kolkata , Syracuse University, USA	Faculties from different Educ-tional Institution & Research scholars
23.12.2014	IEEE AP-MTT Distinguished Lecture On "*Advanced Antenna Systems for Satellite Communication Payloads*"	Dr. S. Das, Dr. S.K. Parui	Dr. Sudhakar Rao - Northrop Grumman Aerospace Systems, CA 90278 USA	Faculties, UG, PG students & Research scholars

02-12 Dec. 2014	National Mission on Education through ICT (MHRD, Govt. of India)	Prof. A. Roy	IIT, Kharagpur	Faculty from different Educ-tional Institution
13-14 Nov. 2014	A Research Promotion Workshop On "Information Theory And Wireless Communications"	Dr. S. Das, Dr. T. Achyarya, Ms. Ankita Pramanik	Dr. Bikash Kr Dey, Dr. Sibi Raj B. Pillai, IIT, Mumbai	Faculties, PG students & Research scholars
22.10.2014	A seminar cum demonstataion on "Virtual instrumentation technique"	Dr. S. Das	Mr. Rabin Pathak, Adlab Solution	Faculties, PG students & Research scholars
22.10.2014	A lecture on "Intoduction to Information theory and coding"	Dr. S. Das Dr. T. Achyarya	Dr. Bikash K Dey IIT, Mumbai	Faculties, PG students & Research scholars
08.10.2014	An interactive session on "How to write a good paper for publishing in journals like IEEE Transactions"	Dr. S. Das Dr. T. Achyarya	Dr. Bikash K Dey IIT, Mumbai	PG students & Research scholar s
02.08.2014 09.08.2014 30.08.2014	A series of lectures on "Programmable Logic Controller (PLC)"	Dr. S. Das	Sayan Bhattacharya	3rd & 4th Year UG ETCE & EE students

Technology Developed / Innovations :

- A solid state portable electrical biosensors for bacteria/toxin detection with electronic readout
- Packaged multiple wireless sensor modules for health monitoring of elderly people-*technology transferred to Amateur World* for medium scale manufacturing
- A process for configuring insolation - intelligent bipv systems

Advancements under TEQIP – Phase II :

- Faculties, research scholars, students of the department participated in international and national conferences / workshops / seminars / short term courses. This participation is supported by TEQIP-Phase II by extending necessary financial assistance. Participation in these events has been very beneficial for improving pedagogical and research skills, and enriching knowledge in the same and different domains.
- The department is equipped with high-end softwares to augment the facilities in the existing laboratories.
- Fellowship is received from TEQIP-Phase II for quite a few deserving students for pursuing Ph.D. program leading to high volume of research publications.
- The financial assistance from TEQIP-Phase II has helped the department to organize workshops / seminars / lecture series etc. This has enriched the students, faculties, technical staffs with the knowledge of advancement of technology in diversified areas besides the regular course curriculum.

Foreign visits and Invited Lectures:

- **Dr. T. Acharyya attended and presented a paper in 37th International Conference on Telecommunication and Signal, Berlin, Germany, July, 2014**
- Dr. Partha Bhattacharyya attended European Conference on Surface Science (ECOSS 30), 2014, organized by Surface Science Division of IUVSTA and the Surface and Interface Section of the European Physical Society (EPS) held in Antalya, Turkey, 31August -5 September, 2014
- Dr. Partha Bhattacharyya was Visiting Scientist to Intel Corporation, Ronler Acres, Hillsboro, USA, 30th June –17th July, 2014.

Visitors to your Department (Indian & Foreign) :

- Dr. Amitava Ghosh - North America Radio Systems Research, Technology and Innovation office of Nokia Networks
- Dr. Sudhakar Rao - Northrop Grumman Aerospace Systems, CA 90278 USA
- Dr. Tapan Sarkar – Syracuse University, USA
- Dr. B.K. Sarkar - Consultant, Kalpan Chawla Space Technology Centre, ISRO Chair Professor (Rtd), IIT Kharagpur
- Dr. Bikash Kr Dey, Dr. Sibi Raj B. Pillai, IIT, Mumbai
- Dr. Sibi Raj B. Pillai, IIT, Mumbai
- Dr. Rowdra Ghatak – NIT Durgapur
- Dr. Subal Kar – Institute of Radio Physics & Electronics, University of Calcutta
- Dr. P.K. Saha – Institute of Radio Physics & Electronics, University of Calcutta
- Dr. Satyajit Chakraborty – SAMEER, Kolkata

Training and Placement :

The students fared very well in campus interviews. 95% students got job opportunity in various reputed core and IT industries. Finally a few of them chose to pursue masters' degree in premier institutes like IIT and two went to premier institutes in USA for higher studies, MS leading to Ph.D. with full financial assistance.

New Academic / Research Initiatives

Academic Collaboration

Collaborative research project is going on in association with the following institutes

- Kalpana Chawla Space Research Centre, IIT-Kharagpur – collaborator in studies on Retro-directive –Array For Space Applications (RAA)
- Institute of Micro and Nanomaterials, Ulm University, Germany
- Department of Physics, National Chung Hsing University, Taiwan
- Department of Physics, BITS, Pilani, Indi
- Dept. of Electronics and Communications, NIT Meghalaya, India
- Dept. of Electronics and Telecomm. Engg., Jadavpur University, India
- Indian Institute of Chemical Biology- collaborator in the biosensor studies
- School of Medical Science and Technology, IIT Kharagpur- collaborator in the studies on electrical characterization of biological cells-2014

Others

Books/Monograms :

1. L.Sujatha, C.RoyChaudhuri, E.Bhattacharya,"Application of Porous Silicon in MEMS and Sensor Technology", Materials and Failures in MEMS and NEMS, (121–172), Scrivener Publishing LLC, 2015

2. C.RoyChaudhuri, R.Dev Das, S.Das, "Interdigitated Electrode-less High Performance Impedance Biosensor for Bacteria Detection Based On Macroporous Silicon Platform", accepted for publication as a chapter in the book *Biosensors for Health, Environment and Biosecurity*, InTech publishers (2014).

3. Book Chapter: P. Bhattacharyya, B. Bhowmik, A.Hazra, P.P. Chattopadhyay, Potentiality of semiconducting metal oxide nanoforms as solid state vapor sensors, in the book 'Sensing Technology: Current Status and Future Trends IV', Edited by Alex Mason, Subhas Chandra Mukhopadhyay, P. Krishanthi Jayasundera, Springer, UK (2015).

4. Book Chapter: P. Bhattacharyya, B. Bhowmik, A.Hazra, P.P. Chattopadhyay, Potentiality of semiconducting metal oxide nanoforms as solid state vapor sensors, in the book 'Sensing Technology: Current Status and Future Trends', Edited by Alex Mason, Springer, UK (2014).

ANNEXURE - I

Paper Published

International and National Journals

1. C.RoyChaudhuri, "A Review on Porous Silicon Based Electrochemical Biosensors: Beyond Surface Area Enhancement Factor", *Sensors and Actuators B*(Elsevier), vol.210, pp.310-323, 2015(Impact Factor: 3.8)
2. H.Ghosh, C.RoyChaudhuri, "Noise Spectroscopy As an Efficient Tool For Impedance Based Sub-Femtomolar Toxin Detection In Complex Mixture Using Nanoporous Silicon Oxide", *Biosensors and Bioelectronics*(Elsevier), vol.67, pp.757-762, 2015(Impact Factor: 6.451)
3. J.Basu, S.Datta, C.RoyChaudhuri, "A graphene field effect capacitive Immunosensor for sub-femtomolar food toxin detection", *Biosensors and Bioelectronics* (Elsevier),vol.68, pp.544-549, 2015(Impact Factor: 6.451)(*published online in Times of India*, 6th April, 2015)
4. D.Mondal,D.Pal and C. RoyChaudhuri," Real Time Sensing of Epithelial Cell-Cell and Cell-Substrate Interactions by Impedance Spectroscopy on Porous Substrates", accepted in *Journal of Applied Physics(American Institute of Physics)*, 2015(Impact factor: 2.18)
5. **N.Das, C.RoyChaudhuri, "Reliability Study of Nanoporous Silicon Oxide Impedance Biosensor for Virus Detection: Influence of Surface Roughness" accepted in *IEEE Transactions on Devices and Materials Reliability*, 2015.**
6. H.Ghosh, C.RoyChaudhuri, "Noise Spectroscopy As an Efficient Tool For Impedance Based Sub-Femtomolar Toxin Detection In Complex Mixture Using Nanoporous Silicon Oxide", *Biosensors and Bioelectronics*(Elsevier), available online September 2014(Impact Factor: 6.451)
7. K.K.Mistry, K.Layek, A.Mahapatra, C.RoyChaudhuri "A comparative study in electrochemical response of some commercial screen–printed electrodes (SPEs)",accepted in Sensor Letters(American Scientific Publishers) 2014(Impact factor: 1.587)
8. K.K.Mistry, K.Layek, A.Mahapatra, C.RoyChaudhuri, "A review on amperometric-type immunosensors based on screen-printed electrodes", *Analyst,* (Royal Society of Chemistry), vol.139, pp.2289-2311, 2014 (Impact Factor: 4.23).
9. S.Ghosh, C.RoyChaudhuri, R.Bhattacharyya, H.Saha, N.Mukherjee, "Palladium-Silver-Activated ZnO Surface: Highly Selective Methane Sensor at Reasonably Low Operating Temperature", *ACS Appl Mater Interfaces.*vol. 26, pp.3879-87, 2014.(Impact Factor: 5.008)
10. B.Mondal, B.Basumatari, J.Das, C.RoyChaudhuri, N.Mukherjee, H.Saha "ZnO–SnO2 based composite type gas sensor for selective hydrogen sensing", *Sensors and Actuators B*, vol.194, 389–396, 2014.(Impact Factor: 3.66)
11. N.Samanta, A.K.Chanda, C.RoyChaudhuri, "An Energy Efficient, Minimally Intrusive Multi- Sensor Intelligent System For Health Monitoring Of Elderly People",*International Journal of Smart Sensing and Intelligent Systems,* vol.7,762-780,2014.
12. P. Bhattacharyya, B. Kundu, S. Ghosh, V. Kumar, A. Dandapat, Performance Analysis of a Low Power High Speed Hybrid 1 Bit Full Adder Circuit, IEEE Transactions on Very Large Scale Integration Systems (IEEE), (Accepted, in press 2015) (Impact Factor: 1.142).
13. P. Bhattacharyya, Technological Journey towards Reliable Microheater Development for MEMS Gas Sensors: A Review, IEEE Transactions on Device and Materials Reliability (IEEE), vol. 14,No. 2, pp. 589-599, (2014) (Impact Factor: 1.544).
14. A. Hazra, K. Dutta, B. Bhowmik, P. P. Chattopadhyay, P. Bhattacharyya, Room Temperature Alcohol Sensing by Oxygen Vacancy Controlled TiO2 Nanotube Array, Applied Physics Letters (AIP), vol. 105, pp. 081604(1-5), (2014) (Impact Factor: 3.794).
15. Hazra, P. Bhattacharyya, Tailoring of the Gas Sensing Performance of TiO2 Nanotubes by 1-D Vertical Electron Transport Technique, IEEE Transactions on Electron Devices (IEEE), vol. 61,No. 10, pp. 3483-3489 (2014) (Impact Factor: 2.358).
16. Hazra, K. Dutta, B. Bhowmik, P. Bhattacharyya, Highly Repeatable Low ppm Ethanol Sensing Characteristics of p-TiO2 based Resistive Devices, IEEE Sensors Journal (IEEE), vol. 15,No. 1, pp. 408-416 (2014) (Impact Factor: 1.852).

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International and National Conferences papers

1. N. Das, J. Basu and C. Roychaudhuri, "Graphene Coated Nanoporous Silicon Immunosensor for Food Toxin Detection", International Conference on Mems and Sensors (ICMEMSS 2014), IIT Madras, Chennai, India, December 18-20, 2014.
2. N.R.Mishra, C.RoyChaudhuri, "Design, Simulation and Optimization of a Piezoelectric Energy Harvester with a Mechanical stopper", International Conference on Smart Materials, Structures and Systems, 8^{th}-11^{th} July, 2014.
3. C.RoyChaudhuri, H.Ghosh, "Frequency Selective Biomolecule Detection using Nanoporous Silicon oxide Immunosensor, pp.34-37", International Workshop on Advances in healthcare Engineering, 2^{nd} -4^{th} January 2014, Kolaghat College of Engineering and Management.
4. N.R. Misra, C. RoyChaudhuri, "Design and Simulation of Modes of MEMS Based Piezoelectric Energy Harvester Incorporated with a Mechanical Stopper", (ICONSEA) International Conference on NEMS and MEMS organized by JNTU H, Hyderabad, June 26-28, 2014.
5. J. Basu, S. Datta, C. RoyChaudhuri,"Improved biofunctionalisation on reduced graphene oxide –porous Silicon Oxide nano composite for immunosensing application", (ICAMET), International Conference on Advanced Materials and Energy Technology, 16^{th}-18^{th} December, 2014, Indian Institute of Engineering Science and Technology (IIEST), Shibpur.
6. Nirmalya Samanta, Hrilina Ghosh "High Performance Nanostructured silicon oxide Impedance Biosensor System with online Noise Spectroscopy Analysis", International Conference on Advances in Materials Science and Engineering (AMSE 2014), Dubai, UAE, October 1-2, 2014.
7. J. Basu, S. Datta, C. Roychaudhuri, " Improved biofunctionalisation on reduced graphene oxide –porous Silicon Oxide nano composite for immunosensing application", ICAMET 2014, IIEST , Shibpur, India December 17-19,2014.
8. N.Das, J.Basu, C.RoyChaudhuri, "High Performance Graphene Based Nanoporous Silicon Sensor For Food Toxin Detection, pp.78-83", National Seminar on Thin Film and MEMS Science and Technology, March 21-22, 2014, Kolkata, India.
9. Humidity Sensitive Characteristics of Pd Dispersed ZnO Nanorod based Methanol Sensor, S. Roy, N. Banerjee, P. Bhattacharyya, C. K. Sarkar, 3^{rd} International Conference on Nanomaterials (CN 2014), January 14-16, 2014, Shenzhen, China.
10. Effect of Stoichiometry Variation on Alcohol Sensing Properties of Electrochemically Grown TiO_2 nanotubes, P. Bhattacharyya, A. Hazra, B. Bhowmik, K. Dutta, European Conference on Surface Science (ECOSS 30), 2014, Antalya, Turkey 31August -5 September, 2014.
11. Methanol Sensing Performance of Two Different ZnO Nanoflowers Grown by CBD Method: A Comparative Study, K. Dutta, S. Das, N. Banerjee, D. Acharyya, P.P. Chattopadhyay, P. Bhattacharyya, European Conference on Surface Science (ECOSS 30), 2014, Antalya, Turkey, 31August -5 September, 2014.
12. A comparative study on methanol sensing performance of ZnO nanoflower and nanorod based resistive devices Debanjan Acharyya, Nabaneeta Banerjee, Partha Bhattacharyya, IEEE SENSORS 2014, Valancia, Spain, 2^{nd} -5^{th} November, 2014.
13. Nanocrystalline p-TiO_2 based MIS device for efficient acetone detection, B. Bhowmik, A. Hazra, K. Dutta, P. Bhattacharyya, IEEE SENSORS 2014, Valencia, Spain, 2^{nd} -5^{th} November, 2014.
14. Modulation of Alcohol Sensing Performance of Anodically Grown TiO_2 Nanotube Array by a Novel Stoichiometry Variation Technique, Arnab Hazra, Partha Bhattacharyya, Young Scientist Colloquium-

2014, Organized by Materials Research Society of India (Kolkata chapter), 12th September, 2014, Saha Institute of Nuclear Physics , Kolkata, India.

15. Development of efficient BTX sensor based on ZnO nanoflower like structures, Debanjan Acharyya, Partha Bhattacharyya, Young Scientist Colloquium-2014, Organized by Materials Research Society of India (Kolkata chapter), 12th September, 2014, Saha Institute of Nuclear Physics , Kolkata, India.
16. Growth, Characterizations and Methanol Sensing Performance of ZnO Nanoflowers Grown By CBD Method, Nabaneeta Banerjee, Debanjan Acharyya, Partha Bhattacharyya, International Conference on Advanced Materials and Energy Technology (ICAMET), IIEST, India, 17-19 th December, 2014.
17. Effect of Wall Thickness Variations of TiO_2 Nanotubes on Benzene Sensing, Koushik Dutta, Partha Pratim Chattopadhyay, Partha Bhattacharyya, International Conference on Advanced Materials and Energy Technology (ICAMET), IIEST, India, 17-19 December, 2014.
18. Effect of Relative Humidity on Pd Modified ZnO Nanorod based Methanol Sensor, Nabaneeta Banerjee, Sunipa Roy, Chandan K. Sarkar, Partha Bhattacharyya, held in International Conference on Advanced Materials and Energy Technology (ICAMET), IIEST, India, 17-19 December, 2014.
19. Tapas Mondal, Susamay Samanta, Rowdra Ghatak and S. R. Bhadra Chaudhuri, "A Novel Circularly Polarized DSRC Band Square Microstrip Antenna Using Minkowski Fractal Structure for Vehicular Communication", IEEE International Conference on Vehicular Electronics and Safety (ICVES), pp. 141–146, Hyderabad , India, Dec, 2014. ----- available in IEEE Xplore.
20. Partha Sarathi Banerjee, Subhankar Das, Krishanu Das and S. R. Bhadra Chaudhuri, AMSPR: A Secure Multipath Routing in Mobile Ad Hoc Networks (MANET)", ICDCCoM - 2014,BIT Mesra, India, September, 12-13,2014. ---available in IEEE Explore.
21. Biswarup Rana, and Susanta Kumar Parui, "Design of H-plane Horn Antenna using Corrugated Substrate Integrated Waveguide," IEEE Indian Antenna Week (IAW2014), Chandigarh, 26-30 May, 2014
22. Ayan Chatterjee and Susanta Kumar Parui, "Gain Enhancement of a Wide Band Slot Antenna using Frequency Selective Surface", IEEE Indian Antenna Week (IAW2014), Chandigarh, 26-30 May, 2014
23. Kasturi Ghosh and B.N. Ray . Design of a new high order OTA-C filter structure and its specification based testing, IEEE Conference VDAT 2014
24. P. Mukherjee, S. Mukherjee,S Prasad Maity, T Acharya, "On Optimal Power Allocation and Relay Assignment in Multiuser Cognitive Radio Networks", in 10th Intl. Conference on Signal Processing and Communications (SPCOM), at IISc Bangalore, July, 2014,.
25. S. Chatterjee; S. P. Maity and T. Acharya, "On Optimal Relay Power Allocation in Energy Efficient Cognitive Radio Networks" in Proceedings of 10th International Conference on Signal Processing and Communicatiions, IISc Bangalore, July, 2014.
26. S. Chatterjee, A. Banerjee, T. Acharya, S. P. Maity, Fuzzy C-Means clustering in energy detection for cooperative spectrum sensing in cognitive radio system, in 8th International Workshop on Multiple Access Communications (MACOM), 2014, pp. 84–95.
27. S. Chatterjee, T. Acharya, S. P. Maity, " On optimal power allocation for joint spectral sensing and data transmission in CR networks", in 37th International conference in Telecommunication and Signal Processing, Berlin, Germany, July, 2014.
28. S. Basak and T. Acharya, "On lifetime centric routing and power allocation in BER constrained cognitive radio ad hoc networks", IEEE International Conference on Advanced Networks and Telecommunication Systems (ANTS), 2014, C-DOT, New Delhi.
29. S. Ghosh, T. Acharya, S. Chatterjee and S. P. Maity, "On Optimal Power Sharing for Joint Sensing and Data Transmission in Cooperative Cognitive Radio Networks", in 21st National Conference on Communications, IIT Bombay, Mumbai, Feb, 2015
30. Arijit Dutta and Ankita Pramanik, "Modified Approximate Lower Triangular Encoding of LDPC Codes," IEEE International Conference on Advances in Computer Engineering and Applications, Ghaziabad, India, 2015
31. Rajat Kanti Sarkar and Ankita Pramanik, "Segmentation Of Plant Disease Spots Using Digital Image Processing," IEEE International Conference on Advances in Computer Engineering and Applications, Ghaziabad, India, 2015

Department of Earth Sciences

The Department

Indian Institute of Engineering Science and Technology, Shibpur(Formerly Bengal Engineering and Science University,Shibpur) and the subject Geology possess a century old relationship. Many eminent geoscientists have offered their teaching and research expertise in the past. Previously teaching in geology was introduced in this university to meet the need of the would be engineering graduates only in Civil Engineering, Mining Engineering and Metallurgical Engineering branches. The science streams have emerged as an integral part of the university offering postgraduate degrees from 2001. The Department of Geology, however, has started to offer independent postgraduate courses in geology after its separate identity as a science department from 2005. In 2011, name of the department has been changed to the Department of Earth Sciences to hold an umbrella to develop teaching and research in various disciplines of geology, geophysics, atmospheric and planetary sciences.

The Department of Earth Sciences is dedicated to improve the understanding of the solid earth, its geotechnical and other applied aspects through teaching, research and field training programme. Students are being trained by permanent and eminent visiting faculties of diverse fields of geology, involved in frontier areas of research like sedimentology, basin tectonics, mineralogy, geochronology, tectonothermal evolution, hydrogeology and paleontology etc. The Master degree programme of the department has a modern and updated syllabus to cope up with the need of the hour and aims to prepare students for a broad range of geoscientific careers which includes petroleum or mineral exploration, natural hazard mitigation and geoscientific activities in different universities and research institutes. Students are able to find employment in mining companies, petroleum industries and various corporate houses.

Academic Programmes:

Undergraduate Level	
Degree offered	NIL
Sanctioned students' intake	NIL
Additional intake through lateral entry in 3rd Semester	NIL
Postgraduate Level	
Degree offered	M.Sc In Applied Geology.
Sanctioned students' intake	25
Additional intake through other programmes (i.e. QIP)	NIL
Specialisations in	Sedimentology & Basin Tectonics, Paleontology (Invertebrate), Geohydrology. Structural Geology

Doctoral Level	
Degree offered	Ph.D in Science (Geology)
No of candidates enrolled	01
registered	04
awarded	0

Faculty position:

Sanctioned faculty post : 8 (Professor-01, Associate Professor-03, Assistant Professor-04)
Vacant Post : Assistant Professor-02, Associate Professor-02.

Faculty profile

Name	Designation	Highest Qualification	Specialisation/ Research Area	Contact No. E-mail
Dr.Bhabani Prasad Mukhopadhyay	Professor	Ph.D.	Sedimentology & Basin Tectonics	+91-9830019506. +919433053978 bpmbesus@gmail.com
Dr.Tapas Kumar Gangopadhyay	Associate Professor	Ph.D.	Invertebrate Paleontology	+91-9674747910 tapasgeolbe@yahoo.com
Dr.Ananya Mukhopadhyay	Associate Professor	Ph.D.	Sedimentology & Stratigraphy	+91-9830012606 +919433516731 ananyageol@gmail.com
Dr. Atin Kumar Mitra	Assistant Professor	Ph.D.	Structural Geology	+91-9433121305 atinmitra@gmail.com

Awards and Laurels: Nil

Research area (only broad titles):

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

Research facilities: (name specific equipment / picture etc.)

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

Name of the laboratories:

1.Sedimentology 2.Paleontology 3.Rock cutting & polishing 4. Structural Geology

Consultancy Work :

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.)

Support staff position:

Sanctioned technical post: 01

Sponsored Research: (only areas mentioned)

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

Department received DST-FIST support under FIST-2009 –
Rs. 40.75 Lakhs.—Continuing till 2015(March)

Industry- Institute Interaction

1.Department is collaborating with ONGC for drill-site training of student & research work.
2. 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.

No of publications:

Journal : 02 (Communicated to International Journal)
Conference: 0 3-National & 01-International
Books/Monograms- 01
(List to be included)

List of Publications (2014-15)

Papers:

Biswas, A, Mukhopadhyay, B.P, Banerjee, T, Mazumdar, P, Thorie, A. 2014. Sedimentation Modelling as a proxy tool for reconstruction of a Falling Stage System Tract on a Proterozoic Carbonate Ramp: Evidence from Simla Group, Western Lesser Himalaya, India. 19th International Sedimentological Congress (ISC 2014), Geneva, Switzerland, August 2014.

Mazumdar, P, Mukhopadhyay B.P., Biswas, A., Banerjee, T., Thorie, A. 2014. Signature of palaeoseismicity recorded from the rock strata of the Chhaosa Formation, Simla Group, Himachal Himalaya, India. National Conference on Sedimentation and Stratigraphy & 31st Convention of Indian Association of Sedimentologists-2014.

Banerjee, T., Biswas, A., Mukhopadhyay B.P., Thorie,A, Mazumdar, P. Facies architecture and sequence stratigraphy of a mid-outer ramp carbonate succession: Basantpur Formation, Proterozoic Simla Group, Western Lesser Himalaya, India. National Conference on Sedimentation and Stratigraphy & 31st Convention of Indian Association of Sedimentologists-2014.

Thorie, A, Biswas, A., Mukhopadhyay B.P., Banerjee, T., Mazumdar, P. 2014. Control of microbial mat related structures (MRS) on mixed siliciclastic-carbonate platform from Lower Proterozoic Simla Basin (Basantpur Formation), Lesser Himalaya, Simla district, Himachal Pradesh, India. National Conference on Sedimentation and Stratigraphy & 31st Convention of Indian Association of Sedimentologists-2014.

Contribution in each chapter in form of few questions and answers by Dr. Ananya Biswas to the Global Edition of Essentials of Geology, 12 th Edition By Frederick K. Lutgens, Edward J. Tarbuck and Dennis G. Tasa(ISBN:9781292057187)

"A Geospatial Approach to determine Lake depth and Configuration of Reingkhyongkine (Pukur Para) Lake, Rangamati Hill District, Bangladesh with Multi-Temporal Satellite data": Biswajit Nath, Shukla Acharjee, **Atin Kumar Mitra** and Debabrata Majumder. (Communicated in Journal of Environmental Accounting and Management)

"A study of bioerosion and taphonomy of belemnites and stephanoceratid ammonites from Kuldhar Member of Jaisalmer Formation from Jaisalmer, Rajasthan India": Sharmistha Paul, Ujjal Mal, **Tapas Kumar Gangopadhyay.** (Communicated to PALAIOS)

Book:

Autobiography of A Naturalist by Charles Darwin **Translated** in vernacular medium by Bhabani Prasad Mukhopadhyay with a broad **Introduction** of 40 pages by Bhabani Prasad Mukhopadhyay,2014 (ISBN 978-93-81858-68-4).

Department of Human Resource Management

About the Department:

The erstwhile Training and Placement of the Institute was rechristened as Department of Human Resource Management in the year 1994 -95 and is headed by one Professor and supported by other staff members.

The Department has its current activities in the following areas:

- Facilitation services for Job Placements of students of the university though Campus and Off-campus selection processes.
- Facilitating Vacational / Summer Training of the students of the Institute
- Grooming up (Personality/Soft-Skill/ Performance Effectiveness) Programme for the Students
- Facilitation for other career options : Preparatory programme for Competitive Exams and other Educational options abroad
- Industry-Contact progammes / Academic collaborations
- Entrepreneurship Development Programme
- IPR Awareness and Facilitating protection of IPR
- Career Counselling
- Industry Liaisoning

Academic Programmes:

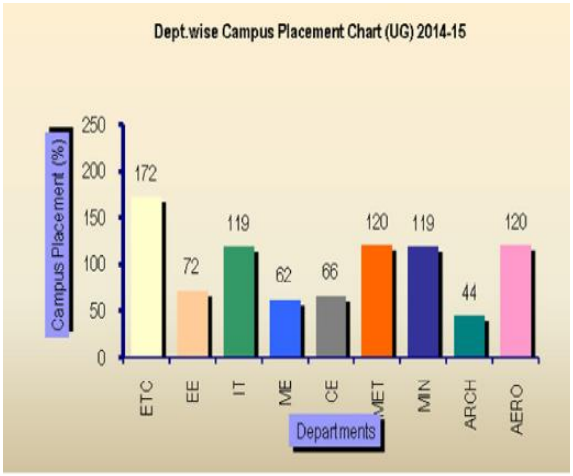
This predominantly is a service department catering to all UG, PG and Ph.D students; it also offers Ph.D Programme under Faculty of Social and Management Sciences. Currently there are five (5) registered Ph.D. Scholars in this department working in the arena of Entrepreneurship and IPR. Proposals have also been submitted to concerned authority of the Institute to offer Elective courses on Entrepreneurship and / or IPR for the engineering students.

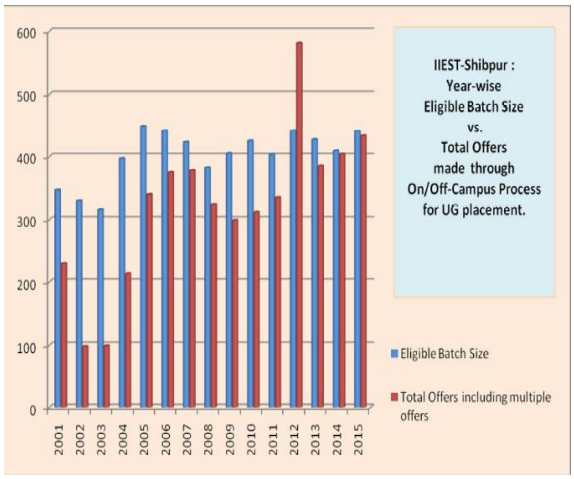
Faculty position: Sanctioned faculty post: 1 (One), Vacant Post: Nil

Faculty Profile:

Name	Designation	Highest Qualification	Specialisation / Research Area	Contact No. E-mail
M. K. Sanyal	Professor	Ph.D	• Entrepreneurship • IPR • Environmental Planning	9831352950 hodhrm@becs.ac.in

Recent Placement Statistics of the Institute:





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
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	Afcons Infrastructure Ltd.		■	■	■		
9	Alfatek Systems				■	■	
10	Alstom Ltd.				■		
11	Alstom Projects			■			
12	Amazon			■		■	■
13	Anshin Software	■	■				
14	Ashiana	■					
15	Atos			■			
16	Babtech Consultants			■			
17	Balmer Lawrie	■		■		■	
18	Bengal Emta	■					
19	BHEL	■					
20	Blue Star		■		■	■	■
21	BOC India	■	■	■	■		
22	Bridge&Roof Co.Ltd.						■
23	Britania Industries					■	
24	Broad Ridge		■				
25	C.E.Testing		■	■			
26	Cadence					■	
27	Capgemini		■	■	■		
28	CapitalVia						■
29	CES		■	■			
30	CESC	■	■	■	■	■	■
31	Coal India Ltd.	■	■	■			
32	Coffee-day Beverages						■
33	Cosmic Circuits		■	■			
34	CTS		■	■	■	■	■
35	Cummins				■		
36	DCPL	■	■	■	■	■	
37	Deloittee		■	■	■	■	■
38	DemagCranes&Comp.	■					
39	Direct-I						■
40	Dolsera		■				
41	DVC			■	■		
42	Digital Dynamic		■	■	■	■	■
43	Egis India		■				
44	Electro Steel Castings						■

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
45	Energy Inratech		■				
46	Ericsson India			■	■	■	
47	Essab India	■	■				
48	Essar	■					
49	Essel Mining		■				
50	EXL Infotel				■		
51	EXL Service					■	■
52	Fi-Tek						■
53	Flur Daniel					■	
54	Foster Wheeler				■	■	■
55	Foster Wheeler Bengal			■			
56	Gontermann-Peipers		■		■		
57	Google					■	
58	GRSE		■	■			
59	Haldia Petrochemicals	■	■	■		■	■
60	Hiland Group					■	
61	Himadri Chemicals		■				
62	Hindalco		■				
63	Hindalco,Mumbai	■					
64	Hindustan Motors.				■	■	
65	Hindusthan National Glass	■	■				
66	HSBC			■	■		■
67	Hyundai						■
68	IBM	■	■	■	■	■	■
69	IES Academy		■				
70	Indian Army		■	■	■		
71	Indian Navy			■		■	
72	Infinity Infotech Parks			■			
73	Infosys Technologies	■		■		■	■
74	Interra Software	■	■				
75	Interview Street					■	
76	Indian Oil Corporation	■	■	■	■		
77	ITC Infotech.		■				
78	ITD Cementation	■	■		■		■
79	Jaibalaji Group	■	■				
80	JCAPCPL						■
81	Jindal Steel Works		■			■	
82	Joy Mining Services				■		
83	JSL Stainless			■			
84	JUSCO (Tata Steel)	■	■				
85	KaramChandThapar		■				
86	KEC International	■	■				
87	Keross FZ-LLC				■	■	
88	KONE					■	
89	Kovair Software		■	■	■	■	■
90	L & T - ECC	■	■	■	■	■	■

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
91	L & T Ltd.	■	■	■	■		
92	L&T Rambol		■				
93	Lafarge India				■	■	
94	Lahmeyer International		■				
95	Landis+Gyr.	■					
96	Lexmark International		■	■	■	■	■
97	Linde Group					■	■
98	Lister Technologies					■	■
99	Lloyds & Steel	■					
100	M Junction			■	■	■	■
101	M.N.Dastur	■	■	■	■		■
102	Mahindra & Mahindra		■				
103	Mahishwari Mining				■		
104	Mani Group				■		
105	Maruti Udyog Ltd.		■	■	■	■	■
106	Mather&Platt	■					
107	McNally Bharat	■	■	■	■		
108	Mecon Ltd.		■				
109	Micro-Soft	■	■				
110	Ministry of Power,Bhutan				■		
111	Mallak Group					■	
112	Mott. MacDonald			■			
113	Murugappa Group				■		
114	Mu-Sigma		■	■	■	■	■
115	Neo-Metaliks				■		
116	Nomura		■				■
117	Ocenearing Engineering				■		
118	Odessa Technologies			■	■	■	
119	Orient Fans	■	■	■	■		
120	Paharpur Cooling Tower					■	■
121	Patton India		■				
122	Peri India					■	
123	Pinnacle Infotech Ltd.						■
124	PIPL	■					
125	Polstar						■
126	Punj Lloyd	■	■				■
127	PWC	■	■		■	■	■
128	Reve Systems					■	■
129	RILReliance India Ltd.		■				
130	Rites Ltd.					■	
131	RS Software				■		
132	S.K. Samanta & Co.	■		■	■		■
133	Samsung				■		
134	Samsung Electronics			■			
135	Samsung Engg.			■			
136	Sankalp Semiconductor		■	■	■	■	■

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
137	Sapient	■	■				
138	Schenek Process				■		
139	Scope				■		
140	Shapoorji & Pallonji		■	■	■	■	
141	Siemens		■	■			
142	Signotron					■	
143	Simplex	■	■				
144	Singens		■				
145	SML ISUZU Ltd			■			
146	Snap Deal						■
147	Sova Ispat	■					
148	SP Algorithm			■	■		
149	Star Coolers					■	
150	Starlite Group				■		
151	Tata Capital					■	
152	Tata Chemicals				■	■	
153	Tata Hitachi						■
154	Tata Power				■		
155	Tata Steel		■	■	■		■
156	Tata Tinplate	■	■				
157	Tavant Technologies		■				
158	Tata Consulting Engineers			■	■		■
159	Tata Consultancy Services	■			■		■
160	Tech Mahindra	■	■				
161	Techno Electric		■	■			
162	Tega Industries					■	
163	Telcon	■	■	■	■	■	
164	Texas Instrument			■			
165	TIL Ltd			■	■	■	
166	Trishul Consultancy		■				
167	Uttam Galva					■	
168	Vedanta	■	■	■	■	■	■
169	Vikram Solar					■	
170	Vikrant Forge					■	■
171	Viraj Projects		■				
172	Visa Power				■		
173	Visa Steel	■					
174	Voith Paper					■	■
175	Voltas Ltd.			■		■	■
176	W.Hunger Hydraulics	■					
177	WABAG					■	
178	WBPDCL				■		
179	WBSEDCL			■	■		
180	Wipro	■	■				■
181	WPIL Ltd.	■					

IIEST-Shibpur : Placement Statistics of UG students of 2015 passout batch											
	CST	ETC	EE	IT	ME	CE	MET	MIN	ARCH	AERO	Total
Official Batch Size	55	39	67	47	66	96	25	26	16	13	450
Interested / Eligible Batch Size	55	39	67	47	54	96	25	26	10	13	432
Total No.of Offers for UG	84	67	48	56	41	63	30	31	7	16	443
No. Of selection proceses held	27	23	27	27	36	27	14	13	11	11	

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

Grooming Activities organized by HRM Department:

02.04.2014 : Interactive Seminar on "Cracking Aptitude Test" – sponsored by Times of India

17.07.2014 : NEN Workshhop on Entrepreneurship Development at College level

15-18. 07. 2014 : Placement Session conducted by Prof. M.K.Sanyal for 2015 pass-out batch.

30.07.2014
Interactive Session for Students on "From Engineers to Managers" conducted by Mr. Suvro Ray Chaudhuri (class of 1999 Mechanical, presently with UB Group) and Smt. Baishali Chatterjee (Class of 1990, presently with Intel Corp. USA) with Prof. Kanika Das of EE Deptt.

11.08.2014
Grooming Session for 2015 Pass-out Students: Career Opportunities of Engineers in Government Sector and Scopes for Studies Abroad conducted by Mr. T. K. Sarkar, TEQIP Consultant and Dr. M. K. Sanyal.

28.08.2014
Grooming Session for 2015 Pass-out Students: Career Opportunities in Emerging Frontier Technology Areas of Semiconductor and Computer Industry

13.08.2014
Students' Interactive Session on Best Practices in Training & Placement in elite Institutions by Prof. S. K. Barai, Head – Career Development Centre, IIT- Kharagpur,

23 July – 14 August, 2014
Special Counselling and Remedial Training Programme for deficient students

15.10.2014 : Students interactive session on Avenues in Doctoral Fellowship Programme in collaboration with IIM-Kolkata

12.11.2014 : Interactive Session with Students on EDC Activities

19.11.2014 : Students' Workshop on Cloud Computing by TCS

16.01.2015 : Career Opportunities in Deptt. of Atomic Energy at VECC Salt-Lake

19.01.2015 : Labview Workshop for students

23.03.15 : CESC Unmesh CESC SIP Launch

25.03.2015 : Placement Readiness Workshop by Focus Academy of Career Advancement (FACE)

Industry promoted students' activities facilitated by HRM Department:

April 2014: Vine and Collage Competition hosted by Accenture

April 2014: Innovacracy – Competion on Innovation hosted by TCS

Merit-cum-Means Scholarships sponsored by CTS Foundation awarded to 1st. year students

02.06.14 - 30.06.14

Accenture Head-Start Foundation Programme conducted by the faculty from M/A Accenture for the 2014 pass-out batch held at the Institute premises.

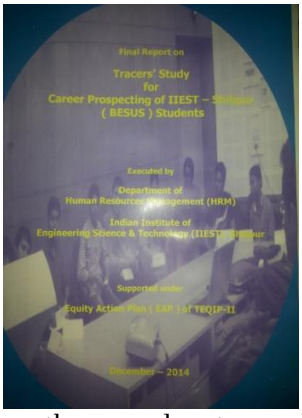
Launching of ICICI Trinity 2014 - Students' Innovation Programme

23.07.2014: Pre-Connect Session with TCS Innovation Laboratory for 2015 Pass-out Batch

05.08.2014 : Pre-Connect Session with Infosys for 2015 Pass- out Batch

TCS Best Student Award being handed over to Father of Ms. Prerana Singhal, University Topper from 2014 pass-out batch by Mr. Kushal Banerjee of TCS

Projects / Consultancy under HRM Department



Tracers' Study for Career Prospecting of IIESTS Students.

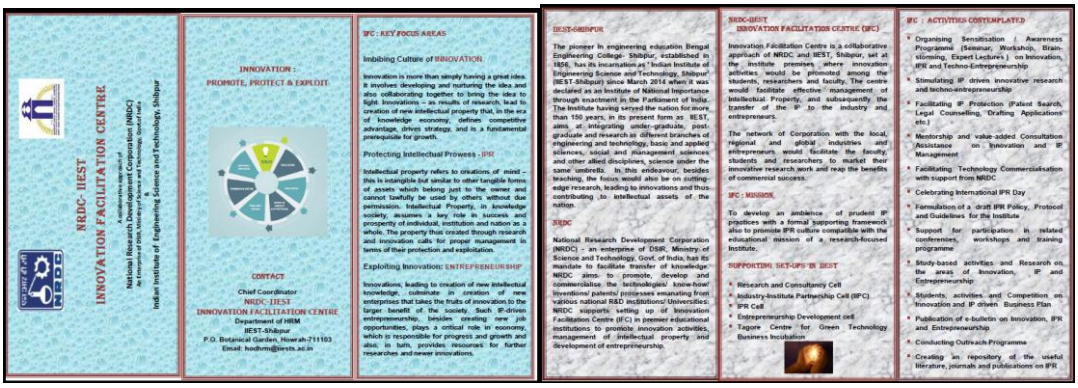
This is a major Project taken up by HRM Department under TEQIP funding. The basic objective of this Project was to obtain inputs from the immediate passed-out candidates of the Institute regarding how the teaching Learning process and also extra-curricular activities can be augmentedd so as to facilitate the students securing careers of their choice. Suggestions received from the passed–out students across various disciplines and persuing various career avenues have been compiled and analysed so as to to arrive at the recommendations. Final Report of the Project has been submiited in December 2014 to the authority to consider various recommendations made therein.

NRDC-IIEST-Innovation Facilitation Centre

NRDC-IIEST-Innovation Facilitation Centre (NRDC-IIEST-IFC) established under HRM department is a collaborative initiative of National Research Development Corporation (A Government of India Enterprise) and IIEST, Shibpur with an objective of promoting innovation activities among students, researchers and faculty members. The centre is facilitating effective management of intellectual property (IP) and subsequently the transfer of the IP to the industry and / creations of new entrepreneurs.

NRDC – IIEST – IFC, in collaboration with Indian Patent Office organized the event titled: "Enlightening Youth - Creativity and Innovation" on 26th. February, 2015. Senior officials of Indian Patent Office along with faculty-members of the Institute deliberated during the programme attended by large number of interested students.

A batch of 17 students of IIEST were sponsored by the Institute to participate in the Global Entrepreneurial Summit held at IIT-Kharagpur during 16-18 January, 2015.



Brochure of NRDC-IIEST-IF

Tagore Centre for Green Technology Business Incubation

The major project for setting up of large scale Incubation Centre supported by National Science & Technology Entrepreneurship Development Board under DST-GoI has been made fully operational in its dedicated facility at Slater Hall.

A Policy has also been adopted by the appropriate authority of the Institute to enable the students and Faculty Members of the Institute to participate in technology-based entrepreneurship and also to have spin-off companies to be incubated in this Incubation Centre.

Responses received from faculty-members and students in entrepreneurship development and availing the facilities of the Incubation Centre has so far been highly encouraging. Mentoring sessions are regularly being held at this Centre for orientation of the students towards entrepreneurship.

Consultancy Projects on Conducting Environmentaland Impact Assessment (EIA) and Social Impact Assessment (SIA) of major development projects on behalf of RITES (A GoI Undertaking).

Participation of HRM Departmen Faculty Member in Academic and Corporate Activities

- Offered Course on IPR for M.Sc. Students at Kolkata University as Guest Faculty.

- Served as Member of CII Eastern Region Innovation Task Force for the year 2014 -15
- Acted as Reviewer for Journal of The Institution of Engineers (India): Series A
- Participation in Training and Placement Meets organised by M/S Accenture (09/04/14), Cognizant (20/04/14), TCS (25/07/14) and Wipro (7-88/8/14).
- Served as an Expert of the various Selection Committees of Ramakrishna Mission Vivekananda University (21/05/14), RCCIT (11/04/14), WB State Council of Science & Technology (07/01/15).
- Delivered a lecture on "Transition to Knowledge Society " as Chief Guest at the meeting held at Taj Bengal of Consular Corps of Kolkata (CCK) - an Association of Career Diplomats and Honorary Consuls in Kolkata together representing 65 Countries from all over the world. (14/05/14)
- Delivered the Key Note Speech for the Entrepreneurship Awareness Camp (EAC) held at Bharat Technology, organised by DST-GoWB. (04.08/14)
- Chairing the Session on “Sharing of Best Innovative Practices in Water Management”,in the “National Workshop on Effective and Innovative Water Management towardsa Sustainable Future” organized by CII at Park Hotel (21/08/14)
- Attended TEQIP Review Meeting at Bhubaneswar (26/08/15)
- Delivered Lecture on IPR as key resource person in the Faculty Development Programme at Institute of Engineering and Management, Kolkata (02/09/14)
- Participation in Television Programme Career Plus organized by Doordarshan as key speaker(18/09/14)
- Delivered Key Note Speech at the 3 Day Entrepreneurship Awareness Camp (EAC) organised by Calcutta Institute of Technology supported by DST-GoWB (12/11/14)
- Delivered Class lecture on Entrepreneurship and IPR at NBIRT for the participants attending the ten days Training Programme for EDP organised with support from MNRE-GoI. (14/11/14)
- Attended National Seminar on Roving Seminars on Patent Cooperation Treaty at National University of Juridical Sciences organized by WIPO and FICCI,(19/11/14)
- Attended, alongwith a student delegation from the Institute, CII Seminar on Innovation 2015 - Today & Tomorrow at The Lalit Great Eastern, Kolkata (22/11/15)
- Attended INFOCOM – the ICT Conference at ITC Sonar, Kolkata (4-6/12/14)
- Delivered Lecture on "Role of Skill Development in Sustainable Employment" at the National Seminar organized by Council of Engineering and Technology at Science City Auditorium. (29/12/14)
- Delivered Lecture on "Mentoring the students in IEM to make them ready for corporates and higher studies", as key resource person, in the FDP at IEM-Kolkata (12/01/15)
- Delivered a theme lecture on University-Industry Collaboration for Innovation Incubation at the Workshop organized by National Research Development Corporation at IEM-Kolkata. (23/03/15)

PUBLICATIONS :

Conference Papers :

"Traditional Knowledge-based Healthcare System: Study of Entrepreneurial Opportunities in Indian Context". Global Conference of Service Management' 2014.AURO University, Surat, Gujarat India and Manning School of Business University of Massachusetts, Lowell, USA. January 4 & 5, 2014, *Jnui Datta and Manas Kumar Sanyal*

"Developing Entrepreneurship Model in the area of Traditional Knowledge-based Healthcare: An Emerging Market in India".Conference Edited Volume, Springer, ICBPEM, NIT, Rourkela, December 12& 13, 2014, *Jnui Datta and Manas Kumar Sanyal*

"Realising Prospects of Commercialization of Traditional Knowledge Based Innovation to Cater to the Growing Needs of Health Care Sector in India" Proceedings of National Conference on Governance of Traditional Knowledge and Contemporary Innovation, by MHRD-IPR Chair, Department of Management Studies, IIT Roorkee, March 13 & 14, 2014, *Jnui Datta and Manas Kumar Sanyal*

"Managing IPR for Facilitating New Drug Development in India: A Case Study for Rotavirus Vaccine." Proceedings of International Conference on "Business Paradigms in Emerging Markets" (ICBPEM-2014), NIT, Rourkela, December 12& 13, 2014, *Suhita Neogi and Manas Kumar Sanyal*

Journal Paper

" Sustainable Slum Improvement Models". Terra Green, (A TERI Publication) Vol 7, Issue 12, March 2015

"Growing Importance of Service sector in Economy: Prospect of Enterprise Development in Healthcare sector in Indian context". SPANDAN FMS GNIT International Journal of Business Management, ISSN-2348 666X. Volume – I, No – I, PP – 136-146, June 2014, *Jnui Datta and Manas Kumar Sanyal*

Book Chapter

"Land Use and Infrastructure Development Strategy for Planned Transformation of Bally-Howrah-Uluberia Planning Area" , Urban Development in Howrah – Socio-Economic Perspectives. ISBN : 978-93-84082-39-0, Primus Books, 2015, *Soumen Mitra, Souvanic Ray, Sudip Kumar Ray and Manas Kumar Sanyal*

Department of Humanities and Social Sciences

About the department

STEM discourses are evolutionary, social and cultural unfolding. Hence, they form an integral part of the historical accumulation of knowledge.

Opening the minds of the initiated before and beyond engineering and technology is extremely important ; not only to generate a sense of relief from the drudgery of quantity but also to develop analytical and exploratory competence in a dynamic world. The exposure to literature, economy, conditioned human behaviour and management, sensitize the young hearts to be responsive to the division of real need and manufactured needs.

Precisely for these ends the Department of HSS is continuously striving to achieve these objectives for seven long decades notwithstanding several imposed limitations and change in perspectives.

Academic Programmes:

Core Courses

The Department teaches several core courses to all undergraduate students. These are :

Semester 1 &2 Professional Communication in English
Semester 3& 4 Principles of Management & Industrial Sociology
Semester 5& 6 Economics
Semester 7 & 8 Accounting & Financial Management

Open Elective Courses

The Department has proposed to offer the following open electives to undergraduate students of the Dual degree programme:

Development Economics
Environmental Economics
Enjoying Shakespeare
Introduction to Science, Technology & Society
Introduction to Renaissance Drama
Language through Literature
Managing the Environment
Services Marketing

Doctoral & Post Doctoral Research Programme

Degree offered : PhD (Humanities & Management Sciences)

No. of candidates enrolled : 9

No. of Candidates registered : 4

No. of Candidates awarded: 2

Faculty Position:

Sanctioned faculty post .....8.....Vacant Post..3.....

Faculty profile (in the following table)

Name	Designation	Highest Qualification	Specialisation / Research Area	Contact No. E-mail
Madhumati Dutta	Professor	Ph.D	Economics	9836853402 madhumatidytta@yahoo.co.in
Partha Sarathy Ray	Associate Professor	Ph.D. in Management	Marketing Management	09432257559 psr@hss.iiest.ac.in
Rupen Basu Mallik	Associate Professor	M.Com, FCMA	Finance & Accounting	9831313642 rbmallik@gmail.com
Mallika Ghosh Sarbadhikary	Associate Professor	M.Phil	English	9830296095 ghosh16mallika@yahoo.com
Subhasis Bandyopadhyay	Assistant Professor	M.A.	Sociology	9836945013 subhasisban@gmail.com
Manasendu Kundu	Visiting Faculty	Ph.D	Social & Environmental Anthropology	9038819190 (India) mannykundu@hotmail.com

Awards and Laurels received by the faculty members:

Research area (only mention broad titles without description in details)

Environmental Economics/ Studies, Sociology of Science & Technology, Renaissance Drama, Gender Studies, Corporate Governance, Finance & Control, Marketing Management, Social Anthropology, Land Policy, Education Policy.

Research facilities (name specific equipment / picture, infrastructure etc.)0

Software available

SPSS
Prowess
Economic Outlook

Support staff position:
Sanctioned technical post .....0.....
Technical staff profile (in the following table)

Ongoing Sponsored Research / projects: (mention area)

Industry-Institute Interaction :

Details of publications of each Faculty member (2013-14)

Name	**Designation**	**Journal**	**Conference**	**Books / Monograms** (List to be included)
Madhumati Dutta	Professor	02*		
Partha Sarathy Ray	Asso.Prof.	Nil	Nil	Nil
Rupen Basu Mallik	Asso.Prof.	Nil	Nil	Nil
Mallika Ghosh Sarbadhikary	Asso.Prof.	01	01	Nil
Subhasis Bandyopadhyay	Asst.Prof.	01	02	01
Manasendu Kundu	Visiting Faculty	06	04	01

* *'Targeting Consumer Groups and What They Consume for the Mitigation of Climate Change in India', in Environmental change and Human Security in the Middle East and Africa, eds. Mohamed Behnassi and Katriona McGlade, in print, 2015.*

Crafting a Doctoral Thesis, in Research Methodology in the Social Sciences: the emerging trends, eds. Arabinda Samanta and Lakshmi Sivaramakrishnan, UGC and Burdwan University, 2015.

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.

"Contingent valuation of environment in developing regions" in Academia: GMGC, volume 1, issue 1, 2014-15, pages 158-168, ISSN 2348-7054 (with Sanchita Sen).

Seminar / Workshops / Conference / Training programme organised by the department (2013-14)

	Event	Topics	Date
1	National Seminar	Women & Work: Issues & Interrogations	07 Feb. 2013
2	Symposium (Jointly with Dept. of IT)	Philosophy of Science	11 Aug, 2013
3	Short Term Course	Research Methodology	18 – 23rd Nov, 2013
4	Short Term Course	Environment: An Interdisciplinary Approach	19th Feb to 15th March, 2014
5	Lecture Speaker :Prof. Alan Spector	Higher Education in Times of Crisis	08 March, 2014
6	Celebration	Celebrating International Women's Day: Inspiring Change	08 March, 2014
7	Lecture Speaker :Prof. Gautam Bandyopadhyay	*Legacies (I)* :Infinitesimal in Calculus its Rejection & Revival	20 May, 2014
8	Lecture Speaker : Prof. Asok Kr. Mallik	*Legacies (II*) : Music & Primes	13 Aug, 2014
9	Lecture Speaker: Prof Mihir Chakraborty	*Legacies (III)* :Pluralism in Mathematics	11 Nov, 2014
10	Symposium	Environmental Action in West Bengal	19 Feb, 2014
11	Short Term Course	Human Evolution and Development of Early Technologies	December, 2014

Technology Developed / Innovations

Advancements under TEQIP- Phase II

Foreign visits and Invited Lectures :

Name	Designation	Invitations
Madhumati Dutta	Professor	a. Academic Staff College, Burdwan University, b. HSS, BESUS – (2 nos.) c. Symposium on Environmental Action in West Bengal, at HSS, BESUS. d. Consumer Behaviour and carbon Emissions, Lessons in Policy, Nehru Memorial Museum and Library in the 'Science, Society and Nature' Public Lecture series of 2015.
Mallika Ghosh Sarbadhikary	Assoc.Prof.	Maulana Azad College (Masters Programme)-Invited Lecture Series
Subhasis Bandyopadhyay	Asst.Prof.	USA (PURDUE UNIVERSITY) 2015 , CHICAGO (SSSP ANNUAL CONFERENCE) 2015
Manasendu Kundu	Visiting Faculty	At Jadavpur University, Calcutta University, Burdwan University, GourbangaViswavidyalaya, Malda,West Bengal State University,Barasat, Bankura University. University of California at Santa Barbara

Visitors to your Department (Indian & Foreign)

Name	Designation
Mihir Chakraborty	Professor Professor,(retd)Cal Univ., Adjunct Prof. Jadavpur Univ.
Alan J. Spector	Professor of Behavioural Sciences, University of Purdue, USA
Manasendu Kundu	Summer Faculty, Departments of Anthropology & Environmental Studies , University of California, Santa Barbara, USA)

Extension Activities and Societal outreach:
Following the mandate of the Right to Education the department of HSS has been actively involved in planning modules and teaching students in the IIEST campus and adjoining areas. UG students are volunteering as tutors.

Guided Numerous Students (UG) To Formulate and execute Short-Term Research Projects
Areas of Work : Primary Education in India, Right to Education, Child Labour, Sexuality, Adolescent Behaviour, Environment, Gender Equality, Farmers' Problems, Women in Science Education, Human Trafficking.

New Academic / Research Initiatives

a) Academic Collaboration with the College of Liberal Arts and Social Sciences, Purdue University, Calumet.
b) Interdisciplinary Centre for Studies in Science Technology & Culture (Revised Proposal awaiting approval of the Senate, IIEST, S)

Department of Information Technology

Introduction

The Department of Information Technology started its journey in the year 2000. It is one of the youngest departments of this 159 years old Institute. The department has produced excellent IT engineers who are serving in different reputed organizations and pursuing higher studies at Institutes of Excellence in India and abroad. The department provides state-of-the-art computational facilities for the students. The strength of the department has been in its diverse areas of research in which it has a remarkable contribution.

Academic Programmes

Undergraduate Level

B.E. in Information Technology: The B.E. program is a four-year course oriented undergraduate program. The course work is spread across all the semesters. The courses include a set of core courses offered by the department, a set of departmental electives and some free electives. Apart from these, a student must complete three courses in his / her minor area. The minor area must be different from Information Technology. Besides, a student must also complete a project in fourth year (7^{th} – 8^{th} semester) towards the fulfillment of the degree requirements.

Postgraduate Level

M.E. in Information and Communication Engineering: The M.E. program is a two-year course oriented graduate program. The student has to take a set of core courses and a set of electives. The course work is spread across the first two semesters with an option of taking one elective in the third semester. This is followed by a project in the third and fourth semester in which the student can take up a project of his / her interest, supervised by a faculty member.

Doctoral Level

PhD in Information Technology: The PhD. programs are postgraduate research oriented programs. The scholar works in an area of his/her interest under the supervision of a faculty member. The scholar has to obtain a minimum number of credits by taking courses. The highlight of the program is the independent research work taken by a scholar, leading to a dissertation at the end of the program. The average duration of a PhD. program is between four to five years.

Student's intake

	U.G	**P.G**	**Ph.D (Session 2014-15)**
Sanctioned students' intake	60	20	Awarded – 5 Thesis submitted – 0 Registered – 16
Additional intake through lateral entry/ QIP	6	-	Enrolled – 5

Ph.D Activities

Ph.D Awarded during 2014-2015 session

1. **Indrajit Pan:** *Design and Analysis of Droplet Routing Algorithms for Digital Microfluidic biochip.*
2. **Indrajit Banerjee***: Appplication of Cellular Automata for Sensor Network Management.*
3. **Kamalika Dutta***: Synthesis and Optimization of Reversible Logic Circuits.*
4. **Subarna Chatterjee**: *Computer Aided Breast Cancer Diagnosis Systems for Sono-mammogram.*
5. **Mousumi Dutt:** *Generation Decomposition and Analysis of the Isothetic Polygons in the Digital Geometric Paradigm.*

Ph.D Submitted during 2014-2015 session

PhD. Registered during 2014-2015 session

1. Shuvajyoti Pal
2. Rupam Some
3. Tapasi Bhattacharjee
4. Ranjeet Kr. Rout
5. Anupam Pattanayak
6. Souvik Roy
7. Nimisha Ghosh
8. Sumit Adak
9. Srijit Chwdhury
10. Nilanjana Datta Roy
11. Bappaditya Mondal
12. Arya Ghosh
13. K. Raful Islam
14. Sk. Latib

Ph.D Enrolled during 2014-2015 session

1. Chinmoy Ghorai
2. Debapriya Sengupta
3. Sushovan Das
4. Sankar Kumar Mridha
5. Subha Koley
6. Munshi Mostafizur Rahaman
7. Avik Bose
8.

Faculty position

	Nos.
Sanctioned faculty post	13
Professor	2
Associate Professor	1
Assistant Professor (Senior)	1
Assistant Professor	7
Vacant post	2

Faculty Name	Designation	Highest Qualification	Specialization/ Research Area	Contact No. / Mail Id
Dr. Hafizur Rahaman	Professor	Ph.D	Design & Test of VLSI Circuits Network-On-Chip, SOC Testing Design & Testing of Cryptographic Hardware Design & Testing of Micro fluidic Bio Chip	rahaman_h@it.iiests.ac.in
Dr. Santi Prasad Maity	Professor	Ph.D	Digital Image Watermarking Wavelets for image de-noising, watermarking, Access control and Error concealment Optimized spread Spectrum watermarking VLSI for watermarking PAPR reduction in multicarrier communication Wireless Channel Estimation Multiuser Detection in MC-CDMA Optical Computing	santipmaity@it.iiests.ac.in
Dr. Arindam Biswas	Associate Professor	Ph.D	Digital Geometry Image Processing and Pattern Recognition Medical Image Analysis	abiswas@it.iiests.ac.in barindam@gmail.com Extn. no. 260
Dr. Sukanta Das	Assistant Professor	Ph.D	Cellular Automata Distributed Computing	sukanta@it.iiests.ac.in Extn. no.
Dr. Tuhina Samanta	Assistant Professor	Ph.D	Design of algorithms for VLSI inter connect design Developing of algorithm for Physical design of Digital Micro-fluidic Biochip	t_samanta@it.iiests.ac.in
Dr. Prasun Ghosal	Assistant Professor	Ph.D	Optimization of Architectural and Layout Level Design of 3D Nanoscale Systems with major thrust on a) Performance Centric, Power Aware Design of Network-on-Chips(NoC) and b) Performance Centric Layout Design of 3D Integrated Circuits Post Silicon Nanoscale Technologies and Computing	p_ghosal@it.iiests.ac.in
Dr. Indrajit Banerjee	Assistant Professor	Ph.D	Wireless ad-hoc Sensor Network	ibanerjee@it.iiests.ac.in
Mr. Surajit Kr. Roy	Assistant Professor	M.Tech	VLSI Testing 3DIC Testing	suraroy@gmail.com
Dr. Chandan Giri	Assistant Professor	Ph.D	VLSI digital Circuit Testing System-On-Chip Testing Network-On-Chip Testing	chandangiri@gmail.com
Mr. Shyamalendu Kandar	Assistant Professor	M.Tech.	Secret Sharing, Visual Cryptography	shyamalendk@it.iiests.ac.in
Dr. Malay Bhattacharyya	Assistant Professor	Ph.D	Crowdsourcing Big Data Analysis Computational Molecular Biology	malaybhattacharyya@it.iiests.ac.in

Awards and Laurels

Name	Award Received	Given by	Year
Hafizur Rahaman	DST-DAAD research fellowship (with Prof. Rolf Drechsler, Professor and Director, Computer Architecture Group, University of Bremen, Germany).	*Indo-German (DST-DAAD) Bilateral Cooperation*	2013-2015
Dr. Prasun Ghosal	Post Doctoral fellowship award in University of North Texas, USA, under Raman Post Doctoral Fellowship grant,	University Grant Commission, New Delhi	June 2013- 2014.
	Vice Chair, Executive Committee of IEEE computer Society (IEEE CS) Technical Committee on VLSI(TCVLSI)	ELSEVIER	2014
	Awarded Outstanding Reviewer status by ELSEVIER	ELSEVIER	2014
	Best Paper Award with a cash prize from IEEE Computer Society and Best presentation award in Soft Computing Section in International Conference on Advances in Electrical Engineering (ICAEE)		2014

Research area

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

A. Systems Architecture and Design of Computer
Architecture, Design,
Testing,
Verification,
Algorithms
and VLSI
CAD

B. Theory and Applications of Cellular Automata
in Distributed Computing,
Pattern Recognition,
Traffic Modeling
and
VLSI design & Test

C. 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

D. Digital Geometry and Image Analysis

Shape Analysis
3D Image Analysis
Face Recognition
Document Image Analysis

E. 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

F. 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

G. Information Management and Analytics

Crowdsourcing
Big Data Analysis
Computational Molecular Biology

Research facilities

i) Computing Facilities:

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

ii) 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

Name of the Laboratories:

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			

Support staff position:

i) Sanctioned technical post:

ii) Technical staff profile

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Name	Designation	Highest Qualification	Contact No	E-mail Id
Soma Sardar	Technical Assistant	D.C.S.T, MCA, M.TECH	9433487298	somabeit@gmail.com
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Amiya Ratan Rout	Technical Assistant	M.Sc(Computer), M.TECH	9232606401	shiboham@gmail.com
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Suman Sarkar	Group D	Madhyamik	9007612086	sarkar_becit@yahoo.co.in
Dinabandhu Sadhukhan	Group D	Madhyamik	9062477213	

Ongoing Sponsored Research/ / Projects: (mention area)

Ongoing :

"Efficient Test Infrastructure Design for 3D Multi-Core Integrated Circuits", Sponsored by UGC, 3years (2011-14), Completion date 31st June 2014.

3D TV - 3D View from All Directions without glasses ,Sponsor: Council of Scientific and Industrial Research (CSIR), Government of India (GOI)CSIR Scheme No: 22(2769)/11

Generation, Decomposition, and Analysis of the Isothetic Polygons in Digital Geometric Paradigm Sponsor: University Grants Commision (UGC), Government of India (GOI)

Detailed Publications: Year: 2014- – 2015

International Journals/Edited Volumes / Conference

International Journals

1. ManodipanSahoo, PrasunGhosal and, **HafizuRahaman**,"Modeling and Analysis of Cross talk Induced Effects in Multiwalled Carbon Nanotube Bundle Interconnects: An ABCD Parameter Based Approach", *IEEE Transactions on Nanotechnology*, (Accepted) 2014 (With PhD Student).
2. Sayan Kanungo, Sanatan Chattopadhyay, Partha Sarathi Gupta and Hafizur Rahaman, "Comparative Performance Analysis of the Dielectrically Modulated Full Gate and Short Gate Tunnel FET based Bio-Sensors", IEEE Transactions on Electron Devices, (TED 2015) (Accepted).
3. KamalikaData, I.Sengupta**, HafizurRahaman** and Rolf Drechsler, "An Approach to Reversible Logic Synthesis using Input and Output Permutations", Springer Transactions on Computation Science XXIV, LNCS 8911, *pp.1-8, 2014 (With PhD Student) (DOI:-* 978-3-662-45710-8, 332808_1_En).
4. ChandanBandyopadhyay, **HafizurRahamanand** Rolf Drechsler, "Cube List based Cube Pairing Approach for Synthesis of ESOP based Reversible logic", Springer Transactions on Computational Science, XXIV, LNCS 8911, pp. 1–18, 2014, DOI: 10.1007/978-3-662-45711-5_8, (With PhD Student).
5. ManodipanSahoo and **HafizurRahaman**, "Modeling of Crosstalk Induced Effects in Copper Based Nano-Interconnects:An ABCD Parameter Matrix Based Approach", Journal of Circuits, Systems, and Computers, Vol. 24, No. 2 (2015) 1540007, World Scientific Publishing Company, DOI: 10.1142/S0218126615400071, (With PhD Student).
6. ManodipanSahoo**,HafizurRahaman** and BhargabB.Bhattacharya, "On the Suitability of Single-Walled Carbon Nanotube Bundle Interconnects for High-Speed and Power Efficient Applications",Journal of Low Power Electronics, American Scientific Publishers, Vol. 10, No 3, pp. 479-494, September 2014. (With PhD Student). (DOI: 10.1166/jolpe.2014.1339)
7. KamalikaDatta, BhadreshwarGhuku, IndranilSengupta, **HafizurRahaman** and Rolf Drechsler, "Synthesis of Reversible Logic Circuits using the Algebra of Permutation Cycles with Input/Output Orderings",Journal of Circuits, Systems & Signal Processing, Springer publication (Accepted). (With PhD Student)
8. ManodipanSahoo, PrasunGhosal and **HafizurRahaman**, "Performance Modeling and Analysis of Carbon Nanotube Bundles for Future VLSI Circuit Applications", Journal of Computational Electronics, Springer Publication, pp.673-688, DOI 10.1007/s10825-014-0587-7, (With PhD Student) .
9. KamalikaDatta, GauravRathi, IndranilSengupta and **HafizurRahaman**,"An Improved Reversible Circuit Synthesis Approach using Clustering of ESOP Cubes", ACM Journal on Emerging Technologies in Computing Systems (JETC), 11(2):15(2014), (With PhD Student).
10. KamalikaDatta, IndranilSengupta, and **HafizurRahaman**,"A Post-Synthesis Optimization Technique forReversible Circuits Exploiting Negative Control Lines", IEEE Transactions on Computers 2014, (online available) (DOI:-I:10.1109/TC.2014.2315641), (With PhD Student)
11. Nachiketa Das, Pranab Roy, and **Hafizur Rahaman**, "Detection of Crosstalk Faults in Field Programmable Gate Arrays (FPGA)", *Journal of the Institution of Engineers (India): Series B, Springer publication*, 2014, (Accepted), (With PhD Student),(DOI:- 10.1007/s40031-014-0141-9).
12. Kamalika Datta, Indranil Sengupta, and **Hafizur Rahaman**, "Exact Synthesis of Reversible Circuits using Astar Algorithm", *Journal of the Institution of Engineers (India): Series B, Springer publication*, 2014, (Accepted). (With PhD Student), (DOI- 10.1007/S40031-014-0133-9).
13. Subhankar Chatterjee, **Santi P. Maity** and Tamaghna Acharya, "Energy Efficient Cognitive Radio System for Joint Spectrum Sensing and Data Transmission", Special Issue: Microwatts Wireless

Technologies on IEEE Journal on Emerging and Selected Topics in Circuits and Systems Vol. 4, No. 3, September 2014, pp. 292-300.

14. Subhankar Chatterjee, Tamaghna Acharya, **and Santi P. Maity**, "On Optimized Decode and Forward Relay Assisted CR System Design for Throughput Maximization", Journal of Digital Signal Processing, Elsevier Vol. 34, November 2014, pp. 92-100.
15. Hirak Maity and **Santi P. Maity**, FPGA Implementation of Reversible Watermarking in Digital Images using Reversible Contrast Mapping, Journal of Systems and Software, Elsevier Science Vol. 96. October 2014, pp.93-104.
16. **Santi P. Maity**, Seba Maity, Jaya Sil and Claude Delpha "Perceptually adaptive MC-SS image watermarking using GA-NN Hybridization in Fading Gain", Special issue on Journal Engineering Applications of Artificial Intelligence, vol.31, pp.3-14, May, 2014.
17. **Santi P. Maity**, Sumanta Hati and Chinmoy Maji, Optimal Power Allocation in DS-CDMA with Adaptive SIC Technique, Special issue, Springer Telecommunication System, Springer Verlag Volume 56, Issue 3 (2014), Page 335-346.
18. Subhankar Chatterjee, **Santi P. Maity** and Tamaghna Acharya, "On Optimal Threshold Selection in Cooperative Spectrum Sensing for Cognitive Radio Networks- an Energy Detection Approach using Fuzzy Entropy Maximization", Special Issue in Journal of Wireless Personal Communication, Springer DOI: 10.1007/s11277-015-2550-8 (Article in press).
19. Tamaghna Acharya, **Santi P. Maity** and Swagata Mandal, "Outage Minimized Joint Power and Channel Allocation in Multihop Cognitive Radio Networks: A Lifetime-Centric Approach" Journal of Wireless Personal Communication, Springer.
20. **Santi P. Maity** and Hirak Maity, On Adaptive Distortion Control in Reversible Watermarking using Modified Reversible Contrast Mapping, Multimedia Tools and Applications (Article in press).
21. **I Banerjee**, P Chanak, H Rahaman, T Samanta , Effective fault detection and routing scheme for wireless sensor networks, Computers & Electrical Engineering 40 (2), 291-306.
22. N Ghosh, **I Banerjee**, T Samanta, Energy efficient coverage of static sensor nodes deciding on mobile sink movements using game theory, Applications and Innovations in Mobile Computing (AIMoC), 2014, 118-125.
23. S Datta, **I Banerjee**, T Samanta, Mobile Sink Management for Nonuniformly Distributed Sensor Node Coverage Using a Game Theoretic Approach, Recent Advances in Intelligent Informatics, 311-319.
24. R Banerjee, K Ray, S Bhattacherjee, S Guha, **I Banerjee**, I Nath, A study of insulin resistance and its clinico-metabolic associations among apparently healthy individuals attending a tertiary care hospital, Annals of medical and health sciences research 4 (5), 823
25. P Chanak, **I Banerjee** , Path Discovery for Sinks Mobility in Obstacle Resisting WSNs, Advanced Computing, Networking and Informatics-Volume 2, 39-50.
26. P Chanak, **I Banerjee**, H Rahaman, Load management scheme for energy holes reduction in wireless sensor networks, Computers & Electrical Engineering
27. S Dan, P Aditya, P Banerjee, C Bal, H Roy, **I Banerjee**, Effect of chronic kidney disease on serum resistin level , Nigerian journal of clinical practice 17 (6), 735-738.
28. N Ghosh, SK Roy, T Samanta, **I Banerjee**, Path determination algorithm of Mobile Sinks for energy efficient data collection and optimal coverage in Wireless Sensor Network, Information Technology (ICIT), 2014 International Conference on, 76-81.
29. S Das**, I Banerjee**, M Chatterjee, T Samanta , Performance analysis of TDMA based data transmission in WSN , Intelligent Systems Design and Applications (ISDA), 2014 14th International ...
30. P Chanak, **I Banerjee**, J Wang, RS Sherratt, Obstacle avoidance routing scheme through optimal sink movement for home monitoring and mobile robotic consumer devices, Consumer Electronics, IEEE Transactions on 60 (4), 596-604.
31. **I Banerjee**, B Datta, A Kumari, S Mandal , Compact clustering based geometric tour planning for mobile data gathering mechanism in wireless sensor network , Advances in Computing, Communications and Informatics (ICACCI, 2014 ...
32. **I Banerjee**, S Chakrabarti, A Bhattacharyya, U Ganguly, An energy aware routing design to maximize lifetime of a Wireless Sensor Network with a mobile base station, Advances in Computing, Communications and Informatics (ICACCI, 2014 .
33. R Some, **I Banerjee** , PRMN: Predictive Location Based Routing for Mobile Nodes in Wireless Sensor Network , Advances in Computing and Communications (ICACC), 2014 Fourth International ... .
34. M Samanta, **I Banerjee** , Optimal load distribution of cluster head in fault-tolerant wireless sensor network Electrical, Electronics and Computer Science (SCEECS), 2014 IEEE Students ... .
35. P Chanak, **I Banerjee** , Load reduction with multiple mobile sinks in wireless sensor networks , Students' Technology Symposium (TechSym), 2014 IEEE, 121-125
36. S Mukherjee**, I Banerjee**, T Samanta , Defect aware droplet routing technique in digital microfluidic biochip, Advance Computing Conference (IACC), 2014 IEEE International, 30-35.

37. **I Banerjee**, A Datta, S Pal, S Chatterjee, T Samanta, A Novel Fault Detection and Replacement Scheme in WSN , Recent Advances in Intelligent Informatics, 303-310 .

38. **M. Bhattacharyya**, J. Nath and S. Bandyopadhyay, MicroRNA Signatures Highlight New Breast Cancer Subtypes, Gene, 556:192-198, 2015, DOI: 10.1016/j.gene.2014.11.053. (Latest IF: 2.082)

39. **M. Bhattacharyya** and S. Bandyopadhyay, Finding Quasi Core with Simulated Stacked Neural Networks, Information Sciences, 294:1-14, 2015, DOI: 10.1016/j.ins.2014.09.032. (Latest IF: 3.893)

40. P. Chatterjee, **M. Bhattacharyya**, S. Bandyopadhyay and D. Roy, Studying the System-level Involvement of MicroRNAs in Parkinson's Disease, PLoS ONE, 9(4):e93751, 2014, DOI: 10.1371/journal.pone.0093751. (Latest IF: 3.534)

41. Manodipan Sahoo, **Prasun Ghosal** and Hafizur Rahaman,"Modeling and Analysis of Crosstalk Induced Effects in Multiwalled Carbon Nanotube Bundle Interconnects: An ABCD Parameter Based Approach", IEEE Transactions on Nanotechnology (IEEE TNANO) [Accepted].

42. Manodipan Sahoo, **Prasun Ghosal** and Hafizur Rahaman, "Performance Modeling and Analysis of Carbon Nanotube Bundles for Future VLSI Circuit Applications", Journal of Computational Electronics, Springer publications [Online] DOI 10.1007/s10825-014-0587-7, pp. 673-688.

43. **Prasun Ghosal**, Hafizur Rahaman, Koyel Mukherjee, and Dibyendu Ballabh, "A Low Power, Low Jitter DLL Based Low Frequency (250 KHz) Clock Generator", International Journal of Signal and Imaging Systems Engineering (Inderscience IJSISE), 2014, Vol.7, No.1, pp. 3 - 11, DOI: 10.1504/IJSISE.2014.057936.

44. Mayukh Sarkar, **Prasun Ghosal**, Saraju Mohanty, "Minimum Reversible Circuit Synthesis on a DNA Computer", Natural Computing, Springer, [Accept with minor revision] - 2013 I.F. 0.539

45. Debashri Roy, **Prasun Ghosal**, and Saraju Mohanty, "FuzzRoute: A Thermally Efficient Congestion Free Global Routing Method for Three Dimensional Integrated Circuits", ACM Transactions on Design Automation of Electronic Systems (ACM TODAES) [Accepted] - 2011 I.F. 0.811.

46. **Surajit Kumar Roy, Chandan Giri and Hafizur Rahaman**, Optimization of Test Architecture in 3D Stacked ICs for Partial Stack/Complete Stack using Hard SOCs, Accepted for publication in Journal of IEEE Computer and Digital Techniques, 2015

47. Suman Bhowmik and **Chandan Giri**, "A Fuzzy Communication Model of Sensor Nodes in Wireless Sensor Network", accepted for publication in Intl. Journal of Sensor Network, Inderscience, 2015.

48. S. Bera, **A. Biswas**, and B. B. Bhattacharya, A Fast and Automated Granulometric Image Analysis Based on Digital Geometry, (accepted) Fundamenta Informaticae, 138 (2015) 321–338, DOI 10.3233/FI-2015-1213.

49. M. Dutt, **A. Biswas**, P. Bhowmick, and B. B. Bhattacharya, On the Family of Shortest Isothetic Paths in a Digital Object---An Algorithm with Applications, *Computer Vision and Image Understanding*, Vol. 129, 75-88, Elsevier, 2014,DOI:10.1016/j.cviu.2014.07.001

50. M. Dutt, **A. Biswas**, P. Bhowmick, and B. B. Bhattacharya, On Finding a Shortest Isothetic Path and its Monotonicity inside a Digital Object, *Annals of Mathematics and Artificial Intelligence*, DOI: 10.1007/s10472-014-9421-y (in press).

51. A. Mukherjee, U. Garain, and **A. Biswas**, Experimenting with Automatic Text-to-Diagram Conversion: A Novel Teaching Aid for the Blind People, *Journal of Educational Technology & Society* (ISSN 1436-4522), Vol. 17(3), 40-53.

52. Subhamita Mukherjee, **Tuhina Samanta**, "A Novel Fault Detection Mechanism in Digital Microfluidic Biochip", accepted, under proof reading, Journal of Electronic Testing: Theory and Applications (Springer Verlag), May 2015.

53. Nazma Naskar, Sumit Adak, Pradipta Maji and **Sukanta Das**: Synthesis of Non-uniform Cellular Automata Having only Point Attractors. ACRI 2014: 105-114

54. Biswanath Sethi, **Sukanta Das**: Convergence of Asynchronous Cellular Automata (Under Null Boundary Condition) and Their Application in Pattern Classification. Recent Advances in Natural Computing, 2014, pp. 35-55

55. Raju Hazari, **Sukanta Das**. On number conservation property of ECA under α-asynchronous update. AUTOMATA 2014: 149-156

International Conferences

1. **M. Bhattacharyya**, Viability of Crowd-Volunteered Open Research Reviews, In Proceedings of the AAAI HCOMP Workshop on Volunteer-Based Crowdsourcing in Science, Public Health and Government (Citizen + X), Pittsburgh, USA, November 02, WS-14-20, pp. 6-7, AAAI Press, 2014 (ISBN: 978-1-577-35690-5).
2. **M. Bhattacharyya**, S. Bhattacharya and S. Bandyopadhyay, Estimating Completeness in Streaming Graphs, In Proceedings of the EDBT/ICDT International Workshop on Multimodal Social Data Management (MSDM), Athens, Greece, March 28, CEUR 1133, pp. 294-299, 2014 (ISSN: 1613-0073). [Acceptance rate: 37.5%]
3. Saurab Dutta, **Prasun Ghosal**, "Routing Solution Over a Multi-layered Network on Chip", Accepted for publication in proceedings of 2015 IEEE International Conference On Electronics Computing and Communication Technologies (CONECCT 2015), **[blind review]**, July 10-11, 2015, Bangalore, India.
4. **Prasun Ghosal**, Souvik Chowdhury, "Enterprise Application Security in Android Devices Using Short Messaging Service under Unified Communication Framework", Accepted for publication in proceedings of 12th IEEE International Conference on Advanced and Trusted Computing (ATC 2015), **[blind review]**, August 10-14, 2015, Beijing, China.
5. Subha Koley, Prasun Ghosal, "Addressing Hardware Security Challenges in Internet of Things: Recent Trends and Possible Solutions", Accepted for publication in proceedings of 12th IEEE International Conference on Advanced and Trusted Computing (ATC 2015), **[blind review]**, August 10-14, 2015, Beijing, China.
6. Mayukh Sarkar, **Prasun Ghosal**, "Implementing Data Structure using DNA: An Alternative in Post CMOS Computing", Accepted for publication in proceedings of 2015 IEEE CS Annual Symposium on VLSI (ISVLSI), **[blind review]**, Montpellier, France, July 8-10, 2015.
7. Dhiman Ghosh, **Prasun Ghosal**, Saraju Mohanty, "A Highly Parameterizable Simulator for Performance Analysis of NoC Architectures", In proceedings of 13th International Conference on Information Technology **[blind review]**, Bhubaneswar, India, December 22-24, 2014.
8. Avik Bose, **Prasun Ghosal**, Saraju P. Mohanty, "A Low Latency Scalable 3D NoC Using BFT Topology with Table Based Uniform Routing", In proceedings of 2014 IEEE Computer Society Annual Symposium on VLSI (ISVLSI) **[blind review]**, Tampa, Florida, USA, July 9-11, 2014, pp. 136-141. DOI: 10.1109/ISVLSI.2014.51
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3. Santanu Datta, Indrajit Banerjee, and Tuhina Samanta, "Mobile Sink Management for Nonuniformly Distributed Sensor Node Coverage using a Game Theoretic Approach", Advances in Intelligent Systems and Computing (ISI 13), Volume 235, pages: 311 – 319.

BOOK Published

Data Abstraction and Problem Solving with JAVATM Walls and Mirrors , 3rd Edition 2011, Janet J Prichard [Bryant University] ,Frank Carrano [University of Rock Island], Indrajit Banerjee [Bengal Engineering and Science University, Shibpur] (International Edition contribution), (International Edition contribution) Pearson. ISBN 13:978-0-273-75120-5.

Book Chapters

2014

1. Prasun Ghosal, Saraju Mohanty, "3D NoC: A Promising Alternative for Tomorrow's Nanosystem Design", in CMOS and Post-CMOS Perspectives of Electronic Device Scaling, Editors - Saraju P. Mohanty and Ashok Srivastava, IET (IEEE Counterpart of UK) [Accepted, Manuscript under preparation, 2015 (to be published)]
2. Prasun Ghosal, Mayukh Sarkar, Saraju Mohanty, "A New Paradigm towards Performance Centric Computation beyond CMOS: DNA Computing", in CMOS and Post- CMOS Perspectives of Electronic Device Scaling, Editors - Saraju P. Mohanty and Ashok Srivastava, IET (IEEE Counterpart of UK) [Accepted, Manuscript under preparation, 2015 (to be published)]
3. Chapter Title - An Advanced Strategy for Droplet Routing in Digital Microfluidic Biochip using Ant Colony Optimization

   Authors: Indrajit Pan, Tuhina Samanta

   Book Name: "Handbook of Research on Swarm Intelligence in Engineering."

   Publisher Name: IGI Global, Pennsylvania 17033-1240, USA, 2015

Seminar/Workshops/ Conferences/ Training Programme organized by the department

- Emerging & Post CMOS Technology , June 16- 18 ,2014
- Research Promotion Workshop on Digital Geometry, June 23-24 ,2014

- Symposium on Problems in Scientific Research , 9th March, 2015
- In-house computer training course on computer & LAN literacy & office related software, May 18-22,2015
- Industry Institute Interaction For Labview Workshop , January 19-23 , 2015

Advancements under TEQIP- Phase II

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

Foregin visits and Invited Lectures

Delivered Invited talk:

1. "Cognitive Radio: Scopes and Challenges for Future Wireless Communication", on 27th January, 2014 at Faculty development program (FDP) on "Fundamentals of fiber and wireless communications for the next generation systems" at Institute of Radio Physics and Electronics, University of Kolkata.
2. " Information Security and Media Protection" on 5th April, 2014 in Seminar on Web page design and information security at Ellite Institute of Engineering and Management, Sodepur, Kolkata.
3. " Convex Optimization and Some Applications on Signal Processing and Communications, on 12 th June, 2014 workshop on Advanced Optimization Techniques in Engineering Application (OTA 2014) held on 10th-14th June 2014 at National Institute of Technology, Durgapur.
4. "Image Reconstruction from Sparse Representation" on 17th June, 2014 Short Term Course on Computer Vision and Pattern Recognition (CVPR-2014) held on 16th-20th June 2014 at National Institute of Technology, Durgapur (Pre-lunch session).
5. "Introduction to Pattern Recognition, Fuzzy C-means clustering and some applications" on 17th June, 2014 Short Term Course on Computer Vision and Pattern Recognition (CVPR-2014) held on 16th-20th June 2014 at National Institute of Technology, Durgapur (Post-lunch session).
6. " Energy Efficient Cognitive Radio Network" on 9th July, 2015 at Faculty Development Program on "Recent Advances in Computer Networking" organized by the Dept. of Comp. Sc. & Engg. of RCCIIT, Kolkata, held from 7th July to 11th July.
7. "Energy Efficient Cognitive Radio Network: Scope and Future Challenges" 3rd International Conference on 'Computing, Communication and Sensor Network *December, Puri, Odisha, 12-14th, 2014* .
8. Delivered couples of guest lectures as a part of the course on Advanced Topics in VLSI Systems (CSCE 6933) during Winter 2013 at Department of CSE, University of North Texas, USA.
9. Invited talk on "3D NoC: A Promising Alternative For Tomorrow's Nanoscale System Design" at JIS College of Engineering, India during September 2014.

1. 22nd International Conference on Pattern Recognition 2014 , 24-28th August, 2014, Stockholm, Sweden (attended and presented research paper)

Tutorial talk:

1. International Conference on Contemporary Computing and Informatics (IC3I 2014), Mysore on 27-29th November, 2014.

Title of Tutorial- Digital Watermarking: Optimization Framework, Random Gain Attack and Compressed Sensing

2. International Image Processing, Applications and System Conference (IPAS 2014) on 5-7th November, Hammamet, Tunisia (over Skype)

Title of Tutorial- Digital Image Watermarking: Optimization Framework, Random Gain Attack and Compressed Sensing .

Training and Placements: 2014-2015

Sl. No.	Date of Visit	Company Visited	Student Intake	
			UG	PG
1	1/9/2014	EXL Service	5	
2	19/08/2014	Deloitte	3	
3	3/9/2014	Mu-Sigma	5	
4	27/9/2014	PWC		1
5	15&16-Sep-14	IBM	7	3
6	11&12-Sep-14	Infosys	5	
7	22&23-Sep-14	CTS	3	5
8	18&19-Sep-14	Accenture	6	
9	17/9/2014	Wipro	11	
10	5/9/2014	Dynamic Digital Tech.	4	
11	28/8/2014	HSBC	1	

New Academic / Research Initiatives

Academic Collaboration

1. Laboratory visit and knowledge sharing in the department of computer and electrical engineering, Duke university, Durham, hosted by Prof. Krishnendu Chakrabarty, William H. Younger Distinguished Professor of Engineering, Department of Electrical and Computer Engineering April 2015.
2. An open talk on Sensor localization and scheduling scheme in the department of computer and electrical engineering, University of Central Florida, during post doctoral fellowship of Dr. Tuhina Samanta at UCF, hosted by Prof. Mainak Chatterjee, Associate Professor, department of computer and electrical engineering, University of Central Florida, November 2014.
3. Laboratory visit and an experimental knowledge and idea sharing with Prof. Suman Chakraborty and his research scholar at Microfluidics and Microscale Transport Processes Laboratory, Department of Mechanical Engineering, May 2014.
4. Higher dimensional computation for droplet routing on EWOD based digital microfluidic biochip, a laboratory visit by Dr. Indrajit Pan under my supervision, in the Dipartimento di Ingegneria dell'Informazione, Università Politecnica delle Marche, Italy, September 2014.

Department of Mathematics

About the Department

Since the inception of Bengal Engineering College, the Department of Mathematics earned a glorious heritage of conducting research activities in various fields of Applied Mathematics. The Department undertakes teaching Mathematics in various fields like Probability, Statistics, Operations Research, Numerical Analysis and Computational Techniques using computers, to undergraduate and postgraduate students in various branches of Engineering. The Department started a two year M.Sc. (Applied Mathematics) programme in the year 2000 with an intake of 25 students and it is successfully running in the Department. Apart from regular routine work like teaching, setting question papers and evaluation of answer scripts in various examinations of this institution, the Department conducts M.Sc. and Ph.D. admission every year. The faculty members are also involved in many other academic and administrative activities of the Institution. The Department has a significant role in research. All the faculty members of this Department are involved in research activities in various fields of Pure and Applied Mathematics e.g. Fracture Mechanics, Thermoelasticity, Operations Research and Optimization, Reliability Theory, Statistics, Functional Analysis, Fuzzy Set Theory, Dynamical Systems, Mathematical Ecology, General Relativity, Cosmology, Mathematical Modeling in Epidemiology, Information Theory, Mathematical Biology, Quantum Mechanics, Fluid Dynamics, Financial Mathematics, Mathematical Elasticity, Nonlinear Data Analysis, Neural Network etc. As a mark of this, the number of research scholars awarded Ph.D. from this Department and the number of research publications in various reputed journals are increasing steadily. At present **about 54 research scholars are registered for Ph.D. programme** and currently **30** students have been enrolled for Ph.D. programme in the year 2015. In the last five years **37 research scholars** of this Department have been awarded **Ph.D. degree.**

Academic Programmes: The Department started its Academic Programme, from the very beginning, since the foundation of this Institution in the year 1856.

Undergraduate Level:

At present, the Department is offering **12 courses** in undergraduate level in different branches of Engineering and Architecture. **In every branch of Engineering, Undergraduate programme has a Mathematics course in each of the first three semesters (approximately 500 x 3= 1500 students**). Computer Science, Electronics and Telecommunications, Information Technology and Aerospace Engineering branches have Mathematics as a subject in the **4th semester (approximately 200 students**). Department of Mathematics also offers **three elective** courses in B.E. **8th semester**. This Department also teaches **two courses in the B.Arch**. programme in the first two semesters.

Post Graduate Level

The Department also offers Mathematics courses in the **Master of Engineering (M. E.)** programmes to almost all engineering branches. At present, the Department of Mathematics is offering **3** courses together with **three sessionals** to **all Engineering branches** in **Post Graduate level**. **Master of Science (M.Sc.)** programme in **Applied**

Mathematics has been started in the year 2000. The programme contains **24 courses**, **2 sessional papers** together with **project thesis and viva-voce**.

I. Degree offered	M.Sc in Applied Mathematics
II. Sanctioned students' intake	27
III. Additional intake through other programmes (i.e. QIP)	Nil
IV. Specialisations in	Solid Mechanics, Operations Research, Mathematical Biology

Doctoral & Post Doctoral Research Programme

There was a heritage of doing research work by the faculty members of the Department of Mathematics, when the Institution was a constituent college of the University of Calcutta. After introducing M.Sc. in Applied Mathematics the productivity is increasing rapidly. At present **about 54 research scholars** have been **registered for doing Ph.D.** work in various fields of Mathematics. This year **30 students have enrolled** in the Ph.D. programme in this Department. Apart from regular routine work, all the faculty members of this Department are engaged in research work in various fields of Mathematics and Statistics. **About 350 research papers have been published in various journals of national and international repute during the last 4 years. 37 students of this Department have received their Ph.D. degree in the last 5 years**. :

I.	Degree offered	Ph.D.(Sc)
II.	No of candidates enrolled	30
	registered	54
	awarded	11

Faculty position:

Sanctioned faculty post…17…. Vacant Post 03……

(a) Faculty profile (in the following table)

Name	**Designation**	**Highest Qualification**	**Specialisation/ Research Area**	**Contact No. E-mail**
Basudeb Mukhopadhyay	Professor	Ph.D.	Elasticity, Thermo elasticity, Thermo visco elasticity, Micropolar elacticity	bmukherjee2006@yahoo.co.in
Binayak Sammadar Choudhury	Professor	Ph.D.	Functional Analysis, Topology, Nonlinear Dynamics, Mathematical Economics, Quantum Information theory, Fuzzy systems, Stochastic differential equation	binayak@.becs.ac.in, binayak12@yahoo.co.in
Guruprasad Samanta	Professor	Ph.D.	Mathematical Biology and Operations Research	g_p_samanta@yahoo.co.uk
Murari Mitra	Professor	Ph.D.	Reliability Theory, Mathematical Statistics, Operations Research, Nonparametric Inference	murarimitra@yahoo.com
Jagabandhu De	Professor & Head	Ph.D.	Elasticity & Plasticity, Mathematical Methods, Fracture Mechanics,Fluid Mechanics	jagabandhu_de@yahoo.com
Tapan Roy	Professor	Ph.D.	Fuzzy and Intuitionistic Fuzzy set Theory, Inventory, Transportation, Reliability Optimization, Information Theory, Portfolio Optimization, Fuzzy and Stochastic Optimization	roy_t_k@yahoo.co.in
Sanat Kumar Mazumder	Professor	Ph.D.	Information, Optimizition, O.R, Entropy Optimization and its applications in different branches of Science and Technology	majumder_sk@yahoo.co.in
Asoke Kumar Dhar	Professor	Ph.D.	Non-linear waves in Ocean	asoked @math.becs.ac.in
Parbati Saha	Professor	Ph.D.	Computational Intelligence	parbati_saha@yahoo.co.in
Tapan Kar	Professor	Ph.D.	Dynamical systems, stability and bifurcation theory, population dynamics, Mathematical Ecology (Theoretical studies on ecology, population management, food chain, conservation of aquatic ecosystems, sustainable use of ecosystem services), Mathematical modeling in ecology and epidemiology, Pest control.	t_k_kar@yahoo.com

Pritha Das	Associate Professor	Ph.D.	Mathematical biology, Neural network, Nonlinear data analysis	prithadas01@yahoo.com
Shariful Alam	Assistant Professor	Ph.D.	Financial Mathematics	salam50in@yahoo.co.in
Ujjal Debnath	Assistant Professor	Ph.D.	Relativity, Cosmology and Astrophysics	ujjaldebnath@yahoo.com
Smita Pal (Sarkar)	Assistant Professor	M.Sc.	Mathematical Theory of Elasticity & Plasticity	smita1308gmail.com

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

Ongoing Sponsored Research / projects:

Ongoing (Prof value)	**Sponsoring agency**
Incorporating ecosystem objectives into the management sustainable marine fisheries: Ecological economic modeling with some case studies along the costal side of West Bengal. – **Rs.12,00,000/-**	UGC
Dark energy models and accelerating universe **Rs.16,00,000/-**	CSIR

Details of publications of each faculty member (2014-15)

Journal ……about 120
Conference……

Students awarded Ph.D.(Sc) in 2014-15 (received certificate in the convocation, 2015)

Prasanta Kumar Mondal, Soovojit Jana, Bapan Ghosh, Chandra Sekhar Bera, Subhojit Kundu, Himadri Sekhar Mondal, Dipak Kumar Jana, Sankar Prasad Mondal, Abhijit Ghorai, Pranati Maity, Shyamapada Bera

Department of Mechanical Engineering

About the Department

The inception of the Mechanical Engineering Department may be traced back to 1921 when a diploma course in Mechanical Engineering was started in this Institute. The first degree course in Mechanical Engineering was started from 18th July, 1930. Over the last eight decades, the Department of Mechanical Engineering consolidated to its present condition offering 8-Semester Undergraduate Course with an approximate current intake of 66 students annually and 4-Semester Post-graduate Course with an intake of 27 students annually. The post-graduate course in the department started in the year 1954. Currently, PG course is offered in three specializations, namely, Machine Design, Heat Power and Production Engineering, leading to the degree of Master of Engineering. The department has state of the art research facilities to carry research in the leading areas of Mechanical Engineering and at present about 40 research scholars are working for their Ph.D degree.

Academic Programmes:

Undergraduate Level

Degree offered: Bachelor of Engineering (Mechanical)

Sanctioned students' intake**: 60**

Additional intake through lateral entry in 3rd Semester: **06**

Post Graduate Level

Degree offered: Master of Engineering (Mechanical)

Sanctioned students' intake: **27**

Additional intake through other programmes (i.e. QIP): Nil

Specializations: Machine Design, Heat Power Engineering and Production Engineering

Doctoral & Post Doctoral Research Programme

Degree offered: Ph.D (Engineering)

No of Candidates enrolled: **05**

No. of Candidates registered**: 04**

No. of Candidates awarded: **03**

Faculty position:

Sanctioned faculty post: **26** Vacant Post: **10**

LIST OF EXITING FACULTY MEMBERS

Name	Designation	Highest Qualification	Specialization/Research Area	Contact Information E-mail/Telephone No.
Dr. B.K. Mandal	Professor and Acting Head	Ph.D.	Alternative Fuels, CFD, Combustion, Refrigeration	bijan@mech.iiests.ac.in 98300-17592
Dr. A.K. Dutta	Professor	Ph.D.	Production Engineering	apurba@mech.becs.ac.in 86970-50870
Dr. S.K. Saha	Professor	Ph. D.	Heat Power Engineering, Heat Transfer Enhancement.	sujoy_k_saha@hotmail.com 98304-93430
Dr. D. Datta	Professor	Ph.D.	Ultrasonic Non-destructive evaluation, Composite Materials, Machine Design	debasis_datta@rediffmail.com 98303-49590 Extn.: 298
Dr. S.K. Guha	Professor	Ph. D.	Machine Design & Bearing Lubrication, Tribology	sk_guha@rediffmail.com 98364-06297
Dr. S.K. Karmakar	Professor	Ph.D.	Tribology (Friction, Wear Modeling, Contact Mechanics, Machine Design	skk@mech.becs.ac.in 98311-45516
Dr. B.K. Bhattacharyya	Professor (Re-employed)	Ph.D.	Production Engg.	bidyut@mech.becs.ac.in 98304-32255
Dr. S. Chatterjee	Professor	Ph.D.	Nonlinear Dynamics of mechanical and Micro-mechanical systems	shychat@gmail.com 2668-4561; Extn: 357 98316-89337
Dr. S. Chakrabarti	Professor	Ph.D.	Power Plant Engineering, CFD, Biomedical	somnathbec@rediffmail.com 91–33–2644 1781
Dr. A.K. Chowdhuri	Associate Professor	Ph.D.	M/C. Design, Combustion	achinkumar_becs@rediffmail.com
Dr. P.P. Dey	Associate Professor	Ph.D.	CAD/CAM, Fracture Mechanics, Non Traditional machining	ppdey2000@yahoo.com 93309-65313

Dr. S. Ghosh	Associate Professor	Ph.D.	Energy	sudipghosh.becollege@gmail.com +91-33-2668-4561, Extn:279 98363-35270
Dr. S C Mondal	Associate Professor	Ph.D.	Manufacturing, Quality Engineering, Modeling and optimization of manufacturing processes	scmondall@gmail.com 97326-52968
Sri A Guha	Assistant Professor	M. Tech.	Advanced Machining, Fluid flow	aguha_me@rediffmail.com 94335-86921
Dr. A. Ganguly	Assistant Professor	Ph.D.	Heat Power Engineering, Solar Energy, Solar Hydrogen systems, Greenhouse Technology	aritra78@gmail.com aritra@mech.iiests.ac.in 94330-32840, Extn.-795
Sri U. Rana	Assistant Professor	M. Tech.	Thermal Engineering, CFD	rana.uttam@gmail.com 97344-42497
Sri R.N. De	Assistant Professor	M.E.	Production Engineering, Quality Management	rathin@mech.iiests.ac.in 97481-15936

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

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

Research facilities: (name specific equipment / picture, infrastructure etc)*

1.	3D Non-Contact Profilometer (Rtec Instruments make) (created under DST-FIST)
2.	Polishing Machine (Buehler make) (procured under grant from DST-FIST)
3.	Micro Balance (Sartorius AG make) (created under DST-FIST)
4.	Tribometer, UMT with Humidity Controller (created under DST-FIST)
5.	Tribometer with 150^0C Rotary Drive Humidifier(created under DST-FIST)
6.	Bio-mass Gasifier Set Up (under TEQIP -II)
7.	Variable Compression Ratio Engine (under TEQIP -II)
8.	Exhaust Gas Analyzer (under UGC Planned Grant)

*The photographs of certain equipments installed are shown in Annexure I

Name of the new laboratories: Advanced Tribology Lab has been established.

Support staff position:

Sanctioned technical post: 08

Technical staff profile (in the following table)

Sl. No	Name	Designation	Highest Qualification	Contact No.	E- mail
1.	Asish Kumar Paul	Tech. Asst. Grade I	DME	94333-43232	
2.	Bijit Kumar Dey	Tech. Asst. Grade II	M.E	94334-13093	bijitde@yahoo.com
3.	Subhasish Pradhan	Tech. Asst. Grade II	DME, B.Sc.	94344-67729	
4.	Nani Gopal Roy	Tech. Asst. Grade II	M.E	94331-03465	
5.	Kankar Mohan Das	Tech. Asst. Grade II	DME	98304-36517	
6.	Pradip Kumar Dey	Mechanic	ITI	99037-70323	

Ongoing Sponsored Research / projects:

Title of the Project	Project value (INR) and Name of PI	Sponsoring Agency
Flow and Thermal Characteristics of Laminar and Turbulent Flow through a Circular Tube Having Spiral Corrugations and Twisted-Tapes with Oblique Teeth	19.55 Lac Prof. S.K. Saha	DST, Government of India
Heat Transfer and Pressure Drop Characteristics of Turbulent Flow of Air, Water and Servotherm Medium Oil through Circular, Rectangular and Square Ducts Fitted with Helical Ribs and Twisted Tapes with Oblique Teeth	15.66 Lac Prof. S.K. Saha	University Grants Commission (UGC)
Heat Transfer and Pressure Drop Characteristics of Laminar &Turbulent Flow through a Circular Duct Fitted with Transverse Ribs and Wire Coil Inserts	12.75 Lac Prof. S.K. Saha	All India Council of Technical Education (AICTE)
Tribology and Vibration control	1.68 Crore Prof. S.K. Karmakar	DST, FIST Government of India

Industry – Institute Interaction; The department maintains close liaison with the leading industries and arranges for summer internship and industrial training to the 4th and 6th semester UG students.

Details of publications of each faculty member (2014 – 15)

Journals: 53

Conference: 35

Books / Monograms: 03 Books and 03 Book Chapters

Complete list of publications are provided in the Annexure II.

Seminar / Workshops / Conferences / Training programme organized by the department (2014 - 15)

1. The Department organized a two day workshop on "Product Development: Concepts, Methods and Applications (WPD 2014)" on 16-17th October 2014.
2. Hosted International Conference on Advanced Material & Energy Technology (ICAMET 2014) during 17 – 19 Dec 2014 in collaboration with other departments of the institute and South Baton University, USA.

Technology Developed / Innovations

Prof. S.K. Saha developed novel heat transfer enhancement techniques.

Dr. Sudip Ghosh has contributed towards new work related to the progress on Biomass Gasification and Greenhouse Technology.

Advancements under TEQIP – Phase II

1. Procurement and installation of a Biomass Gasifier facility in the Department.

Foreign visits and Invited Lectures

1. **Prof. (Dr.) S.K. Saha** visited University of Freiberg, Germany; Lund University, Sweden; Denmark Technical University, Denmark, Technical University of Eindhoven, Netherlands, 2014 for delivering invited talk.
2. **Prof. (Dr.) B.K. Bhattacharyya visited** Xhuhai, China in November 2014 to attend and deliver keynote lecture in IEOM Conference
3. **Dr. P.P. Dey** visited Nara, Japan for attending and presenting paper in the International Conference, ACMFMS-2014 organized by Osaka Institute of Technology held on October 10-14, 2014.
4. **Dr. Sudip Ghosh** visited Canada and attended International Conference on Sustainable Development and Southern University Baton Rouge, USA.
5. **Dr. A. Ganguly** visited Imperial College, London to present a technical paper in World Congress on Engineering 2014 in the month of July 2014.
6. **Dr. A. Ganguly** presented a technical paper in International Conference on Mechanical Engineering held at Bangladesh University of Engineering and Technology (BUET) Dhaka in June 2014.

Visitors to your Department (Indian & Foreign)

Prof. (Dr.) Mustafizur Rahaman, Dept. of Mech. Engineering, National University, Singapore visited our Department and delivered a lecture on "Micro and Nano Manufacturing" on 5th January 2015.

Training and Placement: 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 April 2015, about 35 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.

Extension Activities and Societal outreach: The Department responds 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.

New Academic / Research Initiatives

Academic Collaboration

i) Prof. P.P. Dey is working in collaboration with CGCRI and has produced two Master Degree Thesis with Joint Collaboration.

ii) 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.

Industrial Collaboration

The department 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.

ANNEXURE- I

(New Facilities Created in the Department 2014-15)

1st Installment

FIG. 1 TRIBOMETER, UMT (CETR Make) WITH HUMIDITY CONTROLLER

FIG. 2 TRIBOMETER WITH 150°C ROTARY DRIVE HUMIDIFIER

FIG. 3 TRIBOMETER WITH 150°C RECIPROCATING LINER DRIVE

FIG. 4 TRIBOMETER WITH 1000°C ROTARY DRIVE

FIG. 5 TRIBOMETER WITH 1000°C RECIPROCATING LINER DRIVE

FIG. 6 TOOL KITS

FIG. 7 LOAD SENSOR, TOOL HOLDERS & KITS

FIG. 8 7.5 KVA UPS (APLAB MAKE)

2nd Installment

FIG. 9 3D Non-Contact Profilometer (Rtec Instruments make)

FIG. 10 Polishing Machine (Buehler make) with Ultrasonic Cleaning Bath

FIG. 11 Micro Balance (Sartorius make) with Density Measurement Kit

Fig.12: Set up of Biomass Gasifier Facility in the Department (under TEQIP)

Fig.13: Another view of the Set up of Biomass Gasifier Facility.

Fig.14: Set up of the Biomass Gasifier Set Up (Engine Part).

Fig.14: Control Panel Part of the Biomass Gasifier Set Up (Engine Part).

ANNEXURE II

JOURNAL PAPERS (2014-15)

1. M. Tiwari and S. K. Saha, 2015, Thermohydraulics of Laminar Flow through a Circular Tube with Transverse Ribs and Twisted Tapes, *Accepted for Publication in ASME Thermal Science and Engineering Applications.*
2. S. Pal and S. K. Saha, 2015, Experimental investigation of laminar flow of viscous oil through a circular tube having integral axial corrugation roughness and fitted with twisted tapes with oblique teeth, *Accepted for publication in Heat and Mass Transfer.*
3. S. Pal and S. K. Saha, 2015, Laminar fluid flow and heat transfer through a circular tube having spiral ribs and twisted tapes, *Exp Thermal Fluid Science, vol. 60,173-181* .
4. Meyer, J. P., Skews, B., Saha, S. K., Winter, F., Toit, J. D., Stehlik, P., Martin, H., Lienhard, J. H., Bejan, A., Vadasz, P., Backstrom, V. T., Harms, T., Reuter, H., 2014, *In Memoriam, D. Kroger, Heat Transfer Engineering, 36(4), 429-431, DOI, 10.1080/01457632.2015.960304*
5. S. Pal and S. K. Saha, 2014, Laminar flow and heat transfer through a circular tube having integral transverse corrugations and fitted with centre-cleared twisted-tape, *Exp Thermal Fluid Science, vol. 57, September 2014, pp 388-395.*
6. P. K. Pal and S. K. Saha, 2014, Experimental investigation of laminar flow through a circular tube fitted with spiral corrugation and twisted tapes with oblique teeth, *Exp Thermal Fluid Science, vol. 57, September 2014, pp 301-309.*
7. Parthasarathi Sarathi Banerjee, Rururaj Pradhan, Amit Roychoudhury and Santanu Kumar Karmakar; "Investigation of Stresses Developed in Natural and Implanted Human Cervical Spine by Finite Element Method" Journal of Advanced Medical and Dental Sciences Research, Vol. 3, Issue 1, January-March 2015, pp 9-18.
8. Santanu Sardar, Santanu Kumar Karmakar, Debdulal Das; "Ultrasonic cavitation based processing of metal matrix nanocomposites: an overview"; Advanced Materials Research, vol. 1042, 2014, pp 58-64.
9. Jayanta Biswas, Santanu Karmakar, Santanu Majumder, Partha Sarathi Banerjee, Subrata Saha,& Amit Roychowdhury; "Optimization of Spinal Implant Screw for Lower Vertebra through Finite Element Studies"; Journal of Long-Term Effects of Medical Implants; 24(2–3): 99-108(2014).
10. Ranendra Roy and Bijan Kumar Mandal. First Law and Second law Analysis of mechanical Vapour Compression Refrigeration System using Refrigerants CFC12, R134a and R290, *International Journal of Current Engineering and Technology*, 2014, Special Issue-3, pp. 191-196.
11. Gaurav Paul, Ambarish Datta and Bijan Kumar Mandal. Numerical Investigation of the Performance and Emission Characteristics of a CI engine using Diesel and its blends with Ethanol and Jatropha Biodiesel, *International Journal of Current Engineering and Technology*, 2014, Special Issue-3, pp. 5-9.
12. Gaurav Paul, Ambarish Datta and Bijan Kumar Mandal. Numerical Simulation of CI Engine Characteristics Fueled with Soyabean Biodiesel and its Blends, *Engineering Sciences International Research Journal*, 2014, Vol. 2, pp. 159-162.

13. Ranendra Roy and Bijan Kumar Mandal. Computer Based Thermodynamic Properties of Alternative Refrigerant R-134A, *Engineering Sciences International Research Journal*, 2014, Vol. 2, pp. 163-169.
14. Ambarish Datta and Bijan Kumar Mandal, Effect of Injection Pressure on the Performance and Emissions of Biodiesel Fueled CI Engine, *Engineering Sciences International Research Journal*, 2014, Vol. 2, pp. 217-220.
15. Ambarish Datta, Samidhdha Palit and Bijan Kumar Mandal. An Experimental Study on the Performance and Emission Characteristics of a CI Engine Fuelled with Jatropha Biodiesel and its Blends with Diesel, *Journal of Mechanical Science and Technology*, 2014, Vol. 28, issue 5, pp.1961-1966.
16. Ambarish Datta and Bijan Kumar Mandal, 2014, Prospects and Threats to Jatropha Biodiesel as the Future Sustainable Fuel of India, *Energy Technology & Policy*, 2014, Vol.1, pp. 8-14.
17. Gaurav Paul, Ambarish Datta and Bijan Kumar Mandal 2014. An Experimental and Numerical Investigation of the Performance, Combustion and Emission Characteristics of a Diesel Engine fueled with Jatropha Biodiesel, *Energy Procedia*, 2014, Vol. 54, pp. 455-467.
18. Bibekananda Nayak, Bijan Kumar Mandal, Effect of generator, condenser and evaporator Temperature on the Performance of Ejector Refrigeration System (ERS), , *Journal of Basic and Applied Scientific Research*, 2014, Vol. 1, pp. 4-9.
19. Aritra Chatterjee, Suhail Dutta, Bijan Kumar Mandal, Combustion, Performance and emission Characteristics of Hydrogen as an Internal Combustion Engine fuel, *Journal of Aeronautical and Automotive Engineering*, 2014, Vol. 1, pp. 1-6.
20. Mukul Bisoi,, Gaurav Paul, Achin Kumar Chowdhuri and Bijan Kumar Mandal. Numerical simulation of natural convection in a square enclosure for different Rayleigh numbers, *International Journal of Energy & Technology*, 2014, Vol. 6, pp. 1–9.
21. Ambarish Datta, Suhail Dutta, Bijan Kumar Mandal, Effect of Methanol Addition to Diesel on the Performance and Emission Characteristics of a CI Engine, *Journal of Basic and Applied Scientific Research*, 2014, Vol. 1, No. 3, pp. 8-13.
22. Arup Jyoti Bhowal and Bijan Kumar Mandal, Radiation Effect on Temperature Distribution and and NO Formation in a Diffusion Flame under Reduced Gravity Conditions, *Heat and Mass Transfer, 2015, Vol. 51*.
23. A. K. Guchait and S. Chakrabarti, A 2-D Numerical Simulation on Flow - Induced Wall Shear Stress for an Abdominal Aortic Aneurysm Model, Engineering Sciences International Research Journal,, Vol. 2, No. 1 (2014), pp. 132-134.
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5) Pijush Kanti Mondal and Bijan Kumar Mandal, A Comprehesive Review on Performance and Emission Characteristics of Diesel Engines using Emulsified Diesel as Fuel, Proceedings of the 2nd International Conference on Advances in Mechanical Engineering and its Interdisciplinary Areas (ICAMEI 2015), January, 2015, Kolaghat, India.

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1. Fluid Mechanics and Hydraulic Machines by D. K. Mandal, **S. Chakrabarti,** N. K. Manna and N. C. Chatterjee under *Vikas Publishing House Private Limited*, Noida (UP), India, 2015.
2. A. K. Mallik and S. Chatterjee, Principles of Passive and Active Vibration Control, Affiliated East-West Press, New Delhi, 2014

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1. "Solar Greenhouse Technology" by **A. Ganguly** published in the Book "Renewable Energy and Sustainable Development" published by *Nova Science Publishers Inc. New York USA*, 2015, ISBN: 978-1-63463-429-8, Chapter No. 1, pp. 1-22.
2. Optimization of process parameters in submerged arc Welding using multi-objectives Taguchi method by **S. C. Mondal**, and A. Saha, , accepted as a book Chapter in the Special issue on Advances in Material Forming and Joining, *Springer Publication* (2014).
3. An Application of Particle Swarm Optimization Technique for Optimization of Surface Roughness in Centerless Grinding Operation', by **Subhas Chandra Mondal** and Prosun Mandal Published in *Springer Publication* ISBN: 978-81-322-2228-6, Chapter No. 59, pp. 687-697.
4. Municipal Solid Waste Characteristics and Management in Kolkata, India, by Swapan. Das and **B. K. Bhattacharyya**, *Springer Berlin Heidelberg*, ISBN 978-3-642-38441-7, 2014.

Department of
Metallurgy and Materials Engineering

ABOUT THE DEPARTMENT:

The Department of Metallurgy and Materials Engineering started its journey at the Bengal Engineering College in 1939 as Department of Metallurgy, Chemistry and Geology with the introduction of a three year degree course in Metallurgy under Calcutta University. Bengal Engineering College is one of the oldest engineering institutions in India and the department is the second oldest Metallurgy department of the country. The duration and syllabus of the course changed time to time and the name of the department also changed to Metallurgy and Materials Engineering keeping pace with the advancement in the field of materials. Presently the last three batches of 4-year 8-semester course for B.E. degree in Metallurgy and Materials Engineering are going to pass out and the first batch of students have been admitted in the 5-year 10-semester Dual degree (B.Tech. + M.Tech.) programs.

In 1953 the Department introduced the 2-year Postgraduate degree programme in Physical Metallurgy which, after changes time to time, is presently a 4-semester course at the All India level offering the degree in Metallurgy and Materials Engineering with specialization in Physical Metallurgy, which was the first postgraduate course in metallurgy in this country.

Prof. N. N. Sen who later became Principal of the College, was the first Professor and Head of the then Department of Metallurgy, Chemistry and Geology which subsequently separated in 1965 and the Department of Metallurgy started journey on its own.

In 1949, Prof. W. Baukhloh of Techniche Hach Schule, Berlin joined the Department as a Professor of Metallurgy and many foreign trained faculties joined the Department during this long period. There was a spurt in the research activity in the Department since 1949 particularly after Dr. A. K. Seal joined the Department in 1955 after completing his Ph. D. in Sheffield University.

In 2000, the department started a 5 semester self sponsored part time post graduate course in Industrial Metallurgy on approval from AICTE in 1999 with intake strength of 15 plus reservation as per rules, which subsequently converted to a 6-semester course. Till date the course is catering the metallurgy / mechanical engineers with B. E. degree plus a minimum of 2 years experience with the aspiration of getting post graduate degree and classes are being held in the evening after working hours and on holidays. The department was the only one to introduce such a course in the field of Metallurgy against a circular from AICTE in 1995 seeking to open such courses.

Over the years the Department has produced a good number of eminent metallurgists working with distinction in India and abroad who have made significant contribution in the fields of Metallurgy and Materials Engineering. The Department has, so

far, produced good number of Ph. Ds, and several Ph. D. programs are running in the Department.

This Department always tries to remain abreast with the recent trends in the fields of Metallurgy and Materials Engineering and evolve suitable means for effective technology transfer to the existing industries. The Department has already pioneered in the development of certain important steels and alloys like HSLA steels, maraging steels, shape memory alloys etc. These developments have had a tremendous impact on the total development of the subject in the national scenario and by this it has contributed significantly to the cause of Metallurgy and Materials Engineering of India today. In spite of inadequate resources the Department has achieved academic distinction which is observed from its good number of alumni holding many important positions around the globe. All efforts have been successful solely due to excellent interaction with industries, institutions and research houses created by a band of devoted faculty members. The department feels proud to announce its collaborative ventures with organisations like TISCO, SAIL, ISRO, BARC, NML, ICDC, NMRL, INSDAG and many others.

The Department is now actively engaged in modernizing the existing laboratories along with the development of newer ones in accordance with the current trends in Metallurgy and Materials Engineering for which it has received aids as well as in the form of Sponsored Research Grants from various sources for further consolidating the undergraduate and postgraduate training and research and maintain the tradition as one of the leading centers for metallurgical education and research in the country. During the Golden Jubilee celebration of the Department in 1989-1990, M/s. M. N. Dastur & Co. showed its affection towards the Department by advancing funds for Research on Materials Science and Engineering. Further, Tata Steel Chair Professor was instituted during the same year by an endowment of Tata Steel to lead advanced research and consultancy work. Ministry of Steel, Govt. of India introduced Steel Chair Professor and this department is also a beneficiary of this scheme.

The Department to-day is thus in a position to undertake various advanced research and consultancy work in various field, to fulfill the vision of those who were pioneer in establishing and in nurturing the Department. A vigorous Ph. D. programs continues in the Department and presently about 20 numbers of Ph. D. candidates are pursuing their Ph. D. programs. Faculty members of the Department also received awards, medals, fellowships from Government of India and other professional bodies. Some faculty members are also pursuing collaborative programs with foreign universities.

ACADEMIC PROGRAMMES:

Undergraduate Level

Degree offered: B. E. Degree in Metallurgy and Materials Engineering
Sanctioned students' intake: 30
Additional intake through other program (i.e. QIP): Nil

Post Graduate Level

Degree offered: 4-semester M.E. Degree in Metallurgy and Materials Engineering
Sanctioned students' intake: 7
Additional intake through other program (i.e. QIP) Nil
Specializations in Physical Metallurgy

Degree offered: 6-semester M.E. degree in Industrial Metallurgy
Sanctioned intake: 15 plus reservation as per rules

Current degree to which students admitted

Integrated 5-year dual degree (B.Tech. + M.Tech) introduced in 2014-15
Sanctioned intake in 2014-15: 34
Additional intake through other program (i.e. QIP): Nil

Doctoral and Post Doctoral Research Programme

Degree offered: Ph. D. in Metallurgy and Materials Engineering
No. of candidates enrolled: 12
No. of candidates registered: 06
No. of candidates awarded: 02

FACULTY POSITION:

Sanctioned faculty post: **14** Vacant Post: **4**

Permanent Faculty Profile:

Name	**Designation**	**Highest Qualification**	**Specialisation/ Research Area**	**Contact No. E-mail:**
Swarup Kr. Ghosh	Professor and Head	Ph. D.	Processing-structure–property correlations of advanced steels	(033) 26684561 to 63, Extn. 236 / 239 hod@metal.iiests.ac.in skghosh@metal.iiests.ac.in swarupkrghosh@gmail.com
S. Chatterjee	Professor	Ph. D.	Microalloyed Steel, Advance joining technique	033-2668-4561 to 63 schatterjee@metal.iiests.ac.in schatterjee46@yahoo.com
A. Basumallick	Professor and Associate Dean (AA)	Ph. D.	Nanostructured Materials, Electronic and Magnetic materials	033-2668-4561 to 63 (ext- 240) abasumallick@metal.iiests.ac.in
P. P. Chattopadhyay	Professor	Ph. D.	Phase Transformation	On Lien from 16.02.2015
Sanjoy Sadhukhan	Associate Professor	M.Tech.	Physical Metallurgy, Materials Characterization, Mechanical testing, Heat treatment	033-2668-4561 to 63 skhan_besus@yahoo.co.in
Sumit Ghosh	Associate Professor	M.E.	Development and Characterization of in situ metal matrix nanocomposites	033 2668-4561 to 63 g_sumit@metal.iiests.ac.in sumit_papan1@rediffmail.com
Manojit Ghosh	Associate Professor	Ph.D.	Aluminium alloys, Crystallographic texture	033-2668-4561 to 63 manojit_ghosh1@rediffmail.com
Debdulal Das	Associate Professor	Ph.D.	Phase Transformation Wear of Materials Nanomaterials & Nanocomposites	033-2668-4561 to 63 debdulal_das@metal.becs.ac.in debdulal_das@yahoo.com
Sukumar Kundu	Assistant Professor	Ph.D.	Advance Joining technique, Corrosion and Wear resistance materials,	033-2668-4561 to 63 skundu@metal.iiests.ac.in erskundu@gmail.com
Tapendu Mandal	Assistant Professor	M.Tech.	Electronic Materials, Biomaterials, Carbon based Composites	033-26684561 to 63 tapendu@gmail.com

Others:

Name	Designation	Highest Qualification	Specialisation/ Research Area	Contact No. E-mail:
P. S. Banerjee	Visiting Faculty	Ph. D.	Extractive metallurgy, Foundry, Corrosion	9836663015 psban_2000@yahoo.co.in
H. S. Ray	Adjunct Professor	Ph. D.	Extractive Metallurgy	Continued up to February, 2015
U. K. Chatterjee	Visiting Faculty	Ph. D.	Corrosion	9434017924 uday_chatterjee@yahoo.com
Nikhiles Bandyopadhyay	Tata Steel Chair Professor	Ph. D.	Steel Making and Characterization	Died in October, 26, 2015
Ramanath Datta	Visiting Faculty	M. Tech.	Electronics	9830374001 ramanath.datta@gmail.com

AREAS OF RESEARCH

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

RESEARCH FACILITY:

Upgradation 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 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 is on the verge of installation.

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.

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 (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
- Nanostructure processing Laboratory

CONSULTANCY WORK

COMPLETED

- "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
- "Brand Ambassador of PMC Prestige TMT Bar" – sponsored by Purulia Metal Casting (P) Ltd. – PI: Prof. S. Sadhukhan - Completed
- "Deformation and Damage Behavior of Automobile Grade Steels under Cyclic Loading" – sponsored by Tata Steel – PI: Prof. D. Das
- "Development of High Strength Multi-phase steels through various processing conditions" – sponsored by Tata Steel – PI: Prof. S. K. Ghosh

SUPPORT STAFF POSITION:

Technical Staff: 10 (full time)

2 (contractual)

Supporting Staff: 7 (full time) for laboratory

2 (full time) for dept. office

Clerical Staff: Nil

Technical staff profile

Technical Staff			
Name	**Designation**	**Highest Qualification**	**Contact No.**
Sri Santanu Chattopadhyay	Supdt. Tech	Diploma (Mech.)	09830229800
Sri Rash Behari Nayak	Supdt. Tech	Diploma (Mech.) & Adv. Diploma in Foundry Tech.	09231828193
Sri Jayanta Kr. Chandra	Supdt. Tech	Diploma (Mech.) & Adv. Diploma in Foundry Tech.	09433739104
Sri Sujit Kr. Roy	Supdt. Tech	Non-Matriculate	09143469096
Sri Bagala Prasad Patra	Supdt. Tech	H.S., ITI, NCVT & Craft Instructor Training	09635860758
Sri Ranjit Karmakar	Workshop Instructor	Non-Matriculate	09433609711
Sri Rupchand Naskar	Workshop Instructor	ITI	07872331640
Sri Srikanta Adak	Workshop Instructor	ITI	Retired in March, 2015
Sri Salil Kr. Dalui	Tech. Asst. II	B.E. (Met.Eng.)	09831435065
Sri Swapan Kr. Jana	Tech. Asst. II	Diploma (Mech.)	09231701660
Sri Syamal Chakrabarty	Contractual	B. Sc.	
Sri Chhabi Lal Kar	Contractual	H.S., ITI, NCVT trade test (Welder)	Completed
Support staff profile			
	Support Staff		
Sri Ashoke Kumar Das	Record Supplier	Class V	9830484398
Sri Provat Kr. Choudhury	Helper Gr. – l	Class VIII	9007590108
Sri Yeasin Mullick	Turner & Fitter	Class X	09433393053
Sri Tarak Nath Dey	Junior Peon	Madhyamik	9830788505
Sri Manoj Bhagat	Junior Peon	Class V	9163728807
Sri Hiru Kumar Majhi	Hammer Man	Class VIII	9007485181
Sri Biswanath Dorjee	Junior Darwan	Class VIII	9062445528
Sri Badal Chandra Das	Helper Gr. - II	Class V	9433212531
Sri Debasish Mondal	Junior Darwan	Class I	8902183415

Sponsored Research Project:

Ongoing

- Development of 2000 MPa steel for defense application sponsored by MSF, OFB
- Influence of Ag-Sn on microstructure and texture in Al-Zn-Mg alloys, sponsored by UGC
- Evolution of microstructure and texture in dissimilar alloys during Electron beam and Friction Stir Welding sponsored by BRNS
- Development of Friction Stir Welded joints between IF steel vs/ IF steel/ Al alloys sponsored by Tata Steel
- Fatigue Property Evaluation and Microstructural Characterization of Hot Rolled Steels sponsored by Tata Steel
-

INDUSTRY-INSTITUTE INTERACTION

- *Colorado School* of *Mines, G*olden, USA
- University of Queensland, Australia
- University of New South Wales, Sydney, Australia
- Australian National University, Australia
- Tata Steel, Jamshedpur
- IIT Kharagpur
- IIT Kanpur
- NML, Jamshedpur
- Jadavpur University

NO OF PUBLICATIONS:

1. M. Ghosh, A. Miroux, L.A.I. Kestens, "Correlating r-value and through thickness texture in Al–Mg–Si alloy sheets", Journal of Alloys and Compounds 619 (2015) 585–591.
2. A. K. Rathore, S. P. Pati, A. Roychowdhury, M. Ghosh, D. Das, "Structural, optical, hyperfine and magnetization studies of ZnO encapsulated α-Fe nanoparticles", Materials Research Bulletin, (2014) 566–571.
3. M. Ghosh, P. S. Banerjee and H. S. Ray, "Examining Energy and Environment Issues in Non-ferrous Metallurgy in the Light of Industrial Metabolism", Journal of Materials and Environmental Science 5 (2) (2014) 380-389.
4. M., A. Miroux, R.J. Werkhoven, P. J. Bolt and L. A. I. Kestens, "Warm Deep-drawing And Post Drawing Analysis of Two Al-Mg-Si Alloys", International Journal of Materials Processing Technology, 214 (2014) 756-766.
5. M. Ghosh, P.S. Banerjee and H.S. Ray, "Environmental Pollution Due to Gaseous Emissions During Non-ferrous Extraction Processes", Russian Journal of Non-Ferrous Metals, 55(3), (2014) 263-269.
6. S. Sadhukhan, M. Kundu, M. Ghosh, "Effect of Trace Added Sn on Mechanical Properties of Al-Zn-Mg alloy", Advanced Materials Research Journal, 828 (2014) 73-80.
7. S. Kundu, S. Sam, B. Mishra and S. Chatterjee: Diffusion Bonding of Microduplex stainless steel and Ti alloy with and without interlayer: Interface microstructure and

strength properties, Metallurgical and Materials Transactions A (2014), 45(1), 371-383.

8. S. M. Bhola, S Kundu, R. Bhola, B Mishra, S. Chatterjee, 'Electrochemical Study of Diffusion Bonded Joints between Micro-duplex Stainless Steel and Ti-6Al-4V Alloy, Journal of Materials Science & Technology, 2014 30(2) 163-171.

9. Gopinath T. , S. Kundu, B. Mishra and S. Chatterjee, Effect of Bonding Time on Interfacial Reaction and Mechanical Properties of Diffusion-Bonded Joint Between Ti-6Al-4V and 304 Stainless Steel Using Nickel as an Intermediate Material, Metallurgical and Materials Transactions A, 2014, 45(4) 2078-2089.

10. Gopinath T. , S. Kundu, B. Mishra and S. Chatterjee, "Effect of bonding temperature on interfacial reaction and mechanical properties of diffusion bonded joint between Ti-6Al-4V and 304 stainless steel using nickel as an intermediate material", Metallurgical and Materials Transactions A, 2014, 45(4) 2067-2077.

11. R. Bhola, S. Kundu, F.M. Alabbas, C. Chandra, B. Mishra, D.L. Olson, "Corrosion Response of Ti6Al4V and Ti15Mo Dental Implant Alloys in the presence of Listerine Oral Rinse" International Journal of Corrosion, 2013, 2014(2) 1-7.

12. S. Kundu, S. M. Bhola, B. Mishra and S. Chatterjee, Structure and properties of solid state diffusion bonding of 17-4PH stainless steel and titanium, Materials Science and Technology,2014, 30 (2), 163-171

13. Gopinath T, S. Kundu, S. Chatterjee, The latent fingerprint in mass transport of polycrystalline materials, Heat Mass Transfer, 2015, DOI 10.1007/s00231-015-1553-z.

14. S. Chatterjee, S. Kundu, S. Sam, B Mishra, Diffusion Bonding of Duplex Stainless Steel and Ti Alloy with and without Interlayer, Materials Science Forum, 2014, 783(7), 9-14.

15. Gopinath T, S. Kundu, B. Mishra S Chatterjee, Effect of Bonding Time on Interfacial Reaction and Mechanical Properties of Diffusion-Bonded Joint Between Ti-6Al-4V and 304 Stainless Steel Using Nickel as an Intermediate Material, Metallurgical and Materials Transactions A 45 (7), 2014 2078-2090.

16. G Thirunavukarasu, S Kundu, B Mishra, S Chatterjee, Effect of Bonding Temperature on Interfacial Reaction and Mechanical Properties of Diffusion-Bonded Joint Between Ti-6Al-4V and 304 Stainless Steel Using Nickel as an Intermediate Material, Metallurgical and Materials Transactions A 45 (7), 2014, 2067-2077.

17. S Kundu, B Mishra, S Chatterjee Structure and properties of solid state diffusion bonding of 17-4PH stainless steel and titanium , Materials Science and Technology 30 (9), 2014, 248-256.

18. R Bhola, S Kundu, F M Alabbas, B Mishra, G Singh, AZ91D A Suitable Candidate For Reconstruction Maxillofacial Implants: A Materials Perspective, accepted for Journal of Oral Implants, 2015.

19. Gopinath T, S. Kundu, S. Chatterjee, The latent fingerprint in mass transport of polycrystalline materials, Heat Mass Transfer, 2015, DOI 10.1007/s00231-015-1553-z.

20. S. Chatterjee, S. Kundu, S. Sam, B Mishra, Diffusion Bonding of Duplex Stainless Steel and Ti Alloy with and without Interlayer, Materials Science Forum, 2014, 783(7), 9-14.

21. Optimization of milling parameters for the mechanosynthesis of nanocrystalline hydroxyapatite; T Mandal, BK Mishra, A Garg, D Chaira; Powder Technology 253,

650-656

22. N Shakti, A Prakash, T Mandal, M Katiyar: Processing temperature dependent morphological and optical properties of ZnO nanorods; Materials Science in Semiconductor Processing 20, 55-60.

23. S Bajpai, A Gupta, SK Pradhan, T Mandal, K Balani: Crack Propagation Resistance of α-Al2O3 Reinforced Pulsed Laser-Deposited Hydroxyapatite Coating on 316 Stainless Steel; JOM 66 (10), 2095-2107.

24. D. Das and K. K. Ray*:* Cryogenic processing to improve wear performance of die steels*; International Journal of Surface Science and Engineering 9 (2015) 124-144.*

25. S. K. Basantia, M. A. Bakkar, N. Khutia and D. Das: Simulation of LCF Characteristic of AA6063 Al Alloy under Different Ageing Conditions*;* Materials Today: Proceedings, Accepted for Publication, 2015.

26. S. Nandy, M.A. Bakkar and D. Das: Influence of Ageing on Mechanical Properties of 6063 Al Alloy; Materials Today: Proceedings, Accepted for Publication, 2015.

27. S. Sardar, S. K. Karmakar and D. Das: Ultrasonic Cavitation Based Processing of Metal Matrix. Nanocomposites: An Overview; Advanced Materials Research, 1042 (2014) 58-64.

28. S. K. Paul, P. K. Rana, D. Das, S. Chandra and S. Kundu: High and low-cycle fatigue performance comparison between micro-alloyed and TMT rebar; Construction and Building Materials 54 (2014) 170-179.

29. D. Das and K.K. Ray: Cryogenic Treatment of Ferrous Materials; in: Encyclopedia of Iron, Steel, and Their Alloys, Eds. Rafael Colas and George E. Totten, Taylor & Francis Group, (Invited article, in press, 2015).

30. S. K. Ghosh: Influence of 10% Cold Rolling Reduction on Ageing Behaviour of Hot Rolled Al-Cu-Si–Mn-Mg Alloy, J. Inst. Eng. India Ser. D (2014) 95 (2) 95–101.

31. N. K. Tewary, B. Syed, S. K. Ghosh, S. Kundu, S. M. Shariff, G. Padmanabham: Microstructural evolution and mechanical behavior of surface hardened low carbon hot rolled steel, Materials Science and Engineering A, A606 (2014) 58–67.

32. N. K. Tewary, S. K. Ghosh, S. Bera, D. Chakrabarti, S. Chatterjee: Influence of cold rolling on microstructure, texture and mechanical properties of low carbon high Mn TWIP steel, Materials Science and Engineering A, A615 (2014) 405–415.

33. Sudipta Pramanik, Supriya Bera, and Swarup Kumar Ghosh: Influence of Cold Rolling on Microstructural Evolution in 2205 Duplex Stainless Steel, Steel Research International 85 (2014) (5) 776-783. DOI: 10.1002/srin.201300293.

34. R. Shukla, S. K. Ghosh, D. Chakrabarti, and S. Chatterjee: Characterisation of Microstructure, Texture and Mechanical Properties in Ultra Low-Carbon Ti-B Microalloyed Steels, Metals and Materials International, 21, No. 1 (2015) 85-95. DOI: 10.1007/s12540-015-1010-z.

35. N. K. Tewary, S. K. Ghosh, S. Chatterjee: Effect of Annealing on Microstructure and Mechanical Behaviour of Cold Rolled Low C, High Mn TWIP Steel, International Journal of Metallurgical Engineering 2015, 4(1) 12-23. DOI: 10.5923/j.ijmee.20150401.03

Seminar/ workshops/Conferences/Training programme organized by the department(in last year)

1. International Conference on Corrosion Control in Infrastructure, Pipeline, RCC Structure and Automobile (CCIPRA 2014)-28th Feb. to 1st March 2014.
2. National Seminar on Microstructure of Materials-12 and 13 March 2014.

Advancements under TEQIP – Phase II

X-ray Diffractometer and texture gonio meter of Bruker

Foreign visits and Invited Lectures

Deakin University, Australia in 2014

Visitors to your Department (Indian & Foreign):

Dr. Manojit Dutta – Tata Steel, as INAE-AICTE Professor

Dr. Jayanta Kr. Saha – INSDAG, as INAE-AICTE Professor

Alumni Contribution to your Department

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

Training and Placement

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

Extension Activities and Societal outreach

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

3-semester Certificate course on Steel Making and Rolling Technology sponsored by NISST, Govt. of India by the Department

New Academic / Research Initiatives

Academic Collaboration

INSDAG, Kolkata

Industrial Collaboration

Tata Steel, Jamshedpur

Department of Mining Engineering

About the department

Mining and Agriculture are the two oldest professions of mankind. But, notwithstanding the emphasis made by Koutilya (*Arthasastra*; c. 300 – 250 BC), Georgius Agricola (*de Re Metallica*; 1556), and a few other philosophers, its advent as a scientific discipline was rather delayed. The situation was more conspicuous in India where coal mines were opened up in 1774 but mining education started more than a century later, in 1906, at this institute (the then Bengal Engineering College). Meanwhile it was felt, - amongst others by the Indian National Congress -, that a School of Mines be established in India in the model of the Royal School of Mines, London. The desire was transformed into reality with the establishment of Indian School of Mines (ISM) in 1926 at Dhanbad and B E College stopped imparting mining education. As such the department was closed and all its scientific and human resources were transferred to ISM Dhanbad.

However post independence period witnessed a purposeful thrust on mining sector. A consequential fall out was the re-establishment of the Department of Mining and Geology at Bengal Engineering College Shibpur in 1956.

Ever since its re-establishment, the mining engineering department has been catering to the quality-manpower needs of the mining industry. Important milestones covered by the department include, *inter-alia*, the following:

As on date academic course run by the department are: BE(Mining Engineering); Integrated dual (BTech/MTech) degree programme in mining engineering and regular 4 semester (a) ME programme in Mining Engineering and (b) MTech programme in Geo-informatics. Over the years the department has built up advance research capabilities in almost all the sub-disciplines of Mining Engineering. Ever since the institute was elevated to a deemed-university, the department has been undertaking regular academic and sponsored research programmes. In the recent past several cutting-edge *avant-garde* research projects have been completed by the department. Of late several outreach services have been extended to the user agencies. Based on its infrastructure and human resource potential the department has identified a few major thrust areas for pursuing top-notch research.

Academic Programmes:

Details of the academic programmes offered under the aegis of the department are furnished below:

Undergraduate Level

Degree offered	B.E. in Mining Engineering
Sanctioned students intake	30

Post graduate Level

Degree offered	Dual (BTech/ MTech) degree in Mining Engineering
Sanctioned students intake	30
Degree offered	M.E. in Mining Engineering
Sanctioned students intake	18
Additional intake through other programmes (i.e. QIP)	Nil
Specialisations in	Mining Engineering
Degree offered	M.Tech in Geoinformatics
Sanctioned students intake	18
Additional intake through other programmes (i.e. QIP)	Nil
Specialisations in	Geoinformatics

Doctoral Level

Degree offered: Ph.D in Mining Engineering

No. of candidates enrolled: 16

No. of candidates Registered: 12

No. of candidates Awarded: 00

Faculty position

Sanctioned faculty strength: 12

Vacant: 3

Faculty profile

Name	Designation	Highest Qualification	Specialisation/Research Area	Contact No E-mail
P.K.Paul	Professor	PhD	Metal Mining. GIS and Remote Sensing	Prabirpaul59@gmail.com
N.C.Dey	Professor	PhD	Coal Mining. U/G mining machinery Safety & Legist ion and Ergonomics	ncdey@mining.iiests.ac.in
I.N.Sinha	Professor	PhD	Surface Mining,Mine Environment Science and Management	indranaths@mining.iiests.ac.in
S. Sinha	Professor & Head	PhD	Mine Environment, Mine Planning & Design and Mineral Economics	suranjan1980@gmail.com
P.Dutta	Professor	PhD	Rock Mechanics and Coal Bed Methane(CBM)	dutta.pratik@gmail.com
S.Mukhopadhyay	Assistant Professor	PhD	Mineral Dressing and Bulk Material Handling	sudipta1973@yahoo.com
A. Ghosh	Assistant Professor	PhD	Mine Planning	apurnag2000@yahoo.com
G .C.Roy	Assistant Professor	PhD	Coal Mining, Mining Machinery And Optimization Techniques	gcroy_besus@yahoo.co.in
Md.M.Islam	Assistant Professor	M.Tech	Mining Pollution control and Management	miraj77@gmail.com

Award s and Laurels :

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

Principal research strengths of the department lies in the areas of

a. Mining Geo-Spatials
b. Occupational Safety and Health of Miners
c. Environmental Management of Mining Operations
d. Mineral Beneficiation
e. Carbon Sequestration and Exploitation of Coal-Bed-Methane
f. Ground Control and Underground Space Engineering

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
- Rock mechanics and strata control

- 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
- Risk assessment of occupational injuries through epidemiological approaches in underground coal mines.
- Impact of sorption and diffusion properties on deliverability of coal-bed 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 *etc*.

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
- Mineral Beneficiation
- Rock Mechanics and Strata Control.
- Mineral Economics.

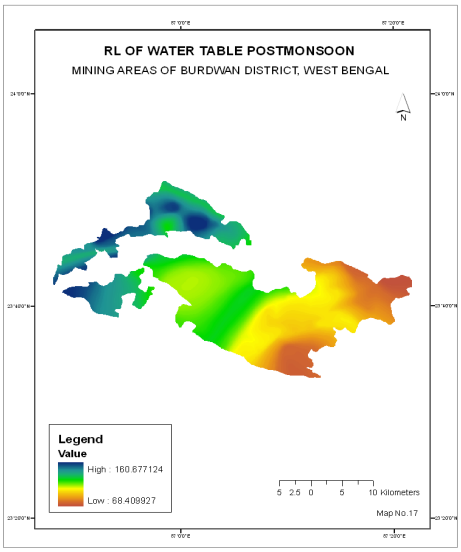
Research facilities: (name specific equipment/picture.)

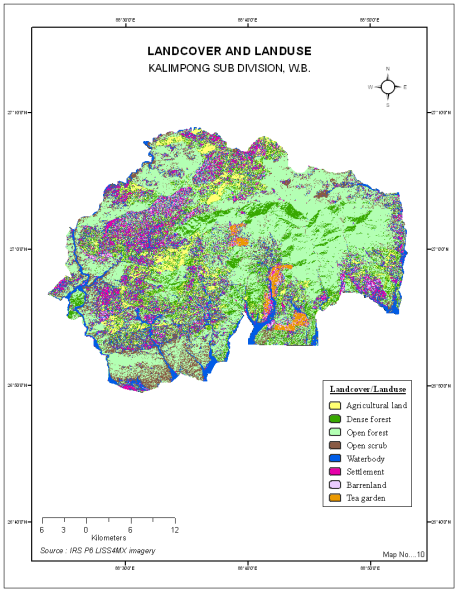
GIS and Remote Sensing: The department has well established GIS and Remote Sensing research laboratories. The facilities include GIS software's like ARCMAP, ILWIS, GEOMEDIA etc. and Remote Sensing software's like ERDAS, ENVI etc. The department has AO scanner, AO plotter, workstations, handheld GPS and 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
Coal bed Methane :
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 ssoftware 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.

Name of the laboratories :

Mine Survey Laboratory	1. Dual frequency GNSS Receivers for DGPS survey 2. Single frequency GNSS receivers for DGPS survey 3. Hand held GPS 4. Robotic Total Station 5. Total Station 6. Electronic Theodolite 7. Levels 8. LISSCAD software 9. Ski Pro software
Computer Laboratory	1. PC's 2. Server 3. Surpac 4. Minex 5. RocScience
Coal sequestration Laboratory	
Rock Mechanics laboratory	1. 100 ton UTM 2. Rock drilling and cutting machine 3. Rock permeability testing setup 4. Shear box test setup 5. Triaxial test setup
GIS and Remote Sensing laboratory	1. ARCMAP 11 (3 users) 2. ERDAS 2011 (5 users) 3. Envi 5.0 (10 Users) 4. Geomedia Professional 5. Raster to vector software 6. ILWIS 7. Modflow 8. A0 Scanner 9. A0 Plotter 10. Servers

	11. Workstations
Mineral Dressing Laboratory	1. Jig Based Pilot Plant 2. Hydrocyclone test rig 3. Jaw crusher 4. Raymond Mill 5. Pulverizer
Safety and Ergonomics Laboratory	1. Oxygen consumption monitor (Oxylog) 2. Whole body vibration meter 3. Hand arm vibration meter 4. Mobile heart rate monitor(Polar) 5. ECG, Asman Hygrometer 6. TMT 7. Globe thermometer 8. Goniometer(digital + axis)
Mine Ventilation Laboratory	1. Blast vibration measuring Instrument 2. Gravimetric Dust Sampler 3. Gas Chromatograph 4. Rescue Apparatus 5. Crossing Point Apparatus 6. High volume Dust sampler 7. Ventilation Duck with anemometer


RL OF WATER TABLE POSTMONSOON
MINING AREAS OF BURDWAN DISTRICT, WEST BENGAL
N
Legend
Value
High : 160.677124
Low : 68.409927
5 2.5 0 5 10 Kilometers
Map No.17


LANDCOVER AND LANDUSE
KALIMPONG SUB DIVISION, W.B.
Landcover/Landuse
Agricultural land
Dense forest
Open forest
Open scrub
Waterbody
Settlement
Barrenland
Tea garden
6 3 0 6 12
Kilometers
Source : IRS P6 LISS4MX imagery
Map No....10


MOZLEY


APEX

Consultancy Work

1. Geotechnical study of rock and gassiness determination for Moonidih U/G coal mines.
2. Geotechnical properties of rock mass and top soil for the Bomi iron ore project of Liberia by Western Clusters Ltd.
3. Analysis and Interpretation of stress cell and Exensometer data collected at Sharda Highwall mining project of South Eastern Coal fields Ltd. unders Cuprum Bagrodia Ltd.
4. Scientific Evaluation of mine closure Plan with reference to sustainable development of govt. of India for Dongri Bujurg mine of MOIL.
5. Strata Monitoring at CM District from December 2013 to August, 2014 at Sarpi Project, SS Pur Colliery, Bankola Area, Eastern Coalfields Limited.
6. Certification on probable future damage to Sova Ispat Plant.19/01/2015.
7. Planing of atunneling project. June 2014.

Support staff positio :
(i) Sanctioned technical post: 5
(ii) Technical staff profile (in the following table)

Name	Designation	Highest Qualification	Contact No.	E-mail
Prasanta Gope	Tech-Asst-(Gr-l)	Diploma in Mining		
Janardan Kar	Tech-Asst-(Gr-ll)	Diploma in Mining		
Amitava Chowdhury	Tech-Asst-(Gr-ll)	Diploma in Mining		
Saibal Ghosh	Sr. Mechani (Gr II)	I.T.I		
Gobardhan Nayak	Sr.Record suppler	VIII Passed		
Sanjoy Ghosh	Jr.Durwan	10 +2 Passed		

Sponsored Research : (mention area)

Ongoing	Sponsoring agency
Ergonomics	DST
Mine closure	MOEF
Environment	DST
Mineral Dressing	UGC
GIS and Remote Sensing	MOEF
Ergonomics	UGC
Coal Bed Methane	DST

Industry – Institute Interaction

No. of publications: (This year only)
Journal 8
Conference 8
Books/Monograms-
Patents/Invention Disclosure/Technology Transfer/Copyright

Seminar/Workshops/Conferences/Training programme organized by the department (in last year).

- Examiner Gas Testing Examination on May, 2014 organized by Directorate General of Mines Safety, Dhanbad.
- Convenor in Workshop on Handling of Safety Lamp Organized by the department for issuance of lamp handling certificate to the final year Bachelor of Engineering students.
- Nodal Officer Procurement TEQIP-II, IIEST, Shibpur.
- Convenor in Educational Tour Programme for Bachelor of Engineering students.
- Professor-in-Charge Training: Organizing and coordinating training in the department for the students in different mines all over India both in metal and coal sectors.

Technology Developed/Innovations

1. Short course on Laser Scanning, starting from 09/06/2014 to 27/06/2014, University of Twente, The Netherland

Advancements under TEQIP-Phase II

Foreign Visits and Invited Lectures

Visitors to your Department (Indian & Foreign)

Alumni Contribution to your Department

Training and Placement

Extension Activities and Societal outreach

New Academic / Research Initiatives

Academic Collaboration

Industrial Collaboration

Department of Physics

About the department

The department of Physics has a century old past and has come through the era of revolutionary thoughts in the world of physics to the present century of technological revolution. As far back in 1926, Prof. Satyendra Nath Bose and Prof. Meghnad Saha , then post graduate students of Calcutta University used to come to this department to study original works of Max. Planck and Albert Einstein. Our library was so rich even at that time under the able leadership of Prof. Bruhl. They also used to do their M.Sc. practical in the laboratory of this physics department. An unforgettable name in the history of the department is Prof. S.S. Boral, who initiated the course on Electronics and Telecommunications which itself finally branched out to be one of the advanced engineering department of the university. Our department can justifiably feel proud of eminent teachers like Prof. P.K. Chattopadhyay, Prof. B.R. Gupta, Prof. N.C. Mukherjee, Prof. M. Mitra and others who taught the undergraduate engineering students of B.E. College and made a strong base for their further studies. Our present faculty members are also faithfully tracing their paths.

The year 2000 was a landmark for our department when the M.Sc. course in Applied Physics was introduced. New faculty members started joining the department, having expertise in modern thrust areas of physics and related technology. On the one hand, theoretical works are being pursued in the field of *Nuclear and High energy physics* and *Atomic and Molecular physics*; on the other hand in view of latest technological advancement, different studies are carried out in the field of *Fiber Optics, Electroceramics, Spectroscopy of Laser and Luminescent materials, Transport phenomena in solids, Synthesis of Nanomaterials by sol gel route and their characterization, Silicon nanostructure based : Light emitters, Detectors, Sensors, Plasma bio-medical application, carbon nanotubes, graphene etc.* At the same time, experimental works are undertaken creating a rich environment of advanced research. In the last five years the faculty members of the department have contributed more than 100 research papers in international journals of repute and international conference proceedings. Many of our students are engaged in research and some of them are also in scientific jobs in various premier research institutions of India, such as SINP, IACS, TIFR, BARC, IPR, CGCRI etc. A considerable number of them are pursuing Ph.D. programme in the department itself.

Academic Programmes:

Undergraduate Level

Degree offered:	BE (Physics course for 1st, 2nd semesters (all) and 3rd Semester (EE and ME))
Sanctioned students' intake:	500 approximately

Additional intake through lateral entry in 3rd Semester

Post Graduate Level

Degree offered	M.Sc. in Physics
Sanctioned students' intake	25
Additional intake through other programmes (i.e. QIP)	Nil
Specialisations in Material Physics	Nuclear Physics

Doctoral & Post Doctoral Research Programme

Degree offered: PhD (Engineering / Science / Humanities & Management Science):	Science
No of Candidates enrolled:	10
No. of Candidates registered:	8
No. of Candidates awarded/submitted:	3

1. Awarded: Joyee Basu (under the sole supervision of Dr. Debasis Ray), Oct 2014.
2. Submitted: Subrata Mitra (under the sole supervision of Dr. Samar Jana), Feb 2015.
3. Submitted: Navonil Bose (under the joint supervision of Dr. Sampad Mukherjee and Dr. Mousumi Basu), March 2015.

Faculty Position:

Sanctioned faculty post ……14……. Vacant Post …1(1 for ST)…

(a) Faculty profile (in the following table)

Name	***Designation***	**Highest Qualification**	**Specialization / research area**	**Contact No. E-mail**
Dr. Bichitra Kumar Guha	Professor and **Dean (Faculty Affairs)**	M.Sc., M.Phil., Ph.D	Solid State Physics, Electroceramics	9830155316 bkg@physics.iiests.ac.in bkguha.phys@gmail.com
Dr. (Mrs.) Dipali Banerjee	Professor	M.Sc., M.Phil., Ph.D	Solid State Physics, Transport properties of solids	9830299253 dipalibanerjeebesu@gmail.com dbanerjee@physics.iiests.ac.in
Dr. Sukhendusekhar Sarkar	Professor	M.Sc., Ph.D	Theoretical Nuclear Structure and Nuclear Astrophysics	9433006526 ss@physics.iiests.ac.in sukhendusekhar.sarkar@gmail.com
Dr. Mousumi Basu	Professor	M.Sc., M.Tech., Ph.D	Fibre Optics in linear and nonlinear domain	9433306461 mbasu@physics.iiests.ac.in, mousumi_basu@yahoo.com
Dr. Sampad Mukherjee	Associate Professor	M.Sc., Ph.D	Solid State Physics Synthesis and characterization of nano materials	9433579392 smukherjee@physics.iiests.ac.in smukherjee.besu@gmail.com
Dr. Samar Jana	Associate Professor and **Head**	M.Sc., Ph.D	Spectroscopy of Laser and Luminescent materials	9433428035 samarjana@physics.iiests.ac.in samarjana@yahoo.com

Dr. Krishnendu Mukherjee	Associate Professor	M.Sc., Ph.D	High Energy Physics,	9432273434 kmukherjee@physics.iiests.ac.in krisnendumukherjee@yahoo.com
Dr. Amit Kundu	Associate Professor	M.Sc., Ph.D	High Energy Physics, Cosmology	9433906370 amitkundu@physics.iiests.ac.in amit_iop@yahoo.com
Dr. Debasis Ray	Assistant Professor	M.Sc., Ph.D	Theoretical Atomic Physics Atomic Physics in Plasmas, Laser-atom interactions, Spectroscopy of confined quantum systems, Many-body techniques in atomic physics.	9433092009 debasisray@physics.iiests.ac.in ray.debasis@gmail.com
Dr. S. M. Hossain	Assistant Professor	M.Sc., Ph.D	Physics of nano-dimensional solids for Photonic, Photovoltaic and sensing applications	9230446483 shminhaz@physics.iiests.ac.in shminhaz@gmail.com
Dr. Sukhen Das	Assistant Professor of Jadavpur University (UGC special programme)	M.Sc., Ph.D	Nano-materials/biophysics	9433091337 sukhendas29@gmail.com
Dr. Abhijit Majumdar	Assistant Professor (UGC-FRP)	M.Sc., M.Tech, Ph.D	Plasma Physics, Plasma Surface Interaction, Transport properties of transition metal ions	8902781531 majuabhijit@gmail.com
Dr. Manish Pal Chowdhury	Assistant Professor (UGC-FRP)	M.Sc., Ph.D	Carbon nanotubes, Graphine, Nanoelectronics and Nanoscience	8902703093 manishpc@gmail.com
Dr. Abhijit Bisoi	Assistant Professor	M.Sc.	Spectroscopic study in A~40 region, Preparation and characterization of implanted target	9830629051 abijitbisoi@gmail.com
Dr. Mojammel Haque Mondal	Assistant Professor	M.Sc., Ph.D	Experimental condensed matter physics	9432180899 mojamelm@gmail.com
Dr. Dwipesh Majumder	Assistant Professor	M.Sc., Ph.D	Theoretical condensed matter physics	7602207766 dwipesh@gmail.com

Awards and Laurels received by the faculty members:

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

- Nuclear structure and nuclear astrophysics
- High energy physics
- Quantum field theory at finite temperature and density
- Synthesis & characterization of thermoelectric nanomaterials and composites
- Magnetic properties of materials
- Characterization of Fuel cells & its components
- Preparation & characterization of oxide glass by sol-gel route
- Spectroscopic investigation on rare earth and transition metals in search of efficient LASER and luminescent materials.
- Fluorescence and phosphorescence study on rare earth materials.
- Design and optimization of optical fibers for dense WDM system.
- Nonlinear pulse propagation through single mode optical fibers.
- Atomic Physics in Plasmas, Laser-atom interactions.
- Spectroscopy of confined quantum systems, Many-body techniques in atomic physics.
- Nanostructure based Photonics, Photovoltaics and , Sensors.
- Processing and characterization of electroceramic materials used as capacitor dielectrics, sensors and actuators etc.
- 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.
- Theoretical studies of nuclear structure in the space above and below ^{132}Sn core.
- Preparation and Characterization of implanted target.
- 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
- Nano-materials/biophysics
- Collective excitation in fractional quantum Hall effect
- Non-equilibrium statistical mechanics and Quantum Chromodynamics.

Research facilities: (name specific equipment / picture, infrastructure etc)

1. Microprocessor controlled 1800^{0}C box furnace 2. Hydraulic pressing machine. 3. Hp LCR Meter
4. Spectrophotometer (UV-Visible) 5. Luminescence Spectrometer 6. Electric Furnace (1400^{0}C)
7. IBM- Z pro work station 8. Dell T7500 work station
9. Ultrasonic PULSER/RECEIVER instruments (MAKE- MATEC INC.).
10. Magnetic succeptibility measurement 11. Closed cycle liquid helium cryostat 12. Vacuum coating unit 13. Magnet with power supply

14. GM Counter and radioactive sample with lead shield 15. Thermal conductivity measurement set up 16. Z-scan instrument for measuring nonlinear properties of optical materials 17. Linear stage setup for pulling fiber from micro to nano dimensions 18. Spin coating unit 19. High precession Ammeter and source meter 20. NaI detector with multichannel analyser
21. Thermal chemical vapor system
22. Plasma jet
23. Indigenously developed PVC coated Chemical bench/Fume hood 24. Computer interfaced I-V characteristics measurement setup—Agilent 25. Computer interfaced LCR meter (1 MHz) --- Agilent

Name of the laboratories:

1.	Composite and Nanomaterial Research Laboratory
2.	LASER and Luminescent Materials Research Laboratory
3.	Synthesis and Characterization of Oxide Glass Laboratory
4.	Fiber Optic Design Laboratory
5.	Electroceramics Laboratory
6.	Material Research Laboratory
7.	Plasma Research Laboratory
8.	Naniomaterials Laboratory
9.	Physics and Applications of Nanoscopic Solids

Laboratories for PG & UG studies

1.	General and electronics laboratory
2.	Optics laboratory
3.	Solid state laboratory
4.	Nuclear physics laboratory
5.	UG general laboratory

Support staff position:

Support staff position:

(a) (i) Sanctioned technical post : 3

(ii) Technical staff profile (in the following table)

Name	Designation	Highest Qualification	Contact No.	E-mail
Dr. Bibhas Ch, Mitra	TA-II	Ph.D	9434715128	bcmitra@yahoo.com
Mr. Amal Kr. Mandal	TA-II	M.Sc.	9830586320	akm627@yahoo.co.in
Mr. Sintu Das	TA-II	B.Sc.	9903262750	-
Mr. Amiya Kr. Paul	Junior Peon	H.S.	9433819077	amiyaamrita_01@yahoo.co.in
Mr. Asim Das Chakraborty	Junior Asst.	M.A.	9433126999	-

Ongoing Sponsored Research / projects: (mention area)

No.	Ongoing (Prof value)	Sponsoring agency
1.	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
2.	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
3.	"Study of isomers in Ho and neighbouring isotopes" – Nuclear structure in A ~ 150 region. P.I. Dr. S. Sarkar Ongoing (Prof value) about 5 lacs	Sponsoring agency UGC-DAE Consortium for Scientific Research, Kolkata Centre
4.	Fabrication and characterization of optical micro and nano fibers (Rs 25,45,800/-) P.I. Dr. S Mukherjee	BRNS,DAE, GOI
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	NASF, ICAR, GOI

	(Total budget- Rs.1,55,84,520/- ; Institute budget- Rs.27,12,750/-) Co P.I. Dr. S Mukherjee	
7.	Solar Energy Hub at BESU (10 Crore) Co-PI: Dr. Syed Minhaz Hossain	DST
8.	Advanced Research On Thin Silicon Solar Cells And Photovoltaic Systems (15 crore) Co-PI: Dr. Syed Minhaz Hossain	MNRE
9.	Rapid Biosensor Detection of Pathogens Toxins and Bacterrorism Agent Using Lipid Bilayer Membrane(Rs. 38,25,000/-) P.I : Dr. S. Das	DRDO
10.	An In Silico Study on Interdependence Between Hemagglutinin and Neuraminidase Subtypes In the Propagation of Viral Infection (Rs. 6,79,000/-) Co- P.I : Dr. S. Das	CSIR
11.	Development Of Eco Friendly High Density Nanocrystalline Mullite Rich Ceramic Pigment / Filler from Low Cost Ceramic Materials/Flyash (Rs. 11,45,800/-) P.I : Dr. S. Das	UGC
12.	Development and characterization of supercapacitors using various metal oxide electrode materials: A competitive study." (Rs. 35,00,000/-) P.I : Dr. S. Das	DST
13.	Understanding the mechanism of action of Homeopathic medicine at the molecular level in nano domains in vivo and in vitro systems (Rs. 45,00,000/-) Co- P.I : Dr. S. Das	CCRH

Details of publications of each faculty member (2014 – 15)
Journal

1. Reduced grapheme oxide-polyaniline composites-synthesis, characterization and optimization for thermoelectric applications, Mousumi Mitra, Chiranjit Kulsi, Krishanu Chatterjee, Kajari Kargupta, Saibal Ganguly, **Dipali Banerjee** and Shyamaprosad Goswami, *RSC Advances 5 (2015) 31039-31048.*
2. Novel bimetallic graphene-cobalt-nickel (G-Co-Ni) nano-ensemble electrocatalyst for enhanced borohydride oxidation, Shubhanwita Saha, Saibal Ganguly, **Dipali Banerjee** and Kajari Kargupta, *International Journal of Hydrogen Energy 40 (2015) 1760-1773***.**
3. Graphene supported bimetallic G-Co-Pt nanohybrid catalyst for enhanced and cost effective Hydrogen generation, *International Journal of Hydrogen Energy 39 (22) 2014 11566-11577.* **D. Banerjee**, et al.

4. Hydrogen Storage on Graphene using Benkeser Reaction, Ananta Kr Sarkar, Shubhanwita Saha, Saibal Ganguly **Dipali Banerjee** and Kajari Kargupta, *International Journal of Energy Research 38 (14) 2014 1889-1895.*
5. Analysis of drying and dilution in phosphoric acid fuel cell (PAFC) using galvanometric study and electrochemical impedance spectroscopy, Tanmoy Paul, Mrinal Seal, **Dipali Banerjee**, Saibal Ganguly, Kajari Kargupta, Pabitra Sandilya, *J. Fuel Cell Sci. Technol 11(4) (2014) 041001.*
6. Thermoelectric performance of electrodeposited nanostructured polyaniline doped with sulfo-salicylic acid, Krishanu Chatterjee, Mousumi Mitra, Saibal Ganguly, Kajari Kargupta and **Dipali Banerjee,** *Journal of Applied Polymer Science 131 (4) (2014) 39920*.
7. Thermal Cycling behavior of Alumina – Graphite brazed Joints in electron tube applications, Nandalal Dandapat, Sumana Ghosh, Kalyan S. Pal, Someswar Datta and **Bichitra K. Guha**, *Transactions of Nonferrous Metal Society of China, 24 (2014,)1666 – 73.*
8. Influence of growth conditions on microstructure and defects in diamond coatings grown by microwave plasma enhanced CVD, Kalyan Sundar Pal, Sandip Bysakh, Awadhesh Kumar Mallik, Nandalal Dandapat, Someswar Datta and **Bichitra K. Guha**, *Bulletin of Materials Science, vol. 38 (June, 2015), 1 – 8.*

9. High spin spectroscopy in 34Cl by **Abhijit Bisoi**, M. Saha Sarkar, **S. Sarkar** et. al., *Phys. Rev. C 89, 024303 (2014).*
10. Collective excitations in 33S by **Abhijit Bisoi**, M. Saha Sarkar, **S. Sarkar** et. al., *Phys. Rev. C 90, 024328 (2014).*
11. Understanding Nuclei in the upper sd-shell by M. Saha Sarkar, **Abhijit Bisoi, S. Ray**, R. Kshetri and S. Sarkar, *AIP Conf. Proc. 1609, 95 (2014).*
12. Study of isospin nonconservation in the framework of spectral distribution theory by Kamales Kar and **S. Sarkar**, *J. Phys. G: Nucl. Part. Phys. 42, 055110 (2015).*
13. 136Sn and three body forces by M. Saha Sarkar and **S. Sarkar**, to be published in *PRAMANA*
14. Navonil Bose, **Sampad Mukherjee**, **Mousumi Basu**, "Parabolic and Semi-parabolic Pulse Dynamics in Optical Fibers*", Optical Engineering (SPIE),54, 016108(2015).*
15. Silica Based Highly Nonlinear fibers to Generate Parabolic self-similar pulses, Debasruti Chowdhury, Dipankar Ghosh and **Mousumi Basu**, *Optical and Quantum Electronics,(Springer) DOI 10.1007/s11082-015-0144-z, March, 2015.*
16. Designing a highly nonlinear normally dispersive optical fiber for efficient parabolic pulse generation, Debasruti Chowdhury, Dipankar Ghosh and **Mousumi Basu**, *Journal of Physical Sciences, Vol. 18, pp – 19 – 22, 2014.*
17. Navonil Bose, G S Taki**, Mousumi Basu**, **Sampad Mukherjee** , "GeO2 nanorods: synthesis, structural and photoluminescence properties", *Materials Research Express (IOP Publishing,) 1., 045013 (2014).*
18. Mrinal Seal, **Sampad Mukherjee**, "Approach for Selection of a Synthesis Procedure of GeO2 Ultra-small Nano Particles and Its Characterization", *International Journal of Physics, 3, 133-138 (2015).*
19. Properties of the energy bands, Judd-Ofelt parameters and the fluorescence of Neodymium Chloride ($NdCl_3$) in Methanol, Iso-propanol and Butanol solvents, Subrata Mitra and **Samar Jana,** *Journal of Fluorescence (Springer), 25 (2015) 541–549.*
20. Intense orange emission in Pr^{3+} doped lead phosphate glass**,** Subrata Mitra and **Samar Jana,** *Journal of Physics and Chemistry of Solids, 85(2015)245–253.*
21. Suppression of fine-structure splitting and oscillator strength of sodium D-line in a Debye plasma: *PHYSICS OF PLASMAS 21, 013301 (2014)* (J. Basu & **D. Ray**)
22. Possibility of giant enhancement of low-frequency non-resonant Rayleigh scattering by atomic systems within dense plasmas: *PHYSICS OF PLASMAS 21, 032709 (2014)* (J. Basu & **D. Ray**)

23. Non-resonant elastic scattering of low-energy photons by atomic sodium confined in quantum plasmas: *PHYSICS OF PLASMAS 22, 032707 (2015)* (A. Ghosh & **D. Ray**)

24. Influence of dense quantum plasmas on fine-structure splitting of Lyman doublets of hydrogenic systems: *PHYSICS OF PLASMAS 22, 054503 (2015)* (M. De & **D. Ray**)

25. Avra Kundu, Sonali Das, **S. M. Hossain**, Swapan K. Datta, Hiranmay Saha, "Tapered Silicon Nanopillars for enhanced performance thin film solar cells", *Energy Procedia Volume 54, pp 389-399, 2014.*

26. Selective manhole methane sensing by Pd-modified nanostructured porous silicon, S. Pradhan, **S.M. Hossain**, J. Das, *IJMSET 1(6) (2014) 10-14 ISSN:2349-3755*

27. Neutral collective modes in spin-polarized fractional quantum Hall states at filling factors 1/3, 2/5, 3/7, and 4/9, **Dwipesh Majumder** and Sudhansu S. Mandal, *Phys. Rev. B 90, 155310 (2014)*

28. Shape coexistence in the near-spherical 142Sm nucleus by S. Rajbanshi**, Abhijt Bisoi** et. al*., Phys. Rev. C 89,014315 (2014).*

29. Characterisation of a Composite LEPS by Moumita Roy Basu, Sudatta Ray, **Abhijit Bisoi**, M. Saha Sarkar (accepted 2015, in *JINST)*.

30. Study of density-dependent swelling of ultrathin water soluble polymer films, **Mojammel H. Mondal** and M. Mukherjee, *J Polym Res 21, 343 (2014).*

31. Synthesis and characterization of Cu/Ag nanoparticle loaded mullitenanocomposite system: a potential candidate for antimicrobial and therapeutic application., SubrataKar, BiswajoyBagchi, BananiKundu, SumanBhandary, RumaBasu, PapiyaNandy, **Sukhen Das**, *BBA - General Subjects, 1840 (2014) 3264-3276*.

32. Synthesis and characterization of copper doped zinc oxide nanoparticles and its application in energy conversion., Poonam Bandyopadhyay, Anindita Dey, Ruma Basu, **Sukhen Das**, Papiya Nandy, *Current Applied Physics, 14 (2014) 1149-1155*.

33. Enhancement of β phase crystallization and dielectric behavior of kaolinite/halloysite modified poly(vinylidene fluoride) thin films., Pradip Thakur, Arpan Kool,BiswajoyBagchi, **Sukhen Das**, PapiyaNandy, *Applied Clay Science, 99 (2014) 149-159*.

34. Effect of vanadic anhydride and copper oxide on the development of hard porcelain composite and its antibacterial activity. Arpan Kool,Pradip Thakur, BiswajoyBagchi, UjjwalRajak, Tania Das, SubrataKar, GopalChakraborty, T.K. Mukhopadhyay, **Sukhen Das,** *Journal of Asian Ceramic Societies, 2 (2014) 297-304.*

35. Abrupt change in dielectric properties due to titanium and strontium incorporation in mullite by sol-gel method. Biplab Kumar Paul,KumareshHalder,Debasis Roy,BiswajoyBagchi,Alakananda Bhattacharya, **Sukhen Das,** *Journal of Advanced Ceramics, Date of acceptance: 7 July 2014*

36. In silico study of potential autoimmune threats from rotavirus infection., Tapati Sarkar, **Sukhen Das**, PapiyaNandy, Rahul Bhowmick, AsheshNandy., *Computational Biology and Chemistry, 51 (2014) 51-56.*

37. Dielectric switching above a critical frequency occurred in iron mullite composites used as an electronic substrate, Biplab Kumar Paul, Kumaresh Halder, Debasis Roy, Biswajoy Bagchi, Alakananda Bhattacharya, **Sukhen Das**, *J Mater Sci: Mater Electron, DOI 10.1007/s10854-014-2291-6, (2014)*

38. Effect of Hydroxyapatite nanrod on chikpea (Cicer arietinium) plant growth and its possible use as nano-fertilizer, Niranjan Bala, Anindita Dey, **Sukhen Das**, Ruma Basu and Papiya Nandy, *Iranian Journal of Plant Physiology, Vol(4), No (3).(2014)*

39. Copper Ion Doped Mullite Composite in Poly (vinylidene Fluoride) Matrix: Effect on Microstructure, Phase Behavior and Electrical Properties, Kumaresh Halder, Biplab Kumar Paul, Biswajoy Bagchi, Alakananda Bhattacharya and **Sukhen Das**, *Journal of Research Updates in Polymer Science, 2014, 3, 157-169*.

40. Role of Carbon nanotubes on load dependent micro hardness of SWCNT-lead silicate glass composite, S. Ghosh, A. Ghosh , T.kar , **S. Das**, P.K.Das, J.Mukherjee, R.Banerjee**,** *Ceramics International 40 (2014) 2953-2958*.

41. Near infrared flourescence an enhanced electrical conductivity of single walled carbon nanotube-lead silicate glass composite, Arnab Ghosh, Sujan Ghosh, **Sukhen Das**, Probal K. Das, Jonaki Mukherjee, Rajat Banerjee**,** *Journal of Non-Crystalline Solids 385 (2014) 129-135.*

42. Effect of Different Potencies of Nanomedicine Cuprum metallicum on Membrane Fluidity – a Biophysical Study., Ghosh S, Chakraborty M, **Das S**, Basu R, Nandy P, *American journal of homeopathic medicine(AJHM), 107, 161-169, 2014.*

43. In situ synthesis of environmentally benign montmorillonite supported composites of Au/Ag nanoparticles and their catalytic activity in the reduction of p-nitrophenol., Biswajoy Bagchi, Pradip Thakur, Arpan Kool, **Sukhen Das**, Papiya Nandy, *RSC advances, DOI: 10.1039/C4RA11108G.*

44. Valinomycin induced pore formation in thin lipid film and its effect on splay and bend elastic constant., Niranjan Bala, Pranab Kumar Das, Ruma Basu, **Sukhen Das**, Papiya Nandy, *Phase Transitions, Date of acceptance: 03/11/2014*.

45. Effect of zinc sulphide nanoparticles on germination of seeds of Vigna radiata and their subsequent aacceleration of growth in presence of the nanoparticles, Sutapa Ganguly, **Sukhen Das**, Sujata G. Dastidar, *European journal of Biomedical and Pharmaceutical Sciences,1(2),273-280, 2014*

46. High-K tungsten-mullite composite for electronic industrial application: synthesis and study of its microstructure, phase behaviour and electrical properties, Kumaresh Halder, Biplab Kumar Paul, Debasis Roy, Alakananda Bhattacharya, **Sukhen Das**, *J. Mater. Sci: Mater Electron, DOI: 10.1007/s10854-014-2521-y*

47. Characteristics of Influenza HA-NA Interdependence Determined Through a Graphical Technique.", Ashesh Nandy, Tapati Sarkar , Subhash C. Basak, Papiya Nandy and **Sukhen Das**., *Current Computer-Aided Drug Design, 10, 285-302, 2014*

48. "Effect of in situ synthesized Fe2O3 and Co3O4 nanoparticles on electroactive β phase crystallization and dielectric properties of poly(vinylidene fluoride) thin films", Pradip Thakur, Arpan Kool, Biswajoy Bagchi, **Sukhen Das**, Papiya Nandy., *Physical Chemistry Chemical Physics: DOI: 10.1039/c4cp04006f 17, 1368-1378. 2014.*

49. "Enhanced broadband microwave reflection loss of carbon nanotube ensheathed Ni-Zn-Co-ferrite magnetic nanoparticles", Debargha Sarkar, Alakananda Bhattacharya, Papiya Nandy, **Sukhen Das,** *Materials letter 120, 259-262, 2014*

50. "Effect of Functionalized Multiwalled carbon nanotubes on liposomal fluidity profile.", Subhajit Ghosh, Anindita Dey, Ruma Basu, **Sukhen Das**, Papiya Nandy, *American Scient5ific Publisher, vol.2, pp. 130-134, 2014.*

51. "Development of transition metal oxide–kaolin composite pigments for potential application in paint systems,", Swagata Roy, Subrata Kar, Biswajoy Bagchi, **Sukhen Das**, *Applied Clay Science, 107 (2015) 507-512.*

52. "A comparative study between electrical properties of bulk and synthesized nano material of zinc sulphide.", Sutapa Ganguly, Kumaresh Halder, Nur Amin Haque, **Sukhen Das**, Sujata G Dastidar, *American Journal of Research Communication, 3 (2015) 68-80.*

53. "Green Synthesis of zinc oxide nanoparticles using Hibiscus subdariffa leaf extract: effect of temperature on synthesis, anti-bacterial activity and anti-diabetic activity.", Niranjan Bala, S. Saha, M. Chakraborty, M. Maiti, **S. Das**, R. Basu and P. Nandy, *RSC Advances, 5 (2015) 4993-5003.*

54. "Marsilea Minutal Plant Extract Mediated Synthesis of Gold Nanopartocle for Catalytic and Antimicrobial Application.", Niranjan Bala, Arpan Kool, Praqdip Thakur, **Sukhen Das**, Papiya Nandy, Ruma Basu, *International Journal of Pharmacy, 5 (2) 600-609, (2015).*

55. "The Role of Cerium (III)/Yttrium (III) nitrate hexahydrate salt on electroactive β phase nucleation and dielectric properties of poly(vinylidene fluoride) thin films.", Pradip Thakur, Arpan Kool, Biswajoy Bagchi, Nur Amin Hoque, **Sukhen Das**, Papiya Nandy, *DIO: 10.1039/c5ra03524d., RAC Adv. 5, 28487- 28496, 2015.*

56. "Anorthite porcelain: Synthesis, phase and microstructure evolution." Mousumi Pal, **Sukhen Das**, Swapan Kumar Das, *Bull. Mater. Sci., Vol. 38, No. 2, pp 1-5, April 2015*.

57. "Development and Optimization of a Non-contact Optical Device for Online Monitoring of Jaundice in Human Subjects.", N. Polley, S. Saha, S. Singh, A. Adhikari, **S. Das**, B. Roy Choudhury and S. K. Pal, *J. Biomed. Optics, 20(6), 097001-1-6, 2015*.

58. "Safe & Symptomatic Medicinal Use of Surface Functionalized Mn3O4 Nanoparticles for Hyperbilirubinemia Treatment in Mice.", N. Polley, S. Saha, A. Adhikari, S. Banerjee, S. Darbar, **S. Das** and S. K. Pal, *Nanomedicine (2015)*.

59. "In situ synthesis of Ni(OH)2 nanobelts modified electroactive poly(vinylidene fluoride) thin films: Remarkable improvement in dielectric properties.", Pradip Thakur, Arpan Kool, Biswajoy Bagchi, Nur Amin Hoque, **Sukhen Das**, Papiya Nandy. *Physical Chemistry Chemical Physics: DOI: 10.1039/c5cp01207d; 17, 13082-13091, 2015*.

60. "Rapid single step green synthesis of copper oxide nanoparticle from vigna radiata using three salts and study its antimicrobial nature.", Monalisa Chakraborty, Anindita Dey, Niranjan Bala, **Sukhen Das**, Ruma Basu, Papiya Nandy, *Int J Pharm, (IJPNL), 5(1),93-97, 2015.*

61. "Invigoration and root growth enhancement of mung bean seed through pre-treatment with Allium Cepa 30C-an agrohomeo study.", Anindita Dey, Ruma Basu, **Sukhen Das**, Papiya Nandy, *Intern. Journal of Innovative Res. In sci. and Engineering (IJIRSE) ISSN (Online) 2347-3207, Vol 3,74-78, 2015*.

62. "Effect of Dilution on Thermovoltage generation using homeopathic nanomedicine Zincun oxydatum.", Poonam Bandyopadhyay, Papiya Nandy, Ruma Basu, Durga Sankar Dhar, **Sukhen Das**, *Intern. Journal of Innovative Res. In sci. and Engineering (IJIRSE) ISSN(Online) 2347-3207, Vol 3, Iss.6, 225-230, 2015*.

63. "Experimental Evaluation of Antimicrobial Potentiality of Chemically Synthesized ZnS Nanoparticles, Sutapa Ganguly, Bidisha Ghosh, **Sukhen Das**, Sujata G. Dastidar, *Journal of Chemical, Biological and Physical Sciences,MARCH-2015,5(2), ISSN-2249-1929*

64. "Microstructural and phase evolution in metakaolin geopolymers with different activators and added aluminosilicate fillers.", Madhuchhanda Sarkar , Kausik Dana , **Sukhen Das**, *Journal of Molecular Structure 1098, 110-118, 2015.*

Conference Proceedings

1. **"**Improved Photoluminescence Property of CTAB Assisted Polyaniline-AlZnO nanocomposite" Mousumi Mitra, Kajari Kargupta, Saibal Ganguly, Dipali Banerjee, DAE-SSPS 2014, 16th-20th December, 2014 (accepted for poster presentation).
2. "Low-dimensional novel nanocomposite of polyaniline-graphene and its sensing application." Mousumi Mitra, Krishanu Chatterjee, Kajari Kargupta, Saibal Ganguly and Dipali Banerjee. International Conference on Advancements in Polymeric Materials CIPET-Bhubaneswar, 14-16th February, 2014.
3. "Hydrogen storage material: Synthesis and characterization of graphene/PANI nanocomposite, Shubhanwita Saha, Ananta Kr Sarkar, Mousumi Mitra, Dipali Banerjee, Saibal Ganguly and Kajari Kargupta International Conference on Advancements in Polymeric Materials CIPET-Bhubaneswar, 14-16th February, 2014.
4. "Synthesis of nanostructures of polyaniline doped with inorganic dopant for sensing ammonia" Krishanu Chatterjee, Mousumi Mitra, Dipali Banerjee, Kajari Kargupta and Saibal Ganguly. International Conference on Advanced Materials and Energy Technology (ICAMET) IIEST, Shibpur Howrah, 17-19th December, 2014.

5. "Synthesis and Characterization of Electrocatalytically Active Graphene-Cobalt Nanocatalyst for Hydrogen Generation" Subhanwita Saha, Sabbir Ahmed, Saibal Ganguly, Dipali Banerjee and Kajari Kargupta International Conference on Advanced Materials and Energy Technology (ICAMET) IIEST, Shibpur Howrah, 17-19th December, 2014
6. Forbidden E1 transitions and isospin mixing in self-conjugate sd-shell nuclei by Abhijit Bisoi, S. Sarkar and M. Saha Sarkar, Proc. DAE-BRNS Symp. Nucl. Phys. (India) 59, 102 (2014).
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9. 4. Shape Evolution in 153Ho, Dibyadyuti Pramanik, S. Sarkar, Euroschool on Exotic Beams 2014 at Padova, Italy organized by University of Padova and INFN during September 7-13, 2014.
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11. Debasruti Chowdhury, Mousumi Basu and Dipankar Ghosh, "Deigning A Normally Dispersive Highly Nonlinear Optical Fiber for Efficient Parabolic Pulse Generation," ICCCM 2014, International Conference on Computing, Communication & Manufacturing, MCKV Institute of Engineering, Liluah, Howrah, West Bengal, 22nd - 23nd December, 2014.
12. Efficient Parabolic Similariton Generation by Highly Nonlinear Silica Based Dispersion Decreasing Fiber, Debasruti Chowdhury, Dipankar Ghosh and Mousumi Basu, Proc. of National Conference on Emerging Technology and Applied Sciences-2014 (NCETAS 2014), ISSN (Online): 2319-8753, ISSN (Print): 2347-6710, Paper No.: ID_16, Page No. 81-87, February 15-16, 2014.
13. Sanchayita.P. Nag, Sampad Mukherjee, "pH dependent study of structural and Optical properties of Fe_2O_3 nanocrystals",CMDAYS-14
14. Sonali Das, Avra Kundu, S. M. Hossain, Hiranmay Saha, Swapan K. Datta, "Effect of size on the scattering properties of silica nanoparticles", 2nd International Conference on Emerging Electronics (ICEE), IISc Banglaore, 2014.
15. "Superliner Photo Response in Colloids of Silicon Quantum Dots", Ujjwal Ghanta, Mallar Ray, Nil Ratan Bandyopadhyay, Syed Minhaz Hossain; National Conference on Emerging Technology & Applied Sciencies, 2014 (NCETAS 2014), February 15-16, 2014, Modern Institute of Engineering & Technology, Bandel, Hooghly, India.
16. International Journal of Innovative Research in Science, Engineering and Technology, Vol. 3, Special Issue 6, February 2014.2. "Irreversible Quenching of Photoluminescence from Silicon Quantum Dots in Low Magnetic Field", Ujjwal Ghanta, Mallar Ray, Nil Ratan Bandyopadhyay and Syed Minhaz Hossain; 12th International Conference on Fiber Optica and Photonics © OSA 2014 (Photonics-2014), Poster Sunday S5A.46, December 13-16, 2014, IIT, Kharagpur, India.
17. Effect of the clover geometry on the LINESHAPE analysis by S. Rajbanshi, Abhijit Bisoi et. al., Proc. DAE-BRNS Symp. Nucl. Phys. (India) 59, 72 (2014).
18. Forbidden E1 transitions and isospin mixing in self-conjugate sd-shell nuclei by Abhijit Bisoi, S Sarkar and M Saha Sarkar, Proc. DAE-BRNS Symp. Nucl. Phys. (India) 59, 102 (2014).

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23. Indication of long fission lifetime of 242Pu at EX=55 MeV by A. Ray, A. K. Sikdar, B. Dey, D. Pandit, S. Bhattacharya, A. De, S. Paul, Srijit Bhattacharya, Abhijit Bisoi, Proc. DAE-BRNS Symp. Nucl. Phys. (India) 59, 486 (2014).
24. Gamma Spectroscopy with a digital oscilloscope by Tuhin Malik, Krithika Raman, Rutuparna Rath, Rohan Biswas, Dibyadyuti Pramanik, Abhijit Bisoi, Shinjinee Dasgupta, Maitreyee Saha Sarkar, Proc. DAE-BRNS Symp. Nucl. Phys. (India) 59, 986 (2014).
25. Neutron Pulse-Shape Discrimination and Time -of - Flight Measurements with a Digital Oscilloscope by Uttiyoarnab Saha , Krithika Raman ,Rutuparna Rath, Tuhin Malik, Abhijit Bisoi, Maitreyee Saha Sarkar, Proc. DAE-BRNS Symp. Nucl. Phys. (India) 59, 986 (2014).
26. Unconventional Spin-Wave Excitations in Fractional Quantum Hall Ferromagnets, Dwipesh Majumder, Current Trends in Computational Physics, 17th May 2015. University of Gour Banga West Bengal, India

Book/Monograph written:

Patents / Invention Disclosure / Technology Transfer / Copyright

Seminar / Workshops / Conferences / Training programme organized by the department (2014 - 15)

1. Seminar of Journal club on 02.04.2014 on “Discovery Of A New Boson: The Quest Continues” by Prof. Manas Maity
2. Seminar of Journal club on 24.07. 2014 on "Non equilibrium statistical mechanics and nonlinear dynamics of many body systems" by Prof. Surajit Sen
3. Seminar of Journal club on 28.08.2014 on “Focusing on research in cross-disciplinary areas for clean water, green energy and affordable healthcare: A spectroscopic survey” by Prof. Samir Kumar Pal
4. One Day Symposium on the occasion of the 157th birthday of Acharya, J. C. Bose on “*Fifty years of LED*”, on 02.12.2014
   Speaker: Dr. A. J. Pal, IACS, Kolkata
   Title: *Fifty years of LED*
5. Seminar by Dr. Sudipta Kanungo, Post Doctoral Fellow, Max Planck Institute For Chemical Physics of Solids, Dresden, Germany on 28.01.2015
6. Seminar by Dr. Subroto Mukherjee, Professor, IPR, Gandhi Nagar, Gujrat on 05.02.2015
   Title: Environment Friendly Applications of Plasma - Developments at Institute for Plasma Research

7. One day seminar on 17.02.2015 at Physics department
   Speakers:
   I. Dr. D. Das, UGC-DAE CSR, Kolkata
      Title: Mossbauer spectroscopy: basic principles and applications in cross-disciplinary fields.
   II. Prof. D. Sahadev, Department of Physics, IIT, Kanpur
      Title: Resolving Aton in our Backyards: Indigenous Technology in a Globalized World.
      Title: Exotic Magnetic Oxides: Microscopic insights from ab-initio approach

Technology Developed / Innovations

Advancements under TEQIP – Phase II

Foreign visits and Invited Lectures

1. Energy Materials Nanotechnology (EMN) meeting on Polymer held on January 7-10, 2015 at Orlando, FL, USA
   Invited Talk : "Composite of conducting polymer with inorganic counterpart for thermoelectric applications" Dr. Dipali Banerjee
2. Nano structured Conducting Polymers: Thermoelectric Application, Dipali Banerjee. International Conference on Advancements in Polymeric Materials CIPET-Bhubaneswar 14-16th February, 2014. Dr. Dipali Banerjee
3. Delivered Invited Lecture at CKM Memorial workshop at SNBNCBS on 30th May, 2015. Dr. Syed Minhaz Hossain

Visitors to your Department (Indian & Foreign):

(*Included in the item number N.)*

Alumni Contribution to your Department

Training and Placement

Extension Activities and Societal outreach

1. Invited and participated as a resource person at the Physics Olympiad orientation cum selection camp held at SGTB Khalsa college Delhi during June 6 to 19, 2015. Dr. Syed Minhaz Hossain

New Academic / Research Initiatives

Academic Collaboration

1. UGC-DAE- Kolkata Centre, UGC DAE, Indore, M.P. India
2. TIFR, Mumbai

3. Institute for Plasma Research, Gandhinagar, Gujarat, India
4. RKM Vivekananda University, Belur
5. Jadavpur University, West Bengal
6. MCKV Institute of engineering, Liluah
7. Saha Institute for Nuclear Physics, West Bengal
8. Calcutta University
9. Ravenshaw University, Cuttak, Odisha, India
10. IIT, Kharagpur
11. University of Greifswald, Germany

Industrial Collaboration

Student's activity:

1. Dibyadyuity Pramanik (Supervisor: Prof. S. Sarkar) attended and presented her research work in the Euro School on Exotic beams. September 7-14, 2014, Padova, Italy.

Department of Students Activities

Department of Student Activity

A Brief History:

NITSER Act was passed in the Parliament on 4th March, 2014 thereby transforming Bengal Engineering and Science University, Shibpur to Indian Institute of Engineering Science and Technology, Shibpur, an Institute of National Importance and thus the nature of activity undertaken by the department facing more challenges due to size and nature of students being more cosmopolitan. A lot of students where admitted from outside the state whose messing and other requirements were different from that of the existing students. Although, the department has a rich tradition of providing proper hostel and fooding facility for the residents of the states but change in nature of students meant changes in food habits, culture and nature of boarders and the department had to adopt with it. The Proctorial Department as established in 1956 on the recommendation of the review committee of erstwhile Bengal Engineering College in 1953 had adequate experience and expertise to cope up with the changing objectives of the Institute which includes improving the personal qualities of students and taking care of discipline, welfare and extra-curricular activities of the students. The department which was later renamed as the department of Students Activities with the re-designation of the proctor in 1985 to Professor-in-charge of Students Activities. After becoming IIEST on March, 2014 the post of Professor in-Charge of Students Activities got abolished and Dean of Students Affairs directly looked after the administrative and other matters of the department i.e. the department now function under the direct supervision of Dean of Students.

Functions:

Broadly the department looks after the following specific works:

1. Supervise all matters relating to students welfare, discipline and extra-curricular activities including sports and games.
2. Exercise general supervision of all hostels and ensure proper running of the messes and observation of rules by the boarders.
3. Allotment of students to different Halls and Hostels in the respective academic sessions.
4. Exercise general supervision of the Athletic Club and activities of various sections of games and sports.
5. Any other duties as may be assigned by the Vice-Chancellor.

Halls & Messes:

At present the total student strength of this institute is about 4500. There are 17 Halls/Hostels including two for UG and PG girls' students and one exclusively for Girls Research Scholars. Each Halls /Hostels is under the direct supervision of a Warden selected from members of the faculty/officer. Hostels Messes are supervised by the respective mess committee.

Sports Board:- The University has a Sports Board and has got the facilities for almost all the Outdoor and Indoor games. There has been a MOU between IIEST Shibpur and CAB to maintain & develop Lords & Oval playgrounds as suitable for playing national level tournaments. CAB shall be providing coaches for all round development and improvement of skills of our students. The Institution has other sports events like Tennis, Volleyball, Badminton Court (Concrete), Basketball (hard court) and a well equipped gymnasium. The University also possesses an International Standard Swimming Pool for usage of all the communities attached with university system. The University recently developed a recreational centre (R.N.Mukherjee Students Amenity Centre) for the students and also a Yogic practice arena for the students, financially supported by two illustrious alumnus of this institution.

Academic Programme:

Additional Elective PT/NCC/NSS in Undergraduate level. Total yearly intake in BE/Integrated M.Tech programme.

Faculty & Officer Profile:

Name	Designation	Highest Qualification	Specialization/Research Area	Contact No. e-mail
Dr .Netai Chandra Dey	Dean of Students	Ph.D	Mining Engg.	9433524339
Sri A.K.Mitra	Asst. proctor (Senior Scale)	M.Phil		9830519575
Dr. Zia-Ul-Alam	P.I (Senior Scale)	Ph.D	Social aspects of Physical Education and Sports	9433128404
Shir Sandip Chattopadhyay	P.I (Senior Scale) ANO (NCC)	M.P.Ed		9432835933

Other Staff members :

1. Shri Chinmoy Sana, Sr. Stenographer
2. Smt. Ruma Naskar, Jr. Suptd.
3. Shri Satyajit Barua, Jr. Suptd.
4. Shri Mahadev Biswas, Jr. Suptd
5. Smt. Suchita Khakha, Jr. Asst.
6. Shri Tinku Das, Jr. Mali
7. Miss Rita Ghosh,
8. Shri Gouranga Chaudhury
9. Shri Pintu Das
10. Shri Buddhadev Samanta
11. Shir Dilip Kr. Bug
12. Shir Raj Kumar Dhali

Alumni Contribution to the Department:

In recent past, the **GAABESU** contributed a lot in developing the sporting facilities in the department. They initiated suitable steps for renovation of the University Swimming Pool as National Standard as well as the University Gymnasium with latest equipments and apparatus.

Sports Training:
The physical instructors are really interested to develop a sporting culture among the students (both boys and girls) for their future endeavor. The scientific training procedure for development of sports performances of the students in different sporting events are being initiated for last 10 years or so. The natural talents of the students are being nurtured by the expertise sports science instructors. The instructors are also given opportunities to grab the latest knowledge in sports and allied exercise sciences for the development of the students.

National Service Scheme:
The University also initiated the extension programme like NSS among the students to develop their social character by helping the poorest of the poor citizens of the locality. Students of this Institute teach them with great care and attention. They are encouraged to attend the learning programmes regularly. Exercise books, copies, pen, pencil, erasers are distributed on "No charge basis". Students are encouraged to attend programmes of NSS. Local people have been considerably motivated by this approach of the scheme .By extending their hands to educate the people of the

slum areas of the society in the form of various awareness programmes (like use of clean water, aids awareness including free medical assistance.
Recently, the NSS unit organized a garment distribution programme and also organized a Voluntary Blood Donation camp in the University campus.

Games and Sports Activities for the session 2014-15.

A. INTRA INSTITUTIONAL COMPETITIONS:

	Nature of Activity	Organizer	Date
1.	Inter Department Football (M) 2014. Knock-out Tournament for 1st Semester Boys.	IIEST	August – September
2.	Inter Year Cricket(M) Tournament	IIEST	November – December 2014.
3.	Inter Hostel TT (M) Tournament	IIEST	January - 2015.
4.	Inter Year Football (M) Tournament	IIEST	March - 2015.
5.	Inter Department Football (M) Tournament	IIESTS	March - 2015.
6.	Inter Hostel Volleyball (M) Tournament	IIESTS	March - 2015
7.	Annual Athletic Meet	IIESTS	14th February 2014.

EXTRA INSTITUTIONAL COMPETITIONS:

East Zone Inter University participation status in different sporting events;

1. East Zone Inter University Football (M) Tournament: 2014-15.

   Organized by: West Bengal State University, Barasat, 24 Pgs (N), WB.
   Date: 03.10.2014- 07.10.2014

2. East Zone Inter University TT (M) Tournament: 2014-15

   Organized by: Calcutta University.
   Date: 10.02.2015 – 12.02.2015

East Zone Inter College/Inter Technical Institute Competitions:

1. **Sports Fest: PARAKRAM: 2015**
   ISM, Dhanbad
   Date: 05.02.2014-08.02.2014
2. **Chetan Devraj Memorial East Zone Inter Technical Institute/College Cricket Tournament:**
   Organized by : BIT, Mesra, Ranchi.
   Date: 23.01. 2015- 26.01.2015

School of
Community Science and Technology

About the School

Bengal Engineering & Science University, Shibpur has a fairly long tradition of rendering community service in a modest manner besides conducting academic programme. Community service rendered by the faculty members consists of formulation and implementation of specific programme of technology innovation and technology transfer to the Rural Sector. In response to the demand for proper co-ordination and integration of such activities of the faculty at University level, School of Community Science & Technology (SOCSAT) was created in 2004 at University for facilitating the development and growth of the unorganized sector in our country.

The objective of the school is to foster sustainable development of different marginalized communities by empowering stakeholders with inputs from institutionalized Science & Technology Community.

The school since then made significant progress in the frontier areas of basic and applied research in juxtaposition with various training programmes that are congruous with the objectives of the school. In this respect various science awareness programmes, several training programme on Advanced Pottery, Metal Art, Batik, Jute diversification including Advance Food Processing & Preservation Technology were organized by this school. The objectives of these programmes are to impart training to the marginalized people especially women Self-Help Groups of Howrah district in order to promote technology and create entrepreneurship. The training on food processing will improve the technical skills and knowledge in the processing of fruits and vegetables to the women of the rural areas and to take up income generating activities. As a result, two SHGs named Suktara and Prayas comprising those women were formed in Howrah District with the initiative of this School.
In this backdrop, the Academic Council of the University approved a four semester M.Sc. Course on **"Food Processing& Nutrition Science"** which had been started from the **Academic session (2007-2008).** Around 100 students obtained MSc degree from this University under this course and placed in the Food Processing industries, R&D organization in food sectors, Academic institutes involved in R&D activities including PhD programmes and the Food analysis laboratories.

Besides above **Government of India's Corporate Social Responsibility(CSR) scheme,** The Garden Reach Shipbuilders & Engineers Limited (GRSE),Kolkata, a Govt. of India undertaking under the Ministry of Defence, entrusted SOCSAT with a CSR project to impart "Skill development/Vocational Training to the unemployed youth around the locality in Metiabruz, Kolkata" where the GRSE plant is situated. The objective of the proposed

programme is to appropriately train the unemployed youth for their employment in appropriate trade and /or to enable them to start entrepreneurship.

Academic Programmes

Undergraduate Level: N.A

Postgraduate Level

i) Degree Offered**: Master of Science in Food Processing and Nutrition Science.**
ii) Sanctioned Students' intake: **27 nos. students per year**
iii) Additional intake through other programmes **N.A**
iv) Specialization in **(a) Microbial Enzyme Technology (b) Nutritional Biochemistry**

Doctoral & Post Doctoral Research Programme

Degree Offered**: Ph.D Science**
No of candidates enrolled**: 27** Registered**: 15** Awarded**: 0** Submitted**: 1**
Post Doctoral Research Programme: Dr. Avery Sengupta, Post Doctoral fellow of UGC-Dr. D.S. Kothari PDF, under Prof. D. K. Bhattacharyya.

Faculty position:

Sanction faculty post N.A **Vacant post N.A**

(a) Faculty profile (In the following table)

Name	Designation	Highest Qualification	Specialization/Research Area	Contact no E-mail
Prof.S.K.Mukherjea	Professor & Director	PhD	Computational Fluid Dynamics	9831209985 mksujay@gmail.com
Prof.D.K.Bhattacharyya	Adjunct Professor	PhD (Science)	Oil Technology	9231586943 Dkb_olitech@yahoo.co.in
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

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 Non- Dairy products of superior Nutritional Quality at significantly reduced cost.
- Technology development particularly microbial fermentation process for making value- added products from waste fruits and vegetables for food applications.
- Microbial oils for functional Food and Neutraceuticals from Micro organisms screened and isolated from soils mainly.
- Colour from soil microbes for food uses and microbial enzymes such as Lactase, Lipases etc. for food industries.
- Shelf life both oxidative and microbial of non- dairy food products and food products in general.
- Production and application of bioactive peptides from natural and microbial sources for food use.
- Development of biotechnological processes for the production of bioflavour.

Research facilities:

Name of Equipment	**Few words**	**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. Micro scopic 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.	
Lyaophiliser	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**.	

Name of laboratories:

1. Food Processing Lab.
2. Food Preservation Lab.
3. Microbiology Lab.
4. Unit Operation Lab.
5. Chemical Analysis Lab.
6. Student Computer Lab.

Sponsored Research (during 2013-2014):

Sl. No.	Title of Research Project	Sponsoring Agency	Year of Start and duration
01.	Development of technology to make low cost nutritionally effective 'ready to eat' protein rich human food from oil seeds or deoiled edible seed cakes (seed meals) by co-extrusion with cereals. **Value: 10.70 lakhs.**	Ministry of Consumer Affairs, Food & Public Distribution, Government of India	January 2012, 3 years
02.	Study on production of Single Cell Protein for food and feed application from waste fruits, UGC. **Value: 2.00**	UGC	2013 2 years
03.	Creation of infrastructural facilities for running degree course in food processing technology" **Value:74.75 lakhs**	MOFPI	2013-2015

Industry-Institute Interaction

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 Defense.

Value: 52.00 lakhs

Details of publications of each faculty member (2014-2015)

Dr. Minakshi Ghosh

(Journal)

Sl. No.	Title of Research paper	Title of the Journal	Year	Vol./ issue No	Page Nos.
01.	Technology Development for Producing Bitter and Flavor Free Mustard Spreads	Journal of International Academic Research for Multidisciplinary	2014	volume 2, issue 6	250-263
02.	Information Systems & Networks (ISN): Emphasizing Agricultural Information Networks with a case Study of AGRIS"	Scholars Journal of Agriculture and Veterinary Sciences	2014	Vol. 01 No. 01	38-41
03	Information Science: The Multidisciplinary, Interdisciplinary field for Information cum Technological Solution for People and Wider Community.	International Journal of Information Science and Computing.	2014	vol.1, issue-1	25-29

Conference

1. "Isopropanol Fractionation of Coconut oil and Use of Its Olein and Stearin Fractions in Margarine Formulation" by Sanjukta Kar*, Minakshi Ghosh, D.K.Bhattacharyya in 69th Annual Convention of Oil Technologist's Association of India, held at Hotel Radisson Blue, Agra, Nov,14-16, 2014.
2. "Production of Co-Extruded products for food uses from De-oiled Tamarind seeds Kernel Flour and edible soy flour" by Priyadarshini Chakraborty, Minakshi Ghosh, N.R. Bandyopadhyay, D.K. Bhattacharyya *On "69 Th Annual Convention & International Conference On Sustainable Technologies And Futuristic Trends:Oilseeds-Oils Processing Surfactants & Expo* Nov,14-16, *2014*
3. "Stability characteristics of some nutritionally important spreads and mayonnaise" by Sanjukta Kar*, Minakshi Ghosh in International Conference on 3S-Safety, Security and Sustainability: Innovations in Food and Bioprocess Industries, at FTBE, Jadavpur University, Kolkata, Feb, 27-28,2015.
4. "Development of processes for upgrading the quality of mustard protein concentrate & mustard protein isolate for food use" by Priyadarshini Chakraborty*, N.R.Bandyopadhyay, D.K. Bhattacharyya, Minakshi Ghosh on *INTERNATIONAL CONFERENCE ON 3 S Safety, Security and Sustainability: Innovations in Food and Bioprocess Industries. Organised by Dept of Food Technology and Biochemical Engineering Jadavpur University February 27-28, 2015*

Details of publications of each faculty member (2014-2015) Dr. Jayati Bhowal

(Journal)

Sl. No.	Title of Research paper	Title of the Journal	Year	Vol./ issue No	Page Nos.
01.	Isolation, Identification and Analysis of Probiotic Properties of Lactobacillus Spp. from Selected Regional Dairy Product	Int. J. Curr. Microbiol. App. Sci	2015		
02.	Study on Enzymatic Hydrolysis of Sal Shorearobusta Starch to Dextrin	Annals of Biological Research, 2015	2015		
03	Identification and Characterization of Extracellular Red Pigment Producing Bacteria Isolated from Soil.	*Int. J. Curr. Microbiol. App. Sci* .	2014	3(9)	169-176
04	Production and evaluation of yogurt with watermelon (*Citrullus lanatus*) juice.	*Journal of International Academic Research for Multidisciplinary*,	2014	2(5)	249-257

Conference

1. Study on effect of enzymatic *saccharification* of cauliflower (*Brassica oleraceae*var) waste, Sayari Majumdar, Jayati Bhowal, International; Conference on 3S: Sefety, Security and Sustaiinability: 2014, Department of Food Technology and Biochemical Engineering, Jadavpur University, Kolkata, 700 032, February 27-29, 2015.

1. Effects of nano protein on properties of non-dairy yogurt" Samadrita Sengupta and Jayati Bhowal, International; Conference on 3S: Sefety, Security and Sustaiinability: 2014, Department of Food Technology and Biochemical Engineering, Jadavpur University, Kolkata, 700 032, February 27-29, 2015.

Details of publications of each faculty member (2014-2015)

Prof. D. K. Bhattacharya

(Journal)

Sl. No.	Title of Research paper	Title of the Journal	Year	Vol./ issue No	Page Nos.
01	Study on Enzymatic Hydrolysis of Sal Shorearobusta Starch to Dextrin	Annals of Biological Research, 2015	2015		
02	Technology Development for Producing Bitter and Flavor Free Mustard Spreads	Journal of International Academic Research for Multidisciplinary	2014	Vol 2, Issue 6,	
03	In vitro antioxidant assay of medium chain fatty acid rich rice bran oil in comparison to native rice bran oil	Journal of Food Science and Technology	2014	-	1-8
04	Antioxidative Effect of Rice Bran Oil and Medium Chain Fatty Acid Rich Rice Bran Oil in Arsenite Induced Oxidative Stress in Rats	Journal of Oleo Science	2014	**63 (11)**	1-8

Conference

Presentation

1. "Isopropanol Fractionation of Coconut oil and Use of Its Olein and Stearin Fractions in Margarine Formulation" by Sanjukta Kar*, Minakshi Ghosh, D.K.Bhattacharyya in 69th Annual Convention of Oil Technologist's Association of India, held at Hotel Radisson Blue, Agra, Nov,14-16, 2014.
2. "Production of Co-Extruded products for food uses from De-oiled Tamarind seeds Kernel Flour and edible soy flour" by Priyadarshini Chakraborty, Minakshi Ghosh, N.R. Bandyopadhyay, D.K. Bhattacharyya *On "69 Th Annual Convention & International Conference On Sustainable Technologies And Futuristic Trends:Oilseeds-Oils Processing Surfactants & Expo* Nov,14-16, *2014*

3. "Development of processes for upgrading the quality of mustard protein concentrate & mustard protein isolate for food use" by Priyadarshini Chakrabort[y*], N.R.Bandyopadhyay, D.K. Bhattacharyya, Minakshi Ghosh on *INTERNATIONAL CONFERENCE ON 3 S Safety, Security and Sustainability: Innovations in Food and Bioprocess Industries. Organised by Dept of Food Technology and Biochemical Engineering Jadavpur University February 27-28, 2015*

Books/Monograms

Seminar/Workshops/Conferences/Training programme organized by the Department (2014-2015)

- 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 Defence from December 22, 2014.

Technology Developed/Innovations.

- Technology of production of functional food products such as non dairy yogurts, soy and other peanut butter like spread products of superior quality.
- Twin Screw Extrusion Technology
- Microbial fermentation process for making value- added products from waste fruits and vegetables for food applications

Training and Placement

Placement of the Trainees after completion of the "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".

Food and Beverage Services(KFC,Dominos,Catering service,), Media Entertainment (Television,Photography,Videography in various ceremony),Automobile (Garage, personal work),Plumbing (Various new multiplex), Carpentry (Interior)

U. Extension Activities and Social outreach

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.

New Academic /Research Initiatives

Industrial Collaboration:

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)

Sharing MOU Document

Director, IIEST delivering lecture on MOU signing Day

School of Ecology, Infrastructure and Human Settlement Management

About the School:

Environment and ecology of the globe in the era of globalization and rapid urbanization are subjected to unprecedented stress. The resource destructive development practices compel the human settlements growing beyond the thresholds of sustainability. To address the environmental and ecological challenges confronting the developmental process today, formation of a multidisciplinary research group for adopting alternative approaches for planning and management of human settlements and infrastructure development was felt necessary in this 150 year old University with diversified human resource pool. The **School of Ecology, Infrastructure and Human Settlement Management** came into existence to conduct interdisciplinary and cutting edge research, post graduate studies and extend technical support services on issues having the critical interface of ecology, human settlements and infrastructure development.

Thrust Areas for Research, Consultancy and Training:

- Spatial and Environmental Planning
- Community-Based Natural Resource Management
- Infrastructure and Utilities Planning
- Carrying Capacity Assessment for Urban Settlements
- Human Settlement Planning for Ecologically Fragile Areas
- Environmental Risk Mitigation for Low-Income Settlements
- Historic Architecture and Principles of Sustainability
- Vernacular Architecture and Sustainability
- Planning for Heritage Conservation
- Climate Change and Human Settlements
- Rehabilitative Planning for Climate Refugees
- Natural Resource Extraction and Livelihood Sustainability of Local Communities
- Green Building Techniques
- Institutional Reform and Capacity Building for Urban, Rural and Natural Resource Governance

Academic Programme:

Degree Offered: **PhD in Engineering**

Number of candidates enrolled/registered: **10**

Faculty profile:

Name	Designation	Highest Qualification	Specialisation/ Research Area	Contact No. E-mail
Sudip K Roy	Director	Ph.D.	Traffic & Transportation Planning and Engineering Infrastructure Planning	royksudip@gmail.com 9830233172
Souvanic Roy	Professor	Ph.D.	Environmental Planning, Urban Planning, Natural Resource Management	souvanic_roy@yahoo.co.in 9836093392
Manas Sanyal	Professor	Ph.D.	Spatial and Environmental Planning	Sanyal_manas@yahoo.co.in 9831352950
Suranjan Sinha	Professor	Ph.D.	EMP and SIA in Mining Areas and Natural Resource Economics	Suranjan1980@gmail.com 9433401631
Subrata Pal	Assistant Professor	Ph.D.	Transportation Planning	subrata2412@gmail.com 9831017508
Soumen Mitra	Assistant Professor	Master of Town and Regional Planning	Environmental Planning and GIS Applications	mitrasmen@yahoo.co.in 9831443101

Research Projects:

a. Ongoing

Sl. No.	Title	Name of P.I.		Sanctioned Amount	University Overhead
1	Development of Public Transport System Planning Method for Incremental Growth of Small and Medium Cities of Eastern and North-Eastern States	Dr. Sudip Kumar Roy	Department of Science and Technology, Government of India	₹ 67,32,400.00	₹ 5,00,000.00
2	Development of a Decision Support System for Planning of Capital Intensive Transportation Links (Bridges and Tunnels) in the North-East Region Based on Utility and Network Robustness Criteria.	Dr. Subrata Kumar Paul	Department of Science and Technology, Government of India	₹ 40,92,400.00	₹ 1,50,000.00
3	Euro-Indian Urbansim in India	Dr. Souvanic Roy	National Musoeum of Denmark	₹ 6,27,400.00	₹ 57,000.00

Completed (during last two years)

- Ecosystem Management and Role of Local Communities: Comparative Study of Canadian and Indian Perspective sponsored by Shastri Indo Canadian Institute
- Development of Decision Support System for Urban Planning in Darjeeling Hills, West Bengal sponsored by AICTE
- Development of Mine Closure Strategy for Sustainable Surface Coal Mining in West Bengal sponsored by MOEF, Govt. of India
- Collaborative Research Project on "Implementing Sustainable Behaviour through Sediment Husbandry in West Bengal Sunderbans – Jointly with Queen's University Belfast, UK
- Design and Development of Green Building to Accommodate Guest House and Ancillary Infrastructure at New Digha sponsored by Students Health Home, Kolkata

Research facilities:

Instruments for physical and chemical analysis of water- Portable water analysis kit, soil analysis kit, sound level meter, PH meter, DO meter, Nephelo meter, TSS meter
Weather Sensors like Temperature, Humidity, Solar Radiation, Air Velocity and Direction, Rainfall Sensor, Data Logger and Data Acquisition System
Digital Thermo- Hygrometer, Digital Thermo- Anemometer, Sound Level Meter, Digital Lux Meter
Building and Settlement Level Energy Simulation Software
Statistical analysis software, ARGUS(Ground Water Modeling), ARMOD (Air Pollution Modeling), Map Source (GPS Software)

Conference Publications:

Roy, A., Paul, K.S., Roy, K. S., 2014. A Study of Settlement Hierarchy & Road Connectivity Parity: Case studies from Cities in Seven Sister States of India, 36th Indian Geography Congress, Jaipur, Rajasthan, 17/19 November 2014, India, NAGI.

Purabi Das School of Information Technology

Contents :

About the Department

The **Purabi Das School of Information Technology (PDSIT)** is established at Bengal Engineering and Science University, Shibpur (BESUS). The School is a collaborative effort of BECDU, Purabi Das Foundation (USA), Research Engineers Inc. (USA) and CMC Ltd. The School has been established with an aim to provide best quality teaching and training in the field of IT. The mandate before PDSIT is to establish itself as a leading centre of excellence. The other essential prerequisite is that - PDSIT should be financially self-supporting from the day one with no burden on the University or Government budget. In close collaboration with IT industries, PDSIT offers postgraduate degree courses.

Academic Programmes
Undergraduate Level

PDSIT do not conduct Undergraduate Course

Postgraduate Level

M. Tech in Information Technology The M.Tech program is a three-year, 6 semester Evening Course. The student has to take a set of core courses and a set of electives. The course work is spread across the first to fourth semesters with an option of taking one elective in the fifth semester. This is followed by a project in the fifth and sixth semester in which the student can take up a project of his or her interest, supervised by a faculty member.

Student's intake

	U.G	P.G	Ph.D
Sanctioned students' intake	Nil	36	Awarded - 2 Registered - 3
Additional intake through lateral entry/ QIP	Nil	-	

Doctoral Level

PhD in Information Technology: The PhD. programs are postgraduate research oriented programs. The scholar works in an area of his/her interest under the supervision of a faculty member. The scholar has to obtain a minimum number of credits by taking courses. The highlight of the program is the independent research work taken by a scholar, leading to a dissertation at the end of the program. The average duration of a PhD. program is between four to five years.

Ph. D Activities

PhD. Awarded during 2014 - 2015 session: 1(one)

PhD. Registered

1. Soumyabrata Ghosh, Thesis topic: "Theory and Application of Cellular Automata for Biological Sequence Analysis."

2. **Sandip Banerjee, Thesis topic: " Studies in Geometric Algorithms for Layout Design and Visualization"**
3. **Soumik Nag, Thesis topic:**

Faculty Position:
Sanctioned Faculty Post 2 Vacant Post

Faculty Profile (in the following table)

Faculty Name	Designation	Highest Qualification	Specialization/ Research Area	Contact No. / Mail Id
Dr.Arindam Biswas	**Director**	Ph.D	○ Digital Geometry ○ Image Processing and Pattern Recognition	abiswas@it.becs.ac.in barindam@gmail.com
Prof. Sekhar Mandal	**Associate Professor**	**Ph. D**	○ Image Processing and Pattern Recognition, Database Management Systems	sekhar@cs.becs.ac.in
Prof. Suryasarathi Barat	**Professor (Visiting Faculty)**	M.Sc. M.Tech	○ Data Base Management System,RFID & System Biology	Sbarat@hotmail.com
Dr. Prasun Ghosal	**Assistant Professor**	Ph.D	○ 3D Integration of VLSI Physical Design ○ Network-On-Chip ○ Design of Embedded Systems	p_ghosal@it.becs.ac.in
Prof. Indrajit Banerjee	**Assistant Professor**	M.Tech	○ Wireless ad-hoc Sensor	ibanerjee@it.becs.ac.in
Dr. Chandan Giri	**Assistant Professor**	**Ph.D**	○ VLSI digital Circuit Testing ○ System-On-Chip Testing ○ Network-On-Chip Testing	chandangiri@gmail.com
Mr. Pranab Roy	**Assistant Professor**	**M.Tech**	○ VLSI Physical Design (Bio-cheap)	Ronmarrine14@yahoo.co.in

Dr. Asit Kumar Das	**Assistant Professor**	**Ph.D**	○ Data mining and Pattern Recognition	akdas@cs.becs.in
Prof. Apurba Sarkar	**Assistant Professor**	**M.Tech**	○ Digital Geometry	sarkar@cs.becs.ac.in , sarkarapurba@yahoo.co.in
Dr. Dipak Kumar Kole	**Assistant Professor (Visiting Faculty)**	**Ph.D**	○ Synthesis and Testing of Reversible Logic Circuits	dipak.kole@gmail.com

Research area

Digital Geometry, Medical Image Analysis, Sensor Netoworks

International Journal

1. P Chanak, I Banerjee, "Energy efficient fault-tolerant multipath routing scheme for wireless sensor networks", Elsevier, The Journal of China Universities of Posts and Telecommunications 20 (6), 42-61.
2. Prasenjit Chanak, Hafijur Rahaman, Tuhina Samanta, Indrajit Banerjee "FTMRS: Fault Tolerance Routing Scheme for Wireless Sensor Network", International Journal of Wireless & Mobile Networks, Vol. 5, No. 2, April 2013
3. N. Karmakar, A. Biswas, P. Bhowmick, and B. B. Bhattacharya, A Combinatorial Algorithm to Construct 3D Isothetic Covers, International Journal of Computer Mathematics, 2012 (accepted), DOI:10.1080/00207160.2012.734813.
4. M. Dutt, A. Biswas, and P. Bhowmick, Approximate Partitioning of 2D Objects into Orthogonally Convex Components, Computer Vision and Image Understanding, Vol. 117(4), pp. 326 - 341, 2013, DOI: 10.1016/j.cviu.2012.08.017.
5. A. Biswas, P. Bhowmick, M. Sarkar, and B. B. Bhattacharya, A Linear-time Combinatorial Algorithm to Find the Orthogonal Hull of an Object on the Digital Plane, *Information Sciences*, Elsevier, 2012, DOI: 10.1016/j.ins.2012.05.029.
6. P. Bhowmick, A. Biswas, and B. B. Bhattacharya, On the Representation of a Digital Contour with an Unordered Point Set for Visual Perception, *Journal of Visual Communication and Image Representation*, Vol. 22(7), pp. 590 – 605, 2011, DOI: 10.1016/j.jvcir.2011.07.005.
7. S. Chatterjee, R. Karim, A. Biswas , A. K. Ray, Image Processing of Ultrasound Color Doppler to Characterize Malignant Breast Lesion, *Advanced Materials Research Journal (AMR*), Vol. 403 – 408, pp. 830 – 834, 2011, DOI: 10.4028/www.scientific.net/AMR.403-408.830, ISSN:1022-6680.
8. S. Chatterjee, A. K. Ray, R. Karim, and A. Biswas, Architectural Design to Characterize Malignant Breast Lesion, *International Journal of Computer Applications*, Vol. 31(11), pp. 8-15, 2011, DOI: 10.5120/3939-5529, ISBN: 978-93-80865-13-7.
9. M. Dutt, A. Sarkar, A. Biswas, P. Bhowmick, and B.B. Bhattacharya, Efficient Word Segmentation and Baseline Localization in Handwritten Documents Using Isothetic Covers, *International Journal of Digital Library Systems*, Vol. 2(3), pp. 1 – 13, 2011, DOI: 10.4018/jdls.2011070101.

10. M. Dutt, A. Biswas, P. Bhowmick, and B.B. Bhattacharya, On Finding an Orthogonal Convex Skull of a Digital Object, *International Journal of Imaging Systems and Technology*, Vol. 21(1), pp. 14 – 27, 2011, DOI: 10.1002/ima.20266.
11. A. Biswas, P. Bhowmick, and B. B. Bhattacharya, Construction of Isothetic Covers of a Digital Object: A Combinatorial Approach, *Journal of Visual Communication and Image Representation*, Vol. 21(4), pp. 295 – 310, 2010, DOI: 10.1016/j.jvcir.2010.02.001.
12. S. Pal, P. Bhowmick, A. Biswas, and B.B. Bhattacharya, Understanding Digital Documents Using Gestalt Properties of Isothetic Components, *International Journal of Digital Library Systems*, Vol. 1(3), pages 1 – 25, 2010, DOI: 10.4018/jdls.2010070101
13. A. Biswas, P. Bhowmick, and B. B. Bhattacharya, Archival Image Indexing with Connectivity Features using Randomized Masks, *Applied Soft Computing*, Vol. 8(4), pages 1625 – 1636, September 2008, DOI:10.1016/j.asoc.2007.05.020.
14. A. Biswas, P. Bhowmick, and B. B. Bhattacharya, Shape Codes and Their Applications to Image Retrieval, *Electronic Letters on Computer Vision and Image Analysis (ELCVIA)*, Vol. 7(2), pp. 62 – 75, 2008.
15. P. Bhowmick, A. Biswas, and B. B. Bhattacharya, Thinning-free Polygonal Approximation of Thick Digital Curves Using Cellular Envelope, *Electronic Letters on Computer Vision and Image Analysis(ELCVIA)*, Vol. 7(2), pp. 76 – 95, 2008.

16. Prasenjit Chanak, Hafijur Rahaman, Tuhina Samanta, Indrajit Banerjee "FTMRS: Fault Tolerance Routing Scheme for Wireless Sensor Network", International Journal of Wireless & Mobile Networks, Vol. 5, No. 2, April 2013.

17. Indrajit Banerjee, Anirban Datta, Sonalisa Pal, Soujanya Chatterjee, Tuhina Samanta, "A Novel Fault Detection and Replacement Scheme in WSN", Second International Symposium on Intelligent Informatics (ISI'13), 23-24, August 2013.

18. Supantha Das, Indrajit Banerjee, and Tuhina Samanta, "Sensor Localization and Obstacle Boundary Detection Algorithm in WSN", Third International Conference on Advances in Computing and Communications (ACC-2013), 29-31 August 2013.

19. Indrajit Banerjee, Prasenjit Chanak, Tuhina Samanta, Hafijur Rahaman "EFDR: Effective Fault Detection and Routing Scheme for Wireless Sensor Network", International Journal of Computers & Electrical Engineering, Elsevier (Accepted), 2013.

20. Prasenjit Chanak, Tuhina Samanta, Indrajit Banerjee, "Quad Tree Approach for Obstacle Discovery and Tracking in Wireless Sensor Networks", IEEE SENSOR 2013, Baltimore, USA, 3-6 November 2013.

21. Ritwik Mukherjee, Hafizur Rahaman, Indrajit Banerjee, Tuhina Samanta, and Parthasarathi Dasgupta, " A Heuristic Method for Co-optimization of Pin Assignment and Droplet Routing in Digital Microfluidic Biochip" Accepted for appearing in Proceedings of International Conference on VLSI Design (VLSID 2012), to be held at Hyderabad, January 2012

22. Srimanta Halder, Monomita Mazumdar, Prasenjit Chanak, Indrajit Banerjee, "FTLBS: Fault Tolerant Load Balancing Scheme in Wireless Sensor Network"

Advances in Computing and Information Technology, Advances in Intelligent Systems and Computing, Springer,

23. Monomita Mazumdar, Srimanta Halder, Prasenjit Chanak, Indrajit Banerjee, "DARIH: Distributed Adaptive Routing via Information Highway in Sensor Network", Advances in Computing and Information Technology, Advances in Intelligent Systems and Computing, Springer,

24. Indrajit Banerjee, Prasenjit Chanak, Hafizur Rahaman, and Nachiketa Das, "GBFTS: Group Based Fault Tolerant Scheme in Wireless Sensor Networks,"

25. Nachiketa Das, Hafizur Rahaman and Indrajit Banerjee "BIST to Diagnosis Delay Fault in the LUT of Cluster Based FPGA", International Journal of Information and Electronics Engineering, Vol. 2, No. 2, March 2012.

26. Prasenjit Chanak, Indrajit Banerjee, Tuhina Samanta, Hafijur Rahaman, "FFMS: Fuzzy Based Fault Management Scheme in Wireless Sensor Network", Eco-friendly Computing and Communication Systems, Communications in Computer and Information Science, Springer, Volume 305, 2012, pp 30-38.

27. Snehansu Bank, Surata Saha, Indrajit Banerjee, "An Analytical Model on Wireless Sensor Networks", International Conference on Computer Science and Engineering, April 28th, 2012. Pp:17-20.

28. Banerjee Indrajit; Chanak Prasenjit; Samanta Tuhina; Rahaman Hafizur, "Fuzzy rule-based faulty node classification and management scheme in wireless sensor network"
Communicated to IEEE Transactions on Parallel and Distributed Systems.

29. Prasenjit Chanak, Tuhina Samanta, Hafizur Rahaman and Indrajit Banerjee, "Obstacle Discovery and Localization Scheme for Wireless Sensor Network", CODIS 2012, 28-29th December, 2012, pp-262-265.

30. Indrajit Banerjee, Indrani Roy, Ahana Roy Choudhury, Biswarup Das Sharma and Tuhina Samanta, "Shortest Path Based Geographical Routing Algorithm in Wireless Sensor Network", CODIS 2012,
28-29th December, 2012 pp-266-269.

31. **Prasun Ghosal**, and Tuhin Subhra Das, "Improved Extended XY On-Chip Routing in Diametrical 2D Mesh NoC", International Journal of VLSI design & Communication Systems (VLSICS) Vol.3, No.5, October 2012, pp. 191-200.; DOI : 10.5121/vlsic.2012.3516
32. **Prasun Ghosal**, Arijit Chakraborty, and Sabyasachee Banerjee, "Particle Swarm Optimization of Speed in Unplanned Lane Traffic", International Journal of Artificial Intelligence & Applications (IJAIA), Vol.3, No.4, July 2012, pp. 51-63. DOI : 10.5121/ijaia.2012.3404
33. **Prasun Ghosal**, Arijit Chakraborty, Sabyasachee Banerjee, and Satabdi Barman, "Speed Optimization in Unplanned Traffic Using Bio-inspired Computing And Population Knowledge Base", Computer Science & Engineering: An International Journal (CSEIJ), Vol. 2, No. 3, June 2012, pp. 79-97. DOI : 10.5121/cseij. 2012.2307

34. **Prasun Ghosal**, Arijit Chakraborty, and Sabyasachee Banerjee, "Computational Optimization of Speed in an Unplanned Lane Traffic", IEM International Journal of Management & Technology (IEMITMT) [ISSN: 2296-6611], pp. 160-163.
35. **Prasun Ghosal,** Arijit Chakraborty, Sabyasachee Banerjee, "Design of Knowledge Based Efficient Speed Optimization Algorithm in Unplanned Traffic",The IUP Journal of Computer Sciences, Vol. VI, No. 1, pp. 23-30, January 2012.
36. **I Banerjee** ,R Banerjee, K Ray, S Bhattacherjee, S Guha, , I Nath "A study of insulin resistance and its clinico-metabolic associations among apparently healthy individuals attending a tertiary care hospital" Annals of Medical and Health Sciences Research 4 (5), 823.
37. Moumita Samanta, **Indrajit Banerjee**, "Optimal load distribution of cluster head in fault-tolerant wireless sensor network" , Electrical, Electronics and Computer Science (SCEECS), 2014 IEEE Students' Conference on,IEEE, 2014/3/1.

38. N Ghosh, **I Banerjee**, T Samanta, "Energy efficient coverage of static sensor nodes deciding on mobile sink movements using game theory" , Applications and Innovations in Mobile Computing (AIMoC), 2014, 118-125.

39. S Mukherjee, **I Banerjee**, T Samanta, "Defect aware droplet routing technique in digital microfluidic biochip", Advance Computing Conference (IACC), 2014 IEEE International, 30-35.

40. P Chanak, **I Banerjee**, "Path Discovery for Sinks Mobility in Obstacle Resisting WSNs"
    Advanced Computing, Networking and Informatics-Volume 2, 39-50.

41. **Indrajit Banerjee**, Anirban Datta, Sonalisa Pal, Soujanya Chatterjee, Tuhina Samanta
    "A Novel Fault Detection and Replacement Scheme in WSN", Recent Advances in Intelligent Informatics, Springer International Publishing, 303-310.

42. Prasenjit Chanak, **Indrajit Banerjee**," Load reduction with multiple mobile sinks in wireless sensor networks", Students' Technology Symposium (TechSym), 2014 IEEE, 121-125

International Conferences

1. Prasenjit Chanak, Tuhina Samanta, Indrajit Banerjee, "Quad Tree Approach for Obstacle Discovery and Tracking in Wireless Sensor Networks", IEEE SENSOR 2013, Baltimore, USA, 3-6 November 2013, pp: 1362-1365.
2. Prasenjit Chanak, Tuhina Samanta, Indrajit Banerjee, "Cluster Head Load Distribution Scheme for Wireless Sensor Networks", IEEE SENSOR 2013, Baltimore, USA, 3-6 November 2013, pp: 1727-1730
3. Supantha Das, Indrajit Banerjee, and Tuhina Samanta, "Sensor Localization and Obstacle Boundary Detection Algorithm in WSN", Third International Conference on Advances in Computing and Communications (ACC-2013), 29-31 August 2013
4. A. Mukherjee, U. Garain, and A. Biswas, Evaluation of the Graphical Representation for Text-to-Graphic Conversion Systems, 10th IAPR International Workshop on Graphics Recognition, Lehigh University, Bethlehem, PA, USA, Aug. 20-21, 2013 (accepted).

5. J. K. Das, S. K. Saha, and A. Biswas, Depth from Images Of External Outdoor Scenes, 8th Indian Conference on Computer Vision, Graphics and Image

Processing: ICVGIP'12, Mumbai, India, ACM, New York, NY, USA, , Article 17 , pp. 1-7, Dec. 16 - 19, 2012.

6. S. Phani, S. Lahiri, and A. Biswas, Culturomics On A Bengali Newspaper Corpus, International Conference on Asian Language Processing 2012 (IALP 2012), Hanoi, Vietnam, pp. 237-240, Nov. 13-15, 2012.

7. N. Karmakar, A. Biswas, and P. Bhowmick, Fast Slicing of Orthogonal Covers Using DCEL, 15th International Workshop on Combinatorial Image Analysis: IWCIA'12, Austin, Texas, USA, Lecture Notes in Computer Science (LNCS), Springer, Vol. 7655, pp. 16 – 30, Nov. 28–30, 2012.

8. M. Dutt, A. Biswas, P. Bhowmick, and B. B. Bhattacharya, On Finding Shortest Isothetic Path inside a Digital Object, 15th International Workshop on Combinatorial Image Analysis: IWCIA'12, Austin, Texas, USA, Lecture Notes in Computer Science (LNCS), Springer, Vol. 7655, pp. 16 – 30, Nov. 28–30, 2012.

9. S. Chatterjee, A. K. Ray, R. Karim, A. Biswas, Classification of Malignant Tumors Using Multiple Sonographic Features, IEEE Proceedings of the International Conference on Recent Trends in Information Systems(ReTIS-2011), pp. 252 – 256, Dec. 21 – 23, 2011, Jadavpur University, Kolkata, India.

10. S. Chatterjee, A. K. Ray, R. Karim, A. Biswas, Micro-calcification Detection to Characterize Malignant Breast Lesion, Annual IEEE India Conference (INDICON 2011), pp. 1 – 4, Dec. 16 – 18, 2011 Hyderabad, India.

11. S. C. Dutta, A. Biswas, S. Mitra, and C. Saha, Extraction of Lip Region from Video Sequences of Basic Facial Expressions, in Proc. of International Conference on Computational vision and Robotics: ICCVR'11, Aug. 13 – 14, 2011 (accepted).

12. N. Karmakar, A. Biswas, P. Bhowmick, and B.B. Bhattacharya, Construction of 3D Orthogonal Cover of a Digital Object, in Proc. of 14th International Workshop on Combinatorial Image Analysis: IWCIA'11, Madrid, Spain, Lecture Notes in Computer Science (LNCS), Springer, Vol. 6636, pp. 70 – 83, May 23 – 25, 2011, DOI:10.1007/978-3-642-21073-0_9.

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55. Papiya Manna, Dipak K. Kole, Hafizur Rahaman, Debesh Kumar Das, and Bhargab B. Bhattacharya, ***"Reversible Logic Circuits Synthesis using Genetic Algorithm and Particle Swarm Optimization",*** International Symposium on Electronic System Design (ISED 2012), **IEEE Xplore Digital Library**, pp. 246-250, December 19-22, 2012.
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International Conference on Advances in Information Technology and Mobile Communication 2013 (AIM 2013), Bangalore, India, April 26-27, 2013.

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Book Chapter:

1. A. Biswas, S. Pal, P. Bhowmick, and B.B. Bhattacharya, Geometric Analysis and Efficient Indexing of Digital Documents, *Machine Learning Techniques for Adaptive Multimedia Retrieval: Technologies, Applications & Perspectives*, C.-H. Wei (Ed.) (accepted), 2010.

2. **Prasun Ghosal**, Satrajit Das, and Arindam Das, "*A Novel Algorithm For Obstacle Aware RMST Construction During Routing in 3D ICs*", In Natarajan Meghanathan et al. (Eds.): **Advances in Computing and Information Technology**, Vol. 2, Advances in Intelligent Systems and Computing Series 177, Springer, pp. 649-658.

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4. **Prasun Ghosal**, Arindam Das, and Satrajit Das, "*Obstacle Aware RMST Generation Using Non-Manhattan Routing For 3D ICs*", In Natarajan Meghanathan et al. (Eds.): **Advances in Computing and Information Technology**, Vol. 3, Advances in Intelligent Systems and Computing Series 178, Springer, pp. 657-666.

5. **Prasun Ghosal**, and Tuhin Subhra Das, "*A Novel Routing Algorithm For On-chip Communication in NoC on Diametrical 2D Mesh Interconnection Architecture*", In Natarajan Meghanathan et al. (Eds.): **Advances in Computing and Information Technology**, Vol. 3, Advances in Intelligent Systems and Computing Series 178, Springer, pp. 667-676.

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12. **Indrajit Banerjee, Prasenjit Chanak, Tuhina Samanta, Hafijur Rahaman "EFDR: Effective Fault Detection and Routing Scheme for Wireless Sensor Network", International Journal of Computers & Electrical Engineering, Elsevier (In Press), 2013.**

Research facilities:

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

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

f) Computing facilities in Promoda Lodh Advanced Information Technology laboratory**:**
Hardware and Software:
IBM X226 Server -- 2Nos.
IBM Websphere Everyplace 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

Support staff position

Sanctioned technical post : 3

Technical staff profile (in the following table) :

Administrative Staff :

Staff Name	Designation	Highest Qualification	Contact No	E-mail Id
Office Staff				
Goutam Bandopadhyay	Accountant	B.Com (Distinction) M.Com, ICWAI (Inter) PGDCA	9433134162	gb8206@gmail.com
Susanta Sarma	Office Assistant	B.Sc.	9433609953	sarma.susanta15@yahoo.in
Amal Das	Technical Assistant	B.Tech (Computer Science)	9836787069	amaldas.cs@gmail.com
Rabindra Nath Das	Group D	Class - VIII	9836662273	

No of Publications : (This year only)

Journal : 36 Conference : 52

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

About the department

Dr. M. N. Dastur School of Materials Science and Engineering started functioning since 2001 as a multidisciplinary educational and research centre with a vision to create a vibrant, supportive community of materials scientists and engineers committed to expand fundamental understanding of materials, develop advanced technologies, and provide leadership through education and innovative research geared to meet the current and future needs of society. The School is an integral part of Indian Institute of Engineering Science and Technology, Shibpur and aims at providing an ideal environment for interdisciplinary teaching and research.

Since its inception the School has embarked on several programmes to facilitate fundamental developments in the physics and chemistry of materials alongside applications in manufacturing processes and engineering design. Over these years, its central function has been imparting education to postgraduate students by providing them with the opportunity to conduct independent and creative research at the forefront of materials science and engineering. The School offers a full time M.Tech. Programme on Materials Science and Technology, with specialization on Materials Design and Application and has a concrete plan for introducing a four year post-B.Sc. integrated M.Tech. programme on Materials Science.

The School started its modest journey in 2001 with extremely limited facilities which included a furnace and few computers. Ever since then, the faculty members, research scholars and the staff members of the School have worked relentlessly to develop new facilities and infrastructure through sponsored projects and with the assistance of the erstwhile University. In the brief span of 12 years we have been able to develop major experimental facilities for synthesis/fabrication and characterization of materials, including a high resolution transmission electron microscope. Till date **24 scholars have been awarded their doctoral degree** and more that **120 scholars have received their M.Tech degree from the School**.

The School has several sponsored projects funded by different funding organizations like DST, MoS, GoI, UGC, etc. and have been able to develop collaborations with some leading material scientists and their groups both at the national as well as at the international level.

Additionally, the Schools activities are closely linked with leading industries like Tata Steel and M. N. Dastur Company. Recently the School has signed a memorandum of agreement with M. N. Dastur Company, who has agreed to provide generous support for up gradation of the School.

What started as an insignificant centre with a furnace, dilapidated furniture and few computers in 2001 has now emerged as a centre that is starting to make modest footprints in the international materials research community.

Academic Programmes

Undergraduate Level: Not Applicable

Postgraduate Level

Degree Offered: Master of Technology in Materials Science and Technology

Sanctioned Students' intake: 18 nos. students per year (AICTE approved)

Additional intake through other programmes (i.e. Q.I.P). Nil

Specialisation in (a) Materials Design & Application

Doctoral & Post Doctoral Research Programme (2014-2015)

Degree Offered: Engineering

No of candidates enrolled: 07 **Registered: 05** **Awarded: 04**

Submitted: 01

Faculty position:
Sanction faculty post (permanent): 04, **Vacant post: 03**
Endowment Faculty: 01, Vacant: 0
Contractual Faculty: 01, Vacant: 0

Faculty profile

Name	Designation	Highest Qualification	Specialisation /Research	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 Materials	nrb@matsc.iiests.ac.in nrbbesus@gmail.com
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
Ajit Kumar Chakrabarti	Visiting Professor	Ph.D. (Engineering)	Metallurgical manufacturing (foundry, Machining, Welding, Surface Engg.), Extractive Metallurgy	akc1940@gmail.com

Awards and Laurels:

N. R. Bandyopadhyay, Professor

Fellow, West Bengal Academy of Science and Technology (WAST)

- Award received

Arijit Sinha, Assistant Professor

Recipient of **IEI Young Engineers Award 2014-2015,** The Institution of Engineers (India).

Research area

- Nano-Semiconductor materials
- Advanced steel
- Composite materials
- Energy materials
- Smart materials
- Biomaterials
- Computational materials science
- High strength non-ferrous metals

Research facilities:

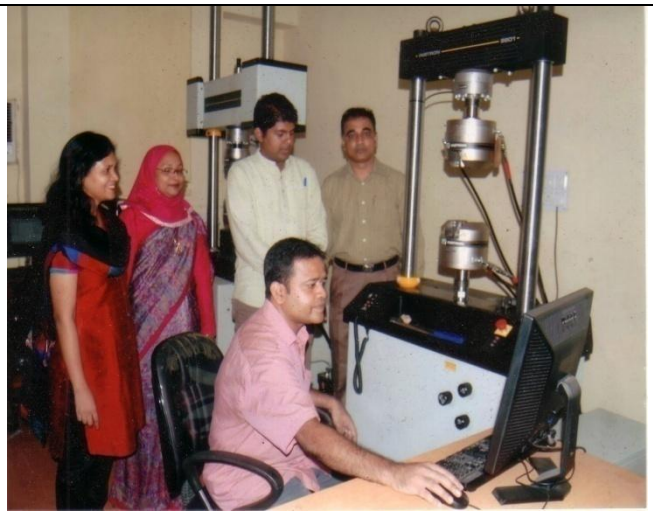
Name of Equipment	*Few words*	*Pictures*
Olympus Optical Microscope with Image Analyzer	Basic Instrument for materials characterization. Microstructure, which governs the materials (Metal, Ceramics, Polymer or Composites) property, can be examined.	 **Left Hand Side:** Olympus Optical Microscope with Image Analyzer **, Right Hand Side:** Leco Micro-Vickers Testing Machine
Leco Micro-Vickers Testing Machine	Preliminary determination of mechanical properties of all kind of materials through measuring the hardness of the sample.	

Ducom Fretting Wear Testing Machine	Abrassive or wear resistance property under service condition is examined in fine details.	

and under Central Materials Research Facility

Veeco Atomic Force Microscope	Surface Property determination through scanning probe microscopy / atomic force microscopy. Attachments for electrical and magnetic property characterization is available with the instrument	

CSM Nano-indentor	Nano scale indentation for mechanical property characterization.	
Hitachi Scanning Electron Microscope with Horiba EDS System and EBSP	Finer Microstructural details can be examined by Scanning Electron microscopy. Local chemical constituents are measured through Energy Dispersive X-ray (EDS) Spectroscopy. The Electron Back Scattered Diffraction Pattern (EBSP) can be examined.	
Leco Glow Discharge Spectroscope	This instrument measures the chemical composition of metals and alloys by optical emission through Spectroscopic analyses.	

Photoluminescence (PL) System	Optical Characterization Instrument	
FEI Tecnai G2 20 S-TWIN Transmission Electron Microscope (TEM) 200 KV with EDX	Very high resolution microstructural characterisation, electron diffraction and energy dispersive x-ray analytical facility for micro-chemical analysis	
Instron 8801 Axial Servohydraulic Dynamic Testing System ± 100 kN capacity	For tensile compression and other mechanical testing for determining YS, UTS etc.	

Instron 8862 Axial Servoelectric Dynamic Testing System ± 250 kN capacity	For tensile compression and other mechanical testing for determining YS, UTS etc with higher capacity	

Name of laboratories:

1. **Nano Semiconductor Lab**:
2. **Materials Characterisation Lab**:
3. **Computational Materials Science Lab**.
4. **Tribology Lab:** Fretting Wear Tester (Ducom)
5. **Low-dimensional Advanced Materials Synthesis Lab.**
6. **Student Computer Lab.**

Support staff position:

Sanctioned technical post: 01 (permanent): Vacant Post: 01

Name	Designation	Highest Qualification	Contact no	E-mail
Dr. Malay Kundu	Scientific Officer (Contractual)	Ph.D. (Engineering)	2668-8140 (Office)	mkundu@matsc.iiests.ac.in

Administrative Staff & Lab. Staff : 4 nos. (Contractual)

Name	Designation	Highest Qualification	Contact no	E-mail
Sanjay Sarkar	Office Assistant	B.A. (Hons) (Final year)	9830450599	ss@matsc.iiests.ac.in
Pradip Kumar Majumder	Office Peon	Secondary	8420281986	-
Sudip Bhattacharjee	Laboratory Attendant	B.Com	9331177191	sudipannand@gmail.com
Kumar Nayak	Laboratory Attendant	B.Com		kumar.nayak55@gmail.com

Sponsored Research (during 2014-2015):

Sl. No.	Title of Research Project	Sponsoring Agency	Year of Start and duration
01.	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
02.	Synthesis of mixed metal oxides by high energy ball milling for their application as photocatalyst for waste-water treatment **Value : Rs 1.50 lakh**	The Institution of Engineers (India)	1 (1) year

No. of Publications (during 2014-2015)

(Journal only)

Sl. No.	Title of Research paper	Title of the Journal	Year	Vol./ issue No	Page Nos.
01.	Effect of Aluminum Coating on the Surface Properties of Ti-(~ 49 at. pct) Ni Alloy	Metallurgical and Materials Transaction B	2015 (Accepted)		
02.	Magnetic and Mechanical properties of Cu (75 wt. %) - 316L grade stainless steels synthesized by ball milling and annealing	Journal of Magnetism and Magnetic Materials	2015	381	14-20
03.	Computational Intelligence based designing of micro-alloyed pipeline steel	Computational Materials Science	2015	104	60-68
04.	Incremental cyclic fracture behaviour of 20MnMoNi55 steel at room temperature	Int. Journal of Fracture	2015	192	117-132
05.	Tunable charge transport through n-ZnO nanorods on Au coated macroporous p-Si	Journal of Materials Chemistry C	2014	2	9613-9619
06.	Sintering and Electrical Properties of Ce0.75Sm0.2Li0.05O1.95	International Journal of Hydrogen Energy	2014	I	5
07.	Highly Lattice-mismatched Semiconductor-Metal Hybrid Nanostructures: Gold	NANOSCALE	2014	6	2201-2210

08.	Indentation and scratch behavior of functionalized MWCNT–PMMA composites	Polymer Composites	2014	35	948
09.	Tribological Studies of Microplasma Sprayed Hydroxyapatite Coating at Low	Materials Technology: Advanced	2014	29	B35

Seminar/Workshops/Conferences/Training programme organised by the Department (during 2014-2015) : None

Technology Developed/Innovations.

- Solar cell coated with Silicon nano-crystals which is fabricated at Nano-semicondutor Laboratory at MNDSMSE shows considerable increase in open-circuit voltage and short-circuit current which can potentially increase overall efficiency of coated solar cells

Foreign visits and Invited Lectures:

[1] **Arijit Sinha, Invited talk** in Fourth International Conference on Natural Polymers, Bio-Polymers, Bio-Materials, their Composites, Blends, IPNs, and Gels: Macro to Nano Scales (ICNP-2015), Kottayam, Kerala, India.10-12th April, 2015. (Topic: Effect of aluminium addition on the thermal stability and scratch behavior of jute/unsaturated polyester composites)

[2] **N. R. Bandyopadhyay**, **Invited Annual Technical Lecture** held March 01, 2015, organized by Sustainable Development Forum, The Institution of Engineers (India), Patna Local Centre, Patna (Topic: Engineering Education to Meet the Challenges of Sustainable Development)

[3] **Arijit Sinha, Invited talk** in national seminar on "Recent Trends and Future Advancements in Manufacturing Technology (RTFAMT 2015)", 28th February, 2015, organized by Swami Vivekananda Institute of Science and Technology, Kolkata. (Topic: Manufacturing: A Materials' Perspective)

N. R. Bandyopadhyay, **Key note speaker** at the Twenty Eight National Convention of Metallurgical and Material Engineers held January 23 & 25, 2015, organized by The Institution of Engineers (India), Visakhapatnam Local Centre, Visakhapatnam (Topic: Performance Enhancement of Crystalline Silicon Solar Cell by Coating with Luminescent Silicon Nano structures Fabricated by an Inexpensive and Reproducible Technique).

[5] **M. Ray, Invited lecture** at the National Workshop on Nano Science and Technology (NWNST), Bankura Unnayani Institute of Engineering, Bankura, January 19-23, 2015 (Topic: How Size Matters? Case Studies of Silicon and Noble Metal Nanoparticles)

[6] **Arijit Sinha, Joint Chairpersons of the Session** "Renewal Materials / Green Composites /Green Materials -I" in Fourth International Conference on Natural Polymers, Bio-Polymers, Bio-Materials, their Composites, Blends, IPNs, and Gels: Macro to Nano Scales (ICNP-2015), Kottayam, Kerala, India. 10-12th April, 2015.

[7] **S. Chatterjee, Chaired a session** on "Advanced Join Technique" at the 52nd National Metallurgists' Day and 68th Annual Technical Meeting of the Indian

Institute of Metals (IIM), Department of Metallurgy And Material Science, College of Engineering, Pune- 411005, Maharashtra, India, 12-15th November, 2014.

[8] **Arijit Sinha, presented the technical** paper on Nanomechanical Behavior of Cryogenically Rolled Martensitic TiNi Alloy at the śŘnd National Metallurgists' Day and 68th Annual Technical Meeting of the Indian Institute of Metals (IIM), Department of Metallurgy And Material Science, College of Engineering, Pune- 411005, Maharashtra, India, 12-15th November, 2014, pp. 316-317.

[9] **N. R. Bandyopadhyay**, **Invited speaker** on "Transfer of Technologies from R&D Institutions to Industries: Opportunities and Challenges", ***Indian Technology Congress*** at Bangalore, August 22, 2014 .

[10] **N. R. Bandyopadhyay**, **Invited Lecture** on âHigher Engineering Education and Sustainable Development: Need for a Paradigm Shift", **Narula Institute of Technology**, Kolkata, January 7, 2014.

[11] **M. Ray, Invited Lecture** on **"**Extraordinary Properties of Silicon based Hybrid Nanostructures" *National Conference on Nanoscience and Nanotechnology (NS&NT-2014)*, University of Calcutta, September, 18-19, **2014**.

[12] **Arijit Sinha**, **Invited Lecture** on "Nanomechanical Characterization of Martensite in Cryogenically Deformed Ti-(~49 at.%) Ni Alloy", 27th National Convention of Metallurgical and Materials Engineering & National Seminar on Multifunctional and Adaptive Materials, 6-7th February, 2014, organized by The Institution of Engineers (India), Karnataka State Centre.

[13] **Arijit Sinha**, **Invited Lecture** on "Nanomechanical Behaviour of Martensite in Cryogenically Rolled Ti-(~49 at.%) Ni Alloy", seminar on "Microstructure of Materials" and METALLUM 2014, 12-14thMarch, 2014 organized by Department of Metallurgy and Materials Engineering, IIEST, Shibpur.

Others

- Signing of Memorandum of Agreement (**MoA**) between **MNDSMSE**, **BESU, Shibpur** and **M.N.Dastur & Co (P) Ltd, Kolkata** on 10.07.2013 **for furthering the activities of the school.**

School of Management sciences

About the department

School of Management Sciences has emerged as an Institution of excellence in all facets of management education with highly specialized, sophisticated and 21st Century oriented courses and curriculum. The goal of SOMS is to achieve professional growth through holistic management education to shape future leaders for the corporate through intermingling of functional knowledge of Marketing, Finance, Operations, Human Resource & IT Management**.**

The MBA programme is designed to deliver the latest business education. The emphasis of the programme is on an integrated understanding of the totality of business, its philosophy and socio-economic inter-relationship. The programme is specially designed to develop and enhance the basic managerial skills and abilities of students and to equip them with tools & techniques of modern management for better decision-making.

Different teaching methods like case studies, simulation games, group discussions, group seminars, scenario building and project work are used to make the teaching-learning process interesting. Students are encouraged to analyze, innovate and prepare themselves for professional challenges of the industry. The two years' programme leading to the Masters in Business Administration

Academic Programmes:

Undergraduate Level

Degree offered

Sanctioned students' intake

Additional intake through lateral entry in 3rd Semester

Post Graduate Level

Degree offered – 2 year Full Time MBA

Sanctioned students' intake 60

Additional intake through other programmes (i.e. QIP) NA

Specialisations in- Human Resources Management ,Financial Management, Information Technology Management,Marketing Management, Operations Management

Doctoral & Post Doctoral Research Programme

Degree offered : PhD (Management Science) :

No of Candidates enrolled : 3

No. of Candidates registered:1

No. of Candidates awarded:3

Faculty Position:

Faculty profile (in the following table)

Name	Designation	Highest Qualification	Specialisation / Research Area	Contact No. E - mail
Dr. Prabir Kumar Paul	Director, SOMS	Doctorate of Philosophy	GIS, RS & MIS	033 26688355 Prabirpaul59@gmail.com
Poulomi Mukherjee Mondal	Assistant Professor On Contract	Ph.D. (Engg)	Operations Management/ Management Information System	26684561 extn: 435 poulomi.mukherjeemondal@gmail.com
Shyamal Kumar Chakraborty		ME,PGDBM	Operations Management/	26684561 extn:433
Sumanta Deb	Assistant Professor On Contract	**MBA**	Marketing Management	26684561 extn:436 Sumanta04@gmail.com
Surabhi Sinha	Assistant Professor On Contract	**MBA**	Human Resource Management	26684561 extn:438 surabhisinha@yahoo.com
Monalika Dey	Assistant Professor On Contract	**MBA**	Human Resource Management	26684561 extn:438 Monalika.dey@gmail.com

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

Management Information System, Operations Management, Human Resource Management, Marketing Management

Research facilities: (name specific equipment / picture, infrastructure etc)

Toshiba Laptops, Internet Connection, EBESCO and JGATE, SPSS and Prowess, CRISIL, SAP, Bloackboard

Name of the laboratories :

Computer Laboratory at U821

Support staff position:

Sanctioned technical post ……

Technical staff profile (in the following table)

Name	Designation	Highest Qualification	Contact No.	E- mail
Goutam Sarkar	Office Assistant	B. Com.(H)	26684561 Extn: 439	monti.papu@gmail.com
Mousumi Shaw (Das)	Assistant Librarian	M. Sc., BLIS	26684561 Extn: 442	shaw.mousumi@yahoo.in
Dipsikha Chandra (Pal)	Computer Assistant	M. Sc.,	26684561 Extn: 443	dipsikha84@gmail.com
Pranab Satpathi	Office Peon	H. S.	26684561 Extn: 439	pranab_satpathi@yahoo.co.in
Sukanta Guha	Office Peon	H. S.	26684561 Extn: 439	

Details of publications of each faculty member (2014 – 15)

Name	Journal Publication	Conference Publication	Books / Monograms
Dr. Prabir Kumar Paul	**2**	**-**	**-**
Dr. Poulomi Mukherjee Mondal	**-**	**1**	**1**
Surabhi Sinha	**-**	**-**	**-**
Sumanta Deb	**8**	**-**	**-**
Monalika Dey	**2**	**1**	**-**

Seminar / Workshops / Conferences / Training programme organized by the School / Department (2014 - 15)

Seminar on "Importance of stock market for students" on 29th Jan 2014 by Stockmind, ICICI Securities Ltd.

Seminar on "Changing dimensions of modern business management" by Prof. Ratan Khashnanis, Prof. Arun Kumar Basu, Prof. Sitanath Majumdar, Prof.Sunil Gandhi on 18th Feb 2014.

Seminar on 'B2B Marketing along with a case study' on Aug., 18, 2015 by Mr. Abesh Chatterjee, Tata Tinplate Ltd.

Seminar on 'Corporate Leadership' on Aug., 25, 2015 by Ms. Suganthi Sridharan Chatterjee, Tata Tinplate Ltd.

Technology Developed / Innovations

Advancements under TEQIP – Phase II

Foreign visits and Invited Lectures:

Monalika Dey, Assistant Professor was invited to deliver a presentation at the Entrepreneur Awareness Camp at Bharat Technology Uluberia on 6th and 8th August 2014

Monalika Dey, Assistant Professor was invited to deliver a presentation at the Entrepreneur Awareness Camp at Calcutta Institute of Technology Howrah on 20th and 22nd November 2014

P.K. Paul visited ITC, Netherlands for one month duration.

Training and Placement

2015 – Total Pass out 17

Placement on Campus: 0

Placement off Campus: 14

School of Mechatronics & Robotics

About the School

The beginning of this century is marked with multi disciplinary technological advancement which has not only revolutionized Indian and global industrial market but also has put an impact on engineering education system. IIEST Shibpur responded to the changed technological scenario by introducing a new specialized engineering post graduate degree course in Mechatronics under the School of Mechatronics & Robotics. The course is unique with respect to similar degree programs offered by other Indian Universities and is framed accordingly to educate graduate engineers to become experts in the multidisciplinary area involving mechanical engineering, electrical engineering, electronics along with computer software. The School of Mechatronics & Robotics was established as an interdisciplinary school in 2007. The School undertakes different research and development activities in the areas of cutting edge technology. The Post Graduate course (M. Tech.) in Mechatronics has been introduced in collaboration with three reputed National level laboratories under Council of Scientific and Industrial Research (CSIR), New Delhi, namely, Central Electronics Engineering Research Institute (CEERI), Pilani, Central Scientific Instrument Organization (CSIO), Chandigarh and Central Mechanical Engineering Research Institute (CMERI), Durgapur. This is a unique and new initiative for generating trained manpower in the futuristic multi-disciplinary area of mechatronics. A memorandum of understanding (MOU) was signed between IIEST (formerlyBESU) and CSIR for this purpose in February, 2007. The program is of two years duration and is conducted by the participating institutes by utilizing their expertise and facilities available. The programme is structured around the core competence of all the four constituent institutions. The faculty members have been drawn from all the four places based on the expertise of scientists and academicians. While the course is conducted at IIEST Shibpur, CEERI, CSIO and CMERI, the academic degree (M.Tech) is awarded to students by IIEST on successful completion of the course. The curriculum is designed to provide multidisciplinary knowledge and to endow the students with the ability to design mechatronics systems.

Academic Programmes:

Undergraduate Level: NA

Degree offered :
Sanctioned students' intake :
Additional intake through lateral entry in 3rd Semester :

Post-graduate Level:

Degree offered : M.Tech. in Mechatronics
Sanctioned students' intake: 18 GATE qualified
Additional intake through other programmes: Nil
Specialisations: Mechatronics & Robotics

Doctoral Level

Degree offered : Ph.D.
No. of candidates: enrolled / registered / awarded : Registered 03

Faculty Position

Sanctioned faculty post: Nil Vacant post: Nil

The school is interdisciplinary in nature and faculty members from relevant departments/school extend support to conduct classes / laboratories

Faculty profile

Name	Designation	Highest Qualification	Specialisation/ Research Area	Contact No. E-mail
Prof. Debjani Ganguly	Director & Associate Professor (EE Dept.)	M.E.	Power Electronics & Drives	M: 91-9830306490 Email: ganguly.debjani@gmail.com
Dr. Subhasis Bhaumik	Coordinator & Professor (AE&AM Dept.)	Ph.D	Mechatronics & Robotics / Automation	M: 91-9836044278 Email: sbhaumik_besu@yahoo.co.in

Research Area:

Dexterous Robotic Hand, Mobile Robots, Micro Systems, Teleportation, Unmanned Aerial Vehicle, Bio-medical and Exoskeleton Devices, Prosthetics, AI and Soft Computing, Intelligent Systems, Image Processing, Sensors Development

Research Facilities:

Bi-handed robot, humanoid robot, drives and control, sensors, image processing, mechanical motion transmission devices, data gloves, laser sensors, smart materials, haptic devices, embedded systems, Techscan pressure sensors, data acquisition system, virtual instrumentation, modeling and simulation software - LabView.

Name of the Laboratories:

1. Mechatronics Laboratory
2. Robotics Laboratory
3. Simulation Laboratory

Sponsored Research

On-going	Sponsoring agency
Development of a Sensor Integrated Multi Finger Dexterous Robot Hand with Data Glove Interface (4 years, June 2010- December 2014) Rs.61,38,500/- (in Robotics Lab, AE&AM Department)	BRNS, Dept. of Atomic Energy, BARC, Mumbai
Development of Indigenous Low Cost Pressure Mat Based Gait Analyzer (3 years, December 2012 – December 2015), Rs. 46,37,937/-	DST (Science for Equity, Empowerment & Development - SEED Division), New Delhi, 2012 Principal collaborating organization - NIOH, Kolkata

Multisensory Myoelectric Controlled Intelligent Active Ankle Foot Prosthesis(3 years, Oct 2013-Oct 2016),Rs 44,40,000	DST,SERB, New Delhi (in collaboration with NIOH, Kolkata)

Industry Institute Interaction:

- Central Scientific Instruments Organization (CSIR-CSIO), Chandigarh
- Central Mechanical Engineering Research Institute (CSIOR -CMERI), Durgapur
- Central Electronics Engineering Research Institute (CSIR-CEERI),Pilani
- National Institute for the Orthopaedically Handicapped (NIOH under MSJE, Govt. of India), Kolkata

No. of Publications:

Journal - 2
Conference - 9
Books/ Monograms - Nil
Book Chapter -2

International Journal

1. Srijan Bhattacharya, Ritwik Chattaraj, Arindam Patra, Mallar Das, Bikash Bepari and Subhasis Bhaumik, "Simultaneous Parametric Optimization of IPMC Actuator for Compliant Gripper", International Journal of Precision Engineering and Manufacturing, International Journal of Springer. (Impact Factor – 1.205, Accepted)

2. Srijan Bhattacharya, Bikash Bepari and Subhasis Bhaumik, "IPMC Actuated Compliant Mechanism Based Multi-Functional Multi-Finger Micro-Gripper", Mechanics based Design of Structures and Machines, International Journal of Taylor & Francis, Vol. 42, Issue 03, May 20, 2014, pp. 312 – 325. (Impact Factor- 0.63)

Conference publications:

1. O.Mazumder, A.S Kundu, R. Chattaraj, P. Lenka, S. Bhaumik, "Trajectory Generation For Myoelectrically Controlled Lower Limb Active Knee Exoskeleton", IEEE conference ; International conference on contemporary Computing, JayPee Institute of Technology, Noida, 20-22 August,2014

2. O.Mazumder, A.S Kundu, R. Chattaraj, S. Bhaumik, "Door Negotiation of a Omni Robot Platform Using Depth Map Based Navigation in Dynamic Environment" IEEE conference ; International conference on contemporary Computing, JayPee Institute of Technology, Noida, 20-22 August,2014

3. O.Mazumder, A.S Kundu, R. Chattaraj, P. Lenka, S. Bhaumik, "Development of Series Elastic Actuator based Myoelectric Knee Exoskeleton for Trajectory Generation and Load Augmentation" ; 2 nd conference of Robotic Society of India, BITS Goa, July 2-4, 2015.

4. O.Mazumder, A.S Kundu, R. Chattaraj, P. Lenka, S. Bhaumik, "Modeling, Simulation and Control Architecture for Lower Limb Active Exoskeleton", 2 nd conference of Robotic Society of India, BITS Goa, July 2-4, 2015.

5. Habib Masum, Subhasis Bhaumik and Ranjit Ray, " Conceptual Design of a Powered Ankle-Foot Prosthesis for Walking with Inversion and Eversion", 2nd International Conference on Innovations in Automation and Mechatronics Engineering, ICIAME 2014, G H Patel College of Engineering & Technology, Gujrat, March 2014 (Procedia Technology, SciVerse Science Direct, Elsevier), Elsevier, 228–235, 2014.

6. Ritwik Chattoraj, Srijan Bhattacharya, B. Bepari, S. Bhaumik, " Design and Control of Two Fingered Compliant Gripper for Micro Gripping", 3rd Intl. Conf. on Informatics, Electronics & Vision (ICIEV 2014), May 2014, Bangladesh 978-1-4799-5180-2/14©2014 IEEE Xplore.

7. Ritwik Chattoraj, Bikash Bepari, S. Bhaumik, "Grasp Mapping for Dexterous Robot Hand: A Hybrid Approach", Seventh International Conference on Contemporary Computing (IC3), IC3-2014. Noida IEEE xplorer.

8. Ritwik Chattoraj, Ananda Sankar Kundu, Oishee Majumder, Bikash Bepari, Subhasis Bhaumik "Tele-Operation of Robot Hand Exploiting Human Hand Synergy", RSI Conference 2015.

9. Srijan Bhattacharya, Siladitya Khan, Tanmoy Sil, Bikash Bepari and Subhasis Bhaumik "IPMC Based Data Glove for Finger Motion Capturing ", 2nd International Conference of Robotics Society of India, BITS Goa, India, July 2 - 4th, 2015, © 2015 ACM. ISBN 978-1-4503-3356-6/15/0

10. Srijan Bhattacharya, Bikash Bepari and Subhasis Bhaumik "Novel Approach of IPMC Actuated Finger for Micro-Gripping", IEEE 4th International Conference on Informatics, Electronics & Vision (ICIEV), Kitakyushu, Fukuoka, Japan, June 15 - 17, 2015.

Book Chapters

1. O.Mazumder, A.S Kundu, P. Lenka, S. Bhaumik, " Technologies for Lower body Exoskeleton: Current trends and Future Directions", Biomedical Engineering and Assistive Devices, COPAL publishing group,2014, ISBN: 978-93-83419-08-1

2. P. Lenka, S. Bhaumik, "Review of Technology in Gait Analysis for Quantitive Evaluation of Able and Disabled Walking Performance", Biomedical Engineering and Assistive Devices, COPAL publishing group,2014, ISBN: 978-93-83419-08-1

Patents / Invention Disclosure / Technology Transfer / Copyright : Patent will be filled for two innovation developed in the SM&R

Seminar/ Workshop/ Conferences/ Training programme organized by the School : Nil

Technology developed/ Innovations:

- Ankle foot prosthesis
- Autonomous omni directional robotic vehicle
- Lower limb active exoskeleton
- Four fingered dexterous robotic hand

Advancements under TEQIP – Phase II

Foreign visits and Invited Lectures:

Invited Talk -

1. Jamia Millia Islamia (A Central University), New Delhi in the Faculty Development Programme on "Mechatronics & Robotics in Manufacturing Industries" sponsored by All India Council for Technical Education, 27 February - 12 March 2015.

2. Key note speaker of "International Conference on Emerging Trends in Manufacturing Engines and Modelling (ICEMEM2015)", MPSTME, SVKM'S NMIMS Shirpur, Maharastra, 27-28 February 2015.

3. Faculty Development Program on "Advancement in Instrumentation Engineering and Development in Process Automation (AIEDPA – 2014)" organized by AEIE, Department, RCCIIT, Baleaghata, Kolkata, from 14th - 18th July, 2014. (5 days, TEQIP –II Program)

Visitors to your Department (Indian & Foreign)

1. Dr. Naga Hanumaiah and his research team at Micro System Technology Laboratory, Mechanical Engineering Research Institute (CSIR – CMERI), Durgapur, India.

2. Dr. Debabrata Chatterjee, Chemistry and Biomimetics Laboratory at Mechanical Engineering Research Institute (CSIR – CMERI), Durgapur, India.

3. Dr. Tetsuya Okabe, Director, Honda Research Institute, Japan.

Training and Placement:

Extension Activities and Societal outreach:

New Academic / Research Initiatives:

a) Academic Collaboration – NIOH Kolkata and CSIR Laboratories

School of VLSI Technology

About the department

The research and education at School of VLSI Technology is closely associated with industry and several other primary academic Institutions of repute with an aim to foster cutting edge research and establishes the School as one of the pronounced leaders in field of VLSI and Microelectronics.

In the School of VLSI Technology, We have sufficient latest VLSI 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.

VLSI being an interdisciplinary field involving various aspects of electrical, communications, computer science, information technology, semiconductor physics and materials science, the SOVLSIT closely collaborates with other departments within BESU and other reputed academic institutions in both India and abroad to cater to the needs of the engineers in the making. Faculty members of this Institute are also running a number of industry and Govt. funded research projects with active participation of SOVLSIT. A number of tools have been developed to carry out the VLSI research. About 8 PhD theses have been completed during the last five years in the field of VLSI design and test. Another seven students have already been registered for PhD in this area.

The School was established on July, 2006 with the introduction of a flagship course of M-Tech (VLSI Design) with an intake of 12 students under special requirement of a Special Manpower Development Project in VLSI Design and related Software (Phase II), a mission project of Govt. of Government of India to promote the research and education in the various areas of VLSI Design. The need to integrate to efforts of scientists and engineers working with different fields of microelectronics and semiconductors devices has been the primary motivation of creation of this school. The research and education at School of VLSI Technology is closely associated with industry and several other primary academic Institutions of repute with an aim to foster cutting edge research and establish the School and one of the pronounced leader in field of VLSI and Microelectronics.

M.Tech (VLSI Design) course under SMDP-II project was started during academic session 2006-2007 and continues to be a sought after program of the institute. Students of SOVLSIT have established their credentials through recruitment of international VLSI Design Companies and selection in PhD admission to different research laboratories/ IIT/IISC/ISI/Foreign Universities.

Academic Programmes:

Post Graduate Level

Degree offered	:	M. Tech in VLSI Design
Sanctioned students' intake	:	20
Additional intake through other programmes (i.e. QIP)	:	
Specializations in	:	VLSI Design

Doctoral & Post Doctoral Research Programme

Degree offered : PhD (Engineering / Science / Humanities & Management Science) :

PhD (Engineering)

No. of Candidates enrolled in 2014: 6

Sl. No.	Scholar's Name
1.	Sudip Poddar
2.	Manas Kumar Parai
3.	Lopamudra Banerjee
4.	Sarosij Adak
5.	Sudipta Bardhan
6.	Arnab Mukhopadhyay

No. of Candidates registered in 2014: 4

Sl. No.	Scholar's Name
1.	Sayan Kanungo
2.	Laxmidhar Biswal
3.	Subhajit Das
4.	Sandip Bhattacharya

No. of Candidates awarded: 1

Sl. No.	Scholar's Name
1.	Prabir Kumar Saha

Faculty Position: Sanctioned faculty post … 3 (Contractual) …… Vacant Post …2 ……
Faculty profile (in the following table)

Name	Designation	Highest Qualification	Specialization / Research Area	Contact No. and 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
Mr. Pranab Ray	Assistant Professor	M. Tech.	Biochip design Automation, Embedded System, Algorithm and data structures , VLSI physical design, Object oriented System Design	033-22270143 9433800260 ronmarine@yahoo.co.in
Mr. Sudip Ghosh	Assistant Professor	M. Tech.	Digital VLSI Design & VLSI Architectures, Digital Image Watermarking, Synthesis and Verification, VLSI Testing.	033-22191833 8017040884 sudip_etc@yahoo.co.in sudip.ghosh@vlsi.becs.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 (Project)	M. Tech.	Low power VLSI design, Evolutionary Algorithms.	9674128771 033-24152571 gupta_parthasarathi@yahoo.co.in
Manodipan Sahoo	Assistant Professor (Project)	M. Tech	Carbon Nanotube Based Interconnects and Devices	9038496889 manodipansahoo@gmail.com

Awards and Laurels received by the faculty members :-

- Dr. Amretashis Sengupta: DST INSPIRE Faculty award 2013 (II), DST Post-doctoral Fellowship in Nano Science and Tech. 2012-2017.
- DST-DAAD has awarded collaborative research fellowship to Prof. Hafizur Rahaman under Indo-German (DST-DAAD) Bilateral Cooperation during 2013-2015 (with Prof. Rolf Drechsler, Professor and Director, Computer Architecture Group, University of Bremen, Germany).
- Best PhD thesis awarded to Dr. Kamalika Datta, PhD student under the supervision of Prof. Hafizur Rahaman in Design Automation and Test in Euroupe (DATE), 2015.

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

1. Digital VLSI Design
2. Analog and Mixed Signals
3. VLSI Testing
4. Nanotechnology
5. Bio-chip Design Automation
6. NOC & SOC Design
7. FPGA Synthesis and Testing
8. VLSI Physical Design Automation
9. Digital Watermarking
10. VLSI architectures
11. System on chip architectures
12. Network on Chip
13. 3D IC and 3D Biochips

Research facilities: (name specific equipment / picture, infrastructure etc)

EDA Tools

1. Mentor Graphics
2. Synopsys
3. Cadence
4. NI LabVIEW
5. Xilinx ISE 14.7 Webpack (for FPGA Applications)
6. Vivado Design Suite
7. Matlab
8. Synopsys TCAD

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.	Pro-Ject 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.	Server	8
31.	Workstation	25
32.	Desktop PC	32
33.	Redhat Linux OS	12

Academic and Research Infrastructure

In the School of VLSI Technology, We have following latest VLSI 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 WebPack (FPGA Applications)
- ❑ Vivado Design Suite
- ❑ Matlab
- ❑ Synopsys TCAD

FPGA Board

- ◘ FPGA Spartan 3E Kits
- ◘ XUP Virtex-II Pro Board
- ◘ Virtex 6 Pro Board
- ◘ Video Decoder Board
- ◘ Other Accessories

Name of the laboratories

1.	Ganapati Sengupta VLSI Laboratory (Research Lab)
2.	SMDP-II Laboratory
3.	Advanced FPGA Lab.
4.	Advanced VLSI Design Lab.
5.	Chip to System Design (C2SD) Lab.

Support staff position:

Technical post

Name	Designation	Highest Qualification	Contact No.	E-mail
Sri Goutam Paul	Technical Assistant	B-Tech (E.C.E.)	9874405431	goutam.paul82@lycos.com
Smt. Ratna Ghosh	Technical Assistant	D.E.T.C., A.M.I.E. (Pursuing)	9239825264	ratna_vlsi@yahoo.co.in

Ongoing Sponsored Research / projects : (mention area)

Project Title	Sponsoring agency	Duration
Modernization of VLSI Design Laboratory (Rs.17.80 lac.)	AICTE, INDIA	2013-2016
Synthesis of Reversible Circuits using Probabilistic Methods and Functional Transformations (Rs.10 lac)	DST India and DAAD Foundation, Germany	2013-2015
Integrated Chip to System Design (C2SD) under India Chip Program (Rs. 2 Crore).	Deity, MCIT, Government of India	Starting February 2015.

Details of publications of each faculty members (2014 – 15)

Journal	= 16
Conference	= 34
Books / Monograms	= 1

Book:

1. **Hafizur Rahaman and Debaprasad Das:- Carbon Nanotube and Graphene Nanoribbon Interconnects (International Edition), CRC Press, Taylor & Francis Group, USA, Published on (December 2014).**
2. **A. Sengupta and C.K. Sarkar (Eds.), "Introduction to Nano: Basics to Nanoscience and Nanotechnology", Springer Verlag (Germany), 2015. (ISBN: 978-3-662-47313-9)**

Journals

1. Partha Sarathi Gupta, Sanatan Chattopadhyay, Partha Sarathi Dasgupta and Hafizur Rahaman,"A Novel Photo-sensitive Tunneling Transistor For Near-Infrared Sensing Applications: Design, Modeling and Simulation", *IEEE Transactions on Electron Devices, (TED 2015)*, DOI: 10.1109/TED.2015.2414172.
2. Sayan Kanungo, Sanatan Chattopadhyay, Partha Sarathi Gupta and Hafizur Rahaman, "Comparative Performance Analysis of the Dielectrically Modulated Full Gate and Short Gate Tunnel FET based Bio-Sensors", *IEEE Transactions on Electron Devices, (TED 2015)*, Vol.62, Issue 3, DOI:10.1109/TED.2015.2390774.
3. Manodipan Sahoo, Prasun Ghosal and, Hafizur Rahaman,"Modeling and Analysis of Cross talk Induced Effects in Multiwalled Carbon Nanotube Bundle Interconnects: An ABCD Parameter Based Approach", *IEEE Transactions on Nanotechnology*, March 2015, Vol.14, Issue: 2 pp. 1-16, DOI: 10.1109/TNANO.2014.2388252.
4. Debasis Mitra, Sarmishtha Ghoshal, Hafizur Rahaman, Krishnendu Chakrabarty, and Bhargab B. Bhattacharya,"Automated Washing Schemes for Residue Removal in Digital Microfluidic Biochips to Enhance Reliability, ACM Transactions *on Design Automation of Electronic Systems, 2015.*
5. Manodipan Sahoo and Hafizur Rahaman, "Modeling of Crosstalk Induced Effects in Copper Based Nano-Interconnects:An ABCD Parameter Matrix Based Approach", Journal of Circuits, Systems, and Computers, Vol. 24, No. 2 (2015) 1540007, World Scientific Publishing Company, DOI: 10.1142/S0218126615400071.
6. Manodipan Sahoo,Hafizur Rahaman and Bhargab B.Bhattacharya, "On the Suitability of Single-Walled Carbon Nanotube Bundle Interconnects for High-Speed and Power Efficient Applications", *Journal of Low Power Electronics***,** American Scientific Publishers, Vol. 10, No 3, pp. 479-494, September 2014, DOI: 10.1166/jolpe.2014.1339.
7. Manodipan Sahoo, Prasun Ghosal and Hafizur Rahaman, "Performance Modeling and Analysis of Carbon Nanotube Bundles for Future VLSI Circuit Applications", Journal of Computational Electronics**,** Springer Publication, pp.673-688, DOI 10.1007/s10825-014-0587-7.
8. Nachiketa Das, Pranab Roy, and Hafizur Rahaman, "Detection of Crosstalk Faults in Field Programmable Gate Arrays (FPGA)", *Journal of the Institution of Engineers (India): Series B, Springer publication*, 2014, (Accepted), (With PhD Student), (DOI:- 10.1007/s40031-014-0141-9).
9. Nachiketa Das, Pranab Roy, and Hafizur Rahaman, "Detection of Crosstalk Faults in Field Programmable Gate Arrays (FPGA). " published in Journal of The Institution of Engineers (India): Series B IEI(B) (Springer), vol 3(12), July 2014, pp-2250-2106
10. Bikash Sharma, Arnab Mukhopadhyay, Amretashis Sengupta, Hafizur Rahaman, C. K. Sarkar, 'Analysis of tunneling currents in Multilayer Black Phosphorous and MoS2 non-volatile flash memory cells', accepted for publication in Journal of Computational Electronics (2015-16).
11. A. Sengupta, D. Saha, T.A. Niehaus and S. Mahapatra, 'Effect of line defects on the electrical transport properties of monolayer MoS2 sheet', IEEE Transactions on Nanotechnology vol. 14, No. 1, pp. 51-56 (2015).

12. Amretashis Sengupta, Anuja Chanana, and Santanu Mahapatra, 'Phonon scattering limited performance of monolayer MoS2 and WSe2 n-MOSFET', AIP Advances, vol. 5, No. 2, pp. 027101 (1-9) (2015).
13. D. Saha, A. Sengupta and S. Mahapatra, 'Impact of Stone-Wales and lattice vacancy defects on the electro-thermal transport of the free standing structure of metallic ZGNR' Journal of Computational Electronics Volume 13, Issue 4, pp 862-871 (2014).
14. Amretashis Sengupta and Chandan Kumar Sarkar, 'Study on Nanoparticles Embedded Multilayer Gate Dielectric MOS Non Volatile Memory Devices', accepted in International Journal of Nanotechnology – IEEE INEC Special Issue Int. J. of Nanotechnology, 2014 Vol.11, No.12, pp.1073 – 1080.
15. A. Chanana, A. Sengupta, and S. Mahapatra, "Performance Analysis of Boron Nitride Embedded Armchair Graphene Nanoribbon MOSFET with Stone Wales Defects" Journal of Applied Physics Vol. 115, Issue 3, pp. 034501 (2014).
16. Manodipan Sahoo, Prasun Ghosal and Hafizur Rahaman, ``Performance Modeling and Analysis of Carbon Nanotube Bundles for Future VLSI Circuit Applications*"*, Journal of Computational Electronics, Springer publications, vol.13, no. 3, pp.-673-688, September 2014, DOI 10.1007/s10825-014-0587-7.

International Conference

1. Pranab Roy,Hafizur Rahaman,Parthasarathi Dasgupta, "A layout based customized testing technique for total microfluidic operations in Digital Microfluidic Biochips"-Proc. of IEEE,DDECS,Warsaw,Poland,2014.
2. Sabir Ali Mondal, Suraj Gupta and Hafizur Rahaman,"Improved supply regulation and temperature compensated current reference circuit with low process variations", 19th International Symposium on VLSI Design and Test (VDAT), 2015, DOI: 10.1109/ISVDAT.2015.7208049.
3. Pranab Roy, Mriganka Chakrabarty, Aatreyi Bal, Hafizur Rahaman, Parthasarathi Dasgupta, "Decision-based Biochips: A Novel Design for Concurrent Executionof Networked Bioassays integrated in Scalable DMFBs", *6th IEEE ASQED ,2015,Kualalampur,Malaysia.*
4. Pratik Dutta, Chandan Bandyopadhyay and Hafizur Rahaman, "All Optical Implementation of Mach-Zehnder Interferometer based Reversible Sequential Counters", 28th *IEEE International Conference on VLSI Design 2015, pp.232-440, IEEE CS Press.*
5. Joyati Mondal, Bappaditya Mondal, Dipak kole, Hafizur Rahaman, Debesh K.Das, "Boolean Difference Technique for Detecting All Missing Gate Faults in Reversible Circuits", IEEE 18th International Symposium on Design and Diagnostics of Electronic Circuits & Systems,pp.95-98, DOI 10.1109/DDECS.2015.43.
6. *Sudip Ghosh, Subhojit Chatterjee, Santi P. Maity, Hafizur Rahaman*, "A New Algorithm On Wavelet Based Robust Invisible Digital Image Watermarking for Multimedia Security", IEEE EDCAV 2015, pp.191-196.
7. Pranab Roy, Tamosha Chakrabarty, Hafizur Rahaman and Parthasarathi Dasgupta, "Multilevel homogeneous detection analyzer for medical diagnostic application in Digital Microfluidic Biochips ",Diagnosis of SMGF in ESOP based Reversible Logic Circuit", *5th IEEE International Symposium on Electronic System Design (ISED 2014),* pp.73-78,DOI 10.1109/ISED.2014.23.
8. Sudip Ghosh, Arijit Biswas, Santi P. Maity and Hafizur Rahaman, "Design of A Low Complexity and Fast Hardware Architecture for Digital Image Watermarking in FWHT Domain on FPGA", *5th IEEE International Symposium on Electronic System Design (ISED 2014),* pp.68-72, DOI 10.1109/ISED.2014.22.
9. Eleonora Schonborn, Kamalika Datta, Robert Wille, Indranil Sengupta, Hafizur Rahaman and Rolf Drechsler , "BDD-based Synthesis for All-optical Mach-Zehnder Interferometer Circuits", *28th IEEE International Conference on VLSI Design 2015, pp.435-440(PhD Student), IEEE CS Press. .*
10. Manodipan Sahoo and Hafizur Rahaman, " Impact of Line Resistance Variations on Crosstalk Delay and Noise in Multilayer Graphene Nano Ribbon Interconnects", 5th *IEEE International Symposium on Electronic System Design (ISED 2014),* pp.94-98, DOI 10.1109/ISED.2014.27.

11. Bappaditya Mondal, Dipak Kumar Kole, Hafizur Rahaman and Debesh K. Das, "Generator for Test Set Construction of SMGF in Reversible Circuit by Boolean difference method", *IEEE 23rd Asian Test Symposium 2014, pp.68-73,* DOI 10.1109/ATS.2014.24, *(PhD Student), IEEE CS Press.*
12. Bappaditya Mondal, Chandan Bandyopadhyay, Dipak K Kole, Jimson Mathew and Hafizur Rahaman, "Diagnosis of SMGF in ESOP based Reversible Logic Circuit", *5th IEEE International Symposium on Electronic System Design (ISED 2014),* pp. 89-93, DOI 10.1109/ISED.2014.26, *(PhD Student), IEEE CS Press.*
13. Sandip Bhattacharya, Debaprasad Das and Hafizur Rahaman, "A Novel GNR Interconnect Model to Reduce Crosstalk Delay", *5th IEEE International Symposium on Electronic System Design (ISED 2014),* pp. 5-9, DOI 10.1109/ISED.2014.9.
14. Pratik Dutta, Chandan Bandyopadhyay and Hafizur Rahaman, "All optical Implementation of Mach-Zehnder Interferometer based Reversible Sequential Circuit", *18th International Symposium on VLSI Design and Test 2014 (PhD Student), IEEE CS Press.*
15. Indrajit Das, Manodipan Sahoo, Pranab Roy and Hafizur Rahaman, "A 42 uW 12 pJ/conv-step 7.4-ENOB 40 kS/s SAR ADC for Digital Microfluidic Biochip Applications", *18th International Symposium on VLSI Design and Test 2014, (PhD Student), IEEE CS Press.*
16. Pratik Dutta, Chandan Bandyopadhyay and Hafizur Rahaman, "Mach-Zehnder Interferometer based All Optical Reversible Carry-Lookahead Adder", 28th *IEEE Computer Society Annual Symposium on VLSI (ISVLSI 2014),* pp.412-417. DOI: 10.1109/ISVLSI.2014.102, *(PhD Student), IEEE CS Press.*
17. Surajit Kumar Roy, Payel Ghosh, Hafizur Rahaman, Chandan Giri, "Session Based Core Test Scheduling for 3D SOCs", *IEEE Computer Society Annual Symposium on VLSI (ISVLSI 2014),* pp.196-201 DOI: 10.1109/ISVLSI.2014.61, *(PhD Student), IEEE CS Press.*
18. Pranab Roy, Rahaman and Parthasarathi Dasgupta, "Optical detection in Biochips:A fuzzy based detection analyzer for homogeneous samples in DMFBs", *IEEE CYBER 2014. DOI: 10.1109/CYBER.2014.6917523*
19. Kamalika Datta, Alhaad Gokhale, Indranil Sengupta and Hafizur Rahaman, "An ESOP based Reversible Circuit Synthesis Flow using Simulated Annealing", 1st International Doctoral Symposium on Applied Computation and Security Systems (ACSS 2014). DOI: 10.1007/978-81-322-1988-0_8
20. Elenora Schonborn, Kamalika Datta, Robert Wille, Indranil Sengupta, Hafizur Rahaman and Rolf Drechsler,"Optimizing DD-based Synthesis of Reversible Circuits using Negative Control Lines", *2014 IEEE 17th International Symposium on Design and Diagnostics of Electronic Circuits & Systems (DDECS), pp.129-134.* DOI: 10.1109/DDECS.2014.6868776
21. Pranab Roy, Hafizur Rahaman and Parthasarathi Dasgupta, "A layout based customized testing technique for total microfluidic operations in Digital Microfluidic Biochips", *2014 IEEE 17th International Symposium on Design and Diagnostics of Electronic Circuits & Systems (DDECS), pp.122-128.* DOI: 10.1109/DDECS.2014.6868775
22. Sayan Kanungo, Partha Sarathi Gupta, Hafizur Rahaman, "Effects of Germanium Mole Fraction Variation at the Source of a Dielectrically Modulated Tunneling FET based Biosensor", *ICDCS 2014*, pp.86-90. DOI: 10.1109/ICDCSyst.2014.6926218
23. Chandan Bandyopadhyay, Hafizur Rahaman and Rolf Drechsler, "A Cube Pairing Approach for Synthesis of ESOP based Reversible Circuit", *44th IEEE International Symposium on Multiple-Valued Logic (ISMVL 2014),* Bremen, Germany, pp.109-114. DOI: 10.1109/ISMVL.2014.27
24. Manodipan Sahoo and Hafizur Rahaman "An ABCD Parameter Based Modeling of Crosstalk Delay and Noise in Multilayer Graphene Nano Ribbon Interconnects", *2014 IEEE International Symposium on Circuits and Systems*, Melbourne, Australia, June 1-5, 2014,pp.1138-1142. DOI: 10.1109/ISCAS.2014.6865341
25. Pranab Roy, Hafizur Rahaman and Parthasarathi Dasgupta, "Automated Two Stage Detection and Analyzer System in Multi-partitioned Digital Microfluidic Biochips", *2014 IEEE International Symposium on Circuits and Systems*, Melbourne, Australia, June 1-5, 2014,pp.1836-1840. DOI:10.1109/ISCAS.2014.6865515
26. Sandip Bhattacharya, Subhajit Das, Debaprasad Das and Hafizur Rahaman, "Electrical Transport in Graphene Nanoribbon Interconnect", *ICDCS'14, 250-253. DOI: 10.1109/ICDCSyst.2014.6926148*
27. Sabir Ali, Manodipan Sahoo and Hafizur Rahaman, "A New Feedback Circuit Based Charge-Pump for Wide-Range and Low-Jitter DLL suitable for PET Imaging Applications", *ICDCS'14,pp.137-141. DOI: 10.1109/ICDCSyst.2014.6926125*
28. Debaprasad Das, and Hafizur Rahaman , "RF Performance Analysis of Graphene Nanoribbon Interconnect Decision", IEEE TechSym 2014. DOI: 10.1109/TechSym.2014.6807923
29. Chandan Bandyopadhyay, and Hafizur Rahaman , "Synthesis of ESOP-based Reversible Logic using Negative Polarity Reed-Muller Form", IEEE TechSym 2014. DOI: 10.1109/TechSym.2014.6808062
30. Chandan Bandyopadhyay, and Hafizur Rahaman, "Synthesis of ESOP-based Reversible Logic using Positive Polarity Reed-Muller Form", Springer **(***ETCC 2014*). DOI: 10.1007/978-81-322-1817-3_36

31. Pranab Roy, Samadrita Bhattacharyya, Rupam Bhattacharya, Hafizur Rahaman and Parthasarathi Dasgupta, "A novel wire planning technique for optimum pin utilization in Digital Microfluidic Biochips", *27th International Conference on VLSI Design (VLSI Design 2014), IEEE CS Press*, USA, pp.510-515, 2014. DOI: 10.1109/VLSID.2014.95
32. Manjari Phadhan, Debesh K. Das, Chandan Giri and Hafizur Rahaman, "Optimizing Test Time for Core-Based 3-D Integrated Circuits by a Technique of Bi-partitioning", *11th East West Design & Test Symposium (EWDTS 2013), pp.1-4.*
33. Pranab Roy, Aatreyi Bal, Mahua Raha Patra, Hafizur Rahaman and Parthasarathi Dasgupta,"Feedback based automated detection analysis in Digital Microfluidic Biochip Systems", *IEEE International Conference on Control, Automation, Robotics and Embedded systems (CARE-*2013). DOI: 10.1109/CARE.2013.6733724
34. Manodipan Sahoo, Prasun Ghosal and Hafizur Rahaman, "An ABCD Parameter Based Modeling and Analysis of Crosstalk Induced Effects in Multiwalled Carbon Nanotube Bundle Interconnects", *27th International Conference on VLSI Design (VLSI Design 2014), IEEE CS Press*, USA, pp.433-438, 2014. DOI: 10.1109/VLSID.2014.81.

WORKSHOPS /SEMINARS / SYMPOSIUMS / CONFERENCES / SHORT-TERM COURSES ATTENDED in 2014 – 15

1. Manodipan Sahoo

SL. No.	TOPIC	HELD AT	DURATION
1.	Nanoelectronics and Biochips	ISI Kolkata	18-19 March, 2014
2.	Emerging and Post CMOS Technologies	IIEST, Shibpur	16-18 June, 2014
3.	Nanotechnology and Biochip	IIEST, Shibpur	1-3 July, 2014
4.	INUP Familiarization workshop on Compact Modeling	IISc, Bangalore	22-23rd August, 2014

2. Pranab Ray

1.	Emerging and Post CMOS Technologies	IIEST, Shibpur	16-18 June, 2014
6.	VLSI Design Conference,2014	IIT ,Mumbai	5-9th January,2014
7.	VDAT,2013	NIT,Jaipur	27-30 July,2013
8.	Nanotechnology and Biochip	IIEST, Shibpur	1-3 July, 2014

3. Amretashis Sengupta

1.	CEFIPRA Indo-French Workshop on Emerging Trends in Electron Device Modeling	IISc, Bangalore	30 March -1 April, 2015
2.	International CeCAM Workshop High performance models of charge transport in large scale systems	BCCMS), Universitat Bremen, Germany	6th – 10th October , 2014
3.	INUP Compact modeling workshop	IISc, Bangalore	22 - 23 August, 2014
4.	Emerging and Post CMOS Technologies	IIEST, Shibpur	16-18 June, 2014
5.	Nanotechnology and Biochip	IIEST, Shibpur	1-4 July, 2014

4. Partha Sarathi Gupta

1.	ISTE Workshop on Analog Electronics	BESU, Shibpur (By IIT KGP)	4-14 June, 2013
2.	National Seminar on Research Scholars' day	BESU, Shibpur	29-30th January, 2014
3.	Emerging and Post CMOS Technologies	IIEST, Shibpur	16-18 June, 2014
4.	Nanotechnology and Biochip	IIEST, Shibpur	1-3 July, 2014
5.	INUP Familiarization workshop on Compact Modeling	IISc, Bangalore	22-23rd August, 2014

5.Sudip Ghosh

SL. No.	TOPIC	HELD AT	DURATION
1.	Application of Simulators in Photonics,	Radio Physics, C.U.	11th – 15th March, 2013
2.	4th ICCCT- 2013	MNNIT, India.	20/09/13 - 22/09/13
3.	National Seminar on Research Scholars' day	BESU, Shibpur	29-30th January, 2014
4.	Emerging and Post CMOS Technologies	IIEST, Shibpur	16-18 June, 2014
5.	Nanotechnology and Biochip	IIEST, Shibpur	1-3 July, 2014
6.	Summer School on Fundamentals of Digital Design Automation	ISI Kolkata	July 22-26, 2014

Patents / Invention Disclosure / Technology Transfer / Copyright

Patents: Budhaditya Majumdar, Sudipta Chakraborty, and Hafizur Rahaman, "A Novel Reusable Sub Volt Differential Amplifier Module for Use as a Preamplifier Output Stage", Indian Patent Application Filed on 13th February 2013, Docket Number 170

Modernization of Academic, Laboratory :

Modernization of EDA and TCAD Laboratories under AICTE MODROBS grant

Seminar / Workshops / Conferences / Training programme organized by the department (2014 -15)

Three days workshop on Emerging and Post-CMOS Technologies, 2014
Coordinator: Prof. Hafizur Rahaman/Dr. Chandan Giri
Sponsored by : Technical Education Quality Improvement Programme (TEQIP)
Venue: BESU Shibpur

Foreign visits and Invited Lectures

- Amretashis Sengupta 'Study of next generation 2-D channel material MOSFETs with empirical tight binding – NEGF formalism' at the International CeCAM Workshop High performance models of charge transport in large scale systems, held at Bremen Center for Computational Materials Science (BCCMS), Universitat Bremen, Germany , 6th – 10th October 2014.
- Amretashis Sengupta, "Semi-Empirical tight binding methods for simulation of transition metal dichalcogenide FETs" at the INUP Compact modeling workshop, held at IISc, Bangalore, 22 - 23 August, 2014.
- Amretashis Sengupta, "2-Dimensional Channel Materials based Next Generation Nano-scale MOS devices", at NIT Sikkim, 05 March, 2014.

Visitors to your Department (Indian & Foreign)

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.

1. Dr. Kaushik Roy, Purdue University, West Lafayette, IN, has delivered lecture on "Beyond Charge Based Computing" on 11th April 2014.
2. Prof. Rolf Drechsler, University of Bremen, Germany, has delivered lecture on "Reversible Circuits: Recent Accomplishments and Future Challenges for an Emerging Technology", 16th June, 2014.

New Academic / Research Initiatives

a) **Academic Collaboration:** We have already research collaboration with following University/Institutes…

1. *Department Computer Science and Engineering, Duke University, Durham, USA (Research Professor)*
2. *Department Computer Science, University of Bristol, UK (Royal Society Programme)*
3. Department of Computer Science, University of Bremen, German (DST-DAAD Programme)
4. *ACM Unit, Indian statistical Institute, Kolkata, India (DST Programme)*
5. *Department of Computer Science and Engineering, IIT Karagpur, India (India Chip Programme, PhD Collaboration)*
6. *Department of Electronics and Communication Engg., IIT Karagpur, India (India Chip Programme)*
7. *Department of Electronics and Communication Engg., IISC., Bangalore, India (India Chip Programme)*
8. *Institute of Radio Physics, Calcutta University, Kolkata, India (Research Collaboration, Clean Room Facility)*

9. *Department of Electronics Science, Calcutta University, Kolkata, India (Research Collaboration, Clean Room Facility)*
10. *Department of Electronics and Communication Engg., National Institute of Technology Durgapur, India (India Chip Programme, Research Collaboration)*
11. Department of Electronics and Tele-communication Engg., Jadavpur University, Kolkata (India Chip Programme, Research Collaboration)
12. 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

Industrial Collaboration

a) Sankalp Semiconductors

b) ARM India

c) VECC (R & D organization)

Centre of Excellence for Green Energy and Sensor Systems

About the department

Worldwide efforts are going on for switching over to sustainable alternative / renewable energy sources (non-polluting, non-fossil-fuel, environmentally friendly sources now known as **Green energy** sources). For these purposes the University on its own has set up a Centre of Excellence entitled **"Centre of Excellence for Green energy and Sensor Systems (CEGESS)"** in November, 2009. The center envisages providing the required environment and facilities for the scientists, engineers and technicians to work in critical R&D areas.

Research & Development:

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

Academic Programmes:

Post Graduate Level

Degree offered : **M.Tech**

Sanctioned students' intake: **15 Nos**

Specialisations in **Renewable Energy Science and Technology**

Doctoral & Post Doctoral Research Programme

Degree offered : PhD (Engineering / ~~Science / Humanities & Management Science~~) :

No of Candidates enrolled : 7 Nos

No. of Candidates registered: 4 Nos

No. of Candidates awarded: 1

Faculty Position:

Faculty profile (in the following table)

Name	Designation	Highest Qualification	Specialisation/ Researh Area	Contact No. E-mail
Prof. H.saha	BECA 1981 Chair Professor and Coordinator	Ph.D	Photovoltaics and Sensors	shahiran@gmail.com
Prof. A.K.Barua	Hony. Emeritus Professor	Ph.D, D.Sc (h.c)	Photovoltaics	eruakb@yahoo.com
Prof. R.Bhattacharya	Hony. Adjunct Professor	Ph.D	Photovoltaics and Sensors	raghubhatin@yahoo.com
Prof. S.P. Gon Chaudhuri	Hony. Adjunct Professor	D.Sc (h.c)	Green Energy and Technology	nbirt2008@yahoo.com
Prof. Bibek Bandyopadhyay	Hony. Adjunct Professor	Ph.D	Photovoltaics and Solar Thrmal	bbibek@nic.in
Prof. Swapan K . Datta	Adjunct Professor	Ph.D	Photovoltaics and Sensors	swapansumana@gmail.com
Dr. Nillohit Mukherjee	Assistant Professor	Ph.D	Nanomaterials and sensors	nilsci@yahoo.co.uk
Dr. Sumita Mukhopadhyay	Assistant Professor	Ph.D	Photovoltaics	mukhopadhyay_sumita@yahoo.co.in
Dr. Avra Kundu	Assistant Professor	Ph.D	Photovoltaic,Sensors and MEMS	avrakundu@rediffmail.com
Dr. Chandan Banerjee	National Solar Science Fellow, MNRE	Ph.D	Photovoltaics	chandanbanerjee74@gmail.com

Awards and Laurels received by the faculty members: -

Prof. A.K.Barua

1. Acted as the Chairman of the Session on Solar Photovoltaics at the R and conclave of MNRE held during August 5-6, 2014.
2. Appointed as Chairman of the Steering Committee (Indian side) of the Indo-UK Joint Centre of Virtual Research on Clean Energy and as Co-chair man of the Joint Panel

Prof. H. Saha

1. Nominated as a member of the Expert Committee of DST- Senergy Enabling Research Program, Govt of India.

2. Nominated as a member of the Research Advisory Council of NETRA-NTPC, Noida.

Dr. R. Bhattacharyya

1. Invited talk, First International Conference on Large area and Flexible Microelectronics (ILAFM-2014), RVCE-Bangalore, 18th -20th December 2014. Topic:"Evolution of Macroelectronics"
2. Key note address ,at the International E-Workshop/Conference on Computational Condensed Matter Physics and Materials Science" IWCCMP-2014 at IIIT ,Gwalior ,25-30 Nov. 2014 ,Topic:"About Intuitive, Empirical and structured Knowledge- an experiential account."

Dr. Bibek Bandopadhyay

Appointments during the year

1. Distinguished Professor (Part time) : National Institute of Technology Arunachal Pradesh
2. Adviser: International Institute of Energy Conservation, New Delhi Centre
3. Independent director, Board of Directors of West Bengal Green Energy Development Corporation Ltd.
4. Member, Governing Body of the West Bengal Renewable Energy Development Agency.

Member of Committees of International Conferences

1. Member, Technical Committee: 5thWorld Renewable Energy Technology Congress, New Delhi, August 2014
2. Member, International Program Committee
   2nd International Conference on Green Energy & Technology (ICGET), September 2014 Dhaka, Bangladesh

Editorial Assignments

- Associate editor: Solar Energy, Journal of International Solar Energy Society, Elsevier
- Associate Editor: Renewable and Sustainable Energy Reviews, Elsevier
- Associate Editor: International Journal of environment (Japan)

Reviewer

- Elsevier Publication for books
- A few International and national journals for research papers.

Membership of Committees

- Member, Board of Management, Indira Gandhi Delhi Technical University for Women, Delhi
- Member, Expert Committee, University Grants Commission
- 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 (earlier: Chairman)
- Member, Scientific Expert Committee on Energy for International Multilateral & Regional S&T Program, Department of Science and Technology, GOI
- Member, Project Review Committee, Indo-UK Science Bridge Project, Department of Science and Technology, GOI
- Member, Committee on Solar Cities, Ministry of New and Renewable Energy GOI
- Member of the National Advisory Committee of the National Centre for Photovoltaic Research and Education, Indian Institute of Technology Bombay
- Member, Board of studies of Amity School of Applied Sciences (ASAS) of the Amity University Haryana
- Member, Core Team, Solar Energy Training Network (SETNET)
- Member, Committee of Indo-U.S. Science and Technology Forum (IUSSTF).

Dr. Chadan Banerjee

1. Selected for PVSEC International Advisory Committee Member
2. **Acted as Co-PI in the DST sponsored project,** "Development of High efficiency Large area, n-type crystalline silicon solar cell by black silicon emitter surface having rear surface passivation and back surface field with a-Si:H layers." PI Prof. U. Ganguly (MSIT) and Co-PI Dr. Chandan Banerjee (IIEST), Duration: 3 years, Rs. 110.00 Lakhs

Dr. Nillohit Mukherjee

Acted as a Co-PI in a CSIR sponsored project "Metal Oxide Core-Shell Nanostructures as Anode Material for Lithium Ion Battery", PI: Dr. Poulomi Roy, Assistant Professor, BIT-Mesra, Co-PI: Dr. Nillohit Mukherjee, Duration: 3 Years, Rs. 907000/-

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

(a) Photovoltaic
- (i) Fabrication of crystalline silicon solar cells
- (ii) Fabrication of amorphous silicon solar cells
- (iii) Efficiency enhancement of c- Si, a- Si and other thin film solar cells.
- (iv) New generation Solar cells and systems with novel nano- materials and green methods.
- (v) New methodologies of solar energy storage (including super capacitors).
- (vi) Advanced solar photovoltaic systems for lighting and power plant applications.
- (vii) Development of Smart Microgrid System in IIEST campus

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

Research facilities: (name specific equipment / picture, infrastructure etc)

Available Infrastructure

Major Materials and Device Processing units

- Automated texturization bench
- Oxidation/ Diffusion Furnace
- Multizone PECVD Cluster
- Screen Printing machine
- Drying and Firing Belt furnaces
- E- Beam evaporation system
- Reactive ion etching system
- DC/RF Sputtering units
- Laser Scriber
- Planetary Ball Mill
- Deionized water system

PECVD cluster tool

Major Characterization Equipments

- Solar Simulator and Spectral Response setup
- atomic force microscope
- Field Emission Scanning Electron Microscope
- Thickness profilometer
- Four probe Resistivity
- Optical microscope with image analyzer

Electron beam and Thermal Evaporation Unit

Reactive Ion Etching (RIE) System

Major Equipments for SPV Systems

- **30 kW Solar Array Simulator**
- **30 kW Grid Simulator**

9

Name of the laboratories:

Solar photovoltaic fabrication laboratory	
Solar photovoltaic Characterization laboratory	
Sensors design and development laboratory	

Consultancy Work: -**Sova Power Ltd** for design of special modules for solar tree and solar boat; **NKDA** for supervision of tendering and subsequent implementation engineering details for 500 KW peak Canal Top Solar Power Plant; WBREDA for preparation of Manuals and Display Boards for Roof Top Solar Power Plants in 100 schools in West Bengal; Roof Top Solar Power Plant policy for KMDA as Expert in Ashden India Initiative; Oztron Energy Sergvices for Development of Grid Smoother Interfacing Unit for Grid Feed Solar Inverter.

Support staff position:

(a) (i) Sanctioned technical post ……NIL……

(ii) Technical staff profile (in the following table) (All Contractual)

Name	*Designation*	*Highest Qualification*	*Contact No.*	*E- mail*
Sri Animesh Roy	Senior Project Assistant	L.E.E	9836610595	royanimesh53@yahoo.in
Sri Sarat Sinha	do	B.Sc (pure Sc.)	9231544357	Singha_sarat@rediffmail.com
Ms. Debashree Sardar	Project Assistant	Dip CST	9748510108	debashreesardar2008@gmail.com
Mr. Sushanta Nayak	Project Assistant	H.S	9088342594	sushantanayak9@gmail.com
Mr. Sandip Dutta	Project Assistant	B.Com (Hons)	929394853	Sandip86@gmail.com
Sri Rittwic Majumdar	Project Assistant	M.Sc	9836424729	bbmjmdr@yahoo.co.in
Sri Biplob Saha	Project Assistant	Diploma engineer	8296200430	bsaha.elc@gmail.com
Sri Sandipan Paul	Project Assistant	B.Tech Electronics and communication	9088822436	ssandy.paul@gmail.com

Ongoing Sponsored Research / projects: (mention area)

The centre has already been awarded a number of research projects in the field of solar energy and sensors by different funding agencies of the Govt. of India:

Research Projects	Funding Agency	Sanctioned Amount	Duration
Solar Photovoltaic Hub at BESU	DST, , Govt. of India	12.46Crores	5 years
Advanced Research on thin Film Silicon Solar Cells and PV systems	MNRE, , Govt. of India	14.76 Crores	5 years
Smart MicroGrid at IIEST	WBREDA	55 lakhs	2 years
Development of Multilayer TCO for High Efficiency Thin Film Solar Cell	DST, , Govt. of India	22.928 lakhs	3 years
High Efficiency Triple Tandem and Heterojunction Silicon based Solar Cell Acronym: HETHSI	MNRE, , Govt. of India	96.0 Lakhs	3 years
Realization of high efficiency interdigitated back-contact (IBC) silicon heterojunction (SHJ) solar cells with novel front structure	DST, Govt. of India	60.00 Lakh	3 years

Industry – Institute Interaction: MOU and collaborative work with the following Industries being continued:

(a) Sova Power Limited , Durgapur

(b) Agni Power Pvt Limited, Kolkata

(c) Synchro Electronics , kolkata

(d) Oztron Energy Systems, Australia

(f) BHEL-ASSCP, Gurgaon

Details of publications of each faculty member (2013 – 14)

Journal …31……

Conference …21……

Books / Monograms ……

(List to be included)

Journal Publications: (2013-2014)

1. "Development of n-µc-SiO:H as cost effective back reflector and its application to thin film amorphous silicon solar cells.", Chandan Banerjee, T Srikanth, U Basavaraju, R M Tomy, M G Sreenivasan, K Mohanchandran, S Mukhopadhyay, A K Barua, Solar Energy 97 (2013) 591.
2. "Silica nanoparticles on front glass for efficiency enhancement in superstrate type amorphous silicon solar cells", Sonali Das, Chandan Banerjee, Avra Kundu, Prasenjit Dey, Hiranmay Saha, Swapan K. Datta, Journal of Physics D: Applied Physics, 46 (2013).
3. "Application of supercapacitor to power small electronic appliances", M Das, I.Das, N.K.Bhattacharyya, D.Mukherjee, H.Saha, IOSR Journal of Electrical and Electronics Engineering (IOSR-JEEE) , 4 (2013) 28-32 .
4. "Cathodic and anodic deposition of FeS_2 thin films and their application in electrochemical reduction and amperometric sensing of H_2O_2", Biswajit Chakraborty, Bibhutibhushan Show, Sumanta Jana, Bibhas Chandra Mitra, Swarup Kumar Maji, Bibhutosh Adhikary, Nillohit Mukherjee, Anup Mondal-Electrochimica Acta. 7 (2013) 94.
5. "Photocatalytic degradation of organic dye on porous iron sulfide film surface", Sanjib Kumar Bhar, Sumanta Jana, Anup Mondal, Nillohit Mukherjee, Journal of Colloid and Interface Science 286 (2013) 393.
6. "A study on nanoindentation and tribological behaviour of multifunctional ZnO/PMMA nanocomposite", Himel Chakraborty, Arijit Sinha, Nillohit Mukherjee, Dipa Ray, Partha Protim Chattopadhyay, Materials Letters, 93 (2013) 137.
7. "Design of high efficiency solar cells with lossless nanoentities atop and embedded in silicon substrate", Sonali Das, Avra Kundu, Hiranmay Saha, Swapan K. Datta- Journal of Optics, 15 (2013) 105006.
8. "Effect of embedding silica nanoparticles and voids in the performance of c- Si solar cells", Sonali Das, Avra Kundu, Hiranmay Saha, Swapan K. Datta, Journal of Renewable and Sustainable Energy, 5 (2013) 031603-1-031603-11.
9. "Enhanced optical absorption and electrical performance of silicon solar cells due to embedding of dielectric nanoparticles and voids in the active absorber region", Sonali Das, Avra Kundu, Hiranmay Saha, Swapan K. Datta-Journal of Modern Optics. http://dx.doi.org/10.1080/09500340.(2013).796015.
10. "An analytical study on daily solar radiation data", Indira Karakoti, Prasun Kumar Das and B. Bandyopadhyay, Current Science, 105, (2013) 215.
11. "Estimation of solar radiation using a combination of Hidden Markov Model and generalized Fuzzy model", Saurabh Bhardwaj, Vikrant Sharma, Smriti Srivastava, O.S. Sastry,J.R.P. Gupta,B. Bandyopadhyay, S.S. Chandel, Solar Energy 93 (2013) 43.
12. "Development of oxide based window and buffer layer for single junction amorphous solar cell: Reduction of light induced degradation.", Gourab Das, Sourav Mandal, M. Rajive Tomy, Chandan Banerjee, Sumita Mukhopadhyay, A.K. Barua, Materials Science in Semiconductor Processing 24 (2014) 50.
13. "Study of resonance energy transfer between MEH-PPV and CuFeS2 nanoparticle and their application in energy harvesting device" Animesh Layek, Somnath Middya, Arka

Dey, Mrinmay Das, Joydeep Datta, Chandan Banerjee, Partha Pratim Ray, Journal of Alloys and Compounds 613 (2014) 364.

14. "Role of Zinc Oxide Nanomorphology on Schottky Diode Properties" Somnath Middya, Animesh Layek, Arka Dey, Mrinmay Das, Joydeep Datta, Chandan Banerjee, Partha Pratim Ray, Chemical Physics Letters 610 - 611 (2014) 39.
15. "Tapered Silicon Nanopillars for enhanced performance thin film solar cells", Avra Kundu, Sonali Das, S. M. Hossain, Swapan K. Datta, Hiranmay Saha, Energy Procedia 54 (2014) 389.
16. "Front surface glass texturization for improved performance of amorphous silicon solar cell", Sonali Das, Avra Kundu, Chandan Banerjee, Prasenjit Dey, Swapan K. Datta, Hiranmay Saha, Physics of Semiconductor Devices Environmental Science and Engineering (2014) 375.
17. "Design of a High-Speed Power MOSFET Driver and Its Use in Bridge Configuration", Joydip Jana, Hiranmay Saha, International Journal of Innovative Research in Science, Engineering and Technology, 3, (2014) 2347.
18. "Modelling and simulation-based performance study of a transformerless single-stage grid-connected photovoltaic system in Indian ambient conditions" A. Datta¸ G. Bhattacharya, D. Mukherjee, and H. Saha, International journal of Ambient energy (in press) 2014.
19. "Selection of islanding detection methods based on multi-criteria decision analysis for grid-connected photovoltaic system applications", A. Datta¸ G. Bhattacharya, D. Mukherjee, and H. Saha, Sustainable Energy Technologies and Assessment (in press) 2014.
20. "Indentation and scratch behavior of functionalized MWCNT–PMMA composites at the micro/nanoscale", H. Chakraborty, A Sinha, N. Mukherjee, D. Ray, P. P. Chattopadhyay, Polymer Composites 35 (2014) 948.
21. "Effect of annealing temperature on the morphology and sensitivity of the zinc oxide nanorods based methane senor", B. Mondal, C. R. Choudhury, H. Saha, N. Mukherjee, Acta Metallurgica Sinica 27 (2014) 593.
22. "A Review on Amperometric Type Immunosensors Based on Screen-Printed Electrodes", Kalyan Kumar Mistry, Keya Layek, Abhijit Mahapatra, Chirasree Roy Chaudhuri and Hiranmay Saha, **139** (2014) 2289.
23. "Zinc oxide nanorods based methane senor: facile chemical synthesis and annealing optimization", Biplob Mondal, Lachit Dutta, Chirosree Roy Chaudhury, Dambarudhar Mohanta, Nillohit Mukherjee, Hiranmay Saha, Sensors & Actuators: B: Chemical (Accepted) (2014).

24. "Palladium-silver activated ZnO surface: highly selective methane sensor at reasonably low operating temperature", Sugato Ghosh, Chirasree RoyChaudhuri, Raghunath Bhattacharya, Hiranmay Saha, Nillohit Mukherjee, ACS Applied Materials & Interfaces 6 (2014) 3879.
25. "An Efficient Technique for Controlling Power Flow in a Single-Stage Grid-Connected Photovoltaic System", A. Datta, G. Bhattacharya, D. Mukherjee and H. Saha, Scientia Iranica Transactions D: Electrical Engineering (2014).
26. "Electrodeposited polymer encapsulated nickel sulphide thin films: frequency switching material", S. Jana, N. Mukherjee, B. Chakraborty, B. C. Mitra, A Mondal, Applied Surface Science 300 (2014) 154.

27. "ZnO-SnO_2 based composite type gas sensor for selective hydrogen sensing", B. Mondal, B. Basumatary, J. Das, C. Roy Chaudhury, H. Saha, N. Mukherjee, Sensors and Actuators B: Chemical 194 (2014) 389.

28. "A comparative study on the cold field electron emission properties of cubic nanocrystalline lead chalcogenide thin films", N. Mukherjee, H. Chakraborty, S. F. Ahmed, RSC Advances 4 (2014) 5312.

29. "Electrochemical synthesis of p-CuO thin films and development of a p-CuO/n-ZnO heterojunction and its application as a selective gas sensor", Amrita Ghosh, Bibhuti Bhushan Show, Sugato Ghosh, Nillohit Mukherjee, Gautam Bhattacharya, Swapan K. Datta and Anup Mondal, RSC Advances 4 (2014) 51569.

30. "Electrochemical synthesis of p-CuO thin films and development of a p-CuO/n-ZnO thin film hetero-contact for gas sensing", A. Ghosh, B.B. Show, N. Mukherjee, S.K. Datta, G. Bhattacharya, A Mondal, Physics of Semiconductor Devices, (2014) 433.

1. "Enhancement of Performance of Crystalline and Amorphous Silicon Solar Cells through Optical Engineering by Nanostructured Materials", H. Saha, Swapan K. Datta , Physics of Semiconductor Devices, Environmental Science and Engineering (2014) 309.

Conference Publications

1. "Improvement of efficiency for the single junction a-Si solar cell by using n-µc-Si:H layer as bottom n-layer", Gourav Das, Sourav Mandal, Rajive Tomy M, Chandan Banerjee, Sumita Mukhopadhyay and A.K.Barua, presented in 20th West Bengal State Science and Technology Congress - 2013, BESU, Shibpur, Howrah, February 25 – March 2, 2013.

2. “Development of n-µc-SiO:H as a back reflector and its application to Amorphous Silicon Solar Cells”, T. Srikanth, U. P. Basavaraju, Rajive Tomy M, M. G. Sreenivasan, Chandan Banerjee, K. Mohanchandran, Sumita Mukhopadhyay, A. K. Barua, Presented in 28th European Photovoltaic Solar Energy Conference and Exhibition, Paris, France, September 30 – October 4, 2013.

3. “Front surface glass texturization for improved performance of amorphous silicon solar cell”, Sonali Das, Avra Kundu, Chandan Banerjee, Prasenjit Dey, Swapan K. Datta, Hiranmay Saha, 17th International Workshop on The Physics of Semiconductor Devices (IWPSD), Amity University, Uttar Pradesh, Dec 2013.

4. “Tapered Silicon Nanopillars for enhanced performance thin film solar cells”, Avra Kundu, Sonali Das, S. M. Hossain, Swapan K. Datta, Hiranmay Saha, 4th International Conference on Advances in Energy Research (ICAER), IIT Bombay, Mumbai, Dec 2013.

5. “A portable sensitive LPG / methane gas measuring unit”, S. Ghosh, S. Dey, I. Das, H. Saha, presented in 20th West Bengal State Science and Technology Congress - 2013, BESU, Shibpur, Howrah, February 25 – March 2, 2013.

6. “Nanoparticles for high efficiency silicon solar cells: Status and Prospects”, Sonali Das, Santanu Maity, Prasenjit Dey, Avra Kundu, Nillohit Mukherjee, Swapan K. Datta and Hiranmay Saha, presented at 20th West Bengal State Science and Technology Congress - 2013, BESU, Shibpur, Howrah, February 25 – March 2, 2013.

7. “Nanotexturing of silicon surfaces for solar cell applications”, Santanu Maity, Sonali Das, Avra Kundu. Swapan K. Datta and Hiranmay Saha, presented at 20th West Bengal State Science and Technology Congress - 2013, BESU, Shibpur, Howrah, February 25 – March 2, 2013.

8. “Radial junction si-nanowire for photovoltaic applications”, Saptaparna Dey, Sonali Das , Avra Kundu , Swapan K. Datta and H.Saha, presented in 20th West Bengal State Science and Technology Congress - 2013, BESU, Shibpur, Howrah, February 25 – March 2, 2013.

9. “A comparative study on the optical properties of Ag and Au nanoparticles deposited by chemical, electrochemical and physical techniques”, Sudarshana Banerjee,

Sonali Das, Avra Kundu, Swapan K. Datta, Hiranmay Saha and Nillohit Mukherjee, presented in 20th West Bengal State Science and Technology Congress - 2013, BESU, Shibpur, Howrah, February 25 – March 2, 2013.

10. "Mixture of metal and dielectric nanoparticles for improved performance of silicon solar cell", Sonali Das, Prasenjit Dey, Avra Kundu, S. M. Hossain, Swapan K. Datta, Hiranmay Saha, 4th International Conference on Advances in Energy Research (ICAER), IIT Bombay, Mumbai, Dec 2013.

11. "Front surface glass texturization for improved performance of amorphous silicon solar cell", Sonali Das, Avra Kundu, Chandan Banerjee, Prasenjit Dey, Swapan K. Datta, Hiranmay Saha, 17th International Workshop on The Physics of Semiconductor Devices (IWPSD), Amity University, Uttar Pradesh, Dec 2013.

12. "Silicon Heterojunction Solar Cells with novel Fluorinated n-type Nanocrystalline Silicon Oxide Emitters on p-type c-Si" Sukanta Dhar, Sourav Mandal, Gourab Das, Chandan Banerjee, Sumita Mukhopadhyay, A. K. Barua: Presented in 6th World Conference on Photovoltaic Energy Conversion, Kyoto, Japan, 23rd November – 27th November' 2014.

13. "Texturization of Al:ZnO Glass Substrate by Reactive ion Etching and its application to Single junction a-Si Solar cells" Gourab Das, Sourav Mandal, Sukanta Dhar, Sukanta Bose, Arpita Jana, Sumita Mukhopadhyay, Chandan Banerjee, A.K.Barua: Presented in 6th World Conference on Photovoltaic Energy Conversion, Kyoto, Japan, 23rd November – 27th November' 2014.

14. "Highly selective and stable methane sensor at reasonably low operating temperature", Sugato Ghosh, Shalini Choudhury, Chirosree RoyChaudhuri, Raghunath Bhattacharyya, Hiranmay Saha and Nillohit Mukherjee, In 'National Seminar on Thin Film and MEMS Science & Technology (NSTF & MT-14), Jadavpur University, Kolkata, March 21-22, 2014.

15. "Effect of size on the scattering properties of silica nanoparticles", Sonali Das, Avra Kundu, S. M. Hossain, Hiranmay Saha, Swapan K. Datta, 2nd International Conference on Emerging Electronics (ICEE), IISc Bangalore, Bangalore, Dec 2014.

16. "Development of a Low Cost and Reliable Power MOSFET Gate Driver for Bridge Configuration", Joydip Jana, Hiranmay Saha, 6th IEEE Power India International Conference, Delhi Technological University, Delhi.

17. "Design & Implementation of MPPT Algorithm for Battery Charging with Photovoltaic Panel Using FPGA", Joydip Jana, Hiranmay Saha, 6th IEEE Power India International Conference, Delhi Technological University, Delhi.

18. “Design and development of a portable user friendly hydrocarbon gas leak detector”, Sugato Ghosh, Indranil Das, Chirasree RoyChaudhuri, Hiranmay Saha, International Conference on Advanced Materials and Energy Technology (ICAMET) 2014 December 17-19, 2014 IIEST Shibpur, Howrah, West Bengal, India.
19. “Wet chemical etching of ZnO:Al thin film for application in the front layer of p-i-n solar cell”: Arpita. Jana, Sukanta Bose, Gourab Das, Jayashree Roy Sharma, Chandan Banerjee, Sumita Mukhopadhyay, A. K. Barua, International conference on Advance materials and energy technology (ICAMET) 17th -19th December, 2014, IIEST Shibpur, Howrah, West Bengal, India.
20. “ Optimization of back surface field for efficient crystalline silicon solar cell”: Suchismita Mitra , Hemanta Ghosh , Syed Minhaz Hossain , U. Gangopadhyay , Swapan K. Datta and Hiranmay Saha, International Conference on Advanced Materials and Energy Technology (ICAMET) 17th -19th December, 2014, IIEST Shibpur, Howrah, West Bengal, India.
21. “Antireflection and Light Trapping Properties of Reduced Graphene Oxide for Efficiency Enhancement of ARC Coated Textured p-n Junction Crystalline Silicon Solar Cell”: Anupam Nandi, Dipankar Panda, Sanhita Majumder, Avra Kundu, S. M. Hossain, S. K. Datta, Hiranmay Saha, International Conference on Advanced Materials and Energy Technology (ICAMET) 2014 17th -19th December, 2014 IIEST Shibpur, Howrah, West Bengal, India.

Patents / Invention Disclosure / Technology Transfer / Copyright

[1] Fabrication of n-type microcrystalline silicon oxide films for use as back reflectors in silicon based thin film solar cells. [File No.: 1347/CHE/2013, Mar. 26, 2013]

[2] Fabrication of fluorinated n-type silicon oxide films for intermediate and back reflector in thin film solar cells. [File No.: 3947/CHE/2013, Sep. 03, 2013]

Seminar / Workshops / Conferences / Training programme organized by the department (2013 - 14)

(a) Two day Workshop on Roof Top Solar PV Power Plant, sponsored by Dept of Power, Govt of West Bengal, 7-8 Feb, 2014

(b) Three Weeks Summer Training on Solar PV and Solar Thermal Engineering, for Engineering Students, 15 June- 7th July, 2014.

Technology Developed / Innovations:

(i) 3"x3" crystalline silicon solar cells with approx 15% efficiency and its efficiency enhancement through plasmonic nano materials on front surface

(ii) P-i-n amorphous silicon solar cells of 8-9 % efficiency and its efficiency enhancement through plasmonic nano materials on front / back surface

(iii) Mobile Turbo Charger With Super Capacitor

(iv) Solar Tree with LED lighting

(v) Solar Boat for boating in Lake

(vi) Data logging and Monitoring Unit for Solar Power Plants

(vii) Gas Leak Hunter

(viii) Prototype for Manhole Gas Detector

Advancements under TEQIP – Phase II : Not included in TEQIP - Phase II

Foreign visits and Invited Lectures:

Prof. A.K.Barua

Invited Lectures

1. Delivered Plenary lecture entitled "Overview of Status Of PV Technology in India" at the R and D Conclave organized by Ministry of New and Renewable Energy at Vigyan Bhavan September 2014.
2. Delivered invited talk entitled "Silicon based thin film solar cells: Status and prospects" at the International Conference on "Microstructural Material and Energy Devices" organized by Advanced Material Centre, IIEST September 2045
3. Delivered Invited talk at the Seminar on "Sustainability in the Core Sector" organized by MECON, Ranchi in September, 2014B.
4. Inaugurated and delivered key note address at the International Conference on "Solar Energy Harvesting and Applications" organized by Cochin University of Science and Technology, Kochi, February 5-7, 2015

Dr. Bibek Bandopadhyay

Invited lectures and Session Chair:

1. Invited talk: Share of renewables in India energy scenario 2030: National Conference on Nanotechnology and Renewable Energy, New Delhi, April 2014.
2. Speaker in the Web Seminar: Role of Energy Storage Technologies for Renewable Energy Deployment in India: USAID PACED, May 2014.
3. Talk: Why rooftop solar- key advantages, potential for India and the global experience in the development of rooftop solar:Workshop on Large Commercial and Industrial Consumers for development of the Rooftop Solar PV Projects, USAID-KREDEL, Bangalore, August 2014.

4. Guest lecture: Solar resource and its assessment**:** Indian Institute of Technology Jodhpur, August 2014.

5. Invited talk:Emerging energy technologies-Solar Energy: Amity University Haryana, August 2014

6. Invited talk:Off-grid Markets-The solar + LED combine is opening up markets that never existed before: Conference in Business of Lighting, New Delhi,September2014.

7. Talk: Grid interactive solar power plants, Delhi Technological University, December 2014.

8. Session Chair: 3rd Green Energy Summit of Indian Chamber of Commerce, New Delhi, March 2015.

Prof. H. Saha

Invited talk:

1. Solar resource and its measurement: National Institute of Solar Energy, January, 2014.
2. Rooftop Solar PV program in India: Legislation, regulation and interaction:Workshop on Promotion of Rooftop Solar PV System in the State of West Bengal, IIEST, February, 2014.
3. Invited talk: Energy Needs in India 2030: 2nd Industry – University International Conference on Supply Chain Management, Ansal Institute of Technology and Management Lucknow, and Clemson University, USA, February 2014.
4. Increasing share of renewable energy, National Workshop onChallenges in Realization of Solar and Biomass ResourcesVellore Institute of Technology: Vellore, March 2014.
5. Challenges and realization of Renewable Power in India: CHEMBridge National Symposium, Jadavpur University March 2014.
6. Share of renewables in India energy scenario 2030: National Conference on Nanotechnology and Renewable Energy, April, 2014.
7. Speaker in the Web Seminar: Role of Energy Storage Technologies for Renewable Energy Deployment in India: USAID PACE D, May, 2014
8. Why rooftop solar- key advantages, potential for India and the global experience in the development of rooftop solar: Workshop on Large Commercial and Industrial Consumers fordevelopment of the Rooftop Solar PV Projects, USAID-KREDEL, Bangalore, August, 2014.
9. Guest lecture: Solar resource and its assessment**:** Indian Institute of Technology Jodhpur, August, 2014.
10. Emerging energy technologies-Solar Energy: Amity University Haryana, August, 2014.
11. Off-grid Markets-The solar + LED combine is opening up markets that never existed before: Conference in Business of Lighting, New Delhi, and September, 2014.

Prof. S K. Dutta

Invited Talks

1. "Enhancement of Performance of Crystalline And Amorphous Silicon Solar Cells through Optical Engineering by Nanostructured Materials" , 4th December 2013 at IWPSD

2. "SOLAR PHOTOVOLTAICS : Current status and Future prospects" March 2014 at NITMAS

3. "Fabrication and Characterization of High Efficiency Crystalline Silicon Solar Cells and its efficiency Enhancement by metallic and dielectric Nano structures", 28 June 2014 at KIIT, Bhubaneswar.
4. "Solar Energy: Prospects and challenges", 19th August 2014 at Lady Brabourne College.

Dr. Chadan Banerjee

Foreign Trip: Attended 24th PVSEC (WCPEC -6) at Kyoto, Japan for presenting a paper.

Visitors to your Department (Indian & Foreign):

Dr. Subhendu Guha, ECD, USA

Dr. Vikram Kumar, NPL and IITD

Prof E S Raja Gopal, IIsc

Prof Satyen Deb, NREL, USA
Dr. Lachman Prasad, Ex-DST Adviser
Prof J.N.Roy, IIT KGP
Dr. A. K. Saxena, BHEL
And many others

Extension Activities and Societal outreach: Summer Training to Engineering Students of different Engineering Colleges.

New Academic / Research Initiatives;

Academic Collaboration:

(i) SSN Institute , Chennai
(ii) IIT, KGP
(iii) IIIT, Ahmedabad
(iv) IACS, Kolkata
(v) Jadavpur University
(vi) MSIT College
(vii) ISM, Dhanbad
(viii) Chartoria University , Gujrat

Industrial Collaboration:

Sova Power Limited, Durgapur
Agni Power Pvt limited, Kolkata
Synchro Electronics, kolkata
Oztron Energy Systems, Australia
BHEL-ASSCP, Gurgaon

Center for Healthcare Science & Technology

About the Department: Centre for Healthcare Science and Technology (CHST) was established by Bengal Engineering and Science University, Shibpur on 22.01.2010. After conversion to IIEST Shibpur, it is proposed to be developed into a full Department. The senate of the institution has principally agreed on this proposal.

A. Academic Programme

Undergraduate Level

Degree offered :- A Proposal for offering UG/PG course from a Department has been prepared and placed in senate last meeting. Approval of senate is awaited.

Additional intake through lateral entry in 3rd Semester: --

Post Graduate Level

Degree offered : Proposed to start from 2016-17 (M Tech Biomedical Engineering)

M Tech (Safety and Occupational Health Engineering):

Sanctioned students' intake : -- 18

Additional intake through other programmes (i.e. QIP) : -- NA

Specialisations in : -- Bioinstrumentation, Biomechanics, Biomaterials, Cancer Diagnosis, Image Processing, Stem Cell, Clinical Microbiology, Genomics.

Doctoral & Post Doctoral Research Programme

Degree offered : PhD (Engineering)

No of Candidates enrolled : **09**

No. of Candidates registered **: 01**

Faculty Position: All positions are of limited tenure

Name	Designation	Highest Qualification	Specialization/ Research Area	Contact No. E-mail
Prof Amit Roy Chowdhury	Professor of Applied Mechanics & Head, CHST	PhD	Biomechanics, Biomaterials,	arc_98@rediffmail.co; head@chest.iiests.ac.in
Prof. Jayanta Chakraborty	Adjunct Professor	PhD	Applied Mechanics, Biomechanics	jayantakrchakraborty@yahoo.com
Dr. Chitrangada Das Mukhopadhyay	Assistant Professor (contractual)	PhD	Biotechnology, Clinical Microbiology	chitrangadadas@yahoo.com
Dr. Ananya Barui	Assistant Professor (contractual)	PhD	Stem Cells, Cancer and Regeneration	9733388223 ananya.pariksha@gmail.com
Dr. Pallab Datta	Assistant Professor (under DST INSPIRE faculty award [IFA12-LSBM-48 dated 01/02/2013])	PhD	Biomaterials, Biofabrication, Drug Delivery	9474892494 contactpallab@gmail.com

Other Associated Faculty Members from other Departments:-

1. Prof. Ajoy Kumar Ray, Director, IIEST - Chief Patron and Adviser
2. Prof. Somnath Chakrabarti - Professor, Mechanical Engg Dept.
3. Prof. Ashoke Sutradhar - Professor, Electrical Engg Dept.
4. Prof. Jaya Sil - Professor, CST Dept
5. Prof. Netai Chandra Dey - Professor, Mining Engg Dept
6. Dr. Susanta Kumar Parui - Asso. Professor, ETC Dept.
7. Dr. Chirasree RayChaudhuri - Asst. Professor, ETC Dept.
8. Dr. Santanu Majumder - Asst. Professor, AE & AM Dept.
9. Dr. Ajit. Kr. Mahapatra, - Asso. Professor, Chemistry Dept.
10. Dr. Jayati Bhowal - Asst. Professor, SOCSAT

Other Adjunct Professors associated with Centre:-

1. Prof. T. Lazar Mathews, Advisor, DST IDP, Govt. of India.
2. Prof. S. K. Basu- Ex-Principal, Medical College, Kolkata
3. Prof. J. C. Misra- Ex-Head, Dept of Mathematics, IIT Kharagpur
4. Prof. D. N. Tibarewala- Ex-Dierctor, SBSE, Jadavpur University.
5. Prof. N. Maity- Ex- Head, Dept of Mathematics and Computer Sci., IIEST Shibpur.
6. Dr. K. M. Mandana- Eminent Cardiac Consulatant, Fortis Hospital, Kolkata.
7. Dr. P. Bhattacharya- Eminent Pulmonary Consultant, Kolkata.
8. Dr. Debatosh Dutta- Consulatant, Apollo Hospital. Kolkata.

Awards and Laurels:

Research Areas (only mention broad titles without description in details):

1. Cancer Biology, Bioinformatics, Drug resistance
2. Biomaterials, Bio-fabrication, Drug Delivery
3. Stem Cells, Cancer and Regeneration

Research Facilities: (name specific equipment/ picture etc.)

Lyophilizer, Multiparameter Meter, Electrospinning Equipment, Nikon Epiflorescent Microscope, -20 degree freezer, 3D Scanner, 3D printer, Antigen Retrieval System, Uv/Vis Microplate Reader, PCR, Refrigerated Centrifuges, Thermostat Cooling Baths, CO_2 incubator, Biosafety cabinets, Autoclaves, Fume Hood, Water purification System, Oscilloscope, Electrical Safety Analyzer.

Cardio-pulmonary Laboratory:

Hot Air Ovens, Centrifuges

BioSafety Cabinet

AD Instruments Powerlab 8 port system & Lab Chart pro software CD

Medical equipments for validation of medical instrumentation

BPL Ultima Prime BS Cardiac monitor

Cardio-pulmonary Laboratory:

Digital Signal & Image Processing

Medical equipments for validation of medical instrumentation

Clinical Microbiology- Biochemistry- Biotechnology Lab

Name of the laboratories:

Cardio-pulmonary Laboratory:

Digital Signal & Image Processing

Medical equipments for validation of medical instrumentation

Clinical Microbiology- Biochemistry- Biotechnology Laboratory

Clinical Microbiology- Biochemistry- Biotechnology Laboratory

Cardio-pulmonary Instrumentation laboratory

Computer Laboratory

Stem Cell Regeneration and Early Cancer Imaging Laboratory

Biomaterials Laboratory Microscope

Support staff position:

Technical staff profile (in the following table):

Name	Designation	Highest Qualification	Status	E-mail
Pratap Chandra Ari	Medical Technician (from DST Project)	DMRT, DMET, B. Com	Temporary from Project Till Sept 2014	
Amlan Samanta	SRF (from DST Project)	M.Tech. (IT)		
Ripon Sarkar	JRF (DST Fast Track Project)	MSc (Micro)		
Medha Majumdar	JRF (DST Fast Track Project)	MSc (Genetics)		
Sanjay Singh	Gr. D. (from University)			

Ongoing Sponsored Research / projects: (mention area)

Ongoing (Proj Value)	Sponsoring agency
Establishment of Dr. Bholanath Chakraborty Laboratory for fundamental research in Homoeopathy (Worth INR 11 Crores, Approved)	CCRH, Ministry of AYUSH, Govt. of India.
Translational Center on Biomaterials for Orthopedic and Dental Applications (COE Network Project with IISC Bangalore worth INR 5 Crores, Sanctioned)	DBT, Govt. of India
Fabrication of Bio-degradable Honey Based Scaffold for Ex-Vivo Expansion and differentiation of Mesenchymal Stem Cells (21.45 Lakhs)	DST (Fast Track)
Biofabrication of Bioactive Scaffolds for Bone Regeneration. (35 Lakhs)	DST (INSPIRE)

Biofabrication with functionalizable poly(amino acid) hydrogels towards development of bioengineered tissue constructs and biocompatible medical devices (24.60Lakhs)	DST (Fast Track)
Enzymatic approach to control celiac disease leading to an alternative treatment strategy Co-PI: Chitrangada das Mukhopadhyay (20 Lakhs for the 1st yr)	DBT, Dovt of India
Development of Smart Prognostic System for Early Indication of Cardiac Problem of a Patient: PI: Prof. Ajoy Kumar Ray (37.425 Lacs)	DST-IDP Govt. of India
Design and development of customized dental implants; PI: Prof. Amit Roy Chowdhary, (12.00 Lacs)	UGC, Govt. of India
Efficacy of Silicon Microchannel Cytosensor Platform for Electrical Profiling of Multiple Mammalian Cells Under Intervention Towards Diagnostic and Regenerative Applications; PI: Prof. Chirasree RoyChowdhuri, (54.600 Lacs)	SERB, Govt. of India
A Biotechnological approach for rapid detection of aflatoxin in food using optical nanofibre probes	DBT, Govt. of India

No. of Publications: (This year only)

Journal ……12

Conference ……21

Books / Monograms ……02

Seminar / Workshops / Conferences / Training program organized by the department (2013 - 14)

1. One day Workshop on Recent trends in Cardiac Risk Assessment, 20th December, 2014.
2. One day International Symposium on RECENT CHALLENGES IN BIOMEDICAL ENGINNERING , 13th January, 2015.
3. Lecture Series on Biomaterials By Prof. Bikramjit Basu, IISc Bangalore; June 8-10 2015.
4. Lecture by Prof. H S Ranu, President American Orthopedic Association on 24th July 2015.
5. Potential of tele medicine technology and its application in remote India by Dr. Amit Sengupta, Consultant, Tata Hospital, Mumbai, 24th November 2014.

Ongoing work on:

- Portable cardiac risk detector – sponsored by Dept. of Science & Technology, Govt. of India
- Multifunction electronic blood pressure machine,
- Computerised auto-analysis of paper-based archived ECG
- Work on clinical Microbiology specially to address drug resistant bacterial strains
- Combinatorial therapy for celiac diseases
- Prototypes developed
  - i) Portable electrical biosensor for bacteria detection
  - ii) Wireless sensor system for health monitoring of elderly people (field testing has started)

Advancements under TEQIP – Phase II

Foreign visits and Invited Lectures

Pallab Datta, International Conference on Biofabrication 2014, Intelligent Manufacturing Systems Lab, Department of Mechanical Engineering, Pohang Institute of Science and Technology, Pohang, South Korea.

Visitors to your Department (Indian & Foreign)

1. Prof. Vladimir Blazek, RWTH Aachen, Germany.
2. Prof. T. Lazar Mathew, PSG Institute of Advance Studies.
3. Prof. Subrata Saha, SUNY Brooklyn, USA.
4. Prof. B. Basu, IISc Bangalore.
5. Prof. J. Bellare, IIT Bombay.
6. Prof. Sneh Anand, IIT Delhi.
7. Prof. H. S. Ranu, Atalanta, USA.

New Academic / Research Initiatives

Interdisciplinary course for PhD students in Biomedical Engineering introduced in Senate.

Proposals for Courses in Biomedical Engineering (UG and PG) and common or elective courses for other department students.

Academic Collaboration

a) GNIDSR, Kolkata.

b) IISc Bangalore.

c) Collaborative research work with Central Glass & Ceramic Research Institute, Jadavpur University and Variable Energy Cyclotron Centre, Kolkata

Industrial Collaboration

a) Alfatek Systems, Kolkata.

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 provides open access services for books and journals to its members including students.

Collection

The total collection of books is 1,41,021 as on 31st March 2015. During this period 1,420 books were added in the collection of the library. It has a huge collection of non-book materials, such as patents, standards, technical reports and pamphlets. The library boasts of having a good collection of old and rare books and 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. The library already introduced system generated bar-coded membership card with photograph for speedy charging and discharging of books. The library is also providing online search facilities (WebOPAC) of its catalogue through the website of the Institute for remote access of its database. Library is planning to upgrade its library management software and introducing RFID technology for providing additional and better services to its members.

Services offered

- Web based library services
- Access to electronic resources
- Lending facilities
- Reading Room facilities
- Reference Services
- Digital Question Papers Access Services
- Inter Library Co-operation
- Internet searching/web browsing
- Services to Alumni and other distinguished visitors

Electronic Resources

The facilities in the Library have been significantly improved by the way of introducing new scholarly electronic resources. The access of e-resources – *ASCE Journals*,

ASME Journals and *IEL Online (5 simultaneous user)* available through the INDEST-AICTE consortium and *American Chemical Society (ACS), American Institute of Physics (AIP), American Physical Society (APS), Royal Society of Chemistry (RSC), Springer's LINK, T&F Journals, JSTOR* and *Economic and Political Weekly* database through the UGC INFONET Digital Library 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. Like previous year, the library is subscribing management science database, *EBSCO Business Suite Plus*.

Participation in Seminars/Conferences/Training Programmes

Dr. H.P. Sharma, Joint Librarian has nominated as a member of the Board of Studies in Bachelor of Library and Information Science programme of the Netaji Subhas Open University, Kolkata. He also acted as a member of the Board of Reviewers of the National Seminar on Distance Learning and Reciprocal Library Services, held in Kolkata during June 6-7, 2014.

Mr. Abani Oraon, Assistant Librarian has attended the Regional Training & Awareness Program on J-Gate@UGC-INFONET, held at Jadavpur University, Kolkata on 16th July 2014.

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.

Equal Opportunity Cell (EOC)

About the department

The Equal Opportunity Cell(EOC) was setup vide resolution no. 06.06.01 of 6th Executive Council meeting held on 17.09.2009 followed by UGC guidelines to run coaching schemes for Scheduled Caste, Scheduled Tribes, OBC (non-creamy layer), Minorities, students of Economically and Academically weaker sections of the society in order to enhance their academic achievements for their employability and success.

EOC runs three coaching schemes i.e. (i) Remedial coaching at UG and PG level of courses, (ii) Coaching for Entry into Services and (iii) Coaching for NET/SET/GATE.

The classes of Remedial Coaching Scheme started from October 2009 and Coaching for Entry into the Services & NET/SET/GATE started from January 2010. At present all the three coaching Schemes at Undergraduate and Postgraduate Level are running successfully. The registered students under these Schemes attend classes taken by both the internal and external faculties. Classes are held from Monday to Friday between 5 pm to 8 pm as per schedule in the allotted classrooms except the period of examinations and vacations.

In 2014-15 sessions, Remedial Coaching classes were proposed for Spoken English, Mathematics, Chemistry, Electronics, Engineering Drawing, Mechanics, Electronics, Physics, C & C++ programming, Basic Electrical Engineering.

From July 2011, classes for IES (Indian Engineering Service) Examination were started for Civil and Electronics & Telecommunication Engineering students and in April-May 2012, the Language Laboratory of the University was renovated with modern equipments.

Academic Programmes:

REMEDIAL COACHING SCHEME:-

No. of Students registered: **33**

No. of SC/ST/OBC/Minority Students registered: **15**

ENTRY INTO THE SERVICES COACHING SCHEME:-

No. of Students registered: **284**

No. of SC/ST/OBC/Minority Students registered: **82**

NET/SET/GATE COACHING SCHEME:-

No. of Students registered: **46**

No. of SC/ST/OBC/Minority Students registered: **14**

Name of the laboratories:

Language Laboratory	Capacity- **32** students

Support staff position:

(i) Sanctioned technical post ……**3**……

(ii) Technical staff profile (in the following table)

Name	Designation	Highest Qualification	Contact No.	E- mail
SUBHASREE MAJUMDER	Part-time Office Assistant	MCA	+919830252793	Subhasree812@gmail.com

Other Staff

Name	Designation	Highest Qualification	Contact No.	E- mail
SUPRIYA JANA	Part-time Office Attendant	Higher Secondary	+918820663887	NA

Ongoing Sponsored Research / projects: (mention area)

Rs. 2,45,291/- was sanctioned in 2014-15.	under UGC XII Plan Scheme
Ongoing (Prof value)	Sponsoring agency

Seminar / Workshops / Conferences / Training programme organized by the department

(2014 - 15)

a) GATE Coaching Classes under Metallurgy & Materials Engineering.

b) Spanish Language Coaching Classes.

c) French Language Coaching Classes.

Extension Activities and Societal outreach Total activity falls in this category.

Annual Convocation

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

The first annual Convocation of IIEST, Shibpur was held on 4th March 2015. Dr.K.Radhakrishnan, Chairperson-BOG, IIEST presided over the ceremony and Professor H.P.Khincha, former Vice Chancellor –Visvesvaraya Technological University, Belgaum was the Chief Guest. Total number of Degree recipients in this Convocation was 865. Degrees and prizes have been awarded in this Convocation to a total of 425 Undergraduate students of 10 courses, 388 postgraduate students from different courses and 52 Ph.D Fellows who have completed their studies and passed the examinations during this period. Institute Medals have been awarded to 35 candidates who have secured highest marks in different disciplines. The President of India Gold Medal has been awarded to Ms. Prerana Singhal from IT Department who secured 1st position among the undergraduates of all ten engineering disciplines taken together. Some endowment medals also have been awarded to the students who have stood first in their respective disciplines or have secured highest marks in particular subjects. Doctor of Literature (Honoris Causa) awarded to Professor Sankha Ghosh. Doctor of Science (Honoris Causa) in Engineering awarded to Professor Vikram Kumar & Doctor of Science (Honoris Causa) in Science awarded to Professor Dipankar Das Sarma.

The Institute conferred Distinguished Teacher Award to Professor Pankaj Kumar Gayen, Professor Joydeb Sarkar & Professor Chitta Ranjan Mahata and Distinguished Alumnus Award to Dr. Chaitanyamoy Ganguly, Dr. Ranjit Kumar Ray & Dr. Subhamay Gangopadhyay.

List of Consultancy (2014 – 15)

Consultancy (2014 - 2015) for the Financial Year 2014 - 15

Sl. No.	Dept.	Name of Principal Investigator	Title of the Project	Funding Agency	Duration	Total Amount Sanctioned (Rs. in lakh)
1	Electrical	Ashok Kumar Maitra	Technical Consultancy on Electrical Equipment, Indo Nabin Projects Limited	Indo Nabin Projects Limited, Kolkata	One Time	3.2809
2	Civil	Sudip Kumar Roy	Renovation, Rehabilitation and Strengthening of Old Arched Masonry Bridge over river Bankra at Birhata on G.T. Road Burdwan	Burdwan Development Authority	2 Months	4.8000
3	Civil	Saibal Kumar Ghosh	Relationship as Advisor	Saroj Infracon Pvt. Ltd.	1 Year	1.1236
4	Civil	Tapas Kumar Roy	Structural Vetting for the work "Construction of Maharaja Nandakumar Mahavidyalaya at Bhabanipur Purba Medinipur"	Haldia Development Authority	1 Year	5.0243
5	Civil	Ambarish Ghosh	Proof Checking of Launching Scheme of Bhatpara ROB & POT PTFE bearing of KMDA Project	Larsen & Toubro Ltd., Construction, Infrastructure IC	6 Months	1.1236
6	Civil	Arun Kumar Chakraborty	Vetting for Civil Design and Drawings for Abutment of Bailey Bridge (Package for Koraput District, Odisha)	Sinha & Associates (Engineers & Design Consultants)	3 Months	0.5056
7	Civil	Aparna (Dey) Ghosh	Training Programme for PWD Engineers - Module 2 & 3	Road and Building Research Institute	8 Days	0.3000
8	Civil	Aparna (Dey) Ghosh	Training Programme for PWD Engineers - Module 1	Road and Building Research Institute	4 Days	0.1500
9	Civil	Aparna (Dey) Ghosh	Vetting of Design & Drawing of Arsenic cum Iron Removal Plant (AIRP)	Effluent & Watertreatment Engineers (P) Ltd.	1 Month	1.0112
10	AE&AM	Amit Roy Chowdhury, Santanu Majumder & Niloy Khutia	Vibration Analysis of Cooling Towers	Paharpur Cooling Towers Ltd.	3 Months	0.7500
11	Civil	Ambarish Ghosh	Soil Investigation for the Proposed Construction of G+9 Storied Building for Mother and Child Hub in the Compound of Canning Sub-Division Hospital in the District of South 24 Parganas	South 24 Parganas Division, Social Sector, P.W. Dte., Govt. of West Bengal	6 Months	5.4495
12	Civil	Saibal Kumar Ghosh	Vetting of RCC Box under B.G. Mainline at Dunlop	E.E. PWD Kolkata North Division	4 Weeks	1.1236

13	Civil	Ambarish Ghosh	Soil Exploration Work at HIT Scheme No. VI, Holding No.144, 144/3, 145/1, 146, 146/1, 146/2, 147(P), Naskarpara Road, Ghusuri, Salkia, Howrah for the work:- Construction of Old Age Home	Howrah Improvement Trust	6 Months	1.8000
14	Civil	Tapas Kumar Roy and Pritam Saha	Quality testing of road works under Alipore Division, PWD	PWD, Govt. of West Bengal	7 Days	1.4200
15	Civil	Prabir Kumar Paul	Certification on probable future damage of Sova Ispat Plant in Ardhagram Coal Block due to under ground mining based on of subsidence prediction study report of CIMFR	Sova Ispat Ltd.	3 Days	1.1236
16	Civil	Saibal Kumar Ghosh	Scaffolding Design for T G Deck	Petron Engineering Construction Ltd.	6 Months	3.3708
17	Civil	Arun Kumar Chakraborty	Consultancy for compressive strength testing of cylinder concrete core specimens	Rajarhat IT Park Ltd. (A Bharti Enterprise)	3 Months	0.2247
18	Civil	Ambarish Ghosh	Study on the river bank protection adjoining the proposaed construction of multistoried building at 99/1 Dr. Abani Dutta Road, Howrah	Nilima Vinimay Pvt. Ltd.	6 Months	2.8090
19	Civil	Saibal Kumar Ghosh	Vetting of Structural Design for Bldg at Durgapur	Genesis Infrastructure Development Services, Durgapur	6 Weeks	2.2472
20	Civil	Ambarish Ghosh	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 along with the widening of the existing 2 (two) lane road by addition of two lanes on both sides of the elevated fly - over through construction of an at grade road and construction of a 1.5 m foothpath at the side of at grade roads - Proposal for veeting of detail design of road, substructure and superstructure	Larsen & Toubro Ltd., Construction, Infrastructure IC	2.5 Years	56.1800
21	Civil	Ambarish Ghosh	Soil Exploration Work at Premises No. 117, G.T. Road, Salkia, Howrah	Howrah Improvement Trust	6 Months	3.6517
22	Civil	Ambarish Ghosh	Soil Exploration Work at Premises No. 128, G.T. Road, Salkia, Howrah	Howrah Improvement Trust	6 Months	1.6292
23	Civil	Ambarish Ghosh	Soil Exploration Work at the junction Belilious Road and Narasingha dutta Road in connection with the laying of 1400 mm dia. Sewer	Howrah Improvement Trust	6 Months	0.7500

24	Civil	Tapas Kumar Roy	Vetting of estimate, design & drawing for the work "Construction of Muktamancha in front of BDO Office, Mahishadal	Haldia Development Authority	2 Months	5.4220
25	Civil	Tapas Kumar Roy	Technical vetting of structural design and estimate of four storied classroom building of Moyna College	Moyna College	1 Month	2.2500
26	Civil	Saibal Kumar Ghosh	Consultancy for Transformer Foundation in Kolkata	CESC, Kolkata	3 Months	2.2472
27	Civil	Saibal Kumar Ghosh	Third Party Consultancy of Paving Block at Haldia	Gangadhar Bera, Haldia	6 Months	1.2360
28	Civil	Ambarish Ghosh	Soil Exploration work for Proposed Construction of a new Government English Medium School in Matikole area under South Dum Dum Municipality	Executive Engineer, 24 Parganas North Division, PW(C.B.)DTE, GOWB	3 Months	1.3000
29	Civil	Ambarish Ghosh	Analysis of Murram samples (four nos.) for road subgrade construction	Larsen & Toubro Ltd., Construction, Infrastructure IC	1 Month	0.3071
30	Civil	Saibal Kumar Ghosh	Vetting of Quantification work for Tripura Food Park	Sikaria Mega Food Park (P) Ltd.	2 Weeks	6.7416
31	Civil	Sujit Kumar Dalui	Rebound Hammer Teston 6 nos. location of RCC Elevated Reservoir at Mukundapur	Supreme Infrastructure India Ltd.	1 Month	0.5618
32	Civil	Ambarish Ghosh	Vetting of design and drawing for the civil structural works for "RCC Intake Structure under Bhadreswar Municipality	Traders & Engineers Pvt. Ltd.	6 Months	0.4000
33	Civil	Ambarish Ghosh	Analysis of field CBR	Kolkata Port Trust, Govt. of India	2 Months	0.1685
34	Civil	Ambarish Ghosh	Reviewing Vetting of design and drawing for the civil structural works for "Design and Installation of 6th heavy duty 6 KV HT Pump-Motor Set with suction and delivery pipeline and allied works at raw water Pumping station PH-II, GRWW	Traders & Engineers Pvt. Ltd.	6 Months	0.2500
35	Civil	Sudip Kumar Roy, Tapas Kumar Roy & Sandip Chakraborty	Vetting of Estimates of Road Work under Rajarhat Gopalpur Municipality	Rajarhat Gopalpur Municipality	Time to time	1.3598
36	Civil	Saibal Kumar Ghosh	Design of Compressor Foundation at Haldia for IOCL	IOCL, Haldia	6 Months	1.1236
37	Civil	Sudip Kumar Roy, Sandip Chakraborty, Tapas Kumar Roy & Pritam Saha	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) Krisnnagar - Baharampore Section from km 115.000 to 193.000 (78 km)	National Highways Authority of India	2 Years	118.2000
38	Civil	Saibal Kumar Ghosh	Vetting of Gems and Jwellery Park at Domjur, Howrah	Skyscraper Projects Pvt.	6 Months	7.5281

				Ltd.		
39	Mining	Netai Chandra Dey & Pratik Datta	Analysis and Interpretation of Stress Cell and Extensometer Data Collected at Sharda Highwall Project of South Eastern Coalfields Ltd.	Cuprum Bagrodia Ltd. (CBL)	1 Month	1.1236
40	Civil	Sudip Kumar Roy	Chandrapura - Bhandaridah - Phusro Railway Crossing - Kathara - Gomia Road in Jharkhand: Consultancy Services for Safety Engineering	Ram Kripal Singh Construction Pvt. Ltd.	1.5 Year	21.8708
41	Civil	Sudip Kumar Roy	Roughness Survey from Jinzira Bazar to Batanagar on Budge Budge Truck Road	C.E. Testing Company Pvt. Ltd.	1 Month	0.6742
42	Civil	Saibal Kumar Ghosh	Vetting of OHR under Bhadreswar Municipality	D.C. Rakshit & Co., Kolkata	1 Week	0.2809
43	Civil	Ambarish Ghosh	Review on the Structural Safety of River Crossing Transmission Tower across River Hooghly pertaining to 400KV Double Circuit Haldia-Subhasgram Transmission Line	Haldia Energy Limited	6 Months	6.1798
44	IIPC	Ashok Kumar Maitra	Technical Inspection of DRV Passenger Ropeway at Darjeeling	Conveyor & Ropeway Services Pvt. Ltd.	5 Years	1.8539
45	Civil	Sudip Kumar Roy & Tapas Kumar Roy	Evaluation of Granular Mix with RBI 81	Jalnidhi Bitumen Specialties Pvt. Ltd.	2 Months	0.2247
46	Civil	Saibal Kumar Ghosh	Health Monitoring of Chimney at Raigarh	Visa Power Limited, Kolkata	3 Months	5.0562
47	Mining	Pratik Dutta	Geotechnical Consultancy for Panchayat Jhora Landslide Zone	Mahananda Construction Co.	1 Month	0.5625
48	Civil	Saibal Kumar Ghosh	Health Monitoring of Four RCC Column in Sagar	BIL Infratech Limited, Kolkata	4 Week	0.5618
49	Civil	Ambarish Ghosh	Checking of design of VTMS Tower at Dadanpatra	Kolkata Port Trust, Govt. of India	6 Months	0.8989
50	Civil	Ambarish Ghosh	Reviewing Soil Report and Vetting of Design & Drawing for the Civil Structural works for Design and Construction of 3.0 MG Semi-Underground Reservoir-cum-Booster Pumping Station at Senpally, Behala, Ward No. 129	Traders & Engineers Pvt. Ltd.	6 Months	0.7500
51	Electrical	Ashok Kumar Maitra	Technical Vetting of Estimates of Electrical Schemes, Talgachhari-I Gram Panchayat	Talgachhari-I Gram Panchayat, Purba Medinipur	5 Years	0.3371
52	Civil	Gautam Bhattacharya	Carrying out Slope Stability Analysis for Dyke of Tailing Pond of Odisha Mining Corporation (OMC) at South Kaliapani, Jajpur, Odisha for MECON LIMITED - Ranchi	MECON LIMITED - Ranchi, (A Govt. of India Enterprise)	40 Days	1.0112

53	Civil	Sudip Kumar Roy	Pavement Soil Investigation, Pavement Material Investigation, Speed & Delay Survey for Improvement and Widening of NH-44 in the State of Tripura	Sumit Consultancy Services	2 Months	0.7528
54	Metallurgy	Sukumar Kundu	Identification of Non-metallic inclusions in Hadfield Manganese Steel	Shilpa Alloys Pvt. Ltd.	2 Days	0.0200
55	Civil	Saibal Kumar Ghosh	Vetting of G+8 Building at Salt Lake	Hollyhock Co-operative Housing Society Ltd.	3 Months	2.0225
56	Civil	Saibal Kumar Ghosh	Investigation for failure of roofing system ……	Balmer Lawrie & Co. Ltd., Kolkata	4 Week	1.1236
57	Civil	Sujit Kumar Dalui	Analysis of materials and Design Mix of Multi-Storeyed Class Room Building of Mahishadal Raj College	Mahishadal Raj College	1.5 Months	0.3938
58	Civil	Saibal Kumar Ghosh	Vetting of Design for 4 Storied Buildings for Kolkata Police	Partha Das & Associates, Kolkata	2 Weeks	0.5618
59	Civil	Sudip Kumar Roy	Design of Pavement of Habra-Kumra Road and Naihati Jirat Road	Executive Engineer, Barasat Highway Division - II.P.W. (Roads) Directorate	2 Months	7.5000
60	Civil	Ambarish Ghosh	Independent Assessment of effect of vibration, emanating from installation of Sheet Piles using a vibro-sinker at Premises No. 576, Anandapur Plot 1-18 Sector 9-J under EKADPPS, Anandapur, Kolkata - 700107, on the adjoining structures and providing guidance to the construction team	Ruby General Hospital Ltd.	3 Months	1.5730
61	Civil	Ambarish Ghosh	Soil Exploration Work at three Plots of HIT, Howrah	Howrah Improvement Trust	9 Months	5.9000
62	Civil	Ambarish Ghosh	Feasibility of acceptance of test result of Dynamic load test instead of static load test for routine load test of 1000/800 mm diameter cast in situ bored piles at Sabang, Paschim Medinipur	Bridge and Roof Co. (India) Ltd.	3 Months	0.8000
63	Civil	Arun Kumar Chakraborty	Consultancy assignment for conducting Non Destructive Test towards Stability analysis for various R.C.C. structural components for DPC's of Jute Corporation of India Ltd.	Webcon Consulting (India) Ltd.	6 Months	0.3034
64	Civil	Saibal Kumar Ghosh	Health Monitoring & Vetting of 3 MSC Buildings	Ninjas Consultancy & Services, Kolkata	3 Months	3.3708
65	Civil	Sujit Kumar Dalui	Analysis of Concrete Mix Design for Strengthening and Widening of SH-6	KCC Buildcon Pvt. Ltd.	2.5 Months	1.4607

66	Civil	Ambarish Ghosh	Soil Exploration Work for Proposed Construction of G+5 storied building at Prabhu Jagabandhu College, Jhorehat, Andul-Muuri	Prabhu Jagabandhu College, Educational Institute	3 Months	0.9500
67	Mining	Suranjan Sinha & Gopal Chandra Roy	Scientific evaluation of Mine Closure Plan with reference to sustainable development framework of Government of India for Dongri Buzurg Mine of MOIL	MOIL Limited	8.5 Months	2.2800
68	Civil	Ashis Kumar Bera & Ambarish Ghosh	Analysis of Glass Fibre	Sardip Consulting Engineers	1 Month	0.3000
69	Civil	Ambarish Ghosh, Sudip Kumar Roy & Santanu Bhanja	Vetting of Drawing of 4 lane Elevated Corridor along Kazi Nazrul Avenue (VIP Road) from Kestopur to Jora Mandir	IL & FS Infrastructure Development Corporation Limited	9 Months	15.7304
70	Civil	Ambarish Ghosh, Sudip Kumar Roy , Sujit Kumar Dalui & Prabir Kumar Paul	Pre tender design advisory consultancy for "Design and construction of 578 m long Theng tunnel including geological investigation and studies, design of tunnel and construction of tunnel proper including Civil as well as Electrical/Mechanical works along with approaches at KM 86.9 on Gangtok-Chungthang road under project Swastik in Sikkim state	ITD Cementation India Limited	6 Months	5.6180
71	Civil	Tapas Kumar Roy	Vetting of Plan and Estimate of the proposed PG Building	Vivekananda Mission Mahavidyalaya, Chaitanyapur, Purba Medinipur	3 Months	1.4607
72	Civil	Ashis Kumar Bera	Analysis of Bottom Ash and Steel Plant Slag Material in Ash Dyke as substitute of Sand	NTPC-SAIL Power Company Private Limited	6 Months	1.3483
73	Civil	Saibal Kumar Ghosh	Structural Stability of Administrative Building of NITA	Nabadiganta Industrial Township Authority	3 Months	5.6180
74	Civil	Aparna (Dey) Ghosh	Vetting of Design & Drawing of Arsenic cum Iron Removal Plant (AIRP)	Effluent & Watertreatment Engineers (P) Ltd.	1 Week	0.3371
75	Civil	Ambarish Ghosh	Soil Exploration and Surveying Work at five Sites of Burdwan	The Executive Engineer, Burdwan Division, P.W. (CB) Directt. Jagatberth, Surya Nagar, P.O. Sripally, Dist. Burdwan – 713103	6 Months	8.2135

76	Civil	Ambarish Ghosh	Soil Exploration Work in connection with the breach of closure work on the left bank of river New Cossye at Garh Purosottampur within Panskura Municipal area, District Purba Medinipur	The Chief Engineer (West), Irrigation & Waterways Directorate, Govt. of W.B.	6 Months	2.8500
77	Civil	Ambarish Ghosh	Geotechnical Investigation for the Contraction of Proposed RCC Bridge over River Bidya connecting Godkhali and Gosaba Bazar in the District of South 24 Parganas, against vide Memo No. 742, dated 17.12.2013	Highway Survey Division - I.P.W. (Roads) Directorate, Bhabani Bhawan, Kolkata - 700027, Govt. of W.B.	6 Months	37.9105
78	Civil	Sudip Kumar Roy	Traffic Study for proposed elevated connector between Belghoria Expressway and Kalyani Expressway …… NH-34.	Executive Engineer, Highway Survey Division - I.P.W. (Roads) Directorate	2 Months	2.6000
79	Civil	Ambarish Ghosh	Geotechnical Investigation for the Construction of Proposed Elevated connector between Belgharia Expressway and Kalyani Expressway to bypass Barasat Town for North Bengal bound Traffic of NH34	Highway Survey Division - I.P.W. (Roads) Directorate, Bhabani Bhawan, Kolkata - 700027, Govt. of W.B.	6 Months	3.5000
					Total	**404.8287**

List of ongoing Projects (2014 – 15)

List of Projects (2014 - 2015) for the financial Year 2014 - 15						
Sl. No.	**Dept.**	**Name of Principal Investigator**	**Title of the Project**	**Funding Agency**	**Duration**	**Total Amount Sanctioned (Rs. in lakh)**
1	Physics	Sampad Mukherjee	A Biotechnological approach for rapid detection of aflatoxin in food using optical nanofibre probes	DBT - GOI	3 Years	43.0460
2	Chemistry	Mrinal K. Bera	Synthetic studies towards structurally complex, synthetically challenging vibsane type diterpenoids via a RCM based common methodology	DST-SERB	3 Years	54.6200
3	Chemistry	Chinmoy Bhattacharya	Preparation and characterizations of binary and ternary metal sulphide semiconductors for applications in photoelectrochemical H2 production from water	DST-WB	3 Years	10.8253
4	Mathematics	Tapan Kumar Kar	Transmission Dynamics and Spread of Infectious Diseases: Modelling, Prediction and Control	CSIR	3 Years	14.4858
5	HRM	Manas Kumar Sanyal	NRDC-IIEST-Innovation Facilitation Centre (NRDC-IIEST-IFC)	National Research Development Corporation (An Enterprise of DSIR-DST-GOI)	1 Year (Likely to be continued)	6.0000
6	Chemistry	Manas Roy	Graphene and its composite as solar sponge for water - splitting	SERB-DST	3 Years	24.8000
7	Electrical	Paramita Chattopadhyay	Development of Nano-structures - transformer oil nano-fluids for improvement of thermal and insulating properties	Central Power Research Institute (CPRI), Ministry of Power, Govt. of India	2 Years + 1 Year (Extn.)	78.0900
8	Chemistry	Sudip Kumar Chattopadhyay	Development and Application of the Theory of Dynamical Systems to Problems in Condensed Phases	CSIR	3 Years	6.6950
9	CEGESS	Hiranmoy Saha	Smart Micro GRID at CEGESS	WEBREDA	2 Years	55.0000
10	Civil	Anirban Gupta	Demonstration of Integrated Fluorosis Mitigation Approaches in Malda	United Nations Children's Fund (UNICEF)	6 Months	10.0004

11	CHST	Pallab Datta	Biofabrication with Functionalizable Poly (Amino Acid) Hydrogels Towards Development of Bioengineered Tissue Constructs and biocompatible Medical Devices	SERB (FTYS-ES)	3 Years	24.6000
12	Chemistry	Papu Biswas	UGC Raman Post Doctoral Fellowship 2014-15	UGC	1 Year	22.8684
13	Electrical	Mainak Sengupta	Analytical and Experimental Investigations on Control of State-of-The-Art Induction Heating Units	SERB	3 Years	36.0470
14	Chemistry	Bibhutosh Adhikary	Studies on Sulfur-Bonded Lanthanide Complexes and Nano-Structured Lanthanide Sulfides Derived from them: Structural Spectroscopic and Magnetic Properties	CSIR	3 Years	13.5360
15	MNDSMSE	N.R. Bandyopadhyay	Synthesis of mixed metal oxides by high energy ball milling for their application as photocatalyst for waste-water treatment	The Institute of Engineers (India), Kolkata	1 Year	1.5000
16	Chemistry	Debabani Ganguly	Interactions of Intrinsicaly Disordered Proteins: A Physics-Based Approach	DBT - Ramalingaswam i Fellowship	5 Years	88.0000
17	Chemistry	Chinmoy Bhattacharya	Development of n-type scheelite type semiconductors (like BiVO4, InVO4, PbMoO4, CaWO4, Pb2CrO5) using the principle of scanning electrochemical microscopy (SECM) for identification of suitable dopants and cocatalysts for enhancement of photoelectrotrochemic	SERB	3 Years	55.0000
18	ETC	Chirasree Roychaudhuri	Multiple Wireless Sensor System for Monitoring Health Status of Elderly People - Prototype Development and Field Testing	DST	2 Years	23.0730
19	AE&AM	Nityananda Nandi	Design and development of an automated rice transplanter	The Institute of Engineers (India), Kolkata	1 Year	1.0000
20	Chemistry	Ajit Kumar Mahapatra	Enzymatic approach to control celiac disease leading to an alternative treatment strategy	Dept. of Biotechnology	1 Year	14.6180
21	Chemistry	Bibhutosh Adhikary	Morphologically-tuned ternary and heteropolymetallic sulfide nanomaterials: Synthesis, structural characterization and catalytic activities	DST	3 Year	23.0000
22	Mining	Pratik Dutta	CBM Reserves Estimation for Indian Coalfields	Ministry of Coal, Govt. of India	3 Years	763.1200

23	Mathematics	Binayak Samadder Choudhury	Developing Fixed Point Theory and Fixed Point Methods in Apllied Mathematics	DST (West Bengal)	3 Years	8.8374
					Total	**1378.7623**

Sl. No.	**Financial Year**	**Dept.**	**Name of Principal Investigator**	**Title of the Project**	**Funding Agency**	**Duration**	**Total Amount Sanctioned (Rs. in lakh)**
1	2014-2015	IIPC	Debjani Ganguly	Short Term Course on Electro Technology for CESC	CESC Ltd.	6 Days	1.7500
						Total	**1.7500**

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

INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31ST MARCH 2015

Amount in Rupees

Particulars	Schedule	Current Year	Previous Year
INCOME			
Academic Receipts	9	10,02,99,531	8,20,48,875
Grants / Subsidies	10	54,23,90,273	50,50,13,423
Income from Investments	11	3,01,81,283	2,59,33,779
Interest earned	12	1,82,47,938	1,27,92,829
Other Income	13	4,52,13,444	4,89,94,768
Prior Period Income	14	25,47,779	-
TOTAL (A)		73,88,80,247	67,47,83,674
EXPENDITURE			
Staff Payments & Benefits (Establishment expenses)	15	47,29,57,046	41,65,39,070
Academic Expenses	16	13,20,94,284	5,58,96,011
Administrative Expenses	17	3,98,76,528	4,91,66,829
Transportation Expenses	18	14,93,749	12,00,142
Repairing & Maintenance	19	5,38,88,981	8,52,12,405
Depreciation		4,57,23,600	7,58,71,192
Finance Costs	20	58,509	1,51,266
Other Expenses	21	-	-
Prior Period Expenses	22	-	-
TOTAL (B)		74,60,92,697	68,40,36,915
Balance being excess of Income over Expenditure (A-B)		(72,12,450)	(92,53,241)
Transfer to / from Designated Fund			
Building fund			
Others (specify)			
Balance being Surplus / (Deficit) carried to Capital Fund		(72,12,450)	(92,53,241)

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Finance Officer
Finance Officer (Actg.)
Indian Institute of Engineering Science & Technology
Shibpur, Howrah-711103, West Bengal, India.

Registrar
Dr. Biman Bandyopadhyay
Registrar
Indian Institute of Engineering Science & Technology
Howrah - 711 103, West Bengal, India

Director

D. Bandyopadhyay, Proprietor
M. No.- 057861
for DEBASIS BANDYOPADHYAY & CO.

SHIBPUR, HOWRAH - 711 103

RECEIPTS AND PAYMENTS ACCOUNTS FOR THE YEAR ENDED 31st MARCH 2015

RECEIPTS	CURRENT YEAR	PREVIOUS YEAR	PAYMENTS	CURRENT YEAR	PREVIOUS YEAR
I Opening Balances			I Expenses		
a) Cash Balances	31,786		a) Establishment Expenses	472,957,046	
b) Bank Balances			b) Academic Expenses	132,094,284	
i. in Current Accounts	272,216,579		c) Administrative Expenses	39,705,528	
ii. Savings Accounts	161,009,747		d) Transporatation Expenses	1,493,749	
iii. Howrah Treasury PF	101,133,451		e) Repairs & Maintenance	53,888,981	
c) Cheques in hand	36,222,443		f) Prior Period Expenses	-	
II Grants Received			II Payments against Earmarked/Endowment Funds	34,296,737	
a) From Govt. of India	328,300,000				
b) From State Govt.	47,675,400		III Payments againsts Sponsored/Scheme	126,488,041	
c) Form UGC-Non Plan	1,172,364				
c) Form Other Sources (Details)	-		IV Payments against Sporsored/Fellowship/Scholarship	37,593,247	
III Academic Receipts	100,299,531				
IV Receipts against Earmarked/Endowment Funds	22,358,464				
			V Expenditure on Fixed Assets and Capital Works-in-progress		
V Receipts againsts Sponsored/Scheme	159,433,384		a) Fixed Assets	115,797,922	
			b) Capital Works-in-Progress	48,800,000	
VI Receipts against Sporsored/Fellowship/Scholarship	46,321,540				

.... Contd.

VII	Income on Investments from		VI	Refunds of Grants	6,462,218
	a) Earmarked/Endowment Funds	653,620			
	b) Other Investments	3,405	VII	Deposit and Advances	19,451,011
VIII	Interest Received on		VIII	Other Payments (Finance Cost)	58,509
	a) Bank Deposits	10,116,634			
	b) Loans & Advances	-			
	c) Savings Bank Accounts	18,247,938	IX	Term Deposits transactions (net) with Schedule Banks	113,792,568
	d) Providend Fund	7,211,956			
			X	Closing Balances	
IX	Other Income (Including Prior Period Income)	9,805,408		a) Cash Balances	191,793
				b) Bank Balances	
X	Deposit and Advances	39,643,240		i. in Current Accounts	(68,090,248)
				ii. Savings Accounts	104,049,748
XI	Miscellaneous Receipts including Statutory Receipts	132,954		iii. Howrah Treasury PF	119,466,666
				c) Cheques in hand	11,598,417
XII	Any Other Receipts	8,106,373			
		1,370,096,217			1,370,096,217

Finance Officer

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Indian Institute of Engineering Science & Technology
Shibpur, Howrah-711103, West Bengal, India.

Registrar

Dr. Biman Bandyopadhyay
Registrar
Indian Institute of Engineering Science & Technology, Shibpur
Howrah - 711 103, West Bengal, India

Director

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

BALANCE SHEET AS ON 31ST MARCH 2015

Amount in Rupees

SOURCES OF FUNDS	Schedule	Current Year	Previous Year
CORPUS / CAPITAL FUND	1	1,28,47,66,126	1,12,25,32,557
DESIGNATED / EARMARKED / ENDOWMENT FUNDS	2	13,07,89,989	37,63,10,484
CURRENT LIABILITIES & PROVISIONS	3	51,01,88,211	1,89,53,083
TOTAL		**1,92,57,44,325**	1,51,77,96,124

APPLICATION OF FUNDS	Schedule		Current Year	Previous Year
FIXED ASSETS	4		82,70,39,997	63,83,92,106
- Tangible Assets		77,09,41,327		-
- Capital Work in Progress		4,88,00,000		
- Intangible Assets		72,98,670		-
INVESTMENTS FROM EARMARKED / ENDOWMENT FUND	5		19,34,77,483	7,96,71,640
- Long Term		18,23,91,859		
- Short Term		1,10,85,624		
INVESTMENTS - OTHERS	6		21,01,02,445	19,89,03,888
CURRENT ASSETS	7		64,96,57,831	57,78,25,962
LOANS, ADVANCES & DEPOSITS	8		4,54,66,570	2,30,02,528
TOTAL			1,92,57,44,325	1,51,77,96,124

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Registrar
Indian Institute of Engineering Science & Technology, Shibpur
Howrah - 711 103, West Bengal, India

Director

D. Bandyopadhyay, Pro
M. No.- 057861
for DEBASIS BANDYOPADHYAY
Chartered Accountant