Annual Report

2017 - 2018

Indian Institute of Technology Kharagpur

September 2018

Contents

Schools (12)

Centers of Excellence (4)

PART–II

Centralised Services, Programmes and Units (19)

PART– III

Statistical Information

Members of the Council of Indian Institutes of Technology

Sl. No.	Name and Designation
1	Shri Prakash Javadekar, (Chairperson, IIT Council), Minister for Human Resource Development
2	Dr. Mahendra Nath Pandey, Minister of State for Higher Education
3	Shri Abhishek Singh, Member of Parliament, Lok Sabha
4	Shri Ninong Ering, Member of Parliament, Lok Sabha
5	Shri Prabhat Jha, Member of Parliament, Rajya Sabha
6	Shri Dilip Shanghvi, (Chairperson, BOG IIT Bombay)
7	Prof. Girish Chandra Tripathi, Chairman, BoG, IIT(BHU), Varanasi
8	Shri Kumar Mangalam Birla, (Chairman, BOG IIT Delhi)
9	Dr. Rajiv I. Modi, Chairperson, Board of Governors, IIT Guwahati
10	Shri R.C. Bhargava, Chairperson, Board of Governors, IIT Kanpur
11	Dr. Pawan Goenka, Chairperson, BoG, IIT Madras
12	Shri Sanjiv Goenka , Chairman, Board of Governors, IIT Kharagpur
13	Prof. D.D. Mishra, Chairperson, Board of Governors, I.I.T.(ISM) Dhanbad
14	Shri Ajai Chowdhry, Chairperson, BOG IIT Patna
15	Mrs. Lila Poonawalla, Chairperson, Board of Governors, IIT Ropar
	List of Directors of IITs
16	Prof. Devang V. Khakhar, Director, IIT Bombay
17	Prof. V. Ramgopal Rao, Director, IIT Delhi
18	Prof. Indranil Manna, Director, IIT Kanpur
19	Prof. Partha P. Chakrabarti, Director, IIT Kharagpur
20	Prof. Bhaskar Ramamurthi, Director, IIT Madras
21	Prof. Gautam Biswas, Director, IIT Guwahati
22	Prof. Ajit Kumar Chaturvedi, Director, IIT, Roorkee
23	Prof. Rajeev Sangal, Director, Indian Institute of Technology (BHU)
24	Prof. C.V.R. Murty, Director, IIT Jodhpur
25	Prof. Pushpak Bhattyacharya, Director IIT Patna
26	Prof. Sudhir K. Jain, Director, IIT Gandhinagar
27	Prof. U.B. Desai, Director, IIT Hyderabad
28	Prof. Sarit Kumar Das, Director, IIT Ropar
29	Prof. R.V. Rajakumar, Director, IIT Bhubaneswar
30	Prof. Timothy A. Gonsalves, Director, IIT Mandi
31	Prof. Pradeep Mathur, Director, IIT Indore
32	Prof. D.C. Panigrahi, Officiating Director, IIT(ISM) Dhanbad
33	Prof. K.N. Satyanarayana, Director, IIT, Tirupati, Tirupati(AP)
34	Prof. P.B. Sunil Kumar, Director, IIT, Palakkad, Palakkad(Kerala)
35	Prof. B.K. Mishra, Director, IIT, Goa
36	Prof. Rajat Moona, Director, IIT Bhilai-Durg
37	Prof. Seshu Pasumarhy, Director, IIT Dharwad (Karanataka)

38 Dr. P. Rama Rao, Chairman, Governing Council of Indian Institute of Science,
39 Prof. Anurag Kumar, Director, Indian Institute of Science, Bangalore
40 Prof. Vijayalakshmi Ravindranath, Prof. & Chair, Centre for Neuroscience, IISc,
41 Prof. Anil D. Shahsrabudhe, Chairperson, AICTE.
42 Dr. Girish Sahni, DG, CSIR, New Delhi
43 Dr. (Mrs.) Tessy Thomas, Director, (ASL) Hyderabad.
44 Prof. Ashok Jhunjhunwala, Deptt. of Elect. Engg., IIT Madras
45 Chairman , University Grants Commission
46 Secretary (Expenditure), Ministry of Finance, Department of Expenditure
47 Secretary, Department of Information Technology
48 Shri. K.K. Sharma, Secretary (Higher Education) (Outgoing)
49 Shri R. Subrahmanyam, Secretary (Higher Education),& the current Chairperson, BOG of six new IITs at Tirupati, Jammu, Goa, Dharwad, Bhilai-Durg and Palakkad.
50 Ms. Darshana M. Dabral, JS&FA, MHRD
51 Dr. Sukhbir Singh Sandhu, Additional Secretary(TE) Secretary (IIT Council) MHRD

Board of Governors, IIT Kharagpur
(From 1st April, 2017 to 31st March, 2018)

Sl. No	Name & Address	Position
1.	**Shri Sanjiv Goenka** Chairman, RP-Sanjiv Goenka Group,CESC House, 1, Chowringhee Square, Kolkata – 700001	Chairman
2.	**Smt. Arundhati Bhattacharya** Former Chairperson, State Bank of India Corporate Centre, 6th Floor, State Bank Bhavan, Madame Came Road, Mumbai-400021	Member
3.	**Dr. (Smt.) Sudha N. Murty** Chairperson, Infosys Foundation, III Floor, Infosys Tower, 27, Bannerghatta Road Bangalore-560076	Member
4.	**Prof.(Dr.) Jai Pal Mittal** M.N. Saha Distinguished Professor(NASI) 11-B, Rohini Coop. Housing Society Vashi, Navi Mumbai, Maharashtra-400703	Member
5.	**Prof. N. Balakrishnan** Supercomputer Education and Research Centre, Indian Institute of Science Bangalore - 560012	Member
6.	**Prof. Partha P. Chakrabarti** Director IIT Kharagpur	Member
7.	**Prof. Sunando Dasgupta** Dept. of Chemical Engineering IIT Kharagpur.	Member
8.	**Prof. Sudeshna Sarkar** Dept. of Computer Science & Engineering IIT Kharagpur	Member
9.	**Prof. B N Singh** Registrar (Officiating) IIT Kharagpur	Secretary

Constitution of Finance Committee, IIT Kharagpur (From 1st April, 2017 to 31st March, 2018)

Sl No	Name and Address	Position
1	**Shri Sanjiv Goenka** Chairman, RP-Sanjiv Goenka Group CESC House, 1, Chowringhee Square Kolkata – 700001	Chairman
2	**Joint Secretary & Financial Adviser** Government of India Ministry of Human Resource Development Department of Higher Education Shastri Bhawan, New Delhi -110001	Member
3	**Director(IITs)** Govt. of India Ministry of Human Resource Development Department of Higher Education Shastri Bhawan, New Delhi -110001	Member
4	**Prof. N. Balakrishnan** Supercomputer Education and Research Centre, Indian Institute of Science Bangalore - 560012	Up to 16.04.2018 Member
5	**Smt. Arundhati Bhattacharya** Former Chairperson, State Bank of India Corporate Centre, 6th Floor State Bank Bhavan, Madame Came Road, Mumbai-400021	Member
6	**Prof. Partha P. Chakrabarti** Director, IIT Kharagpur	Member
7	**Prof. Sunando Dasgupta** Dept. of Chemical Engineering IIT Kharagpur	Member
8.	**Prof. B N Singh** Registrar (Officiating) IIT Kharagpur	Secretary

Constitution of Building & Works Committee, IIT Kharagpur

(From 1st April, 2017 to 31st March, 2018)

Sl No	Name and Address	Position
1	**Prof. Partha P. Chakrabarti** Director IIT Kharagpur.	Chairman
2	**Superintending Engineer & Circle Manager** Midnapore Distribution Circle West Bengal State Electricity Distribution Co. Ltd. (WBSEDCL) 190, S. K.Bose Road Paschim Medinipur, PIN - 721101	Member
3	**Superintending Engineer** South Western Circle Public Works Department (PWD) Saheed Mangal Pandey Sarani Paschim Medinipur, PIN- 721101	Member
4	**Head** Department of Civil Engineering IIT Kharagpur.	Member
5	**Head** Department of Electrical Engineering IIT Kharagpur.	Member
6	**Head** Department of Architecture & Regional Planning IIT Kharagpur.	Member
7	**Prof. B N Singh** Registrar (Officiating) IIT Kharagpur	Secretary

Administrative Heads

Director	Prof. Partha Pratim Chakrabarti, CSE	
Deputy Director	Prof. Sriman Kumar Bhattacharyya, CE	
Deans		
Faculty	Prof. Subhasish Tripathy, GG	
Undergraduate Studies	Prof. Sudhir Kumar Barai, CE	
Postgraduate Studies & Research	Prof. Prasanta Kumar Das, ME	
Students' Affair	Prof. Manish Bhattacharjee, Chem Prof. Somesh Kumar, Maths	Upto 31.07.2017 From 01.08.2017
Sponsored Research & Industrial Consultancy	Prof. Pallab Dasgupta, CSE	
Continuing Education	Prof. Adrijit Goswami, Maths	
Associate Dean, SRIC	Prof. Suman Chakraborty, ME	
Associate Dean, SRIC	Prof. Gour Gopal Roy, MT	From 06.12.2017
Associate Dean (CE)	Prof. Swagata Dasgupta, Chem	
Alumni Affairs & IR	Prof. Siddhartha Mukhopadhyay, EE	Upto 31.12.2017
Associate Dean (AA&IR)	Prof. Baidurya Bhattacharya, CE	Upto 31.12.2017
Alumni Affairs & IR	Prof. Baidurya Bhattacharya, CE	Upto 31.01.2018
Alumni Affairs	Prof Subrata Chattopadhyay	From 01.02.2018
International Relations	Prof. Baidurya Bhattacharya, CE	From 01.02.2018
Planning & Coordination	Prof. Biswajit Mahanty, ISE Prof. Manoj Kumar Tiwari, ISE	Upto 31.12.2017 From 01.01.2018
VGSOM	Prof. Prabina Rajib	
RGSOIPL	Dr. Padmavati Manchikanti	
Human Resource Development	Prof. B. N. Singh, Aero	
Heads of the Departments		
Aerospace Engineering	Prof. Dipak Kumar Maiti	
Agricultural & Food Engineering	Prof. V. K. Tewari Prof. Nirupama Mallick	Upto 31.08.2017 From 01.09.2017
Architecture & Regional Planning	Prof. Subrata Chattopadhyay Prof. Joy Sen	Upto 31.07.2017 From 08.08.2017
Biotechnology	Prof. Sudip Kumar Ghosh	
Chemical Engineering	Prof. Sirshendu De Prof. Gargi Das	Upto 31.12.2017 From 01.01.2018
Chemistry	Prof. Tanmaya Pathak Prof. Manish Bhattacharjee	Upto 31.05.2017 From 01.06.2017
Civil Engineering	Prof. Kusam Sudhakar Reddy	
Computer Science & Engineering	Prof. Sudeshna Sarkar	
Electrical Engineering	Prof. Siddhartha Sen Prof. Pranab Kumar Dutta	Upto 15.05.2017 From16.05.2017

Electronics & Electrical Communication Engineering	Prof. Prabir Kumar Biswas	
Geology & Geophysics	Prof. Anindya Sarkar	
Humanities & Social Sciences	Prof. Priyadarshi Patnaik	
Industrial & Systems Engineering	Prof. Jhareswar Maiti	
Mathematics	Prof. Mahendra Prasad Biswal	
Mechanical Engineering	Prof. Sukanta Kumar Dash	
Metallurgical & Materials Engineering	Prof. Rahul Mitra	
Mining Engineering	Prof. Khanindra Pathak Prof. Debasis Deb	Upto 31.10.2017 From 01.11.2017
Ocean Engineering & Naval Architecture	Prof. Prasad K. Bhaskaran	
Physics	Prof. Krishna Kumar	

Heads of Centres

Advanced Technology Development Centre	Prof. Sunando DasGupta	
Centre for Computational and Data Sciences	Prof. Sanjoy Bandyopadhyay, Chem	
Centre for Educational Technology	Prof. Anupam Basu, CSE Prof. Swagata Dasgupta, CET	Upto 31.12.2017 From 01.08.2018
Centre for Oceans, Rivers, Atmosphere & Land Sciences	Prof. Arun Chakraborty Prof. A. N. V. Satyanarayana	Upto 28.06.2017 From 29.06.2017
Centre for Theoretical Studies	Prof. Somnath Bharadwaj, Phy	
Cryogenic Engineering	Prof. Parthasarathi Ghosh	
Material Science Centre	Prof. Susanta Banerjee Prof. Pallab Banerji	Upto 07.05.2017 From 08.05.2017
Rubber Technology Centre	Prof. Nikhil Kumar Singha	
Rural Development Centre	Prof. V.K. Tewari, AgFE Prof. Nirupama Mallick, AgFE	Upto 31.08.2017 From 01.09.2017
Steel Technology Centre	Prof. Surjya Kanta Pal, ME	

Heads of Schools

G. S. Sanyal School of Telecommunication	Prof. Saswat Chakrabarti	
Rajendra Mishra School of Engineering Entrepreneurship	Prof. Partha Pratim Das, CSE	
Ranbir & Chitra Gupta School of Infrastructure Design & Management	Prof. Joy Sen, A&RP Prof. Bhargab Maitra, CE	Upto 31.08.2017 From 01.09.2017
School of Bioscience	Prof. Amit Kumar Das, BT	
School of Energy Science & Engg.	Prof. Suneel Kumar Srivastava	
School of Environment Science and Engineering	Prof. Makarand Madhao Ghangrekar, Civil	

School of Medical Science & Technology	Prof. Suman Chakraborty	
School of Nano-Science and Technology	Prof. Rahul Mitra, Met & Mat	
School of Water Resources	Prof. A K Gupta, Civil Engg	
Subir Chowdhury School of Quality and Reliability	Prof. V. N. Achutha Naikan	

Heads of Centre of Excellence

DHI Centre of Excellence on Advanced Manufacturing Technology	Prof. Surjya Kanta Pal, ME	
P. K. Sinha Centre for Bio Energy	Prof. M M Ghangrekar, Civil	

Heads of Sections

Computer & Informatics Centre	Prof. Arobinda Gupta	
Institute Information Cell	Prof. Ghosh, CSE	
Asso. Head, IIC	Dr. Pralay Mitra, CSE	
Administrative Computer Service Support Centre (ACSSC)	Prof. Adrijit Goswami, Maths	

Chairman, Vice-Chairman

Civil Construction & Maintenance	Prof. Debasis Roy, CE	
CCM, Vice-Chairman	Dr. Nilanjan Mitra, CE	
	Dr. Haimanti Banerji, ARP	
Hall Management Centre	Prof. Surjya Kanta Pal, ME	
Career Development Centre	Prof. Debasis Deb, MIN	Upto 31.12.2017
	Prof. G.P.Raja Sekhar	From 01.01.2018
CDC, Vice-Chairman	Prof. P A Deshpande, ChE	
	Prof. Uady Shankar, RGSoIPL	
	Prof. Mamata Jenamani, ISE	From 01.01.2018
Central Library	Prof. Suneel Kumar Srivastava	
GATE – JAM	Prof. K.S. Sreenivasa Rao	Upto 27.05.2017
	Prof. Ramkrishna Sen	From 28.05.2017
GATE – JAM, Vice-Chairman	Prof. P K Datta, Physics	
	Prof. M Manjunatha, SMST	
	Prof. Madan Kumar Jha, AgFE	
JEE	Prof. Pallab Banerjee, MSC	
JEE, Vice-Chairman	Dr. Rabibrata Mukherjee, ChE	
	Dr. Mihir Kumar Dash, CORAL	
Enterprise Resource Planning	Prof. Adrijit Goswami	
ERP, Vice-Chairman	Dr. S K Das Mandal, CET	
	Prof. Shamik Sural, CSE	
	Prof. Soumya Kanti Ghosh, CSE	
Central Research Facility, Mat. Sc.	Prof. Jyotsna Dutta Majumder	
Central Research Facility, Life Sc.	Prof. Amit Kumar Das, BT	

Central Workshop & Instruments Service (CWISS)	Prof. Asimava Roy Choudhury, ME	
Rajbhasha Vibhag	Prof. Venkappayya R Desai, CE	
Nehru Museum of Science & Technology	Prof. Dhrubajyoti Sen, CE	
Kalpana Chawla Space Technology Cell (KCSTC)	Prof. Dipanwita Roy Chowdhury, CSE	
House Allotment Committee (HAC)	Prof. Ashok Kumar Gupta, CE	
Commercial Establishments & Licencing Committee (CELC)	Prof. Susanta Banerjee, MSC Prof. Madan Kumar Jha, AgFE	Upto 31.12.2017 From 01.01.2018
Campus Schools Advisory (CSA) Committee	Prof. Somnath Sen, ARP	
Campus Green Cover (CGC)	Prof. Bhabani Sankar Das, AgFE	
Computer Purchase and Network Maintenance Committee	Prof. Arobinda Gupta, CSE	
Vice-Chairman, Technology Aquatic Society (TAS)	Prof. Santanu Chattopadhyay, RTC Dr. Alok Kanti Deb, EE	Upto 14.10.2017 From 15.10.2017
Vice-chairman, Technology Film Society (TFS)	Dr. Saikat Kumar Paul, ARP Dr. Amreesh Chandra, Phy	Upto 08.11.2017 From 09.11.2017
Treasurer, TFS	Dr. Mainak Ghosh, ARP Dr. A K Goswami, RCGSIDM	Upto 09.08.2017 From 10.08.2017
President, Technology Students' Gymkhana (TSG)	Prof. Somesh Kumar, Maths Prof. William Kumar Mohanty, GG	Upto 15.08.2017 From 16.08.2017
Treasurer. TSG	Prof. Kingshook Bhattacharyya, ME	
Principal Medical Officer (Acting)	Dr. Seema Roy, SMO (Admn)	
Chief Vigilance Officer	Prof. Sujoy Ghose, CSE	
Managing Director, STEP	Prof. Satyahari Dey, Biotechnology	
Coordinator, Vodafone Essar-IIT Centre of Excellence (VEICET)	Prof. Chakrabarti, E& ECE	
Vice-Chairman, Steel Technology Centre	Prof. Shiv Brat Singh, MT	
Professors-in-Charge		
Electrical Works	Prof. A. K. Pradhan, EE Dr. Prabodh Bajpai, EE	
Refrigeration & AC Unit Co-PIC, RAC Unit	Prof. M. Ramgopal, ME Dr. Parthasarathi Ghosh, Cryo	
Horticulture	Prof. Bhabani Sankar Das, AgFE	
Water Works & Sanitation	Prof. Chandranath Chatterjee, AgFE	
Institute Guest Houses	Prof. B. C. Meikap, ChE	
Technology Telecom Centre	Prof. Raja Datta, E&ECE	
Time Table	Prof. Jyotsna Dutta Majumdar, MT	
Audio Visual Cell	Chairman, CWISS	
Examinations	Prof. Dilip Kumar Baidya, CE	

63rd Convocation - 2017	Prof. Prasanta Kumar Das, ME	
Advanced VLSI Laboratory	Prof. T.K.Bhattacharyya, E&ECE	
IPR & IR	Prof. C Retna Raj , Chemistry	
IIT Kharagpur Kolkata Campus	Prof. A.P.Gupta Prof. B C Meikap	Upto 31.07.2017 From 01.08.2017
IIT Kharagpur Bhubaneswar Ext.	Prof. Subhasish Tripathy	
ALPGE	Prof. Sudip Kumar Ghosh, BT	
Incubation & Entrepreneurship	Prof. Satyahari Dey, BT	
B.C.Roy Technology Hospital	Prof. Rajib Mall, CSE	
Centre for Railway Research, CRR Co-Professor in-Charge, CRR	Prof. Subhransu Roy, ME Prof. Arghya Deb, CE	
Outsourced Manpower	Prof. Santanu Kumar Bhowmik, GG	
Counseling Centre	Prof. Sangeeta Das Bhattacharya, SMST	
Co-PIC, Counselling Centre	Dr. Abhiram Kumar Verma, MI	From 22.11.2017
Transport & Automobile Section	Prof. Arun Kumar Majumder, MI	
Rajarhat Research Park	Prof. Partha Pratim Das, CSE	
HR Training & Development	Prof. Trilochan Sahoo, Naval	

Miscellaneous Assignment

Faculty Coordinator, International Relations	Dr. Sanjay Gupta, ME	
NSS Programme Coordinator	Prof. Debasis Roy, Civil Engg Dr. Arghya Deb, Civil Engg	Upto 31.12.2017 From 01.01.2018
NSS Programme, Co-Coordinator	Dr.Maruthi Manoj Brundavanam, Physics	
Programme Coordinator, NSO (Health & Fitness)	Dr. Shivakiran B N Bhaktha, Phy	
Programme Coordinator, NCC	Dr. Kamal Lochan Panigrahi, Phy	
Institute's Representative at the Indian Member Council	Prof.Om Prakash Sha, Naval	
Coordinator for Rural Technology Action Group (RuTAG) Cell	Prof. P B S Bhadoria, AgFE	
Public Information Officer (PIO)	Shri Achintya Kumar Mandal, Deputy Registrar (S&P)	
Assistant Public Information Officer (APIO)	Shri A K Naskar, DR (Acad) Shri P C Das, DR (E) Shri B Bhattacharyya, DR (F&A) Shri S K Biswas, DR (SRIC)	

List of Senate Members

The 326th Meeting of the Senate held on 26th September 2018 at 4.00 P.M. in the Senate Hall

Section 14(A) - Director

Prof. Partha P. Chakrabarti

Section 14(B) Deputy Director

Prof. Sriman Kumar Bhattacharyya

Section 14(C) Professors of the Institute

Aerospace Engineering

Prof. N. Singh (upto 30.6.2018)
Prof. Kalyan P. Sinhamahapatra
Prof. Bhrigu Nath Singh
Prof. Dipak Kumar Maiti
Prof. Manoranjan Sinha

Architecture & Regional Planning

Prof. Uttam K. Banerjee
Prof. Jaydip Barman
Prof. Subrata Chattopadhyay
Prof. Joy Sen
Prof. Sanghamitra Basu (upto 31.8.2018)

Biotechnology

Prof. D. Das (upto 30.11.2018)
Prof. Satyahari Dey
Prof. Ananta K. Ghosh
Prof. Amit K. Das
Prof. Tapas K. Maiti
Prof. Sudip Kumar Ghosh
Prof. Ramkrishna Sen
Prof. Pinaki Sar
Prof. Anindya Sundar Ghosh
Prof. Mrinal Kumar Maiti

Chemical Engineering

Prof. A.N. Samanta
Prof. Sunando Dasgupta
Prof. N. C. Pradhan
Prof. Sirshendu De
Prof. Gargi Das
Prof. Sudarsan Neogi
Prof. Jayanta Kumar Basu
Prof. Goutam Kundu

Prof. B.C. Meikap
Prof. Swati Neogi
Prof. Sudipto Chakraborty
Prof. Rabibrata Mukherjee

Civil Engineering

Prof. Dhrubajyoti Sen
Prof. Sriman K. Bhattacharyya (Dy. Dir.)
Prof. K.S. Reddy
Prof. L.S. Ramachandra

Agricultural & Food Engineering

Prof. Rajendra Singh
Prof. Virendra K. Tewari
Prof. Kamlesh Narayan Tiwari
Prof. R.K. Panda (Lien upto 30.04.2021)
Prof. Rintu Banerjee
Prof. P.B.S. Bhadoria (Upto 31.07.2021)
Prof. Ashis K. Datta
Prof. Hari Niwas Mishra
Prof. N. S. Raghuwanshi (upto 24.7.2017)
Prof. S. N. Panda (Lien upto 31.5.2021)
Prof. Tridib K. Goswami
Prof. Nirupama Mallick
Prof. Madan Kumar Jha
Prof. Hifjur Raheman
Prof. Snehasish Dutta Gupta
Prof. Adinpunya Mitra
Prof. Chandranath Chatterjee
Prof. Bhabani Sankar Das
Prof. E. V. Thomas

Bioscience

Prof. Nihar Ranjan Jana

Centre for Ocean, Rivers, Atmosphere & Land Sciences

Dr. A.N.V. Satyanarayana (Head, CORAL)
Prof. P. C. Pandey (upto 19.11.2020)
Prof. Arun Chakraborty

Chemistry

Prof. Pratim K. Chattaraj
Prof. Tanmaya Pathak
Prof. Amit Basak (up to 30.06.2021)
Prof. Debashis Ray
Prof. M. Bhattacharjee
Prof. S. K. Srivastava
Prof. Nilmoni Sarkar
Prof. Swagata Dasgupta
Prof. Srabani Taraphder

Prof. Sanjoy Bandyopadhyay
Prof. Joykrishna Dey
Prof. Kumar Biradha
Prof. C. R. Raj
Prof. N. D. Pradeep Singh
Prof. Samik Nanda

Computer Science & Engineering

Prof. Sujoy Ghose
Prof. Partha P. Chakrabarti (Director)

Prof. Subhasish Dey
Prof. Dilip K. Baidya
Prof. Nirjhar Dhang
Prof. S. K. V. Barai
Prof. V. R. Desai
Prof. Ashok Kumar Gupta
Prof. M. M. Ghangrekar
Prof. Baidurya Bhattacharya
Prof. Damodar Maity
Prof. Debasis Roy
Prof. Bhargab Maitra
Prof. Aniruddha Sengupta
Prof. Anjali Pal
Prof. M. Amarnatha Reddy
Prof. Arghya Deb
Prof. Sujit Kumar Dash

Cryogenic Engineering

Prof. Parthasarathi Ghosh (Head)
Prof. V. Rao Vutukuru
Prof. Kanchan Chowdhury

Electrical Engineering

Prof. S.K. Das (Upto 30.11.2018)
Prof. Amit Patra
Prof. N.K. Kishore
Prof. A. Barua (Upto on 30.6.2018)
Prof. Siddhartha Mukhopadhyay
Prof. Siddhartha Sen
Prof. Pranab K. Dutta
Prof. B.M. Mohan
Prof. Debapriya Das
Prof. Tapas K. Bhattacharya
Prof. Chandan Chakraborty

Prof. Ashok Kumar Pradhan
Prof. Debaprasad Kastha
Prof. Aurobinda Routray

Geology & Geophysics

Prof. Sankar K. Nath
Prof. Biswajit Mishra
Prof. Anil K. Gupta
Prof. Debashish Sengupta
Prof. Abhijit Bhattacharya
Prof. Subhasish Tripathy
Prof. Anindya Sarkar
Prof. Subhasish Das
Prof. Mruganka K. Panigrahi
Prof. Santanu K. Bhowmik
Prof. Saibal Gupta
Prof. Shashi Prakash Sharma
Prof. Manish A Mamtani

Prof. Anupam Basu (Lien upto 30.6.2022)
Prof. Indranil Sengupta
Prof. Jayanta Mukhopadhyay
Prof. Sudebkumar Prasant Pal
Prof. Rajib Mall
Prof. Dipanwita Roy Chowdhury
Prof. Pallab Dasgupta
Prof. Sudeshna Sarkar
Prof. Chittaranjan Mandal
Prof. Arobinda Gupta
Prof. Partha Pratim Das
Prof. Niloy Ganguly
Prof. Shamik Sural
Prof. Soumya Kanti Ghosh
Prof. K. Sreenivasa Rao
Prof. Sudip Misra
Prof. Partha Bhowmick
Prof. Pabitra Mitra
Prof. Debdeep Mukhopadhyay
Prof. Abhijit Das

Electronics & Electrical Comm. Engineering

Prof. Ajoy Kr. Roy
Prof. R V R Kumar (Lien upto 21.04.2020)
Prof. Prabir K. Biswas
Prof. Mrityunjoy Chakraborty
Prof. Sant Sharan Pathak
Prof. D. Biswas
Prof. Santanu Chattopadhyay
Prof. Tarun Kanti Bhattacharyya
Prof. Goutam Saha
Prof. Anindya Sundar Dhar
Prof. Raja Datta

Prof. Indrajit Chakrabarti
Prof. Debatosh Guha (Upto 09.08.2018)
Prof. Sudipta Mukhopadhyay
Prof. Pradip Mandal
Prof. Amitabha Bhattacharya
Prof. Bratin Ghosh

G S Sanyal School of Telecommonucations

Prof. Saswat Chakraborti

Humanities & Social Sciences

Prof. Damodar Suar
Prof. Anjali Gera Roy
Prof. K.B.L. Srivastava
Prof. Suhita Chopra Chatterjee
Prof. Vijai Nath Giri
Prof. Chhanda Chakraborti
Prof. Priyadarshi Patnaik
Prof. Narayan Chandra Nayak

Prof. William K. Mohanty
Prof. Ravikant Vadlamani
Prof. Arindam Basu
Prof. Paresh Nath Singha Roy

Industrial & Systems Engineering

Prof. Biswajit Mahanty
Prof. Pradip K. Ray
Prof. Manoj K. Tiwari
Prof. Jhareswar Maiti
Prof. Sarada Prasad Sarmah
Prof. Mamata Jenamani

Mathematics

Prof. P.D. Srivastava (Upto on 31.7.2018)
Prof. Umesh Chandra Gupta
Prof. Mahendra Prasad Biswal
Prof. D.K. Gupta (Upto 30.6.2018)
Prof. Somnath Bhattacharyya
Prof. Adrijit Goswami
Prof. Somesh Kumar
Prof. Rajni Kant Pandey
Prof. G. P. Raja Sekhar
Prof. P.V.S.N. Murthy
Prof. Pratima Panigrahi
Prof. Chandal Nahak

Prof. Debjani Chakraborty
Prof. Geetanjali Panda

Metallurgical & Materials Engineering

Prof. N. Chakraborti
Prof. Indranil Manna
Prof. Siddhartha Das
Prof. Karabi Das
Prof. Gour Gopal Roy
Prof. Rahul Mitra
Prof. P.K. Sen (Upto 31.3.2020)
Prof. Jyotsna Dutta Majumdar
Prof. Shiv Brat Singh
Prof. Sudipto Ghosh

Mining Engineering

Prof. S.S. Bhamidipati
Prof. Ashis Bhattacharya
Prof. K. U. M. Rao (Lien Upto to 19.7.2022)
Prof. Samir K. Das
Prof. Khanindra Pathak
Prof. Jayanta Bhattacharyya
Prof. Samir Kumar Pal
Prof. Debasis Deb
Prof. Biswajit Samanta
Prof. Debashish Chakravarty
Prof. Arun Kumar Majumder

Prof. Manas K Mandal (Upto 27.11.2019)
Prof. Kishor Goswami
Prof. Bhagirath Behera
Prof. Jitendra Mahakud
Prof. Pulak Mishra

Materials Science

Prof. Pallab Banerjee
Prof. Chako Jacob
Prof. Susanta Banerjee
Prof. Subhasish Basu Majumder

Mechanical Engineering

Prof. Biswajit Maiti
Prof. S Bhattacharya (EOL upto 12.6.2021)
Prof. Ranjan Bhattacharyya
Prof. Sukanta K. Dash
Prof. Prasanta K. Das
Prof. Amiya Ranjan Mohanty
Prof. Sati Nath Bhattacharyya
Prof. R. N. Maiti (upto 31.8.2018)
Prof. Soumitra Paul
Prof. Manas Chandra Ray
Prof. A. K. Nath (Upto 30.6.2018)
Prof. Subhransu Roy
Prof. Dilipl K. Pratihar

Prof. Suman Chakraborty
Prof. Anirvan Dasgupta
Prof. Abhijit Guha
Prof. Maddali Ramgopal
Prof. Ashimava Roy Choudhury
Prof. Manab Kumar Das
Prof. Surjya Kanta Pal
Prof. Arun Kumar Samantaray
Prof. Kumar Siva Cheruvu
Prof. Sanjay Gupta
Prof. Sandipan Ghosh Moulic
Prof. Partha Pratim Bandyopadhyay
Prof. Partha Saha
Prof. Goutam Chakraborty

Ocean Engineering & Naval Architecture

Prof. Debabrata Sen
Prof. O. P. Sha
Prof. Trilochan Sahoo
Prof. Prasad Kumar Bhaskaran
Prof.Hari V Warrior

Rajiv Gandhi School of Intellectual Property Law

Prof. Padmavati Manchikanti
Prof. Dipa Dube
Prof. Raju K. D.

Physics

Prof. Samit K. Ray
Prof. Arghya Taraphder
Prof. Krishna Kumar
Prof. Somnath Bharadwaj
Prof. Sayan Kar
Prof. Anushree Roy
Prof. Prasanta Kumar Datta
Prof. Tapan Kumar Nath
Prof. Achintya Dhar
Prof. Pragya Shukla
Prof. Sudhansu Sekhar Mandal
Prof. Utpal Sarkar (Upto 30.06.2019)
Prof. Dipak Kumar Goswami
Prof. Sonjoy Majumder
Prof. Partha Roy Chaudhuri
Prof. Ajay Kumar Singh
Prof. Kamal Lochan Panigrahi

Under Section 14 (1)(a) Heads of the Deptts./Centres/Schools other than Professors

Already included under 'C' above

Under Section 14 (1)(b) The Librarian of the Institute

Dr. Bablu Sutradhar

Under Section 19 (2) The Registrar (Secretary)

Prof. Bhrigu Nath Singh

Rubber Technology

Prof. Anil K. Bhowmick
Prof. Nikhil Kumar Singha
Prof. Santanu Chattopadhyay
Prof. Kinsuk Naskar

School Of Medical Science & Technology

Prof. Soumen Das
Prof. Koel Chaudhury
Prof. Sangeeta Das Bhattacharya
Prof. Mahitosh Mandal
Prof. Manjunatha Mahadevppa
Prof. Jyotirmoy Chatterjee
Prof. Santanu Dhara

Subir Chowdhury School Of Quality & Reliability

Prof. V.N.A. Naikan
Prof. Sanjay Kumar Chaturvedi

Vinod Gupta School Of Management

Prof. Gautam Sinha (Upto 31.10.2018)
Prof. Prabina Rajib
Prof. Sangeeta Sahney

Students' Representatives :

Mr. Vishal Kumar Singh, Vice President, TSG
Ms. Aruja Rustagi, PG Representative
Ms Jyayasi Nath, Women Representative
Mr. K N K Sagar, UG Representative
Mr. Sujit Madhab Ghosh

Director's Report

Shri Dinesh K Sarraf, Chairman & Managing Director of Oil and Natural Gas Corporation Ltd., Chairman, ONGC Videsh Ltd. and other ONGC Group companies and Chairman, Mangalore Refinery & Petrochemicals Ltd.;and **Padma Vibhushan Professor Man Mohan Sharma**, Fellow of the Royal Society, an eminent and highly regarded Scientist, teacher and Professor, the Chief Guests of the **63rd Convocation; Shri Sanjiv Goenka,**Chairman, Board of Governors, IIT Kharagpur and Chairman, *R.P.Sanjiv Goenka Group,*Members of the Board of Governors, Members of the Senate, Distinguished Guests, Dear Faculty Colleagues and Staff Members, Degree and Award Recipients, My dear Students, Media Persons, Ladies and Gentlemen!

I extend you all a very hearty welcome on this solemn occasion of the 63rd Convocationof our prestigious Institute. On this auspicious day, I am delighted and feel privileged to be among the august presence of many eminent men and women, visionaries, parents and our dear graduates -the future of our great Nation.

Here, on this heritage site where many a noble souls paid their homage to the cause of independence of our great Nation, I am reminded of the words of Swami Vivekananda, *'Put your heart, mind, and soul into even your smallest acts. This is the secret of success'*. It is the same spirit with which our visionaries laid the foundation stone of this premier Institute as a depiction of the aspirations of the Nation. The air then carried a still silent whisper, *"from now on, Indian students would get the best quality engineering education within the sanctified soil of this great Nation".* Over the past almost seven decades, the Institute has strived to achieve excellence and stood among the best in academics, research and development in all sectors including science, technology, arts, medicine, culture and heritage, architecture, law, agriculture, management without any bias and with utmost care for the societal development.

Holistic approach to wholesome personal development, quest for knowledge, health and wellbeing along with a mind to appreciate art and culture and empathy to fellow beings have been the ethos and kept sacred in the heart of all activities and growth of the Institute for we appreciate the fact that *'Someone is sitting in the shade today because someone planted a tree a long time ago'.*

I would like to emphasize that our Institute is always proud and thankful to its alumni who have made the Nation and the world at large a better place to live, thanks to their continuing efforts by way of living their lives appropriately. They make us even more proud everyday as they soar into higher and higher levels of contributions; be it in Agriculture, Economics, Computer Science, Food Security, Military Intelligence, Eco-friendly products, Space and Atmospheric Sciences, Railway Research and in Humanitarian Services. They are trained to *"start by doing what's necessary; then do what's possible; and suddenly you are doing the impossible".* While doing so, they always bear in their minds that *"The best and most beautiful things in the world cannot be seen or even touched - they must be felt with the heart" as in* the words of Helen Keller when motivated by the Spirit of love. IIT Kharagpur fraternity has always stood up to any great cause; be it at any level holding the flag of the Nation high.

We keep our keen inquisitiveness, open mind and broad thinking despite serious problems like qualified faculty crunch, dropping financial supports, increasing social and natural disasters and the lack of state of the art laboratories and cutting-edge technologies; we carry forward the legacy of IIT Kharagpur! To vouch for this, Indian Institute of Technology Kharagpur is India's highest-ranked institution for nurturing graduate employability, features in the Top 100 QS Graduate Employability Rankings 2016-17, Materials Science Centre at IIT Kharagpur has been ranked among the top 100 educational centers by QS World University Subject Rankings 2015. Department of Mining Engineering has been placed within top 50, worldwide. Dept. of Architecture and Regional Planning secured the Nation's first position, Institute scored a position within the best 300 universities in the world and recently accorded with Fifth Rank by MHRD (NIRF) and First Rank by *India Today*!

The Institute took the first step of enhancing its international exposure by starting the International Summer Winter Term (ISWT) Programme, which was later, adapted at the national level in the form of the

Global Initiative of Academic Networks (GIAN) programme of the Ministry of Human Resources and Development. In this national initiative, IIT Kharagpur has been playing a leading role in coordinating the programme nationwide with achieved a great success. Another such programme, where a national mission was entrusted in the able hands of IIT Kharagpur is the creation of the National Digital Library of India (NDLI). Thanks to the efficiency of the Institute, the facility has been dedicated to the Nation recently. The National Digital Library with several crores of books, journals, videos in a single-window search portal has received appreciation from far and wide. During the last few years IIT Kharagpur has also been engaged in carrying out Ministry of Human Resource Development, Government of India funded four mega research projects in the areas sustainable food security, future of cities, signals and systems for life sciences and science and heritage interface that are critical for the country's development. In the rail sector IIT-Kharagpur contributed a tool to prevent train collision which is vital to improve rail safety. The Institute is keen on developing teaching innovations and academic networks. The institute leads the national effort on GIAN and has been a key contributor to NPTEL, T10KT, Pedagogy, TEQIP etc. which add a few more colorful feathers. We have also conducted an outreach program to communicate with ten thousand teachers of college level institutions and help them in the pedagogy of imparting quality and empowering education.

The women and men of mettle; the alumni of the Institute are known for their role as game changers in the national and international scenario. The Nation looks up to us to address some of its major problems and to lead to a better and promising future for the multitudes of its citizens. Increasing threats against our motherland is a matter of great concern. Development of advanced defense systems, space exploration, concerns of environmental sustainability including 'safety and security', 'food and nutrition', 'shelter for all and livable habitat', 'energy and environment', 'economy and employment', 'health and well-being', and 'empowering the elderly through age-friendly systems and designs'. IIT Kharagpur has responded to these challenges by taking up major projects related to Future of Cities (Phase II), Food and Nutritional Sustainability, Signals and Systems in Life Science, Science and Heritage Initiative and other major research projects related to Clean Water, Bio-energy, Environment and the like. In parallel, we continue to pursue some cutting edge technology development in areas of Nano-Science, Bio-MEMS, Materials, Circuit Design and, Mathematical Methods, which produce research publications in top quality journals keeping us at par with global standards. Its noteworthy to state that the Institute has responded timely by introducing a course on Happiness; how to be happy in a challenging atmosphere with all the stress and complexities of life. Further, the reach out programme introduced by the Institute by switching off lights to make a free air for interaction among students and faculty at large has obtained national acclaim. The efforts to make the Campus an academic environment student-friendly are rather a big leap in the making of a brighter future for India. It is note- worthy to state 'Rekhi Centre of Excellence' for the Science of Happiness signed MoU with Rajya Anandam Sansthan (Department of Happiness) under the Government of Madhya Pradesh. It is important that the researchers at IIT Kharagpur have achieved a breakthrough that will change the way bio-fuel is manufactured all over the globe.

Attracting sufficient high quality faculty remains the biggest challenge of the IIT System and IIT Kharagpur is not an exception either. We have, therefore, embarked on a very aggressive recruitment process through which we screen quality applications and provide appointments as soon as possible. Special efforts are being made to identify and induct brilliant faculty from industry and academia within the country and from abroad. We have tried to instill competitive and collaborative excellence through promotion of Research Challenge Grants, Teaching Excellence Award, which have excited both our young and senior faculty members. We at the Institute have been very sensitive to the human resource development needs of the Country and have initiated new academic programs and research ventures. In recent years we have introduced several new academic programmes both at PG and UG levels as detailed in this report. The Institute has timely responded to the issues of sustainability and built forms by introducing a new masters program in Architecture (M. Arch) emphasizing on sustainability of built environments. Recently, MoU has been signed between IIT Kharagpur and Sri Aurobindo Society, Puducherry in this regard. This year a MoU has been signed for setting up of a Center of Excellence in Artificial Intelligence Research seed funded **by Capillary Technologies Limited**. IIT Kharagpur and Ministry of Rural Development, Government of India signed a historic MoU to set up a Centre for Excellence in Big Data Analytics for Rural Development. I am glad that the companies and institutes continue to absorb our graduates for their purposes in the endeavor of research

and development in all walks of life. We are proud of our brilliant alumni who make important decisions that are pivotal to the world outside and within the Nation.

Let me thank the Ministry of Human Resource Development for a special onetime grant for infrastructure development.

Let me now introduce our Chief Guest, before moving on to the various achievements and contributions of this Institute in the last year.

Shri Dinesh K Sarrafis the Chairman & Managing Director of Oil and Natural Gas Corporation Ltd, India's most valuable Maharatna public sector enterprise and one of the most premier E&P companies in the world. Mr. Sarraf is also the Chairman of ONGC Videsh Ltd., four other ONGC Group companiesand also the Chairman of Mangalore Refinery & Petrochemicals Ltd.

Mr. Sarraf graduated in Commerce from Shri Ram College of Commerce, Delhi and completed his post-graduation from the Delhi University. He is an associate member of the Institute of Cost and Works Accountants of India and the Institute of Company Secretaries of India. He has experience of over three and half decades in the oil and gas industry, starting his career in Oil India Ltd.

He transformed ONGC Videsh into an aggressive growth engine for ONGC Group by clinching many high value deals within a short span of time and was instrumental in several oil and gas acquisitions in many countries to ensure energy security for the country. Being at the helm of affairs of ONGC, he has been focusing primarily on augmentation of Oil and Gas production from domestic assets.

Shri Sarraf is the driving force of extraordinary growth of company and strategic approach to oil and gas exploration and production, emphasizing on adoption of the best operational & cost practices and appropriate oil and gas technologies with a focused approach.

Padma Vibhushan Professor Man Mohan SharmaFREng is an Indian Chemical Engineer. A *Dnyanayogi and Karmayogi,*Knowledge and Action Seeker par excellence. Prof. Sharma was educated in Jodhpur, Mumbai and Cambridge. At the age of 27, he was appointed Professor of Chemical Engineering in the Institute of Chemical Technology (erstwhile UDCT), Mumbai. He later went on to become the Director of the Institute of Chemical Technology (ICT/ UDCT/ UICT), the first Chemical Engineering professor of acclaim from ICT.In 1990, he became the first Indian engineer to be elected as a Fellow of Royal Society, UK. He was awarded the Padma Bhushan (1987) and the Padma Vibhushan (2001) by the President of India. He has also been awarded the Leverhulme Medal of the Royal Society, the S.S. Bhatnagar Prize in Engineering Sciences (1973), FICCI Award (1981), the Vishwakarma medal of the Indian National Science Academy (1985), G.M. Modi Award (1991), Meghnad Saha Medal (1994), and an honorary Doctor of Science degree from Indian Institute of Technology, Delhi (2001).Prof. Sharma has become an unbelievable phenomenon because, throughout his life, he has remembered his mission, the value of time, the power of knowledge, the ecstasy of research, the obligation of commitment and duty, the success of perseverance, the pleasure of working long hours, the dignity of simplicity, the worth of character, the power of kindness and charity, the influence of setting examples, the wisdom of economy, the virtue of patience, the improvement of talent, and, above all, the joy of originating.

Shri Sanjiv Goenka,Chairman, Board of Governors, IIT Kharagpur is the Chairman of the *RP-Sanjiv Goenka Group* with an asset base of over USD 4.3 billion, and over 50,000 employees and over a hundred thousand shareholders.He is also the current Chairman of the Board of Directors of Woodlands Medical Centre Ltd, Kolkata. CESC, a 118-year-old power utility with 3 million customers, is the flagship of RP-Sanjiv Goenka which expanded beyond its eastern India stronghold with rights to distribute electricity in Rajasthan. He took over as the youngest-ever President of the Confederation of Indian Industry (CII), was appointed Chairman of the Board of Governors of the Indian Institute of TechnologyKharagpur and currently serves on the Board of the Indian Institute of Management Kolkata. Shri Sanjiv Goenka is the former President of the All India Management Institute (AIMA), and a member of the Prime Minister's Council on Trade & Industry. Shri Goenka is extremely optimistic about today's India and is enthused by the emergence of a large and young working population with a median age of 24, the rising number of urban nuclear families, working womenand emerging opportunities in the service sector. Shri Goenka believes there is no replacement for the age-old virtues of sheer hard work, clear vision and the courage to bring an entrepreneurial streak into

management. For him, there are no secrets to success, which do not spring from perseverance, preparation, hard work and learning.Born in 1961, Shri Goenka is currently the Honorary Consul of Canada in Kolkata.

DISTINGUISHED ALUMNUS AWARDS

I am honored and privileged to announce that in this convocation the Senate and Board of Governors of the Institute will confer the Distinguished Alumnus Award on:

Ms. Anuradha Acharya (M. Sc./Physics/1995) is an Indian entrepreneur, Founder and CEO of Mapmygenome India, a Genomics company whose vision is "To touch100 million lives". She introduced the concept of improved healthcare through personal genomics. She has successfully pioneered the company through growing product lines, expanding affiliate network, Pre-Series A round of funding and several awards and accolades for start-ups.

Dr. Ruma Acharya (M. Tech./Chemical Engineering/1973) is an entrepreneur, researcher, philanthropist and an exemplary leader in community service.

Dr. Sanghamitra Bandyopadhyay (M. Tech./Computer Science and Engineering/1994) is a leading researcher in computer science, working in the intersection of pattern recognition, evolutionary computing and bioinformatics. She is acclaimed for her work on evolutionary and multi-objective clustering. She is a Professor at the Indian Statistical Institute and currently serves the Institute as its Director.

Dr. Sujit Banerji (B. Tech./M. Tech./Mechanical Engineering/1960/1962) is an educationist and researcher with focus on servitization of manufacturing, service products, globalization, outsourcing and off shoring. Currently he is Professor of Operations Management at the Warwick Manufacturing Group (WMG), University of Warwick and Executive Director at WMG Education.

Shri Dipak Basu (B. Tech./Electronics and Electrical Communications Engineering/1971) is a social entrepreneur, employing technology in humanitarian missions worldwide. He is the Founder and Chairman of Anudip Foundation, a nonprofit social enterprise that is dedicated to empowerment of marginalized youth and women for digital livelihoods in India's e-Commerce and IT-enabled services sector.

Dr. Arun Kumar Bhaduri (B. Tech. & Ph. D./Metallurgical and Materials Engineering/1983/1992) is a distinguished scientist associated with India's nuclear technology programme. He is presently Distinguished Scientist and Director at the Indira Gandhi Centre for Atomic Research at Kalpakkam and a Senior Professor of the Homi Bhabha National Institute.

Prof. Subhasis Chaudhuri (B. Tech./Electronics and Electrical Communications Engineering/1985) is a leading expert in the area of image processing and computer vision. Currently he occupies the Kamal Nayan Bajaj Chair Professorship at IIT Bombay and is the J.C. Bose National Fellow.

Dr. Amitabha Ghosh (M. Sc./Geology and Geophysics/1993) is a Space Scientist and Planetary Geologist, working on NASA Mars Missions for the last 15 years. He is a world authority on the thermal evolution of asteroids and planets. He currently serves as the Chair of the Science Operation Group for the Mars Exploration Rover Mission.

Shri Raj Kamal Jha (B. Tech./Mechanical Engineering/1988) is among the finest journalists in India and is an internationally acclaimed novelist, telling stories of a changing India with honesty, compassion and courage. He is currently the Chief Editor of The Indian Express.

Shri Surajit Kar Purkayastha (B. Tech./Mechanical Engineering/1978) is an IPS Officer who has provided exceptional services and leadership for the safety, security, and convenience of the public and ordinary citizens for more than three decades. He is currently the Director General of Police, West Bengal.

Dr. Brajendra Mishra (B. Tech./Metallurgical and Materials Engineering/1981) is an expert with over three decades of experience in the domain of materials recovery and recycling, pyrometallurgy and electrochemistry. He is presently the Kenneth G. Merriam Distinguished Professor of Mechanical Engineering and Director of the Metal Processing Institute [MPI] at the Worcester Polytechnic Institute [WPI]. He is also the Director of the National Science Foundation's Industry/University Collaborative

Research Center on Resource Recovery & Recycling.

Rear Admiral Shekhar Mital (Retired, Indian Navy) (M. Tech./Electronics and Electrical Communications Engineering/1985) is an expert in the field of Shipbuilding, weapons, missiles and electronic systems and Policy formulation in 'Warship building & acquisition domain'. He currently serves as the Chairman and Managing Director of Goa Shipyard Ltd. (GSL) a Defence PSU.

Shri BodduAneesh Reddy (B. Tech./Mechanical Engineering/2006) is an entrepreneur leading one of India's top 5 software product companies. He is the Co-founder & Chief Executive Officer, Capillary Technologies, which has over 800 employees spread across 10 offices globally, a company incubated out of IIT Kharagpur.

Shri Anand Sen (B. Tech./Metallurgical and Materials Engineering/1981) is a distinguished metallurgist with widely recognized professional expertise of more than three decades in the field of Marketing and Sales, Strategy and Business Leadership, Operations and Projects. Presently, he is the President TQM & Steel Business, Tata Steel.

HIGHLIGHTS OF ACHIEVEMENTS DURING THE PAST YEAR

I shall take this opportunity to present before you some of the key achievements of the Institute in the past year.

Institute's Leading Role in National Initiatives

Our continuous effort to live up to the founding motto of our Institute, "Dedicated to the Service of the Nation" has strengthened us to lead several national initiatives with far-reaching benefits to the country and its citizens.

With an aim to provide a single-window access to all the existing digitized and digital contents of the nation, the Government of India had entrusted the Institute to host, coordinate and set-up the *National Digital Library of India* (NDLI). With a great sense of accomplishment, we are happy to announce that the facility, with more than 15 crore contents, was dedicated to the Nation by the Government of India last June. The Android Mobile Application of the NDLI has been declared the winner of *mBillionth South Asia Award 2017* in "Learning and Education" category. To further strengthen the initiative, we are planning to take NDLI global through ollaborations with top digital libraries of the World.

Based on our core strengths, we have undertaken four mega projects in *Sustainable Food Security*, *Future of Cities*, *Signals and Systems for Life Sciences*, and *Science and Heritage Interface*. The newly created Centre for Computation and Data Science of the Institute has been playing a leading role in establishing the peta-flop supercomputing facility under the *National Supercomputing Mission* (NSM) of the Government of India. The Institute has also been selected as a nodal centre for HPC-related educational activities under NSM. The Institute took a leading role in implementing the great initiative of Ministry of HRD, the *Smart Indian Hardware Hackathon* (SIHH) 2018, the largest hardware open innovation competition aimed at encouraging college students to initiate unique solutions that can be converted to tangible products and business.

The unique strength of the Institute in the research area of climate modelling, coastal zone analysis, and agriculture, was recently acknowledged by the Department of Science and Technology, Government of India, by establishing a *Centre for Excellence on Climate Change* at IIT Kharagpur. The centre will focus on vulnerability and risk assessment due to various environmental drivers in a climate change scenario over eastern India, by developing Integrated Modelling System and provide solutions for climate change, one of the greatest threats facing the planet.

The Institute has set up a first of its kind *Centre of Excellence in Artificial Intelligence* that will strengthen our expertise in the pedagogy, research, incubation and entrepreneurship in Artificial Intelligence and related domains. This centre, seed funded by Capillary Technologies Limited, envisages to develop new AI technologies in the domains of Digital Healthcare, Intelligent Transportation System, Intelligent Urban Infrastructure, Big Data Analytics for rural development, etc., through custom applications, interfacing and, training.

Department of Heavy Industries (DHI) under the union Ministry of Heavy Industries and Public Enterprises,

recently launched the *Centre of Excellence on Advanced Manufacturing Technologies* at IIT Kharagpur with an overarching aim to bridge the divide between the requirements of the leading manufacturing firms of India and the ability of SMEs to meet these requirements. This centre is a unique facility, where a consortium of leading industrial houses of India jointly supports an academic centre on Advanced Manufacturing Technologies for infusion of next generation technology in the manufacturing sector.

The Institute participated as a nodal institute for Agriculture and Food Engineering, Architecture and Regional Planning, and Mathematics programs of the recently launched *Prime Minister's Research Fellowship* (PMRF) scheme, which is aimed at attracting the talent pool of the country to doctoral programs for carrying out research in cutting edge science and technology, with focus on national priorities. Thirteen students of the Institute have been selected in the first year of this scheme.

The Institute's commitment to encourage participation of the woman students of the country in playing their rightful role in the nation building is reiterated by offering the largest number (113) of *supernumerary seats for exclusive intake of female candidates* into its Undergraduate Program for the academic year 2018-19.
Currently, there are 11569 students, 693 faculty not including adjunct and short term visiting faculty and 1002 non-teaching staff in the Institute.

Infrastructure Development

The Ministry of Human Resource Development Ministry has approved *a special grant of Rs 151.19 crore to the Institute for Research and Infrastructure Development*. This special grant will be a great boost to the Institutes focus towards attracting young talented academicians and postdoctoral fellows from across the world. The Institute will soon undertake a housing project for facilitating international faculty and postdoctoral fellows. The Institute has already drawn the blueprints to build lab infrastructure of top global standard and acquire equipment for technological convergence domains like manufacturing, transportation, VLSI design, cloud computing, smart infrastructure and affordable healthcare among others. A significant part of the funding will also be used to offer challenge grants and equipment for Central Research Facility of the Institute making them accessible to both faculty and students for research work.

Promotion of Sports

The Institute has taken a giant step towards promotion of sports activities among its students. The Institute is building two synthetic courts each for tennis, basketball and volleyball, one synthetic athletic track, and an indoor stadium with food court. The enhanced focus in sports activities would strengthen the leadership, discipline, quick decision-making qualities among the students.

Recognitions

The Institute's excellence in teaching and research in diverse areas of academics has been recognised by the National Institutional Ranking Framework (NIRF) 2018 of the Ministry of Human Resource Development, where IIT Kharagpur is the only Institute to be ranked in the top list in all five categories in which it was considered. Our excellent performance in Engineering, Management, Architecture, and Law, exhibit our unique strength as an overall Institution. The Institute has significantly improved its ranking, from last year's 71st to this year's 45th place, in the Times Higher Education (THE) Emerging Economies University Rankings 2018.

Research with Impact on Society

The Institute with its dedicated teams of students and faculty members makes persistent efforts to carry out research that reaches the society. The research work from the Institute involving the development of a bio-toilet that helps generate electricity with the help of electrogenic bacteria in the septic tank and whose giant flush filled with 500 litre of water that recycles itself for a time period of 15 years, has recently won the *Prime Minister's Swachh Bharat award*. Another research work from the Institute involving '*complete sleep monitoring system*' has found traction from the South Eastern Railway in the form of a pilot project to test and monitor the attention and vigilance state of train drivers. Researchers from the Institute have developed a visual technology that removes the obscuring effects of rain from real-time video and displays it on the windscreen of vehicles for safer driving during rain. ANTs Ceramics Private Limited, a company incubated in the Institute, recently received the *MSME National Award 2018* from the Honourable President of India for their contribution

in development of several technical ceramic compositions. During this academic year, total number of publication by the faculty members and researchers was 2648 which is a rise of about 20% from previous year (2016-17).

New Initiatives in Teaching

Institute has launched new academic programs spanning the realms of biology, medicine and engineering. Several joint M. Sc.-PhD programmes in Medical Physics, Molecular Medical Micro-Biology, Nuclear Medicine, etc. have been initiated with Tata Medical Centre.

The Institute has initiated a new program, the *Certificate of Excellence in Research* to recognize state-of-the-art collaborative research with industries and academia. This program is open to bright professionals with doctoral degrees in India and abroad, working in industry or research institutions, with a desire to pursue impactful research in collaboration with the Institute and be recognized globally.

Institute's Role in Scientific Advancement of Culture and Heritage

The Institute has been actively pursuing advanced research in the overlapping fields of culture, architecture, and heritage. True to its spirit of innovation in teaching and research, the Institute has launched a course on *History of Science and Technology in Ancient India*, to provide a seamless overview of the relation between modern science to ancient India's science and technology. With a focus on classical Indian astronomy and its global influences, Mathematics in Vedic and post-Vedic texts, Ayurveda and its genetic offshoot Ayurgenomics, etc., this course provides a unique understanding of heritage through the lens of modern science.

The Institute celebrated and showcased the rich cultural and social heritage of different states of the country and successfully implemented the *Ek Bharat Shrestha Bharat* initiative of the Human Resource Development ministry, by organizing a series of cultural events in its campus to celebrate the diverse linguistic, cultural and religious traditions that hold together our composite national identity. With a unique level of collaboration in Science and Heritage, the Institute has partnered with Pandit Ajoy Chakraborty to combine research, pedagogy, documentation, dissemination and creative rejuvenation of Indian classical music. To initiate the bright young minds of India to the rich and varied Indian classical art form, the Institute hosted the *6th SPIC MACAY International Conference* 2018 participated by a galaxy of maestros and more than a thousand external participants.

ACADEMIC PROGRAMMES

Various academic programmes at IIT Kharagpur are run by 19 Academic Departments, 15 centres, 12 schools, and more than 25 Industries & Research Labs, Research Centres and Centres of Excellence.

The Institute offers B. Tech. (Honours) programme in 15 different disciplines, B. Arch (Honours) Programme in Architecture, 6 five-year Integrated M. Sc. programmes, 16 Dual Degree programmes, nine two-year joint M. Sc.-PhD programmes and 54 Postgraduate Degree programmes leading to Joint M. Tech. /MCP-PhD, MBA, MHRM, EMBA, PGDBA, LLB, LLM and MMSR Degrees. The Curricula and Syllabi are updated periodically to meet the changing demands of the world. In the past year, attempts have been made to revise the common curriculum of the first year undergraduate programmes in an effort to revise the entire curriculum in due course. In addition the Institute offers a number of micro specializations from diverse disciplines. In its continued endeavour to make course curricula flexible, IIT Kharagpur has introduced several micro-credit courses. Eminent Visiting Experts (denoted as Adjunct or Visiting faculty) from national/international academic Institution/ industry/R&D Laboratories associated with a faculty member from IIT Kharagpur have been teaching in these courses.

The Institute has introduced a number of new academic programmes namely M. Tech. in Quality and Reliability Engineering, M. Tech. in Functional Materials and Devices, M. Tech. in Cyber Physical System (to be offered jointly by the Institute and CEERI Pilani), and three Master of Science (two year) programmes under the Joint M.Sc.-PhD programme to be offered by IIT Kharagpur in association with Tata Medical Centre (TMC), Kolkata in the areas of Nuclear Medicine, Molecular Medical Microbiology, and Medical Physics from the academic session 2017-18. Besides, the Institute has also decided to offer Certificate of Excellence in Research (CER) for the PDF and Visiting Fellows at IIT Kharagpur, and PhD

Programme for the working professionals with minimum residential requirements. Introduction of the Prime Minister's Fellowship Scheme for Doctoral Research by the Government of India is expected to encourage bright students to pursue doctoral research in the areas of Science, Technology, Engineering, Agriculture and Medicine. Other new academic initiatives by the Institute include Short-term Reciprocal Student Exchange Programme between Foreign University and IIT Kharagpur, Learn-Earn-Return (LER) programme for awarding of LER merit scholarships to the top 02 (two) JEE Advanced rankers, and Undergraduate Research Platform (UGRP) to increase the culture of research among the undergraduates.

In our pursuit to offer prompt quality services to the IIT community, ERP system has been further revamped. All academic issues including students' registration, enrolment, course allocation, annual progress report, synopsis submission, examination results, students' feedback, sponsored research, faculty recruitment and salary and income tax details are now available online.

Today, at this function we will be conferring 268 Ph.D. (i.e. 249 Ph.D. + 6 Joint M.Tech./MCP-Ph.D. + 13 Joint M.Sc-Ph.D.), 37 MS, 750 M.Tech., 39 MCP, 81 MBA, 39 EMBA, 8 MMST, 16 MHRM, 13 LLM, 37 LLB, 453 Dual Degree, 471 B.Tech. (Hons), 47 B.Arch. (Hons.), 200 five-year integrated M.Sc. and 144 two-year M.Sc. degrees.

RESEARCH AND DEVELOPMENT ACTIVITIES

I shall now outline some of the research and development activities various Departments, Schools and Centres are carrying out.

Aerospace Engineering

The Department has pioneered research in various fields such as: Small-scale wind turbines; Development of Tesla Turbines for Micro Arial Vehicles (MAV); Aerodynamic performance characterization of MAV models and wings; Damage analysis of laminated composite structure; Multi-component force measurement and data acquisition system; BL transition for hypersonic flows; Scale-up of large reactors using simulations; Design and validation of supersonic nozzles; Design and development of various multi hole probes like 3 hole, 4 hole probe, boundary layer probes, Pitot tube probe, Kiel probe, etc. The Department is also carrying out substantial research in swirl-stabilized gas turbine type combustor test rig; Structural health monitoring; and Aero- elasticity of wind turbine blades.

Agriculture and Food Engineering

As one of the leading departments of the country in the field of agricultural research, the Department of Agriculture and Food Engineering has treaded new heights in the realm of Sensor-based technology interventions for precision farming; Solar energy operated farm machinery and micro-irrigation systems; Remote sensing and GIS applications for integrated watershed management; Soil and crop health monitoring; Simulation-optimization and climate modelling for holistic water management; High pressure processing of high- value perishables and nutraceuticals; Targeted metabolomics of floral scents for value-added products; Microalgal biofuel production; Waste utilization in aquaculture; Development of autonomous tractor; Organic farming; RTE-Health food for malnourished children; and Vacuum frying of food.

Architecture and Regional Planning

The Department was conceived at this Institute for ensuring a holistic integration of the development of science and technology with the normative and cultural dimensions of human society. The first of its kind in the IIT system, the Department started its journey in 1952 with the undergraduate course in architecture. In 1959, the first postgraduate course in planning was introduced by the Department, and the first doctoral degree was awarded in 1970. The Department has received a NIRF RANKING ONE in 2018-19, by the MHRD of the Government of India. The Department blends modern building science & technology with Indian vernacular and traditional concepts with active societal programmes for employment generation and self-reliance. The Department is also strongly networked with the alumni, successfully established all over the world and intensive. It has plans to set up an AI related DESIGN Centre intertwined with the M. Arch. and an Advanced Planning Simulation Lab based on IoT and AI in coming two years.

Biotechnology

The Department focuses on research areas, such as: Process development and optimization for the production of an anti-tumor biosurfactant and production of biodiesel and its evaluation; Bioremediation of heavy metals, radionuclides and organic pollutants; Molecular analysis of microbial community structure and function at contaminated sites; Development of methods of o-antigens and its relation with pathogenecity in Gram negative bacteria; Bioreactor strategies for the enhanced production of probiotic endospores for Nutraceutical formulations and their clinical evaluation; Characterisation of E. histolytica surface proteins and characterization of E. invadens encystations specific proteins; Recombinant protein (therapeutic & diagnostic) expression in plant, animal and microbial systems; Structural and functional studies of protein from M. tuberculosis and S. aureus aiming at drug and inhibitor design; Improvement of hydrogen production from industrial waste using hybrid bioreactor; Continuous hydrogen production by immobilized recombinant E. coli BL-21; Molecular analysis of cypovirus infecting tasar silkworm; Phytomedicine and molecular farming; Development of low fat content transgenic oilseed plant; Biomicrofluidics and Biochip development; Identification and characterization of immunomodulator from natural sources; Characterization of Antarctic microbiota; Probiotic nutraceutical development; Bioinformatics and Computational Biology RNA protein interaction.

Chemical Engineering

The major areas of research in the Department includes Environmental Pollution Control; Polymer Processing and Composites; Plasma Engineering and Surface Science; Computational Materials Science; Colloid and Interface Engineering; Molecular Simulation; Computational Fluid Dynamics and Thermal Engineering; Catalysis and Reaction Engineering; Bioenergy; Coal Science and Engineering; Petroleum Production Engineering; Carbon Capture and Storage; Fine Particle Engineering; Crystallisation Engineering; Process Optimization, Dynamics and Control; Membrane Separation; Bio- and Energy Materials; Soft Nanotechnology; Complex Fluids; Microfluidics and Microscale Transport Engineering; Porous Media and Structured Fluids; Multiphase Flow.

Chemistry

The Department is engaged in frontier research embracing both basic and applied areas of Chemistry, such as, Catalysis, Spectroscopy, Chemistry of Biomolecules, Functional Materials, Macromolecules, Organic Synthesis, Organized Assemblies, Organometallic Chemistry, Structural Chemistry, Synthetic Inorganic Chemistry, and Theoretical and Computational Chemistry. The Department is equipped with state-of-the art experimental and computational facilities, namely, (only major equipment's) Bruker APEX SMART CCD Single Crystal difractometer, Bruker 500 MHz NMR, Bruker AVANCE II 400 MHz and AVANCE II 200 MHz spectrometer, Shimadzu DT-40 model 883 IR Spectrometer, Powder X-Ray Diffractometer, Spex Fluorolog 3 fluorimeter, Time Resolved Fluorescence Measurements (TRFM), Fluorescence lifetime imaging microscopy (FLIM), Easy Life lifetime apparatus, BETSurface Area Analyser, Perkin Elmer C, H, N Analyser, CPU-GPU hybrid HPC cluster. Currently, the Department is handling a large number of sponsored projects from various agencies, including major research grants from DST as FIST level-II support and the Seed Grant for Research Infrastructure in an area of Emerging Thrust (SGDRI) of the Institute.

Civil Engineering

The core research area of the Department includes Structural Health Monitoring; Finite Element Model updating; Reliability of structures; Seismic Analysis of dams; Recycled construction materials; Low cost and sustainable housing; Biomechanics; Stability of plates and shells; Computational nanostructures; Molecular simulations; Fluid-structure interaction; Soil-structure interaction; Sustainable Ground Engineering; Erosion control and mechanical stabilization of soils using natural fibres; geo-synthetics; industrial by-products; Ground improvement; Soil-microbe interaction; in situ testing; Geotechnical Earthquake Engineering; Landslides and slope stabilisation; Tunnelling; Road Traffic Safety; Crash data analysis; Economic modelling of Transport data; Sustainable Transport Planning; Traffic Engineering and Operations; Evaluation of pavements and pavement materials; Pavement Analysis; Environmental Impact Assessment; Air Quality Management; Environmental Monitoring and Planning; Bio electrochemical processes; Integrated Waste Management; Life Cycle Analysis and Sustainable Engineering; Environmental Risk and Impact Assessment; MSW Management

for Smart Cities; Water and wastewater treatment; Industrial Effluent Treatment and Reuse; Anaerobic Wastewater treatment; Groundwater Hydrology; Analytical and Computational Hydrodynamics; Computational Fluid Dynamics; Flow on turbulent submerged jets; River Hydraulics and Engineering; Urban flood monitoring and management; Models for flood forecasting; Hydro climatology and Water Resources Engineering; Climate change impacts on water resource.

Computer Science and Engineering

The Department carries out research in a wide range of areas. In the field of Algorithms and Theory, bounds were established on (i) the computational and combinatorial complexities and the multiple-connectedness of regions visible due to multiple reflections, and (ii) ratio-factor approximations for computing diffuse reflection paths. As regards Artificial Intelligence and Machine Learning, the Department has worked on Opinion Dynamics on Social Networks, representation learning for NLP and temporal point-processes for computational advertising. In Cryptography and Security, the Department has been focussing on optimization of real-time encryption performance for high volume storage data traffic and verification challenges in compression and cryptographic stacks in Quick Assist Technology. In the context of mobile, the Department leverages on the users' smart phone engagement to recognize her physical activities, group activities as well as to detect the emotional state of the user. The Department also works on sensor networks and sensor systems converging to IoT. In visual information processing, some of the research problems that the Department has worked on, include (i) Automated Representation, Analysis and Interpretation of Indian Classical Dance (Bharatanatyam) using Multimedia Data;(ii) Predicting Cancer Treatment Outcomes of Lung & Colo-Rectal Cancer by Modelling& Analysis of Anatomic & Metabolic Images; (iii) Hands-Free Control for Immersive Image Navigation; (iv) 3-D modelling of objects using digital geometry.

Electrical Engineering

Some of the important research themes of the Department of Electrical Engineering are: Fabrication and characterization of sensors to analyse adulterated milk, drinking water, sewage water; Development of a Wireless Eye Wear for Continuous Monitoring of the Vigilance Level of Automotive Driver and Aircraft Pilots; Battery and Fuel Cell Management System; Solar PV Systems; Micro-grid; Modelling and Control of Hybrid Vehicles; and VLSI and Embedded Systems. Some of the important research themes of Department of Electrical Engineering, which are funded by various sponsored projects, include Electric Vehicles: Power Train & Battery Management; Power converter for HVDC & FACTS; Power Electronics for Solar Photovoltaic; Solar Energy Operated Agricultural Machinery; Scalable GaN-based Distributed Dynamic Power Management System; Power Management Integrated Circuit for IOT; Modular DC-DC Power Supply for Space Applications; Hybrid AC-DC Micro- grids; Hybrid Facts Controllers for Transmission and High Voltage Distribution Application; Wide Area Measurement, Advanced Communication and Control for the Prevention of Blackouts; Reconfigurable distribution network; Study of Fractional Order System, Polymer Coated CPE Sensors for Automated Quality Monitoring of Water Used for Drinking and Agriculture; Closed-Loop MEMS Capacitive Accelerometer Cognitive Sate Assessing System; Optical and Computational Imaging, Joint super Resolution of Image and Structure; Analysis of Injury Topology Using Ultrasound Imaging; Compressed Sensing- based Fetal ECG (FECG) Monitoring for Point-of Care Applications; Opened and Intelligent Plug-in Hybrid Electric Vehicle; Robust Multivariable PID Control for High-Angle-of-Attack Missiles; and Decentralized Target Tracking.

Electronics and Electrical Communication Engineering

Department has focused on research areas like VLSI Architecture, Computer Vision, Bioelectronics, Microelectronics and MEMs, Communications and Fibre optics, RF and Microwave etc. In CAD Lab, efforts are directed towards 'primitive instantiation in FPGA implementations' and 'approximate computing'. The Computer Vision Lab carries out advanced research in the areas of Machine Learning Application in Computer Vision, eye movement analysis, error resilience of video, medical image processing and Unsupervised deep learning, 3D Imaging. The Bioelectronics Innovation Lab performs research on bio-electronic circuits and systems, implantable neural interfaces, wireless power and data transfers and IoTs for medical instrumentation. The Microelectronics and MEMs lab devotes itself to the development of nano- bio sensors for health and environmental monitoring, painless drug delivery systems, micro propulsion system for space application and many more. The Communication Systems Lab carries out research in data security and

storage management on enhanced spectral efficient communication channel, 5G Network, Deep Space Interplanetary Communication, Sensor Network. The Fibre optics Systems Lab is involved in making Nano-photonic devices for communication, silicon photonics technology for low energy optical communication and novel optical sensors. The research in RF and Microwave is focused on miniaturized antenna design, microwave imaging, ground penetration radar, radar signal processing etc.

Geology and Geophysics

The major areas of research being carried out in the Department include: Tectonic evolution of craton; Mobile belt ensembles in parts of the Indian shield; Gold mineralization in greenstone belts of Dharwar Craton; Metamorphic remobilization of massive sulphide deposits; Studies on Indian micro-vertebrates, Lithospheric structure across Himalaya; Deformation at Collisional boundaries, Isotope geochemistry, geochronology and crustal evolution; Cosmochemistry; Stable isotopes in Himalayan foreland sediments; Paleogene climate of Kutch, Rajasthan; Environment of ancient sedimentary basins in India; Vertebrate paleobiology; Gondwana stratigraphy and sedimentation; Seismic hazard assessment andmicrozonation in the NE India and metropolitan cities; Non-invasive near surface and down-holegeophysics; Application of electrical and electromagnetic methods to environmental problems; Helicopter-borne electromagnetics; Joint inversion of electrical and electromagnetic methods; Unconventional energy resources; Reservoir potential evaluation; Development of an innovative interpretation approach for VLF electromagnetic measurement for fast imaging of subsurface conducting features associated with mineral and groundwater investigation; Gravity & Magnetic Methods of Prospecting and Reservoir Characterization; Waste management; In-situ surveys for heavy mineral beach placers along Eastern coast of India; Physico-mechanical behaviours of rock and rock-like materials; Rock failure modes; Shear behaviour of rock joints; Groundwater storage and recharge estimation of Indian subcontinent; Groundwater arsenic distribution; Research connecting science and heritage; and Remote sensing, GIS, quantitative geomorphology and mineral exploration.

Humanities & Social Sciences

The Department is extensively involved in research areas: Quantitative economics and Financial economics; Economics of growth; Industrial economics; Development economics, Environmental and resource economics; Developing world bioethics; Gender and trade; financial institutions and markets; Sociology of health and medicine; Human resource development; Brain and behaviour; Interpersonal, intercultural and organizational communication; Visual aesthetics; Business ethics; Corporate social responsibility; Economics of biofuels; Bioethics and Public Health Ethics. The Department also conducts training and development programmes in the areas of Aesthetics, Interpersonal communication, Recent trends in human resource development, Strategic management, Emotional intelligence, Logic and applications of logic, Research methodology and data analysis, Financial modelling and risk management, Leadership and teambuilding, Language, cognition and communication, Understanding culture and practising cross-cultural communication, Creative writing, Critical thinking, reading and writing skills, Environmental humanities, Sanskrit and French. The Department also undertakes a number of projects addressing a wider range of research interests including socially inclusive and sustainable development, environmental and resource economics, HR, music perception, generosity, end of life care, environmental history, food security, and popular culture and literary theory.

Industrial & Systems Engineering

The Department has been active in research, consultancy and various development activities. The high value projects undertaken by the Department are under (i) Megaproject: Food Supply Chain, and Future of Cities, (ii) UAY: Safety Analytics, (iii) IMPRINT: Manufacturing of shell for field guns, and (iv) e-business centre of excellence. Other projects include hazard identification and risk assessment for PXE, DRDO; Assessment of convergence activities under NREGA; Intelligent support systems for online auction; European Union - India research and innovation partnership, and prevention through design (PtD) for industrial safety. In 2017-18, ISE has published 89 journal and 20 conference papers, three edited volumes, and several book chapters.

Mathematics

Department has made a significant contribution in the area of Computational fluid Dynamics, micro-Nano fluid Modelling, Sediment Transport in Open Channel, flow through porous media, Commutative Algebra, Applied Linear Algebra, Numerical Linear Algebra, Fuzzy Optimization, Bio-Mechanics, Dynamics of Nonlinear Systems, Inventory Management, Graph Theory, Integral Equations, Queuing Theory, Statistical Decision Theory, Statistical Data Analysis, Compiler Design, Combinatorics, Fractional Calculus, Numerical Optimization, Stochastic Optimization, Robust Optimization, Theoretical Computer Science, Information and Coding Theory and Cryptography, Complex Networks, Quantum Entanglement, Strategic Network Formation, Data mining and functional Data Analysis. Faculty members of the Department have published number of research papers in reputed international journals on those topics. A numbers of sponsored research projects are under taken by the faculty members.

Mechanical Engineering

Department has setup for Orthotic and ankle prosthetic devices. Some new facilities for manufacturing low cost medical diagnostic devices based on microfluidic principles have been developed. Salinity tracer sensing has been developed in-house. Cells to study transport in heterogeneous media have been fabricated in-house. A micropipette puller has been designed.The Department also carries out research in the areas of Evolutionary robotics; Rehabilitation robotics; Electron beam welding; Electro-hydrodynamics, Groundwater transport and mixing, Electro-kinetics; Mechanics of biological membranes; Contact mechanics and adhesion of thin structures; Parallelization of an immersed boundary based CFD code; Railway Locomotive Noise Control and Battlefield Acoustics.

Metallurgical and Materials Engineering

The R&D Program of the Department encompasses various areas like Corrosion Science and Technology, Extractive Metallurgy, Mechanical Metallurgy, Melting, Casting and Solidification Processing, Modelling, Simulation, Physical Metallurgy, Powder Metallurgy, Surface Engineering, etc. Investigations related to structure-property relationship have been performed on various ceramic and metal-matrix composites, high temperature materials and advanced alloys. Further, activities involving development of newer grades of dual phase and micro alloyed steels, super alloys, high strength light weight alloys, composites and thin sheet steel components remained the quest areas of research.

Moreover, studies related to the development of bulk nano-crystalline materials, severe plastic deformation processing, metastable alloys through non-equilibrium processing, thin films and functionally graded materials have been carried out. Studies emphasizing the principles of basic metallurgical processes and correlation between structural defects on the macroscopic structural and functional properties have been performed. Significant research has been conducted on modelling and simulation to elucidate various metallurgical aspects. Concepts of computational fluid dynamics, heat and mass transfer, thermodynamic modelling and dislocation dynamics have been applied successfully to model various complex metallurgical and materials phenomena. Further, atomistic simulation, molecular dynamic simulation, genetic algorithm and neural networks have received significant attention.

Mining Engineering

The Department is equipped with state-of-the art facilities in rock mechanics, ventilation, mine safety and hazards, and environmental laboratories. Department houses a 3500 kN capacity servo-controlled UTM and 2000 kN capacity servo-controlled direct shear-cum tri-axial testing machine which are unique in India. Faculty members are actively involved with extramural research and consulting works and regularly conduct short courses for Industry executives. The Department has collaboration with American, Australian and Chinese Universities in terms of academics programs and research.

Ocean Engineering & Naval Architecture

The Department is actively involved in Research & Development activities covering the broad area of Ocean Engineering & Naval Architecture. In the recent past, the Department also witnessed an increasing number of Research scholars both as Institute scholar and through projects choosing their career in the field of Ocean Engineering & Naval Architecture. In the recent past, postdoctoral scholars and research

associates choose their career in this department. Department is very actively involved in various research and industrial projects sponsored by the government, research organizations, and industry. The academic and research programs are designed emphasizing on cutting edge knowledge in the subject areas such as ocean hydrodynamics, marine structures, ocean environment, hydro-elasticity, ocean energy, offshore technology, design of marine vehicles & systems, coastal engineering, marine production & planning, and other niche areas. Recently, the faculty of this Department is also involved in National mission project sponsored by the Department of Science & Technology, Government of India in the establishment of Centre of Excellence (CoE) in Climate change studies.

Physics

Research on issues relating to the following areas (both theoretical and experimental) is carried in the Department : Astrophysics and Cosmology; Complex systems; Computational Physics; Condensed Matter Physics; Mathematical Physics; Nuclear and High Energy Physics; Optics and Photonics. The thrust areas of experimental physics are: Functional Materials; Biomedical devices; Bio-Photonics; Flexible electronics; Electronic & magnetic materials; Super-capacitors; Multifunctional ceramics; Raman Scattering; Magnetism and Spintronics; Nuclear Condensed Matter Physics; Light-matter interaction; Glass Photonics; Solar Photovoltaics; Nuclear Structure and Nuclear detectors. The thrust areas in theoretical physics are: String Theory; High energy physics; Quantum field theory (QFT); Quantum entanglement in QFTs; Hydrodynamic instability; Soft Matter Physics; Nonlinear photonics; Classical and quantum gravity; Quantum Information Theory. Faculty members of the Physics Department have published a large number of publications in international journals of repute an addition to doing undergraduate and postgraduate teaching. There are around one hundred PhD scholars, 27 M. Tech. and more than 250 undergraduate students. Several faculty members and research scholars presented their work in international conferences and carried out collaborative research. The Department also engaged a foreign visiting faculty during this academic year.

Deysarkar Centre of Excellence in Petroleum Engineering

Research in the Centre is focused on various areas of Petroleum Geoscience and Engineering as follows: Reservoir Simulation and History Matching; Data Analytics in Petroleum Industry; Drilling, Completion and Cementing Fluids; Fracturing Fluids; Petroleum Geostatistics; Reservoir Geomechanics; and Naturally Fractured Rocks. There has been active participation from the faculty at DSCEPE in submitting a grant proposal for a PAN-IIT ONCG research collaboration titled “Fault Mapping and Facies Prediction using Big Data Analytics”. This has been submitted jointly with faculty members from Electrical Engineering, Computer Science, Industrial Engineering, Geology and Geophysics and Mathematics.

Advanced Technology Development Centre

The Centre primarily carries out research in the areas of: Growth of MoS2, Graphene, CNTs and SiC thin films by chemical vapour deposition (CVD) involving design and fabrication of suitable CVD reactors; Development of Energy Management and Supervisory Control strategies for a parallel Hybrid Electric Vehicle; Development of Autonomous Vehicle Controller through modelling and Simulation; Development of Simulation test bench of EV power system of a real Electric Vehicle towards fault analysis; Activities in numerous applications and fundamental studies under the Centre of Excellence in Microfluidics; Epitaxial semiconductor hetero-structures for nano-electronic application (Growth focus with MBEs); Study of Solar PV (SPV) systems in
terms of technologies, optical and electrical behaviour; Advanced MOSFET devices; Development of flexible pressure sensors for robotic and biomedical applications; Design and demonstration of micro-ring resonator based optical bandpass filter using SU-8polymer and optical lithography; Design and demonstration of a polarization independent power splitter using three coupled silicon rib waveguides in SOI platform; and Development of a non-destructive technique for simultaneous measurement of fibre-waveguide coupling loss and waveguide propagation loss.

Centre for Educational Technology

A major research agenda of the Centre is to enhance and improve the teaching learning experience. In collaboration with TCS Innovation Lab the Centre is focused on building high end Smart classrooms that shall address the individual needs of the learner in the ICT age. The faculty members are also involved in identifying

the cognitive load during an active learning condition to enhance personalised learning. In addition, research is on-going in developing home based interventions for teaching special children like Dyslexia. The Centre has also been actively involved in creating and generating Teaching Learning material for Science, Mathematics and Languages for Secondary school level and development of automated assessment techniques using text processing. Another major research agenda of the Department is to develop an efficient distributed search paradigm for very large volume of unstructured data using multi core processors. Some of the faculty members are also actively engaged in development of knowledge graph for enhancing search experience in digital library.

Centre for Oceans, Rivers, Atmosphere and Land Sciences

The Centre leads the Digital earth initiative of the Institute and is gearing up for the development of a meso-scale land-ocean-atmosphere coupled model, especially suitable for Indian sub-continent. The thrust areas of research and development of this centre include Ocean modelling for Bay of Bengal, Indian ocean and north Indian ocean, Observation and modelling of thunderstorm, Modelling and prediction of tropical cyclone, Study of forest biomass and carbon sequestration, Monsoon meteorology, Air pollution study, Observations and modelling of land surface processes, Meso-scale and land surface data assimilation, Cloud microphysics, Cryospheric studies, Satellite oceanography, and Regional coupled modelling for extreme weather events study.

Cryogenic Engineering Centre

The Centre carry out research in the area of: Cryogenic two phase flow; Cryogenic turbo expander; Cryocooler for HTS applications; Space applications of metal foam; Cryogenic compact and miniaturized heat exchangers; LN
technologies; High temperature superconductivity applications; Cryogenic air separation.

Materials Science Centre

The Centre is engaged in the development and application of novel polymers, ceramics, and semiconductor materials. Currently, major research and development activities carried out at the Centre include the following: Nano- structured materials for super-capacitors, lithium and Na ion batteries and thermoelectric applications; Additive and laser based manufacturing; Crystallographic texture and EBSD of materials; Engineered oxide and semiconductor hetero-structures; high performance polymers for fuel cells and gas separation; Catalyst development for fuel cells, environmental remediation and organic synthesis; Multi-ferric thin films and composites; Oxide gas sensors; Self-healing elastomers; Self-healing hydrogels; and 2D layered materials like graphene and MoS2 by chemical vapour deposition (CVD) and multi-wall carbon nano-tubes by CVD.

Subir Chowdhury School of Quality and Reliability

The School is actively involved in the research activities, such as: Reliability Analysis of Electronics Power Conditioner (EPC) for Space Application (LEC); Reliability Assessment of L40 Stage Assembly and Integration Process (RLK), KCSTC, ISRO; Quantification of Software Reliability for Computer-Based I & C Systems of Prototype Fast Breeder Reactor (PFBR)(QBP), (Indira Gandhi Centre For Atomic Research (IGCAR); Reliability Analysis of Electronics Power Conditioner (EPC) for Space Application(LEC); Microwave Tube Research and Development Centre (MTRDC); Data Analysis and Reliability Assessment of Proof Information System (DARA)(DAI) Defence Research and Development Organization; Proof and Experimental Establishment (PXE), Ministry of Defence; E-Business Centre of Excellence (ECO), MHRD; IBM Shared University Research Award Grant (IUR), Almaden Research Centre; Reliability Study of Akash-NG System(RSNS) (DRDL, Hyderabad). The School is also engaged in Rotating Machinery Fault Simulation Lab (VLS/15) (MHRD), Virtual Labs Phase II (VLT) (MHRD) and also in Developing a Reliability Engineering Framework for Indian Railways Rolling Stock (EIR) (Department of Science and Technology (DST). The School has research collaborations with Ohio State University, United States of America, Department of Computing, Curtin University, Australia, School of Civil and Mechanical Engineering, Curtin University, Australia.

Rubber Technology Centre

Research at the Centre focuses on: Design of rubber products, like tire, seal etc.; Rubber composites and nano-composites; Development of polymers for, biomedical and electronic applications; Polymer foam and microcellular rubber composite for various critical and industrial applications; Polymer nano- composites for food packaging; Controlled radical polymerization; Green tire technology; Rheology and process ability of rubber compounds and polymer blends; Conductive rubber composites for electrical and electronics application; Smart and Stimuli responsive flexible materials; and Block copolymers in drug delivery.

Rural Development Centre

This Centre is committed to carry out research and development activities related to: Strengthening the marketing and credit linkage for small and marginal vegetable farmers in West Medinipur district, West Bengal; Adoption of technology-oriented drinking water facilities in rural India; Exploring biodiversity knowledge through NTFP cultivation in city parks; Food processing technology for rural development; Nutritional and functional food development for malnourished children.

School of Bioscience

The thrust areas of research in the School include deciphering molecular mechanisms of diseases such as inflammatory disorders, viral infections, neurodegenerative and developmental disorders. Faculty members have brought extramural funding (Rs. 80 L) from different government agencies in 2017-18.

Energy Science and Engineering

The School has installed a Solar Cooker in a village school for mid-day meal scheme. Improved version has also been designed. The School carries out research in the areas of Evaluation and modelling of various SPV module's real life performance; Improvement of heat transfer of fluids mixed with nanoparticles for solar thermal applications; Dye sensitized solar cell (DSSC) fabrication and characterization; Improvement of efficiency of a-Si solar cells. Besides, the School has developed a light-harvesting model to describe microalgal growth kinetics, a green-cathode for generation of bioelectricity using microalgae, an in-situtrans-esterification method for biodiesel production directly from yeast biomass, proof of the concept of a yeast bio-refinery for deriving multiple products and benefits using yeast biomass as feedstock. In addition, research in the School focuses on Organic-Inorganic halide based perovskite solar cell fabrication and optimization; Metabolic engineering of Yeast for free fatty acids; Pilot Scale Production of Ethanol from Lignocellulosic Feedstock; Hybrid Sodium - ion Cell/Super Capacitor Packs for Light Electric Vehicles; Opened & Intelligent Plug-in Hybrid Electric Vehicle (PHEV) Technologies for Smart Indian Cities; c-Silicon Solar Photovoltaic; Solar Photovoltaic System; Energy policy; Impact of high Solar PV penetration on power system protection; PV integration to the Grid.

G. S. Sanyal School of Telecommunications

Current research focus of the School is in the areas of: Millimetre Wave Communications; Massive MIMO Systems; C-RAN; Visible LightCommunication (VLC); High Speed Vehicular Communication Network; Techno-economic Analysis of Wireless and Optical Access Networks; Flexible and Secure Optical Access Network Design; Design and Performance Analysis of Elastic Optical Network Simulation Environment using NKN Infrastructure in India; Performance Analysis of Wireless Communication System; Energy harvesting based communications; and Physical Layer Based Secret Key Generation under User Anonymity. The School has developed a Mobile App NerQuake for Telecommunication mobile tower locations under danger due to natural disaster in North-East India. It has developed basic test bed for Cloud Radio Access Network (C-RAN) with wireless access and tested the same. A proposal in connection with modification of Contact Graph Routing (CGR) in Bundle Protocol for Deep Space Inter-Planetary Networks (CCSDS) has also been submitted.

Rajiv Gandhi School of Intellectual Property Law

The School takes pride in reiterating that it has secured 1st position in legal research in the recently announced ranking of NIRF, a MHRD, Government of India initiative, with overall ranking of four in the

country. The School undertakes research in traditional as well as emerging areas of the interface of technology and law. The School also contributes in advancing interdisciplinary research by taking benefit of the Institute's academic ecosystem. The major areas of research being carried out in the Department include Sustainable development and legal aspects of climate change; Contract theories and their application in Indian mercantile laws; IP licensing: Intricacies and legal dimensions; Environmental Law, Policy and Governance; Sexual and Gender based Violence and Victims of Crimes; Internet Governance; Direct and Indirect Taxation, Corporate & International Taxation; Procedural Laws & Land Laws; Corporate Law & Governance; Competition Policy & Law; Recombinant Drug Regulation; Implementation of IP Laws; Biodiversity Law Implementation; International Economic and Trade Law; Copyright Infringement and Liability; International Investment Law aspects; International Commercial Arbitration; International Human Rights Law; Public Policy and Governance; Socio-Economic Rights; Energy Law; Bioenergy-IP and commercialization; and Labour and Industrial Law.

Ranbir and Chitra Gupta School of Infrastructure Design and Management

The School is involved in collaborative research with institutes such as Nikken Sekkei Research Institute, Tokyo on Transit Oriented Development; Curtin University, Australia on FRP-Stay-in place composite system for sustainable construction; University of Southern California, Wuhan University, China and Southwest University, Chongqing, China on project under Asia Pacific Network; Indian Institute of Science and National Remote Sensing as a part of ISRO IISc Research Project. The School is also collaborating with industry on research projects such as Smart and Integrated Pedestrian Design with Vikram Solar Private Limited (VSPL), Kolkata; Thin White Topping: A Pilot Study for Design, Construction and Performance Evaluation with Ultratech Cement Ltd., India. Further, The School is hosting two GIAN courses through academic collaboration with University of Illinois, and Lawrence Technological University, Michigan. Academic Collaboration with Columbia University and Geographical Institute of the Ruhr-University Bochum, Technical University Dortmund - Vajra collaboration is also proceeding. The School is also working with the State Government on projects associated with Transportation planning and assessment of Happiness at New Town, Rajarhat. The School is also a part of the IIT Kharagpur team for setting up of Urban Observatory in Kolkata, in association with British Deputy High Commission.

Rajendra Mishra School of Engineering Entrepreneurship

School has focused research areas like Health care service delivery, Digital Technology applications, Smart-Grid and energy management, Manufacturing &System Design, Grass-roots innovation, and Entrepreneurship. Energy Lab initiated research project on alternative design of the safest and the most reliablemode of energy storage, that is,the lead acid battery to decrease the dead weight of the conventional battery thereby making it more efficient in terms ofspecific energy and power. The Analytics Lab advanced research on Behaviour Monitoring and Analysis for Personalized Preventive Care, Application ofVisual-Inertial Fusion for Large-Scale Scene Reconstruction, Resource Allocation and Scheduling in Emergency Medical Services, Planning Interventions forCardiovascular Disease Prevention. The Products Analytics and Modelling lab initiated research on Design and development of transmission and controlsystem for Hybrid electric vehicle (HEV) and Imaging and Rapid Prototyping based Product Engineering. The Agri-preneurship Lab inducted research inInsecticidal Formulation development from locally available indigenous Plant materials, Development of Nutraceutical and cosmeceuticals products andprocessing of Non-edible oil seeds for production of bio Diesel, Bio-lubricants and Oleo chemicals. The Social Research Group also progressed with theimportance and knowledge of understanding grass- root innovation and use of appropriate technology in Indian context, research on agricultural extension.

Kalpana Chawla Space Technology Cell

The Cell carries out collaborative research projects in the following broad areas: Liquid Combustion, Propulsion and Cryogenics; Space Communications and EMI/EMC; Micro-machine Sensors; Control, Navigation and Guidance; Embedded Systems and IP-Cores; Cryptography and Security; Remote Sensing; Life Support Engineering; Smart Materials & Exotic Materials; Power Electronics; Space Education; Electronics Devices; Cryogenics; and Quantum Communication. As an outcome there are approximately hundred and forty papers published in reputed national and international journals and conferences, and one patent has been filed jointly with ISRO. The cell offered two courses on 'Digital Signal Processing' and

'Fundamentals and Applications of RADAR Imaging for Geo-resource Operations' in the academic year of 2017-2018.

School of Medical Science and Technology

The School is a state of art facility for interdisciplinary teaching, research and development in medical science and technology. The School developed new academic and research collaboration with Tata Medical Center, Kolkata. The School has introduced M. Tech. in Biomedical Engineering in addition to the existing Masters in Medical Science and Technology (MMST) programme; It has also developed and launched Joint M. Sc.-PhD programmes in the areas of Molecular Medical Microbiology, Medical Physics and Nuclear Medicine in association with Tata Medical Center, Kolkata; Significant number of scholars (>75) are pursuing fundamental and translational research in the areas of cancer biology and early diagnostics, wound healing, regenerative medicine, biomaterials, soft & hard tissue engineering, neuro-rehabilitation prostheses, epidemiology, proteomic/metabolomic dimensions of health and disease, reproductive health, herbal medicine, medical informatics, MEMS and microfluidics-based biosensors, immunology and cardiovascular diseases. Several R&D projects are being supported by Govt. of India (e.g. MHRD, DBT, DST, ICMR, CSIR, and IMPRINT) and other funding agencies like the Royal Academy of Engineering. Students have received awards with various international scholarships (e.g. Newton-Bhabha, DAAD, and Khorana).

School of Nanoscience and Technology

Research in the Department focuses on: Group-IV and III-V semiconductor nanostructures for electronic and photonic devices; Polymer and rubber based nanocomposites; Intermetallics, bulk amorphous alloys and nanocomposites; MEMS and microsystems, Nano-electronics, Nano-scale biosystems engineering; Carbon nanotubes, graphene, metallic nanowires, and nano- particles; Biocompatible nanostructures for bioimaging & diagnostics, drug delivery, biosensor; GMR & magneto-electric and magnetocaloric materials; Nanostructured/nanocomposite thin films and coatings; Nanofluids and Mesoporous Solids; Polymer thin film instability, self-organization and meso- mechanics; Oxide gas sensors, Lithium ion rechargeable batteries; and Computational nanostructures.

School of Water Resources

The research areas of the School include Leak detection & urban water supply network management; Eco-friendly treatment systems for reuse of grey water; Pathway identification & toxicity analysis of electrochemical oxidation of methyl orange; Real-time mapping of riverine heavy-metal pollution, source-identification and vulnerability assessment; Runoff estimation using deterministic, conceptual and Remote-Sensing-based approaches; Real-time flood and groundwater level forecasting; River basin management involving surface-water-groundwater-climate interaction in urban/periurban/rural areas, water-energy-food-society-climate nexus, hydro-informatics, and climate change feedbacks; Reservoir water management and reservoir sedimentation; The School has been successful in availing Australia–India Strategic Research Fund (AISRF) Early- and Mid-Career Researcher (EMCR) Fellowships in 2018–19. It has also initiated collaboration with CSIRO- Australia and Leibniz Universität Hannover, Institutfür Hydrologie und Wasserwirtschaft, Germany. Besides, the School conducted two GIAN courses: Titles: "Urban Water and Wastewater Management for India" and "Recent Advancements in Groundwater Contamination Modeling", and conducted a Micro-Credit Course on "Economic Analysis of the Urban Water Services". Another GIAN course entitled "Improved Climate Change Adaptation Strategies in Water Resources" has been approved. The School hosted four international faculties (Prof.Asit K. Biswas, Prof. VenkateshUddameri, Dr Pawan Sachdeva and Dr Sreekanth Janardhanan).

Vinod Gupta School of Management

Some of the key research activities of the School are: Business Intelligence, Business Analytics including Marketing Analytics and HR Analytics; Operations Management; Supply Chain and Logistics Management; Strategic Outsourcing; Consumer Behaviour, Services Marketing, Industrial Buying Behaviour; Leadership; Ethics; Organization Behaviour; Financial Markets; Derivatives; Banking; Market Microstructure.

Centre for Theoretical Studies

Centre is actively pursuing cutting-edge research in the area of: Astrophysics, Cosmology and Relativity;

Dynamics and control (including nonlinear science); Mathematics, Mathematical physics and Theoretical Computer Science; Theoretical Condensed Matter Physics; Theoretical High Energy physics; and Theoretical Chemistry.

Rekhi Centre of Excellence for the Science of Happiness

Broad areas of research of the Centre include: Happiness and health; Happiness and physiological changes; Cultural dimensions of happiness; Happiness, well-being and ecology; Community wellbeing; career, success and happiness; Generosity, gratitude and happiness; Creativity and happiness; Leadership and happiness; Relaxation techniques for happiness; Stress and well-being; and other related areas. Project works being carried out at the Centre include studies with the Governments of Madhya Pradesh and West Bengal for happiness scale development and volunteer selection.

INFRASTUCTURE DEVELOPMENT

As a modern technological institution, we constantly upgrade our existing infrastructure to accommodate growing number of campus residents and to facilitate state-of-the art methods of teaching and research. Listed below are some recent additions and development.

Aerospace Engineering

The Department has procured two dimensional low speed particle image velocimetry units. The Department has commissioned development of Probe calibration facility for multi-hole probes and hot wire probes, up gradation of test section for Low speed Cascade tunnel for development of new compressor and turbine air foils, modification and up gradation of existing axial flow fan facility for UG and PG students' lab. It has procured 16 channel pressure scanners and miniature five-hole probe.

Architecture and Regional Planning

The Department is strongly networked with alumni, successfully established all over the world and has intensive plans to set up an AI related DESIGN Centre intertwined with M.Arch. program; an advanced Planning Simulation Lab based on IoT and AI.in coming two years (2018 -2020) and a DIGITAl Spectral lab. The major collaborations are with MIT Media Lab, GSAPP Columbia University, Georgia Tech. Atlanta with their advanced GIS Center and Graduate School (ABL), Kyoto University.

Biotechnology

The Department has procured Laser Scanning Confocal Microscope FV3000 (Olympus, Japan).

Chemical Engineering

The Department has finalized the construction plan for new building to shift undergraduate laboratories.

Chemistry

The Department has installed 500 MHz NMR spectrometer, purchased with DST FIST Level - II support.

Computer Science and Engineering

The Department has procured a Digital Storage Oscilloscope (Specifications: Tektronix - TPS2024B: 200 MHz, Electrically Isolated 4-Channel, 2 GS/s DSO. GW INSTEK - GDS 3504: 500 MHz, 4-Channel, 4 GS/s DSO. Nvis 210C1T: 100 MHz, 2-Channel, 2 Mpts DSO), a GPU cluster was also procured (Specifications: Master Node - PowerEdge R730 Server Intel Xeon ES·26S0v4 2.2GHz,30MCache 16GB RDIMM,2400MT/s, Dual Rank, x8 Data Width x 4 OS : CentOS 7 (Rocks Cluster); Client Node (4 Nos) - PowerEdge R730 Server; Intel Xeon ES·26S0v4 2.2GHz,30MCache, 16GB RDIMM,2400MT/s, Dual Rank, x8 Data Width x 4 OS: CentOS 7 (Rocks Cluster); GPU: NVIDIA Tesla P100 16GB Passive GPU (2 Nos)).

Electrical Engineering

The Department has procured High Performance Computing Server (comprising of High performance computing (HPC) rack mount server in 2 x 2U arrangements with four nodes per 2U chassis. Each node with 2x Intel Xeon Platinum 8160 CPU, 64 GB RAM, 4 TB HDD cumulatively performing at 25 TFLOPS of FP32 in total compute capacity) and an Ultrasound Mannequin.

Electronics and Electrical Communication Engineering

The Department has set up Bioelectronics Innovation Laboratory for developing bioelectronics circuits, bio-reliability characterization and animal studies. Microelectronics and MEMs Lab has established C-MEMs fabrication facility, targeting alternative electrodes for devices, bio sensing, and drug delivery in the field of energy harvesting. It has also established a Di Electrophoresis (DEP) used for precise alignment of nanostructures (like: nano-dots, nano- rods, nano-tubes, etc.).

Geology and Geophysics

The Department has developed multi-method approach based on soil Radon deficit, Resistivity and Induced Polarization measurements to monitor non- aqueous phase liquid contamination.

Humanities & Social Sciences

The Department is now equipped with CANTAB for Cognitive Assessment. It has bought Eye-tracker and Polygraph for conducting intensive behavioural research.

Industrial and Systems Engineering

E-business Centre of Excellence is now equipped with High-Performance Computing Cluster, a prototype RFID based supply chain monitoring system Safety Analytics and Virtual Reality Laboratory consist of a 3D Laser scanner, Eye tracker, Headand Hand Tracker, Head Mounted Display, Hand Data Gloves. Operation Research & Data Science laboratory has been set up in the Department that is equipped with 70 computers and state-of-the-art software such as CPLEX and SAS.

Mechanical Engineering

The Department has established a 3-node HPC rack cluster with 48 compute processors P100 GPGPU and a 10 GB Ethernet switch. High end workstations with COMSOL software has also been set up. High voltage source AC/DC has been acquired along with several instrumented IC engine test beds and gravimetric fuel consumption meter, Piezo based vibration excitation system. A low noise high-speed wind tunnel for rolling stock aerodynamic study and an experimental facility for rail-wheel interaction studies are being developed.

Metallurgical and Materials Engineering

The Department has commissioned Fatigue testing machine, Micro- and Nano- hardness testing machine, Creep testing machine, and Field Emission Scanning Electron Microscope with Energy Dispersive X-Ray Spectroscopy facility.

Mining Engineering

The Department has procured a servo controlled direct shear-cum-tri-axial testing machine, BET surface area analyser, and new rock mechanics and ground control laboratory building.

Ocean Engineering and Naval Architecture

Under the National mission project Centre for Excellence (CoE) in Climate Change sponsored by the Department of Science & Technology (DST), Government of India, the Department has acquired a High Performance Computing (HPC) system. The Vibration and Marine Construction Laboratory has been upgraded with acquisitions of new instruments and machinery.

Physics

The Department has developed a new 'Nanoscale Optoelectronics' lab which is capable of investigating the quantum optical properties that can lead to the development of the future generation of optical devices. A new low- temperature dielectric and transport measurement laboratory has also been developed.

Centre for Educational Technology

The Centre has purchased a high end GPU server with 1TB RAM, 44 core processors and 70 TB hard disks for research in big data and large scale search engines. The department has also developed a Language and Information Processing Lab equipped with explicit bio-markers like the 32 channel EEG

machine and Tobii 120 Eye Tracker. For the development of improved content for Secondary education, the Centre has acquired a state of art Mobile Studio.

Centre for Oceans, Rivers, Atmosphere and Land Science

Actively participating in DST sponsored Centre of Excellence in Climate Change at IIT Kharagpur, the Centre has developed research laboratories for atmosphere and oceanic research, urban and regional climate modelling for extreme weather events; ocean modelling, monsoon dynamics, spatial analysis and modelling, and ocean atmosphere coupled modelling. It has improved computing laboratory for M. tech. students, initiated Doppler Radar Initiation with faculty. It has also initiated the processes of acquiring funds for the Advanced Dual-Polarized Weather Observations at the Institute. There are on-going collaborations with national/international laboratories under the Vajra Programme and multi-institutional and international collaborations (NOAA, Purdue University) under the Monsoon Mission Programme of MoES.

Deysarkar Centre of Excellence in Petroleum Engineering

The Centre has procured pH Meter, Stirrer, Balance, Hot air oven, BHP Chart reader, Microscope for Chart Reading, and Resistivity Measurement Instrument. It has also been recently granted money from the Institute for buying 12 high end workstations for setting up a Simulation Laboratory. The Centre is also in the process of building a collection of books in their library in the areas of petroleum engineering and geology. 124 books have been so far purchased that include volumes from societies like AAPG and SPE.

Materials Science Centre

The Centre has commissioned FESEM from Zeiss (Germany) under DST-FIST program.

Rekhi Centre of Excellence for the Science of Happiness

Rekhi Centre is coming up in the Nalanda complex and will house psychological and physiological research labs, space for various activities and for research scholars and faculty. A virtual interactive lab for profiling positive states of mind is also being proposed.

Rubber Technology Centre

The Department has procured freeze dryer and differential scanning calorimetry.

School of Bioscience

The Department has established high end Biosafety level 2 laboratory and procured Real Time PCR, Multimodal imager for protein and nucleic acid analysis, and a Luminometer.

Rajiv Gandhi School of Intellectual Property Law

The School has established the Legal Aid and IP Facilitation Cell which was inaugurated by the Hon'ble Justice Aniruddha Bose, Judge, High Court at Calcutta and Executive Chairman, West Bengal State Legal Services Authority.

Ranbir & Chitra Gupta School of Infrastructure Design and Management

The School has procured "CUBE" software that will enable the physical infrastructure laboratory in developing transportation-land use models and fully equipped RS GIS spatial lab development on Environment and urban research at RCGSIDM.

Rajendra Mishra School of Engineering Entrepreneurship

Energy Laboratory has procured the important instruments viz. Cyclic Voltammeter, Drying Oven, Muffle Furnace, and Tabular Furnace. This will help in the research of new materials for energy storage. Bio-Lab procured far pH meter, Microtome, Barometer Hygrometer Thermometer, BOD Incubator, Hot Air Oven, Water bath, Extractor has been procured in this Lab for doing research on pesticidal formulation development from locally available indigenous plant product and their field efficacy Study.The School is engaged in developing the IIT Kharagpur Research Park at Kolkata with the active participation of faculty. An incubation hub has also beencreated for eight start-ups at Kolkata Extension Centre. CarlBio Private Limited and Purplas IT Services Private Limited have started their activities in the hub.

Subir Chowdhury School of Quality and Reliability

The School is progressing on the development of Quality Engineering Laboratory. New experiments are being conducted in the Reliability Testing Facility. The computer laboratory is now updated with various functional software tools for reliability, availability, maintainability, safety, quality and DOE analysis.

School of Energy Science and Engineering

The School has installed a Solar Cooker in a village school for mid-day meal scheme. Improved version has been designed. It has conducted evaluation and modelling of various SPV modules' real life performance. Improvement of heat transfer of fluids mixed with nanoparticles for solar thermal applications and efficiency of a-Si solar cells are ensured. It has developed Dye Sensitized solar cell (DSSC) fabrication and characterization. A light-harvesting model to describe microalgal growth kinetics, a green-cathode for generation of bioelectricity using microalgae, an in-situ trans-esterification method for biodiesel production directly from yeast biomass, and the proof of the concept of a yeast bio refinery for deriving multiple products and benefits using yeast biomass as feedstock have been developed.

INFRASTRUCTURE DEVELOPMENT IN THE INSTITUTE

The Civil Construction and Maintenance section has taken up several construction projects to cater to the infrastructural requirements of the Institute. All 39 flats of new faculty transit apartments, 64 flats of married scholar accommodation, and all four blocks including Dining, Kitchen & common facility block of Nivedita hall of residence have been handed over. Finishing work of Vikram Sarabhai residential accommodation with 164 rooms for Boys and 164 rooms for Girls has been completed and handing over process of the facility is in progress. All 88 rooms of Nalanda class room complex have been handed over. In the J. C. Ghosh Science Block and P. C Ray Laboratory Block, 16 Floors have been handed over to SIDM, CORAL, Petroleum Engineering and Department of Chemistry.

100 units of post-doctoral accommodation and foreign visitor accommodation are under progress. Sixty-six new Faculty accommodation units in 11 (G+2) building are being constructed by CPWD. RCC Structure & brick work of four buildings have been completed and finishing work is in progress. Work is in progress at rest of the seven buildings.

Expansion of Aerospace Engineering building is under progress and finishing work is going on by M/s HSCL. Finishing work of new Annex Building in Mining Engineering Department is in progress. Finishing work is in progress at JC Bose Annex Laboratory building. RCC structural work, brickwork & plastering of Main Hospital Building, Electrical substation, AC Plant room, and pump house have been completed. HVAC, Fire-fighting, internal electrification, lift installation, STP & finishing work is in progress. The work order for the (B+G+9) Main Building along with Auditorium, Sub Station building and services has been issued by CPWD to M/s. NCC Ltd. The structural work has already been completed including Auditorium and sub- station. 90% of finishing work has been completed. Various service works like HVAC, fire-fighting etc. are also being simultaneously executed.

Under the new water supply project of the Institute, total pipe laying has been done for 11.04 km out of 12.60 km. The work is in progress in the SE Rly Goods yard Area where total of 4.29 km has been laid out of 5.50 km. Pier casting and Collector well casting work is in progress.

For NANO CRF and Life Science Building of Diamond Jubilee Complex, the RCC Structure has been completed and finishing work has commenced. Plant Room of HVAC has been completed and installation work has commenced. Structural work of sub-station has been completed. Work has commenced for development of synthetic athletic track, hockey ground, and tennis courts with lighting facility.

TECHNOLOGY TELECOM CENTRE

Technology Telecom Centre (TTC) provides the voice communication services to subscribers in the academic as well as in the residential campus on conventional copper wires as well VoIP and Digital Telephony and the value added services like Audio Conferencing Bridge and mobile extensions etc. It is having the state of art Centralized EPABX at Technology Telecom Centre and a satellite exchange at New Guest House. It is also providing the centralized fax services to Institute community.

During year 2017-18, TTC laid cables to Nalanda Class Room Complex (both external and internal cabling) as well as to Sister Nivedita Hall of Residence (both external and internal) besides our normal work of the maintenance of the existing telephone lines as well as augmentation of new lines with respect of joining of new faculties/officers as well as creation of new labs/departments.

CENTRAL RESEARCH FACILITY

Central Research Facility (CRF) provides a platform to support interdisciplinary research that complements the academic goals of departments to serve a compelling campus research priority. The requirement of different high end instruments is identified through broad campus consultation or strategic planning.

This facility has two broad Divisions: Materials Science Division and Life Science Division. There are around 36 laboratories in the CRF complex and each laboratory is under the supervision of a designated faculty member from the Institute. The equipment housed in these laboratories are used for various types of characterization including study of structure and chemical composition of surfaces and bulk materials at different length scales (sub-nanometer to millimetre), phase transitions, as well as evaluation of mechanical, electrical, magnetic, and optical properties. The available facilities for such studies on materials include state-of-the art field emission scanning and transmission electron microscopes, dual beam FIB-FEG microscopes, X-ray diffractometers, X-Ray Micro-CT, Scanning Auger Nanoprobe, Atomic Force Microscope, Nano- triboindenter, Raman Spectrometer, Thermal Analysers, SQUID-VSM, Hall- effect measurement, etc. Various cells and biomolecules (DNA and proteins) are also studied for their structural analysis and interactions using high end equipment like SPR, Analytical Ultracentrifuge, MALDI-MS/MS, Single crystal protein X-ray diffractometer, ITC, FACS etc. High performance computing server for Micro-CT lab has been established newly.

CRF serves to facilitate interdisciplinary research and research collaborations; disseminate results through research conferences, workshops, meetings, performances and other creative activities; seek extramural research funds; and carry out university and public service programs related to the CRF's research expertise. CRF is able to provide undergraduate and graduate student research and training opportunities, access to facilities.

ALUMNI AFFAIRS AND INSTITUTIONAL DEVELOPMENT (ID) PROGRAM

The Office of Alumni Affairs and International Relations was set up in the year 2003. Since then the Office has expanded its activities across various domains such as alumni networking, fundraising, alumni events etc. The other wing of the Office, International Relations has grown exponentially since 2014. The Office has also been made responsible for institutional branding under the Institutional Development Program. Following are the major activities undertaken during 2017-18.

Alumni Relations

Close to 65% connectivity with the alumni has been achieved by the end of the year including registrations on the alumni website, annual alumni meet, visits, social media platforms and other alumni engagement programs. Out of a total number of 61701 alumni, the Institute is connected with 39392 alumni and is able to network with them.

Some new initiatives have been introduced this year to improve connectivity of the alumni. These are Alumni find-a-friend program and Homecoming for alumni batches completing 10th, 15th and 20th year of graduation.

Young Alumni Achiever Award is launched to recognize young and promising alumni who have achieved great success and recognition in their chosen profession. This will recognize alumni with age 40 or less who have demonstrated emerging and unique innovation, creativity and success in his or her chosen career. Selections are based on success in chosen careers; however, a demonstrated commitment to excellence in IIT Kharagpur and opportunity for future involvement may also be considered.

The giving back campaign for outgoing students 'My Imprint Senior Class Gift' witnessed another successful year with 400+ students donating their caution money for building bus stands for the on-campus bus service.

Alumni and Institute Events

Annual Alumni Meet

The 15th Annual Alumni Meet was organized in association with the Students' Alumni Cell. Close to 300 alumni participated in the event with their families. The event hosted the alumni batches that completed 50th, 40th and 25th years of graduation i.e. 1968, 1978, and 1993.

Alvida

The annual farewell dinner was organized on April 12th 2018 wherein Dean Alumni Affairs welcomed the students to the alumni community. More than 2000 students attended the event. They also showed a keen interest in giving back to their Alma Mater by pledging their caution money for the My Imprint Senior Class Gift program.

Convocation

The Office played a key role towards distributing Alumni Card and Yearbook to the degree recipients, conferment of the Distinguished Alumnus Awards and hosting the annual press conference on the occasion of Convocation.

Foundation Day

The 67th Foundation Day of IIT Kharagpur was celebrated on August 18, 2017. The Chief Guest was Shri K K Sharma, IAS, Secretary, Higher Education, MHRD; Government of India. Like every year on the occasion of Institute Foundation Day, faculty and staff members who completed 25 years of service were felicitated by the Director. In the evening, a debate was conducted among the student and faculty members of the Institute. This year's Foundation Day Debate topic was 'By 2050 a machine will win the teaching excellence award at IIT Kharagpur based on student feedback'. Schools from Kolkata and Kharagpur were invited to participate in an outreach event involving scientific demonstrations, a tour of research facilities at the Institute, registration for the National Digital Library, competitive project presentation and a special talk by the Director.

Fundraising Campaign

Under the Institutional Development (ID) Program several fundraising campaigns are being carried out to build corpus through endowment mode to ensure self-sustainability in the long run.

The campaigns such as Batch Endowment encourages alumni to contribute in the name of their batch, the collections on being reaching the milestone of INR 50 Lakhs, the batch is commemorated with a classroom named after the batch in the Nalanda Academic Complex. In 2017-18, the batch of 1968 achieved this target. The funds raised in India from various batches amounted to Rs. 47.5 Lakh~.Hall Gift is another campaign where alumni were appealed to donate for the development of their Halls. Alumni from six halls raised about Rs. 75 Lakh in the FY 2017-18 for hall development activities and work is underway.

Alumni Satinder Singh Rekhi and Subir Chowdhury made contributions for two pioneering projects launched by the Institute - Rekhi Centre of Excellence for Science of Happiness (Rs. 63.5 Lakh~ as the third instalment) and Subir Chowdhury School of Quality (Rs. 1 crore 28 Lakh). Alumnus Arjun Malhotra is driving the campaign for the Center for Classical Arts and made a contribution of Rs. 50 Lakh. Also, a grassroots campaign has been launched for the alumni to contribute towards this Centre.

Alumni donated in various grassroots campaigns such as annual donation (Rs. 12.7 Lakh), an endowment campaign, Learn-Earn-Return (Rs. 17 Lakh), a students' fellow award campaign, Chair Professorships by alumnus Amitabh Agrawal, alumni from the class of 1993 in memory of their late batchmate Ajay Kumar Singh, IPS, scholarships by the class of 1997 from Mechanical Engineering department in memory of their late batchmate Ritesh Ranjan.CSR fund of about Rs. 80 Lakh were received during the year towards scholarship by Tower Research Capital, students' innovation by Top Gear Service Providers and alumni outreach by Axis Bank.

400+ graduating students donated their caution money under the My Imprint campaign which amounted close to Rs. 25 Lakh for building bus stands in the campus.

A new initiative which was started in FY 2017-18 was raising funds for various departmental events and campaigning for them to improve connectivity.

Endowment Fund Management

The alumni endowment fund committee recommended exploring alternative modes of secured investments other than fixed deposits in scheduled banks. Also, the interest out of past investments was recommended to be utilized for funding research at undergraduate level. A part of fund raised in the past financial year was recommended to be utilized to boost fundraising, connectivity and communication.

Branding

In keeping with the continuous efforts to improve the global brand image of the institute, media relations remained a focal point with regular dissemination of news and information on research, academics, student achievements and other developments at the Institute. This systematic focus on visibility enhancement has resulted into 685 insertions on 145 unique stories (up from 605 insertions on 124 unique stories last year) in a wide variety of media publications. Contacts have been established with science websites and journalists exclusively writing science news.

Activities have been undertaken for increasing visibility on **social media** through Facebook, LinkedIn, YouTube and Twitter. Several tweets from the official handle were re-tweeted by various ministries and offices under the Government of India.

An event was organized targeting students from class VIII-XI to promote orientation towards science and technology. The event, **Young Innovators Program**, garnered interest from about 1500 schools in the country. Semi- finalists were invited to the institute campus for last two rounds, workshops and experience IIT student life.

Brand Memorabilia

Distribution of souvenirs and memorabilia got a major boost during the year with a large number of items being included, online promotions, and literature being distributed to the alumni. Alumni chapters have been approached to improve distribution volume in their events.

Publications

Our internal publications provide another key tool for us to share Institutional and student-related news as well as encourage participation of alumni in institutional activities. To that end, we have been successfully launched the electronic newsletter '*Clap for KGP*' which sends out positive news and achievements of the Institute and all its stakeholders. Other regular publications such as the Alumni Annual Report and the annual souvenir "Yearnings of Yore" were published during the Annual Alumni Meet. In additional, we published a steady stream of communication and other material such as brochures for different campaigns, Foundation Day Celebrations, Alumni ID Cards as well as separate Yearbooks for UG, PG and Ph. D. students. A new publication 'The World of IIT KGP' is underway.

THE OFFICE OF INTERNATIONAL RELATIONS

The Office of IR continues to make significant strides to maintain important international strategic alliances while developing new relationships. It continues to work under the leadership of Dean IR to increase the Institute's visibility among international audience. Its activities include:

- Facilitating the development and management of a variety of international partnerships
- Linkages and networks with institutions of academic excellence and repute all over the world. Increasing students exchange opportunities by facilitating research partnerships
- Promote relationships between foreign universities and the institute
- Help define the scope of such relationships through appropriate Memoranda of Understanding (MoUs)

International MoUs:

16 International MoUs were signed in the past year. Significant strides are being taken to sign more MoUs with renowned international universities and rope in collaborations with the top universities of the world.

MoUs are expected to facilitate heightened student and faculty exchanges, innovative collaborative projects, workshops and seminars that would contribute effectively to the academic landscape of the Institute.

The international MoUs signed with University of Manchester –UK, Purdue University, Texas Tech. University, The University of Arizona, Ohio State University – USA, Saint Petersburg National Research University of Information Technologies, Mechanics and Optics, Innopolis University- Russia, Nikken Sekkei Research Institute, University of Tokyo – Japan, Universita Degli Studi Di Catania- Italy, University of Rwanda – Africa, University of MINHO – Portugal, Tomas Bata University, Zlin- Czech Republic, Technical University Munich – Germany, University of New Castle- Australia and Institute National Polytechnique de Toulouse (INPT), France.

Student Exchange Program

The student exchange program covers funded short-term visit by students between IIT Kharagpur and foreign institutions/universities on a reciprocal basis. The visiting student must be a full-time student enrolled in a degree program in their Institution. The nature and extent of funded support shall cover one or more from the following: travel in India, tuition fees, stay at IIT Kharagpur, food, and medical insurance. IIT Kharagpur has recently launched a funded short-term student research exchange program with Texas A&M University. Under this program, three students have visited IIT Kharagpur to pursue their summer internship. Likewise, three students from IIT Kharagpur have visited TAMU for their summer internship. Even if the corresponding university of a prospective student does not have an agreement with IIT Kharagpur on student exchange, a short-term visit can be arranged by the Office of International Relations, IIT Kharagpur, after due approval from the department/school/centre concerned.

Multi-Institutional Dual Degree Programs

The Institute offers Dual Doctoral Program jointly with its partner institutions. MIPA, or the Melbourne India Postgraduate Academy, is one of them. Developed by a collaboration between the University of Melbourne (UoM) and IIT KGP (one of the three partner IITs), MIPA facilitates the DDP, wherein students enrolled in MIPA, work on a project jointly developed by both supervisors and are mentored by a joint advisory committee consisting of academics from UoM and IIT KGP.

Similarly, IIT Kharagpur also offers Dual Doctoral Degree Program (DDDP) with Curtin University of Technology, Perth, Western Australia. Both the institutions are promoting appropriate joint research projects and joint courses of study with particular emphasis on internationally funded projects.

DDP is also offered by IIT Kharagpur jointly with the University of Wollongong, Australia. The two institutions encourage short term visits of scholars for research and joint research projects.

As interaction and cooperation among the faculty members of the partner Institutes is extremely important for the success of the DDP, several meetings and discussions are being held by IIT KGP and the partner universities. For e.g. a joint symposium (IIT KGP-Curtin) have taken place between December 13-14, 2017 at IIT KGP to offer a platform for interactions and exchange among the faculty members of IIT Kharagpur and Curtin University. This interaction has helped identify more specific work areas and also the faculty members who are interested in working jointly on those thrust areas. A team of 10 professors from Curtin University visited IIT Kharagpur during this joint symposium. Another extremely important component of the workshop included interaction with the potential students from IIT KGP, who have demonstrated interest in the Program. Prof. Bhargab Maitra, Civil Engineering. Department at IIT KGP has been the coordinating Faculty of this symposium.

Similarly, multiple meetings and interactions have taken place with University of Melbourne, where academics from both sides have visited the partner institute and have closely discussed road-maps to take the Program ahead. Dean IR IIT KGP, Prof. Baidurya Bhattacharya for example, visited UoM in April 2018 to discuss the way forward with the UoM leadership. His visit has been reciprocated with subsequent visit being planned by faculty members from UoM on the 12-13 July, 2018. This visit would be a follow-up to the previous visit made by UoM in December, 2016. As a direct consequence of these interactions, IIT KGP is now ready to send its first batch of 3 students for the DDP in UoM, in 2018.

DDP procedure in a nutshell: A doctoral student of IIT Kharagpur can apply for the Dual Doctoral Program only when a supervisor from IIT Kharagpur and a co-supervisor from the partner Australian University are ready to work with the student. If admitted to DDP, the student will be required to stay for one year in the Partner University. The doctoral students from the partner university will also be eligible for the same program on a reciprocal basis. For the award of DDP, a student has to satisfy the academic requirements of both IIT Kharagpur and the partner Australian University. Upon the fulfilment of all academic requirements, students receive PhD degree jointly awarded by IIT Kharagpur and the partner university. The first batch of PhD students have already applied for the DDP and regular discussions are taking place between IIT KGP and partner universities to make the process more robust and efficient.

IIT KGP is also offering joint programs with several Australian universities – Curtin and Wollongong while collaboration with Melbourne was in the process during the year. The institutions on a one-to-one basis are promoting appropriate joint research projects and joint courses of study with particular emphasis on internationally funded projects. They are also cooperating in the exchange of information relating to their activities in teaching and research in fields of mutual interests. While both the institutions are offering exchange programs and study tours for their faculty and students alike, they are also conducting joint cultural projects to help students understand the culture of both the nations well. It is also providing study abroad opportunities at postgraduate and PhD level for students of both the institutions.

Multi-Institutional Dual Degree Programs

The degree programs from Curtin University, University of Melbourne, and University of Wollongong – Australia.

Semester Away Program in India/Abroad (SAP)

IIT Kharagpur puts great emphasis on the overall development which makes its graduates highly proficient professionals. Under this program registered students (both PG and UG) will spend a semester at the host university; the credits earned there will count towards completion of course at IIT through credit transfer. Unless explicitly covered by a MoU, the student is expected to bear all costs of the SAP experience. The SAP has been approved by the institute senate and formalization of this program has been done to a considerable extent.

Students Visits: 2017-2018
Undergraduate Students (Inbound): 03
Graduate/Postgraduate Students (Inbound): 02

Foreign Training Program

International Relations Office has started this pilot project last year to streamline the process of sending applications for foreign training and is supported by a students' body - International Relations Cell. Just a year on, the project has gained momentum and supported more than 10 students receiving internship offers from foreign universities like KTH Stockholm, Northeastern University, University of South Carolina Aiken, Korea Advanced Institute of S&T, New Castle University etc. In the coming years FTP looks forward to support more number of students getting foreign internships and have a holistic experience.

News Letter

To help inform various target audience about world-class research, award- winning faculty experts, international programmes, etc. International Relations Office is preparing a quarterly newsletter 'The World of IIT KGP'.

Shri Gopal Rajgarhia International Programme (SGRIP) Endowment Fund

- International Faculty/Expert Outreach Program:12
- International Research Scholar Support Program: 1
- SGR International Student Scholarship Program:1
- International Workshops/Meetings: 6
- International Student Travel Support Program: 1

Inbound Visits

Inbound visits from foreign university includes: University of Manchester, Nottingham Trent University – UK, Curtin University, University of Newcastle - Australia, Massachusetts Institute of Technology, Southern Illinois University Carbondale, Fordham University – USA, University of Pierre & Marie Curie –France, Otto-von-Guericke University – Germany, University of Haifa – Israel, Universita Cattolica del Sacro Cuore Brescia, Via San Giovanni, University of Catania – Italy and Barcelona Tech.- Spain.

Joint Collaborative Research at IIT KGP

The Institute welcomes collaborative international research proposals from its faculty members through which collaboration with an outstanding international researcher may be developed for a maximum period of three years. Under this collaboration, the internationally renowned faculty member visits the Institute for a minimum of 10 days. The Institute bears the travel, stay expenses of the international researcher and awards him an honorarium. In turn, the supervisor/mentor may visit the international laboratory for a short duration, maximum 14 days once in three years, and the student may visit the laboratory for a period of 2-3 months once in every year. In this case the Institute will bear all travel related expenditure of the faculty as well as the student.
Some researches that are presently being funded under this project are:

- Indo-Swiss Joint Research Programme (ISJRP): A total of 12 projects will be funded under this call
- National Mission on Himalayan Studies to support the sustenance and enhancement of the ecological, natural, cultural and socio economic capital assets and values of the Indian Himalayan Region
- Industrial Biotechnology and Bioenergy in the Developing World (IBBEDW)
- Samsung Global Research Outreach Program for 2018

Joint Collaborative Research Work is also being conducted with the following partner Universities: Columbia University Graduate School of Architecture, Planning and Preservation, USA on the topic"*How water can be the core of urban management strategies and planning*".

MIT India Practicum Program: The School of Architecture and Planning, MIT, USA and Department of Architecture and Regional Planning, IIT Kharagpur have come together to collaborate for the India Practicum programme. The broad objective of the programme is to critically study urbanization in the current developing world, where the concept is no longer limited to the precincts of what are administratively defined as "cities".

SPONSORED RESEARCH & INDUSTRIAL CONSULTANCY (SRIC)

The Sponsored Research and Industrial Consultancy (SRIC) Cell is the primary conduit for all sponsored research in the institute. It also plays a pivotal role in the preparation and execution of the research roadmap of the institute, and in managing the internal mechanism of the institute for disbursement of its research funds. As research is one of the key indicators of institutional excellence, and as the government increasingly leans towards the IITs to facilitate its technology infusion roadmap, SRIC has become responsible for driving a wide variety of technology interventions with industrial and social significance for the country.

The huge diversity of engineering and science disciplines at IIT Kharagpur offers a single window for all types of educational and research service required by the industry. The diversity of in-house expertise at IIT Kharagpur has also catalysed the development of a healthy ecosystem for large scale industrial collaborations in multi-disciplinary areas including AI, Advanced Manufacturing Technology, Intelligent Transportation Technology, Affordable Healthcare Technology, Geosciences for the Future of Earth, Innovative Infrastructure Design, Industrial Internet of Things, Industrial Robotics etc.

In the year 2017-2018, IIT Kharagpur has set up two major centres of excellence, namely the following:

Center of Excellence on Advanced Manufacturing Technologies. Funded by the Department of Heavy Industries and Public Enterprises and a consortium of eight industry partners, this centre of excellence aims to create advanced manufacturing infrastructure for design, prototyping, and testing potentially leading to import substitution, innovation and capacity building in the manufacturing ecosystem of the country. The key

focus of this initiative will be to make the Indian capital goods sector globally competitive and support the imminent need to increase the depth in manufacturing through innovation and technology upgrades in four important areas - specialty materials, process automation, additive manufacturing, and digital interventions as envisaged in industry 4.0.

Center for Artificial Intelligence. The aim of this Centre is to address the growing need for AI interventions in a wide range of domains, ranging from safety critical intelligent cyber-physical systems, intelligent analytics in finance and retail, intelligent healthcare, intelligent transportation, and cognitive sciences. The Centre has been seeded through a grant from Capillary Technologies Limited, which is one of the most successful incubations from IIT Kharagpur.

SRIC runs the Institute Challenge Grants program, which consists of highly competitive schemes through which the institute provides seed funds for new research initiatives proposed by departments, interdisciplinary teams of faculty members, and individual researchers. This year proposals were sought in three categories, namely student innovation scheme, industry collaboration scheme, and international collaboration scheme.

SRIC played a key role in catalysing the submission of a large number of proposals from IIT Kharagpur under the Uchchatar Avishkar Yojana (UAY), IMPRINT, and Swatchta Abhiyan and worked with the other IITs in carrying out the selection process. Under UAY-I (2016-2017), the institute has received funding to the tune of INR 66 crores spread over 12 projects. In the year 2017-2018, under UAY-II, 14 projects were submitted and 7 were selected, total amount being INR 11.85 crore. Under IMPRINT, the Institute has already received a fund-commitment in the tune of INR 67 crores spread over 32 projects.

During the year 2017-2018 the Institute received 264 research projects from the Government, private and international funding agencies/enterprises for a total value of INR 230.37 crore and 160 consultancy projects worth 18.93 crore.

The Intellectual Property Rights and Industrial Relations (IPR & IR) Cell under SRIC is responsible for the filing and maintenance of Intellectual Property Rights, and also for licensing and the transfer of technologies developed by researchers at IIT Kharagpur to the commercial sector. In the financial year 2017-18, a total number of 51 intellectual property (national and international) has been filed and a total of 16 intellectual properties were granted. Several technologies have been transferred to industries. A one day IPR Workshop on 'How Intellectual Property Impacts Life' was organized on 19th August 2017 by IPR & IR Cell, SRIC, and MHRD IPR Chair in association with RGSoIPL, IIT Kharagpur. A half day IPR workshop was also conducted in IIT Kharagpur on 3rd February 2018. The world Intellectual Property day was celebrated on 26th April 2018 with the theme "Powering change: Women in innovation and creativity" encouraging more women inventors of the Institute.

The Entrepreneur Cell under SRIC supports a variety of incubation programs funded by the Government.

Various student activities are encouraged and supported through SRIC. Notable activities include the following:

TeamAGV activity for design and implementation of autonomous ground vehicles. The team has designed, fabricated and operated autonomous vehicle with multiple sensors data processing and fusion incorporating sophisticated control steps to participate in various competitions in India and abroad. It is indeed is a matter of pride to note that Team AGV, IIT Kharagpur have secured second position in 26th International Ground Vehicle Competition (IGVC) held at Oakland University in Rochester, Michigan on June 1 - June 4, 2018.

TeamKART designs and manufactures formula style racing cars. Significant design improvements this year (2017-18) includes weight reduction of over 30 kgs, electronic gear shifting, carbon fibre diffuser for improved acceleration, Anti-Roll Bar for better suspension system, incorporation of a 3D printed nylon intake system. The engine of the car will soon be dyno-tuned for improved performance and reliability.

RoboSoccer activity for design and implementation of a team of soccer playing robots: This activity is coordinated under a students' group named "Kharagpur Robosoccer Students' Group" (KRSSG). It regularly organizes robo-soccer competition during the techno-management fest "Kshitij" and also participate in international student competitions and also bagged prizes in previous years.

Swarm Robotics IIT Kharagpur took part in DRDO's DRUSE 2018 (DRDO Robotics & Unmanned Systems Exposition) which was held in Pune from 23rd May to 25th May 2018 and won the First Runners Up position to win a cash prize of 1 Lac Rupees for further research and implementation.

Aerial Robotics Kharagpur (ARK) is a students' group working for building autonomous aerial vehicles. They are developing a system for flight control of a drone for participating in International Aerial Robotics Competition (IARC).

TeamAUV activity for design and implementation of autonomous underwater vehicle. The team has designed and operated an upgraded underwater vehicle with multiple sensors and sophisticated control computers to participate in various competitions in India and abroad.

Signals and systems for Life Science, a thrust area of Research at IIT Kharagpur, organized a one week long orientation programme during May 8-12, 2017 at IIT Kharagpur for selected ICMR-IITKGP MedTech interns of this year. In the 8 week long internship, 2 ICMR Scientists and 4 medical college students from 3 different AIIMS were to work at IIT Kharagpur laboratories while 7 IIT Kharagpur engineering students were to report different centres of ICMR namely, NCDIR, Bangalore, NIRRH, Mumbai, NARI, Belgavi, RMRC, Bhubaneswar.

M. N. FARUQUI INNOVATIONS CENTRE

The Tinkering Lab in M. N. Faruqui Innovations Centre is now equipped with multiple machinery and tools to be used by the student groups for carrying out projects of their interest. It also has an electronics bay that allows students to use kits for electronics parts of the project. These are being used by some student groups for their team projects as well. An externally funded project on a novel and indigenous design of an Electric Vehicle is being carried out by the Electric Vehicle Group at the centre comprising of students from different departments. During last one year, the Innovations Centre has made significant progress in in-house development of various sub-systems of modern and high powered electric vehicle with Li-ion battery energy storage solution. The team is developing their own Battery Management System, BLDC Motor Control System and Li-Ion Battery Charger for such systems.

Efforts towards Encouraging Students Innovation

Recognizing that the students are more sensitive to the problems surrounding their day-to-day life and that they are eager to come out with solutions of varying kinds, IIT Kharagpur has made provisions to encourage them to work on such problems and provide solutions. The Design Innovation Centre of the Institute focuses on agricultural and rural technologies, whereas the M. N. Faruqui Innovations Centre provides platforms to the student groups to form problem, propose solutions and develop products and systems under mentorship of faculty members. Both undergraduate and post graduate students and research are also encouraged to work on various concepts during their spare time in hostels, departmental laboratories and in the gymkhana. They are also encouraged to work on a variety of problems posed by or solutions sought in different national/international competitions like, Gandhian Young Technology Innovation Award (GYTI), DRDO Robotics and Unmanned Systems Exposition (DRUSE), KPIT Sparkle, Formula Student, Autonomous Ground Vehicles, Drones, Underwater Vehicles, Hackathons etc. The prize winning results of these competitions encourage many others to be involved in such activities. Efforts are also being made to introduce courses in the line of design thinking and product development in curricula to foster and develop adequate skills at the early stages in their academic pursuits.

AUV Project of Students

Team AUV, the students AUV project team has been active in designing and testing its 3rd generation vehicle KRAKEN 3 for full autonomous underwater operations. They had qualified for presentation at the SAUVC 2018 event at Singapore. Currently, they are readying themselves for the Students Autonomous Vehicle (SAVe) 2019 competition to be organised by the National Institute of Ocean Technologies (NIOT), Chennai. Also the design of upgraded version of vehicle i.e. KRAKEN4 is ready for manufacturing. The undergraduate students are involved in this project. Research scholars are also using the platform for their initial research studies and experiments.

COMPUTER AND INFORMATICS CENTRE

The Centre has completed the extension of Institute networking facility to various laboratories of different departments, newly constructed hall of residences and buildings like remaining two blocks of Nivedita Hall of Residence, two blocks of Married Scholar Accommodation, Part of Nalanda Academic Complex (RCR1, CCR1, CCR2, part of Admin block). In addition to these the existing network infrastructure has been upgraded in various hall of residences and departments like MMM Hall, Central Library, IIT Kharagpur extension centre Kolkata.

The Centre has also taken up the network extension for various services like video surveillance of security section, data acquisition for the electrical meter reading of E&M section, monitoring and control of various renewable power plants by E&M section.CIC has implanted a helpdesk system to monitor and analyse user calls.A new server room has been set up to accommodate more IT infrastructure. Presently some more NDL servers will be housed in this room.

The laboratories in CIC have been utilized for Institute academics purposes for conducting Institute laboratory classes along with various online tests like GATE/JAM, JEE(advanced), Moodle based online class tests, ACM-ICPC Asia Regionals 2017 Kharagpur and online examination conducted during placement.High end blade and rack servers hosted at CIC Server room have been virtualized using Vmware, KVM, RHEV, etc. This visualized environment allows to optimally using the hardware resources for several mission critical application of the Centre, such as Mail Messaging System, Proxy Servers to access Internet, DNS Servers, WWW Servers for portals, Application Software License Servers, RADIUS Server for Wi-Fi authentication, E-office etc.CIC has done the domain migration of mail messaging system seamlessly from @iitkgp.ernet.in to @iitkgp.ac.in. A major mail storage migration and version upgrade of mail messaging system have been completed with zero down time and no loss in user emails.The Wi-Fi authentication system is enabled and rolled out using open source application stack.

CIC also provided temporary IT infrastructure during several events like Spring Fest, Kshitij, Alumni meet, Convocation and different national/international academic conferences.

SCIENCE AND TECHNOLOGY ENTREPRENEURSHIP PARK (STEP)

STEP, IIT Kharagpur is one of the oldest and most successful innovation and incubation Centre in the country, having supported the entrepreneurship endeavour of our graduates and others in establishing the start-ups for over three decades. During year 2017-18, five new companies were inducted.

During the year, two Committee Meetings for Incubation and Seed Loan, ten workshops and outreach camp, two Project Review Committee Meetings on PRISM scheme, and one Screening Committee Meeting on PRISM scheme have been conducted.

The Ministry of Textile has already approved two projects for RS. 12.10 Crores: “Setting up of a Plug & Play Infrastructure for technical textile manufacturing for user industries/ entrepreneurs” and “Setting up of a Plug & Play Infrastructure for technical textile: Manufacturing defence, aircraft & pollution- control related products”.

STEP, IIT Kharagpur signed an “Industry/incubate” collaboration on Tissue Culture Banana Project of STEP, with one of its incubatee M/s Synthetic Moulders Ltd.

Infrastructure facilities are being created to facilitate implementation of new projects of the Ministry of Textile: Shed area at STEP Gopali Campus has been renovated for civil work, improved water supply, electrification toprovide better facilities to incubatees, New boundary wall (Phase-I) has been constructed to improve security measures of STEP Gopali campus, Pucca road has been repaired and construction process of new road at STEP Gopali campus is under process and A 11KV feeder line for uninterrupted power supply is being installed to support graphene production infrastructure.

RAJBHASHA VIBHAG

The Rajbhasha Vibhag translates all Institute documents and correspondence including Institute’s Annual Report and Annual Accounts statement along with the routine translation of various technical / non-technical documents, administrative orders, RTI and letters from English to Hindi and vice versa. In addition to the translation of documents, the Vibhag ensures the bilingual display of different nameplates, notice

boards, rubber stamps, and preparation of Degrees / Diplomas certificates awarded by the Institute. Rajbhasha Vibhag has initiated Hindi Training to Institute employees for Praveen, Pragya and Parangat course under Hindi Teaching Scheme.

This year, three Hindi workshops were organized for the Officers and employees of the Institute. The Institute celebrated "Hindi Divas" on 14th Sep 2017. Several programmes and competitions in Hindi were organised for employees and students of the Institute as well as for the students of nearby schools. The Institute celebrated Vishwa Hindi Divas on 10 Jan 2018. Recently ISM V.6 was procured which is Unicode compatible. The Vibhag has activated UNICODE in all the computers of departments and trained the employees to work in Hindi.
The Rajbhasha Vibhag has made its website bilingual. The Rajbhasha Vibhag has also made the Institute's website bilingual and efforts are being made to make the contents of the website also bilingual.

In addition to this, Rajbhasha Vibhag, IIT Kharagpur plays a vital role in co- ordination for implementing the Official Language policy in the town. As the Director of the Institute, is the senior most officer of the Central government posted in Kharagpur, Rajbhasha Vibhag, Ministry of Home Affairs, Government of India has nominated him as Chairman of Town Official Language Implementation Committee (TOLIC).

CONFERENCES, SEMINARS, SYMPOSIA AND WORKSHOPS Listed below department wise are the conferences, seminars, symposia and workshop organized by the Institute.

Aerospace Engineering

- International Conference on: *Theoretical, Applied, Computational and Experimental Mechanics*, December 30, 2017.

Agricultural & Food Engineering

- QIP- Short-Term Course on:*Novel Food Processing Technologies*, December 4-8, 2017.
- Skill Development Short-Term Course on: *Greenhouse Operators*, February 13, 14, 2018.
- Technology Demonstration Mela under Unnat Bharat Abhiyan, February 16, 2018.
- Prakriti-2018: *Digital and Sustainable Development*, March 16-18, 2018.

Architecture & Regional Planning

- Presentation at The Office of the Consul General of India, NYC, USA by students of ARP, IIT Kharagpur along on members of GSAPP, Columbia University, USA to dignitaries and experts from IvyLeague foundation, Gensler Foundation, Rockefeller groups and other experts from different universities; May 3, 2018.

Chemical Engineering

- Workshop on: *Forecasting contaminant percolation through soil beds in India*, September 12, 2017.
- AICTE-QIP Short Term Course on: *Numerical techniques for chemical process simulations*, November 20-26, 2017.

Chemistry

- Conference on: *Recent Advances in Functional Inorganic & Nanomaterials Chemistry (RAFINC-2017)*, November 11, 2017.

Civil Engineering

- Workshop on: *Sustainable Urban Transportation System*, March 23 - 25, 2017.
- Workshop on: *Making Urban Transport Smart & Sustainable in India*, May 31, 2017.
- Workshop on: *Design and Maintenance of Sustainable Water Supply System: A Smart Approach*, April 24, 2017.
- Workshop on: *Design and Maintenance of Sustainable Water Supply System: A Smart Approach*, May 8-12, 2017.
- Workshop on: *Solid and Hazardous Waste Management*, June 26 – July 3, 2017.
- Workshop on: *Design and Maintenance of Sewage Treatment Plant; Special Emphasis on Recycle & Reuse Perspective*, July 10 – 14, 2017.
- Workshop on: *Preparation, Design and Operation Maintenance of a sustainable Water Supply System: A Fool Step Towards Water Management*, July 28 – 30, 2017.

- Workshop on: *A General Guideline for Preparation and Management of a Sustainable Water Supply System with Special Emphasis on Tendering, Contract Management and Legal Issues*, November 13 –17, 2017.
- Workshop on: *A General Guideline for Preparation and Management of a Sustainable Water Supply System with Special Emphasis on Tendering, Contract Management and Legal Issues*, November 20-24, 2017.
- Conference on: Frontiers of Mechanics Colloquium, November 24 –26, 2017.
- Workshop on: *A General Guideline for Preparation and Management of a Sustainable Water Supply System with Special Emphasis on DPR preparation Tendering, Execution and Operation Maintenance Project*, January 18 – 20, 2017.
- Workshop on: *A General Guideline for Preparation and Management of a Sustainable Water Supply System with Special Emphasis on Tendering, Contract Management and Legal Issues*, February 6 – 9, 2018.
- Workshop on: *Developments in Pavement Engineering*, February 12– 14, 2018.
- Workshop on: *Mathematical Methods in Civil Engineering*, February 19 – 23, 2018.
- Workshop on: *Advanced Computing Tools in Civil Engineering*, March 5 – 9, 2018.
- Conference Series on: *Big Data for Better Governance*, July 18, 2016– March 31, 2018.

Computer Science & Engineering

- Symposium on: *ACM Summer School on Natural Language Processing and Machine Learning*, June 1 – 21, 2017.
- 9th International Conference on: *Reversible Computation (RC 2017)*, July 6 – 7, 2017.
- Conference on: *COMSNETS 2018*, January 3 - 7, 2018
- International Conference on: *Networked Digital Earth*, March 7 – 9, 2018.
- Workshop on: *Second Workshop on Exploitation of Social Media for Emergency Relief and Preparedness (SMERP 2018) co-located with WWW: The Web Conference*, April 23, 2018.

Energy Science and Engineering

- GIAN Course on: *Bio-production in Photosynthetic Microbes*, May 21 – 25, 2018.

Geology & Geophysics

- AICTE-QIP Short Term Course on: Solid and Hazardous Waste Management, June 26 – July 3, 2017.

Humanities & Social Sciences

- Workshop on: *Introduction to the History of Science in Ancient India*, October 13 – 15, 2017.
- AICTE-QIP Short Term Course on: *Combining hydrology and hydrosocial: Towards Comprehensive understanding of river systems*, October 22 – 29, 2018.
- NAOP Conference, December 22 – 24, 2017.
- Conference on: *Memories and Histories of 1947*, January 3 – 4, 2018.
- Workshop on: *History of Mathematics and Astronomy in Ancient India*, January 13 – 14, 2018.
- Workshop on: *The History of Astronomy in Ancient and Medieval India*, March 6 – 9, 2018.
- Seminar on: *Peri Urban Kolkata: Critical, lived, peri-urban ecologies*, April 10, 2018.
- Seminar on: *Everyday politics and urban environments: A discussion of past and future research on the politics of urban change and environmental governance in India and Zambia*, May 8, 2018.

Industrial & Systems Engineering

- Workshop on: Competency building on prevention through design (PtD), March 26 – 28, 2018.

Mathematics

- Conference on: *A National Conference on Engineering Mathematics (TOPAS - 2017)*, December 16 – 17, 2017.

Mechanical Engineering

- Asia Pacific Conference on: *Prognostics and Health Management Metallurgical & Materials Engineering*, July 12 – 15, 2017.
- Workshop on: *MATLAB*, March 10 – 11, 2018.

Metallurgical and Materials Engineering

- Workshop on: *Introduction to Engineering Materials for Industry*, August 17 – 18, 2017.
- Workshop on: *Density Functional Theory*, September 14 – 15, 2017.
- Workshop on: *Crystallographic Texture and Crystal Plasticity Modeling*, December 14, 2017.
- Workshop on: *Synchrotron based studies on surfaces and interfaces of materials*, January 5, 2018.

Nano Science and Technology

- Workshop on: *Synchrotronbased studies on surfaces and interfaces of materials*, January 5, 2018.

Ocean Engineering & Naval Architecture

- Conference on: *ICSOT 2017*, December 7 – 8, 2017.
- Conference on: *ICTACEM 2017*, December 28 – 30, 2017.

Centre for Computational and Data Sciences

- Workshop on: *GPU Accelerated Computing: Giant leap for AI & HPC*, September 9, 2017.

Centre for Educational Technology

- International Workshop on: *UNESCO NDL India for Knowledge Engineering in Digital Library Design*, October 25 – 27, 2017.
- *Dyslexia workshop on Home based interventions*, February 24, 2018.
- Workshop on: *Fourth Regional Workshop for PMMMNMTT (Eastern Region)*, April 20, 2018.

Centre for Oceans, Rivers, Atmosphere and Land Sciences

- International Workshop on: *Biodiversity and Climate Change*, Feb 24 – Feb 27, 2018.

Centre for Theoretical Studies

- Symposium on:*Electronic Structure and Dynamics*, March 5, 2018.

Deysarkar Centre of Excellence in Petroleum Engineering

- Certificate Course on: *Offshore Petroleum Engineering*, October 6 - 8, 2017.
- International Seminar and Exhibition Exploration on: Oil, Gas, Coal, Minerals and Ground Water, February
- 7–9, 2018.
- Certificate Course on: *Best Practices in the Offshore Industry through Barrier Management: A Risk-based Approach*, April 6 – 8, 2018.

G. S. Sanyal School of Telecommunication

- Seminar on: 5G Communications and Systems, March 27 – 28, 2018.
- Seminar on: Some Projected Broad Trajectories of the Telecom Ecosystem – A Few Personal Thoughts, January 24, 2018.
- Symposium on: *Security and Trust in 18th lEEE International Workshop on Signal Processing Advances in Wireless Communications (SPAWC 2017)*, July 3 – 6, 2017.

Rekhi Centre for the Science of Happiness

- Workshop on: *Happy Cities and Happy Communities: Developing a Road-map at New Town*, March 16, 2017.
- Workshop on: *The Happy and Innovative Way to Workplace: Train the Trainer Program (for SAIL)*, January 29, February 4, 2018.
- International Workshop on: Development of Happiness Index for State of Madhya Pradesh, February 22 – 23, 2018.
- Train the trainer Program on: Happiness and Wellbeing at Work place (for CRPF), March 4 – 18, 2018.

Rubber Technology Centre

- Conference on: Technology upgradation on Rubber Technology, September 4 – 8, 2017.

Rural Development Centre

- Workshop on: *Beekeeping and vermi-compost farming for tribal people*, July 29 – 30, 2017.

Rajiv Gandhi School of Intellectual Property Law

- Workshop on: *Protection and Promotion of Human Rights in Digital Age: Challenges and Opportunities*, March 31, 2017.
- Workshop on: *Ethical and Clinical and Legal Guidelines on Biomedical Research*, September 3 – 4, 2017.
- Workshop on: *Open Source and IP - IPR Udbhava*, September 16, 2017.
- Conference on: Corporate Governance and Corporate Social Responsibility, November 27 – December 2, 2017.

Ranbir and Chitra Gupta School of Infrastructure Design and Management

- Seminar on: *Integrated Infrastructure Management- An Indian Edge*, October 6, 2017.
- Workshop on:*Big Data for Better Governance*, November 28 – 29, 2017.
- Workshop on: *Imaging Science*, December 11 -12, 2017.
- Curtin University-IIT Kharagpur Joint Symposium, December 13 – 14, 2017.
- Workshop on: *Water Urbanism and Joint Field Study with GSAPP*, Columbia University, January 4 – 13, 2018.
- Workshop on: *Eco-tourism in the Sundarbans*, February 8, 2018.
- Workshop on: *Impact of homosapiens*, February 11 – 15, 2018.
- Workshop on: *Achieving the Next Level of Excellence*, March 11 – 13, 2018.
- Conference on: *INAE Youth conference preconclave – Town planning session*, March 23 – 24, 2018.

Vinod Gupta School of Management

- International Conference on: *Financial Markets & Corporate Finance 2017*, July 7 – 8, 2017.
- Workshop on: *Graduate Trainees Management Development Programme TATA METALIKS LIMITED*, July 31 – August 4, 2017.
- Workshop on: *Data Mining Techniques and Data Analytics*, November 20 – 25, 2017.
- International Symposium on: *Frontiers of Infrastructure Finance*, December 14 -15, 2017.
- Workshop on: *Supervisory Development Program for Senior Executives of M/S Ketex*, April 20 – 21, 2018.

CONTINUING EDUCATION PROGRAM

The Continuing Education Programme is a significant academic activity of the Institute. Over the years, it has diversified in terms of variety of programmes, coverage of disciplines, mode of teaching, duration, and the range of industries and academia served. The activities includes providing continuing education and training to professionals from industries, R&D organisations and academia, providing opportunities to teachers and students of Engineering Colleges to update their knowledge through short term courses and for pursuing M. Tech. and PhD programme under Quality Improvement Programme (QIP) of MHRD. Additionally UG and PG students from Canada were also trained under the MITACs programme of TEQIP-II, MHRD.

In this year, the Continuing Education Cell organised eighteen QIP short term courses with 611 participants, eleven TEQIP-II sponsored courses with 205 participants; while the number of self-sponsored short term courses conducted was 85 with as many as 2967 participants. Also, in this period 26 conferences/ workshops were conducted with 1181 participants. The three year executive MBA programme organised by the unit had 54 students in its Kolkata centre. During this year two teachers under QIP completed their M.Tech.Programme and eight QIP scholars were awarded PhD degrees.Under the scheme for empowerment of students and teachers through synchronous and asynchronous instruction (EIT) under NMEICT, MHRD, more than 194 faculty coordinators and 5928 engineering college teachers were trained.

The Institute initiated Global Initiative for Academic Networks (GIAN) which is a flagship programme of the Govt. of India in the winter of 2015. These courses of two weeks or ten working days duration were designed around current and multidisciplinary themes of Science, Engineering, Management and Law with a judicious blend of lectures and tutorials per day. A total of 476 national and international participants from the academia and industry participated in the 16(sixteen) GIAN courses during 2017-2018. GIAN courses provided an excellent platform to our students, faculty and industry professionals to seek knowledge and experience from international faculty; also providing them an opportunity to interact and learn subjects in niche areas through collaborative learning process. High quality course material, both through print and video were developed under the GIAN programme so as to be used by a larger body of students and teachers.

One credit courses on micro specializations are being conducted successfully for the last few years. Five micro credit courses were conducted during 2017-2018.

LAURELS AND DISTINCTIONS AWARDED TO FACULTY

Last year, like every other year, faculty members and students of the Institute received a number of awards and honours, laurels and distinctions in recognition to their excellence. Faculty members were honoured with prestigious awards and elected as Fellows of the National Science and Engineering Academies. The students were rewarded with various scholarships and their excellent contributions were acknowledged in various conferences, symposia etc.

FELLOWSHIPS

Prof. Nikhil K Singha, Rubber Technology Center	Fellow of the Royal Society of Chemistry, UK
Dr Sudip Misra, Department of Computer Science and Engineering	Fellow of The National Academy of Sciences, India
Prof. Amiya R. Mohanty, Department of Mechanical Engineering	Fellow of the Indian National Academy of Engineering
Prof. Samit K. Ray, Department of Physics	Fellow of the National Academy of Sciences, India
Prof. Suman Chakraborty, Professor, Department of Mechanical Engineering	Fellow of the American Physical Society, Fellow of The Royal Society of Chemistry, UK
Prof. Subhasish Dey, Department of Civil Engineering	Fellow of the Indian National Science Academy
Dr Renji Remesan, School of Water Resources	Fellow of the Higher Education Academy (FHEA), UK
Dr Amreesh Chandra, Department of Physics	Endeavour Executive Fellowship, Australia
Dr Abhijit Das, School of Bioscience	Ramalingaswami Re-entry Fellowship, India
Dr Mahitosh Mandal, School of Medical Science &Technology	Fellow of the Indian Academy of Sciences
Prof. Santanu K. Bhowmik, Department of Geology & Geophysics	Fellow of the Indian Academy of Sciences
Prof. Swagata Dasgupta, Department of Chemistry	Fellow of the Indian Academy of Sciences
Prof. Sudip K. Ghosh, Department of Biotechnology	Fellow of the West Bengal Academy of Science and Technology
Prof. Subhasish B.Majumder, Material Science Centre	Fellow of West Bengal Academy of Sciences & Technology
Prof. Manoj K. Tiwari, Department of Industrial & Systems Engineering	Fellow of the Institute of Industrial and Systems Engineers, USA

AWARDS

Prof. Kumar Biradha, Department of Chemistry	Selected as a Member of the Research Council of CSIR-North East Institute of Science and Technology (CSIR-NEIST), Jorhat
Dr Debarati Sen, G.S. Sanyal School of Telecommunication	Elected as a senior member of IEEE Qualcomm Innovation Award as Faculty Mentor on the topic “Blind Joint Equalization and Detection in presence of Non-linearity and Synchronization Errors for Millimeter Wave Communications”

Prof. P. K. Biswas, Dept. of Electronics & Electrical Communication	Qualcomm Innovation Award as Faculty Mentor on the topic “Domain Engineering Adversarial Networks for Bridging Cross Domain Semantic Gaps in Computer Vision”
Prof. Pabitra Mitra, Department of Computer Science & Engineering	Qualcomm Innovation Award as Faculty Mentor on the topic “Domain Adversarial Networks for Bridging Cross Domain Semantic Gaps in Computer Vision”
Dr Debdeep Mukhopadhyay, Department of Computer Science	Qualcomm Innovation Award 2017s Faculty Mentor on the topic “Automating Fault based Cryptanalysis in Secure Embedded Applications using Machine Learning”
Prof. Pallab Dasgupta, Department of Computer Science & Engineering	Qualcomm Innovation Award 2017s Faculty Mentor on the topic “Automating Fault based Cryptanalysis in Secure Embedded Applications using Machine Learning”
Dr Basab Chakraborty, Rajendra Mishra School of Engineering Entrepreneurship	Excellent Young Teacher Award
Prof. Sriman Kumar Bhattacharyya, Department of Civil Engineering	ICI - Life Time Achievement Award by the Indian Concrete Institute
Dr Basab Chakraborty, Rajendra Mishra School of Engineering Entrepreneurship	Excellent Young Teacher Award instituted by IIT Kharagpur Alumni Foundation
Prof. Amit Basak, Department of Chemistry	Nominated for the Professor J N Mukherjee Memorial Award by Indian Chemical Society
Prof. Anil K. Gupta, Department of Geology & Geophysics	Awarded Prof. S. N. Bhalla Gold Medal by the Paleontological Society of India
Dr Aritra Hazra, Department of Computer Science & Engineering	INAE Young Engineer Award
Prof. Bhargava Maitra, Department of Civil Engineering	Awarded Yasoshima Yoshinosuke Prize
Dr Sanghamitra Basu, Architecture and Regional Planning	2nd Best Paper award in the prestigious HERITAGE, Tourism and Hospitality. 3rd International Conference Narratives for a World in Transition Pori, Finland, 27-29 September 2017
Prof. Jayanta Bhattacharya, Department of Mining Engineering	Prof.S.K. Bose Memorial Excellent Teacher Award and School of Environmental Science and Engineering
Prof. Siddhartha Das, Department of Metallurgical and Materials Engineering	IIM - Distinguished Educator Award” by the Indian Institute of Metals
Dr Brajesh Kumar Dubey, Department of Civil Engineering	Selected for the Waste Management & Research Editor’s Pick for March 2017
Prof. S. K. Ghosh, Department of Computer Science & Engineering	National Geospatial Chair Professorship, Department of Science and Technology, Government of India.
Prof. Manoj K. Tiwari, Department of Industrial and Systems Engineering	First recipient of the Prof. P. C.Mahalanobis Distinguished Educator Award by the Central Council of the Operational Research Society of India
Prof. Prasad Kumar Bhaskaran, Department of Ocean Engineering & Naval Architecture	Selected as member of Expert panel of the Ocean Environment Panel of Naval Research Board, DRDO

Prof. Khanindra Pathak, Department of Mining Engineering	Nominated as Chairman of Eastern Regional Committee, Kolkata by All India Council for Technical Education, (AICTE) New Delhi for a period of three years
Prof. Sirshendu De, Department of Chemical Engineering	Hindustan Dorr-Oliver Award of Indian Institute of Chemical Engineers (IIChE)
Dr Saptarshi Ghosh, Department of Computer Science and Engineering	IEI Young Engineers Award in Computer Engineering by the Institution of Engineers (India)
Prof. B. C. Meikap, Department of Chemical Engineering	Hetero Drugs Prof. G.S. Laddha CHEMCON Distinguished Speaker Award of Indian Institute of Chemical Engineers (IIChE)
Dr Koel Chaudhury, School of Medical Science and Technology	Labhsetwar Award
Prof. K. N. Tiwari, Department of Agricultural & Food Engineering	Eminent Water Resources Scientist Award by the Indian Water Resources Society
Dr Sabyaschi Mishra, Department of Chemistry	Odisha Young Scientist Award by the Odisha Science Academy, Science and Technology Department
Dr Shibayan Roy, Material Science Centre	Award of R&D 100 by the R&D Magazine, United States of America
Prof. Indrajit Dube, Rajiv Gandhi School of Intellectual Property law	Selected for the award of Atax Research fellowship award by the School of Taxation and Business Law, The University of New South Wales, Sydney
Prof. Samir Kumar Pal, Department of Mining Engineering	National Geoscience Award
Prof. Anjali Pal, Department of Civil Engineering	Selected as Bentham Ambassador for Bentham Science Publisher
Prof. Sudipta Mukhopadhyay, Department of Electronics and Electrical Communication Engineering	Abdul Kalam Technology Innovation National Fellowship award by the Indian National Academy of Engineering
Dr Indrani Sen, Department of Metallurgical and Materials Engineering	Outstanding Woman in Engineering Award by the Venus International Foundation, Chennai
Prof. Sudip Misra, Department of Computer Science & Engineering	Careers360 Outstanding Faculty Award in Computer Science
Dr Ankur Roy, Deysarkar Centre of Excellence in Petroleum Engineering	Best paper award in the ISMAA Conference, EXOCMING
Prof. Manoj K. Tiwari, Department of Industrial Systems and Engineering	Offered the position of Visiting Professor of Computational Intelligence in Manufacturing in the Wolfson School of Mechanical, Electrical and Manufacturing Engineering, at Loughborough University, UK for 3 years
Prof. G. P. Rajasekhar, Department	Mathematician of the Year – 2018 of Mathematics by NIT Warangal
Prof. Pratim Kumar Chattaraj, Department of Chemistry	Offered the position of Distinguished Visiting Professor in the Department of Chemistry, IIT Bombay
Prof. N. D. Pradeep Singh, Department of Chemistry	Selected as Member of the National Academy of Sciences, India

Prof. Nirupam Chakraborti, Department of Metallurgical and and Materials Engineering	A special symposium entitled Evolutionary Algorithms Artificial Intelligence in Metallurgy and Materials Science" in honour of Prof. Nirupam Chakraborti, Professor, Department of Metallurgical and Materials Engineering has been announced in the XXVIth conference on Computer Methods in Materials Technology (KomPlasTech), to be held at Zakopane, Poland in January 2019
Prof. N. D. Pardeep Singh, Department of Chemistry	Distinguished Investigator Award by Science & Engineering Research Board (SERB), Department of Science and Technology, Government of India
Prof. Prasad K. Bhaskaran, Dept. of Ocean Engineering & Naval Architecture	Nominated as Expert Member in the Programme Advisory and Monitoring Committee for National Network Programme on Climate Change and Coastal Vulnerability under Climate Change Programme of Department of Science & Technology, Government of India
Prof. P. K. Chattaraj, Department of Chemistry	Nominated as a Bentham Ambassador by the Bentham Publication group

MEMBERSHIP OF EDITORIAL BOARDS AND PROFESSIONAL BODIES

Dr Sudip Misra, Department of Computer Science & Engineering	Associate Editor of IEEE Transactions on Vehicular Technology (Area: Wireless Networks and Mobile Services), published by the IEEE Vehicular Technology Society
Dr Santanu Chattopadhyay, Rubber Technology Centre	Editorial board member of the"Journal of Advanced Biotechnology and Bioengineering" of Synergy Publishers
Dr Jitesh J. Thakkar, Department of Industrial & Systems Engineering	Invited to join the Editorial Advisory Board - Quality of International Journal of Quality and Reliability Management (IJQRM) published by Emerald
Dr Biswajit Samanta, Department of Mining Engineering	Nominated as the Associate Editor of the Journal "Transactions of MGMI" for the year 2018-19
Prof. Soumen Das, School of Medical Science and Technology	Invited to join as Associate Editor, Micro & Nano Letters, IET journal
Dr Santanu Kapat, Department of Electrical Engineering	Invited to join as an Associate Editor of the IEEE Transactions on Circuits and System- II (TCAS-II)
Prof. Arghya Deb, Department of Civil Engineering	Invited to join the Editorial Board of the ASCE Journal of Composites for Construction
Prof. Suneel Kumar Srivastava, Department of Chemistry	Member of the Editorial Board for Scientific Reports, a Nature Research journal
Prof. W. K. Mohanty, Department of Geology & Geophysics	Invited to be a member of the Advisory Board of Odisha Space Applications Centre, Department of Science & Technology, Government of Odisha
Dr Jitesh J. Thakkar, Department of Industrial & Systems Engineering	Member of the Editorial Board of International Journal of Productivity and Performance Management, published by Emerald
Prof. Chandan Chakraborty,	Co-Editor-in-Chief of IEEE Department of Electrical Engineering Transactions on Industrial Electronics for the period Jan 2019 to Dec 2021

ACHIEVEMENTS BY THE STUDENTS – LAURELS

Mr. Avisek Lahiri Research Student, Computer and Informatics Centre (Supervisor : Prof. P. K. Biswas)	Qualcomm Innovation Award
Mr. Harsh Vardhan Mall Research Student, Computer and Informatics Centre (Supervisor : Prof. Sudipta Mukhopadhyay)	Received a position among top nine innovations in "University Challenge o f IIGP2.0 2017" for his researchwork "On glass visualization in real time: Rain removal from videos"
Ms. Manashi Chakraborty Research Student, Computer and Informatics Centre (Supervisor: Prof. Sudipta Mukhopadhyay)	Received "Gandhian Young Technological Innovation Award" under MLM-Frugal Innovation(BIRACGYTI) for the pioneering work thermal imaging based oral cancer detection
Ms. Priyanka Chakrabarty Research Student, Rajiv Gandhi School of Intellectual Property Law (Supervisor : Dr M. Padmavati)	Outstanding Paper Awardee in the 2nd Regional Science & Technology Congress, 2017 for work on 'Traditional Knowledge Protection in India through GI registration'
Mr. Anibrata Roy & Mr. Dipanjan Nag Research Students, Ranbir and Chitra Gupta School of Infrastructure Design (Supervisor : Dr Arkopal Goswami)	Best poster award for paper titled 'Estimating Environmental Impacts of Electronic Toll Collection' at the 4th and Management Conference of Transport Research Group (CTRG), IIT Bombay, Mumbai, India
G. Nimish, A. Shafiaand, Research Students, Ranbir and Chitra Gupta School of Infrastructure Design and Management Second (Supervisor : Dr Bharath Aithal)	Best Paper award for paper titled M. C. Chandan 'Monitoring land use/cover change and Land surface Temperature' at the Regional Science & Technology Congress, November2017, West Bengal, India
Mr. Atanu Dey MS Student, Industrial and Systems Engineering	"PReMI'17-Springer Student Award" in the International Conference on Pattern Recognition and Machine Intelligence, organized by ISI Calcutta, December 05 - 08, 2017

SCHOLARSHIPS

Sl. No	Awarding Organization
1	Merit -Cum-Means Institute Scholarship
2	National Council of Educational Research & Training, Sri Aurobindo
3	Marg, New Delhi-16
4	INSPIRE Scholarship awarded by Department of Science & Technology, Govt. of India, New Delhi to the students of 5-Yr. Int. M.Sc. Course (Science stream only)
5	Rajarshee Shahu Maharah Merit Scholarship, Director of Social
6	Welfare, Maharashtra State, Pune
7	SAIL Scholarship being awarded by Steel Authority of India Ltd. through Vishakhapatnam Steel Plant
8	Pandit Jawaharlal Nehru Science & Technology Scholarship

Sl. No	Awarding Organization
9	Aditya Birla Scholarship, Aditya Birla Group, Aditya Birla
10	Management Corporation, Mumbai
11	Jagadish Chandra Bose National Talent Search, Calcutta (JBNSTS)
12	OPJEM Scholarship being awarded by Jindal Trust, New Delhi
13	Indian Oil Corporation Ltd., Delhi
14	BOEING Scholarship to the students of Aero Space Engg. Department from the ongoing Research Project "Boeing University Relations"(BUR) sponsored by Boeing Company, U.S.A
15	Scholarship under Scheme (Trust Fund) for Differently Abled Students being awarded by National Handicapped Finance & Development Corporation, (NHFDC), Faridabad.
16	KVPY Scholarship, IISc, Bangalore

17	FAEA Scholarship to BPL Cat. SC/ST students being awarded by
18	Foundation for Academic Excellence & Access, New Delhi.
19	Post Matric Scholarship to SC/ST students, awarded through different
20	District Welfare Officers in A.P. State Govt. of Andhra Pradesh.
21	Directorate of Technical Education, Chhattisgarh
22	ST Scholarship awarded by Singapore Technologies Eng. Ltd., to students of Computer Science Engg. And O. E. & Naval. Arch.
23	NTPC Scholarship
24	Scholarship from CALSOFT Pvt. Ltd.
25	ONGC Scholarship
26	EIL Scholarship, Engineers India Ltd., HRD, New Delhi
27	STEEL Scholarship
28	IAF Benevolent Asso. Scholarship
29	Post-Matric Scholarship, Bihar
30	CSS Scholarship for College & University students through Govt. of
31	AP, Hyderabad
32	Batch of ’85 Scholarship (Non-Endowment)
33	Shyamal & Sunanda Ghosh Endow. School
34	Arjun Das Datta Memorial Scholarship
35	Rajendra Nath Das Merit-cum-Means Awards
36	Madan Sundar Sahu Scholarship
37	Indian Women’s Association Scholarship
38	Mrinal Chandra Basu Memorial Scholarship
39	Prova Basu Memorial Scholarship
40	Rajeshwari Sahu Memorial Scholarship
41	Gour Chandra Saha Memorial Scholarship
42	HPCL Start-Up Scholarship
43	M.K. Sircar Memorial Scholarship
44	Mrs. Minoti Bagchi Memorial Scholarship
45	Puri Memorial Scholarship
46	Ministry of Steel Scholarship
47	Dr. J. C. Ghosh Memorial Scholarship
48	Dr. Arunabha Chatterjee Memorial Scholarship
49	Goralal Syngal Memorial Scholarship
50	Devi Mahamaya Mallick Memorial Scholarship
51	Partha Roy Choudhury Memorial Scholarship
52	B. P. Poddar Scholarship
53	T A A (Kharagpur Chapter)
54	Kumud Manorama Memorial Scholarship
55	Swapan Gupta Memorial Scholarship
56	ABS Scholarship
57	MB Scholarship
58	Sushma Mukhija Memorial Scholarship
59	Vinod Gupta Leadership Scholarship

CENTRAL LIBRARY

The Central Library of the Institute is one of the largest and finest technical libraries in Asia. It is the heart of our Institute fulfilling the informational needs of the users towards the completion of their academic programmes as well as the research activities. At present, the library is catering to the needs of more than ten thousand students of undergraduate and postgraduate section, research scholars, seven hundred faculty members and more than one thousand staff members of the Institute. The Central Library is having two internally connected buildings (main and annex) with a carpet area of about 8000 square meters. It is a matter of prestige that the Central Library has been certified with ISO 9001:2015.

MHRD, under its NMEICT mission, has entrusted the Institute to host, coordinate and set-up National Digital Library of India (NDLI) towards building a national asset. The objective of the project is to integrate all the existing digitized and digital contents across educational institutions of the nation to provide a single-window access with e-learning facility to different groups of users ranging from primary level to higher education level of our county. NDLI will harvest metadata and contents from all the Institutional Digital Repositories (IDR) of Universities and Institutions, all other digital library initiatives, and NMEICT projects and index in the National Digital Library Server so that all the e-contents can be searched, browsed and accessed in the full-text by the users through a single window. The NDLI project workstation is situated in the Central Library, Annexe Building.

The library is using LIBSYS, an integrated library management software package, with all the modules for automated library operations. The Central Library houses and maintains nearly four lakhs of print documents comprising of books, reports, theses and bound volume journals. The library procured 2048 print books during the academic year. As far as e-resources are concerned, there is large collection of e-resources comprising of full text e- journals, e-books, online databases, etc. Also, the Central Library has six air-conditioned reading halls with 2000 seating capacity for the users. The Central Library introduced the facility of 24 x 7 hours reading room facility for 15 days during Semester Examinations of the Undergraduate Students and Post Graduate Students. Library users can make payment for their library fines, photocopying, printing and scanning through debit and credit cards. Web scale discovery service has been introduced in our library where the users can search and browse all subscribed full text e-resources using open source software Vufind, which is linked with Library website.

Central Library has developed two open source software namely (i) Online Document Delivery Service (ii) CD Library Online Service for library professionals who can download, configure and use the software for their libraries. Besides, the regular support to the users, Central Library also had taken initiatives to organize several '*Author workshops*' to motivate researchers to publish research articles in reputed journals. Regular library orientation programmes as well as three technical workshops have also been organized by the library during the period to increase awareness and optimum utilization of resources. Recently, Central Library has set up sophisticated Reading Lounge with video and web conferencing facilities in the Annex Building of the library. The project is funded by Prof. T. P. Bagchi, alumni of the Institute.

CAREER DEVELOPMENT CENTRE

The Career Development Centre (CDC) is responsible for arranging Industrial training for 3rd year B. Tech., 4th year Dual Degree and 4th year Integrated M. Sc. degree students. CDC also facilitates the job placement of all final year students graduating from the Institute including PhD and two year M. Tech. students. The centre is actively engaged in forging synergistic relationships between the Institute and various industries. Based on these interactions, the CDC gives feedback to the Institute on the academic programmes.

Summer Training Details

Eight weeks of summer internship at the end of 3rd year B. Tech., 4th year Dual Degree and 4th year Integrated M. Sc. degree is a compulsory part of the curriculum, carrying two credits. All efforts are made to place the concerned students in the best organizations in India and abroad for summer Internship through CDC and various departmental supports. An emergent trend is that more and more students are seeking summer internship abroad. Also, students utilize opportunities in various universities with which the Institute has signed MoU. For the current summer internships of our students during May- July 2018, 79 companies either visited the campus or conducted interviews through telephonic, Skype interviews and seven companies allotted seats after seeking nominations. The highest stipend offered in India was INR 1,50,000/-. The details of internship for the

period May to July 2018 are as follows:

Nos. of students enlisted	Placement in India			Placement at foreign Univ./Org.
	Selected by visiting company	Nominated by the Dept.	Self-arranged	
1220	378	29	813	129

Placement Details

226 companies / organizations have shown interest for hiring students for final placement out of which 221 companies offered our students employment during the year. The details of number of the students who had registered for placement and those actually placed through campus interviews including those who have opted either for higher studies or arranged job through off campus as on 19.04.2018 are as follows:

The highest salary for the overseas offer received in 2017-18 was $ 162,100 + annual benefits and the highest salary received in India is Rs. 39 lakh per annum. The Institute registered highest number of PPOs among all IITs, with 251offers out of which 205 have been accepted. Furthermore, the Institute received the highest number of offers (both Indian as well as overseas) among the all IITs.

Degree	Registered	Placed	Percentage Placed (%)
B. Arch.	32	22	69
B. Tech.	439	366	83
DUAL DEGREE	476	398	84
LLB	22	9	41
LLM	1	0	0
Joint M.Sc.-PhD	101	24	24
M. Sc. (5Yr Integrated)	154	119	77
Joint M. Tech. -PhD	497	251	51
MCP	31	1	0
MS	16	2	13
PhD	36	29	81

Student Participation

CDC has taken an initiative to harness the students' management skills through a formal system during the placement season since 2005-2006 from which CDC has immensely benefitted. CDC also conducts an in-house pre-assessment test to prepare the students for the placement season. This test score is also used by the recruiters as one of their shortlisting criteria. The organizational skill of students has helped CDC to host 30-35 companies on campus on a given day during the initial days and round the clock. During the placement season, students/CDC staffs play an active role from contacting the companies to the final selection at campus by providing complete logistic support with a close coordination from all the divisions of the Institute.

New Initiatives

In addition to the existing roles, Career Development Centre has taken some initiatives to help student take up a better career and also to strengthen the relation with the recruiters. These are

1. Faculty/ Corporate & Alumni interactions on various career options.
2. Foreign placement opportunities through consultants.
3. Personality Development activities.
4. CDC has introduced the Corporate Relationship Index (CRI) which reflects the relationship CDC is having with the recruiters based on certain parameters for providing better slots to them.

Achievements

1. Continuously achieved more than 1300 placements for the last three years.
2. Highest number of Pre placement offers.
3. Highest number of Overseas Pre placement offers.

NEHRU MUSEUM OF SCIENCE AND TECHNOLOGY

The Nehru Museum of Science & Technology is the only museum of its kind in the entire IIT System. Located in the historic Hijli Shaheed Bhavan Building, it preserves the rich heritage of its association with the Indian freedom struggle movement and subsequently the journey of the Institute from its inception in 1951. The museum has several galleries on various themes of science and technology and historical facts related to the freedom struggle of India and the developmental history of the Institute. Recently, 'Exploration Hub', intended mainly for school children has been added. The facility contains mechanical, electrical, electronics, chemistry, and basic physics and mathematics setups for hands-on experiments. After the renovation with the financial assistance from the Ministry of Culture, Government of India, the footfall of the museum has increased significantly in recent times. Various participants of the short-term courses and seminars, the students and their guardians, along with the visitors from the local community and many schools and colleges visit the museum regularly. The documentary movie on the history of the IIT Old Building is screened regularly in the audio-visual room of the museum. The history galleries and the ladies jail gallery of the museum are under renovation and will be reopened soon. The museum also organises training programmes and workshops for the school and college students. This year the museum organised two days summer camp on basic physics, chemistry and biological science experiments for the local school children in association with the '*Midnapur Science Center*'. Every year the museum observes the Hijli Martyrs' Day on 16th September where some of the successors of the inmates of Hijli Detention camp and Andaman jail participate and share the roles of their parents in the freedom struggle of India. The museum published its thematic calendar like previous years, and the current year's theme was *'Our colourful Customs round the year'*. During this year's Spring Fest, the annual cultural festival of the Institute, the museum conducted a photo exhibition on campus photography in association with the '*ClickKgp*' photographic group of the students' community.

TECHNOLOGY STUDENTS' GYMKHANA

Technology Students' Gymkhana (TSG) is the hub of the numerous extra- curricular and co-curricular activities in the Institute ranging from Sports, Socio- Cultural to Technology. Since its inception in 1952, TSG has played a key role in the everyday lives of Kgpians cultivating and nurturing their extra- curricular talents. The students under the auspices of TSG participated in a variety of activities during their leisure time for fun, fitness, enjoyment and reviving their energy after academic workload and also for their overall development. The highlights of the year are as follows:

Inter-IIT Meet

The 33rd Inter IIT Aquatics Meet and 52nd Inter-IIT Sports Meet were held at IIT Madras during 01-04 October 2017 and 15-23 December 2017 respectively. The participating students of the Institute exhibited great performance with two Bronze medals for women and a silver medal for men's team of IIT Kharagpur, leading the Institute to finish at 4th in Overall G. C. for swimming. Indresh performed exceptionally well by bagging three silver medals. Water Polo team has also brought us glory by securing 2nd Position. In 52nd Inter-IIT Sports Meet, IIT Kharagpur secured 4thposition in March past, Basketball (Men) won Gold medal. Football (Men), Squash (Men), Badminton (Men), Basketball (Women) won Silver medals. Athletics (Men) won overall Bronze medal with five Individual Gold, six Silver and five Bronze medals. Athletics (Women) secured 4th position with one Individual Gold and four Bronze medals. AbinDebassia performed exceptionally by bagging two Gold medals and one Silver medal with one New Meet Record in Hammer throw (42.88 meters). Weightlifting team secured 4th position with one Gold Medal and three New Meet Records by Lokesh Singh in 77+ Weight Category (Clean & Jerk 133 kg, Snatch 106 kg and Total 239 kg). In lawn tennis (Men &Women) both have secured 4th position. Chess team (Men) won Gold Medal. Rohit Kumar and Jugal Kishore secured best player award in Basketball and Football respectively. IIT Kharagpur stood 5th in 52nd Inter IIT sports meet with 4thposition for both Men and Women.

Cultural team secured third Position in the 2nd Inter-IIT Cultural Meet which was held at IIT Kanpur in December 2017. IIT Kharagpur team bagged overall trophies in Band and Duet competition, English Poetry Slam, Parliamentary Drama and Turncoat events, General Quiz, Mela Quiz and India quiz. Team also secured Music cup, Quiz cup and Fine arts cup.

The 6th Inter-IIT Tech Meet was hosted by IIT Madras in Jan 2018. After five successful Inter-IIT Tech meets, IIT Kharagpur continued the winning spirit and won GC in this Tech meet bringing out the best in each category. With 19 participating institutes competing in ten events, this meet was grander in scale, higher in quality and tougher in competition than ever before where IIT Kharagpur bagged Gold Medals in four events, Silver Medals in two events and Bronze Medals in two events.

Institute Awards and Medals

Event	Inst. Blue / Order of Merit	Honourable Mention	Special Mention	Alumni Cup
Sports & Games	09	19	18	3
Social & Cultural	07	13	16	01
Technology	10	10	-	-

Bhandarkar Cup was awarded to Rahul Sehrawat (13EE30012) (Basketball). ShrimatiChandiramani Cup was awarded to RachitMadhukar (13AG3FE05) for Soc. and Cult. G.S. Sanyal Cup was awarded to K. Pareen Jain (14ME10029) and Rishabh Kumar Shrivastava (14EE35012) for Technology. Amrit Barman Memorial Award introduced last year as cash prize of Rs. 15000.00 was awarded to Mayank Srivastav.

Overall General Championship Results

Sports and Games	Social and Cultural	Technology
Azad Hall of Residence (Men) and Sarojini Naidu/Indira Gandhi Hall of Residence (Women)	Radha Krishnan Hall of Residence	Not Awarded

Alumni Cup

Alumni Cup in sports was awarded to AbinDebassia in Athletics, Jugal Kishore Patanwar in Football, Lokesh Singh in Weightlifting. Alumni Cup in Social and Cultural was awarded to Arka Pravo Saha.

Major Events

The TSG organized National Yoga Day on 21 June 2017 which was conducted by YogacharyaJayanta Das. Yogathan has also been organized at TSG premises. Quiz on Yoga, Health & Fitness was organized on the pre International Yoga Day Program on 28th April 2018. TSG also organized four *Ek Bharat Shresth Bharat* program an initiative by MHRD Govt. of India. In this program Cultural Exchange Activities, Food Festival and Merchandise Sell were initiated. The different paired states are Tamil Nadu and Jammu & Kashmir; Andhra Pradesh & Punjab; Assam and Rajasthan; and Orissa and Maharashtra.

TSG successfully organized Kharagpur Open in Tennis, International U-17 Cricket match between Bengal vs. Bangladesh, DAV/KVS regional meet in Athletics and Swimming; training program on life saving skills in water; Navneet Memorial Tournament, Fancy Football Tournament on Foundation day in Football and Annual children's Aquatics meet.TSG also organized Run for unity, 26th January, 15th August, Sankalp se Siddhi (*Ye India ka time hay)*. Mrinal Chakraborty (Sports Psychologist) demonstrated a motivational lecture on mental toughness which was organized for the Inter IIT Sports Contingent. Technology Adventure society, TSG organized several adventure events and trekking trips.

Kshitij, Spring Fest, Robotix events, Robosoccer, in-house workshops, Indian case challenge 2017, TSG elections were conducted throughout the year. Rangoli and Illumination was celebrated on 30 Oct 2017 where the different Hall of Residence participated for a month to get their hostels illuminated on the day of Diwali along with the signature Rangolis created in the Halls of Residence.

EXTRA ACADEMIC ACTIVITIES

The extra academic activity (EAA) at the Institute involves undergraduate students in the National Service Scheme (NSS), National Cadet Corps (NCC) and sports and fitness activities over four semesters. In each semester, students get involved in approximately 45 hours of field work in EAA. Specific Highlights of the EAA program in the year are as follows:

National Service Scheme of EAA covered about 1000 students in this year. The students typically spent three hours per week over entire semesters working on social issues in the nearby villages and slums in and around Kharagpur. They participated in facilitating education for the underprivileged school children by organizing scholarships, prizes, study materials, stationery, bicycles and utensils. They monitored drinking water quality at villages and provided nutritional supplements to primary school children to ameliorate endemic malnutrition among tribal population. They also organized blood donation and medical camps and awareness programs on issues such as substance abuse, health and hygiene and nutrition. They planted and maintained saplings and participated in facility and infrastructure maintenance, e.g., repair of rural roads, painting and maintaining school buildings and furniture.

Both 3 Bengal Tech Air Sqn NCC and one Bengal EME Coy NCC units are dedicated NCC units designed to impart NCC training to students of the Institute as an allotted EAA (Extra Academic Activity) subject for undergraduate students (1st& 2nd Year). During the training year 2017-18 a total number of 159 students were enrolled (129 Boys and 30 Girl cadets) in 3 Bengal Tech Air Sqn NCC and 161 cadets in one Bengal EME coy NCC.

Considering their importance and requirement various training activities were conducted by this unit for first and second year cadets. All these activities include (i) Drill; (ii) NCC & Aircraft Technical subjects; (iii) Aeromodelling; (iv) Independence Day parade; (v) Rastriya Ekta Diwas; (vi) Combined Annual Training Camp; (vii) Republic Day Parade; (viii) Range Firing (22" Rifle) and (ix) 'B' Certificate examination. This unit also conducted various social and community development activities such as (i) Blood Donation Camp; (ii) Tree Plantation; (iii) Swachh Bharat Abhiyaan; (iv) Sadbhavana Run; (v) World AIDS Day.

The NSO (Health and Fitness) program served 966 UG students in the year 2017-2018 as a part of Institute's mandatory extra academic activity. The program was supervised by ten faculty members who serve as program officers of individual units comprising of about 100 students each, and another faculty as program coordinator. Every Wednesday and Saturday, the students assembled in the Jnan Ghosh stadium / Tata Sports Complex at sunrise for workout sessions. In this, physical training was conducted under strict supervision of qualified physical training instructors drawn from Students' Gymkhana. Apart from routine activities, the students took part in several special activities:

- Aerobics (29th July 2017, conducted for 966 students)
- A motivational program, 'Celebrating Swami Vivekananda's Life and Message' (14th March 2018, conducted for 909 students)
- Art of Living Yoga (17th March 2018, conducted for 537 students)
- Disaster Management Training by Sri Sathya Sai Seva Organisation, West Bengal (17th March 2018, conducted for 372 students)
- Heart fullness Meditation (24th and 25th March 2018, conducted for 909 students)

In addition to these, to serve a greater cause of spreading the message of health and fitness beyond the physical reach of the Institute, a blog with URL: http://healthandfitnessiitkgp.blogspot.in/ is maintained under this program.

GRADUATES OF THE YEAR

In this Convocation, we are going to confer degrees on outgoing students. I am very glad to announce that the following students are recipients of Institute Gold Medals for their academic excellence and all round performance in the year 2016-2017.

- **Shri Saurav Maji** of the Department of Electronics and Electrical Communication Engineering is the recipient of the **President of India Gold Medal** 2016-2017 for the best academic performance among the outgoing B.Tech. (Hons) and B.Arch. (Hons) students.

- **Miss Darshita Chaturvedi** of the Department of Civil Engineering has won the **Dr. Bidhan Chandra Roy Memorial Gold Medal** 2016-2017 for the best all-round performance among the B.Tech (Hons) and B.Arch (Hons) outgoing students.

- The **Prime Minister of India Gold Medal** 2016-2017 for the best academic performance among the Dual Degree and Integrated M.Sc. outgoing students goes to **Shri Biswajit Paria** of the Department of Computer Science and Engineering.

- Dr. Jnan Chandra Ghosh Memorial Gold Medal 2016-2017 for the best all-round performance among the outgoing Dual Degree and Integrated M.Sc. students is awarded to **Shri Kumar Abhishek** of the Department of Electronics and Electrical Communication Engineering.

- **Miss Shreya Roy** of the Department of Chemistry has won the **Professor Jagadish Chandra Bose Memorial Gold Medal** 2016-2017 for the best academic performance among the outgoing students of all 2-year M.Sc. courses in the Science Disciplines.

- **Miss Pavani R.V.** of the Department of Mathematics is the recipient of The **Director's Gold Medal** 2016-2017 for the best academic performance among the students completing M.Tech. and MCP courses.

Today, as I stand here, memories of more than thirty years flash across my mind and I remember myself sitting like all of you on my graduation day thinking what this degree means to me. I was then firm on the belief that this degree empowers me to face and overcome challenges in my future endeavours. The insight, knowledge and education I received at this Institution has been the core strength of my life, making me wiser day after day. The education not only meant the technical knowledge that was imparted in me but the fundamental principles that an IIT student stands for, which includes personal integrity, strength of character and the ability to strive constantly to learn, share and care as in the words of Albert Einstein *"Only a life lived for others is a life worthwhile".*

I offer my heartiest congratulations to all the Medal Winners and graduating students.

Before concluding, I wish to state that *"As we express our gratitude, we must never forget that the highest appreciation is not to utter words, but to live by them"*. Let's listen to the resounding voice of Shri Sardar Patel *"My services will be at your disposal, I hope for the rest of my life, and you will have unquestioned loyalty and devotion from me in the cause of the Nation's freedom and growth. Our combination is unbreakable and therein lies our strength."* My friends, while you go out and conquer the world; motivated by an irresistible longing to understand the secrets of nature, please do so with unity and tender care for our fellow countrymen who have supported your education in the sincere hope that you will make their world better. Try your best to ensure a smile and a whisper of joy in every fellow citizen and the poorest of the poor through whatever you do.

Jai Hind

Kharagpur
July 20, 2018

Professor Partha Pratim Chakrabarti
Director, IIT Kharagpur

Courses of Study

Department of Aerospace Engineering

- B.Tech in Aerospace Engineering
- Dual Degree - B.Tech and M.Tech in Aerospace Engineering
- Dual Degree - B.Tech in Aerospace Engineering and M.Tech in Engineering Entrepreneurship
- Dual Degree - B.Tech in Aerospace Engineering and M.Tech in Financial Engineering
- M.Tech. in Aerospace Engineering

Department of Agricultural and Food Engineering

- B.Tech..in Agricultural and Food Engineering
- Dual Degree - B.Tech in Agricultural and Food Engineering and M.Tech in Farm Machinery and Power
- Dual Degree - B.Tech in Agricultural and Food Engineering and M.Tech in Food Process Engineering
- Dual Degree - B.Tech in Agricultural and Food Engineering and M.Tech in Land and Water Resources Engineering
- Dual Degree - B.Tech in Agricultural and Food Engineering and M.Tech in Engineering Entrepreneurship
- Dual Degree - B.Tech in Agricultural and Food Engineering and M.Tech in Financial Engineering
- M. Tech. in Farm Machinery and Power
- M. Tech. in Land and Water Resources Engineering
- M. Tech. in Food Process Engineering
- M. Tech. in Agricultural Biotechnology
- M. Tech. in Aquacultural Engineering
- M. Tech. in Agricultural Systems and Management

Department of Architecture and Regional Planning

- Bachelor of Architecture (B.Arch)
- Master of City Planning (MCP)

Department of Biotechnology

- B.Tech .in Biotechnology and Biochemical Engineering
- Dual Degree - B.Tech and M.Tech in Biotechnology and Biochemical Engineering
- Dual Degree - B.Tech in Biotechnology and Biochemical Engineering and M.Tech in Engineering Entrepreneurship
- Dual Degree - B.Tech in Biotechnology and Biochemical Engineering and M.Tech in Financial Engineering
- M. Tech. in Biotechnology and Biochemical Engineering

Department of Chemical Engineering

- B.Tech. in Chemical Engineering
- Dual Degree - B.Tech and M.Tech in Chemical Engineering
- Dual Degree - B.Tech in Chemical Engineering and M.Tech in Petroleum Engineering
- Dual Degree - B.Tech in Chemical Engineering and M.Tech in Financial Engineering
- M. Tech. in Chemical Engineering

Department of Chemistry

- M.Sc. in Chemistry (2 Years.)
- Integrated M.Sc. in Chemistry (5 Years.)

Department of Civil Engineering

- B.Tech .in Civil Engineering
- Dual Degree - B.Tech in Civil Engineering and M.Tech in Engineering Entrepreneurship

- Dual Degree - B.Tech in Civil Engineering and M.Tech in Financial Engineering
- Dual Degree - B.Tech in Civil Engineering and M.Tech in Structural Engineering
- Dual Degree - B.Tech in Civil Engineering and M.Tech in Environmental Engineering and Management
- Dual Degree - B.Tech in Civil Engineering and M.Tech in Transportation Engineering
- M. Tech. in Hydraulic and Water Resources Engineering
- M. Tech. in Transportation Engineering
- M. Tech in Environmental Engineering and Management
- M. Tech. in Geotechnical Engineering
- M. Tech. in Structural Engineering
- M.Tech in Railway Engineering (Mechanical)
- M.Tech in Railway Engineering (Civil)
- M.Tech in Railway Engineering (Electrical)

Department of Computer Science and Engineering

- B.Tech in Computer Science and Engineering
- Dual Degree - B.Tech and M.Tech in Computer Science and Engineering
- Dual Degree - B.Tech in Computer Science and Engineering and M.Tech in Engineering Entrepreneurship
- Dual Degree - B.Tech in Computer Science and Engineering and M.Tech in Financial Engineering
- M. Tech. in Computer Science and Engineering

Department of Electrical Engineering

- B.Tech .in Electrical Engineering
- B.Tech..in Instrumentation Engineering
- Dual Degree - B .Tech in Electrical Engineering and M.Tech in Machine Drives and Power Electronics
- Dual Degree - B.Tech in Electrical Engineering and M.Tech in Control System Engineering
- Dual Degree - B.Tech in Electrical Engineering and M.Tech in Power and Energy Systems Engineering
- Dual Degree - B.Tech in Electrical Engineering and M.Tech in Instrumentation Engineering
- Dual Degree - B.Tech in Electrical Engineering and M.Tech in Instrumentation and Signal Processing Engineering
- Dual Degree - B.Tech in Instrumentation Engineering and M.Tech in Instrumentation and Signal Processing Engineering
- Dual Degree - B.Tech in Instrumentation Engineering and M.Tech in Engineering Entrepreneurship
- Dual Degree - B.Tech in Instrumentation Engineering and M.Tech in Control System Engineering
- M. Tech.in Machine Drives and Power Electronics
- M. Tech. in Control System Engineering
- M. Tech. in Power and Energy Systems
- M. Tech. in Instrumentation and Signal Processing

Department of Electronics and Electrical Communication Engineering

- B.Tech in Electronics and Electrical Communication Engineering
- Dual Degree - B.Tech in Electronics and Electrical Communication Engineering and M.Tech in Engineering Entrepreneurship
- Dual Degree - B .Tech in Electronics and Electrical Communication Engineering and M.Tech in Financial Engineering
- Dual Degree - B.Tech in Electronics Electrical Communication Engineering and M.Tech in Microelectronics and VLSI Design
- Dual Degree - B.Tech in Electronics and Electrical Communication Engineering and M.Tech in RF and Microwave Engineering
- Dual Degree - B.Tech in Electronics and Electrical Communication Engineering and M.Tech in

Visual Information and Embedded Systems

- Dual Degree - B.Tech in Electronics and Electrical Communication Engineering and M.Tech in Telecommunications System Engineering
- M. Tech. in Microelectronics and VLSI Design
- M. Tech. in RF and Microwave Engineering
- M. Tech. in Telecommunication Systems Engineering
- M. Tech. in Visual Information and Embedded Systems Engineering

Department of Geology and Geophysics

- Integrated M.Sc. in Exploration Geophysics (5 Years)
- Integrated M.Sc. in Applied Geology (5 Years)
- M.Sc. in Geophysics (2 Years.)
- M.Sc. in Geology (2 Years.)
- Integrated M.Sc. in Applied Geology and M.Tech in Petroleum Engineering (6 Years)
- Integrated M.Sc. in Exploration Geology and M.Tech in Petroleum Engineering (6 Years)
- M. Tech. in Exploration Geosciences

Department of Humanities and Social Sciences

- Integrated M.Sc. in Economics (5 Years)
- Master of Human Resource Management

Department of Industrial and Systems Engineering

- B.Tech in Industrial Engineering
- Dual Degree - B.Tech and M.Tech in Industrial Engineering and Management
- Dual Degree - B.Tech in Engineering Product Design and Manufacturing and M.Tech in Design and Quality Engineering (Industrial Electronics)
- Dual Degree - B.Tech in Engineering Product Design and Manufacturing and M.Tech in Design and Quality Engineering (Mechanical Engineering)
- Dual Degree - B.Tech in Industrial Engineering and M.Tech in Financial Engineering
- Dual Degree - B.Tech in Industrial Engineering and M.Tech in Industrial Engineering and Management
- M. Tech. in Industrial Engineering and Management

Department of Mathematics

- Integrated M.Sc. in Mathematics and Computing (5 Years)
- M.Sc. in Mathematics (2 Years.)
- M. Tech. in Computer Science and Data Processing

Department of Mechanical Engineering

- B.Tech .in Mechanical Engineering
- B.Tech .in Manufacturing Science and Engineering
- Dual Degree - B.Tech in Mechanical Engineering and M.Tech in Manufacturing Science and Engineering
- Dual Degree - B.Tech in Mechanical Engineering and M.Tech in Thermal Science and Engineering
- Dual Degree - B.Tech in Mechanical Engineering and M.Tech in Mechanical Systems Design
- Dual Degree - B.Tech in Mechanical Engineering and M.Tech in Engineering Entrepreneurship
- Dual Degree - B.Tech in Mechanical Engineering and M.Tech in Financial Engineering
- Dual Degree - B.Tech in Mechanical Engineering and M.Tech in Petroleum Engineering
- Dual Degree - B.Tech in Manufacturing Science and Engineering and M.Tech in Engineering Entrepreneurship
- Dual Degree - B.Tech in Manufacturing Science and Engineering and M.Tech in Financial Engineering
- Dual Degree - B.Tech in Manufacturing Science and Engineering and M.Tech in Industrial

Engineering and Management

- M. Tech in Manufacturing Science and Engineering
- M. Tech. in Thermal Science and Engineering
- M. Tech. in Mechanical Systems Design

Department of Metallurgical and Materials Engineering

- B.Tech in Metallurgical and Materials Engineering
- Dual Degree - B.Tech and M.Tech in Metallurgical and Materials Engineering
- Dual Degree - B.Tech in Metallurgical and Materials Engineering and M.Tech in Engineering Entrepreneurship
- Dual Degree - B.Tech in Metallurgical and Materials Engineering and M.Tech in Financial Engineering
- M. Tech. in Metallurgical and Materials Engineering

Department of Mining Engineering

- B.Tech .in Mining Engineering
- Dual Degree - B.Tech and M.Tech in Mining Engineering
- Dual Degree - B.Tech in Mining Engineering and M.Tech in Safety Engineering
- Dual Degree - B.Tech in Mining Engineering and M.Tech in Financial Engineering
- Dual Degree - B.Tech in Mining Engineering and M.Tech in Petroleum Engineering
- M. Tech. in Mining Engineering

Department of Ocean Engineering and Naval Architecture

- B.Tech.in Ocean Engineering and Naval Architecture
- Dual Degree - B.Tech and M.Tech in Ocean Engineering and Naval Architecture
- Dual Degree - B.Tech in Ocean Engineering and Naval Architecture and M.Tech in Engineering Entrepreneurship
- Dual Degree - B.Tech in Ocean Engineering and Naval Architecture and M.Tech in Financial Engineering
- M.Tech.in Ocean Engineering and Naval Architecture

Department of Physics

- Integrated M.Sc. in Physics (5 Years.)
- M.Sc. in Physics (2 Years)
- M.Tech.in Solid State Technology

Advance Technology Development Centre

- M.Tech.in Embedded Controls and Software

Centre for Educational Technology

- M.Tech.in Multimedia Information Processing

Centre for Oceans, Rivers, Atmosphere and Land Sciences

- M.Tech in Earth System Science and Technology

Cryogenic Engineering Centre

- M.Tech in Cryogenic Engineering

Materials Science Centre

- M. Tech. in Materials Science and Engineering.

Rubber Technology Centre

- M. Tech. in Rubber Technology

Rajendra Mishra School of Engineering Entrepreneurship

- Dual Degree - B.Tech. in Parent Dept and M.Tech in Entrepreneurship Engineering

Rajiv Gandhi School of Intellectual Property Law

- Bachelor of Laws with Honours in Intellectual Property Law (LLB) (3 Years)

- Master of Laws (LLM) (2 Years)

Ranbir and Chitra Gupta School of Infrastructure Design and Management

- M.Tech. in Infrastructure Design and Management

School of Bioscience

- M.Sc. in Chemical and Molecular Biology (Jointly Offered by IIT Kharagpur and IACS Kolkata)

Subir Chowdhury School of Quality and Reliability

- M. Tech. in Reliability Engineering

School of Energy Science and Engineering

- M.Tech in Energy Science and Engineering

School of Medical Science and Technology

- Master of Medical Science and Technology (3 Years)
- M.Tech in Medical Imaging and Informatics (2 Years)

School of Water Resources

- M. Tech. in Water Engineering and Management

Vinod Gupta School of Management

- Master of Business Administration (2 Years)
- Master of Business Administration in the Executive MBA Programme (3 Years)
- Post Graduate Diploma in Business Analytics (2 Years) [Jointly offered by IIT Kharagpur, IIM Calcutta and ISI]

Academic Departments

Aerospace Engineering

Head of the Department : Dipak Kumar Maiti

Professors

Name	Highest Degree	Research Areas
Bhrigu Nath Singh	Ph.D. (Kanpur)	Smart and Composite Structures; Uncertainty quantification; Dynamics and Aeroelasticity; Mechanics of Composites; Structural Health Monitoring
Dipak Kumar Maiti	Ph.D.	Aerospace Structures; Composite and Smart Structures; Structural Dynamics and Aeroelasticity; Structural Health Monitoring
Kalyan Prasad Sinhamahapatra	Ph.D.	Computational Fluid Dynamics, DNS and LES, Fluid Structure Interaction, Jet Control and Aeroacoustics, Low Reynolds No. Aerodynamics
Manoranjan Sinha	Ph.D.	
Navtej Singh	Ph.D.	

Associate Professors

Arnab Roy	Ph.D.	Computational Fluid Dynamics, DNS and LES, Low Reynolds No. Aerodynamics, Single and Multiphase Fluid Dynamics, Jet Control and Aeroacoustics
Manas Kumar Laha	Ph.D.	
Mira Mitra	Ph.D.	
Suresh Chandra Pradhan	Ph.D.	

Assistant Professors

Akshay Prakash	Ph.D. (Kanpur)	Hypersonics, Chemically Reacting flows, Lattice Boltzmann Methods, High order schemes, Computational Fluid Dynamics
Anup Ghosh	Ph.D.	Aircraft Structures; Composite and Smart Structures; Micro Air Vehicle; UAV
Chetankumar Sureshbhai Mistry	Ph.D., IIT Bombay	Design of Turbomachines; Turbomachines performance augmentation; Experimental & CFD study of turbomachine; Fluid mechanic and Heat transfer; Experimental aerodynamics
Mohammed Rabius Sunny	Ph.D.	Fluid Structure Interaction; Dynamics and Aeroelasticity; Vibration of marine structures; Structural Health Monitoring; Smart Materials and Structures
Mrinal Kaushik	Ph.D.	Shock-Boundary Layer Interactions; Jet Control and Aeroacoustics; Experimental aerodynamics
Naba Kumar Peyada	Ph.D.	
Ratan Joarder	Ph.D.	Chemically Reacting flows; Computational Fluid Dynamics; Droplet and Spray Combustion; Single and Multiphase Fluid Dynamics; Heat Transfer
Sandeep Saha	Ph.D.	Hydrodynamics Stability; Low Reynolds No. Aerodynamics; Analytical & Computational Hydrodynamics; Chemically Reacting flows; Theoretical &

		Computational Differential Equations
Sikha Hota	Ph.D.	Path planning of unmanned vehicles; optimal trajectory planning; Collision avoidances; Obstacle avoidances; Three dimensional path generations

Name	**Highest Degree**	**Research Areas**
Somnath Ghosh	Ph.D.	DNS and LES; Computational Fluid Dynamics
Srinibas Karmakar	Ph.D.,Louisiana Sate University	Droplet and Spray Combustion; Combustion of solid fuels and propellant; Experimental methods in combustion
Susmita Bhattacharyya	Ph.D.	Satellite Navigation Systems; Fault detection; Sensor fusion

New Faculty Appointment

Amardip Ghosh	Assistant Professor

Visiting Faculty

Changduk Kong	Assistant Professor

Promotion

Chetankumar Sureshbhai Mistry	Assistant Professor
Manoranjan Sinha	Professor
Mohammed Rabius Sunny	Assistant Professor
Susmita Bhattacharyya	Assistant Professor

Re Appointment

Navtej Singh	Professor

Resignation

Changduk Kong	Assistant Professor

Research Areas

Aerospace Structures; Aircraft Structures; Analytical & Computational Hydrodynamics; Chemically Reacting flows; Collision avoidances; Combustion of solid fuels and propellant; Composite and Smart Structures; Computational Fluid Dynamics; Design of Turbomachines; DNS and LES; Droplet and Spray Combustion; Dynamics and Aeroelasticity; Experimental aerodynamics; Experimental & CFD study of turbomachine; Experimental methods in combustion; Fault detection; Fluid mechanic and Heat transfer; Fluid Structure Interaction; Heat Transfer; Hydrodynamics Stability; Jet Control and Aeroacoustics; Low Reynolds No. Aerodynamics; Micro Air Vehicle; Obstacle avoidances; optimal trajectory planning; Path planning of unmanned vehicles; Satellite Navigation Systems; Sensor fusion; Shock-Boundary Layer Interactions; Single and Multiphase Fluid Dynamics; Smart Materials and Structures; Structural Dynamics and Aeroelasticity; Structural Health Monitoring; Theoretical & Computational Differential Equations; Three dimensional path generations; Turbomachines performance augmentation; UAV; Vibration of marine structures;

Academic Performance

New Acquisitions	01
Doctoral Degrees Awarded	04
Fellow - Professional Bodies	09
Member - Professional Bodies	03
Sponsored Research Projects	24

Visits Abroad by Faculty Members	03
Invited Lectures by Faculty Members	05
Seminars, Conferences and Workshops Organized	01
Short-Term Courses, Training Programmes and Workshops organised	01
Papers Published in Journals	18
Papers Presented in Conferences	46

Agricultural and Food Engineering

Head of the Department : Nirupama Mallick

Professors

Name	Highest Degree	Research Areas
Adinpunya Mitra	Ph.D	Biochemistry of floral scent volatiles; Natural products from root cultures; Secondary metabolism - molecular biology; Physiology of plant volatilome; Histochemistry of plant metabolites
Ashis Kumar Datta	Ph.D	
Bhabani Sankar Das	Ph.D	
Chandranath Chatterjee	Ph.D	Flood hazard and risk analysis; Flood forecasting; Impact of climate change on flood risk; Design flood estimation; Application of Geo-informatics
Hari Niwas Mishra	Ph.D	RTE Health Foods & Nutraceuticals; Food Storage & Shelf Life Extension; Novel Food Product & Process Development; Food Fortification & Bioactives; Food Safety & Quality Control
Hifjur Raheman	Ph.D	Renewable energy operated agri-machinery; Combination offset disc harrow; Rubber tracks for walking tractor; Use of robotic arm for transplanting
Kamlesh Narayan Tiwari	Ph.D	Micro Irrigation; Protected Cultivation Technology; RS & GIS Applications in Water Resources; Hydrology of Horticultural Plantations; Solar PV Operated Irrigation Systems
Madan Kumar Jha	Ph.D	Basin-wide Groundwater Modeling; Water Harvesting and Artificial Recharge; GW Management using RS, GIS and MCDA; Field Investigation & Seawater Intrusion; Goundwater-Surface Water Interaction
Narendra Singh Raghuwanshi	Ph.D	
Nirupama Mallick	Ph.D	Microalgal Biofuels; Biodegradable films from cyanobacteria; Bioactives from microalgae; Algal Refinery; Climate Change and Soil Health
P B Singh Bhadoria	Ph.D	
Rabindra Kumar Panda	Ph.D	
Rajendra Singh	Ph.D	
Rintu Banerjee	Ph.D	
Snehasish Dutta Gupta	Ph.D	Plant Image Analysis; Plant Tissue Culture Engineering; Impact of LED on Plant Morphogenesis; Plant Nanotechnology
Sudhindra Nath Panda	Ph.D	
Thomas E V	Ph.D	Rice transplanter and sowing equipments; Tea processing; Harvesting of rice and wheat
Tridib Kumar Goswami	Ph.D	
Virendra Kumar Tewari	Ph.D	Farm Machinery Systems Design; Ergonomics & Industrial Safety; Precision Agriculture

Associate Professors

Arunabha Mitra	Ph.D	Waste utilization in aquaculture; Ecology and Environmental Pollution; Mind and Consciousness; Stress Management and Control; Value based education

Ashok Mishra	Ph.D	Hydrological Modelling & Watershed Manag; Crop Yield Modelling; Climate Change & Adaptation Analysis

Name	**Highest Degree**	**Research Areas**
Dillip Kumar Swain	Ph.D	Sustainable Production Agriculture; Climate Change Adaptation & Mitigation; Crop Modeling and Simulation;
Prem Prakash Srivastav	Ph.D	Fuctional Food Development; Herbal Neutaceuticals Extraction; Design of food processing machineries
Proshanta Guha	Ph.D	Agronomy; Post-harvest Technology; Forest, Weed and Water Management; Food Laws and Standards
P Srinivasa Rao	Ph.D	
Shanker Lal Shrivastava	Ph.D	Dairy & Food Process Engineering; Post Harvest Engineering; Low cost food processing equipment
Assistant Professors		
Chanchal Kumar Mukherjee	Ph.D	
Damodhara Rao Mailapalli	Ph.D	
Jayeeta Mitra	Ph.D (IIT Kharagpur)	Irrigation hydraulics and Modeling; Nanofertilizers and environmental toxici; Crop Modeling and Simulation; Nonpoint source agricultural pollution
Punyadarshini Punam Tripathy	Ph.D	
Rajendra Machavaram	Ph.D	
Somsubhra Chakraborty	Ph.D (Louisiana State University, USA)	Hyperspectral Proximal Soil Sensors; Portable XRF Applications in Soil; Digital Soil Mapping; Data Mining; Non-invasive Sensors
Visiting Faculty		
P. B. Singh Bhadoria	Ph.D	Soil Science and Plant Nutrition; Rural Technology Development; Transfer of Rural Technologies; Sustainable Production Agriculture; Product Design, Development, Testing
Retirement		
Susanta Kumar Das	Ph.D	
Re Appointment		
Susanta Kumar Das	Ph.D	

Brief Description of on-going activities

- Sensor-based technology interventions for precision farming
- Solar energy operated farm machinery and micro-irrigation systems
- Remote sensing and GIS applications for integrated watershed management, and soil and crop health monitoring.
- Simulation-optimization and climate modelling for holistic water management
- High pressure processing of high-value perishables and nutraceuticals
- Targeted metabolomics of floral scents for value-added products
- Microalgal biofuel production
- Waste utilization in Aquaculture

- Development of autonomous tractor
- Organic farming
- RTE-Health Food for malnourished children
- Vacuum frying of food

Research Areas

Agronomy; Algal Refinery; Application of Geo-informatics; Basin-wide Groundwater Modeling; Bioactives from microalgae; Biochemistry of floral scent volatiles; Biodegradable films from cyanobacteria; Climate Change & Adaptation Analysis; Climate Change Adaptation & Mitigation; Climate Change and Soil Health; Combination offset disc harrow; Crop Modeling and Simulation; Crop Yield Modelling; Dairy & Food Process Engineering; Data Mining; Design flood estimation; Design of food processing machineries; Digital Soil Mapping; Ecology and Environmental Pollution; Ergonomics & Industrial Safety; Farm Machinery Systems Design; Field Investigation & Seawater Intrusion; Flood forecasting; Flood hazard and risk analysis; Food Fortification & Bioactives; Food Laws and Standards; Food Safety & Quality Control; Food Storage & Shelf Life Extension; Forest, Weed and Water Management; Fuctional Food Development; Goundwater-Surface Water Interaction; GW Management using RS, GIS and MCDA; Harvesting of rice and wheat; Herbal Neutaceuticals Extraction; Histochemistry of plant metabolites; Hydrological Modelling & Watershed Manag; Hydrology of Horticultural Plantations; Hyperspectral Proximal Soil Sensors; Impact of climate change on flood risk; Impact of LED on Plant Morphogenesis; Low cost food processing equipment; Microalgal Biofuels; Micro Irrigation; Mind and Consciousness; Natural products from root cultures; Non-invasive Sensors; Novel Food Product & Process Development; Physiology of plant volatilome; Plant Image Analysis; Plant Nanotechnology; Plant Tissue Culture Engineering; Portable XRF Applications in Soil; Post Harvest Engineering; Post-harvest Technology; Precision Agriculture; Product Design, Development, Testing; Protected Cultivation Technology; Renewable energy operated agri-machinery; Rice transplanter and sowing equipments; RS & GIS Applications in Water Resources; RTE Health Foods & Nutraceuticals; Rubber tracks for walking tractor; Rural Technology Development; Secondary metabolism - molecular biology; Soil Science and Plant Nutrition; Solar PV Operated Irrigation Systems; Stress Management and Control; Sustainable Production Agriculture; Tea processing; Transfer of Rural Technologies; Use of robotic arm for transplanting; Value based education; Waste utilization in aquaculture; Water Harvesting and Artificial Recharge;

Academic Performance

International Collaborations	06
Doctoral Degrees Awarded	16
MS Degrees Awarded	02
Fellow - Professional Bodies	07
Member - Professional Bodies	29
Member - Editorial Board	14
Awards & Honours	09
Sponsored Research Projects	67
Consultancy Projects	12
Technology Transferred	03
Visits Abroad by Faculty Members	08
Invited Lectures by Faculty Members	25
Seminars, Conferences and Workshops Organized	12
Short-Term Courses, Training Programmes and Workshops organised	14
Papers Published in Journals	99
Papers Presented in Conferences	43

Architecture and Regional Planning

Head of the Department : *Joy Sen*

Professors

Name	Highest Degree	Research Areas
Jaydip Barman	Ph.D.	Urban design; Landscape and landscape planning; Creative Eco-tourism & Heritage based Tourism; Community & Behavioral Studies in Planning
Joy Sen	Ph.D.	Community and Regional planning; Cultural Heritage documentation; Regional analysis and programming
Sanghamitra Basu	Ph.D.	Heritage Studies and Conservation; Social Indicators & Quality of Life; Settlement Dynamics and GIS application; Pedagogy in Architectural Design; Age Friendly Environment
Subrata Chattopadhyay	Ph.D.	Intangibles in Relief & Rehabilitatin; Peri urban dynamics; Smartness of Traditional Indian cities; Mixed use development model; Heat Stress on MSME workers
Uttam Kumar Banerjee	Ph.D.	

Associate Professors

Abraham George	Ph.D.	Ergonomics; Product Development; Healthy workplace; Cultural Landscape of Coastal Zones; Sustainable Community Planning
Debapratim Pandit	Ph.D.	Transportation Planning & Routing Services; Public Transportation,Traffic Management & Safety; Community & Behavioral Studies in Planning; Urban Planning: Utilities, Services; IT based Infrastructure, Information System
Haimanti Banerji	Ph.D.	Sustainable Community Planning; Residential Satisfaction in Post Disaster Housing; Urban design; Human Factors Engineering
Somnath Sen	Ph.D. (IIT Kharagpur)	
Tarak Nath Mazumder	Ph.D.	

Assistant Professors

Arup Das	Ph.D.	Disaster Management & Environmental Resilience; Urban Planning: Utilities, Services; Transportation Planning & Routing Services
Saikat Kumar Paul	Ph.D. (IIT Kharagpur)	Computer Application in Built Env.; GIS and Remote Sensing in Planning; Urban and Regional Planning; Architectural Design; Environmental Planning
Shankha Pratim Bhattacharya	Ph.D.	
Sumana Gupta	Ph.D.	
Sutapa Das	Ph.D.	
Tapan Kumar Majumdar	Ph.D.	

Visiting Faculty

Mainak Ghosh	Professor

Promotion

Arup Das	Assistant Professor	Disaster Management & Environmental Resilience; Urban Planning: Utilities, Services; Transportation Planning & Routing Services

Resignation

Mainak Ghosh	Professor

Research Areas

Architectural Design; Community and Regional planning; Community & Behavioral Studies in Planning; Computer Application in Built Env.; Creative Eco-tourism & Heritage based Tourism; Cultural Heritage documentation; Cultural Landscape of Coastal Zones; Disaster Management & Environmental Resilience; Environmental Planning; Ergonomics; GIS and Remote Sensing in Planning; Healthy workplace; Heat Stress on MSME workers; Human Factors Engineering; Intangibles in Relief & Rehabilitatin; IT based Infrastructure, Information System; Landscape and landscape planning; Mixed use development model; Peri urban dynamics; Product Development; Public Transportation,Traffic Management & Safety; Regional analysis and programming; Residential Satisfaction in Post Disaster Housing; Smartness of Traditional Indian cities; Sustainable Community Planning; Transportation Planning & Routing Services; Urban and Regional Planning; Urban design; Urban Planning: Utilities, Services;

Brief Description of on-going activities

Audio Visual Facilities & Photographic Lab; Computer & Informatics Lab; Environment and Remote Sensing Lab; Graphics & Visual Communication Lab; Material Testing Lab; Modelling Workshop; Digital Lab on Historic Documentation and Iconography studies

Academic Performance

Lectures by Visiting Experts	07
Doctoral Degrees Awarded	03
Fellow - Professional Bodies	02
Member - Professional Bodies	13
Member - Editorial Board	08
Awards & Honours	04
Sponsored Research Projects	47
Consultancy Projects	12
Visits Abroad by Faculty Members	07
Invited Lectures by Faculty Members	16
Seminars, Conferences and Workshops Organized	02
Short-Term Courses, Training Programmes and Workshops organised	03
Papers Published in Journals	21
Papers Presented in Conferences	25

Biotechnology

Head of the Department : Sudip Kumar Ghosh

Professors

Name	Highest Degree	Research Areas
Amit Kumar Das	Ph.D.	Structural Biology; Macromolecular X-ray Crystallography; Biochemistry and Biophysics; Structure based inhibitor design; Bioinformatics
Ananta Kumar Ghosh	Ph.D.	Recombinant DNA Technology; Immunotechnology; Antimicrobial peptides; Virology
Anindya Sundar Ghosh	Ph.D.	Bacterial biofilm formation; Antibiotic Resistance mechanisms; Penicillin-interactive enzymes; Multi-drug resistance efflux pumps; Bacterial cell shape
Debabrata Das	Ph.D.	
Mrinal Kumar Maiti	Ph.D.	Plant Molecular Biology; Functional Genomics of Rice Crop; Biotechnology of Plants, Fungi and Algae; Lipid Metabolic Engineering; Bioprospecting of Endophytic Microbes
Pinaki Sar	Ph.D.	Microbial genomics and metagenomics; Microbiology of deep biosphere; Geomicrobiology; Bioremediation and Biodegradation
Ramkrishna Sen	Ph.D.	Green Process & Product Development; Microalgal & Microbial Biorefinery; Biofuels Bio-CCR & Waste Valorization; Green Surfactants & Polymers; Antimicrobial & Anticancer Lipopeptides
Satyahari Dey	Ph.D.	
Sudip Kumar Ghosh	Ph.D.	Plant Molecular Biology; nanobiotechnology; Molecular Cell biology of Parasite
Tapas Kumar Maiti	Ph.D.	

Associate Professors

Ranjit Prasad Bahadur	Ph.D.	Bioinformatics and Computational Biology

Assistant Professors

Agneyo Ganguly	Ph.D.	Mechanistic studies of RecQ helicases; Protein protein interactions
Riddhiman Dhar	Ph.D., University of Zurich, Switzerland	Drug resistance evolution; Non-genetic variation; Gene-environment interaction
Somdeb Bose Dasgupta	Ph.D	

Promotion

Name	Designation	Research Areas
Anindya Sundar Ghosh	Professor	Bacterial biofilm formation; Antibiotic Resistance mechanisms; Penicillin-interactive enzymes; Multi-drug resistance efflux pumps; Bacterial cell shape
Mrinal Kumar Maiti	Professor	Plant Molecular Biology; Functional Genomics of Rice Crop; Biotechnology of Plants, Fungi and Algae; Lipid Metabolic Engineering; Bioprospecting of Endophytic Microbes
Pinaki Sar	Professor	Microbial genomics and metagenomics; Microbiology of deep biosphere; Geomicrobiology; Bioremediation and Biodegradation
Somdeb Bose Dasgupta	Assistant Professor	

Brief Description of on-going activities

- Process development & optimization for the production of an anti-tumor biosurfactant and
- Production of Biodiesel and its evaluation.
- Bioremediation of heavy metals, radionuclides and organic pollutants; molecular analysis of
- microbial community structure and function at contaminated sites
- Development of methods of o-antigens and its relation with pathogenecity in Gram negative bacteria.
- Bioreactor strategies for the enhanced production of probiotic endospores for Nutraceutical formulations and their clinical evaluation.
- Characterisation of E. histolytica surface proteins and characterization of E. invadens encystation specific proteins.
- Recombinant protein (therapeutic & diagnostic) expression in plant, animal and microbial systems.
- Structural and functional studies of protein from M. tuberculosis and S. aureus aiming at drug and inhibitor design.
- Improvement of hydrogen production from industrial waste using hybrid bioreactor.
- Continuous hydrogen production by immobilized recombinant E. coli BL-21.
- Molecular analysis of cypovirus infecting tasar silkworm
- Phytomedicine and molecular farming.
- Development of low fat content transgenic oilseed plant.
- Biomicrofluidics and Biochip development
- Identification and characterization of immunomodulator from natural sources.
- Characterization of Antarctic microbiota
- Probiotic nutraceutical development
- Bioinformatics and Computational Biology RNA protein interaction

Research Areas

Antibiotic Resistance mechanisms; Antimicrobial & Anticancer Lipopeptides; Antimicrobial peptides; Bacterial biofilm formation; Bacterial cell shape; Biochemistry and Biophysics; Biofuels Bio-CCR & Waste Valorization; Bioinformatics; Bioinformatics and Computational Biology; Bioprospecting of Endophytic Microbes; Bioremediation and Biodegradation; Biotechnology of Plants, Fungi and Algae; Drug resistance evolution; Functional Genomics of Rice Crop; Gene-environment interaction; Geomicrobiology; Green Process & Product Development; Green Surfactants & Polymers; Immunotechnology; Lipid Metabolic Engineering; Macromolecular X-ray Crystallography; Mechanistic studies of RecQ helicases; Microalgal & Microbial Biorefinery; Microbial genomics and metagenomics; Microbiology of deep biosphere; Molecular Cell biology of Parasite; Multi-drug resistance efflux pumps; nanobiotechnology; Non-genetic variation; Penicillin-interactive enzymes; Plant Molecular Biology; Protein protein interactions; Recombinant DNA Technology; Structural Biology; Structure based inhibitor design; Virology;

Academic Performance

New Acquisitions	01
International Collaborations	07
Lectures by Visiting Experts	06
Doctoral Degrees Awarded	12
Member - Professional Bodies	16
Member - Editorial Board	07
Awards & Honours	03
Fellowships	01
Sponsored Research Projects	69
Consultancy Projects	03
Visits Abroad by Faculty Members	07
Invited Lectures by Faculty Members	33
Seminars, Conferences and Workshops Organized	03
Papers Published in Journals	83
Papers Presented in Conferences	54

Chemical Engineering

Head of the Department : Gargi Das

Professors

Name	Highest Degree	Research Areas
Amar Nath Samanta	Ph.D., IIT Kharagpur	Carbon capture and storage; Robust, Nonlinear and Adaptive control; Waste Water Treatment
Bhim Charan Meikap	Ph.D.	Pollution MOnitoring and Control; Pollution Control Technologies; Coal science and technology; Fluidization; Renewable Energy Sources
Gargi Das	Ph.D.	
Gautam Kundu	Ph.D.	
Jayanta Kumar Basu	Ph.D.	Adsorption and Separation Science; Waste Water Treatment; Advance Oxidation Processes; Reaction Engineering
Narayan Chandra Pradhan	Ph.D.	
Rabibrata Mukherjee	Ph.D.	
Sirshendu De	Ph.D.	Membrane separation; Water and waste water treatment; Microfluidics; Transport Phenomena
Sudarsan Neogi	Ph.D.	
Sudipto Chakraborty	Ph.D.	Ultrafast Cooling (Spray, Jet, Coolants); Process modelling and simulation; CFD and Heat transfer
Sunando Dasgupta	Ph.D.	Microfluidics; Microscale Transport Processes; Interfacial Phenomena
Swati Neogi	Ph.D.	

Associate Professors

Amiya Kumar Jana	Ph.D.	
Debasis Sarkar	Ph.D.	Computational System Biology; Crystallization Engineering; Multi-objective Optimization
Jayanta Chakraborty	Ph.D.	
Parag Arvind Deshpande	Ph.D.	Computational chemistry; Computational material science; Molecular simulation
Saikat Chakraborty	Ph.D.	Bio-energy & Development of Relevant Materials; Microalgal Biofuels; Lignocellulosic Biofuels; Chemical Reactor Modeling; Catalysis and reaction engineering
Somenath Ganguly	Ph.D.	Porous Media; Structured Fluid
Sonali Sengupta	Ph.D.	Petroleum engineering; Catalysis and reaction engineering

Assistant Professors

Arnab Atta	Ph.D.	Hypersonics, Chemically Reacting flows, Lattice Boltzmann Methods, High order schemes, Computational Fluid Dynamics
Harikrishnan G	Ph.D.	Aircraft Structures; Composite and Smart Structures; Micro Air Vehicle; UAV
Hariprasad Kodamana	Ph.D., IIT Bombay	Design of Turbomachines; Turbomachines performance augmentation; Experimental & CFD study of turbomachine; Fluid mechanic and Heat transfer; Experimental aerodynamics
Manish Kaushal	Ph.D.	Fluid Structure Interaction; Dynamics and Aeroelasticity; Vibration of marine structures; Structural Health Monitoring; Smart Materials and Structures

Subhabrata Ray	Ph.D.	Shock-Boundary Layer Interactions; Jet Control and Aeroacoustics; Experimental aerodynamics

New Faculty Appointment

Name	Designation	Research Areas
Manish Kaushal	Assistant Professor	Electrorheology; Soft-Glassy-Rheology; Drainge of vertical liquid thin films; Microfluidics; Rheology of molecularly thin liquid-film

Promotion

Debasis Sarkar	Professor
Jayanta Chakraborty	Professor
Parag Arvind Deshpande	Professor
Rabibrata Mukherjee	Professor

Resignation

Hariprasad Kodamana	Assistant Professor

Research Areas

Adsorption and Separation Science; Advance Oxidation Processes; Bio-energy & Development of Relevant Materials; Carbon capture and storage; Catalysis and reaction engineering; CFD and Heat transfer; Chemically Reacting flows; Chemical Reactor Modeling; Coal science and technology; Computational chemistry; Computational Fluid Dynamics; Computational material science; Computational nanostructures; Computational System Biology; Crystallization Engineering; Drainge of vertical liquid thin films; Electrorheology; Fluidization; Heat and Mass Transfer; Hydrodynamics of low Reynolds number; Interfacial Phenomena; Lignocellulosic Biofuels; Membrane separation; Microalgal Biofuels; Microfluidics; Microscale Transport Processes; Molecular simulation; Multi-objective Optimization; Petroleum engineering; Pollution Control Technologies; Pollution MOnitoring and Control; Process modelling and simulation; Reaction Engineering; Renewable Energy Sources; Rheology of molecularly thin liquid-film; Robust, Nonlinear and Adaptive control; Science of the Liquid crystal; Single and Multiphase Fluid Dynamics; Soft- Glassy-Rheology; Transport in porous medium; Transport Phenomena; Ultrafast Cooling (Spray, Jet, Coolants); Waste Water Treatment; Water and wastewater treatment;

Academic Performance

International Collaborations	20
Lectures by Visiting Experts	09
Doctoral Degrees Awarded	12
Member - Professional Bodies	02
Awards & Honours	03
Fellowships	01
Sponsored Research Projects	37
Consultancy Projects	24
Technology Transferred	01
Visits Abroad by Faculty Members	11
Invited Lectures by Faculty Members	15
Seminars, Conferences and Workshops Organized	01
Short-Term Courses, Training Programmes and Workshops organised	01
Papers Published in Journals	80
Papers Presented in Conferences	29

Chemistry

Head of the Department *:* Manish Bhattacharjee

Professors

Name	Highest Degree	Research Areas
Amit Basak	Ph.D.	
C Retna Raj	Ph.D.	Functional materials; Electrocatalysis; Biosensors; Energy conversion and storage; Energy materials
Debashis Ray	Ph.D.	Coordination chemistry synthsis; Crystal growth from synthesis; Structure determination; Magnetic studies; DNA binding and catechol oxidation
Dipakranjan Mal	Ph.D.	
Joykrishna Dey	Ph.D.	Organized assemblies; Macromolecules; Drug Delivery Systems; Molecular Gels; Biomacromolecule-Ligand Interactions
Kumar Biradha	Ph.D.	
Manish Bhattacharjee	Ph.D.	
Narayan Dhuleep Pradeep Singh	Ph.D.	
Nilmoni Sarkar	Ph.D.	FCS, FLIM, FRET, Ultrafast Spectrosocpy; Graphene oxide -Protein interaction
Pratim Kumar Chattaraj	Ph.D.	
Samik Nanda	Ph.D.	Asymmetric Synthesis; Total Synthesis of Natural Products; Biocatalysis in Organic synthesis; Green Chemistry
Sanjoy Bandyopadhyay	Ph.D.	
Srabani Taraphder	Ph.D.	Computational chemistry; Theoretical chemistry; Modelling and simulation; Molecular simulation; Computational chemistry
Suneel Kumar Srivastava	Ph.D.	
Swagata Dasgupta	Ph.D.	Protein-protein/nucleic acid interaction; Protein protein interactions; Protein aggregation Studies; Protein Chemistry
Tanmaya Pathak	Ph.D.	
Tarasankar Pal	Ph.D.	

Assistant Professors

Ahindra Nag	Ph.D.	
Amita (Pathak) Mahanty	Ph.D.	
Anoop Ayyappan	Ph.D.	Computational chemistry; Software Development; Modelling Reaction Mechanism; Chemical Evolution; Nanocluster modelling
Dibakar Dhara	Ph.D.	Physical Chemistry of Macromolecules; Synthetic Polymer Chemistry; Polymers for Biomedical Applications; Stimuli Responsive Polymers; Colloids and Nanomaterials
Ganesan Mani	Ph.D.	Organometallic, Main Group and Catalysis
Mintu Halder	Ph.D.	Experimental Physical Chemistry; Biophysics; Spectroscopy; Single Molecule Spectroscopy; Spectroscopy of Materials

Assistant Professors

Arun Ghosh	Ph.D. IIT Kharagpur	Control of MIMO systems; Periodic control; Robust control; Control applications
Ashis Maity	Ph.D.	Power Management IC; Energy Harvesting for Powering Microsys; Analog Electronics
Avishek Chatterjee	Ph.D.	
Debdoot Sheet	Ph.D.	Machine Learning; Computer Vision; Image and Video Processing; Biomedical Systems; Medical Informatics
Dheeman Chatterjee	Ph.D.	
Dipankar Debnath	Ph.D.	Power Electronics for solar photovoltaic; Power electronics converter topologies; Grid integration of renewables; Power converter for electric vehicle
Nirmalya Ghosh	Ph.D.	Image and Video Processing; Medical Informatics; Machine Learning; Computer Vision; Pattern Recognition
Rajiv Ranjan Sahay	Ph.D.	
Sarasij Das	Ph.D.	
Saurav Pramanik	Ph.D.	FRA Diagnostics of Power Transformer
Sourav Patra	Ph.D.	
Souvik Chattopadhyay	Ph.D.	
Suman Maiti	Ph.D.	
Tanmoy Bhattacharya	Ph.D.	

New Faculty Appointment

Name	**Designation**	**Research Areas**
Ashis Maity	Assistant Professor	Power Management IC; Energy Harvesting for Powering Microsys; Analog Electronics
Avishek Chatterjee	Assistant Professor	Droplet and Spray Combustion; Combustion of solid fuels and propellant; Experimental methods in combustion

Promotion

Name	**Designation**	**Research Areas**
Ashis Maity	Assistant Professor	Power Management IC; Energy Harvesting for Powering Microsys; Analog Electronics
Nirmalya Ghosh	Assistant Professor	Image and Video Processing; Medical Informatics; Machine Learning; Computer Vision; Pattern Recognition
Santanu Kapat	Associate Professor	Switched Mode Power Converters; High frequency digital control of SMPC; Nonlinear Dynamics; Nonlinear control
Saurav Pramanik	Assistant Professor	FRA Diagnostics of Power Transformer

Resignation

Sarasij Das	Assistant Professor

Research Areas

AC and DC Microgrid; Analog Electronics; Biomedical Image Processing; Biomedical Systems; Brushless and Magnetless Machines; Computational Intelligence; Computer Vision; Control Allocation; Control applications; Control of MIMO systems; Control of Power Converter Circuits; Control Systems; Electrical Overstress Studies; Electricity markets; Electric Power and Energy Systems; Embedded Systems; Energy Harvesting for Powering Microsys; Engineering Education; Fault Diagnosis and Prognosis; Fractional order Circuits and Systems; FRA Diagnostics of Power Transformer; Grid integration of renewables; Healthcare application of Electrostatics; High frequency digital control of SMPC; Hybrid AC-DC microgrids; Image and Video Processing; Industrial Application of High Voltages; Machine Drives; Machine Learning; Machine Learning and Pattern Recognition; Medical Informatics; MEMS Capacitive Accelerometers; Modelling & Diagnostics of Biomedical Systems; Modelling & Diagnostics of Industrial Systems; Modelling of Aerospace & Automotive Systems; Multilevel Converters; Nonlinear control; Nonlinear Dynamics; Optical Imaging and image processing; Pattern Recognition; Periodic control; Power converter for electric vehicle; Power Converters for DC micro grid; Power electronics converter topologies; Power Electronics for solar photovoltaic; Power Management IC; Power System Analysis, Dynamics & Control; Power System Protection; Rechargeable batteries; Robust control; Robust Control; Sensor Development; Signal Processing for Power System; Smart Grid and Renewable Integration; Smart Grid Technology; Soft Computing and Control; Solar Photovoltaics; Solar PV Systems; Switched Mode Power Converters; Synchrophasor Technology; VLSI and Embedded Systems; Wide Area Measurement Application; Wind Power Generation;

Academic Performance

International Collaborations	06
Lectures by Visiting Experts	05
Doctoral Degrees Awarded	09
MS Degrees Awarded	01
Member - Professional Bodies	20
Member - Editorial Board	08
Awards & Honours	01
Sponsored Research Projects	53
Consultancy Projects	07
Visits Abroad by Faculty Members	10
Invited Lectures by Faculty Members	48
Seminars, Conferences and Workshops Organized	02
Short-Term Courses, Training Programmes and Workshops organised	04
Papers Published in Journals	44
Papers Presented in Conferences	30

Civil Engineering

Head of the Department : Kusam Sudhakar Reddy

Professors

Name	Highest Degree	Research Areas
Aniruddha Sengupta	Ph.D.	
Anjali Pal	Ph.D.	Catalysis & Spectroscopy using Metal Nanoparticles; Organized assemblies; Biomaterials; Functional materials
Arghya Deb	Ph.D.	Discrete Elements; Size effect in concrete; Micromechanics of Concrete
Ashok Kumar Gupta	Ph.D.	Water and wastewater treatment; Industrial Effluent Treatment and Reuse; Environmental Impact Assessment; Air Quality Management; Environmental Monitoring and Planning
Baidurya Bhattacharya	Ph.D.	
Bhargab Maitra	Ph.D.	
Damodar Maity	Ph.D.	Structural Health Monitoring; Vibration Control of Highrise Structures; Earthquake Analysis of Concrete Dams; Cost Effective Housing
Debasis Roy	Ph.D.	Soil Dynamics, Geotechnical Earthquake Engineering; Ground Improvement & Soil/Rock Stabilization; Sustainable ground engineering; Numerical Modelling of Geotechnical Systems
Dhrubajyoti Sen	Ph.D.	River hydraulics and engineering; Urban flood monitoring and management; Hydraulic structures: design /operation
Dilip Kumar Baidya	Ph.D.	
Kusam Sudhakar Reddy	Ph.D.	Pavement Materials; Pavement Analysis; Pavement Evaluation
Lingadahally S Ramachandra	Ph.D.	Stability of Structures; Brittle Material Failure under Impact; Nonlinear Dynamics
Makarand Madhao Ghangrekar	Ph.D.	Water & Wastewater Treatment / Recycling; Anaerobic Wastewater treatment; Bioelectrochemical processes, MFC, MDC,; Waste to Energy
M Amarnatha Reddy	Ph.D.	
Nirjhar Dhang	Ph.D.	Structural Health Monitoring and Control; Micromechanics of Concrete; Dynamics of bridges; Biomechanics
Sriman Kumar Bhattacharyya	Ph.D. (IIT Kharagpur)	
Subhasish Dey	Ph.D.	Turbulence and Fluvial Hydraulics; Analytical & Computational Hydrodynamics
Sudhir Kumar Barai	Ph.D.	Structural Health Monitoring; Sustainable Structures; Big Data Analytics; Machine Learning
Sujit Kumar Dash	Ph.D.	
Venkappayya R Desai	Ph.D.	

Associate Professors

Amit Shaw		
Anirban Dhar	Ph.D.	Groundwater Hydrology; Analytical & Computational Hydrodynamics; Computational Fluid Dynamics; Flow Through Porous Media
Brajesh Kumar Dubey	Ph.D., University of Florida	Environmental Engineering; Integrated Waste Management; Life Cycle Analysis & Sustainable Engg;

		Environmental Risk Assessment; MSW Management for Smart Cities
Kousik Deb	Ph.D.	Soil-Structure Interaction; Ground Improvement & Soil/Rock Stabilization; Numerical Modeling; Foundation on Soft Soil; Soil Dynamics, Geotechnical Earthquake Engineering
Nilanjan Mitra	Ph.D.	
Rajib Maity	Ph.D.	Hydroclimatology and Water Resources Eng; Remote Sensing Applications; Climate Change Impacts on Water Resource; Time Series Analysis and Forecasting; Soft-computing Methods
Shubha Verma	Ph.D.	
Sudeshna Mitra	Ph.D.	Road Traffic Safety; Crash data analysis; Econometric modelling of Transport data; Sustainable Transport planning & design; Traffic Engineering and Operations
Sudha Goel	Ph.D.	Environmental Engineering; Water Quality and treatment; Solid and Hazardous Waste Management; Environmental Risk Assessment; Environmental Impact Assessment
Sushanta Chakraborty	Ph.D.	Development of Nobel Numerical Analysis Tools

Assistant Professors

Biswanath Banerjee	Ph.D.	
Debarghya Chakraborty	Ph.D., IISc Bangalore	Numerical Modelling of Geotechnical Systems; Soil Dynamics, Geotechnical Earthquake Engineering; Ground Improvement & Soil/Rock Stabilization
Kranthi Kumar Kuna	Ph.D.	
Krishna Prapoorna Biligiri	Ph.D.	
Mohammad Saud Afzal	Ph.D.	Computational Fluid Dynamics; Wind-Wave Modeling; Analytical & Computational Hydrodynamics; Artificial Intelligence; Turbulence and Fluvial Hydraulics
Paramita Bhattacharya	Ph.D., IISc Bangalore	Numerical Modelling of Geotechnical Systems; Soil Dynamics, Geotechnical Earthquake Engineering; Ground Improvement & Soil/Rock Stabilization
Prashanth Reddy Hanmaiahgari	Ph.D.	
Puneet Kumar Patra	Ph.D.	Nonlinear Dynamics; Computational material science; Computational nanostructures; Molecular simulation
Shaikh Jahangir Hossain	Ph.D.	

New Faculty Appointment

Name	**Designation**	**Research Areas**
Kranthi Kumar Kuna	Assistant Professor	
Mohammad Saud Afzal	Assistant Professor	Computational Fluid Dynamics; Wind-Wave Modeling; Analytical & Computational Hydrodynamics; Artificial Intelligence; Turbulence and Fluvial Hydraulics
Puneet Kumar Patra	Assistant Professor	Nonlinear Dynamics; Computational material science; Computational nanostructures; Molecular simulation

Promotion

Anirban Dhar	Assistant Professor	Groundwater Hydrology; Analytical & Computational Hydrodynamics; Computational Fluid Dynamics; Flow Through Porous Media
Anjali Pal	Professor	Catalysis & Spectroscopy using Metal Nanoparticles; Organized assemblies; Biomaterials; Functional materials
Arghya Deb	Assistant Professor	Discrete Elements; Size effect in concrete; Micromechanics of Concrete
Debarghya Chakraborty	Assistant Professor	Numerical Modelling of Geotechnical Systems; Soil Dynamics, Geotechnical Earthquake Engineering; Ground Improvement & Soil/Rock Stabilization
M Amarnatha Reddy	Professor	
Puneet Kumar Patra	Assistant Professor	Nonlinear Dynamics; Computational material science; Computational nanostructures; Molecular simulation
Sujit Kumar Dash	Professor	

Resignation

Krishna Prapoorna Biligiri	Assistant Professor

Research Areas

Air Quality Management; Anaerobic Wastewater treatment; Analytical & Computational Hydrodynamics; Artificial Intelligence; Big Data Analytics; Bioelectrochemical processes, MFC, MDC,; Biomaterials; Biomechanics; Brittle Material Failure under Impact; Catalysis & Spectroscopy using Metal Nanoparticles; Climate Change Impacts on Water Resource; Computational Fluid Dynamics; Computational material science; Computational nanostructures; Cost Effective Housing; Crash data analysis; Development of Nobel Numerical Analysis Tools; Discrete Elements; Dynamics of bridges; Earthquake Analysis of Concrete Dams; Econometric modelling of Transport data; Environmental Engineering; Environmental Impact Assessment; Environmental Monitoring and Planning; Environmental Risk Assessment; Foundation on Soft Soil; Functional materials; Ground Improvement & Soil/Rock Stabilization; Hydraulic structures: design /operation; Hydroclimatology and Water Resources Eng; Industrial Effluent Treatment and Reuse; Machine Learning; Micromechanics of Concrete; Molecular simulation; Nonlinear Dynamics; Numerical Modeling; Numerical Modelling of Geotechnical Systems; Organized assemblies; Pavement Analysis; Pavement Evaluation; Pavement Materials; Remote Sensing Applications; River hydraulics and engineering; Road Traffic Safety; Size effect in concrete; Soft-computing Methods; Soil Dynamics, Geotechnical Earthquake Engineering; Soil-Structure Interaction; Solid and Hazardous Waste Management; Stability of Structures; Structural Health Monitoring; Structural Health Monitoring and Control; Sustainable ground engineering; Sustainable Structures; Sustainable Transport planning & design; Time Series Analysis and Forecasting; Traffic Engineering and Operations; Turbulence and Fluvial Hydraulics; Urban flood monitoring and management; Vibration Control of Highrise Structures; Waste to Energy; Water and wastewater treatment; Water Quality and treatment; Water & Wastewater Treatment / Recycling; Wind-Wave Modeling;

Academic Performance

International Collaborations	05
Doctoral Degrees Awarded	16
Fellow - Professional Bodies	01
Member - Professional Bodies	18
Member - Editorial Board	18
Awards & Honours	07
Fellowships	04

Sponsored Research Projects	65
Consultancy Projects	77
Visits Abroad by Faculty Members	11
Invited Lectures by Faculty Members	17
Seminars, Conferences and Workshops Organized	06
Short-Term Courses, Training Programmes and Workshops organised	10
Papers Published in Journals	126
Papers Presented in Conferences	72

Computer Science and Engineering

Head of the Department : Sudeshna Sarkar

Professors

Name	Highest Degree	Research Areas
Abhijit Das	Ph.D.	
Anupam Basu	Ph.D.	
Arobinda Gupta	Ph.D.	
Chittaranjan Mandal	Ph.D.	
Debdeep Mukhopadhyay	Ph.D.	
Dipankar Sarkar	Ph.D.	
Dipanwita Roy Chowdhury	Ph.D.	
Indranil Sengupta	Ph.D.	CAD for VLSI & Embedded Systems; Information Security
Jayanta Mukhopadhyay	Ph.D.	Image and Video Processing; Bioinformatics; Medical Informatics; Biomedical instrumentation; Robotics
Krothapalli Sreenivasa Rao	Ph.D.	Signal Processing; Speech Processing; Audio, Music and Multimedia; Machine Learning and Pattern Recognition; Big Data Analytics
Niloy Ganguly	Ph.D.	
Pabitra Mitra	Ph.D.	
Pallab Dasgupta	Ph.D.	Formal Methods; CAD for VLSI & Embedded Systems; Artificial Intelligence; Modelling of Aerospace & Automotive Systems; Smart Grid and Renewable Integration
Partha Bhowmick	Ph.D.	
Partha Pratim Chakrabarti	Ph.D.	
Partha Pratim Das	Ph.D.	Computer Vision; Machine Learning; Software Engg; Digital Heritage; Technology Enabled Learning
Rajeev Kumar	Ph.D.	
Rajib Mall	Ph.D.	Program analysis; Program testing
Shamik Sural	Ph.D.	Data Science; Data and Application Security
Soumya Kanti Ghosh	Ph.D.	Spatial Informatics; Machine Learning; Spatial Web services; Spatio-Temporal Data Analysis; Cloud Computing
Sudebkumar Prasant Pal	Ph.D.	Design and analysis of algorithms; Computational geometry; Combinatorics and Graph Theory
Sudeshna Sarkar	Ph.D.	Artificial Intelligence; Information Retrieval; Machine Learning; Natural Language Pocessing
Sudip Misra	Ph.D.	
Sujoy Ghose	Ph.D.	
Associate Professors	Ph.D.	
Animesh Mukherjee	Ph.D.	Artificial Intelligence; Big Data Analytics; Natural Language Pocessing; Information Retrieval; Machine Learning
Debasis Samanta	Ph.D.	
Rajat Subhra Chakraborty	Ph.D.	Hardware Security; VLSI and Embedded Systems; Digital Content Protection; Digital Image Forensics

Assistant Professors	Ph.D.	
Aritra Hazra	Ph.D.	Formal Methods; Design Verification; CAD for VLSI & Embedded Systems; VLSI and Embedded Systems
Bivas Mitra	Ph.D.	Network science, Multilayer networks; Social networks, Data science; Anomaly detection; Mobile affective computing; Socio-mobile applications, Social-IoT
Pawan Goyal	Ph.D.	Natural Language Pocessing; Information Retrieval; Data and Web Mining; Complex and Social Networks
Pralay Mitra	Ph.D. (IISc, Bangalore)	Computational Biology; Bioinformatics; Molecular simulation; Computational Data Science
Rogers Mathew	Ph.D.	
Sandip Chakraborty	Ph.D. (IIT Guwahati)	Computer Networks; Assistive Systems; Systems and Networking
Saptarshi Ghosh	Ph.D.	Information Retrieval; Data Mining; Natural Language Pocessing; Machine Learning; Complex and Social Networks
Somindu Chaya Ramanna	Ph.D.	
Soumyajit Dey	Ph.D.	Formal Methods; CAD for VLSI & Embedded Systems; Embedded Systems
Sourangshu Bhattacharya	Ph.D.	
Lecturer		
Partha Sarathi Dey	Ph.D.	

New Faculty Appointment

Aritra Hazra	Assistant Professor
Somindu Chaya Ramanna	Assistant Professor

Promotion

Abhijit Das	Professor
Debdeep Mukhopadhyay	Professor
Krothapalli Sreenivasa Rao	Professor
Pabitra Mitra	Professor
Partha Bhowmick	Professor
Sudip Misra	Professor

Retirement

Dipankar Sarkar	Professor

Re Appointment

Dipankar Sarkar	Professor

Resignation

Rajeev Kumar	Assistant Professor

Research Areas

Algorithms; Artificial Intelligence; Assistive Systems; Audio, Music and Multimedia; Big Data Analytics; Bioinformatics; Biomedical instrumentation; CAD for VLSI & Embedded Systems; Cloud Computing; Combinatorics and Graph Theory; Complex and Social Networks; Computational Biology; Computational Data Science; Computational geometry; Computer Networks; Computer Vision; Data and Application Security; Data Mining; Data Science; Design and analysis of algorithms; Digital Content Protection; Digital Heritage; Digital Image Forensics; Embedded Systems; Formal Methods; Hardware Security; Image and Video Processing; Information Retrieval; Information Security; Machine Learning; Machine Learning and Pattern Recognition; Medical Informatics; Modelling of Aerospace & Automotive Systems; Molecular simulation; Natural Language Pocessing; Program analysis; Program testing; Robotics; Signal Processing; Smart Grid and Renewable Integration; Software Engineering; Spatial Informatics; Spatial Webservices; Spatio-Temporal Data Analysis; Speech Processing; Systems and Networking; Technology Enabled Learning; Theoretical Computer Science; VLSI and Embedded Systems;

Academic Performance

New Acquisitions	02
International Collaborations	06
Lectures by Visiting Experts	09
Doctoral Degrees Awarded	16
MS Degrees Awarded	10
Fellow - Professional Bodies	02
Member - Professional Bodies	28
Member - Editorial Board	09
Awards & Honours	14
Fellowships	01
Sponsored Research Projects	130
Consultancy Projects	17
Visits Abroad by Faculty Members	20
Invited Lectures by Faculty Members	43
Seminars, Conferences and Workshops Organized	16
Short-Term Courses, Training Programmes and Workshops organised	01
Papers Published in Journals	75
Papers Presented in Conferences	110

Electrical Engineering

Head of the Department : Pranab Kumar Dutta

Professors

Name	Highest Degree	Research Areas
Alok Barua	Ph.D.	Control of Power Converter Circuits; Rechargeable batteries; VLSI and Embedded Systems; Modelling & Diagnostics of Industrial Systems; Modelling & Diagnostics of Biomedical Systems
Amit Patra	Ph.D.	Power System Protection; Wide Area Measurement Application; Synchrophasor Technology; Signal Processing for Power System; Smart Grid Technology
Ashok Kumar Pradhan	Ph.D.	
Aurobinda Routray	Ph.D.	Brushless and Magnetless Machines; Multilevel Converters; AC and DC Microgrid; Solar PV Systems
Chandan Chakraborty	Ph.D.	Wind Power Generation; Switched Mode Power Converters; Power Converters for DC micro grid; Machine Drives
Debaprasad Kastha	Ph.D.	
Debapriya Das	Ph.D.	
Murali Mohan Bosukonda	Ph.D.	Electrical Overstress Studies; Healthcare application of Electrostatics; Industrial Application of High Voltages; Engineering Education; Electric Power and Energy Systems
N K Kishore	Ph.D.	Optical Imaging and image processing; Biomedical Image Processing; Machine Learning and Pattern Recognition
Pranab Kumar Dutta	Ph.D.	Periodic control; Robust control
Sarit Kumar Das	Ph.D.	Embedded Systems; Modelling & Diagnostics of Industrial Systems; Modelling of Aerospace & Automotive Systems; Soft Computing and Control
Siddhartha Mukhopadhyay	Ph.D.	Fractional order Circuits and Systems; MEMS Capacitive Accelerometers; Sensor Development; Robust Control; Control Allocation
Siddhartha Sen	Ph.D.	
Tapas Kumar Bhattacharyya	Ph.D.	

Associate Professors

Alok Kanti Deb	Ph.D.	Control Systems; Computational Intelligence; Fault Diagnosis and Prognosis
Anirban Mukherjee	Ph.D.	
Gautam Poddar	Ph.D.	
Karabi Biswas	Ph.D.	Study of Fractional Order system; Sensor Design; Instrumentation System Design
Prabodh Bajpai	Ph.D.	Hybrid AC-DC microgrids; Smart Grid and Renewable Integration; Solar Photovoltaics; Power System Analysis, Dynamics & Control; Electricity markets
Santanu Kapat	Ph.D. IIT Kharagpur	Switched Mode Power Converters; High frequency digital control of SMPC; Nonlinear Dynamics; Nonlinear control

Assistant Professors

Arun Ghosh	Ph.D. IIT Kharagpur	Control of MIMO systems; Periodic control; Robust control; Control applications
Ashis Maity	Ph.D.	Power Management IC; Energy Harvesting for Powering Microsys; Analog Electronics
Avishek Chatterjee	Ph.D.	
Debdoot Sheet	Ph.D.	Machine Learning; Computer Vision; Image and Video Processing; Biomedical Systems; Medical Informatics
Dheeman Chatterjee	Ph.D.	
Dipankar Debnath	Ph.D.	Power Electronics for solar photovoltaic; Power electronics converter topologies; Grid integration of renewables; Power converter for electric vehicle
Nirmalya Ghosh	Ph.D.	Image and Video Processing; Medical Informatics; Machine Learning; Computer Vision; Pattern Recognition
Rajiv Ranjan Sahay	Ph.D.	
Sarasij Das	Ph.D.	
Saurav Pramanik	Ph.D.	FRA Diagnostics of Power Transformer
Sourav Patra	Ph.D.	
Souvik Chattopadhyay	Ph.D.	
Suman Maiti	Ph.D.	
Tanmoy Bhattacharya	Ph.D.	

New Faculty Appointment

Name	**Designation**	**Research Areas**
Ashis Maity	Assistant Professor	Power Management IC; Energy Harvesting for Powering Microsys; Analog Electronics
Avishek Chatterjee	Assistant Professor	Droplet and Spray Combustion; Combustion of solid fuels and propellant; Experimental methods in combustion

Promotion

Name	**Designation**	**Research Areas**
Ashis Maity	Assistant Professor	Power Management IC; Energy Harvesting for Powering Microsys; Analog Electronics
Nirmalya Ghosh	Assistant Professor	Image and Video Processing; Medical Informatics; Machine Learning; Computer Vision; Pattern Recognition
Santanu Kapat	Associate Professor	Switched Mode Power Converters; High frequency digital control of SMPC; Nonlinear Dynamics; Nonlinear control
Saurav Pramanik	Assistant Professor	FRA Diagnostics of Power Transformer

Resignation

Sarasij Das	Assistant Professor

Research Areas

AC and DC Microgrid; Analog Electronics; Biomedical Image Processing; Biomedical Systems; Brushless and Magnetless Machines; Computational Intelligence; Computer Vision; Control Allocation; Control applications; Control of MIMO systems; Control of Power Converter Circuits; Control Systems; Electrical Overstress Studies; Electricity markets; Electric Power and Energy Systems; Embedded Systems; Energy Harvesting for Powering Microsys; Engineering Education; Fault Diagnosis and Prognosis; Fractional order Circuits and Systems; FRA Diagnostics of Power Transformer; Grid integration of renewables; Healthcare application of Electrostatics; High frequency digital control of SMPC; Hybrid AC-DC microgrids; Image and Video Processing; Industrial Application of High Voltages; Machine Drives; Machine Learning; Machine Learning and Pattern Recognition; Medical Informatics; MEMS Capacitive Accelerometers; Modelling & Diagnostics of Biomedical Systems; Modelling & Diagnostics of Industrial Systems; Modelling of Aerospace & Automotive Systems; Multilevel Converters; Nonlinear control; Nonlinear Dynamics; Optical Imaging and image processing; Pattern Recognition; Periodic control; Power converter for electric vehicle; Power Converters for DC micro grid; Power electronics converter topologies; Power Electronics for solar photovoltaic; Power Management IC; Power System Analysis, Dynamics & Control; Power System Protection; Rechargeable batteries; Robust control; Robust Control; Sensor Development; Signal Processing for Power System; Smart Grid and Renewable Integration; Smart Grid Technology; Soft Computing and Control; Solar Photovoltaics; Solar PV Systems; Switched Mode Power Converters; Synchrophasor Technology; VLSI and Embedded Systems; Wide Area Measurement Application; Wind Power Generation;

Academic Performance

International Collaborations	06
Lectures by Visiting Experts	05
Doctoral Degrees Awarded	09
MS Degrees Awarded	01
Member - Professional Bodies	20
Member - Editorial Board	08
Awards & Honours	01
Sponsored Research Projects	53
Consultancy Projects	07
Visits Abroad by Faculty Members	10
Invited Lectures by Faculty Members	48
Seminars, Conferences and Workshops Organized	02
Short-Term Courses, Training Programmes and Workshops organised	04
Papers Published in Journals	44
Papers Presented in Conferences	30

Electronics and Electrical Communication Engineering

Head of the Department : Prabir Kumar Biswas

Professors

Name	Highest Degree	Research Areas
Ajoy Chakraborty	Ph.D.	
Ajoy Kumar Ray	Ph.D.	
Amitabha Bhattacharya	Ph.D.	Microwave Imaging; Microwave Stealth; Ground Penetrating Radar; Microwave Propagation; High Power Microwaves
Anindya Sundar Dhar	Ph.D.	
Bratin Ghosh	Ph.D.	
Dhrubes Biswas	Ph.D.	
Goutam Saha	Ph.D.	Speech Processing; Biomedical Signal Processing
Indrajit Chakrabarti	Ph.D.	
Kalyankumar Bandyopadhyay	Ph.D.	
Mrityunjoy Chakraborty	Ph.D.	Digital Signal Processing; Adaptive Signal Processing; VLSI Signal Processing; Compressed Sensing; Applied Linear Algebra
Prabir Kumar Biswas	Ph.D.	Image and Video Processing; Multimedia; Sensor Networks; Structural Health Monitoring
Pradip Mandal	Ph.D.	
Raja Datta	Ph.D.	Sensor Networks; Optical Communication and Networks; Telecommunication Systems and Networks; Network Security; Systems and Networking
Ratnam Varada Raja Kumar	Ph.D.	
Santanu Chattopadhyay	Ph.D.	VLSI and Embedded Systems; Network-on-Chip Design and Test; Low Power Digital Design and Testing; Thermal Aware Testing; Logic Encryption
Sant Sharan Pathak	Ph.D.	Cryptography; Cognitive Radio Networks; Information Theory and Coding
Sudipta Mukhopadhyay	Ph.D.	Medical Image Processing; Video Postprocessing; Biometric Authentication; Biomedical Signal Processing; Machine Learning
Tarun Kanti Bhattacharyya	Ph.D.	

Associate Professors

Akhilesh Mohan	Ph.D.	RF and Microwave Circuits; Antenna and Arrays
Arijit De	Ph.D.	
Bibhudatta Sahoo	Ph.D.	Nanoelectronics and Devices; RF and Microwave Circuits; Semiconductor Devices and Circuits; Signal Conditioning & Mixed-Signal VLSI Design; Machine Learning
Prasanta Kumar Guha	Ph.D.	Metal oxide Gas sensor; 2D layered material based gas sensor; Sensor on CMOS MEMS platform; thermal accelerometer; Water contaminant sensor

Rajarshi Roy	Ph.D.	Queuing theory and Computational Science; 5G Communications; Telecommunication Systems and Networks; Sensor Networks; Wireless and Optical Networking
Rajat Roy	Ph.D.	
Shailendra Kumar Varshney	Ph.D.	Microphotonics; Fiber Optics and Photonics; Nonlinear Photonics; Quantum photonics; Optical wireless communication
Sudipta Mahapatra	Ph.D.	Parallel and Distributed Computing; Wireless and Optical Networking; Video Coding/QoE Aware Video Streaming; Intelligent Internet of Things (IoT)

Assistant Professors

Basudev Lahiri	Ph.D.	Nanofabrication; Microphotonics; Catalysis & Spectroscopy using Metal Nanoparticles; Nano materials
Chetna Singhal	Ph.D.	Multimedia Communication; Mobile Computing; Wireless Networks; Communication systems; Quantum computing Ph.D., Jadavpur University
Debashis Sen	Ph.D. Jadavpur University	Image and Video Processing; Vision; Uncertainty Handling; Bio-Inspired Computing; Eye Movement Analysis
Gourab Dutta	Ph.D.	Semiconductor Devices and Circuits; Nanoelectronics and Devices
Kapil Debnath	Ph.D.	Microphotonics; Fiber Optics and Photonics; Semiconductor Devices and Circuits
Mrigank Sharad	Ph.D.	Signal Conditioning & Mixed-Signal VLSI Design; VLSI Signal Processing; VLSI for Neuromorphic Computing; Biomedical Systems; Nanoelectronics and Devices
Mrinal Kanti Mandal	Ph.D.	Microwave and Millimeter-Wave Circuits; Antenna and Arrays; Six-port receiver; RADAR front end
Ritwik Kumar Layek	Ph.D., Texas A&M University	
Sharba Bandyopadhyay	Ph.D., Johns Hopkins University, Baltimore, USA	Neuroscience; Computational Neuroscience; Physiological & Cognitive Data Analysis
Sudip Nag	Ph.D.	Biomedical Systems; Neuroscience
Vivek Dixit	Ph.D., National University of Singapore	Semiconductor Devices and Circuits; Fiber Optics and Photonics; Circuits, Devices and Sensors; RF and Microwave Circuits

New Faculty Appointment

Name	**Designation**	**Research Areas**
Basudev Lahiri	Assistant Professor	Nanofabrication; Microphotonics; Catalysis & Spectroscopy using Metal Nanoparticles; Nano materials

Gourab Dutta	Assistant Professor	Semiconductor Devices and Circuits; Nanoelectronics and Devices
Kapil Debnath	Assistant Professor	Microphotonics; Fiber Optics and Photonics; Semiconductor Devices and Circuits

Visiting Faculty

Bibhudatta Sahoo	Associate Professor	

Promotion

Name	Designation	Research Areas
Akhilesh Mohan	Associate Professor	RF and Microwave Circuits; Antenna and Arrays
Amitabha Bhattacharya	Professor	Microwave Imaging; Microwave Stealth; Ground Penetrating Radar; Microwave Propagation; High Power Microwaves
Arijit De	Assistant Professor	
Bibhudatta Sahoo	Associate Professor	Nanoelectronics and Devices; RF and Microwave Circuits; Semiconductor Devices and Circuits; Signal Conditioning & Mixed-Signal VLSI Design; Machine Learning
Prasanta Kumar Guha	Associate Professor	Metal oxide Gas sensor; 2D layered material based gas sensor; Sensor on CMOS MEMS platform; thermal accelerometer; Water contaminant sensor
Sharba Bandyopadhyay	Assistant Professor	Neuroscience; Computational Neuroscience; Physiological & Cognitive Data Analysis
Sudipta Mukhopadhyay	Professor	Medical Image Processing; Video Postprocessing; Biometric Authentication; Biomedical Signal Processing; Machine Learning

Retirement

Ajoy Chakraborty	Professor
Debasish Datta	Professor
Kalyankumar Bandyopadhyay	Professor

Re Appointment

Debasish Datta	Professor

Brief Description of on-going activities

Department has focused research areas like VLSI Architecture, Computer Vision, Bioelectronics, Microelectronics and MEMs, Communications and Fiber optics, RF and Microwave etc. In CAD Lab efforts are directed towards 'primitive instantiation in FPGA implementations' and 'approximate computing'. The Computer Vision Lab carries out advanced research in the areas of Machine Learning Application in Computer Vision, eye movement analysis, error resilience of video, medical image processing and Unsupervised deep learning, 3D Imaging. The Bioelectronics Innovation Lab perform research on bioelectronic circuits and systems, implantable neural interfaces, wireless power and data transfers and IoTs for medical instrumentation. The Microelectronics and MEMs lab devotes itself to the development of nano bio sensors for health and environmental monitoring, painless drug delivery systems, micro propulsion system for space application and many more. The

Communication Systems Lab carries out research in data security and storage management on enhanced spectral efficient communication channel, 5G Network, Deep Space Interplanetary Communication, Sensor Network. The Fiber optics Systems Lab is involved in making Nanophotonic devices for communication, silicon photonics technology for low energy optical communication and novel optical sensors. Th research in RF and Microwave is focused on miniaturized antenna design, microwave imaging, ground penetratio n radar, radar signal processing etc.

Research Areas

2D layered material based gas sensor; Adaptive Signal Processing; Antenna and Arrays; Applied Linear Algebra; Bio-Inspired Computing; Biomedical Signal Processing; Biomedical Systems; Biometric Authentication; Catalysis & Spectroscopy using Metal Nanoparticles; Circuits, Devices and Sensors; Cognitive Radio Networks; Compressed Sensing; Cryptography; Digital Signal Processing; Eye Movement Analysis; Fiber Optics and Photonics; Ground Penetrating Radar; High Power Microwaves; Image and Video Processing; Information Theory and Coding; Intelligent Internet of Things (IoT); Logic Encryption; Low Power Digital Design and Testing; Machine Learning; Medical Image Processing; Metal oxide Gas sensor; Microphotonics; Microwave and Millimeter-Wave Circuits; Microwave Imaging; Microwave Propagation; Microwave Stealth; Multimedia; Nanoelectronics and Devices; Nanofabrication; Nano materials; Network-on-Chip Design and Test; Network Security; Neuroscience; Nonlinear Photonics; Optical Communication and Networks; Optical wireless communication; Parallel and Distributed Computing; Quantum photonics; RADAR front end; RF and Microwave Circuits; Semiconductor Devices and Circuits; Sensor Networks; Sensor on CMOS MEMS platform; Signal Conditioning & Mixed-Signal VLSI Design; Six-port receiver; Speech Processing; Structural Health Monitoring; Systems and Networking; Telecommunication Systems and Networks; thermal accelerometer; Thermal Aware Testing; Uncertainty Handling; Video Coding/QoE Aware Video Streaming; Video Postprocessing; Vision; VLSI and Embedded Systems; VLSI for Neuromorphic Computing; VLSI Signal Processing; Water contaminant sensor; Wireless and Optical Networking;

Academic Performance

New Acquisitions	01
International Collaborations	09
Doctoral Degrees Awarded	16
MS Degrees Awarded	05
Fellow - Professional Bodies	03
Member - Professional Bodies	20
Member - Editorial Board	11
Awards & Honours	06
Fellowships	04
Sponsored Research Projects	69
Consultancy Projects	06
Technology Transferred	01
Visits Abroad by Faculty Members	12
Invited Lectures by Faculty Members	26
Seminars, Conferences and Workshops Organized	06
Short-Term Courses, Training Programmes and Workshops rganised	09
Papers Published in Journals	86
Papers Presented in Conferences	59

Geology and Geophysics

Head of the Department : Anindya Sarkar

Professors

Name	Highest Degree	Research Areas
Abhijit Bhattacharya	Ph.D.	
Anil Kumar Gupta	Ph.D.	
Anindya Sarkar	Ph.D.	
Arindam Basu	Ph.D. University of Hong Kong	Engineering Geology; Rock Mechanics
Biswajit Mishra	Ph.D.	
Debashish Sengupta	Ph.D.	Modelling of Nuclear Geophysical data; Contaminant study using geophysical data; Radon Modelling in subsurface media; Studies on Rare Earths and applications
Manish A Mamtani	Ph.D.	Structural Geology; Microtectonics
Mruganka Kumar Panigrahi	Ph.D.	Crustal Fluids; Ore Deposits; Geochemistry; Modeling and Simulation
Ravikant Vadlamani	Ph.D.	
Saibal Gupta	Ph.D.	
Sankar Kumar Nath	Ph.D.	Computational Seismology; Engineering Seismology; Seismic Prospecting; Seismic Microzonation & Risk; Landslide Susceptibility Slope Stability
Santanu Kumar Bhowmik	Ph.D.	Metamorphic Petrology; Diffusion Chronometry; Accessory Mineral Petrology
Shashi Prakash Sharma	Ph.D.	Electrical & Electromagnetic Geophysics; Geophysical optimizations; Numerical Modeling; Mineral and Groundwater Exploration
Subhasish Das	Ph.D.	
Subhasish Tripathy	Ph.D.	Environmental Geochemistry; Waste Management; Acid Mine Drainage; Coal Geochemistry; Soil and Water Contamination
William Kumar Mohanty	Ph.D.	

Associate Professors

Abhijit Mukherjee	Ph.D.	
Arun Singh	Ph.D.	
Chandrani Singh	Ph.D.	
Dewashish Upadhyay	Ph.D.	
Kamal Lochan Pruseth	Ph.D.	
Sanghamitra Ray	Ph.D.	

Assistant Professors

Melinda Kumar Bera	Ph.D.	Sedimentology; Sequence Stratigraphy; Stable Isotope Geochemistry; Cenozoic Himalaya; Bengal Basin
Probal Sengupta	Ph.D.	
Sabyasachi Maiti	Ph.D.	Remote sensing and GIS; Geomorphology; Exploration

Sudha Agrahari	Ph.D.
Sujoy Kanti Ghosh	Ph.D.

Promotion

Name	Highest Degree	Research Areas
Arindam Basu	Professor	
Arun Singh	Assistant Professor	
Chandrani Singh	Assistant Professor	
Ravikant Vadlamani	Professor	

Brief Description of on-going activities

Tectonic evolution of craton – mobile belt ensembles in parts of the Indian shield; Lithospheric structure across Himalaya and deformation at collisional boundaries;Structural geology and microtectonics; Metamorphic and accessory mineral petrology; Water contents and oxygen fugacity in xenoliths; Gold mineralization in greenstone belts of Dharwar Craton; Metamorphic remobilization of massive sulphide deposits; Molecular dynamic simulation of fluid mixtures for refinement of PVTX relationship and metal transport, Marine Geochemistry, Felsic magmatism and associated hydrothermal activities and mineralization, Acid mine drainage and impact on the environment, Modeling of reactive fluid flow in the crust and resultant phenomena; Isotope geochemistry, geochronology and crustal evolution; Cosmochemistry; Stable isotopes in Himalayan foreland sediments; Understanding the connection between Himalayan orogeny and Late Cenozoic climate change from the Himalayan foreland and Bengal basin sediments; Studies on Indian monsoon (both modern and ancient) and paleoclimate studies of the Indian subcontinent and paleoceanography of the Indian Ocean; Paleogene climate of Kutch, Rajasthan; Proterozoic sedimentation in Kolhan Basin; Vertebrate paleobiology; Gondwana stratigraphy and sedimentation.
Seismic Hazard assessment and microzonation in the NE India and metropolitan cities; Noninvasive near surface and downhole geophysics; Application of electrical and electromagnetic methods to environmental problems, helicopter-borne electromagnetics (for imaging shallow earth structures), joint inversion of electrical and electromagnetic methods, unconventional energy resources (reservoir potential evaluation through modelling and simulation; Development of an innovative interpretation approach for VLF electromagnetic measurement for fast imaging of subsurface conducting features associated with mineral and groundwater investigation; Gravity & Magnetic Methods of Prospecting and Reservoir Characterization; Waste utilizations, wasteland development and acid marine drainage; In-situ surveys for heavy mineral beach placers along Eastern coast of India;

Evaluation of physico-mechanical behaviors of rock and rock-like materials, rock failure modes under different states of stress and shear behavior of rocks joints, improvement of rock index test methods and interdisciplinary research connecting science and heritage; Groundwater storage and recharge estimation of Indian Subcontinent: past, present and future, by ground-, satellite- and artificial intelligence-based methods, submarine groundwater discharge to the Bay of Bengal in present and future climatic scenarios; controls on groundwater arsenic distribution, fate and transport around the globe, hydrostratigraphy and groundwater flow modeling of large sedimentary aquifers, urban geology and geo-quest of ancient cities; Remote sensing, GIS, quantitative geomorphology and mineral exploration.

Research Areas

Accessory Mineral Petrology; Bengal Basin; Cenozoic Himalaya; Computational Seismology; Diffusion Chronometry; Electrical & Electromagnetic Geophysics; Engineering Geology; Engineering Seismology; Exploration; Geomorphology; Geophysical optimizations; Landslide Susceptibility Slope Stability; Metamorphic Petrology; Microtectonics; Mineral and Groundwater Exploration; Numerical Modeling; Remote sensing and GIS; Rock Mechanics; Sedimentology; Seismic Microzonation & Risk; Seismic Prospecting; Sequence Stratigraphy; Stable Isotope Geochemistry; Structural Geology;

Academic Performance

International Collaborations	08
Lectures by Visiting Experts	04
Doctoral Degrees Awarded	07
Fellow - Professional Bodies	03
Member - Professional Bodies	16
Member - Editorial Board	08
Awards & Honours	04
Fellowships	07
Sponsored Research Projects	26
Consultancy Projects	05
Visits Abroad by Faculty Members	04
Invited Lectures by Faculty Members	13
Papers Published in Journals	32
Papers Presented in Conferences	12

Humanities and Social Sciences

Head of the Department : Priyadarshi Patnaik

Professors

Name	Highest Degree	Research Areas
Anjali Roy	Ph.D.	Postcolonial Literature and Theory; Partition 1947; Media Studies; Popular Culture; Diaspora Studies
Bhagirath Behera	Ph.D.	Environmental Economics; Development Economics
Chhanda Chakraborti	Ph.D.	Philosophy of Mind; Bioethics and Public Health Ethics; Corporate Social Responsibility; Business Ethics; Philosophy of Logic
Damodar Suar	Ph.D.	Social and Organizational Psychology; Neuropsychology; Research Methodology
Jitendra Mahakud	Ph.D.	Corporate Finance; Investment Management; Financial Markets and Risk Management; Banking; Behavioral Finance
Kailash Bihari Lal Srivastava	Ph.D.	Human Resources Development & Management; Social & Organizational Psychology & Behavior; Performance Management; Knowledge Management; Change management
Kishor Goswami	Ph.D.	Development Economics; Agricultural Economics; Economics of Biofuels
Narayan Chandra Nayak	Ph.D.	Public Economics & Policy
Priyadarshi Patnaik	Ph.D.	
Pulak Mishra	Ph.D.	Industrial Economics; Public Economics & Policy; Economics of Rural Development; Economics of Regulation
Suhita Chopra Chatterjee	Ph.D.	Sociology of Health; Medical Sociology; End-of-Life Care
Vijai Nath Giri	Ph.D.	Science of Happiness; Human Resource Management;
Anjali Roy	Ph.D.	Communication Studies; Social Psychology; Gender Studies
Bhagirath Behera	Ph.D.	Postcolonial Literature and Theory; Partition 1947; Media Studies; Popular Culture; Diaspora Studies

Associate Professors

H S Komalesha	Ph.D.	
Jayashree Chakraborty	Ph.D.	Syntax; Semantics; Language Communication; Sociolinguistics; Discourse Analysis
Saswat Samay Das	Ph.D.	Industrial and Organisational Psychology; Organisational Behaviour; Human Resources Development & Management; Positive Psychology; Health Psychology
Seema Singh	Ph.D.	Language Studies & Literary Theories; Literature; Media & Communication Studies; Translation & Culture
Zakir Husain	Ph.D.	Ageing; Gender; Economics of education; Health economics, relating to cancer; Applied Econometrics

Assistant Professors

Anuradha Choudry	Ph.D.	
Anwesha Aditya	Ph.D., Jadavpur University	International Economics; Development Economics
Bimal Kishore Sahoo	Ph.D.	Human Development; Labour Economics; Industrial Economics; Growth and Development Economics; International Economics
Gourishankar S Hiremath	Ph.D.	

Inder Sekhar Yadav	Ph.D.	Financial Economics and related Studies; Industrial Economics; Macroeconomics; Enterprise Risk Management
Jenia Mukherjee	Ph.D.	Ecological Humanities & Anthropocene Studies
Rishabh Rai	Ph.D.	
Siddhartha Chattopadhyay	Ph.D.	Macroeconomics; Applied Econometrics; Growth and Development Economics
Sree Vinutha Venkataraman	Ph.D.	

Visiting Faculty

Name	Designation	Research Areas
Manas Kumar Mandal	Professor	

Promotion

Anuradha Choudry	Assistant Professor	
Anwesha Aditya	Assistant Professor	International Economics; Development Economics
Inder Sekhar Yadav	Assistant Professor	Financial Economics and related Studies; Industrial Economics; Macroeconomics; Enterprise Risk Management
Siddhartha Chattopadhyay	Assistant Professor	Macroeconomics; Applied Econometrics; Growth and Development Economics

Brief Description of on-going activities

Various talks and interactions especially in the areas of Economics, Literary Studies, Ethics, HR and Social Sciences by various invited faculty from India and abroad.
Workshops and short-terms courses in HR, History, Economics, Literary Studies and Social Sciences

Research Areas

Ageing; Agricultural Economics; Applied Econometrics; Banking; Behavioral Finance; Bioethics and Public Health Ethics; Business Ethics; Change management; Communication Studies; Corporate Finance; Corporate Social Responsibility; Development Economics; Diaspora Studies; Discourse Analysis; Ecological Humanities & Anthropocene Studies; Economics of Biofuels; Economics of education; Economics of Regulation; Economics of Rural Development; End-of-Life Care; Enterprise Risk Management; Environmental Economics; Financial Economics and related Studies; Financial Markets and Risk Management; Gender; Gender Studies; Growth and Development Economics; Health economics, relating to cancer; Health Psychology; Human Development; Human Resource Management; Human Resources Development & Management; Industrial and Organisational Psychology; Industrial Economics; International Economics; Investment Management; Knowledge Management; Labour Economics; Language Communication; Language Studies & Literary Theories; Literature; Macroeconomics; Media & Communication Studies; Media Studies; Medical Sociology; Neuropsychology; Organisational Behaviour; Partition 1947; Performance Management; Philosophy of Logic; Philosophy of Mind; Popular Culture; Positive Psychology; Postcolonial Literature and Theory; Public Economics & Policy; Research Methodology; Science of Happiness; Semantics; Social and Organizational Psychology; Social & Organizational Psychology & Behavior; Social Psychology; Sociolinguistics; Sociology of Health; Syntax; Translation & Culture;

Academic Performance

International Collaborations	07
Doctoral Degrees Awarded	04
MS Degrees Awarded	02
Member - Professional Bodies	46
Member - Editorial Board	14
Awards & Honours	04
Sponsored Research Projects	40
Visits Abroad by Faculty Members	16

Invited Lectures by Faculty Members	53
Seminars, Conferences and Workshops Organized	17
Short-Term Courses, Training Programmes and Workshops organised	07
Papers Published in Journals	51
Papers Presented in Conferences	26

Industrial and Systems Engineering

Head of the Department : Jhareswar Maiti

Professors

Name	Highest Degree	Research Areas
Biswajit Mahanty	Ph.D. IIT Kharagpur	
Jhareswar Maiti	Ph.D.	Data Science; Safety & Health Analytics; Quality Analytics; Engineering Ergonomics; Virtual Reality Applocations
Mamata Jenamani	Ph.D.	E- Business, Information Systems; Operations & Supply Chain Management; Web data analytics; Online auctions and e-procurement
Manoj Kumar Tiwari	Ph.D.	Manufacturing Operations Planning; Supply Chain Management and Logistics; Intelligent Decision Modeling; Operations Analysis and Management; Product and Process Improvements
Pradip Kumar Ray	Ph.D.	Ergonomics and product design; Performance Management; Operations & Supply Chain Management; Quality and Safety Engineering; TQM and with Analytics
Sarada Prasad Sarmah	Ph.D.	Supply Chain Management and Logistics; Reverse Logistics; Manufacturing/Production Planning & Control; Operations management

Associate Professors

Jitendra Kumar Jha	Ph.D.	Supply Chain Management and Logistics; Operations Research (OR); Inventory Control; Facility Location
Jitesh J Thakkar	Ph.D.	Project Management, Maintenance & Monitoring; Supply Chain Management and Logistics; Lean Six Sigma; Operations management; Operations Research (OR)

Assistant Professors

Akhilesh Kumar	Ph.D. Wayne State University, Detroit, Michigan	Business Analytics; Closed-loop Supply Chains; Product Returns and Remanufacturing; Condition-Based Maintenance
Goutam Sen	Ph.D.	Operations Research (OR)
Sri Krishna Kumar	Ph.D.	Supply Chain and Logistics; Operations Research (OR); Game Theory; Non Linear Programming

New Faculty Appointment

Name	Highest Degree	Research Areas
O. Bala Krishna	Assistant Professor	

Chair Professor

Jyoti Mukherjee	Professor
P L Narasimhan	Professor

Visiting Faculty

O. Bala Krishna	Assistant Professor

Retirement

P L Narasimhan	Professor

Brief Description of on-going activities

Department of Industrial and Systems Engineering (ISE), the pioneer of industrial engineering education in India with a legacy of over 40 years of service to the nation has continually reinvented itself in terms of academic curriculum, teaching pedagogy and research infrastructure to keep pace with the developments in the global scenario and needs and requirements of the nation in general and the industries and service organizations in particular. ISE produces excellent quality students at both UG and PG levels, provides short and long term training and outreach programs to industries, conducts consultancy and research works of world
repute.

Listed below are the various academic programs offered by the Department of Industrial and Systems Engineering.
1. 4-year B.Tech in Industrial Engineering
2. 5-year Dual-Degree: (B.Tech in Engineering Product Design and Manufacturing and M.Tech in Design and Quality Engineering)
3. 5-year Dual-Degree: (B.Tech in Industrial Engineering and Management and M.Tech in Industrial Engineering & Management)
4. 5-year Dual-Degree: (B.Tech in Manufacturing Science and Engineering and M.Tech in Industrial Engineering & Management)
5. 2-year M.Tech in Industrial Engineering & Management
6. Master of Science
7. Doctor of Philosophy

ISE provides an excellent opportunity to the students to build their career in an inter-disciplinary area of Industrial and systems engineering with a strong focus on real life industry problems. The courses are designed with a strong analytical and process orientation for the design, procurement, operations & production, delivery and recovery of goods and services. Students are exposed to the complete spectrum of analytical tools for Analytics and Data Science, Decision Analysis, Performance Improvements and Process Transformations including analytics, OR, statistics, multivariate data analysis, simulation and soft computing. Students receive hands-on experience on various latest software packages like CPLEX, SAS, R, MATLAB, MS-Project, Arena, DELMIA, QUEST and Mathematica, and technologies like Analytics, Virtual-Reality and ICT. Graduates are recruited by the leading multinational companies in analytics, finance, insurance, logistics, manufacturing, IT and capitalists firms. We are consulting and carrying out sponsored projects in collaboration with leading service & manufacturing industries, and several leading foreign universities. We provide the most conducive environment of learning by linking theoretical concepts with its practical applications
to take up challenging real life problems.

ISE has illustrious alumni who continually support for betterment of the department.

Research Areas

Business Analytics; Closed-loop Supply Chains; Condition-Based Maintenance; Data Science; E-Business, Information Systems; Engineering Ergonomics; Facility Location; Game Theory; Intelligent Decision Modeling; Inventory Control; Lean Six Sigma; Manufacturing Operations Planning; Manufacturing/Production Planning & Control; Non Linear Programming; Online auctions and e-procurement; Operations Analysis and Management; Operations management; Operations Research (OR); Operations & Supply Chain Management; Product and Process Improvements; Product Returns and Remanufacturing; Project Management, Maintenance & Monitoring; Quality Analytics; Reverse Logistics; Safety & Health Analytics; Supply Chain and Logistics; Supply Chain Management and Logistics; Virtual Reality Applocations; Web data analytics;

Academic Performance

New Acquisitions	03
International Collaborations	14
Lectures by Visiting Experts	01
Doctoral Degrees Awarded	06
Fellow - Professional Bodies	02
Member - Professional Bodies	08
Member - Editorial Board	24
Awards & Honours	09
Sponsored Research Projects	25
Consultancy Projects	09
Visits Abroad by Faculty Members	01
Invited Lectures by Faculty Members	09
Seminars, Conferences and Workshops Organized	02
Short-Term Courses, Training Programmes and Workshops organised	04
Papers Published in Journals	67
Papers Presented in Conferences	12

Mathematics

Head of the Department : Mahendra Prasad Biswal

Professors

Name	Highest Degree	Research Areas
Adrijit Goswami	Ph.D.	Data and Web Mining; Cryptography; Operations Research (OR); Supply Chain Management and Logistics; Fuzzy Sets and Applications
Chandal Nahak	Ph.D.	
Debjani Chakraborty	Ph.D.	
Dharmendra Kumar Gupta	Ph.D.	
Geetanjali Panda	Ph.D.	Numerical Optimization; Optimization with uncertainty; Portfolio Optimization; Convex Optimization
G P Raja Sekhar	Ph.D.	Biphasic mixture theory; Boundary integral methods; Flow through anisotropic porous media; Transport phenomena of viscous drops
Mahendra Prasad Biswal	Ph.D.	
Parmeshwary Dayal Srivastava	Ph.D.	
Pratima Panigrahi	Ph.D.	Combinatorics and Graph Theory
P V S N Murthy	Ph.D.	
Rajni Kant Pandey	Ph.D.	
Somesh Kumar	Ph.D.	Estimation in Restricted Parameter Space; Estimating in selected populations; Estimation in directional distributions; Classification of observations; Mesaures of Entropy and Reliability
Somnath Bhattacharyya	Ph.D.	
Umesh Chandra Gupta	Ph.D.	
Associate Professors		
Gnaneshwar Nelakanti	Ph.D.	
Jitendra Kumar	Ph.D.	Particle Technology; Mathematical Modelling and Simulations; Development of Numerical Methods; Mathematical and Numerical Analysis
Koeli Ghoshal	Ph.D.	Hydraulics in Sediment Beds; Grain Size Distribution; Velocity Distribution; Entropy Theory
Pawan Kumar	Ph.D.	
Ratna Dutta	Ph.D.	
Sourav Mukhopadhyay	Ph.D.	
Assistant Professors		
Asish Ganguly	Ph.D.	
Bappaditya Bhowmik	Ph.D.	Geometric Function Theory
Bibhas Adhikari	Ph.D. IIT Guwahati	Applied Linear Algebra; Theory of Complex Networks; Quantum Information Theory
Debapriya Biswas	Ph.D.	Calculus and Functional Analysis; Calculus and Topology; Groups of symmetries, Analysis, Geometry; Mathematical Physics & Parabolic Analytic Function; Vector Spaces and Topology

Name	**Highest Degree**	**Research Areas**
Hari Shankar Mahato	Ph.D.	
Mousumi Mandal	Ph.D.	
Nitin Gupta	Ph.D.	
Rajesh Kannan	Ph.D.	Linear Algebra; Combinatorics and Graph Theory; Applied Functional Analysis & Optimization
Ramakrishna Nanduri	Ph.D.	Commutative Algebr
Rupanwita Gayen	Ph.D.	Linear water waves; Integral equations
Shirshendu Chowdhury	Ph.D.	
Swanand Ravindra Khare	Ph.D., IIT Bombay	Applied Mathematics
T Raja Sekhar	Ph.D.	
Vasudeva Rao Allu	Ph.D.	

New Faculty Appointment

Name	**Designation**	**Research Areas**
Dharmendra Kumar Gupta	Assistant Professor	
Hari Shankar Mahato		

Visiting Faculty

Buddhananda Banerjee	Assistant Professor	Surrogate Endpoint Analysis in Clinical Trials; Functional data analysis; Goodness-of-fit test for survival data; Change point problem

Promotion

Geetanjali Panda	Assistant Professor	Numerical Optimization; Optimization with uncertainty; Portfolio Optimization; Convex Optimization

Retirement

Dharmendra Kumar Gupta	Professor	
Vasudeva Rao Allu		

Resignation

Shirshendu Chowdhury	Assistant Professor	

Research Areas

Applied Functional Analysis & Optimization; Applied Linear Algebra; Biphasic mixture theory; Boundary integral methods; Calculus and Functional Analysis; Calculus and Topology; Change point problem; Classification of observations; Combinatorics and Graph Theory; Commutative Algebra; Convex Optimization; Cryptography; Data and Web Mining; Development of Numerical Methods; Entropy Theory; Estimating in selected populations; Estimation in directional distributions; Estimation in Restricted Parameter Space; Flow through anisotropic porous media; Functional data analysis; Fuzzy Sets and Applications; Geometric Function Theory; Goodness-of-fit test for survival data; Grain Size Distribution; Groups of symmetries, Analysis, Geometry; Hydraulics in Sediment Beds; Integral equations; Linear Algebra; Linear water waves; Mathematical and Numerical Analysis; Mathematical Modelling and Simulations; Mathematical Physics & Parabolic Analytic Function; Mesaures of Entropy and Reliability; Numerical Optimization; Operations Research (OR); Optimization with uncertainty; Particle Technology; Portfolio Optimization; Quantum Information Theory; Supply Chain Management and Logistics; Surrogate Endpoint Analysis in Clinical Trials; Theory of Complex Networks; Transport phenomena of viscous drops; Vector Spaces and Topology; Velocity Distribution;

Academic Performance

New Acquisitions	01
International Collaborations	10
Doctoral Degrees Awarded	16
Fellow - Professional Bodies	01
Member - Professional Bodies	03
Member - Editorial Board	07
Awards & Honours	04
Sponsored Research Projects	24
Visits Abroad by Faculty Members	04
Invited Lectures by Faculty Members	25
Seminars, Conferences and Workshops Organized	02
Short-Term Courses, Training Programmes and Workshops organised	01
Papers Published in Journals	02

Mechanical Engineering

Head of the Department : Sukanta Kumar Dash

Professors

Name	Highest Degree	Research Areas
Abhijit Guha	Ph.D.	Noise and Vibration Control; Fault Diagnosis and Prognosis; Machinery Condition Monitoring; Automobile Engineering; Underwater Acoustics
Ajay Kumar Chattopadhyay	Ph.D.	Mechanics of inflatable structures; Vibration induced transport; Discrete and continuous system dynamics; Rail vehicle dynamics
Amiya Ranjan Mohanty	Ph.D.	Nonlinear Dynamics; Fault Diagnosis and Prognosis; Modelling & Diagnostics of Industrial Systems; Rail vehicle dynamics; Systems and Control
Anirvan Dasgupta	Ph.D.	
Arun Kumar Samantaray	Ph.D.	
Ashish Kumar Nath	Ph.D.	
Ashish Kumar Nath	Ph.D.	
Asimava Roy Choudhury	Ph.D.	
Biswajit Maiti	Ph.D.	Optimization & Modeling of Manufacturing Processes; Robotics & Computer-Aided Engineering (CAE)
Cheruvu Siva Kumar	Ph.D.	Mechanics of Advanced Materials; Vibration and Noise Control; Dynamics of MEMS and NEMS devices; Vibration of Electromechanical Systems
Dilip Kumar Pratihar	Ph.D.	
Goutam Chakraborty	Ph.D.	Computational Fluid Dynamics; Turbulence modeling of RANS; Large eddy simulation (LES)
Maddali Ramgopal	Ph.D.	
Manab Kumar Das	Ph.D.	Surface engineering and coated materials
Manas Chandra Ray	Ph.D.	
Partha Pratim Bandyopadhyay	Ph.D.	Single and Multiphase Fluid Dynamics; Heat Transfer; Thermal Engineering; Computational Fluid Dynamics; Flow of granular material
Partha Saha	Ph.D.	Dynamical Systems with limited power sou; Vibration Isolation by SMAs.; Nonlinear Dynamics
Prasanta Kumar Das	Ph.D.	Fluid Drive & Control; Hydrostatic Units (Pump /Motor) Design; Mechanical Drives; Gear Engineeing
Ranjan Bhattacharyya	Ph.D.	Computational Fluid Dynamics; Hydrodynamic and Thermal Instability; Spectral Methods in Fluid Dynamics; Perturbation Methods in Fluid Dynamics; Convective Heat Transfer
Rathindranath Maiti	Ph.D.	
Sandipan Ghosh Moulic	Ph.D.	
Sanjay Gupta	Ph.D.	Machining; grinding; cutting tool coating; residual stress; manufacturing
Sati Nath Bhattacharyya	Ph.D.	
Soumitra Paul	Ph.D.	Heat Transfer; Computational Fluid Dynamics; Melting and Solidification; Train Aerodynamics

Souvik Bhattacharyya	Ph.D.	
Subhransu Roy	Ph.D.	Microfluidics and microscale transport
Sukanta Kumar Dash	Ph.D.	
Suman Chakraborty	Ph.D.	
Associate Professors	Ph.D.	
Anandaroop Bhattacharya	Ph.D. University of Colorado	Thermal Engineering; Refrigeration and Air Conditioning; Microfluidics; Thermal management of Li-ion batteries
Kingshook Bhattacharyya	Ph.D.	
Kumar Ray	Ph.D.	
Mihir Sarangi	Ph.D.	
Sovan Lal Das	Ph.D.	Continuum Mechanics; Mechanics of Biological Membranes; Granular Mechanics
Sushanta Kumar Panda	Ph.D.	
Vikranth Racherla	Ph.D.	Friction Stir Welding and Processing; Optimization & Modeling of Manufacturing Processes; Mechanics of Composites; Computational Weld Mechanics & Welding Technology
Assistant Professors		
Aditya Bandopadhyay	Ph.D.	Fluid Mechanics (Incl. Bio, Multiphase); Computational Fluid Dynamics; Flow through porous media; Industrial Application of High Voltages; Chemically Reacting flows
Ajay Muljibhai Sidpara	Ph.D. IIT Kanpur	Surface finishing; Micromachining; Tribology
Atul Jain	Ph.D.	
Chirag Deepak Kalelkar	Ph.D.	Porous materials and structured fluids; Single and Multiphase Fluid Dynamics
Dhananjay Kumar Srivastava	Ph.D.	
Jeevanjyoti Chakraborty	Ph.D.	Microfluidics; Lithium-ion battery modelling; Fuel cells modelling; Flow through deformable confinements
Jinu Paul	Ph.D.	
Rajaram Lakkaraju	Ph.D.	
Sankha Deb	Ph.D.	Computer Integrated Manufacturing; Automation and Robotics; Flexible Manufacturing Systems; Soft Computing techniques; Micromanufacturing Processes
Somnath Roy	Ph.D.	Computational Fluid Dynamics; Low Reynolds No. Aerodynamics; Heat Transfer; Fluid Structure Interaction; DNS and LES
Sourav Mitra	Ph.D.	Adsorption; Refrigeration; Thermal energy storage; Thermal desalination
S Ramanujam	Ph.D.	

New Faculty Appointment

Name	Designation	Research Areas
Aditya Bandopadhyay	Assistant Professor	
Ashish Kumar Nath	Assistant Professor	
Sourav Mitra	Assistant Professor	

Visiting Faculty

Atul Jain	Assistant Professor	

Promotion

Name	Highest Degree	Research Areas
Ajay Muljibhai Sidpara	Assistant Professor	
Goutam Chakraborty	Professor	

Retirement

Ajay Kumar Chattopadhyay	Assistant Professor	
Ashish Kumar Nath		
Sankar Kumar Som		

Re Appointment

Sankar Kumar Som	Professor	

Research Areas

Automation and Robotics; Automobile Engineering; Chemically Reacting flows; Computational Fluid Dynamics; Computational Weld Mechanics & Welding Technology; Computer Integrated Manufacturing; Continuum Mechanics; Convective Heat Transfer; cutting tool coating; Discrete and continuous system dynamics; DNS and LES; Dynamical Systems with limited power sou; Dynamics of MEMS and NEMS devices; Fault Diagnosis and Prognosis; Flexible Manufacturing Systems; Flow of granular material; Flow through deformable confinements; Flow through porous media; Fluid Drive & Control; Fluid Mechanics (Incl. Bio, Multiphase); Fluid Structure Interaction; Friction Stir Welding and Processing; Fuel cells modelling; Gear Engineeing; Granular Mechanics; grinding; Heat Transfer; Hydrodynamic and Thermal Instability; Hydrostatic Units (Pump /Motor) Design; Industrial Application of High Voltages; Large eddy simulation (LES); Lithium-ion battery modelling; Low Reynolds No. Aerodynamics; Machinery Condition Monitoring; machining; manufacturing; Mechanical Drives; Mechanics of Advanced Materials; Mechanics of Biological Membranes; Mechanics of Composites; Mechanics of inflatable structures; Melting and Solidification; Microfluidics; Microfluidics and microscale transport; Micromachining; Micromanufacturing Processes; Noise and Vibration Control; Nonlinear Dynamics; Optimization & Modeling of Manufacturing Processes; Perturbation Methods in Fluid Dynamics; Porous materials and structured fluids; Rail vehicle dynamics; Refrigeration and Air Conditioning; residual stress; Robotics & Computer-Aided Engineering (CAE); Single and Multiphase Fluid Dynamics; Soft Computing techniques; Spectral Methods in Fluid Dynamics; Surface engineering and coated materials; Surface finishing; Thermal Engineering; Thermal management of Li-ion batteries; Train Aerodynamics; Tribology; Turbulence modeling of RANS; Underwater Acoustics; Vibration and Noise Control; Vibration induced transport; Vibration Isolation by SMAs.; Vibration of Electromechanical Systems;

Academic Performance

International Collaborations	09
Doctoral Degrees Awarded	10
MS Degrees Awarded	03
Fellow - Professional Bodies	07
Member - Professional Bodies	13
Member - Editorial Board	16
Awards & Honours	07
Fellowships	01
Sponsored Research Projects	72
Consultancy Projects	14
Visits Abroad by Faculty Members	03
Invited Lectures by Faculty Members	33
Seminars, Conferences and Workshops Organized	09
Short-Term Courses, Training Programmes and Workshops organised	05
Papers Published in Journals	111
Papers Presented in Conferences	47

Metallurgical and Materials Engineering

Head of the Department : Rahul Mitra

Professors

Name	Highest Degree	Research Areas
Gour Gopal Roy	Ph.D.	Computational Fluid Dynamics; Electron beam welding; Sponge iron technology by RHF; Extractive metallurgy; NMI control in steel
Indranil Manna	Ph.D.	
Jyotsna Dutta Majumdar	Ph.D.	
Karabi Das	Ph.D.	Advanced Materials Processing; Bulk nanocomposites and nanocomposite thin films; Surface Engineering; Functionally Graded Materials; Wear Resistant Steels
Nirupam Chakraborti	Ph.D.	Extractive metallurgy; Process Simulation, Optimization & Control; Soft Computing and Control; Computational material science; Iron & steel technology
Rahul Mitra	Ph.D.	Advanced Alloys & Superalloys; Mechanical metallurgy; Thin film growth and epitaxy; Corrosion & environmental degradation; Advanced Materials Processing
Shiv Brat Singh	Ph.D.	Physical metallurgy of steel
Siddhartha Das	Ph.D.	Energy materials; Surface engineering and coated materials; Failure Analysis; Characterization of Materials; Nano Materials
Sudipto Ghosh	Ph.D.	

Associate Professors

Debalay Chakrabarti	Ph.D.	Physical metallurgy; Mechanical metallurgy; Iron & steel technology; Structural Safety; Advanced Materials Processing
Jayanta Das	Ph.D.	Metastable alloys, Bulk Metallic Glasses; Non-equilibrium Processing; Bulk Nanocrystalline Metals and Alloys; Low Stacking Fault Energy Materials; High Temperature Oxidation
Koushik Biswas	Ph.D.	Energy materials; Modelling of metals and ceramics; Multifunctional ceramics; cement
Narendra Nath Acharya	Ph.D.	
Shampa Aich	Ph.D.	
Sujoy Kumar Kar	Ph.D.	Processing-Structure-Texture-Property; Neural network & Thermo-kinetic modeling; TiAl based high temperature materials; Physical metallurgy; Ti alloys, Ni based superalloys, Steels
Tapas Kumar Bandyopadhyay	Ph.D.	
Tapas Laha	Ph.D.	Advanced Materials Processing; Surface engineering and coated materials; Bulk metallic glasses; Bulk nanocomposites and nanocomposite thin films; Metastable & nano-structured material
Tarun Kumar Kundu	Ph.D.	

Assistant Professors

Amit Bhaduri	Ph.D.	
Amlan Dutta	Ph.D.	Computational material science; Modelling of dislocation dynamics; Elastoplastic behaviour of nanomaterials
Indrani Sen	Ph.D.	Shape memory alloys and smart materials; Improved Structural materials; Additive and Laser based Manufacturing; Marine Structural Engineering
Mangal Roy	Ph.D.	Bone Regeneration & Bone Tissue Engineering; Powder metallurgy; Advanced Alloys & Superalloys
Somjeet Biswas	Ph.D.	Thermomechanical processing and SPD; Quantitative Microscopy and Texture; Advanced light metals and alloys; Mechanical & Physical Metallurgy; Recrystallization and related phenomena
Sumantra Mandal	Ph.D. IIT Madras	Alloy Design; Grain Boundaries and Interfaces; Aqueous and High Temperature Corrosion; Creep, Fatigue and Fracture; Computational Materials Modeling

New Faculty Appointment

Amlan Dutta		Computational material science; Modelling of dislocation dynamics; Elastoplastic behaviour of nanomaterials

Visiting Faculty

Prodip Kumar Sen	Assistant Professor	

Promotion

Somjeet Biswas		Thermomechanical processing and SPD; Quantitative Microscopy and Texture; Advanced light metals and alloys; Mechanical & Physical Metallurgy; Recrystallization and related phenomena
Sumantra Mandal		Alloy Design; Grain Boundaries and Interfaces; Aqueous and High Temperature Corrosion; Creep, Fatigue and Fracture; Computational Materials Modeling
Tapas Kumar Bandyopadhyay	Assistant Professor	

Brief Description of on-going activities

- Structure-property correlation of various ceramic and metal-matrix composites, steel, high temperature materials and advanced alloys have been extensively done. Alloy development for height strength light weight requirements of automotive applications has been the quest area of research. Indeed, newer grades of dual phase and micro alloyed steels have been developed. Further, extensive research work is being carried out on superalloys, high strength light weight alloys, composites and thin sheet steel components regarding structure-property relationships to improve the various aspects of the alloys. Several new alloys and processing techniques giving better properties have indeed been found and subjected to patenting process.
- Various methods have been applied to improve the fatigue, creep and fracture behavior of materials. Failure analysis has been the subject of study for many materials to understand and thus improve the fracture behavior of materials. Moreover, studies related to the development of bulk nano-crystalline materials, severe plastic deformation processing, metastable alloys through non- equilibrium processing, thin films and functionally graded materials have been carried out. New processing techniques such as Additive and laser based additive manufacturing techniques have been applied to various alloys. In addition, Studies emphasizing the principles of basic metallurgical processes and correlation between structural defects on the macroscopic structural and functional properties have been performed.
- Significant improvement in extractive metallurgy is achieved through process control, optimization and simulation. Studies related to Non-metallic inclusions have been carried out towards the clean steel technology practice and to improve various aspects of the steel. Corrosion & environmental degradation studies have been subjected to various materials to determine the corrosion behavior and hence to improve

the corrosion resistance. Character of grain boundaries has been modified through processing techniques to achieve better corrosion behavior. High temperature corrosion behavior studies are also being carried out on several high temperature alloys.

• In addition, significant research has been conducted on modelling and simulation to elucidate various metallurgical aspects. Concepts from computational fluid dynamics, heat and mass transfer, thermodynamic modelling and dislocation dynamics have been successfully applied to model various complex metallurgical and materials phenomena. Numerous modelling techniques have been used to simulate the different metallurgical processes such as extractive metallurgy, processing methods, stress-assisted deformation behavior and atomistic mechanisms. Further atomistic simulation, molecular dynamic simulation, genetic algorithm and neural networks have received significant attention and publications.

Research Areas

Additive and Laser based Manufacturing; Advanced Alloys & Superalloys; Advanced light metals and alloys; Advanced Materials Processing; Alloy Design; Aqueous and High Temperature Corrosion; Bone Regeneration & Bone Tissue Engineering; Bulk metallic glasses; Bulk nanocomposites and nanocomposite thin films; Bulk Nanocrystalline Metals and Alloys; cement; Characterization of Materials; Computational Fluid Dynamics; Computational material science; Computational Materials Modeling; Corrosion & environmental degradation; Creep, Fatigue and Fracture; Elastoplastic behaviour of nanomaterials; Electron beam welding; Energy materials; Extractive metallurgy; Failure Analysis; Functionally Graded Materials; Grain Boundaries and Interfaces; High Temperature Oxidation; Improved Structural materials; Iron & steel technology; Low Stacking Fault Energy Materials; Marine Structural Engineering; Mechanical metallurgy; Mechanical & Physical Metallurgy; Metastable alloys, Bulk Metallic Glasses; Metastable & nano-structured material; Modelling of dislocation dynamics; Modelling of metals and ceramics; Multifunctional ceramics; Nano Materials; Neural network & Thermo-kinetic modeling; NMI control in steel; Non-equilibrium Processing; Physical metallurgy; Physical metallurgy of steel; Powder metallurgy; Processing-Structure-Texture-Property; Process Simulation, Optimization & Control; Quantitative Microscopy and Texture; Recrystallization and related phenomena; Shape memory alloys and smart materials; Soft Computing and Control; Sponge iron technology by RHF; Structural Safety; Surface Engineering; Surface engineering and coated materials; Thermomechanical processing and SPD; Thin film growth and epitaxy; TiAl based high temperature materials; Ti alloys, Ni based superalloys, Steels; Wear Resistant Steels;

Academic Performance

New Acquisitions	04
International Collaborations	08
Lectures by Visiting Experts	02
Doctoral Degrees Awarded	12
MS Degrees Awarded	02
Fellow - Professional Bodies	02
Member - Professional Bodies	12
Member - Editorial Board	05
Awards & Honours	06
Fellowships	03
Sponsored Research Projects	56
Consultancy Projects	13
Visits Abroad by Faculty Members	10
Invited Lectures by Faculty Members	40
Seminars, Conferences and Workshops Organized	09
Short-Term Courses, Training Programmes and Workshops organised	01
Papers Published in Journals	101
Papers Presented in Conferences	23

Mining Engineering

Head of the Department : Debasis Deb

Professors

Name	Highest Degree	Research Areas
Arun Kumar Majumder		
Ashis Bhattacherjee		Occupational health and safety; Injury epidemiology; Safety data analytics; operations research applications; Whole-body vibration of machine operator
Biswajit Samanta		
Debashish Chakravarty		
Debasis Deb		Rock Mechanics and Ground Control; Numerical Modelling of Geotechnical Systems; Digital Image Correlation
Jayanta Bhattacharyya		
Karanam Uma Maheshwar Rao		
Khanindra Pathak		
Samir Kumar Das		
Samir Kumar Pal		
S Suryanarayana Bhamidipati		

Associate Professors

Abhiram Kumar Verma		Air quality measurement and modelling; Whole-body vibration of machine operator; Ergonomics & Industrial Safety
Aditya Kumar Patra		
Ajay Kumar Jha		
Basanta Kumar Prusty		Coalbed methane and coal mine methane; unconventional gas, shale gas; CO2 sequestration; mining environmental management
Bibhuti Bhusan Mandal		
Srikant Annavarapu		Underground Structures for Mining; Assessment of rock fragmentation; Automation of Mining Systems

Assistant Professors

Kaushik Dey	Ph.D. (Kanpur)	

New Faculty Appointment

Name	Highest Degree	Research Areas
Bibhuti Bhusan Mandal	Assistant Professor	

Visiting Faculty

Ganga Prasad Karmakar	Assistant Professor	Petroleum production engineering; Polymer synthesis; Drilling Fluid Waste Management
M P Dikshit	Assistant Professor	

Promotion

Arun Kumar Majumder	Assistant Professor
Biswajit Samanta	Professor
Debashish Chakravarty	Assistant Professor

Brief Description of on-going activities

Environment and Safety• Application of LCA, GIS and remote sensing for soil and water analysis as a part of mine closure planning Experimental and computational fluid dynamics studies for shock loss determination in mine air flow Biological and passive treatment of mine waste water Investigation of soil and water contamination vis•á•vis land use changes near mining fields. Study of human behaviour related accidents in mines Epidemiological investigations to identify possible risk factor of occupational injuries in mines The statistical methods for assessing risk factors included logistical regression, loglinear modeling and structural equation modeling.

Rock Mechanics / Ground Control• Finite element analysis for longwall strata control problems, and design of shield supports Rock Joints and their influence on the stability of underground openings Rock Mass characterization, Land reclamation and soil mechanics Assessment of Fly ash composites as a substitute fill material for underground mine voids Risk analysis for the safety management of coalmines On the mechanics of rock fragmentation by drilling and cutting• studies on the linear cutting machine (LCM).
Mine Planning / Modeling• Application of various grade estimation techniques namely kriging, cokriging, stichastic simulation and neural networks for estimation of mining blocks for quality control in mines Investigation of different statistical quality control techniques including univariate and multivariate control charts for controlling the grade of mineral at various locations Grade control aspects in limestone and bauxite operations. Fault Tree Analyses and algorithm development for a Coal Handling Plant.

Advanced Surveying & Geoinformatics: Integration of GPS & I.SAR ground deformation data over mining areas. Use of lasers for assessment of stability of dumps. Vision based semi•automatic mine navigation system.
Collaborative Research• Collaborative research is ongoing with the French National Institute of Health and Medical Research (INSERM) for conducting research on injury epidemiology. In this study, the public health prevention methods were applied to occupational injuries in mines.

Research Areas

Air quality measurement and modelling; Assessment of rock fragmentation; Automation of Mining Systems; CO2 sequestration; Coalbed methane and coal mine methane; Digital Image Correlation; Drilling Fluid Waste Management; Ergonomics & Industrial Safety; Injury epidemiology; mining environmental management; Numerical Modelling of Geotechnical Systems; Occupational health and safety; operations research applications; Petroleum production engineering; Polymer synthesis; Rock Mechanics and Ground Control; Safety data analytics; unconventional gas, shale gas; Underground Structures for Mining; Whole-body vibration of machine operator;

Academic Performance

New Acquisitions	02
International Collaborations	08
Lectures by Visiting Experts	02
Doctoral Degrees Awarded	02
MS Degrees Awarded	01
Fellow - Professional Bodies	02
Member - Professional Bodies	11
Member - Editorial Board	04
Awards & Honours	01
Sponsored Research Projects	10
Consultancy Projects	29
Visits Abroad by Faculty Members	06
Invited Lectures by Faculty Members	08
Seminars, Conferences and Workshops Organized	05
Short-Term Courses, Training Programmes and Workshops organised	04
Papers Published in Journals	15

Ocean Engg and Naval Architecture

Head of the Department : Prasad Kumar Bhaskaran

Professors

Name	Highest Degree	Research Areas
Debabrata Sen	Ph.D.	Physical and Dynamical Oceanography
Hari V Warrior	Ph.D.	
Nisith Ranjan Mandal	Ph.D.	
Om Prakash Sha	Ph.D.	Marine Design and Production; High Performance Marine Vehicles
Prasad Kumar Bhaskaran	Ph.D.	Ocean Modeling and Analysis; Marine Acoustics; Ocean Wave Climate Studies; Port & Harbour Engineering; Mechanics of Sediment Transport
Trilochan Sahoo	Ph.D.	Coastal Engineering; Hydroelasticity; Wave past porous structures; Engineering Mathematics and Computation
Associate Professors	Ph.D.	
Ashoke Bhar	Ph.D.	
Vishwanath Nagarajan	Ph.D.	Fluid Structure Interaction; Marine Hydrodynamics; Seakeeping and Maneuvering; Ship Motion; Marine Design and Production
Assistant Professors		
Anirban Bhattacharyya	Ph.D.	Marine propulsion; Ship design; Energy Saving Devices
Arunjyoti Sarkar	Ph.D.	Marine operation for subsea installation; Low RPM current turbine; Offshore wind turbine; Subsea pipelines and risers
Joydip Bhattacharjee	Ph.D.	
Kiran Vijayan	Ph.D.	Vibration of marine structures; Fluid Structure Interaction; Electro-chemical, Electro-mechanical & MEMS Sensor; Vibration in oil drilling structures; Vibroacoustics
Nabanita Datta	Ph.D.	
Ranadev Datta	Ph.D.	Marine Hydrodynamics; Fluid Structure Interaction; Hydroelasticity of Floating Structures & Ships

New Faculty Appointment

Name	Designation	Research Areas
Bikas Chaudhuri	Assistant Professor	

Visiting Faculty

Bikas Chaudhuri	Professor	
Dasharatha Achani	Professor	

Promotion

Arunjyoti Sarkar	Assistant Professor	Marine operation for subsea installation; Low RPM current turbine; Offshore wind turbine; Subsea pipelines and risers
Hari V Warrior	Professor	Physical and Dynamical Oceanography

Retirement

Dasharatha Achani	Professor
Nisith Ranjan Mandal	Professor

Research Areas

Coastal Engineering; Electro-chemical, Electro-mechanical & MEMS Sensor; Energy Saving Devices; Engineering Mathematics and Computation; Fluid Structure Interaction; High Performance Marine Vehicles; Hydroelasticity; Hydroelasticity of Floating Structures & Ships; Low RPM current turbine; Marine Acoustics; Marine Design and Production; Marine Hydrodynamics; Marine operation for subsea installation; Marine propulsion; Mechanics of Sediment Transport; Ocean Modeling and Analysis; Ocean Wave Climate Studies; Offshore wind turbine; Physical and Dynamical Oceanography; Port & Harbour Engineering; Seakeeping and Maneuvering; Ship design; Ship Motion; Subsea pipelines and risers; Vibration in oil drilling structures; Vibration of marine structures; Vibroacoustics; Wave past porous structures;

Academic Performance

International Collaborations	08
Doctoral Degrees Awarded	02
Fellow - Professional Bodies	03
Member - Professional Bodies	05
Member - Editorial Board	08
Awards & Honours	03
Sponsored Research Projects	19
Consultancy Projects	18
Visits Abroad by Faculty Members	04
Invited Lectures by Faculty Members	10
Seminars, Conferences and Workshops Organized	06
Papers Published in Journals	41
Papers Presented in Conferences	30

Physics

Head of the Department : Krishna Kumar

Professors

Name	Highest Degree	Research Areas
Achintya Dhar	Ph.D.	Organic Electronics; Solar Photovoltaics; Semicondutor Thin Films; Thin Film Heterostructure
Ajay Kumar Singh	Ph.D.	Nuclear Structure; Gamma-ray spectroscopy; Nuclear detectors
Anushree Roy	Ph.D.	Experimental Condensed Matter Physics; Raman Scattering
Arghya Taraphder	Ph.D.	
Dipak Kumar Goswami	Ph.D.	Organic Electronic Devices; Biomedical devices, Flexible electronics; Organic thin film growth; Flexible healthcare devices
Kamal Lochan Panigrahi	Ph.D.	High Energy Physics; String Theory; AdS/CFT duality
Krishna Kumar	Ph.D.	Hydrodynamic Instabilities; Nonlinear Dynamics; Interfacial Waves
Partha Roy Chaudhuri	Ph.D.	Fiber & Integrated Optics, Photonics; Experimental Bio-Photonics, Imaging
Pragya Shukla	Ph.D.	Statistical Studies of Complex Systems; System Dependent Random matrix theory; Mathematical Physics; Statistical Physics
Prasanta Kumar Datta	Ph.D.	
Samit Kumar Ray	Ph.D.	
Sayan Kar	Ph.D.	
Somnath Bharadwaj	Ph.D.	
Sonjoy Majumder	Ph.D.	
Sudhansu Sekhar Mandal	Ph.D., IIT Kanpur	Fractional Quantum Hall Effect; Disordered Superconductors; Magnetic Vortices and Skyrmions; Physics of Topological Materials
Tapan Kumar Nath	Ph.D.	Functional materials; Engineered oxide & semiconductor heterostructures; Thin film growth and epitaxy; GMR & Magneto-electric & Magneto-caloric Materials; Spintronic nanomaterials and devices

Associate Professors

Amal Kumar Das	Ph.D.	Magnetism and Spintronics
Amreesh Chandra	Ph.D.	Hiearchical Nanostructures for Devices; Supercapacitors; Gas Sensors and catalysis; Structural Phase Transitions; Multifunctional ceramics
Sanjeev Kumar Srivastava	Ph.D.	Swift heavy ion-matter interaction; Nuclear Condensed Matter Physics; Local Magnetism; Quantum phase transitions & criticality
Shivakiran B N Bhaktha	Ph.D.	Glass Photonics; Random Lasers; Optofluidics; Photonic Crystals; Microresonators
Sugata Pratik Khastgir	Ph.D.	Mathematical Physics; Integrable Models

Assistant Professors

Amar Nath Gupta	Ph.D.	Biophysics; Soft Matter Physics; Single-Molecule Force Spectroscopy; Microrheology; Protein folding
Atindra Nath Pal	Ph.D.	
Debamalya Banerjee	Ph.D.	
Debraj Choudhury	Ph.D., IISc Bangalore	GMR & Magneto-electric & Magneto-caloric Materials; Thin film growth and epitaxy; Electronic & magnetic materials
Ipsita Mandal	Ph.D.	
Jyotirmoy Bhattacharya	Ph.D.	Quantum field theory; Gravity; String Theory; Relativistic hydrodynamics; Quantum entanglement in QFTs
Maruthi Manoj Brundavanam	Ph.D.	Singular Optics; Filamentation
Poornachandra Sekhar Burada	Ph.D.	Soft Matter Physics; Non-equilibrium Statistical Mechanics; Circuits for Neuromorphic Computing
Sajal Dhara	Ph.D.	Nanoscale optoelectronics; Electron transport; Light-matter interaction
Samudra Roy	Ph.D.	Nonlinear Photonics; Nonlinear Cavity Dynamics, CavitySoliton; Airy pulse dynamics
Sandipan Sengupta	Ph.D.	Classical gravity; Quantum gravity
Sitikantha Dhurjati Das	Ph.D.	
Tirtha Sankar Ray	Ph.D.	Particle Physics; Beyond Standard Model Physics; Electroweak Symmetry Breaking; Astroparticle Physics

New Faculty Appointment

Name	**Highest Degree**	**Research Areas**
Bhupendra Nath Dev	Assistant Professor	
Jyotirmoy Bhattacharya	Professor	Quantum field theory; Gravity; String Theory; Relativistic hydrodynamics; Quantum entanglement in QFTs
Simone Peli	Assistant Professor	

Visiting Faculty

Bhupendra Nath Dev	Assistant Professor
Jayanta K Bhattacharjee	Assistant Professor
Simone Peli	Assistant Professor
Sumanta Tewari	Assistant Professor
Utpal Sarkar	Professor

Promotion

Ajay Kumar Singh	Professor	Nuclear Structure; Gamma-ray spectroscopy; Nuclear detectors
Debraj Choudhury	Professor	GMR & Magneto-electric & Magneto-caloric Materials; Thin film growth and epitaxy; Electronic & magnetic materials
Dipak Kumar Goswami	Professor	Organic Electronic Devices; Biomedical devices, Flexible electronics; Organic thin film growth; Flexible healthcare devices
Kamal Lochan Panigrahi	Professor	High Energy Physics; String Theory; AdS/CFT duality
Partha Roy Chaudhuri	Professor	Fiber & Integrated Optics, Photonics; Experimental Bio-Photonics, Imaging

Shivakiran B N Bhaktha	Professor	Glass Photonics; Random Lasers; Optofluidics; Photonic Crystals; Microresonators
Sonjoy Majumder	Professor	
Tirtha Sankar Ray	Professor	Particle Physics; Beyond Standard Model Physics; Electroweak Symmetry Breaking; Astroparticle Physics

Resignation

Ipsita Mandal	Assistant Professor
Atindra Nath Pal	Assistant Professor
Jayanta K Bhattacharjee	Assistant Professor

Retirement

Sumanta Tewari	Professor

Brief Description of on-going activities

The Department has currently a total of thirty five faculty members including Visiting faculty and more than one hundred research scholars in addition to more than two hundred undergraduate students and around thirty postgraduate students. A number of sponsored research projects are undertaken by the faculty members of the Department and ninety four research articles are published in international journals of repute. The thrust areas of research are:

1. Experimental Physics: Bio-medical Devices, Electron Transport, Functional Materials, Gas Sensors and catalysis, Gamma-ray Spectroscopy, Light-matter interaction, Magnetism, Nanoscale Optoelectronics, Nuclear Structure, Nuclear detectors, Organic and Flexible Electronics, Photonics, Raman Scattering, Solar Photovoltaics, Soft-Matter Physics, Sprintronics, Supercapacitors, Heavy ion-matter interaction,

2. Theoretical Physics: Astrophysics, Bio-physics, Classical and Quantum Gravity, Cosmology, High-Energy Physics, Hydrodynamic Instability, Mathematical Methods,Non-equilibrium Statistical Mechanics, Nonlinear Photonics, Quantum Field Theory, String Theory, Random Matrix Theory.

Research Areas

AdS/CFT duality; Airy pulse dynamics; Astroparticle Physics; Beyond Standard Model Physics; Biomedical devices, Flexible electronics; Biophysics; Circuits for Neuromorphic Computing; Classical gravity; Disordered Superconductors; Electronic & magnetic materials; Electron transport; Electroweak Symmetry Breaking; Engineered oxide & semiconductor heterostructures; Experimental Condensed Matter Physics; Filamentation; Flexible healthcare devices; Fractional Quantum Hall Effect; Functional materials; Gamma-ray spectroscopy; Gas Sensors and catalysis; Glass Photonics; GMR & Magneto-electric & Magneto-caloric Materials; Gravity; Hiearchical Nanostructures for Devices; High Energy Physics; Hydrodynamic Instabilities; Integrable Models; Interfacial Waves; Light-matter interaction; Local Magnetism; Magnetic Vortices and Skyrmions; Magnetism and Spintronics; Mathematical Physics; Microresonators; Microrheology; Multifunctional ceramics; Nanoscale optoelectronics; Non-equilibrium Statistical Mechanics; Nonlinear Cavity Dynamics, CavitySoliton; Nonlinear Dynamics; Nonlinear Photonics; Nuclear Condensed Matter Physics; Nuclear detectors; Nuclear Structure; Optofluidics; Organic Electronic Devices; Organic Electronics; Organic thin film growth; Particle Physics; Photonic Crystals; Physics of Topological Materials; Protein folding; Quantum entanglement in QFTs; Quantum field theory; Quantum gravity; Quantum phase transitions & criticality; Raman Scattering; Random Lasers; Relativistic hydrodynamics; Semicondutor Thin Films; Single-Molecule Force Spectroscopy; Singular Optics; Soft Matter Physics; Solar Photovoltaics; Spintronic nanomaterials and devices; Statistical Physics; Statistical Studies of Complex Systems; String Theory; Structural Phase Transitions; Supercapacitors; Swift heavy ion-matter interaction; System Dependent Random matrix theory; Thin film growth and epitaxy; Thin Film Heterostructure;

Academic Performance

International Collaborations	11
Doctoral Degrees Awarded	12
Fellow - Professional Bodies	01
Member - Professional Bodies	10
Member - Editorial Board	04
Awards & Honours	05
Sponsored Research Projects	41
Consultancy Projects	01
Visits Abroad by Faculty Members	10
Invited Lectures by Faculty Members	35
Seminars, Conferences and Workshops Organized	03
Short-Term Courses, Training Programmes and Workshops organised	01
Papers Published in Journals	94

Academic Centers

Advanced Technology Development Centre

Head of the Department : Sunando Dasgupta

Assistant Professors

Name	Highest Degree	Research Areas
Somnath Sengupta	Ph.D.	Modelling & Diagnostics of Industrial Systems; Modelling of Aerospace & Automotive Systems; Electric Vehicles: Powertrain & Battery Management; Algorithms

New Faculty Appointment

Name	Designaion	Research Areas
Somnath Sengupta	Assistant Professor	Modelling & Diagnostics of Industrial Systems; Modelling of Aerospace & Automotive Systems; Electric Vehicles: Powertrain & Battery Management; Algorithms

Visiting Faculty

Jatindra Nath Roy	Professor	MEMS and Microsystems; Semiconductor Devices and Circuits; VLSI and Embedded Systems; Solar and Wind Energy Conversion

Promotion

Somnath Sengupta	Assistant Professor	Modelling & Diagnostics of Industrial Systems; Modelling of Aerospace & Automotive Systems; Electric Vehicles: Powertrain & Battery Management; Algorithms

New Academic Programmes

1. Recently the centre has started a new elective course on ‘Principles of Automotive Dynamics & Control’, under the ECS program.

Research Areas

Algorithms; Electric Vehicles: Powertrain & Battery Management; MEMS and Microsystems; Modelling & Diagnostics of Industrial Systems; Modelling of Aerospace & Automotive Systems; Semiconductor Devices and Circuits; Solar and Wind Energy Conversion; VLSI and Embedded Systems;

Academic Performance

New Acquisitions	02
Doctoral Degrees Awarded	18
MS Degrees Awarded	05
Fellow - Professional Bodies	02
Member - Professional Bodies	02
Member - Editorial Board	01
Sponsored Research Projects	02
Consultancy Projects	01
Invited Lectures by Faculty Members	02

Centre for Computational and Data Sciences

Head of the Department : *Sanjoy Bandyopadhyay*

Brief Description of on-going activities

The Centre for Computational and Data Sciences (CCDS) at Indian Institute of Technology Kharagpur (IIT Kharagpur) has a mandate to promote next generation interdisciplinary research and teaching activities that involve state-of-the-art high performance computing (HPC) platforms. IIT Kharagpur is going to get a Peta-flop capacity supercomputing facility under the National Supercomputing Mission (NSM), Govt. of India. This facility will be built, managed and operated under CCDS to provide large- scale computational support to the researchers of IIT Kharagpur, who are engaged in research activities in diverse areas of national importance. This facility will accelerate and evolve the level of research currently being done with manifold improvement in output and efficiency. The research activities of CCDS will address building hardware and software for HPC systems, Data Management, Analytics, Visualizations, etc, along with promoting cutting-edge research in different HPC application domains that include but are not limited to Computational Biology, Drug Design, Atmospheric Modeling, Computational Fluid Dynamics, Geo-Scientific Computations, Modeling and Mining of Heterogeneous Information Network, Multi-scale Modeling of Novel Materials, Computational Chemistry, Computational Physics, Cryptanalysis, Numerical Mathematics, Computational Mechanics, Non- equilibrium Molecular Dynamics, etc.

Academic Performance

New Acquisitions	01
Lectures by Visiting Experts	16

Centre For Educational Technology

Head of the Department : Swagata Dasgupta

Associate Professors

Name	Highest Degree	Research Areas
Bani Bhattacharya	Ph.D.	

Assistant Professors

Atasi Mohanty	Ph.D.	Educational Psychology; Curriculum & Pedagogy; Teacher Education & Professional Deve; Human Resource Development; Education for Sustainable Development
Jiaul Hoque Paik	Ph.D.	Big Data Analytics; Information Retrieval; Natural Language Pocessing; Machine Learning; Learning Analytics
Plaban Kumar Bhowmick	Ph.D.	Natural Language Pocessing; Artificial Intelligence; Digital Library; Computer Assisted Language Learning
Rajlakshmi Guha	Ph.D.	Psychology; Positive Psychology; Physiological & Cognitive Data Analysis; Neuroscience; Educational Psychology
Shyamal Kumar Das Mandal	Ph.D.	Speech Processing; Computer Aided Assessment; Pedagogy Design; Educational Psychology

Promotion

Name	Designation	Research Areas
Jiaul Hoque Paik	Assistant Professor	Big Data Analytics; Information Retrieval; Natural Language Pocessing; Machine Learning; Learning Analytics
Rajlakshmi Guha	Assistant Professor	Psychology; Positive Psychology; Physiological & Cognitive Data Analysis; Neuroscience; Educational Psychology

Research Areas

Educational Psychology; Curriculum & Pedagogy; Teacher Education & Professional Deve; Human Resource Development; Education for Sustainable Development; Artificial Intelligence; Big Data Analytics; Computer Aided Assessment; Computer Assisted Language Learning; Digital Library; Educational Psychology; Information Retrieval; Learning Analytics; Machine Learning; Natural Language Pocessing; Neuroscience; Pedagogy Design; Physiological & Cognitive Data Analysis; Positive Psychology; Psychology; Speech Processing;

Academic Performance

Doctoral Degrees Awarded	01
Member - Professional Bodies	06
Awards & Honours	01
Sponsored Research Projects	22
Visits Abroad by Faculty Members	01
Invited Lectures by Faculty Members	11
Seminars, Conferences and Workshops Organized	05
Short-Term Courses, Training Programmes and Workshops organised	01
Papers Published in Journals	07
Papers Presented in Conferences	09

Centre For Oceans, Rivers, Atmosphere and Land Science

Head of the Department : Achanta Naga Venkata Satyanarayana

Professors

Name	Highest Degree	Research Areas
Arun Chakraborty	Ph.D.	Ocean Modelling and Process Studies; Ocean Data Assimilation; Regional coupled Modelling; Visualization of 3D Ocean Data; Bio-geochemical modelling

Associate Professors

Achanta Naga Venkata Satyanarayana	Ph.D.	Modeling of PBL & Air sea Interactions; Modeling of Extreme Events; Urban Boundary Layer, UHI Impact-Climate; Parameterization- Land Surface Processes; Air Pollution&Regional Climate Modeling
Manabottam Mandal	Ph.D.	
Mihir Kumar Dash	Ph.D.	Modelling of Mesoscale Ocean Processes; Monsoon dynamics; Cryospheric Modeling using RS; Remote Sensing of the Ocean Surfaces
Mukunda Dev Behera	Ph.D.	**Terrestrial Remote Sensing; Spatial Biodiversity; Ecological Climatology; Biomass and Carbon Sequestration; Land Use and Land Cover Dynamics**

Assistant Professors

C Shaji	Ph.D.	Upper Equatorial Indian Ocean Dynamics; Ocean Modeling and Analysis; Ocean Processes Studies; Water Masses & Climate Variations; Physical Forcing on Biologi. Activity
Jayanarayanan Kuttippurath	D.Sc., University of Pierre Marie Curie, Paris	Atmospheric Chemistry and Physics; Climate Change and Climate Modelling; Physical Oceanography; Atmospheric Pollution and Health effects

New Faculty Appointment

Name	Designation	Research Areas
Prem Chand Pandey	Assistant Professor	

Chair Professor

V Chandrasekar	Professor
Prem Chand Pandey	Assistant Professor

Promotion

Arun Chakraborty	Professor	Ocean Modelling and Process Studies; Ocean Data Assimilation; Regional coupled Modelling; Visualization of 3D Ocean Data; Bio-geochemical modelling
Jayanarayanan Kuttippurath	Assistant Professor	Atmospheric Chemistry and Physics; Climate Change and Climate Modelling; Physical Oceanography; Atmospheric Pollution and Health effects

Research Areas

Air Pollution&Regional Climate Modeling; Atmospheric Chemistry and Physics; Atmospheric Pollution and Health effects; Bio- geochemical modelling; Biomass and Carbon Sequestration; Climate Change and Climate Modelling; Cryospheric Modeling using RS; Ecological Climatology; Land Use and Land Cover Dynamics; Modeling of Extreme Events; Modeling of PBL & Air sea Interactions; Modelling of Mesoscale Ocean Processes; Monsoon dynamics; Ocean Data Assimilation; Ocean Modeling and Analysis; Ocean Modelling and Process Studies; Ocean Processes Studies; Parameterization- Land Surface Processes; Physical Forcing on Biologi. Activity; Physical Oceanography; Regional coupled Modelling; Remote Sensing of the Ocean Surfaces; Spatial Biodiversity; Terrestrial Remote Sensing; Upper Equatorial Indian

Ocean Dynamics; Urban Boundary Layer, UHI Impact-Climate; Visualization of 3D Ocean Data; Water Masses & Climate Variations;

Academic Performance

New Acquisitions	01
International Collaborations	06
Doctoral Degrees Awarded	01
MS Degrees Awarded	01
Member - Professional Bodies	04
Member - Editorial Board	07
Sponsored Research Projects	23
Visits Abroad by Faculty Members	01
Invited Lectures by Faculty Members	05
Seminars, Conferences and Workshops Organized	01
Short-Term Courses, Training Programmes and Workshops organised	01
Papers Published in Journals	30
Papers Presented in Conferences	36

Centre for Theoretical Studies

Convenor: Somnath Bharadwaj

Faculty (CTS Advisory Committee)

Name	Degree	Specialization
S.Bandyopadhyay	M. Sc., Ph.D (IISc Bangalore)	Chemistry (Computational Chemistry, Molecular Modelling)
S.Bharadwaj	M. Sc., Ph.D (IISc Bangalore)	Physics (Theoretical Astrophysics and Cosmology
Suman Chakraborty	Ph.D	Microfluidics and Nanofluidics Interfacial Phenomena and Phase Change Computational Fluid Dynamics (CFD)
P. K. Chattaraj	M. Sc., Ph.D (IIT Bombay)	Chemistry (Theoretical Chemistry, Quantum Chaos)
Anirvan DasGupta	B.Tech, M.Tech, Ph.D Kanpur)	Mechanical (Dynamics, Control and Robotics.)
Sayan Kar	M. Sc., Ph.D (IIT Kanpur)	Physics (Relativity and High Energy Physics)
S. Pratik Khastgir	M. Sc., Ph.D (IOP, Bhubaneswar)	Physics (Mathematical Physics and Integral Models)
Somesh Kumar	MSc.,Ph.D (IIT Kanpur)	Mathematics (Statistical Decision Theory and Inference, Quantum Computing)
S. P. Pal	B. Tech (Hons.), M. Tech, Ph.D (IISc Bangalore)	Computer Sc. and Eng. (Computational geometry, Design and analysis of algorithms.)
Pratima Panigrahi	Ph.D.(Bangalore)	Mathematics (Combinatorics, Graph Theory)
G.P.Raja Sekhar	Ph.D.(Hyderabad Univ)	Mathematics (Boundary integral methods for viscous flows, Mass transfer in porous biological pellets)
A. Taraphder Head, Mathematics Head, Physics	M. Sc., Ph.D (IISc Bangalore)	Physics (Theoretical Condensed Matter Physics)

Associate of CTS

Poornachandra Sekhar Burada	Ph.D.(Univ. of Augsburg, Germany)	Softmatter physics, Biophysics
P. A. Deshpande	Ph.D.(IISc., Bangalore)	Chemical (Electronic structure calculations, Computational catalysis, First principles analysis of physiological reactions)
Chirag Kalelkar	Ph.D. (IISc., Bangalore)	Mechanical, Rheology, Fluid Dynamics
Sanjoy Majumder	Ph.D.(IIA Bangalore)	Physics (Computational Many-body physics, Atomic & Molecular Physics, Theoretical modeling of bulk and nano-materials, Astronomy and Astrophysics, Physics of Ultra-Cold atom)
Sabyashachi Mishra	Ph.D. (Tech. Univ. Munich, Germany)	Chemistry (Theory of Relativistic Vibronic Coupling in Molecular Physics, Relativistic Quantum Chemistry, Molecular Structure and Spectroscopy in Excited States, Reactive Processes in Biology, Network Dynamics in Bio-(chemical/physical) processes)
Venkat Padmanabhan	Ph.D.(Columbia University)	Chemical (Advanced Functional Materials, Polymer Nanocomposites, Bio-Mechanics of C. elegans, Organic Photovoltaics)

Kamal L. Panigrahi	Ph.D.(Institute of Physics, Bhubaneswar)	Physics (String Theory, High Energy Physics, String Inspired Cosmology)
Tirtha Sankar Ray	Ph.D.(SINP, Kolkata)	High energy physics
Samudra Roy	Ph.D.(Jadavpur Univ.)	Nonlinear Photonics
Bibhas Adhikari	Ph.D.(IIT Guwahati)	Applied Linear Algebra, Complex Networks, Quantum Entanglement
Baidurya Bhattacharya	Ph.D. (Johns Hopkins Univ)	Computational materials science, Risk and reliability analysis of infrastructure systems
Asish Ganguly	Ph.D.(Calcutta Univ.)	Mathematical & Theoretical Physics, Quantum Mechanics, Non-linear Evolution Equation in Real & Complex Domain, Soliton Theory and Inverse Scattering Transformation, Ordinary and partial differential equations
Rajaram Lakkaraju	Ph.D.(Univ. of Twente, Netherlands)	Multiphase flows and Fluid structure interactions
Sudhansu Sekhar Mandal	Ph.D. (IIT Kanpur)	Theoretical Condensed Matter Physics, Fractional Quantum Hall Effect, Strongly Correlated Systems, Disordered Superconductors
Nilanjan Mitra	Ph.D.(Univ. of Washington, SEATTLE)	Multiscale Multiphysics of materials, Continuum Mechanics, Molecular dynamics Density Functional Theory, High strain rate loading (shock waves and impact loading), Fluid Structure Interaction, Sandwich composite structures, Reinforced concrete structures, Earthquake loading of structures, Probabilistic modeling
Debapriya Biswas	Ph.D.(Univ. of Leeds, UK)	Functional Analysis, Lie Groups Lie Algebras and their Representation theory, Complex Analysis, Harmonic Analysis, Hyper-Complex Analysis including Clifford Algebras
T. Raja Sekhar	Ph.D.(IIT Bombay)	Quasilinear Hyperbolic System of Conservation Laws, Lie Group Analysis for Quasilinear Hyperbolic System of Partial Differential Equations, Symmetry Integration Methods for Differential Equations
Sandipan Sengupta	Ph.D.(IMSc, Chennai)	General relativity, Gravitation & Cosmology

Staff

Ujal Halder	Post Diploma in Computer App., Diploma in Electrical Engg.	Computer (Hardware/Software), Networking, Web development etc.

Project Staff

Soumya Bhattacharya	SRF	3 years

Post-Doctoral Fellow

Name	Research Area
Monodeep Chakraborty	Theoretical Condensed Matter
Ujjal Kumar Dey	High Energy Physics (Theory and Phenomenology), Astroparticle Physics, Cosmology

Arpita Maitra	Quantum Information and Quantum Cryptography
Yada Nandukumar	Heat transport in Rayleigh-Bénard Convection
Soumya Chakraborty	General Theory of Relativity, Modified Theory of Gravity, Black Hole Formation and Cosmic Censorship

Research Scholar

N.Varatharajan	Nonlinear waves and it's stability
Anjan Kumar Sarkar	Cosmology & Astrophysics
Debanjan Sarkar	Cosmology & Astrophysics
Urmimala Dey	Condensed Matter Physics
Sayan Das Gupta	Particle Physics
Amit Kumar Mondal	Biophysics
Abyaya Dhar	Non-equilibrium statistical mechanics
Sahana Das	Condensed matter physics
Sambo Sarkar	Astroparticle physics, cosmology and it's connection to Particle Physics
Tanmoy Mondal	Nonlinear dynamics, Fluid dynamics
Adrita Chakraborty	String Theory
Indranil Chakraborty	Gravitational Physics

RESEARCH AND DEVELOMPENT

Brief Descriptions on-going activities :-

Research is carried out in CTS on the following areas:

I. Astrophysics, Cosmology and Relativity
II. Dynamics and control (including nonlinear science)
III. Mathematics, Mathematical physics and Theoretical Computer Science
IV. Theoretical Condensed Matter Physics, theoretical high energy physics
V. Theoretical Chemistry

ACTIVITIES

Courses and Graduate Programme:-

- CTS is offering new advanced post-graduate courses which are relevant across departments through involvement of faculty from various departments. These courses are:

  1. Methods in molecular simulations (TS70009)
  2. Advanced dynamics (TS70002)
  3. Wave propagation in continuous media (TS70003)
  4. Advanced Mathematical techniques (TS70004)
  5. Advanced quantum theory (TS70005)
  6. Quantum mechanics and quantum computing (TS70006)
  7. Hydrodynamics at Low Reynolds Number (TS61002)
  8. Nanomechanics (TS61004)

- CTS also offering Micro-Specialization in "SIMULATION METHODS AND APPLICATIONS" for under graduate student

  1. Simulations in Collider Physics and Cosmology (TS62001)
  2. Monte Carlo Simulation in Engineering (CE60103)

- CTS is also admitting PhD students through institute fellowships, CSIR fellowships. Currently ten such students are enrolled.

CTS courses taught (2017-18):

- Quantum mechanics and quantum computing (TS70006) [Autumn]
- Advanced mathematical techniques (TS70007) [Autumn]
- Simulations in Collider Physics and Cosmology (TS62001) [Autumn]
- Hydrodynamics at low Reynolds number (TS61002) [Spring]
- Nanomechanics (TS61004) [Spring]
- Methods in molecular simulations (TS70009) [Spring]
- Wave propagation in continuous media (TS70003) [Spring]
- Quantum Methods in Molecular Simulations (TS62002) [Spring]
- Project / Term Paper (TS67001) [Spring]

Lecture Series

- Topic: Demonstration Course on the Arduino
  Lecturer: Chirag Kalelkar, Department of Mechanical Engineering
  Date: March 05 - 16, 2018

FACILITIES

- HP DL585 G7 BC NIC AMD Opteron CTO Server
- HP DL380 G9 8SFF Intel Xeon CTO Server
- A Computer Lab with 11 Core i5 desktops, 3 AMD Opteron Server, Color Laserjet duplex network printer, LaserJet duplex network printer, Scanner, Multimedia Projector, Photocopier
- Software (Mathematica, Matlab, Maple, Scilab, IFort, IDL, Aips, Comsol etc.)
- CTS library

Aims & Objectives:

- To generate and nucleate theoretical research
- To organize seminars on diverse topics
- To organize Conferences/Workshops
- To provide research facilities to students/faculties from within and outside IIT Kharagpur
- To offer postgraduate level elective courses

The Centre for Theoretical Studies (CTS) at the Indian Institute of Technology, Kharagpur was set up in 1998 in a part of the Old Building of IIT Kharagpur. Its primary goal is to generate and nucleate theoretical research on fundamental aspects of basic and engineering sciences. The role of the CTS in the academic framework of IIT Kharagpur is to bring together people of similar interests under a common umbrella. The CTS, apart from acting as a facility for research in theoretical science and engineering.

Over the last seventeen years the Centre for Theoretical Studies has grown into an academic unit which participates in teaching as well as in the research activities of the Institute. Currently 30 faculty members of the Institute are associated with CTS. In the near future, CTS will offer specialised courses for undergraduates (micro specialisation) and graduate students and also work towards facilitating individual, sponsored and interdisciplinary research in currently important areas in science and engineering.

Visitors Programme
Objective:

To provide facilities to faculty members, postdoctoral fellows and students from academic and research institutions in India and abroad to conduct research on theoretical problems in science and engineering in collaboration with faculty members of IIT Kharagpur.

COLLABORATIVE EFFORTS

The Centre for Theoretical Studies has very active collaborative research programmes in the board areas of Astrophysics and Cosmology. The research carried out under this collaboration is focused mainly on Cosmology. The collaboration with NCRA, TIFR, Pune. This focuses on the possibility of using low-frequency radio wave observations to study a variety of astrophysical processes through the 21 cm neutral hydrogen radiation, including turbulence in the interstellar medium and the early universe.

Visitors during 2017 – 2018 under CTS Visitors Programme

Name Of The Visitor	Institute/University	Associated Faculty
Dr. S.K.Pradhan	Asst. Prof., Dept. of Mathematics, VSS Univ. of Technology, Sambalpur	Prof. C.Nahak Dept. of Mathematics
Dr. Sankar Sarkar	Visiting Assistant Prof., Physics & Applied Mathematics Unit, ISI, Kolkata	Prof. S.Dey Dept. of Civil Engg.
Dr. Subrata Bera	Assistant Prof., Dept. of Mathematics, NIT, Silchar	Prof. S.Bhattacharyya Dept. of Mathematics
Dr. Biswajit Pandey	Assistant Prof., Dept. of Physics, Visva-Bharati Univ, Santiniketan	Prof. S.Bharadwaj Dept. of Physics
Mr. Mihir Ranjan Sahoo	RS, School of Basic Sciences, IIT Bhubaneswar	Prof. A.Taraphder Dept. of Physics
Ms. Saista Tabssum	Ph.D, Dept. of Applied Mathematics, ISM, Dhanbad	Prof. T.Sahoo Dept. of OENA
Ms. Manisha	RS, Dept. of Applied Mathematics, ISM, Dhanbad	Prof. T.Sahoo Dept. of OENA
Dr. M.Reza	Associate Prof., Dept. of Mathematics, NIST, Berhampur	Prof. G.P.Raja Sekhar Dept. of Mathematics
Dr. Dipankar Das	Asst. Prof., Univ. of Calcutta	Prof. T.S.Ray, Dept. of Physics
Dr. Ramnarayan Mondal	Project Researcher, The University of Tokyo	Prof. T.Sahoo Dept. of OENA
Dr. Benala Tirumala Rao	Asst. Prof., Dept. of IT, JNTUK UCEV Vizianagaram	Prof. R.Mall, Dept. of Comp. Sc.
Dr. Ashutosh Gupta	Asso. Prof., Dept. Chemistry, UP College, Varanasi	Prof. P.K.Chattaraj Dept. of Chemistry
Dr. Vamsi Krishna Narla	Assistant Professor, GITAM University, Hyderabad	Prof. G.P.Raja Sekhar Dept. of Mathematics
Dr. Narayan P Adhikary	Professor, Central Dept. of Physics, Tribhuvan University, Nepal	Prof. A. Taraphder, Dept. of Physics
Dr. Payel Das	Asst. Prof., Univ. of PES, Dehradun	Prof. N.Gnaneshwar, Dept. of Mathematics
Dr. Mrinal Jana	Asst. Prof., Univ. of PES, Dehradun	Dr. Geetanjali Panda, Dept. of Mathematics
Dr. Satyabrata Adhikari	Asst. Prof., Dept. of Mathematics, BIT, Mesra, Ranchi	Prof. Bibhas Adhikari Dept. of Mathematics
Dr. Sudip Pan	NPDF, BARC, Mumbai	Prof. P.K.Chattaraj Dept. of Chemistry
Sofia Singla	JRF, Department of Mathematics, IITRopar, Rupnagar, Punjab	Prof. T.Sahoo Dept. of OENA

Ramanababu Kaligatla	Asst. Prof., Dept. of Applied Mathematics, ISM Dhanbad	Prof. T.Sahoo Dept. of OENA
Suman Sarkar	Ph.D student, Department of Physics, Visva-Bharati	Prof. S.Bharadwaj, , Dept. of Physics
Mohammad Alamgir Hossain	Assistant Professor of Physics, University of Dhaka	Prof. A. Taraphder, Dept. of Physics

LECTURES BY VISITING EXPERTS

Seminars

1. Title: Lorenztian geometry of qubit entanglement
   Prof. Joseph Samuel
   Raman Research Institute, Bangalore
   Date:14 March, 2018

2. Title: Gravity and Decoherence
   Prof. Joseph Samuel
   Raman Research Institute, Bangalore
   Date:13 March, 2018

3. Title: High energy astrophysics at multi-wavelength
   Dr. Reetanjali Moharana
   Racah Institute of Physics, Hebrew University of Jerusalem
   Date:12 March, 2018

4. Title: Black holes and quantum stars: observer's paradise
   Prof. Pankaj S. Joshi
   Department of Astronomy and Astrophysics, TIFR, Mumbai
   Date: 27 February, 2018

5. Title: Density functional theory in parameter space: Application to dynamics in condensed phase
   Prof. Swapan K. Ghosh
   Bhabha Atomic Research Centre, Mumbai
   Date: 26 February, 2018

6. Title: From Macroscopic Superpositions to Quantum Gravity
   Prof. Sougato Bose
   Department of Physics & Astronomy, University College, London
   Date: 13 February, 2018

7. Title: Where Particle Physics Meets Cosmology: The Case of the Missing Antimatter
   Prof Anirban Kundu
   University of Calcutta
   Date: 06 February, 2018

8. Title: Integrability of two-dimensional gravity
   Prof. Amitabh Virmani
   Chennai Mathematical Institute, Chennai
   Date: 31 January, 2018

9. Title: Stability of Schwarzschild -- a talk in honor of late Prof C V Vishveshwara
   Prof. Amitabh Virmani
   Chennai Mathematical Institute, Chennai
   Date: 29 January, 2018

10. Title: The status of Higgs physics after its discovery
    Dr. Shankha Banerjee
    Institute for Particle Physics Phenomenology, Durham University
    Date: 17 January, 2018

11. Title: The Quantum and the Continuum : Einstein's Dichotomous Legacies
    Prof. Parthasarathi Majumdar
    RKM Vivekananda University, Belur Math
    Date: 13 January, 2018

12. Title: Population studies and radiation mechanism of FRBs
    Dr. Mukul Bhattacharya
    University of Texas at Austin
    Date: 11 January, 2018

13. Title: Determining effects of telescope spatial resolution with synthetic observations of galaxy simulations
    Dr. Ayan Acharyya
    Australian National University
    Date: 22 December, 2017

14. Title: How Answers Lead to Questions in Fundamental Physics
    Prof. Biswarup Mukhopadhyaya
    HRI Allahabad
    Date: 28 November 2017

15. Title: RE-VISITING NEWTON'S LAWS: POSSIBLE EXTENSION AND COSMOLOGICAL CONSEQUENCES
    Professor Amitabha Ghosh
    Senior Scientist, INSA, Former Director, IIT Kharagpur
    Date: 17 November 2017

16. Title: Hydrogen Storage on novel 2D materials
    Prof. N. Adhikari
    Central Department of Physics , Tribhuban University
    Date: 16 October, 2017

17 S.Datta Majumdar Memorial Lecture

Title: Zeta Function and Prime Numbers
Professor R. Balasubramanian
Distinguished Guest Professor and Head
Center for Mathematics, IIT Bombay
Date: November 06, 2017

RESEARCH PUBLICATIONS

In Journals (Publications involving Visitors under CTSVP, PDF and Ph.d. student of CTS only)

1. "Turbulence features in a wall-wake flow downstream of a wall-mounted vertical cylinder", Dey, Subhasish and Swargiary, Debshri and Sarkar, Sankar and Fang, Hongwei and Gaudio, Roberto, 2018, European Journal of Mechanics-B/Fluids, 69,46-61.
2. "Wave Trapping by Dual Porous Barriers Near a Wall in the Presence of Bottom Undulation", R.B. Kaligatla, Manisha and T. Sahoo, DOI: 10.1007/s11804-017-1423-9, J. Marine Sci. Appl. (2017) 16: 286-297.
3. Does information entropy play a role in the expansion and acceleration of the Universe?, Biswajit Pandey, 2017, MNRAS Letters, 471, L77
4. Can anisotropy in the galaxy distribution tell the bias?, Biswajit Pandey, 2017, MNRAS, 469, 1861
5. Testing isotropy in the Two Micron All-Sky redshift survey with information entropy, Biswajit Pandey, 2017, MNRAS, 468, 1953.

6. "Some aspects of reconstruction using a scalar field in f(T) gravity", The European Physical Journal C, December 2017, 77 : 815. Soumya Chakrabarti, Jackson Levi Said and Gabriel Farrugia.
7. "Collapsing spherical star in Scalar-Einstein-Gauss-Bonnet gravity with a quadratic coupling", The European Physical Journal C, April 2018, 7 : 296. Soumya Chakrabarti.
8. A. Maitra. Measurement Device Independent Quantum Dialogue, Quantum Information Processing, Vol-16, pp-305, 2017. (SCIE, Impact Factor 2.19) https://link.springer.com/article/10.1007/s11128-017-1757-x/fulltext.html.
9. Multi-component Fermionic Dark Matter and IceCube PeV scale Neutrinos in Left-Right Model with Gauge Unification", Debasish Borah, Arnab Dasgupta, Ujjal Kumar Dey, Sudhanwa Patra, Gaurav Tomar, JHEP 1709 (2017) 005 arXiv:1704.04138.
10. Quark mixing in an S_{3} symmetric model with two Higgs doublets, Dipankar Das, Ujjal Kumar Dey, Palash B. Pal, Phys.Rev. D96 (2017), 031701 (Rapid Communication) arXiv:1705.07784.
11. Dark Energy from pNGB Mediated Dirac Neutrino Condensate, Ujjal Kumar Dey, Tirtha Sankar Ray, Utpal Sarkar, Nucl.Phys. B928 (2018) 258-267, arXiv:1705.08484

MEETING/ WORKSHOPS/ CONFERENCES ORGANIZED BY THE UNIT

- Symposium on Electronic Structure and Dynamics, March 05, 2018.

Cryogenic Engineering

Head of the Department : Parthasarathi Ghosh

Professors

Name	Highest Degree	Research Areas
Kanchan Chowdhury	Ph.D.	Cryogenic air separation; Prevention of Fire in hospitals; Liquefied Natural Gas (LNG) transport; Liquefied Natural Gas (LNG) vaporization; Safety in oxygen-rich environment
Vutukuru Vasudeva Rao	Ph.D.	Applied Superconductivity; Vacuum Technology

Associate Professors

Parthasarathi Ghosh	Ph.D.	Cryogenic refrigeration and liquefaction; Large scale helium cryogenics; CFD of cryogenic fluid transfer systems; Cryogenic rotating equipments; Low temperature processes and equipment
Venimadhav Adyam	Ph.D.	Quantum Materials and Applications; Multiferroics and Multicaloric effect; Spintronics and magnetic field sensors; Sodium ion batteries; Thin film rechargeable batteries

Assistant Professors

Indranil Ghosh	Ph.D.	Heat Exchanges: PlateFin, Minichannel; Heat Transfer in Metal Foam; Solid Sorption Cooling; Cryosorption Storage of Hydrogen
Pavitra Sandilya	Ph.D.	
Tapas Kumar Nandi	Ph.D.	Cryogenic refrigeration; Perforated plate matrix heat exchanger; Cryogenic rocket propulsion; Thermoacoustics engine

Brief Description of on-going activities

Cryogenic Engineering Centre is engaged in teaching at UG and PG levels, sponsored research and consultancy remain at the core activity of the Centre.
The Centre is also active in Continuing Education through training engineers from industries, faculty from academic institutions, and scientists from R&D oranisations by conducting short term courses and workshops in specialised areas like Cryogenic Engineering, Air Separation, Vacuum Technology etc.

Research Areas

Applied Superconductivity; CFD of cryogenic fluid transfer systems; Cryogenic air separation; Cryogenic refrigeration; Cryogenic refrigeration and liquefaction; Cryogenic rocket propulsion; Cryogenic rotating equipments; Cryosorption Storage of Hydrogen; Heat Exchanges: PlateFin, Minichannel; Heat Transfer in Metal Foam; Large scale helium cryogenics; Liquefied Natural Gas (LNG) transport; Liquefied Natural Gas (LNG) vaporization; Low temperature processes and equipment; Multiferroics and Multicaloric effect; Perforated plate matrix heat exchanger; Prevention of Fire in hospitals; Quantum Materials and Applications; Safety in oxygen-rich environment; Sodium ion batteries; Solid Sorption Cooling; Spintronics and magnetic field sensors; Thermoacoustics engine; Thin film rechargeable batteries; Vacuum Technology;

Academic Performance

International Collaborations	02
Doctoral Degrees Awarded	01
Fellow - Professional Bodies	04
Member - Professional Bodies	07
Member - Editorial Board	01
Awards & Honours	01
Sponsored Research Projects	07
Consultancy Projects	02
Visits Abroad by Faculty Members	01
Invited Lectures by Faculty Members	14
Papers Published in Journals	32
Papers Presented in Conferences	34

Materials Science Centre

Head of the Department : Pallab Banerji

Professors

Name	Highest Degree	Research Areas
Chacko Jacob	Ph.D.	Thin film growth and epitaxy; Nanofabrication; Functional materials; Nano materials; Two Dimensional Ransition Metal Dichalcogenides
Pallab Banerji	Ph.D.	Low dimensional semiconductor structures; Solar Energy; Thermoelectric materials; MOCVD
Shanker Ram	Ph.D.	
Subhasish Basu Majumder	Ph.D.	Oxide gas sensors; Fly ash based ceramic products; Multiferroic thin fims and composites; Li and Na ion batteries; Fiber reinforced cement composites
Susanta Banerjee	Ph.D.	Polymer synthesis; Membrane separation; Hydrogen technology; Fluorinated high performance polymers; Conductive polymers

Associate Professors

Bhanu Bhusan Khatua	Ph.D.	Polymeric Supercapacitors Materials; Polymeric Piezoelectric Materials; Polymer Composite for EMI-SE Application; Polymer-Graphene/CNT/CNH Nanocomposites; Polymer processing and composites
Debabrata Pradhan	Ph.D.	Nanotechnology; Energy materials; Functional materials

Assistant Professors

Ayan Roy Chaudhuri	Ph.D., IISc Bangalore	Engineered oxide & semiconductor heterostructures; Energy materials; Rechargeable batteries; Thin film growth and epitaxy; III-V semiconductors nanostructures
Rajat Kumar Das	Ph.D., IISc Bangalore	Self-healing hydrogels; Self healing elastomers
Shibayan Roy	Ph.D., IISc Bangalore	Crystallographic texture and EBSD; Mechanical Properties; Additive and Laser based Manufacturing; Glass and glass-ceramics; Modelling of metals and ceramics

Retirement

Name	Designation	Research Areas
Shanker Ram	Professor	

Brief Description of on-going activities

Apart from teaching various courses in our M. Tech. Program on Materials Science and Engineering, we also teach undergraduate and post graduate level courses on basic materials science and advanced courses on ceramics, polymers, and electronic materials to other departments of our Institute. So far as the research activity is concerned our Centre is engaged in development and application of novel polymers, ceramics, and semiconductor materials supported by our Institute as well as by various funding agencies. In the area of polymer materials besides polymer modification we synthesize new polymers for application as electronic materials, membranes for gas separation, nanoclay and carbon nanotube reinforced composites for automobiles and other high performance specialty applications. The Centre is now also engaged in a new field of welding thermoplastics, recycling waste polymers and direct fluorination of polymers. Apart from activities on structural ceramics and refractories, we are also investigating various research issues related to the synthesis of nanostructured oxides for ceramic gas sensor, electrode materials for supercapacitors, lithium rechargeable batteries and hydrogen generation through water splitting. Novel inorganic and organic semiconductor materials are being synthesized and characterized for various electronic and optoelectronic applications. MOCVD growth of InGaP epitaxial layers and other such compound semiconductors as well as

quantum dots are also being carried out for various applications such as solar cell, etc. Another important area of research is the synthesis and characterization of wide band gap materials such as SiC, ZnO and nitride semiconductors and nanomaterials for device applications. Multi-wall carbon nanotubes are also being synthesized by CVD on silicon substrates.

Research Areas

Additive and Laser based Manufacturing; Conductive polymers; Crystallographic texture and EBSD; Energy materials; Engineered oxide & semiconductor heterostructures; Fiber reinforced cement composites; Fluorinated high performance polymers; Fly ash based ceramic products; Functional materials; Glass and glass-ceramics; Hydrogen technology; III-V semiconductors nanostructures; Li and Na ion batteries; Low dimensional semiconductor structures; Mechanical Properties; Membrane separation; MOCVD; Modelling of metals and ceramics; Multiferroic thin fims and composites; Nanofabrication; Nano materials; Nanotechnology; Oxide gas sensors; Polymer Composite for EMI-SE Application; Polymer-Graphene/CNT/CNH Nanocomposites; Polymeric Piezoelectric Materials; Polymeric Supercapacitors Materials; Polymer processing and composites; Polymer synthesis; Rechargeable batteries; Self healing elastomers; Self-healing hydrogels; Solar Energy; Thermoelectric materials; Thin film growth and epitaxy; Two Dimensional Ransition Metal Dichalcogenides;

Academic Performance

International Collaborations	16
Doctoral Degrees Awarded	08
Fellow - Professional Bodies	02
Member - Professional Bodies	05
Member - Editorial Board	04
Awards & Honours	03
Fellowships	02
Sponsored Research Projects	28
Visits Abroad by Faculty Members	05
Invited Lectures by Faculty Members	11
Papers Published in Journals	67
Papers Presented in Conferences	23

Rubber Technology

Head of the Department : Nikhil Kumar Singha

Professors

Name	Highest Degree	Research Areas
Kinsuk Naskar	Ph.D. (Kanpur)	High Performance TPV; Green Tyre Technology; Shape memory polymer blends; Polymer and rubber nanocomposites; Electron beam processing/crosslinking
Nikhil Kumar Singha		Self healing elastomers; Polymer and rubber nanocomposites; Synthetic Polymer Chemistry; Polymer Characterizations & Modifications; Fluorinated high performance polymers
Santanu Chattopadhyay		Viscoelasticity of rubbery nanocomposite; Block copolymers for smart drug delivery; TPU for guided bone tissue regeneration; Magnetically active nanocomposites; Conducting polymers as energy materials

Associate Professors

Narayan Chandra Das		Polymer and rubber nanocomposites; New generation green tire compounds; Polymeric food packaging materials; Biodegradable polymers; Carbon dots & nanomaterials for sensors

Emeritus Faculty

Name	Designation	Research Areas
Anil Kumar Bhowmick	Professor	

Promotion

Kinsuk Naskar	Professor	High Performance TPV; Green Tyre Technology; Shape memory polymer blends; Polymer and rubber nanocomposites; Electron beam processing/crosslinking
Narayan Chandra Das	Associate Professor	Polymer and rubber nanocomposites; New generation green tire compounds; Polymeric food packaging materials; Biodegradable polymers; Carbon dots & nanomaterials for sensors
Santanu Chattopadhyay	Professor	Viscoelasticity of rubbery nanocomposite; Block copolymers for smart drug delivery; TPU for guided bone tissue regeneration; Magnetically active nanocomposites; Conducting polymers as energy materials

Research Areas

Biodegradable polymers; Block copolymers for smart drug delivery; Carbon dots & nanomaterials for sensors; Conducting polymers as energy materials; Electron beam processing/crosslinking; Fluorinated high performance polymers; Green Tyre Technology; High Performance TPV; Magnetically active nanocomposites; New generation green tire compounds; Polymer and rubber nanocomposites; Polymer Characterizations & Modifications; Polymeric food packaging materials; Self healing elastomers; Shape memory polymer blends; Synthetic Polymer Chemistry; TPU for guided bone tissue regeneration; Viscoelasticity of rubbery nanocomposite;

Academic Performance

New Acquisitions	02
International Collaborations	03
Doctoral Degrees Awarded	10
Fellow - Professional Bodies	02
Member - Professional Bodies	07
Member - Editorial Board	08
Fellowships	03
Sponsored Research Projects	25
Consultancy Projects	11
Visits Abroad by Faculty Members	04
Invited Lectures by Faculty Members	10
Seminars, Conferences and Workshops Organized	02
Short-Term Courses, Training Programmes and Workshops organised	02
Papers Published in Journals	62
Papers Presented in Conferences	11

Rural Development

Head of the Department : Nirupama Mallick

Professors

Name	Highest Degree	Research Areas
Pradip Kumar Bhowmick	Ph.D. (Kanpur)	Rural and Tribal Development Planning

Assistant Professors

Piyush Kumar Singh		Agricultural Production and Management; Pricing & Risk management in Agriculture; AgriValue Chain Financing and Management; Small and Medium Enterprises Financing; Farm Performance Management
Somnath Ghosal		Rural Development and Regional Planning; Ethnographic and Qualitative Research; Aboriginal Culture, Believes & Practices; Biodiversity and Environment; Community Forestry

Research Areas

Agricultural Production and Management; AgriValue Chain Financing and Management; Farm Performance Management; Pricing & Risk management in Agriculture; Rural and Tribal Development Planning; Small and Medium Enterprises Financing;

Academic Performance

Member - Professional Bodies	04
Member - Editorial Board	01
Sponsored Research Projects	03
Invited Lectures by Faculty Members	02
Seminars, Conferences and Workshops Organized	02
Papers Published in Journals	02
Papers Presented in Conferences	05

Steel Technology Centre

Head of the Department : Surjya Kanta Pal

Brief Description of on-going activities

The centre has got the state of the art facilities on different types of metal working processes, such as instrumented rolling mills, forging press, different types of furnaces, characterization setups, optical microscopes, tensile testing instruments etc.

The centre is actively doing industrial research with iron and steel making organizations such as Tata Steel, and also with R&D laboratory of Iron and Steel making.

Academic School

G.S Sanyal School of Telecommunication

Head of the Department : Raja Datta

Professors

Name	Highest Degree	Research Areas
Saswat Chakrabarti	Ph.D.	

Associate Professors

Goutam Das	Ph.D.	
Suvra Sekhar Das	Ph.D.	

Assistant Professors

Aneek Adhya	Ph.D.	Elastic optical networks; Computer Communication and Networks; Hybrid Wireless-Optical Access Networks; Physical Layer Impairment Issues
Debarati Sen	Ph.D.	5G Communications; Millimeter Wave Communications; Large MIMO Systems; Cloud RAN; Green Communications
Parthajit Mohapatra	Ph.D.	Physical Layer Secrecy; Multiuser Information Theory; Signal Processing for Communication; Union of networking & information theory

New Faculty Appointment

Name	Designation	Research Areas
Aneek Adhya	Assistant Professor	Elastic optical networks; Computer Communication and Networks; Hybrid Wireless-Optical Access Networks; Physical Layer Impairment Issues

Promotion

Aneek Adhya	Assistant Professor	Elastic optical networks; Computer Communication and Networks; Hybrid Wireless-Optical Access Networks; Physical Layer Impairment Issues
Goutam Das	Associate Professor	

Brief Description of on-going activities

1. Developed a Mobile App named “NerQuake” for Telecommunication infrastructure that provides the mobile tower locations which are under danger due to natural disaster in North-East part of India.
2. Basic Test bed for Cloud Radio Access Network (C-RAN) with wireless access is developed and tested.
3. Millimeter wave communications, Massive MIMO systems, C-RAN, Visible light communication (VLC), High speed Vehicular Communication Network.
4. Techno-economic analysis of Wireless and Optical Access Networks
5. Flexible and Secure optical access network design
6. Design and performance analysis of elastic optical network simulation environment using National Knowledge Network infrastructure, India.
7. Performance Analysis of Wireless Communication system
8. Energy harvesting based communications
9. Physical Layer Based Secret Key Generation under User Anonymity

Patents

1. Method and System for joint Training Sequences design for correlated Channel and Frequency Offset Estimation – Patent Filed
2. A Method and System for Frequency Estimation using Modified MUSIC with Reduced Sample Size – Patent Applied
3. Shashank Tiwari and Suvra Sekhar Das, A Generalized FFT-IFFT Structure Based Frequency Division Multiplexing Transceiver, US Patent, Filled on 20-3-2018, Application Number 15926041.
4. Shashank Tiwari and Suvra Sekhar Das, A Generalized FFT-IFFT Structure Based Frequency Division Multiplexing
Transceiver, Indian Patent, Filled on 3-12-2017, Application Number 46183/KOL/2017.

Research Areas

5G Communications; Cloud RAN; Computer Communication and Networks; Elastic optical networks; Green Communications; Hybrid Wireless-Optical Access Networks; Large MIMO Systems; Millimeter Wave Communications; Physical Layer Impairment Issues;

Academic Performance

New Acquisitions	01
International Collaborations	02
Lectures by Visiting Experts	02
MS Degrees Awarded	02
Fellow - Professional Bodies	01
Member - Professional Bodies	02
Awards & Honours	01
Sponsored Research Projects	05
Consultancy Projects	01
Visits Abroad by Faculty Members	01
Invited Lectures by Faculty Members	02
Papers Published in Journals	06
Papers Presented in Conferences	07

Rajendra Mishra School of Engg Entrepreneurship

Head of the Department : Partha Pratim Das

Associate Professors

Name	Highest Degree	Research Areas
Pranab Kumar Dan	Ph.D.	

Assistant Professors

Basab Chakraborty	Ph.D.	Energy materials; Rechargeable batteries; Smart Grid and Renewable Integration; Electric Vehicles: Powertrain & Battery Management; Bio-energy & Development of Relevant Materials
Bhaskar Bhowmick	Ph.D.	Social Entrepreneurship; Entrepreneurship Development; Firm Environment and Leadership; Technology and Sustainable Development; Start-up Ecosystem
Mamoni Banerjee	Ph.D.	Phytochemicals, Bio pesticides; Pesticidal bio-efficacy; Rural Technology Development; Health Care Management; Entrepreneurship
Manoj Kumar Mondal	Ph.D.	
Prabha Bhola	Ph.D.	Entrepreneurship Development; Financial Economics and related Studies; Product Analytics and Modelling
Ram Babu Roy	Ph.D.	Health Care Management; Complex and Social Networks; Big Data Analytics
Titas Bhattacharjee (Rudra)	Ph.D.	Financial Management; Corporate Governance; Entrepreneurship; Agricultural Economics; Corporate Reporting

Promotion

Name	Highest Degree	Research Areas
Mamoni Banerjee	Ph.D.	Phytochemicals, Bio pesticides; Pesticidal bio-efficacy; Rural Technology Development; Health Care Management; Entrepreneurship

Brief Description of on-going activities

Global Entrepreneurship Summit (GES),held during 2nd to 4th February, 2018, as the biggest entrepreneurial platforms for New- age Entrepreneurs organized by e-Cell.Edu-Preneurship workshop was organized by the school on 4thFebruary, 2018 in the GES platform in collaboration with National Digital Library of India,discussing its open technologies and data to develop appropriate products, provide value-added services or develop Secondary Platform Solutions.
The Analytics Lab hosted Prof. Paul Lillrank, Professor of Quality and Service Management, Aalto University, Finland and Dr. Paulus Torkki, Research Director, HEMA Institute, Finland for discussion with faculty and research scholars in the domain of healthcare service design during January 22-27, 2018.
The school has initiated the Micro-credit course in Innovation, Disruption and Exponential Development in Medical Technologies with Foreign faculty Prof. Michael Friebe from Otto-von-Guericke-University in Magdeburg, Germany during 3rd to 7th February, 2018.
The Product Analytics and Modelling Lab hosted two Workshops on Innovation and Product Engineering in collaboration with Pepperdine University, USA withProf. Larry Cox and IP creation and protection featuring Workshop on Product Engineering with Kameshwar Eranki(Promoter, Vajrasoft Inc., USA), bringing the faculty and students sharing knowledge on possible technology driven IP creation in near future.

Research Areas

Agricultural Economics; Big Data Analytics; Bio-energy & Development of Relevant Materials; Complex and Social Networks; Corporate Governance; Corporate Reporting; Electric Vehicles: Powertrain & Battery Management; Energy materials; Entrepreneurship; Entrepreneurship Development; Financial Economics and related Studies; Financial Management; Firm Environment and Leadership; Health Care

Management; Pesticidal bio-efficacy; Phytochemicals, Bio pesticides; Product Analytics and Modelling; Rechargeable batteries; Rural Technology Development; Smart Grid and Renewable Integration; Social Entrepreneurship; Start-up Ecosystem; Technology and Sustainable Development;

Academic Performance

New Acquisitions	01
International Collaborations	03
Lectures by Visiting Experts	03
Doctoral Degrees Awarded	04
Member - Professional Bodies	03
Member - Editorial Board	05
Awards & Honours	01
Sponsored Research Projects	12
Visits Abroad by Faculty Members	03
Invited Lectures by Faculty Members	05
Seminars, Conferences and Workshops Organized	02
Short-Term Courses, Training Programmes and Workshops organised	01
Papers Published in Journals	08
Papers Presented in Conferences	17

Rajiv Gandhi School of Intellectual Property Law

Head of the Department : *Padmavati Manchikanti*

Professors

Name	Highest Degree	Research Areas
Dipa Dube	Ph.D.	
Indrajit Dube	Ph.D.	
Padmavati Manchikanti	Ph.D.	
Raju K D	Ph.D.	International Law; Intellectual property law; International Economic and Trade Law

Associate Professors

Uday Shankar	Ph.D.	Constitutional Law; Socio-Economic Rights; Energy Law; Labour and Industrial Law

Assistant Professors

Arindam Basu	Ph.D.	
Balraj Kaur Sidhu	Ph.D.	International Law; Environmental Law; Courts and Tribunals; Sexual and Gender based Violence; Internet Governance
Gaurav Shukla	Ph.D.	
Shreya Matilal	Ph.D.	
S R Subramanian	Ph.D. , Nagpur	

New Faculty Appointment

Name	Designation	Research Areas
Prabuddha Ganguli	Assistant Professor	

Promotion

Balraj Kaur Sidhu	Assistant Professor	International Law; Environmental Law; Courts and Tribunals; Sexual and Gender based Violence; Internet Governance

Resignation

Khushal Vibhute	Professor

Brief Description of on-going activities

The School undertakes research in traditional as well as emerging areas of the interface of technology and law. The School also contributes in advancing interdisciplinary research by taking benefit of the Institute's academic ecosystem. The major areas of research in the school includes: Biodiversity Law, Bioenergy-IP and commercialization, Competition Policy & Law, Constitutional Law, Corporate & International Taxation, Corporate Law & Governance, Courts and Tribunals, Crimes against Women, Direct Taxation, Energy Law, Environmental Governance, Environmental Law, Gender Violence, Implementation of IP Laws, Indirect Taxation, Intellectual property analytics, Intellectual property audit, valuation, Intellectual property law, Intellectual property management, International Commercial Arbitration, International Economic and Trade Law, International Human Rights Law, International Investment Law, International Law, Internet Governance, Labour and Industrial Law, National & International Tax Policy, Plant secondary metabolic pathways, Police & Prison, Procedural Laws & Land Laws, Recombinant Drug Regulation and IP aspect, Sexual and Gender based Violence, Socio-Economic Rights, Technology transfer, Victims of Crimes.

The School takes pride in reiterating that it has secured 1st position in legal research in the recently announced ranking of NIRF, a MHRD, Government of India initiative, with overall 4th rank in the country.

The School currently offers LLB, LLM and hD programmes.

Number of Ph.D students registered in Autumn 2018: 6
Number of LL.B students registered in Autumn 2018: 34
Number of LL.M students registered in Autumn 2018: 15

Research Areas

Constitutional Law; Courts and Tribunals; Energy Law; Environmental Law; Intellectual property law; International Economic and Trade Law; International Law; Internet Governance; Labour and Industrial Law; Sexual and Gender based Violence; Socio- Economic Rights;

Academic Performance

Doctoral Degrees Awarded	03
Member - Professional Bodies	04
Member - Editorial Board	01
Sponsored Research Projects	04
Visits Abroad by Faculty Members	03
Invited Lectures by Faculty Members	06
Seminars, Conferences and Workshops Organized	03
Papers Published in Journals	12
Papers Presented in Conferences	01

Ranbir and Chitra Gupta School of Infrastructure Design and Mngt.

Head of the Department : *Bhargab Maitra*

Assistant Professors

Name	Highest Degree	Research Areas
Ankhi Banerjee	Ph.D. (Kanpur)	Residential Location Choice; Peri-urban dynamics; Urban Planning: Utilities, Services; Sustainable Community Planning; Housing Affordability
Arkopal Kishore Goswami	Ph.D.	Urban Transport Planning and Mgmt; Preservation of Roadway Infrastructure; Performance Management; Multimodal Transport Planning
Bharath Haridas Aithal	Ph.D.	Urban Planning: Utilities, Services; Urban design; Urban informatics; Disaster management; Satellite Image processing
Swati Maitra	Ph.D.	Transport Infrastructure; Retrofitting and Rehabilitation; Concrete and Cementitious materials; Road Construction site safety

Promotion

Arkopal Kishore Goswami	Assistant Professor	Urban Transport Planning and Mgmt; Preservation of Roadway Infrastructure; Performance Management; Multimodal Transport Planning
Changduk Kong	Assistant Professor	Transport Infrastructure; Retrofitting and Rehabilitation; Concrete and Cementitious materials; Road Construction site safety

Research Areas

Concrete and Cementitious materials; Disaster management; Housing Affordability; Multimodal Transport Planning; Performance Management; Peri-urban dynamics; Preservation of Roadway Infrastructure; Residential Location Choice; Retrofitting and Rehabilitation; Road Construction site safety; Satellite Image processing; Sustainable Community Planning; Transport Infrastructure; Urban design; Urban informatics; Urban Planning: Utilities, Services; Urban Transport Planning and Mgmt; marine structures;

Academic Performance

New Acquisitions	01
Doctoral Degrees Awarded	04
Fellow - Professional Bodies	09
Member - Professional Bodies	03
Sponsored Research Projects	24
Visits Abroad by Faculty Members	03
Invited Lectures by Faculty Members	05
Seminars, Conferences and Workshops Organized	01
Short-Term Courses, Training Programmes and Workshops organised	01
Papers Published in Journals	18
Papers Presented in Conferences	46

School of Bio Science

Head of the Department : Amit Kumar Das

Assistant Professors

Name	Highest Degree	Research Areas
Abhijit Das	Ph.D., Tata Institute of Fundamental Research	Developmental neurobiology; Neuro-epigenetics; Ageing and neuro-degenerative disorders
Arindam Mondal	Ph.D.,University of Calcutta	Molecular Virology; Biochemistry
Dibyendu Samanta	Ph.D.	Protein engineering; Immune receptors; Cell adhesion molecules; Protein-protein/nucleic acid interaction
Ritobrata Goswami	Ph.D., Indiana University	Immunology; T cell biology
Soumya De	Ph.D.	NMR Spectroscopy; Structural Biology; Biophysics; Signal transduction and gene expression; Protein engineering

Brief Description of on-going activities

The School is running a joint M.Sc-Ph.D program in Chemical and Molecular Biology in collaboration with IACS Kolkata.
The School focuses on research activities in the field of Structural Biology, Protein engineering, Molecular Virology, Immunology
and Neurobiology. The main focus is on understanding of molecular mechanism of disease biology.
Currently, 25 students are pursuing research work for their PhD degree.
The School also offers microspecialization in ' Drug discovery'.
Science of living system, a common course for all undergraduate students, is offered by the School.

Research Areas

Ageing and neuro-degenerative disorders; Biochemistry; Biophysics; Cell adhesion molecules; Developmental neurobiology; Immune receptors; Immunology; Molecular Virology; Neuro-epigenetics; NMR Spectroscopy; Protein engineering; Protein- protein/nucleic acid interaction; Signal transduction and gene expression; Structural Biology; T cell biology;

Academic Performance

New Acquisitions	01
Doctoral Degrees Awarded	04
Fellow - Professional Bodies	09
Member - Professional Bodies	03
Sponsored Research Projects	24
Visits Abroad by Faculty Members	03
Invited Lectures by Faculty Members	05
Seminars, Conferences and Workshops Organized	01
Short-Term Courses, Training Programmes and Workshops organised	01
Papers Published in Journals	18
Papers Presented in Conferences	46

Energy Science and Engineering

Head of the Department : *Suneel Kumar Srivastava*

Assistant Professors

Name	Highest Degree	Research Areas
Amit Ghosh	Ph.D.,IISc Bangalore	Metabolic Engineering; Quantitative Metabolic Systems Biology; Synthetic Biology; Molecular Dynamics Simulation; Bio-Energy
Sreeraj Puravankara	Ph.D., Westphalia-Wilhelms University, Germany	

New Faculty Appointment

Trilok Singh	Assistant Professor
Vanteru Mahendra Reddy	Assistant Professor

Visiting Faculty

Vanteru Mahendra Reddy	Assistant Professor

Research Areas

Bio-Energy; Metabolic Engineering; Molecular Dynamics Simulation; Quantitative Metabolic Systems Biology; Synthetic Biology;

Academic Performance

New Acquisitions	01
Member - Professional Bodies	01
Fellowships	01
Sponsored Research Projects	04
Papers Published in Journals	02

Environmental Science and Engineering

Head of the Department : Makarand Madhao Ghangrekar

New Faculty Appointment

Name	Designation	Research Areas
Binay Kanti Dutta	Assistant Professor	

Visiting Faculty

Binay Kanti Dutta	Assistant Professor	

Research and Development Activities

- Small scale and sustainable household grey water recycling (S3HWR) (PROJECT NO.: 5670) (SAQ). MHRD,Department Of Higher Education, New Delhi, Ministry of Urban Development, GoI,Niman Bhawan, New Delhi- 110 108, F. No.: 41-2/2015-T.S.-I (Pt.), Dt. 09-01-2016; 36.0 Months w.e.f. 05-05-2017, Funding Rs. 3192,000.00.
- Develop an energy - efficient combined process of microbial fuel cell (MFC) & membrane bioreactor (MBR) for high efficiency & reliable treatment of organic wastewater (OER). Society for Research and Initiatives for Sustainable Technologies and Institutions (SRISTI),AES Boys Hostel Campus, Near Gujrat University Library and SBI, Navrangpura, Ahmedabad - 380 009, Gujrat; BIRAC SRISTI PMU - 2016/014 , Dt. 04-04-2016; Duration: 24.0 Months w.e.f. 16-09-2016; Amount Rs. 1500000.00.
- Bioelectric toilet: a novel approach for treatment of human waste & generating onsite electricity for lighting toilets (TNO). Department of Science and Technology (DST), Government of India. DST/TSG/NTS/2015/99 , Dt. 23-11-2016; Duration: 36.0 Months w.e.f. 23-11-2016; Funding Rs. 3594,360.00.
- Intergrated MFC-MBR system using low cost multifunctional ceramic membrane for efficient wastewater treatment and electricity recovery (IUW) funded by DBT under Inno-Indigo project. Funding 96.11 Lakhs, March 2016-March 2019 (bt/iN/inno-indigo/28/mmg/2015-16).

Laurels and Distinctions awarded to faculty

Excellent paper award and Euro 2500 Cash prize for the paper titled "Domiciliary management of mango waste for power production using biological fuel cell-a green technology" authored by Iti Sharma and Makarand Madho Ghangrekar in the conference 23rd World Energy Congress, by the Scientific Committee and the experts of World Energy Council. 9-13 October, 2016, Istanbul, Turkey.

School of Medical Science and Technology

Head of the Department : Suman Chakraborty

Professors

Name	Highest Degree	Research Areas
Jyotirmoy Chatterjee	Ph.D.	Oral Pre-cancer Therapeutic Patch Dev.; Wound Healing & Honey; Stem cells Diffe. & Honey based Matrix; Multi-modal Imaging on Oral cancer Diag; Lung Cancer & Diabetic Retinopathy Diag
Koel Chaudhury	Ph.D.	Non-invasive biomarkers and sensors; Metabolomics; Nanomedicine; Women's health; Respiratory disorders
Mahitosh Mandal	Ph.D.	Cancer Drug Discovery; Chemoresistance; Cell Signaling; Cancer Stem Cell
Manjunatha Mahadevappa	Ph.D.	Biomedical instrumentation; Bio-Robotics and Neurorehabilitation; Neural Engineering & Retinal Prosthesis; Biomedical Signal Processing; Functional Electrical Stimulation
Sangeeta Das Bhattacharya	Ph.D.	
Santanu Dhara	Ph.D.	
Soumen Das	Ph.D.	BioMEMS; Microfluidics; Sensors & Actuators; MEMS and Microsystems; Biomedical devices, Flexible electronics

Associate Professors

Analava Mitra	Ph.D.	
Chandan Chakraborty	Ph.D.	Biomedical Data Analytics; Digital Pathology; Medical Image Analysis; Machine Learning for Medical Imaging

Assistant Professors

Gayatri Mukherjee	Ph.D.	Immunology; Development of Immunetherapeutics; Commensal Microbiota in Cancer; Immune modulation in atherosclerosis
Nishant Chakravorty	Ph.D.	Regenerative Medicine; Clinical Research; Bone Regeneration & Bone Tissue Engineering
Praphulla Chandra Shukla	Ph.D.	Atherosclerosis and non-coding RNAs; Immune interaction in heart and vessels; Cardiac developmental biology; Heart failure and vascular biology

Promotion

Name	Designation	Research Areas
Jyotirmoy Chatterjee	Professor	Oral Pre-cancer Therapeutic Patch Dev.; Wound Healing & Honey; Stem cells Diffe. & Honey based Matrix; Multi-modal Imaging on Oral cancer Diag; Lung Cancer & Diabetic Retinopathy Diag
Koel Chaudhury	Professor	Non-invasive biomarkers and sensors; Metabolomics; Nanomedicine; Women's health; Respiratory disorders
Mahitosh Mandal	Professor	Cancer Drug Discovery; Chemoresistance; Cell Signaling; Cancer Stem Cell
Manjunatha Mahadevappa	Professor	Biomedical instrumentation; Bio-Robotics and Neurorehabilitation; Neural Engineering & Retinal Prosthesis; Biomedical Signal Processing; Functional Electrical Stimulation

Sangeeta Das Bhattacharya	Professor	
Santanu Dhara	Professor	
Soumen Das	Professor	BioMEMS; Microfluidics; Sensors & Actuators; MEMS and Microsystems; Biomedical devices, Flexible electronics

Research Areas

Atherosclerosis and non-coding RNAs; Biomedical devices, Flexible electronics; Biomedical instrumentation; Biomedical Signal Processing; BioMEMS; Bio-Robotics and Neurorehabilitation; Bone Regeneration & Bone Tissue Engineering; Cancer Drug Discovery; Cancer Stem Cell; Cardiac developmental biology; Cell Signaling; Chemoresistance; Clinical Research; Commensal Microbiota in Cancer; Development of Immunetherapeutics; Functional Electrical Stimulation; Heart failure and vascular biology; Immune interaction in heart and vessels; Immune modulation in atherosclerosis; Immunology; Lung Cancer & Diabetic Retinopathy Diag; MEMS and Microsystems; Metabolomics; Microfluidics; Multi-modal Imaging on Oral cancer Diag; Nanomedicine; Neural Engineering & Retinal Prosthesis; Non-invasive biomarkers and sensors; Oral Pre-cancer Therapeutic Patch Dev.; Regenerative Medicine; Respiratory disorders; Sensors & Actuators; Stem cells Diffe. & Honey based Matrix; Women's health; Wound Healing & Honey;

Academic Performance

International Collaborations	07
Doctoral Degrees Awarded	13
MS Degrees Awarded	02
Fellow - Professional Bodies	02
Member - Professional Bodies	10
Member - Editorial Board	06
Awards & Honours	03
Fellowships	01
Sponsored Research Projects	41
Consultancy Projects	01
Technology Transferred	01
Visits Abroad by Faculty Members	03
Invited Lectures by Faculty Members	10
Seminars, Conferences and Workshops Organized	03
Short-Term Courses, Training Programmes and Workshops organised	01
Papers Published in Journals	55
Papers Presented in Conferences	11

Nano Science and Technology

Head of the Department : Rahul Mitra

Brief Description of on-going activities

School of Nano-Science and Technology does not have any core faculty members. There are two DST inspire faculty members only, who probably need not submit self-apprisal. The faculty members of various departments serve as adjunct faculty members of SNST.

Research Areas

Group-IV and III-V semiconductor nanostructures for electronic and photonic devices; Polymer and rubber based nanocomposites; Intermetallics, bulk amorphous alloys and nanocomposites; MEMS and microsystems, Nano-electronics, Nano-scale biosystems engineering; Carbon nanotubes, graphene, metallic nanowires, and nano- particles; Biocompatible nanostructures for bioimaging & diagnostics, drug delivery, biosensor; GMR & magneto-electric and magnetocaloric materials; Nanostructured/nanocomposite thin films and coatings; Nanofluids and Mesoporous Solids; Polymer thin film instability, self-organization and meso-mechanics; Oxide gas sensors, Lithium ion rechargeable batteries; and Computational nanostructures.

Doctoral Degrees Awarded

Ravindra Kumar Jha: TWO DIMENSIONAL TUNGSTEN - DISULFIDE NANOSHEETS FOR SENSING APPLICATIONS (Supervisor(s) : ., Prasanta Kumar Guha)

School of Water Resources

Head of the Department : Ashok Kumar Gupta

Associate Professors

Name	Highest Degree	Research Areas
Bhabagrahi Sahoo	Ph.D.	Integrated River Basin Management; Real-time flood modeling and forecasting; Surface water - Groundwater interaction; Meso-scale Solute Transport Dynamics; Remote Sensing in Hydroinformatics

Assistant Professors

Manoj Kumar Tiwari	Ph.D.	Water & Wastewater Treatment / Recycling; Bioremediation and Biodegradation; Fate and Transport of Contaminants; Smart Water Distribution Systems; Contaminated Site Management
Renji Remesan	Ph.D.	Land surface processes & environment; Climate Impacts on Water Resources; Catchment modelling and management; Hydroinformatics

Research Areas

Bioremediation and Biodegradation; Catchment modelling and management; Climate Impacts on Water Resources; Contaminated Site Management; Fate and Transport of Contaminants; Hydroinformatics; Integrated River Basin Management; land surface processes & environment; Meso-scale Solute Transport Dynamics; Real-time flood modeling and forecasting; Remote Sensing in Hydroinformatics; Smart Water Distribution Systems; Surface water - Groundwater interaction; Water & Wastewater Treatment / Recycling;

Academic Performance

New Acquisitions	01
International Collaborations	05
Doctoral Degrees Awarded	02
Fellow - Professional Bodies	01
Member - Professional Bodies	02
Member - Editorial Board	02
Awards & Honours	01
Fellowships	02
Sponsored Research Projects	09
Consultancy Projects	03
Invited Lectures by Faculty Members	06
Short-Term Courses, Training Programmes and Workshops organised	01
Papers Published in Journals	07
Papers Presented in Conferences	06

Subir Chowdhury School of Quality and Reliability

Head of the Department : *V N Achutha Naikan*

Professors

Name	Highest Degree	Research Areas
Sanjay Kumar Chaturvedi	Ph.D.	FMEA/FMECA, Reliability Apportionment; Network Reliability; Reliability based Design; Reliability data Analysis, Maintenance; SystemReliability Modelling and Analysis
V N Achutha Naikan		Reliability Engineering; Condition-Based Maintenance; Quality Control; Simulation

Associate Professors

Neeraj Kumar Goyal		Network Reliability; Accelerated Life Testing; Probabilistic Safety Assessment; Reliability Modeling; Software Reliability

Assistant Professors

Monalisa Sarma	Ph.D.

Visiting Faculty

Name	Designation	Research Areas
Amitava Mitra	Professor	
Rajiv Nandan Rai	Assistant Professor	Reliability Engineering; Reliability Prediction & Optimization; Human Factors Engineering; Probabilistic Safety Assessment; RAMS analysis

Retirement

Amitava Mitra	Professor

Brief Description of on-going activities

1. The M. Tech. new course curriculum of the school has been approved and is to be followed from 2018-19.
2. Micro-specialization in Quality Engineering for undergraduate students is going to be offered from the session 2018-19.
3. Development of Quality Engineering Lab is under progress.
4. The School is currently focusing its research in the areas of fault diagnosis, risk analysis in Indian Truck Fleet Industry, MANET Reliability, Reliability of Wireless Sensors Networks, Maintenance Cost Optimization, Human Reliability, Software reliability, RAMS for Railways, Process Integration Reliability for Space ystems.
5. Development of outcome based course module(s) tailored to specific industry needs are underway.
6. The School is soon be going to be shifted to its new location for which plans are underway.

Research Areas

Accelerated Life Testing; Condition-Based Maintenance; FMEA/FMECA, Reliability Apportionment; Network Reliability; Probabilistic Safety Assessment; Quality Control; Reliability based Design; Reliability data Analysis, Maintenance; Reliability Engineering; Reliability Modeling; Simulation; Software Reliability; SystemReliability Modelling and Analysis;

Academic Performance

International Collaborations	03
Doctoral Degrees Awarded	03
Fellow - Professional Bodies	01
Member - Professional Bodies	05
Member - Editorial Board	03
Awards & Honours	01
Sponsored Research Projects	09
Consultancy Projects	01
Invited Lectures by Faculty Members	02
Seminars, Conferences and Workshops Organized	04
Short-Term Courses, Training Programmes and Workshops organised	02
Papers Published in Journals	18
Papers Presented in Conferences	04

Vinod Gupta School of Management

Head of the Department : Prabina Rajib

Professors

Name	Highest Degree	Research Areas
Gautam Sinha	Ph.D.	
Prabina Rajib	Ph.D.	
Sangeeta Sahney	Ph.D.	Marketing managment; Consumer Behavior; Services Marketing; Organizational Behavior; Quality Management

Associate Professors

Arun Kumar Misra	Ph.D.	
Biplab Datta	Ph.D.	Leadership; Social Media Marketing [eWOM]; Customer Relationship Management; Services Marketing
Chandra Sekhar Mishra	Ph.D.	Financial Management; Financial Reporting and Analysis; Mergers and Acquisitions; Earnings Management; Business Valuation
Parama Barai	Ph.D.	
Ranjan Chaudhuri	Ph.D.	Industrial Buying Behaviour; Agricultural Production and Management; Supply Chain Management and Logistics
Rudra Prakash Pradhan	Ph.D.	Banking and Decisions making; Financial Economics and related Studies; Statistical Decision Modeling; Public Economics & Policy
Sujoy Bhattacharya	Ph.D.	
Susmita Mukhopadhyay	Ph.D.	Spirituality and Work place happiness; People Analytics; Behavioural issues in Microfinance; Leadership; Ethics

Assistant Professors

Abhijeet Chandra	Ph.D.	Corporate Finance; Financial Economics and related Studies; Behavioral Finance; Financial Markets and Risk Management; Asset Pricing
Amit Upadhyay	Ph.D.	Operations Research (OR); Transportation and Logistics Management; Revenue Optimization; Production Planning
Aradhna Malik	Ph.D.	
Barnali Nag	Ph.D.	
Saini Das	Ph.D.	Information Security; Information security risk management; Management Information Systems; E-commerce Technology and Applications; Cyber ethics : security and privacy
Srabanti Mukherjee	Ph.D., IIESc&T, Shibpur	Consumer Behavior; Social Media Marketing [eWOM]; Services Marketing; Healthcare and Higher Education; Bottom of Pyramid and Rural Marketing
Tuheena Mukherjee	Ph.D.	Human Resource Management; Cognitive Studies, Organizational Behavior; Ethics

New Faculty Appointment

Name	Highest Degree	Research Areas
Amit Upadhyay	Assistant Professor	Operations Research (OR); Transportation and Logistics Management; Revenue Optimization; Production Planning
Ranjan Chaudhuri	Associate Professor	Industrial Buying Behaviour; Agricultural Production and Management; Supply Chain Management and Logistics

Sanjib Chowdhury	Associate Professor

Visiting Faculty

Kunal Kanti Ghosh	Professor
Sanjib Chowdhury	Professor
Swagato Chatterjee	Assistant Professor

Promotion

Ranjan Chaudhuri	Associate Professor

Research Areas

Agricultural Production and Management; Asset Pricing; Behavioral Finance; Behavioural issues in Microfinance; Big Data Analytics; Bottom of Pyramid and Rural Marketing; Business Valuation; Cognitive Studies, Organizational Behavior; Consumer Behavior; Corporate Finance; Customer Relationship Management; Cyber ethics : security and privacy; Earnings Management; E- commerce Technology and Applications; Ethics; Financial Economics and related Studies; Financial Management; Financial Markets and Risk Management; Financial Reporting and Analysis; Game Theory; Healthcare and Higher Education; Human Resource Management; Industrial Buying Behaviour; Information Security; Information security risk management; Leadership; Management Information Systems; Marketing managment; Mergers and Acquisitions; Operations Research (OR); Organizational Behavior; People Analytics; Predictive Analytics; Production Planning; Quality Management; Revenue Optimization; Services Marketing; Social Media Marketing [eWOM]; Spirituality and Work place happiness; Statistical Decision Modeling; Supply Chain Management and Logistics; Transportation and Logistics Management;

Academic Performance

Doctoral Degrees Awarded	07
MS Degrees Awarded	01
Fellow - Professional Bodies	01
Member - Professional Bodies	14
Member - Editorial Board	06
Awards & Honours	05
Fellowships	01
Sponsored Research Projects	08
Consultancy Projects	01
Visits Abroad by Faculty Members	02
Invited Lectures by Faculty Members	08
Seminars, Conferences and Workshops Organized	04
Short-Term Courses, Training Programmes and Workshops organised	23
Papers Published in Journals	35
Papers Presented in Conferences	24

Centers of Excellence

Deysarkar Centre of Excellence in Petroleum Engineering

Head of the Department : Anindya Sarkar

Assistant Professor

Name	Highest Degree	Research Areas
Ankur Roy	Ph.D	Petroleum Reservoir Analogs, Geostatistics, Fractal Models in Geology, Fractured Reservoirs
Aditya Vyas	Ph.D	Reservoir Simulation, History Matching, Hydraulic Fracturing Optimization, Data Analytics

New Faculty Appointment

Name	Designation	Research Areas
Ankur Roy	Assistant Professor	
Aditya Vyas	Assistant Professor	

Brief Description of on-going activities

- Establishing state-of-art reservoir simulation and geo-modeling laboratory with industry support. *Industry software* including ECLIPSE, INTERSECT, PETREL, OLGA, MANGROVE, TECHLOG, KAPPA ECRIN, NEXUS, DECISION SPACE.
- Setting up of state-of-art drilling and fracturing fluids' laboratory. *API & research equipments*: oil-field viscometer, filtre press, fluid mixers, ageing cells, high-temperature viscometers, digital retort, mud balance, digital viscometer, ageing oven.
- Student exchange program with Texas A&M Universities.
- Pan-IIT ONGC project : "*Fault Mapping and Facies Prediction using Big Data Analysis*" (Dr. Ankur Roy, from ADRACEPE, is Co-PI on this project). This has been submitted jointly with faculty members from Electrical Engineering, Computer Science, Industrial Engineering, Geology and Geophysics and Mathematics.
- Offshore Petroleum Engineering (**Instructor:** Dr. Asoke Deysarkar, PfP Industries, Houston, USA)
- Best Practices in the Offshore Industry through Barrier Management: A Risk Based Approach (**Instructor:** Dr. Asoke Deysarkar, PfP Industries, Houston, USA).
- Visit and Seminar by Prof. Akhil Datta-Gupta, Texas A&M University, USA
- 3 Students were sent to Texas A&M University, USA for summer internship.
- Visits at the Center - Halliburton Landmark, Bangalore, India, Shell, Bangalore, India, SNF FLOPAM, INDIA

Research Areas

Reservoir Simulation and History Matching; Data Analytics in Petroleum Industry; Drilling, Completion and Cementing Fluids; Fracturing Fluids; Petroleum Geostatistics; Reservoir Geomechanics; and Naturally Fractured Rocks; Petroleum Reservoir Analogs, Geostatistics, Fractal Models in Geology, Fractured Reservoirs

P K Sinha Centre For Bioenergy

Head of the Department : Makarand Madhao Ghangrekar

This is India's first integrated Bioenergy center. The activities of the centre include knowledge in action by partnering with the government, commercial organizations, knowledge dissemination through academia, industry and policy makers. The center's faculty members are currently working in the areas of bio-ethanol, bio-diesel, bio-hydrogen, bio-methane, algal bio-refinery and microbial fuel cells and genetic prospecting of energy crops.

Rekhi Centre of Excellence for the Science of Happiness

Head of the Department : Priyadarshi Patnaik

New Faculty Appointment

Name	Designation	Research Areas
Saamdu Chetri	Assistant Professor	

Visiting Faculty

Saamdu Chetri	Assistant Professor	

Research Areas

Happiness and health; Happiness and physiological changes; Cultural dimensions of happiness; Happiness, well-being and ecology; Community wellbeing; career, success and happiness; Generosity, gratitude and happiness; Creativity and happiness; Leadership and happiness; Relaxation techniques for happiness; Stress and well-being; and other related areas.

Brief Description of on-going activities

Project works being carried out at the Centre include studies with the Governments of Madhya Pradesh and West Bengal for happiness scale development and volunteer selection.

Academic Performance

New Acquisitions	01
Lectures by Visiting Experts	03

DHI Centre of Excellence on Advanced Manufacturing Technology

Head of the Department : Surjya Kanta Pal

Brief Description of on-going activities

The Centre of Excellence in Advanced Manufacturing Technology has been established at IIT Kharagpur through the support of the Department of Heavy Industry of Ministry of Heavy Industries and Public Enterprises, Government of India, along with a consortium of top industry members in the country. The centre aims to stimulate the innovation to manufacture smart machines in the capital goods sector. The center will bring together various industries in this area to work in a synergistic way towards the common goals of infusing cutting edge technologies, and to come up with research and development for sustainable products having higher productivity with reduced cost.

This centre offers a unique platform for collaborative, consortium driven infusion of advanced technologies in the manufacturing area, which is in harmony with the 'Make-in-India' initiative of the Government of India. The centre will initiates innovative and top-quality research focused to the industries on Specialty materials, Design and automation, Additive manufacturing, and Digital manufacturing and Industrial Internet of Things. The centre will boost innovative interventions in the advanced manufacturing domain by enabling an ecosystem among Institutes of higher repute, heavy industries, and also the MSMEs and start-ups. The centre looks for active participation in this ecosystem for a collaborative research in the proposed areas.

The centre also houses an Innovation Lab to facilitate the culture of innovation and open engineering. The Innovation Lab invites MSMEs and the Start-ups to grab opportunities of getting an end-to-end support from the experts including access to various state- of-the-art facilities for early prototyping of their product. The centre also welcomes bright and talented scholars with high value doctoral fellowship to support its activities.

The Centre of Excellence has the lofty ambition of positioning itself as one of the primary knowledge centers on advanced manufacturing in the country. The broad objectives of the centre are as follows:

- Reinvigorating manufacturing in India through technological interventions
- Value additions in terms of innovations in materials, manufacturing processes, new technologies, and bringing academic rigor to industrial and organizational practices
- Inculcating modern concepts of IIoT, intelligent, and connected manufacturing through digital interventions, robotics and automation
- Creating an ecosystem for indigenization and innovations in the manufacturing sector involving small and medium scale enterprises
- Bringing in international expertise through partnerships with the best in the world
- Imparting skilling to industry people and inculcating start-up culture
- Securing Intellectual Property through IP protection and licensing

The Centre has got a total project funding of Rs 65.19 Cr. Presently, 6 industry members have joined the consortium, including Tata Motors, Tata Sons, Tata Consulting Services, Tata Steel, Heavy Engineering Corporation, Bharat Heavy Electricals Limited.

Centralized Services Units

Alumni Affairs & Institutional Development (ID) Program

Dean (Alumni Affairs) : Prof. Subrata Chattopadhyay

Dean (International Relations) : Prof. Baidurya Bhattacharya

The Office of Alumni Affairs and International Relations was set up in the year 2003. Since then the Office has expanded its activities across various domains such as alumni networking, fundraising, alumni events etc. The other wing of the Office, International Relations has grown exponentially since 2014. The Office has also been made responsible for institutional branding under the Institutional Development Program. Following are the major activities undertaken during 2017-18 are given below.

Alumni Relations:

Close to 65% connectivity with the alumni has been achieved by the end of the year including registrations on the alumni website, during annual alumni meet, visits, social media platforms and other alumni engagement programs. Out of a total number of 61701 alumni, the Institute is connected with 39392 alumni and is able to network with them.

Some new initiatives have been introduced this year to improve connectivity of the alumni. These are Alumni find-a-friend program and Homecoming for alumni batches completing 10th, 15th and 20th year of graduation.

Young Alumni Achiever Award is launched to recognize young and promising alumni who have achieved great success and recognition in their chosen profession.

The Young Alumni Achiever Awards will recognize alumni age 40 or younger who have demonstrated emerging and unique innovation, creativity and success in his or her chosen career. Selections are based on success in chosen careers; however, a demonstrated commitment to excellence in IIT Kharagpur and opportunity for future involvement may also be considered.

The giving back campaign for outgoing students 'My Imprint Senior Class Gift' witnessed another successful year with 400+ students donating their caution money for building bus stands for the on-campus bus service.

Alumni and Institute Events:

Annual Alumni Meet
The 15th Annual Alumni Meet was organized in association with the Students' Alumni Cell. Close 300 alumni participated in the event with their families. The event hosted the alumni batches that completed 50th, 40th and 25th years of graduation i.e. 1968, 1978, and 1993.

Alvida
The annual farewell dinner was organized on April 12th 2018 wherein Dean Alumni Affairs welcomed the students to the alumni community. More than 2000 students attended the event. They also showed a keen interest in giving back to their Alma Mater by pledging their caution money for the My Imprint Senior Class Gift program.

Convocation
The Office played a key role towards distributing Alumni Card and Yearbook to the degree recipients, conferment of the Distinguished Alumnus Awards and hosting the annual press conference on the occasion of Convocation.

Foundation Day
The 67th Foundation Day of IIT Kharagpur was celebrated on August 18, 2017. The Chief Guest was Shri K K Sharma, IAS, Secretary, Higher Education, MHRD, Govt of India. Like every year on the occasion of Institute Foundation Day, faculty and staff members who completed 25 years of service were felicitated by

the Director. In the evening, a debate was conducted among the student and faculty members of the Institute. This year's Foundation Day Debate topic was 'By 2050 a machine will win the teaching excellence award at IIT Kharagpur based on student feedback'. Schools from Kolkata and Kharagpur were invited to participate in an outreach event involving scientific demonstrations, a tour of research facilities at the Institute, registration for the National Digital Library, competitive project presentation and a special talk by Director of IIT Kharagpur. This year's Foundation Day Debate topic was -. Schools from Kolkata and Kharagpur were invited to participate in an outreach event involving scientific demonstrations, tour of research facilities at the Institute, registration for the National Digital Library, competitive project presentation and a special talk by Director of IIT Kharagpur.

Distinguished Alumnus Award 2017

Name	Dept	Degree	Year	Hall	Position	Company
Anuradha Acharya	PH	B.Sc,M.Sc	1993/1995	SN/IG	CEO/ CEO & Director	Mapmygenome India Limited /Ocimum Biosolutions Ltd. and MapMyGenome
Anand Sen	MT	B Tech	1981	LLR	President	TQM & Steel Business
Surajit Kar Purkayastha	ME	B.Tech	1978		DGP	Govt of West Bengal
S Shekar Mital	EC	M Tech	1985	JCB	Chairman & Managing Director	Goa Shipyard Limited
Arunima Acharya (Ruma Acharya)	CH	M.Tech	1973	SN/IG	President of Scindia, LLC	Advisor to PfP Industries
Subhasis Chaudhuri	EC	B Tech	1985	LLR	K N Bajaj Chair Professor in Electrical Engineering and Deputy Director (Academic and Infrastructure Affairs)	IIT Bombay
Dipak Basu	PH,EC	B.Sc,B Tech	1968/1971	VS	CEO	Anudip Foundation
Sujit Banerji	ME,IM	B.Tech, M.Tech	1960/1962	RP	Professor and Executuve Director of Education, WMG	WMG, University of Warwick
Sanghamitra Bandyopadhyay	CS	M.Tech	1994	SN/IG	Director	ISI Kolkata
Raj Kamal Jha	ME	B Tech	1988	AZ	Executive Editor	The Indian Express Group of Newspapers
Arun Kumar Bhaduri	MT	B Tech,PhD	1983/1992	RK	Former Director	Indira Gandhi Centre for Atomic Research
Amitabha Ghosh	GG	B.Sc,M.Sc	1991/1993	LLR	Chair of the Science Operation Group	NASA Mars Exploration Rover Mission
B Aneesh Reddy	ME	B Tech	2006	RK	Co-Founder & CEO	Capillary Technologies
Brajendra Mishra	MT	B Tech	1981	RK	Director	Worcester Polytechnic Institute

Distinguished Service Award 2017

Name	Dept	Degree	Year	Hall	Position	Company
Neeta Jain	AR	B.Arch	1968	SN/IG	Partner/VP	Samir Sharma & Associates

Vinod Kumar Sobti	ME	B.Tech	1967	RP	Consultant	Oil & Gas Industry
C Dhananjay	EC	B Tech	1981	RK	MD	Computer Factory (I) Pvt Ltd
Ashok Madhukar	ME	B.Tech	1965	RP	Former Chairman	Afro-Asian Development Consortium
Sujata Roy	PH	M Sc	1975	SN/IG	COO/Vice President	NDL Project IIT Kharagpur/IIT Kharagpur Alumni Foundation (India)
Pradeep Prasad	MT	B Tech	1985	RK	Program Manager, Business Compliance and Asset Management	IBM India
N Krishnan	ME	B.Tech	1957		Chairman	HVK Systems & Marketting PVT Ltd., chennai
Rajendra Kumar Khanna	ME	B.Tech	1968	Radha Krishnan Hall	Vice President Corporate Audit (Retired)	Qualcomm

***Fundraising Campaign*:** Under the Institutional Development (ID) Program several fundraising campaigns are being carried out to build corpus through endowment mode to ensure self-sustainability in the long run.

The campaigns such as Batch Endowment encourages alumni to contribute in the name of their batch, the collections on being reaching the milestone of INR 50 Lakhs, the batch is commemorated with a classroom named after the batch in the Nalanda Academic Complex. In 2017-18, the batch of 1968 achieved this target.

Hall Gift is another campaign where alumni were appealed to donate for the development of their Halls. Alumni from six halls raised funds for hall development activities and work is underway.

Major alumni donations of about INR 1 crore 91 Lakh were received from Satinder Singh Rekhi for Rekhi Centre of Excellence for Science of Happiness and Subir Chowdhury for Subir Chowdhury School of Quality. CSR fund of INR 80 Lakh were received during the year.

Funds were also raised for Chair Professorship and Scholarship and other campaigns.

A new initiative which was started in FY 2017-18 was raising funds for various departmental events and campaigning for them to improve

Endowment Fund Management: The alumni endowment fund committee recommended exploring alternative modes of secured investments other than fixed deposits in scheduled banks. Also, interest out of past investments were recommended to be utilized for funding research at undergraduate level. A part of fund raised in the past financial year was recommended to be utilized to boost fundraising, connectivity and communication.

Branding

In keeping with the continuous efforts to improve the global brand image of IIT Kharagpur, media relations remained a focal point with regular dissemination of news and information on research, academics, student achievements and other developments at the Institute. This systematic focus on visibility enhancement has resulted into 685 insertions on 145 unique stories (up from 605 insertions on 124 unique stories last year) in a wide variety of media publications. Contacts have been established with science websites and journalists exclusively writing science news.

Activities have been undertaken for increasing visibility on **social media** through Facebook, LinkedIn, YouTube and Twitter. Several tweets from the official handle were retweeted by various ministries and offices under the Government of India.

An event was organized targeting students from class VIII-XI to promote orientation towards science and technology. The event, **Young Innovators Program,** garnered interest from about 1500 schools in the country. Semi-finalists were invited to the IIT Kharagpur campus for last two rounds, workshops and experience IIT student life.

Brand Memorabilia
Distribution of souvenirs and memorabilia got a major boost during the year with a large number of items being included, online promotions, literature being distributed to the alumni. Alumni chapters have been approached to improve distribution volume in their events.

Publications
Our internal publications provide another key tool for us to share Institutional and student-related news as well as encourage participation of alumni in institutional activities. To that end, we have been successfully the electronic newsletter 'Clap for KGP' which sends out positive news and achievements of the Institute and all its stakeholders. Other regular publications such as the Alumni Annual Report and the annual souvenir "Yearnings of Yore" were published during the Annual Alumni Meet. In additional, we published a steady stream of communication and other material such as brochures for different campaigns, Foundation Day Celebrations, Alumni ID Cards as well as separate Yearbooks for UG, PG and Ph.D students. A new publication 'The World of IIT KGP' is underway.

Institute Website: News and promotional content are being updated on the Institute website

International Relations

Multi-Institutional Dual Degree Programs*:* IIT-KGP is also offering joint programs with several Australian universities – Curtin and Wollongong while collaboration with Melbourne was in the process during the year. The institutions on a one-to-one basis are promoting appropriate joint research projects and joint courses of study with particular emphasis on internationally funded projects. They are also cooperating in the exchange of information relating to their activities in teaching and research in fields of mutual interests. While both the institutions are offering exchange programs and study tours for their faculty and students alike, they are also conducting joint cultural projects to help students understand the culture of both the nations well. It is also providing study abroad opportunities at postgraduate and PhD level for students of both the institutions.

Semester Away Program in India/Abroad (SAP)
IIT Kharagpur puts great emphasis on the overall development which makes its graduates highly proficient professionals. Under this program registered students (both PG and UG) will spend a semester at the host university; the credits earned there will count towards completion of course at IIT through credit transfer. Unless explicitly covered by a MoU, the student is expected to bear all costs of the SAP experience. The SAP has been approved by the institute senate and formalization of this program has been done to a considerable extent.

Students Visits: 2017-2018
Undergraduate Students (Inbound): 01
Graduate/Postgraduate Students (Inbound): 03

Foreign Training Program
International Relations Office has started this pilot project last year to streamline the process of sending applications for foreign training and is supported by a students' body - International Relations Cell. Just a year on, the project has gained momentum and supported more than 10 students receiving internship offers from foreign universities like KTH Stockholm, Northeastern University, University of South Carolina Aiken, Korea Advanced Institute of S&T, New Castle University etc. In the coming years FTP looks forward to support more number of students getting foreign internships and have a holistic experience.

News Letter- To help inform various target audience about world-class research, award-winning faculty experts, international programmes, etc. International Relations Office is preparing a quarterly newsletter 'The World of IIT KGP'.

Shri Gopal Rajgarhia International Programme (SGRIP) Endowment Fund
- International Faculty/Expert Outreach Program:12
- International Research Scholar Support Program: 1
- SGR International Student Scholarship Program:1
- International Workshops/Meetings: 6
- International Student Travel Support Program: 1

Inbound Visits
- Univ of Manchester, UK
- Curtin University, Australia
- Nottingham Trent University, UK

- MIT, USA
- University of Pierre & Marie Curie/France
- Otto-von-Guericke University/Germany
- University of Newcastle, Australia
- University of Haifa, Israel
- Universita Cattolica del Sacro Cuore Brescia/Italy
- University of Pierre & Marie Curie, Paris
- Via San Giovanni, Italy
- University of Catania,Italy
- Southern Illinois University Carbondale, USA
- Fordham University,USA
- Barcelona Tech, Spain

Multi-Institutional Dual Degree Programs

- Curtin University, Australia
- Univ of Melbourne, Australia
- Univ of Wollongong, Australia
- Rutgers University: Work in Progress
- Johns Hopkins: In contemplation

International MoUs

- University of Manchester
- Purdue University
- Saint Petersburg National Research University of Information Technologies, Mechanics and Optics (ITMO)
- Texas Tech University (TTU)
- The University of Arizona
- Innopolis University, Russia
- Nikken Sekkei Research Institute (NSRI), Japan
- Ohio State University, USA
- Universita Degli Studi Di Catania, Italy
- University of Rwanda, Africa
- University of MINHO Portugal
- Tomas Bata University, Zlin, Checz Republic
- Technical University Munich, Germany
- University of Tokyo, Japan Extension of Academic Exchange
- University of New Castle, Australia

B C Roy Technology Hospital

Prof-in-Charge : Prof. Rajib Mall

The Institute provides primary health care to the campus community through B C Roy Technology Hospital located strategically within the campus. Constant efforts are on to upgrade and improve the existing facilities at the B. C. Roy Hospital. Health Care remains a top priority in the activities of the Institute.

In addition to General OPD service, **special clinics are provided in General Medicine, Cardiology, Paediatrics, Chest, Skin, Psychiatry, General Surgery, Obstetrics & Gynaecology, Orthopaedics, Eye, ENT and Dental by appointing visiting consultants in the various disciplines.32 Indoor Beds including 2 Bedded ICU & Isolation Wards are available which are fully utilized by students & institute beneficiaries.** Physiotherapy Unit is fully functional.

Round-the-clock emergency service and a 24 hour pharmacy have been made available. Critical care ambulance support is provided in emergency situations.
Medical Insurance coverage through the Institute is available for the students

OPD services are provided 6 days a week (Sunday and institute holidays being off days). Diagnostic services are provided in parallel with the OPD and frequent emergency services are also provided on On-call basis. The entire student community of IIT along with all faculty, non-teaching staff, hall employees and pensioners are the beneficiaries who receive medical treatment from BCRTH. Apart from that, any person, even without treatment entitlement at BCRTH, is not refused in case of any emergency and are primarily treated at ER, BCRTH.

Presently there are two medical shops inside the campus which provides service to entitled patient, one being inside the hospital premises, which remains open 24 x 7 for 365 days.

Cooperative medical store is located in the tech market premises which remains open at particular times of the day. Beneficiaries are provided medicines free of cost, from this 2 out lets.

The arrangements for students and other members of the community are essentially same. The only difference being that there are separate wards in the indoor for students and employees and pensioners. The facilities extended to the beneficiaries are practically the same, irrespective of them being students or employees. The isolation ward though, reserved for contagious diseases is reserved usually for the students, though occasionally, in case of genuine need, an employee may be admitted there.
BCRTH treats all kinds of cases that are brought under its purview. Most of the cases that require referral are the cases requiring surgical intervention of any sort, which cannot be done at BCRTH presently. Few medical cases requiring referral are cases of extreme life threatening emergency or cases requiring higher modalities of intervention which are presently unavailable at BCRTH.

In cases of medical emergency patients are usually referred to hospitals in Kolkata with whom the institute has tie ups. Trained medical assistant is sent along with that patient for tending to medical needs of the patient en route.

BCRTH presently has 10 doctors, 24 visiting consultants, 17 nurses, 6 ATNM along with clerical staff and attendants (Regular and Outsource).

Total Man Power of the Hospital*:*

1) Out source Mode : 38
2) Permanent Jr. Attendant/Attendant : 13
3) Ministerial Staff: 3
4) Pathology: 5+1
5) Radiology: 2+1

MMST Student Time : 6.30pm to 10.30 pm Total No. 29

OPD Timing : 9am to 12.30 pm & 4.30 pm to 8 pm

Ambulance

Institute has five number of ambulance (4 Institutes and 1 outsource). Institute Ambulance are under PIC Automobile Section. Drivers are also under Automobile Section. Frequently there is break down of Institute Ambulance which hampers patient transfer to higher center.

At present we have 5 ambulance (a) Critical Care 2 nos. one being donated by Alumni's (b) Outsource Ambulance (c) Winger (d)Tata Sumo which is used for campus in and around Kharagpur.

Operation Theater:

1. OT Table	2. OT Light	3. Anaesthesia Work Station
4. Diathermy Cautery	5. HP Steam Steriliser	6. Suction Machine

ICU:

1. Multipara Monitor	2. Computerise ECG Machine	3. Ventilator
4. Defibrillator	5. Syringe Pump	6. Crash Cart
7. Ambu bag	8. Suction Machine	

Emergency:

1. Multipara Monitor	2. ECG	3. Defibrillator
4. Pulse Oxymeter	5. Crash Cart	6. Ambubag
7. Suction Machine		

Pathology :

1. Fully automatic Analyser	2. Cell Counter (3 Parts)	3. Electro Microscope
4. Laminar Flow	5. Centrifuge Machine	6. Incubator

Radiology:

1. X-ray Machine (500mA)	2. CRU (Digital X-ray)	3. ECG Machine
4. USG Machine (not being operated due to technical reason)		

Ophthalmology:

1. Refractometer	2. Slit Lamp	3. Ophthalmoscope

Physiotherapy:

1. SWD Machine	2. IFT Machine	3. UST Machine
4. Red Infra Lamp	5. Ankle Exerciser/Knee Exerciser	6. Shoulder Exerciser
7. Wax Bath	8. Traction	

Career Development Centre

Chairman : G P Raja Sekhar

The Career Development Centre is responsible for arranging Industrial training for 3rd year B. Tech, 4th year Dual Degree and 4th year Integrated M.Sc. degree students as part of their curriculum. CDC also facilitates the job placement of final year students graduating from the Institute including PhD students. The Centre is actively engaged in forging synergistic relationships between the Institute and various industries. Based on these interactions, CDC gives feedback to the Institute on the academic programmes.

Summer Training Details

Eight weeks of summer Internship at the end of 3rd year B. Tech, 4th year Dual Degree and 4th year Integrated M.Sc. degree is a compulsory part of the curriculum at IIT Kharagpur, carrying 2 credits. All efforts are made to place the concerned students in the best of organizations in India and abroad for summer Internship through Career Development Centre with the support of departments/ schools/ centres of IIT Kharagpur. An emergent trend is that more and more students are seeking summer Internship abroad. Also students utilize opportunities due to various Universities with which IIT Kharagpur had signed MoU. These include S. N. Bose Scholar's Program, Viterbi-India Program, Khurana Program for Scholars, DAAD Scholarship Program, MITACS, NTU-Singapore.

For the current summer internships of our students during May- July 2018, 79 companies either visited the campus or conducted interviews through telephonic, Skype interviews and 7 companies allotted seats after seeking nominations. The details of internship are as follows.

Period of Internship	Nos. of students enlisted for Internship	Nos. attending Internship in India			Internship at foreign Univ./Org.
		Selected by the company	Nominated by the Dept.	Self-arranged	
May-July 2018	1220	378	29	813	129

Placement Details

226 companies / organizations have shown interest for hiring students for final placement out of which 221 companies offered our students for employment during the placement season 2017-2018. The details of number of the students who had registered for placement and those actually placed through campus interviews including those who have opted either for higher studies or arranged job through off campus as on 19.04.2018 are as follows:

Sl.No	Department	Registered	Placed	Percentage Placed (%)
1	B.ARCH	32	22	69
2	B.TECH	439	366	83
3	DUAL DEGREE	476	398	84
4	LLB	22	9	41
5	LLM	1	0	0
6	Joint M.Sc.-PhD	101	24	24
7	M.Sc.(5Yr Integrated)	154	119	77
8	Joint M.Tech-PhD	497	251	51
9	MCP	31	1	0
10	MS	16	2	13
11	PhD	36	29	81
	Total	**1805**	**1221**	**68**

IIT Kharagpur registered highest number of PPOs among all IITs, with 251offers out of which 205 have been accepted. Further IIT Kharagpur received highest offers among the all IITs, with 1304 while the registered students are 1805.

Student Participation

Career Development Centre at IIT Kharagpur has taken an initiative to harness the students' management skills through a formal system during the placement season since 2005-2006. The system has progressed extremely well and from year 2010 onwards, the CDC has immensely benefitted from students participating in placement process. CDC also conducts an in-house pre assessment test to prepare the students for the placement season. This test score is also used by some of the recruiters as one of their short listing criteria.

The organizational skill of students has helped CDC to host 30-35 companies on campus on a given day during the initial days and round the clock. During the placement season, students/CDC staffs play an active role from contacting the companies to the final selection at campus by providing complete logistic support with a close coordination from all the divisions of the Institute.

New Initiatives

In addition to the existing roles, Career Development Centre at IIT Kharagpur has taken some initiatives to help student take up a better career and also to strengthen the relation with the recruiters. These are

1. Faculty/ Corporate & Alumni interactions on various career options.
2. Foreign placement opportunities through consultants.
3. Personality Development activities.
4. CDC has introduced the Corporate Relationship Index (CRI) which reflects the relationship CDC is having with the recruiters based on certain parameters for providing better slots to them.

Achievements

1. Continuously achieved more than 1300 placements for the last three years.
2. Highest number of Pre placement offers.
3. Highest number of Overseas Pre placement offers.

Central Library

Chairman : Prof. S. K. Srivastava

Introduction

The Central Library, IIT Kharagpur is one of the largesttechnical libraries in Asia. It is fully automated and air-conditioned library with an aim to serve more than 11,800 students and1600number of employeeof the institute. The Library has its dynamic website (http://www.library.iitkgp.ac.in) with rich in content. The Central Library is having two building (main and annex) internally connected with a carpet area of about 8000 sq.m. The Central Library houses and maintains nearly 4.1 lakh of print documentscomprising of books and bound volume journals. As far as e-resources are concerned, there are huge collection of e-resources comprising of full text e-journals, e-books, online databases (full text and bibliographic) etc. As far as facilities are concerned, the Central Library has six air-conditioned reading halls with 1500 seating capacity for the users. Moreover, the Central Library is ISO 9001:2015 certified library.

Academic Staff

Librarian

BabluSutradhar	Ph. D (V.U), M. Sc, MLIS, CCA

Deputy Librarian

Samir Kumar Jalal	Ph. D (B.U),M. Phil, MA (Econ), ADIS (ISI)
Mr.Atin Nandi	MLIS, M. Sc.

Assistant Librarian

Mr. Uma Shankar	MLIS, MA
Mr. A.K. Goswami	MLIS, M. Sc
Mr.SamratGuha Roy	MLIS, MCA,PGDLIM
Mr. M. Manivannan	MLIS, MCA
Mr.Hemanta Kr. Biswal	M. Phil, MLIS

New Joining

Mr. Subrat Kumar Nanda, SLIA
Mr. Pavan Kr. Gupta, SLIA

Print Collection

Books

General	Text Books	Print Journals	PhD Theses
1545	503	67	302

List of e-Resources subscribed

Sl.No.	Name of the e-Database	Publishers
1.	Bloomberg Professional Services	M/s Bloomberg data Services
2.	Business Source Complete	EBSCO Publishing
3.	CapEX (IP)	Centre for Monitoring Indian Economy Pvt. Ltd., Kolkata
4.	Communication & Mass Media Complete	EBSCO Publishing
5.	Economic Outlook (IP)	Centre for Monitoring Indian Economy Pvt. Ltd., Kolkata
6.	GeoScienceWorld& Geo Ref Databases	GeoScienceWorld
7.	Grammarly@edu writing support suit (250 users)	Grammarly@edu
8.	Hein Online	William S Hein & Company Inc
9.	IEC Complete Set	International Electro technical Commission
10.	IEEE/IET Electronic Library (IEL) Online	IEEE Xplore Digital Library

11.	Indiastat.com (multiuser version)	Datanet India Priavte Limited, New Delhi
12.	Industry Outlook (IP)	Centre for Monitoring Indian Economy Pvt. Ltd., Kolkata
13.	IS Complete Set (Online)	Bureau of Indian Standards
14.	Magillon Literature Plus	EBSCO Publishing
15.	Manupatra Online	Manupatra
16.	PDF-4+2018(CD Version) and Sleve+2018	ICDD
17.	ProQuest Dissertation & Theses	Proquest
18.	Proquest-ABI/Inform Complete	Proquest
19.	Prowess	Centre for Monitoring Indian Economy Pvt. Ltd., Kolkata
20.	PsycArticle	American Psychological Association
21.	Science Direct	Elsevier
22.	SciFinder Scholar	American Chemical Society
23.	Scopus	Elsevier Science
24.	Turnitin2 – – Anti Plagiarism Web Tool (for 1000 users)	iParadigms, LLC
25.	Westlaw India	Thomson Reuters
26.	World Intellectual Property Search (WIPS)	WIPS Company Ltd.

List of major e-Resources subscribed by IIT Kharagpur

S.N	Name of the e-Resource	Publishers
1.	ACS-All Publications Package (including Archive)	American Chemical Society
2.	ASM Package	American Society of Microbiology
3.	AMS Package	American Mathematical Society
4.	ASME Standards (Complete Set)	American Society of Mechanical Engineers
5.	ASTM Standards + Engineering Digital Library	American Society for Testing and Materials
6.	Cambridge University Press	Cambridge University Press
7.	Taylor & Francis Core Journals	Taylor & Francis
8.	Taylor & Francis S & T Collection	Taylor & Francis
9.	Taylor & Francis SSH Collection	Taylor & Francis
10.	Emerald ESS310 collections	Emerald Publishing
11.	Emerald e-Cases	Emerald Publishing
12.	IOP Journals	Institute of Physics
13.	Optical Society of America (Optics InfoBase)	Optical Society of America
14.	PNAS	National Academy of Sciences
15.	RSC Gold Package	Royal Society of Chemistry
16.	Sage (HSS) Package	Sage Publications
17.	Sage (EMS) Package	Sage Publications
18.	Science Online	American Association for the Advancement of Science
19.	SIAM - eSS Collection	Society for Industrial and Applied Mathematics
20.	SPIE Digital Library	Society of Photographic Instrumentation Engineers

21.	Wiley Journals	Wiley

List of e-Resources Available from ESS Consortium

Sl.No.	Name of the e-Database	Publishers
1	American Institute of Physics - eSS Collection	American Institute of Physics
2	MathSciNet	American Mathematical Society
3	American Physical Society - eSS Collection	American Physical Society
4	ASCE Journals Online	American Society of Civil Engineers
5	ASME Journals Online	American Society of Mechanical Engineers
6	Annual Reviews - eSS Collection	Annual Reviews Inc
7	ACM Digital Library	Association for Computing Machinery
8	JGate Plus (JCCC) - S&T collections	Informatics India Ltd.
9	Project Muse	Johns Hopkins University Press
10	JSTOR (with Archives)	JSTOR
11	Economic & Political Weekly	Sameeksha Trust
12	Nature Journal	Nature Publishing Group
13	SpringerLink	Springer
14	Oxford Journals Package	Oxford University Press
15	Web of Science	Thomson Reuters

E-Books Databases

- Springer e-BooksCollection (1842-2017)
- ACS e-Books (2015-2018)
- CRCnetBASE by Taylor & Francis (2004-2018)

NDLI E-resources

- World e-Book Library (September 2016 to August 2017)
- South Asian Archive (SAA) (Perpetual)

Bibliographic Databases

1. MathSciNet
2. SciFinder Scholar
3. Scopus
4. Web of Science (WoS)

Financial Databases

1. Bloomberg Database – Accessible Online
2. IndiaStat(Publisher: Datanet India Pvt. Ltd)
3. CMIE's Database (CapEX, Economic Outlook, Industry Outlook, Prowess)
4. EBSCO Business Source Complete

Law Databases

1. Hein Online
2. Manupatra Online Legal Database
3. Westlaw India Academic
4. WIPS - Worldwide Intellectual Property Search

List of Standards Subscribed by Central Library

Following standards may be accessed through the links of library websites within LAN after Disable Proxy:

1. ASME Standards
2. Indian Standards
3. IEC Standards
4. EuroCode Standard (Civil Engg./ Structural Engg.)
5. ISO Standard

Theses & Dissertation

- ProQuest's Dissertation&Theses

Databases and Software

1. Grammarly@eduwriting support suit
2. JCPDS Database
3. TurnitIn2 – Anti Plagiarism Software
4.

Digital Library

Following section provides information on services provided by Digital Library to the users for the period April 2017 to March 31 2018.

- Total No. of Document Delivery Service : 178 out of 223
- Total No. of Book Accompany CDs : 20
- Total No. of Turnitin Anti plagiarism checking Service
  - Student Id : 1580
  - Instructor Id : 26
  - Report Delivered : 158

- Total No. of ICDD's PDF-4+ (Offline) : 215
- Total No. of Ph.D. Theses Digitized (2016-17) : 813
- Kindly e-Book Reader : 33
- Audio Visual Lounge (from Nov 2017) : 16
- Grammarly service Provided to users (2017-2018) :550
- NDL IRD Workshop conducted : 09
- No. of PhD Thesis uploaded : 557

Institutional Digital Repository (IDR)

- The Central Library has developed an Institutional Digital Repository (IDR) using open source software namely DSpace. The IDR collects, preserves and disseminates in digital format of the research output (PhD theses, Technical Reports, Faculty Publications, etc.) within IIT Kharagpur Research Community. It enables the Institute community to deposit (self-archiving) their pre-prints, post prints and other scholarly publications using a web interface and organize these publications for easy retrieval. We are having 3482 PhDthesis both full text and abstract level uploaded in our IDR which is rapidly growing day by day. The Institute research scholars are also using the IDR regularly. The Library also gets many requests from other universities to provide access to full text content of PhD thesis. The present URL of the IDR is http://www.idr.iitkgp.ac.in/xmlui/
- **Web Scale Discovery Service:** It is being introduced in our library where the users can search and browse the full text subscribed e-resources using open source software VuFind integrated with Summon Solution from ProQuest.
- **eSearch Portal Link**: http://www.library.iitkgp.ernet.in/sites/eSearch2.1/
- **VuFind eBook Search**: http://library.iitkgp.ernet.in/vufind/

Infrastructure and Renovation Works

- Central Library has created an excellent **Reading Longue Facilities** at the Annex Building of the Library with video conferencing facilities. The project was endowed by Prof. T.P. Bagchi
- The Central Library with the help of Civil Department has made a renovation works in the tower room of the Library Main building.
- Around 40 power connection for Laptop has been newly installed at the Annex Building of the Library;
- New 20 KVA UPS has been installed for interrupted power supply at Annex Building.

- Successfully implementation of **Reading Launch Project** including Video and web conferencing system funded by Prof. T.P. Bagchi.

Facilities Created for Library Users

- Library Facilities- 24 x7 during Semester Exam: The Central Library introduced the facility of 24 x 7 hours reading room facility for 15 days during Semester Examinations of the Undergraduate Students and Post Graduate Students.
- Pay Library Dues through Debit Card: Library users can make payment for their Library fines, photocopying, printing and scanning through debit and credit card.
- Web Scale Discovery Service: It is being introduced in our library where the users can search and browse the full text subscribed e-resources using open source software vufind through eSearch portal:http://library.iitkgp.ernet.in/sites/eSearch/index.html
- IDR Service and CCTV Service is also provided to the user

List of Workshops Organized by Central Library, IIT Kharagpur

- Central Library of IIT Kharagpur organized an *International Workshop on Open Source Software for Library Management (OSSLM 2017), 12-17 June 2017 and more than 100 participants including some participants from Bangladesh and Sri Lanka attended the programme.*
- Central Library of IIT Kharagpur&Turnitin India Education Pvt. Ltdjointlyorganized a Seminar on **"An Effective Usage of Turnitin"on 12th Jan, 2018 at Central Library**. About175participants were attended the seminar and theme of the seminar is "How to use the anti-plagiarism web tool in an effective manner". High tea was provided to all attended participants.
- Central Library of IIT Kharagpur&Springer Naturejointlyorganized a Workshop on **"Scholarly Writing and Publishing"on 27th Feb, 2018 at Netaji Auditorium**. About 450participants were attended the seminar and theme of the workshop are "How to plan and write manuscripts, Get published in scientific journals, and Author Services: support when you publish with Springer". Lunch and certificate was provided to all attended participants.

National Digital Library (NDL)

MHRD, under its NMEICT mission, has entrusted IIT Kharagpur to host, coordinate and set-up National Digital Library (NDL) towards building a national asset. The objective of the project is to integrate all the existing digitized and digital contents across educational institutions of the nation to provide a single-window access with e-learning facility to different groups of users ranging from primary level to higher education level of our county. NDL will harvest metadata and contents from all the Institutional Digital Repositories (IDR) of Universities and Institutions, all other digital library initiatives, and NMEICT projects and index in the National Digital Library Server so that all the e-contents can be searched and accessed in the full-text by the users through a single window. The NDL project workstation is situated in the Central Library, Annex Building. For details, visit NDL website: ndl.iitkgp.ac.in

Publications & Invited Lectures Publications

1. Jalal, S.K and Sutradhar, B (2017). Collaboration on nanotechnology research in India during 2001-2016 in the Sixth National Conference of Institute of Scientometrics held on 21-23 December2017.
2. Jalal, S.K (2017). Research Collaboration between India and China: A Case Study. Library Herald (Print ISSN: 0024 - 2292), Vol. 55(3), 2017; pp. 322-337
3. Samrat Guha Roy, B. Sutradhar, Partha Pratim Das (2017). Large-scale Metadata Harvesting—Tools, Techniques and Challenges: A Case Study of National Digital Library (NDL) - World Digital Libraries- An International Journal, 10(1), ISSN: 0975-7597. Article DOI : 10.18329/09757597/2017/10101
4. Das, Anup and Sutradhar, B (2018). Harvesting of Additional Metadata Schema into DSpace through OAI-PMH: Issues and Challenges. SRELS Journal of Information Management, Volume 55, Issue 1, February 2018,

5. Nandi (Atin).Emerging Challenges to impart Library Orientation Programme in Academic Libraries, Published in the Proceedings of the National Conference on Role of Academic Libraries for Excellence in Research (ROALER), IISER Bhopal, 18-20 January 2018, pp.243-250
6. Sutradhar, B, Roy, Samrat Guha and Banerjee, Shibabroto (2017). Workshop Manual on DSpace Tutorial, National Workshop on Open Source Software for Library Management (OSSLM 2017), pp. 13-28
7. Roy, Samrat Guha (2017). Workshop Manual on Koha Tutorial, National Workshop on Open Source Software for Library Management (OSSLM 2017), pp. 29-68
8. Roy, Samrat Guha (2017). Workshop Manual on VuFind and Its Integration with Koha, National Workshop on Open Source Software for Library Management (OSSLM 2017), pp. 69-80
9. Sutradhar, B, and Manivannan, M (2017). Workshop Manual and Tutorial of Online Document Delivery Service, International Workshop on Open Source Software for Library Management (OSSLM 2017), pp. 81-96

Invited Lectures

1. Sutradhar, B (2018). Delivered an invited talk at National Conference on Role of Academic Libraries for Excellent Research held at IISER Bhopal dueing 18-20 January, 2018
2. Sutradhar, B (2017) Delivered in invited talk at CALIBER 2017 held at Anna University, Chennai during 2-4 august, 2017
3. Jalal, S.K (2017). Invited as Resource person to deliver a Lecture in International Workshop organized by AISSM College, Pune during December 18-23, 2017.
4. Jalal, S. K (2017). Invited as Resource person to deliver a Lecture in National Seminar on Information resource management: Role of modern technologies dated 29-30 March 2017 at NIT Agarpara, W.B
5. Jalal, S.K (2017). Invited as Resource Person to Deliver a Lecture on Topic “Koha -Acquisition Module and Open Source Software for Bibliometrics” in International Workshop on Open Source Software for Library Management (OSSLM 2017) on 12 – 17 Jun 2017, Organized by Central Library IIT Kharagpur & National Digital Library of India.
6. Manivannan, M (2017). Invited as Resource Person to Deliver a Lecture on Topic “Online Document Delivery Service” in National Workshop on Open Source Software for Library Management (OSSLM 2017) on 12 – 17 Jun 2017, Organized by Central Library IIT Kharagpur& National Digital Library of India.
7. Manivannan, M (2017). Invited as Resource Person to give Training and Lecture on “Digital Preservation of Rare Documents”in Preservation of rare documents on 6th- 8th Dec, 2017, Organized by Administrative Training Institute, Kolkata, and Government of West Bengal.
8. Roy, Samrat Guha (2017). Invited as Resource Person to Deliver a Lecture on Topic “DSpace, Koha and Vufind Training” in International Workshop on Open Source Software for Library Management (OSSLM 2017) on 12 – 17 Jun 2017, Organized by Central Library IIT Kharagpur & National Digital Library of India.
9. Roy, Samrat Guha (2017). Invited as Resource Person to give Training and Lecture on “Library Automation” in International Workshop cum Training Programme on Library Automation (IWTPLA): Emphasizing on Digital and Audio-visual Media on 13th - 19th Nov, 2017, Organized by Satyajit Ray Film & Television Institute, Kolkata.
10. Roy, Samrat Guha (2017). Invited as Resource Person to give Training and Lecture on “Digital Preservation of Rare Documents” in Preservation of rare documents on 6th- 8th Dec, 2017, Organized by Administrative Training Institute, Kolkata, and Government of West Bengal.

Central Research Facility

Chairman (Material Science Division) : Prof. Jyotsna Dutta Majumdar

Chairman (Life Science Division) : Prof. Amit Kumar Das

Central Research Facility (CRF) provides a platform to support interdisciplinary research that complements the academic goals of departments to serve a compelling campus research priority. The requirement of different high end instruments is identified through broad campus consultation or strategic planning.

This facility has two broad Divisions: Materials Science Division and Life Science Division. There are around 36 laboratories in the CRF complex and each laboratory is under the supervision of a designated faculty member from the Institute. The equipment housed in these laboratories are used for various types of characterization including study of structure and chemical composition of surfaces and bulk materials at different length scales (sub-nanometer to millimeter), phase transitions, as well as evaluation of mechanical, electrical, magnetic, and optical properties. The available facilities for such studies on materials include state-of-the art field emission scanning and transmission electron microscopes, dual beam FIB-FEG microscopes, X-ray diffractometers, X-Ray Micro-CT, Scanning Auger Nanoprobe, Atomic Force Microscope, Nano-triboindenter, Raman Spectrometer, Thermal Analyzers, SQUID-VSM, Hall-effect measurement, etc. Various cells and biomolecules (DNA and proteins) are also studied for their structural analysis and interactions using high end equipment like SPR, Analytical Ultracentrifuge,MALDI-MS/MS, Single crystal protein X-ray diffractometer, ITC, FACS etc. High performance computing server for Micro-CT lab has been established newly.

CRF serves to facilitate interdisciplinary research and research collaborations; disseminate results through research conferences, workshops, meetings, performances and other creative activities; seek extramural research funds; and carry out university and public service programs related to the CRF's research expertise. CRF is able to provide undergraduate and graduate student research and training opportunities, access to facilities.

Central Workshop and Instruments Service Section

Chairman **:** Prof. A. Roy Choudhury

AWS **:** Dr. S. Patra

The Central Workshop & Instruments Service Section (CWISS), a unique service centre at IIT, Kharagpur was established in 1965 to cater to the fabrication of custom made Instruments, experimental set-ups and samplesfor sustenance of laboratory work and experimental research activity in the Institute for all the departments and centres.

It is one of the major service sections of the Institute having following units:

1)Mechanical 2) Glass Blowing 3) Carpentry
4) Electronic Repair Section 5) Audio Visual

Mechanical Section

a. Dr.S. Patra, Assistant Workshop Superintendent
Mechanical Section in CWISS comprises Mechanical fabrication and Glass Blowing Section.

b. Mechanical Fabrication Section
It is equipped with various types of machines like CNC Lathe, table mounted CNC Lathe, CNC Engraving, CNC Milling, EDM, Milling, Conventional Lathe, Bench Lathe, Watch Maker's Lathe, Drilling, Shaping Machine, Bench Drill, Bench Shaper, Grinding Machines (Surface, Cylindrical, Pedestal, Belt and Hand operated), Jig Boring, Power Saw, Shearing Machine, Polishing, Press, Arc Welding, Brazing and Soldering, etc. CNC WEDM and Laser welding machine these has enhanced our fabrication quantity and quality as well. Recently one 5-Axis CNC Machine has been purchased which will significantly improve the capability of CWISS to serve the institute.

The Mechanical Fabrication Section caters to all the departments of the Institute for any type of precision and complicated mechanical fabrication or repair with various types of metals with the machines available in the section mostly for research and project works and regular experiment classes for B. Tech. and M. Tech. as per design.

In CNC Machines different types of software are used for drawings, like Auto CAD, Rhinoceros, 3D Studio Max, Solidworks etc. for drawing works of the components to be fabricated and also use different types of CAM software for their fabrication.

During the year 2017-18 the Mechanical Section has performed jobs of about 250workorders.

Some of the notable fabrications successfully completed by CWISS are as follows:

1) Fabrication of different types of nozzle block.
2) Fabrication of Finite Wings with sinosodial leading edge.
3) Fabrication of Wing& Winglet Part Root for Aerodynamic Lab.
4) Fabrication of Die-Punches of different sizes.
5) Fabrication of different sizes tensile, Chirpy specimens with different materials.
6) Fabrication of Left Part & Right Part Wings.
7) Fabrication of XRD Holder.
8) Fabrication of Heat Sink.
9) Fabrication of Wire Grip.
10) Fabrication of Micro- channel of various sizes& notches.
11) Fabrication of Copper hub.
12) Fabrication of various types of crossed horn.
13) Fabrication of Winglet Optimization for fixed Wing.
14) Fabrication of portable water purification kit.
15) Fabrication of Tool for Wire EDM Guide.
16) Fabrication of 3-D Printer Support.
17) Fabrication of mould part.
18) Fabrication of Rotary feed control valve.
19) Fabrication of indenter with different tipangle
20) Fabrication of Aerospace Swirler (Blisk).
21) Fabrication of Gas Sensing Chembers.
22) Fabrication of Twist drills.
23) Fabrication of Propeller.

Glass Blowing Section

This section is equipped with glass blowing lathe, glasscutter, glass grinder, glass annealing chamber, etc. Mainly of Borosilicate glass work is done here with the help of oxygen & LPG. The main fabrication jobs include different type of condensers, Dewars, different volume capacity F.B, R.B., Flask with neck joints, manometers, U & S Tubes, glass bubbler, glass coil for oil bath, gas collector, etc. The fabrication of Glass ware items are done as per drawing and design of the equipments.

During the year 2017-18 the this section has performed jobs of about 55workorders

Carpentry Section

Housed in the workshop complex behind Chemical Engg.& Automobile Section, This section has Auto Planer, Joints Nature's machinery, Vertical Band Saw and Multipurpose Machine. Apart from carpentry jobs, as per requirement of the Institute it also undertakes construction of MS Frames, Hand painting, Spray painting, Polishing, Writing of name plates, display board &jobs as required by students' projects.

This section also meets the major requirements of furniture in the Institute. During the year 2017-18, this section has completed 120Workorders of various departments of the Institute.

Electronics Section

Electronics section of CWISS has been revived and has facilities for repair of different types of electronic equipments. It also helps users in their design and development activities. A LPKF PCB Prototyping machine is available in this section which helps the users of different departments in fabrication of double sided PCBs.
During the year 2017-18 the Electronics Section has performed jobs of about 25 Workorders.

Audio Visual Section

Audio Visual Cell is primarily involved in providing audio visual support for conducting regular classes at different lecture halls (approximately 852 classes per week). It supports audiovisual facilities with Multimedia projectors, Document cameras, PCs and PA system with wireless microphones for the following class rooms: V1, V2, V3 & V4 at Vikramshila complex, F116, F127, F142, F232 & F244 at main building area and all 44 classrooms at Nalanda classroom complex.

AV Cell used to provide support about 24,700 regular classes throughout the year in aforesaid classrooms. Besides these the Cell provides AV facilities for all seminars, symposiums, workshops, short term courses and meetings at Gargi,Moitrei, S. N. Bose Auditorium and associated programme at Netaji , Kalidas Auditorium, Senate hall, Committee room and Board room. All the T. S. G. activity programmes are also supported by the Cell. AV Cell also provides support to various student activities like Quiz, Plays, Spring festival, Kshitij, Inter Hall competitions, T&P activities and other Tech Fests from different Departments.

It also helps in various other academic activities like Convocation, Senate Meeting, National & International seminars, Conferences and Workshops and also JEE & GATE programmes. AV Cell also render technical support for pre-placement talk during office hours & beyond office hours and sometime overnight for special cases.

The Audio Visual Cell has a good number of sophisticated equipments like Multimedia Projectors, Document Cameras, High quality Amplifiers and Mixtures, Wireless Microphones & Conference Systems and other peripheral supporting systems. Primary maintenance of these equipments are also asserted by AVCell staff itself. The new Digital conference system installed at Senate Hall, DCN Next Generation, can automatically show an image of the current speaker delegate on monitors & projection screens in the Senate hall.

Outreach

CWISS has conducted a number of Short Term Courses on CAD-CAM applications & advanced CNC programming at IIT Kharagpur. These courses have disseminated knowledge among Teaching Faculty, Staff & Students of TEQIP colleges under the TEQIP-II programme.

The Short Term Course Principal Coordinators were Professor A. Roy Choudhury (Chairman, CWISS) and Co-OrdinatorsDr. SuprakashPatra (AWS, CWISS) and Mr. Santanu Das/Sr. Tech. Supdt., CWISS.

CWISS has also carried out work for sponsored projects and for other institutions in consultancy mode through SRIC.

Computer and Informatics Centre

Head **:** Prof. Arobinda Gupta

Concerned Faculty/Officers

Name	Degree	Specialization
Partha Goswami	B.Sc. (Hons.) and B.Tech (C.U), M.Tech and Ph. D (IIT Kharagpur)	Campus Network, Wide Area Network, Optical Backbone Network
Alokes Chattopadhyay	M.Sc., M.S (IIT Kharagpur)	Hardware, OS, Network and Information Security, Open Source Applications
Alok Baran Das	B.Sc. (Hons.) and B.Tech (C.U)	Campus Networking (CCNA) Data Centre and Wide Area Networking IT Service Management (ITIL) OS and Hardware
Sudipta Chowdhury	B.E (Manipal Institute of Technology, Mangalore University),	Computer Networks (CCNA), Project Management (PMP,PRINCE2 and AGILE) IT Service Management and Process Consulting (ITIL) Cloud (EXIN, AWS, Microsoft)
Surid Kumar Das	B.Tech, MTech (Rajasthan Vidyapith Deemed University)	Hardware, Infrastructure and Operation Management of Computer Laboratories
Sudipto Das	B. Tech, MTech (Rajasthan Vidyapith Deemed University)	OS and Network Applications
Uddipan Tunga	B.E (Bankura Unnayani Institute of Engineering, Burdwan University)	Routing and Switching (CCNA and CCNP) Data Centre (CCNA and CCNP) VOIP (CCNA Voice) Network Security (CISCO IOS Security and Firewall Specialist)
Deepan Banerjee	B.Tech (Bankura Unnayani Institute of Engineering, WBUT)	Configuring Network (Routing Switching & Wireless) Network Planning and Design
Tanumoy Ghosal	B.Tech (Bengal Institute of Technology and Management, WBUT)	Campus Networking Infrastructure and Network Security
Subhasish Chattopadhyay	B Tech (Dr. B.C. Roy Engineering College, Durgapur, WBUT)	Wireless Network and GPON
Debnath Pramanik	B. Tech (B.P. Poddar Institute of Management and Technology, WBUT)	Operating System (Red Hat Certified Engineer) Programming (Python) Open source applications
Gyan Singh Patel	B.Tech (Rajasthan Technical University), Kota	Mailing System, IT Infrastructure and Cloud

Facilities

Networking Facilities in the Institute

LAN points in the campus have crossed 30000 by adding more than 1200 new points during the year under review. Networking facilities have been extended to the following locations:

- Sister Nivedita Hall of Residence
- Nalanda CCR and RCR1 class Room Complex
- Data Centre networking for Integrated Information Service (IIS)
- Extension of SRIC office
- Upgradation of the network at Central Library and Kolkata Extension Centre

➢ The Quadruple Play Network (QPN) facility provided in the campus is being extended to several other locations particularly to the newly constructed residential quarters.

- New Faculty accommodation (MSA)
- Residential accommodations such as 66 NFA, C& D Type, B Type Flats

➢ CIC has also undertaken the following network expansions:

- Extension buildings of Aerospace Engineering, Mining Engineering and JCB Lab.

- Foreign Visitors Guest House
- Diamond Jubilee Complex
- Nalanda Admin Block
- Post-Doctoral Accommodation
- VSRC G+7 Boys and Girls Hostels
- New Campuses at Rajarhat
- Expansion of outdoor OFC cable plant to connect new Hospital, building redundancy in existing fiber routes and for further expansion of campus network to the upcoming constructions.

- Campus wide Wi-Fi Authentication system is being rolled out without any purchase of additional hardware and Software. Due to the increased use of Wi-Fi from the mobile phones and tabs, CIC is planning to strengthen the Wi-Fi signal strengths in the Hall of residences by increasing the number of access points. The placement activities carried out by the CDC was heavily supported by the Wi-Fi network at the Nalanda Class room complex.
- The centre has also taken up the network extension for various services like video surveillance by security section, data acquisition for the electrical meter reading by E&M section, monitoring and control of various renewable power plants by E&M section.
- CIC is rolling out the deployment of new network security devices to channel the traffic from the specific users / specific subnets to the Internet directly.

PC Laboratory Facilities

- In PC labs open source software has been used for the diskless remote boot and automated OS deployment to reduce the OS installation and configuration time in all PCs. Open source software has been also tested for the power management and software deployment.
- Thin Clients of PC Lab-1 have been replaced with newly procured 90 nos. Dell 5050 PCs.
- Old PCs of PC Lab-4 have been replaced with newly procured 80 nos. Dell 3620 PCs.
- Rolling out the implementations of Dual-Projector and Dual-Screen environment in the PC labs for better visibility.
- Apart from the regular laboratory classes, all five PC Labs are used for other student related activities like registration of students in both semesters, placemen initiatives of CDC, short term courses and International seminars, tech festival like Kshitij, Spring festival and other computer contests organized by Department/Centers/Schools of the Institute.
- Along with the online test for the regular Institute courses, PC laboratories are also used to conduct important national level online examinations such as JEE Advanced, GATE, NPTEL, etc.

Server Room Facilities

- High end blade and rack servers hosted at CIC Server room have been virtualized using Vmware, KVM, RHEV, etc.
- This visualized environment allows to optimally use the hardware resources for several mission critical application of the Centre, such as Mail Messaging System, Proxy Servers to access Internet, DNS Servers, WWW Servers for portals, Application Software License Servers, RADIUS Server for Wi-Fi authentication, E-office etc.
- Centre is also planning for the expansion of the above infrastructure towards hyper converged architecture and cloud platform to provide support to the user community
- Zimbra Mail messaging system has been seamlessly migrated from Z6.X to Z8.X
- Mail Storage has been also migrated with zero down time and no loss in user emails.
- CIC is rolling out the domain migration for the mailing system and the web servers.

Other Facilities (Software & Hardware)

- CIC has renewed the licenses/support/AMCs for the followings:
  - Trend Micro Neat Suite Advanced Antivirus Protection for Desktop and Servers PSP Gold Support,
  - Zimbra Network Edition Premium Support for Mail Messaging Systems
  - Renewal of Abaqus, Ansys, MatLab, Microsoft, RHEL software licenses
  - Annual Maintenance Contract for Campus Network
  - Annual Maintenance Contract for HP Blade Servers
- Centre has implemented Kiwi Syslog Server to store various event logs.
- A new server room has been set up to accommodate more IT infrastructure.
- CIC has implanted a helpdesk system to monitor and analyze user calls.
- New website for the Centre has been launched during the year under review

Continuing Education Programme

Dean : Prof. Adrijit Goswami

The Continuing Education Programme is a significant academic activity of the Institute. Over the years, it has diversified in terms of variety of programmes, coverage of disciplines, mode of teaching, duration, and the range of industries and academia served. The activities includes providing continuing education and training to professionals from industries, R&D organisations and academia, providing opportunities to teachers and students of Engineering Colleges to update their knowledge through short term courses and for pursuing MTech and PhD programme under Quality Improvement Programme (QIP) of MHRD. Additionally UG and PG student s from CANADA were also trained under the MITACs programme of TEQIP-II, MHRD.

During 2017-2018 the Continuing Education Cell organised 18(eighteen) QIP short term courses with 611 participants, 11(eleven)TEQIP-II sponsored courses with 205 participants; while the number of self-sponsored short term courses conducted was 85 with as many as 2967 participants. Also, in this period 26 conferences/workshops were conducted with 1181 participants. The three year executive MBA programme organised by the unit had 54 students in its Kolkata centre. During this year 02(two) teachers under QIP completed their M.Tech programme and 08(eight) QIP scholars were awarded PhD degrees.

Under the scheme for empowerment of students and teachers through synchronous and asynchronous instruction (EIT) under NMEICT, MHRD, more than 194 faculty coordinators and 5928 engineering college teachers were trained.

Indian Institute of Technology Kharagpur initiated Global Initiative for Academic Networks (GIAN) which is a flagship programme of the Govt. of India in the winter of 2015. These courses of 2 weeks or 10 working days duration were designed around current and multidisciplinary themes of Science, Engineering, Management and Law with a judicious blend of lectures and tutorials per day. A total of 476 national and international participants from the academia and industry participated in the 16(sixteen) GIAN courses during 2017-2018. The GIAN courses provide an excellent platform to our students, faculty and industry professionals to seek knowledge and experience from international faculty. It also provides them an opportunity to interact and learn subjects in niche areas through collaborative learning process. High quality course material, both through print and video are developed under the GIAN programme so as to be used by a larger body of students and teachers.

One credit courses on micro specializations are being conducted successfully for the last few years. 05(five) Nos micro credit courses were conducted during 2017-2018.

Facilities of the Cell include Video-Conferencing Studios at Kolkata, Bhubaneswar and Kharagpur.

Estate (E&M) Works Section

1 Installation of 1000 kWp grid connected distributed roof top Solar Power Plant at various hostel and academic building roof tops. Proposal for installation of 500 kWp solar power plants in various roof tops of the Institute.

2 EOI for 5 MWp ground mounted solar Power Plant in final stages.

3 Installation of New 11 kV Vaccum Circuit breakers in Substation no. 5, Nalanda Substation, Substation no. 14 for better power system reliability.

4 Modification and Augmentation of substation no. – 13A for High Power capacity facility and augmentation of substation no-13 with 1500 kVA transformer and new PCC panel.

5 Electrification of new UPS room out Takshila.

6 Installation of New 500 kVA DG set in the process of being installed at Nalanda Classroom Complex.

7 ACB controlled main electrical power distribution panel was installed in Kolkata Guest House,Saltlake to provide power to NDL project and Guest house.

8 Completion of electrical works of SNHR,MSA and NFA building.

9 Football ground and Cricket ground sports lighting at Tata Sports complex is under process.

10 Sports lighting of Gynan Ghosh Hockey stadium and PAN loop Volley Ball and Basket Ball court is under process.

11 Ten. Passengers lift put in operation in SNHR.

12 Provided additional wall fan in LBS Hall (174 nos.), in SNHR (75 nos.) and in MT Hall (30 nos.) to accommodate more number of students in the existing room.

13 Two nos. Badminton Court sports lighting was done at B.R.A Hall.

14 Replacement of conventional luminaries with LED fitting in the hostels.

15 Different Halls surrounding area lighting are increased by providing LED streetlight.

Civil Construction & Maintenance Section

As a part of the ongoing infrastructural development, various construction projects have been taken up by Civil Construction and Maintenance Section. Current status of those projects is as follows:

Nalanda Class Room Complex : All 88 rooms of NCRC have been handed over. External development like road, drain etc. is in progress.

J.C. Ghosh Science Block & P.C Roy Laboratory Block : Total – 16floors.All the floors have been handed over with 2 floorstoSIDM, 2 floors to CORAL, 2 floors to Petroleum Engg. and 10 floors to ChemistryDeptt.. HVAC works is in progress.

Expansion Work In Academic Buildings :

1. Finishing work is in progress at the Expansion of Aerospace Engineering Building Project.
2. Finishing work is in progress at new Annex Building of Mining Engineering Department.
3. Finishing work is in progress at JC Bose Annexe Laboratory Building. Tender process for HVAC work is in progress.

Construction Of B-Type Faculty Aparments : RCC structural work under progress.

Construction Of Married Scholars Accommodation : All the 64 flats have been handed over.

Construciton Of Faculty Transit Apartments : All 39 flats have been handed over.

Expansion of Vikram Sarabhai Residential Accommodation : Finishing work of 164 rooms for Boys and 164 rooms for Girls have been completed substantially and joint verification of facilities for handover is in progress.

Construction of Super Speciality Hospital : RCC structural work, brickwork & plastering of Main Hospital Building, Electrical sub station, AC Plant room, pump house has been completed. HVAC, Fire fighting, internal electrification, lift installation, STP & finishing work isin progress.

Construction of Research Park at Rajarhat Kolkata: The work order for the (B+G+9) Main Building along with Auditorium, Sub Station building and services has been issued by CPWD to M/s. NCC Ltd. The structural work has already been completed including Auditorium and sub-station. 90% of finishing works has been completed. Various service works like HVAC, fire-fightingetc. are also being simultaneously executed.

Construction of Nivedita Hall Of Residence : All the 4 blocks including Dining, Kitchen & common facility have been handed over.

66 Units of New Faculty Accommodation : 66 nos. New Faculty accommodation units in 11 (G+2) building are being constructed by CPWD through their executing agency M/s S N Paul & Co. RCC Structure & brick work of 4 buildings have been completed and finishing work is in progress. Works is in progress at balance 7 buildings.

New Water Supply Project : Total pipe laying done 11.04 Km out of 12.600 km. The work is in progress in SE Rly Goods yard Area where total of 4.29 km has been laid out of 5.500 km. Pier casting & Collector well casting is in progress.

Nano Crf & Life Science Building of Diamond Jubilee Complex : All the RCC Structure has been completed and finishing work has commenced.Plant Room of HVAC has been completed and installation work has commenced. Structural work of sub-station has been completed.

100 Units Of Post Doctoral Accommodation : Out of 8 slabs, 7 slab has been completed. Simultaneously brickwork, plastering, flooring & finishing work is in progress.

Foreign Visitors' Accommodation : RCC structural frame work has been completed with the casting of top slab and brickwork, plastering work is inprogress.

Infrastructure Development of Technology Students Gymkhana : Work has commenced for development of synthetic athletic track, hockey ground, tennis courts with lighting facility.

Extra Academic Activities

The extra academic activity (EAA) at the Institute involves undergraduate students in the National Service Scheme (NSS), National Cadet Corps (NCC) and sports and fitness activities over four semesters. In each semester, students get involved in approximately 45 hours of field work in EAA. Specific Highlights of the EAA program in the year are as follows:

National Service Scheme

National Service Scheme of EAA covered about 1000 students in this year. The students typically spent three hours per week over entire semesters working on social issues in the nearby villages and slums in and around Kharagpur. They participated in facilitating education for the underprivileged school children by organizing scholarships, prizes, study materials, stationery, bicycles and utensils. They monitored drinking water quality at villages and provided nutritional supplements to primary school children to ameliorate endemic malnutrition among tribal population. They also organized blood donation and medical camps and awareness programs on issues such as substance abuse, health and hygiene and nutrition. They planted and maintained saplings and participated in facility and infrastructure maintenance, e.g., repair of rural roads, painting and maintaining school buildings and furniture.

NCC

Both 3 Bengal Tech Air Sqn NCC and one Bengal EME Coy NCC units are dedicated NCC units designed to impart NCC training to students of the Institute as an allotted EAA (Extra Academic Activity) subject for undergraduate students (1st& 2nd Year). During the training year 2017-18 a total number of 159 students were enrolled (129 Boys and 30 Girl cadets) in 3 Bengal Tech Air Sqn NCC and 161 cadets in one Bengal EME coy NCC.

Considering their importance and requirement various training activities were conducted by this unit for first and second year cadets. All these activities include (i) Drill; (ii) NCC & Aircraft Technical subjects; (iii) Aeromodelling; (iv) Independence Day parade; (v) Rastriya Ekta Diwas; (vi) Combined Annual Training Camp; (vii) Republic Day Parade; (viii) Range Firing (22" Rifle) and (ix) ‘B’ Certificate examination.

This unit also conducted various social and community development activities such as (i) Blood Donation Camp; (ii) Tree Plantation; (iii) Swachh Bharat Abhiyaan; (iv) Sadbhavana Run; (v) World AIDS Day.

NSO (Health and Fitness)

The NSO (Health and Fitness) program of IIT Kharagpur served 966 UG students in the year 2017-2018 as a part of Institute’s mandatory extra academic activity. The program was supervised by ten faculty members who serve as program officers of individual units comprising of about 100 students each, and another faculty as program coordinator. Every Wednesday and Saturday, the students assembled in the JnanGhosh stadium / Tata Sports Complex at sunrise for workout sessions. In this, physical training was conducted under strict supervision of qualified physical training instructors drawn from Students' Gymkhana. Apart from routine activities, the students took part in several special activities:

- Aerobics (29th July 2017, conducted for 966 students)
- A motivational program, ‘Celebrating Swami Vivekananda’s Life and Message’ (14th March 2018, conducted for 909 students)
- Art of Living Yoga (17th March 2018, conducted for 537 students)
- Disaster Management Trainingby Sri SathyaSaiSevaOrganisation, West Bengal (17th March 2018, conducted for 372 students)
- HeartfulnessMeditation (24th and 25th March 2018, conducted for 909 students)

In addition to these, to serve a greater cause of spreading the message of health and fitness beyond the physical reach of IIT Kharagpur, a blog with URLhttp://healthandfitnessiitkgp.blogspot.in/ is maintained under this program.

Institute Information Cell

Head : Prof. SoumyaKanti Ghosh

Associate Head: Dr. Pralay Mitra

The Institute Information Cell (IIC) has been the hub of academic information service of the Institute throughout the year. In the past year, the IIC has maintained the IIT Kharagpur website data and added new features. The cell is continuously adding new features to display more and more information on departmental pages, academic programmes, profiles of all faculties, halls of residences and administrative positions in the Institute. The website database has been interfaced with the Institute ERP system which has facilitated maintenance and updation of information in a seamless manner.

The existing internal noticeboard have been updated to *apna website*(http://www.apna.iitkgp.ac.in), which fetches data from ERP system wherever necessary. The contents of the group mail service of IIT Kharagpur internal users are now be listed in specific categories in the *apna* website (internal website). The latest doctors' roster of BC Roy Technology Hospital are published in the internal website with proper interfacing with the Institute ERP. The messaging system have been developed under Faculty Hub with other ongoing development. Other facilities of internal noticeboard like Academic/ Administrative/ Estate/ Hospital notices, Document/Forms, Rules & Regulations have also been moved to the new internal website

The cell also maintained additional information modules for in-house applications in existing internal noticeboard. These include on-line CRF Lab Booking system, Staff Directory, Message Board facility to the Academic Section, Establishment Section, Estate Office, B C Roy Hospital and other sections. Doctorates Information System is a website for PHD/MS which is maintained by the Cell.

Kalpana Chawla Space Technology Cell

Chairman : Prof. Dipanwita Roy Chowdhury

Brief description of on-going activities:

Space Technology Cell, IIT Kharagpur was renamed as KalpanaChawla Space Technology Cell and was formally inaugurated by Chairman ISRO on 17th November 2004 this Cell has been functioning under the supervision of chairman of Space Technology Cell since June 1998. The Cell is being funded by ISRO, Bangalore. Currently, the cell handles thirty seven number of on-going research projects and in addition eleven new projects are approved in 2017-2018.These collaborative research projects are carried out in the following broad areas :

1) Liquid Combustion, Propulsion and Cryogenics
2) Space Communications and EMI/EMC
3) Micro-machine Sensors
4) Control, Navigation and Guidance
5) Embedded Systems and IP-Cores
6) Cryptography and Security
7) Remote Sensing
8) Life Support Engineering
9) Smart Materials & Exotic Materials
10) Power Electronics
11) Space Education
12) Electronics Devices
13) Cryogenics
14) Quantum Communication

As an outcome there are approximately hundredand forty papers published in reputed national and international journals and conferences, and one patent has been filed jointly with ISRO. KCSTC offered two courses on 'Digital Signal Processing'&'Fundamentals and Applications of RADAR Imaging for Georesource Operations' in the academic year of 2017-2018.

Infrastructure Development and new Acquisitions

A number of softwares and hardwares have been procured under KCSTC projects to enhance the research platform of KCSTC as well as different department laboratories. A few of these are as follows :
(i) High Voltage Differential Probe (ii) Digital Storage Oscilloscope (iii) Spectrometer with Accessories (iv) Foliar Dust Particle Measuring device Computer (v) wireless connectivity kit and software (vi) Nimble and software (vii) Cadence and Visual TCAD software packages (viii) CST software for Electromagnetic simulation tool (ix) FPGA board with FMC cards for ADC and DAC (x) Vivado System edition Software (xi) VersaSTAT 4 Potentiostat Galvanostat(xii) SLC-2445 Nanometer Precision Linear Positioner

Rajbhasha Vibhag

Chairman
Prof V.R.Desai

Hindi Officer
Dr. Rajeev Kumar Rawat

On Going Activities of Vibhag

Translation

All the documents, correspondence, Institute's Annual Report and Annual Accounts statement are translated by Rajbhasha Vibhag apart from the routine translation of various technical / non-technical documents, administrative orders,RTI and letters from English to Hindi and vice versa. In addition to the translation of documents, the Vibhag ensures the bilingual display of different nameplates, notice boards, rubber stamps, and preparation of Degrees / Diplomas certificates awarded by the institute.

Hindi Training

Rajbhasha Vibhag has initiated Hindi Training to Institute employees for Praveen, Pragya and Parangat course under Hindi Teaching Scheme. The classes are arranged in Institute with the help of Sri K K Pathak, Hindi Pradhyapak, Hindi Teaching Scheme. The Vibhag has also initiated Hindi typing training under Hindi Teaching Program and up and set up a small Hindi Typing Training Centre where our employees are being trained for doing their official work in bilingual.

Hindi Workshops and Seminars

With a view to create awareness for use of Hindi as Official Language in official work as well as to accelerate the pace of its progressive use, Rajbhasha Vibhag used to organize various training programmes, Workshops and Seminars for the employees / Officers of the Institute throughout the year. In the previous year 2015-16 the following events took place:-

On 14 Sep 2017, 02 Nov 2017, 23 Feb 2017 three Hindi workshops were organized for the Officers and employees of the Institute. In these Dr. Rajeev Kumar Rawat, Hindi officer, Sri K K Pathak and other invited guest speakers briefed the employees about the techniques for doing their day to day official work in Hindi and also hands-on training was given to them to be able to work on computer in Hindi, noting and drafting. All the secretaries working in Dean’s office, Establishment, Coordination sections were trained by Hindi Officer for Hindi typing by going to their desk.

Celebration of Hindi Divas & Vishwa Hindi Divas

During the month of Sep 2017 the Institute celebrated "Hindi Divas" on 14th Sep 2017. Several programmes and competitions in Hindi were organised for employees and students of the Institute as well as for the students of nearby schools. Winners were motivated with certificates and Hindi books as prizes. A well known speaker, technocrat Hydor specialist Dr Dinesh Kumar Mishra ji gave the Hindi Divas lecture on 14 Sep 2017 on the Scientific and Technical subject BHART KI NADIYONO KA BHASHIK. SANSKRITIC AND VAIGYANIK MAHATWA, He interacted with the Ph D Scholars of the institute and motivated them to do their research in their mother tongues and Hindi.
The institute celebrated Vishwa Hindi Divas on 10 Jan 2018 and invited Prof Baldev Bhai Sharma, Chairman, National Book Trust delivered the lecture on Pustak Sanskriti.

Publication
Rajbhasha Vibhag publishes a monthly News Magazine "Jharokha" in Hindi covering all the academic, cultural, extra-curricular activities of the institute with the rules, regulations, policy matters related to Rajbhasha.

Resources and Achievements, Softwares

Rajbhasha Vibhag has several Hindi Softwares like i-leap, ISM Publisher, ISM Office, Leap Office etc. Vibhag also uses the tools, PARIVARTAK, MANTRA, TRANSLITERATION, etc developed by Department of Official Language , MHA, Government of India, C-DAC and other agencies. Recently ISM V.6 was procured which is Unicode compatible.

UNICODE

The Vibhag has activated UNICODE in all the computers of departments and trained the employees to work in Hindi.

Rajbhasha Library

Rajbhasha Vibhag has a full-fledged Library with a collection of more than 1500 books of different writers on literature, fiction, poetry, prose, play and various subjects of translation and language.

Bilingual web site

The Rajbhasha Vibhag has made its website bilingual. Useful information links are available on Vibhag Website regarding training programmes, incentives schemes, different tools etc. The Rajbhasha Vibhag has also made the Institute's website bilingual and efforts are being made to make the contents of the website also bilingual.

Committees

Official Language Implementation Committee and Progress Measurement Committee

The Institute has constituted Official Language Implementation Committee (OLIC) for the implementation of Rajbhasha Policies and to monitor the progressive use of Hindi in the Institute in day-to-day work. A meeting of the OLIC is held quarterly and is chaired by the Director. This year the meetings were held on to discuss various issues.

Town Official Language Implementation Committee (TOLIC)

In addition to this, Rajbhasha Vibhag, IIT Kharagpur plays a vital role in co-ordination for implementing the Official Language policy in the town. As the Director of the Institute, is the senior most officer of the Central government posted in Kharagpur, Rajbhasha Vibhag, Ministry of Home Affairs, Government of India has nominated him as Chairman of Town Official Language Implementation Committee (TOLIC). All the central government offices, Banks, Corporations, Autonomous bodies and enterprises are the members of TOLIC. At present there are 54 member Offices in the committee. The committee has been assigned the task of implementing the Rajbhasha policies and ensuring the orders and directives of government. The Chairman TOLIC Kharagpur has nominated Dr Rajeev Kumar Rawat, Hindi Officer as Member- Secretary of TOLIC to look after the routine work of committee. As per the calendar, the meetings of TOLIC Khargpur are fixed to be held in January and August every year. In the previous year two meetings were held on 21 Aug 2017 and 10 Jan 2018. The meetings were chaired by the Chairman TOLIC and attended by Heads of the member offices with their Hindi Officers and Staff. Rajbhasha Vibhag invites the employees of TOLIC member offices to participate in the workshops, seminars and training programmes organized in IIT Kharagpur.

Science & Technology Entrepreneurs' Park (STEP)

Managing Director **:** Prof. Satyahari Dey

Major Activities:

a) New laboratories created in Gopali campus- i) Microbiological Testing Laboratory; ii) Phytotoxicity Testing Laboratory

b) Infrastructure facilities created:

(1) Shed area at STEP Gopali Campus has been renovated for civil works, water connection, electrification to provide better facilities to incubatees.
(2) New boundary wall (Phase-I) has been constructed to improve security measures of STEP Gopali campus.
(3) Pucca road has been repaired and construction process of new road at STEP Gopali campus is under process.
(4) A 11KV feeder line for uninterrupted power supply is being installed to support graphene production infrastructure.

c) The Ministry of Textile has already approved two projects for RS. 12.10 Crore:
(1) Setting up of a Plug & Play Infrastructure for technical textile manufacturing for user industries/ entrepreneurs
(2) Setting up of a Plug & Play Infrastructure for technical textile: Manufacturing defence, aircraft & pollution-control related products

d) STEP IIT Kharagpur signed a "Industry/incubatee collaboration on Tissue Culture Banana Project of STEP, with one of its incubatee M/s Synthetic Moulders Ltd. on 29.12.2017.

e) Committee Meeting for Incubation and Seed Loan: A Committee Meeting was held on 25.09.2017 to give incubation and seed loan support to applying companies at STEP, IIT Kharagpur. Four (4) companies M/s Arogyam Medisoft Solution Pvt. Ltd., M/s Bhadoria Rural Technologies Pvt. Ltd., M/s Kuhu Labs Pvt. Ltd. and Krytotech Pvt. Ltd. attended the meeting. None of them have been selected for incubation or seed support.

f) Committee Meeting for Incubation and Seed Loan: A Committee Meeting was held on 29.12.2017 to give incubation and seed loan support to applying companies at STEP, IIT Kharagpur. Five (5) companies M/s Skablotrays Pvt. Ltd., M/s Alive Homes Pvt. Ltd., M/s Hexa Ride Technologies (OPC) Pvt. Ltd., Kuhu Labs Pvt. Ltd. and M/s Single Door Techno Solutions Pvt. Ltd. attended the meeting. M/s Skablotrays Pvt. Ltd. has been recommended for incubation at STEP, IIT Kharagpur.

g) Progress Report of TOCIC, IIT Kharagpur:

Workshop/ Outreach Camp

1. **Inauguration of Solar Powered Cycle Refueling Station (A Collaborative Effort between IIT Kharagpur, Ampere Vehicles, Coimbatore and Renewable Energy College, Kolkata), IIT Kharagpur on 26th May, 2017:** The programme was inaugurated by Dr. S. P. Gon Chaudhuri of Renewable Energy College, Kolkata and Prof. Partha Pratim Chakrabarti, Director, IIT Kharagpur. The meeting was attended by a number of entrepreneurs of STEP, IIT Kharagpur.

2. **Product Showcasing by Entrepreneurs' of STEP, IIT Kharagpur on 26th May, 2017:**The programme was inaugurated by Prof. Partha Pratim Chakrabarti, Director, IIT Kharagpur. The meeting was attended by a number of entrepreneurs of STEP, IIT Kharagpur along with other dignitaries.

3. **Discussion between Entrepreneurs' of STEP IIT Kharagpur and Times of India, IIT Kharagpur on 26th May, 2017**: The programme was inaugurated by Prof. Partha Pratim Chakrabarti, Director, IIT Kharagpur. During the meeting Times of India discussed their initiative Brandshoots, an

accelerator platform for startups from Eastern India. The discussion was attended by many entrepreneurs' of IIT Kharagpur.

4. Skill development/ entrepreneurship workshop on oyster mushroom cultivation & tissue culture based plant propagation technology on 28th November, 2017

5. Skill development/ entrepreneurship workshop on oyster mushroom cultivation & tissue culture based plant propagation technology on 2ndDecember, 2017

6. Skill development/ entrepreneurship workshop on oyster mushroom cultivation & tissue culture based plant propagation technology on 21st December, 2017

7. Skill development/ entrepreneurship workshop on oyster mushroom cultivation & tissue culture based plant propagation technology on 7th January, 2018

8. Skill development/ entrepreneurship workshop on oyster mushroom cultivation & tissue culture based plant propagation technology on 24th January, 2018

9. Skill development/ entrepreneurship workshop on oyster mushroom cultivation & tissue culture based plant propagation technology on 7th February, 2018

10. Skill development/ entrepreneurship workshop on oyster mushroom cultivation & tissue culture based plant propagation technology on 21st February, 2018

Project Review Committee Meeting

1. **PRISM PRC meeting on 15.06.2017 at 11.00 AM:**A PRISM PRC meeting at TOCIC, IIT Kharagpur was held on 15.06.2017 at 11.00 AM to review three PRISM projects 'Development of a cost effective, technically modified liquid chromatography column' of innovator 'Dr. Biswajit Saha'. The meeting was attended by Dr. Ramanuj Banerjee, Scientist 'E', DSIR, Prof. Satyahari Dey, PI, TOCIC, IIT Kharagpur, Prof. Partha Pratim Das, Head - Rajendra Mishra School of Engineering Entrepreneurship, Prof. Basab Chakraborty, Co-PI of TOCIC, IIT Kharagpur, Prof. S. K. Pal, Professor, Department of Mechanical Engineering, IIT Kharagpur and Prof. Alok Kanti Deb, Associate Professor, Electrical Engineering Department, IIT Kharagpur.

2. **PRISM PRC meeting on 10.07.2017 at 11 AM:**A PRISM PRC meeting at TOCIC, IIT Kharagpur was held on 10.07.2017 at 11 AM at Pune, Maharashtra to review the PRISM projects 'Solar Powered Farm Level Cold Storage with battery-less refrigeration and thermal storage' of innovator 'Mr. Vivek Pandey'. The meeting was attended by Dr. Ramanuj Banerjee, Scientist 'E', DSIR, Prof. Satyahari Dey, PI, TOCIC, IIT Kharagpur, Prof. Partha Pratim Das, Head - Rajendra Mishra School of Engineering Entrepreneurship, Prof. Basab Chakraborty, Co-PI of TOCIC, IIT Kharagpur and Mr. Soumya Sen Sharma, Chief Scientist, CMERI, Durgapur.

Screening Committee Meeting

PRISM Screening Committee Meeting on 15.02.2018 at 11.00 AM:A PRISM Screening Committee meeting at TOCIC, IIT Kharagpur was held on **15.02.2018 at 11.00 AM** to review new PRISM project. The meeting was attended by Dr. Ramanuj Banerjee, Scientist 'E', DSIR, Prof. Satyahari Dey, PI, TOCIC, IIT Kharagpur, Prof. Partha Pratim Das, Head - Rajendra Mishra School of Engineering Entrepreneurship, IIT Kharagpur, Prof. Surjya Kanta Pal, Professor, Department of Mechanical Engineering, IIT Kharagpur, Prof. Basab Chakraborty, Co-PI, TOCIC, IIT Kharagpur and Assistant Professor, Rajendra Mishra School of Engineering Entrepreneurship, IIT Kharagpur.

Brief descriptions of on-going entrepreneurial activities at STEP

- Total No. of companies: 19.
- STEP IIT Kharagpur Campus: 14.
- STEP Gopali Campus: 5.
- No. of Companies incubated in 2017-18: 7.
- STEP IIT Kharagpur Campus: 5.
- STEP Gopali Campus: 2.

New Companies inducted at STEP-IIT Kharagpur campus during 2017-18

New Acquisitions in STEP-IIT Campus:

Sl. No	Name of the companies	Major Entrepreneurial Activity
1	M/s Humosys Technologies Pvt. Ltd.	Development, manufacturing and commercialization of human monitoring system
2	M/s Zelence Industries Pvt. Ltd.	Development, manufacturing and commercialization of biochar and animal husbandry growth regulator.
3	M/s Aspenbower Vehicles Pvt. Ltd.	Development, manufacturing and commercialization of electric vehicles.
4	M/s mBreath Technologies Pvt. Ltd.	Development, manufacturing and commercialization of wireless smart sleep sense.
5	M/s SkyBits Technologies Pvt. Ltd.	Research, design and development of processing and analytics of rich media.

Companies incubated at STEP-Gopali campus during 2016-17

New Acquisitions in STEP-Gopali Campus:

Sl. No	Name of the companies	Major entrepreneurial activity
1	M/s Bengal Biotechnology and Agriculture Pvt. Ltd.	Development of low cost tissue culture rack fully fitted with cooling facility and tissue culture lab, providing disease free banana and flowers sapling, green house and nursery activity.
2	M/s Skablotrays Pvt. Ltd.	Development of nano coated wire mesh cables.

Awards and Recognition to STEP Entrepreneurs

- **M/s Zelence Industries Pvt. Ltd. -** Received Start-up Recognition from DIPP.
- **M/s Aspenbower Technologies Pvt. Ltd. -** Received Start-up Recognition from DIPP.

Seminars/Workshops/Conferences:

Sl. No.	Name of the Seminars / Workshops / Conferences / Symposia	Date
1	Workshop / Symposium	26th May, 2017; 28th November, 2017; 2nd December, 2017; 21st December, 2017; 7th January, 2018; 24th January, 2018; 7th February, 2018 and 21st February, 2018
2	STEP GBM & AGM	1st November, 2017
3	STEP Quarterly GBM	24th April, 2017; 29th August, 2017 and 23rd February, 2018
4	Committee Meeting for Incubation and Seed Loan	25th September, 2017 and 29th December, 2017

Sponsored Research & Industrial Consultancy

Dean : Prof. Pallab Dasgupta

The Sponsored Research and Industrial Consultancy (SRIC) Cell is the primary conduit for all sponsored research in the institute. It also plays a pivotal role in the preparation and execution of the research roadmap of the institute, and in managing the internal mechanism of the institute for disbursement of its research funds. As research is one of the key indicators of institutional excellence, and as the government increasingly leans towards the IITs to facilitate its technology infusion roadmap, SRIC has become responsible for driving a wide variety of technology interventionswith industrial and social significance for the country.

The huge diversity of engineering and science disciplines at IIT Kharagpur offers a single window for all types of educational and research service required by the industry. The diversity of in-house expertise at IIT Kharagpur has also catalyzed the development of a healthy ecosystem for large scale industrial collaborations in multi-disciplinary areas including AI, Advanced Manufacturing Technology, Intelligent Transportation Technology, Affordable Healthcare Technology, Geosciences for the Future of Earth, Innovative Infrastructure Design, Industrial Internet of Things, Industrial Robotics etc.

In the year 2017-2018, IIT Kharagpur has set up two major centers of excellence, namely the following:

Center of Excellence on Advanced Manufacturing Technologies

Funded by the Department of Heavy Industries and Public Enterprises and a consortium of eight industry partners, this center of excellence aims to create advanced manufacturing infrastructure for design, prototyping, and testing potentially leading to import substitution, innovation and capacity building in the manufacturing ecosystem of the country. The key focus of this initiative will be to make the Indian capital goods sector globally competitive and support the imminent need to increase the depth in manufacturing through innovation and technology upgrades in four important areas - specialty materials, process automation, additive manufacturing, and digital interventions as envisaged in industry 4.0. The Centre will aim to bridge the divide between the requirements of the leading manufacturing firms of India and the ability of SMEs to meet those requirements in globally competitive terms. The founding partners are Tata Sons, Tata Motors, Tata Steel, TCS, Ramkrishna Forgings, Heavy Engineering Corporation, Bharat Heavy Electricals Limited and Ampere Vehicles.

The facility will have state of the art physical infrastructure for additive manufacturing like 3D printing, advanced joining facility like robotic and micro friction stir welding, diagnostic and metrological inspection systems such as CT scan, Industrial IoT with lab facilities for sensors, backend analytics and research. All of these are targeted towards Industry 4.0, the next generation industrial evolution with intelligent machines, health monitoring and connected manufacturing through digital interventions, robotics and automation.

Center for Artificial Intelligence.

The aim of this center is to address the growing need for AI interventions in a wide range of domains, ranging from safety critical intelligent cyber-physical systems, intelligent analytics in finance and retail, intelligent healthcare, intelligent transportation, and cognitive sciences. The Center has beenbe seeded through a grant from Capillary Technologies Limited, which is one of the most successful incubations from IIT Kharagpur. The major aims will include application of artificial intelligence (AI), machine learning (ML) and computational techniques for intelligent decision making for solving problems in the Indian context, related to Energy, Climate, Water, Disaster Management and Traffic. The center aims to start several outreach educational programmes in AI catering to the enormous demand for trained manpower in AI.

SRIC runs the *Institute Challenge Grants* program, which consists of highly competitive schemes through which the institute provides seed funds for new research initiatives proposed by departments, interdisciplinary teams of faculty members, and individual researchers. This year proposals were sought in three categories, namely student innovation scheme, industry collaboration scheme, and international collaboration scheme. The following projects have been awarded.

Challenge Grant On Collaborative International Research (SGCIR)

- Diffusion Limited SRES for High-Efficiency Biomedical Devices
- Thermal Management Using Smart Hydrogels
- Stem cell Conducive Honey-Biomaterial Blended Regenerative Healing Scaffold.

- Development of an advanced Microbial Enhanced Oil Recovery (MEOR) technology using green-surfactant stabilized microbubbles
- Sodium ion battery for solar energy storage: Novel electrode materials and battery management system development for integration to photo-voltaic modules
- Soil Matrix Temperature Gradient Influence on Migration of Plant Nutrients in Soil
- Field Investigation and Numerical Modeling of Seawater Intrusion in a Coastal Basin of West Bengal, Eastern India
- A multiscale approach to understanding water droplet erosion
- Resonance-free Capacitive Power and Data Transfer Scheme for Bioelectronic Implants
- Visual attention assisted image and video compression
- Model-based estimation of the probability of rare arrhythmic events using extreme-value statistics
- Paper based point of care multiplex bioanalytes detection device for whole blood analysis

Challenge Grants Under Industry Collaboration Scheme (SGICS)

- Prototyping absorbent cellulosic fluff pulp production for personal hygiene from tissue culture raised banana plantation
- Process Development For Manufacturing Fire Retardant Composite From Banana Fibre For Smart Building, Vehicles & Aircraft

Challenge Grants Under Student Innovation Scheme (SGSIS)

- Modeling Connectedness of Firms in Financial Markets with Heterogeneous Agents
- Design of high power rated battery packs for electric vehicles with effective thermal and stress management strategies for enhanced safety and performance
- Large Scale 3D scene Reconstruction using Visual-Inertial Sensor Fusion
- Spore based biosensors for point-of-care diagnostics
- Low-cost syringe pump for biomedical applications
- Development of Indigenous Low-cost Soil and Sawdust Based Water Filters for Water Treatment and its Demonstration in Selected NSS Adopted Villages
- 'AIRAVAT' - The Future Of Transportation
- Hybrid Mobile Manipulator : Uninterrupted Manipulation and Locomotion on Uneven Terrain
- 3D Printing for Building Construction

SRIC IIT Kharagpur played a key role in catalyzing the submission of a large number of proposals from IIT Kharagpur under the UchchatarAvishkarYojana (UAY), IMPRINT, and SwatchtaAbhiyanand worked with the other IITs in carrying out the selection process. Under UAY-I (2016-2017), the institute has received funding to the tune of INR66crores spread over 12 projects. In the year 2017-2018, under UAY-II, 14 projects were submitted and 7 were selected, total amount being INR 11.85 crore. Under IMPRINT, the Institute has already received a fund-commitment in the tune of INR 67crores spread over 12 projects.

Since its inception of Global Initiative of Academic Networks (GIAN) program in 2015-16, IIT Kharagpur is coordinatingthis program nationwide. Aimed at tapping the talent pool of scientists and entrepreneurs worldwide and garnering the best international experience into our systems of education, the GIAN initiative has attracted an astonishing 18 advanced courses involving international experts in 2017-2018. These courses have been made available online for attendees all across the nation.

Additional educational initiatives under the leadership of IIT Kharagpur include the National Digital Library initiative, the National Initiative for Design Innovation, the Teaching Learning Center for Pedagogy Design & Research, and the MOOC compliant e-content creation initiative. Major MHRD supported initiatives include the E-Business Centre of Excellence, Virtual Labs, and Real Time Virtual Labs.

During the year 2017-2018 the Institute received 264 research projects from the Government, private and international funding agencies/enterprises for a total value of INR230.37crore and 160 consultancy projects worth 18.93crore. This includes a number of high-value and flagship projects from the government and the industry, such as:

1. Development of a suite of indigenous assistive systems and tools for the disabled community in India
2. Aberrant circulation epigenomic signatures: development and validation of non-invasive biomarkers for trans-generational monitoring of air pollution associated cancers

3. Development of an inexpensive obstructive sleep apnea (OSA) detection and analysis system useful for home care
4. Decentralized target tracking using swarms of aerial robots
5. Development of a system for post stroke rehabilitation of hand functions using a low cost robotic exoskeleton
6. Development of anti-spoofing measure for speech interfaces to prevent computer generated voice hacking
7. Small scale and sustainable household grey water recycling
8. Indigenous development of online process monitoring of laser surface hardening, cladding and additive manufacturing and studies on dynamic mechanical behavior of manufactured parts
9. Information access from document images of Indian languages
10. Cityprobe: a city-scale pervasive sensing system for monitoring road conditions, air and sound pollution
11. Ultra high efficiency CMOS compatible SiGe single nanowire photodetectors in infrared and THZ wavelengths for defence and security applications
12. Mass cultivation of microalgae for the production of high value biofuel fractions through hydrothermal liquefaction
13. Centre of excellence in Advanced Manufacturing Technologies.
14. Center of Excellence in Artificial Intelligence
15. Development of cheap and high energy density alkali metal - ion rechargeable batteries for renewable energy storage
16. Development of facile, green and commercially scalable, non-cyanide bath based electrodeposition route for nanostructured coloured gold coating with advanced mechanical and scratch resistance properties
17. Secure resource-constrained communication framework for tactical networks using physically unclonable functions (SERFPUF)
18. UK India clean energy research (UKICERI)
19. Development of indigenous fully biodegradable natural and synthetic blended super absorbing polymer (NSB-SAP) for agricultural uses (as import substitute)
20. Evaluation of fracture and fatigue crack growth (FCG) for IN625 cast material
21. Evaluation of fracture and fatique crack growth (FCG) behaviour of ss304hcu weld material
22. evaluation of creep crack growth (CCG) behaviour of ss 304hcu weld material
23. indigenous development of online process monitoring of laser surface hardening, cladding and additive manufacturing and studies on dynamic mechanical behavior of manufactured parts
24. A platform for crosslingual and multilingual event monitoring in Indian languages
25. Development of speech interface for form-filling application (SIFA) in five Indian languages
26. Development of high performance rubber composites using new generation materials for application in tyre
27. Ultra high efficiency CMOS compatible Sige single nanowire photodetectors in infrared and thz wavelengths for defence and security applications
28. Development of scalable gan-based distributed dynamic power management system for iot applications with on-demand thermal management
29. A novel approach of making Green Belite Cement from electric arc furnace steel making slag, funded by the Ministry of Steel.

The Intellectual Property Rights and Industrial Relations (IPR & IR) Cell under SRIC is responsible for the filing and maintenance of Intellectual Property Rights, and also forlicensing and the transfer of technologies developed by researchers at IIT Kharagpur to the commercial sector. In the financial year 2017-18, a total number of 51 intellectual property (national and international) has been filed and a total of 16intellectual properties were granted. Several technologies have been transferred to industries.

A one day IPR Workshop on ‘How Intellectual Property Impacts Life’ was organized on 19th August 2017 by IPR & IR Cell, SRIC, and MHRD IPR Chair in association withRGSoIPL, IIT Kharagpur, which witnessed some great speakers including Justice Aniruddha Bose, Justice RavindraBhat, Prof. V.C. Vivekanandan, Dean, School of Law, Bennett University and Patent Attorney Mr. VineetRohilla, Remfry and Sagar, Prof. ImtiazGulam Ahmed, Head, School of Law, Sikkim University,and other Professors of the Institute including the MHRD IPR Chair Professor, and PIC, IPR & IR Cell,IIT Kharagpur, who shared their experience and enriched the audience.

A half day IPR workshop was conducted in IIT Kharagpur on 3rd February 2018, with distinguished patent advocate Mr. NarenThapetta as the special guest speaker,along with Intitute Law School faculty members,PIC, IPR and IR Cell, and Prof. GoutamSaha, MHRD IPR Chair Professor, with encouraged and discussed upon queries from members of the audience.

The world Intellectual Property day was celebrated on 26th April 2018 with the theme “Powering change: Women in innovation and creativity” encouraging more women inventors of the Institute. The IP day celebration started with the inauguration of the Technology Transfer Brochure of the Institute.

The Entrepreneur Cell under SRIC supports a variety of incubation programs funded by the Government.

Various student activities are encouraged and supported through SRIC. Notable activities include the following:

- **TeamAGV** activity for design and implementation of autonomous ground vehicles.The team has designed, fabricated and operated autonomous vehicle with multiple sensors data processing and fusion incorporating sophisticated control steps to participate in various competitions in India and abroad. It is indeed is a matter of pride to note that Team AGV, IIT Kharagpur have secured second position in 26th International Ground Vehicle Competition (IGVC) held at Oakland University in Rochester, Michigan on June 1 - June 4, 2018, organized by the Association for unmanned vehicle system international (AUVSI).

- **TeamKART** designs and manufactures formula style racing cars. Significant design improvements this year (2017-18) includes weight reduction of over 30 kgs, electronic gear shifting, carbon fiber diffuser for improved acceleration, Anti-Roll Bar for better suspension system, incorporation of a 3D printed nylon intake system. The engine of the car will soon be dyno-tuned for improved performance and reliability.

- **RoboSoccer** activity for design and implementation of a team of soccer playing robots: This activity is coordinated under a students' group named "Kharagpur Robosoccer Students' Group" (KRSSG). It regularly organizes robo-soccer competition during the techno-management fest "Kshitij" and also participate in international student competitions and also bagged prizes in previous years.

- **Swarm Robotics** IIT Kharagpur took part in DRDO's DRUSE 2018 (DRDO Robotics & Unmanned Systems Exposition) which was held in Pune from 23rd May to 25th May 2018 and won the First Runners Up position to win a cash prize of 1 Lac Rupees for further research and implementation. This was the culmination of the national level challenge which had over 1000 entries out of which 164 qualified for the Zonals on 28th March 2018 where they were crowned the runners-up in the 30 teams selected for the finals.

- **Aerial Robotics Kharagpur (ARK)** is a students' group working for building autonomous aerial vehicles. The group was formed in February 2015. They are developing a system for flight control of a drone for participating in International Aerial Robotics Competition (IARC).

- **TeamAUV** activity for design and implementation of autonomous underwater vehicle. The team has designed and operated an upgraded underwater vehicle with multiple sensors and sophisticated control computers to participate in various competitions in India and abroad.

- Signals and systems for Life Science, a thrust area of Research at IIT Kharagpur, organized a one week long orientation programme during May 8-12, 2017 at IIT Kharagpur for selected ICMR-IITKGP MedTech interns of this year. In the 8 week long internship, 2 ICMR Scientists and 4 medical college students from 3 different AIIMS were to work at IIT Kharagpur laboratories while 7 IIT Kharagpur engineering students were to report different centers of ICMR namely, NCDIR, Bangalore, NIRRH, Mumbai, NARI, Belgavi, RMRC, Bhubaneswar.

Technology Students' Gymkhana

President : William Kumar Mohanty

Technology Students' Gymkhana is the hub of the numerous extra-curricular and co-curricular activities in IIT Kharagpur ranging from Sports, Socio-Cultural to Technology. From its inception in 1952, the Gymkhana has played a key role in the everyday lives of Kgpians cultivating and nurturing their extra-curricular talents. The students under the auspices of TSG participated in a variety of activities during their leisure time for fun, fitness, enjoyment and reviving their energy after academic workload and also for their overall development. The highlights of the year 2017-18 are as follows:

Inter-IIT Meet

The 33rd Inter IIT Aquatics Meet and 52nd Inter-IIT Sports Meet and held at IIT Madras during 01-04 October 2017 and 15-23 December 2017 respectively.The participating students of the institute exhibited great performance with 2 Bronze medals for women and a silver medal for men's team of IIT Kharagpur, leading IIT Kharagpur to finish at 4th in Overall G.C for swimming. Indresh Performed exceptionally well by bagging 3 silver medals. Water Polo team has also brought us glory by securing 2nd Position.

In 52nd Inter-IIT Sports Meet, IIT Kharagpur secured 4thposition in Marchpast, Basketball (Men) won Gold medal. Football (Men), Squash (Men), Badminton (Men), Basketball (Women) won Silver medal. Athletics (Men) won overall Bronze medal with five Individual Gold, sixSilver andfive Bronze medals. Athletics (Women) secured 4th position with one Individual Gold and 4 Bronze medals. Abin Debassia performed exceptionally by bagging 2 Gold medals and 1 Silver medal with one New Meet Record in Hammer throw (42.88 mt.) Weight lifting team secured 4th position with 1 Gold Medal and three New Meet Records by Lokesh Singh in 77+ Weight Category(Clean & Jerk 133 kg, Snatch 106 Kg and Total 239 Kg).In Lawn Tennis (Men &Women)both have secured 4th position. Chess team (Men) won Gold Medal. Rohit Kumar and Jugal Kishore secured best player award in Basketball and Football respectively. IIT Kharagpur stood 5th in 52nd Inter IIT sports meet with 4thposition for both Men and Women.

IIT Kharagpur Cultural team secured Third Positionin the 2ndInter-IIT Cultural Meet which was held at IIT Kanpur in December 2017. IIT Kharagpur team bagged overall trophies in namely, Band and Duet competition, English Poetry Slam, Parliamentary Drama and Turncoat events, General Quiz,Mela Quiz and India quiz. Team also secured Music cup, Quiz cup and Fine arts cup.

The 6th Inter-IIT Tech Meet was hosted by IIT Madras in Jan 2018. After five successful Inter-IIT Tech meets, IIT Kharagpur continued the winning spirit and won GC in this Tech meet bringing out the best in each category. With 19 participating IITs competing in ten events, this meet was grander in scale, higher in quality and tougher in competition than ever before where IIT Kharagpur bagged Gold Medals in 04 events, Silver Medals in 02 events and Bronze Medals in 02 events.

Institute Awards and Medals

Event	Inst. Blue/ Order of Merit	Honorable Mention	Special Mention	Alumni Cup
Sports & Games	09	19	18	3
Social & Cultural	07	13	16	01
Technology	10	10	-	-

Bhandarkar Cup was awarded to Rahul Sehrawat (13EE30012) (Basketball).ShrimatiChandiramani Cup was awarded to RachitMadhukar (13AG3FE05) for Soc. and Cult. G.S. Sanyal Cup was awarded to K.Pareen Jain (14ME10029) and Rishabh Kumar Shrivastava(14EE35012)for Technology. Amrit Barman Memorial Award introduced last year as cash prize of Rs. 15000.00 was awarded to MayankSrivastav.

Overall General Championship Results

Sports and Games	Social and Cultural	Technology
Azad Hall of Residence (Men) and Sarojini Naidu/Indira Gandhi Hall of Residence (Women)	Radha Krishnan Hall of Residence	Not Awarded

Alumni Cup : ALUMNI CUP in sports was awarded to AbinDebassia in Athletics, JugalKishoePatanwar in Football, Lokesh Singh in Weightlifting. ALUMNI CUP in Social and Cultural was awarded to ArkaPravoSaha.

Major Events : Like every year, the TSG organized National Yoga Day on 21 June 2017 which was conducted by Yogacharya Jayanta Das. Yogathan has also been organized at TSG premises. Quiz on Yoga, Health & Fitness was organized on the pre International Yoga Day Program on 28th April 2018.

TSG has organized four EK BHARAT SHRESTH BHARAT program an initiative by MHRD govt. of India. In this program Cultural Exchange Activities, Food Festival and Merchandise Sell were initiated. The different paired states are TN and J&K, AP & Punjab, Assam and Rajasthan and Orissa and Maharashtra.

TSG has successfully organized Kharagpur Open in Tennis, International U-17 Cricket match between Bengal vs. Bangladesh, DAV/KVS regional meet in Athletics and Swimming.Training Program on Life saving skills in water.Navneet Memorial Tournament, Fancy Football Tournament on Foundation day in Football, Annual children's Aquatics meet.

TSG also has successfully organized Run for unity, 26th January, 15th August, Sankalp se Siddhi(Ye India ka time hay).Mrinal Chakraborty (Sports Psychologist) demonstrated a motivational lecture on mental toughness which was organized for the Inter IIT Sports Contingent. Technology Adventure society, TSG has organized adventure events and trekking trips.

Kshitij, Spring Fest, Robotix events, Robosoccer, in-house workshops, Indian case challenge 2017, TSG elections were successfully conducted throughout the year.Rangoli and Illumination was celebrated on 30 Oct 2017 where the different Hall of Residence participated for a month to get their hostels illuminated on the day of Diwali along with the signature Rangolis created in the Halls of Residence.

Technology Telecom Centre

TTC provides the voice communication services to subscribers in the academic as well as in the residential campus on conventional copper wires as well VoIP and Digital Telephony and the value added services like Audio Conferencing bridge and mobile extensions etc. It is having the state of art Centralized EPABX at Technology Telecom Centre and a satellite exchange at New Guest House. It is also providing the centralized fax services to Institute community.

In Financial year (2017-18) Telecom Centre laid cables to Nalanda Class Room Complex (Both external and internal cabling) as well as to Sister Nivedita Hall of Residence(Both external and internal) besides our normal work of the maintenance of the existing telephone lines as well as augmentation of new lines with respect of joining of new faculties/officers as well as creation of new labs/departments.

In the future plans TTC proposes to upgrade and shift the existing LIM with state of art server based system to JCB lab complex Annex building. TTC is also planning to install a EPABX system in new coming up Dr. B C Roy super specialty Institute of Medical Sciences as well as in the Research Park Rajarhat Kolkata.

Water Works Section

The water works & sanitary section of IIT Kharagpur is one of the most important sections. It takes the major responsibility in managing and providing water of high quality to all sections of the Institute as well as manages the drainage.

The achievements include high quality drinking water through a recently constructed state of art technology water treatment plant. There is also plan for another source of water by construction of a well from a nearby river,Kangsabati.

The vision is to provide high quality water for all purpose.

Future plans:

- Even for additional demand of water from the community we take up the challenge to meet the demand through working hard and our aim is to satisfy every one of the community.

- PMC has been appointed to prepare a draft proposal report for improving the sewerage network which is quite old to enable the present load (Sewer) to be treated. It is in the discussion stage and things are moving as per the direction of the authority.

Statistics

Table A-1

Admission to Undergraduate Courses

A. BTech

Sl No	Course	Sanction Strength					Admission Offered					Actually Admitted				
		GN	OB	SC	ST	Total	GN	OB	SC	ST	Total	GN	OB	SC	ST	Total
1	AEROSPACE ENGINEERING	17	9	5	2	33	17	9	5	2	33	16	9	4	2	31
2	AGRICULTURAL AND FOOD ENGINEERING	18	10	5	3	36	18	10	5	3	36	17	10	5	3	35+(1*)
3	BIOTECHNOLOGY	14	7	4	2	27	14	7	4	2	27	14	6	4	1	25
4	CHEMICAL ENGINEERING	26	14	8	4	52	26	14	8	4	52	26	14	8	4	52
5	CIVIL ENGINEERING	31	17	9	5	62	31	17	9	5	62	30	17	9	5	61
6	COMPUTER SCIENCE & ENGINEERING	28	15	8	4	55	27	16	8	4	55	28	15	8	4	55
7	ELECTRICAL ENGINEERING	28	15	8	4	55	28	15	8	4	55	28	15	8	4	55
8	ELECTRONICS & ELECTRICAL COMMUNICATION ENGG.	31	17	9	5	62	30	18	9	5	62	31	17	9	5	62
9	INDUSTRIAL AND SYSTEMS ENGINEERING	15	7	5	2	29	15	7	5	2	29	15	7	5	2	29
10	INSTRUMENTATION ENGINEERING	16	9	5	2	32	16	9	5	2	32	14	9	5	2	30
11	MANUFACTURING ENGINEERING	15	8	4	2	29	15	8	4	2	29	15	8	4	2	29
12	MECHANICAL ENGINEERING	33	18	11	5	67	33	19	10	5	67	33	18	10	5	66
13	METALLURGICAL & MATERIALS ENGINEERING	22	12	7	3	44	22	12	7	3	44	22	12	7	3	44
14	MINING ENGINEERING	20	11	6	3	40	20	11	6	3	40	19	11	6	3	39
15	OCEAN ENGG AND NAVAL ARCHITECTURE	17	9	5	2	33	17	9	5	2	33	17	9	4	2	32+(1*)
	Total (A)	331	178	99	48	656	329	181	98	48	656	325	177	96	47	645+(2*)

B. B Arch

Sl No	Course	Sanction Strength					Admission Offered					Actually Admitted				
		GN	OB	SC	ST	Total	GN	OB	SC	ST	Total	GN	OB	SC	ST	Total
1	ARCHITECTURE AND REGIONAL PLANNING	19	12	6	3	40	19	12	6	3	40	18	12	6	3	39
	Total (B)	19	12	6	3	40	19	12	6	3	40	18	12	6	3	39

C. Integrated MSc

Sl No	Course	Sanction Strength					Admission Offered					Actually Admitted				
		GN	OB	SC	ST	Total	GN	OB	SC	ST	Total	GN	OB	SC	ST	Total
1	CHEMISTRY	17	9	5	3	34	17	9	5	3	34	15	9	4	3	31+(1*)
2	EXPLORATION GEOPHYSICS	17	9	5	3	34	17	9	5	3	34	17	9	5	3	34
3	APPLIED GEOLOGY	18	10	5	3	36	18	10	5	3	36	17	10	4	3	34
4	HUMANITIES & SOCIAL SCIENCES	23	12	7	3	45	23	12	7	3	45	23	12	7	3	45
5	MATHEMATICS	25	13	8	4	50	25	13	8	4	50	25	13	8	4	50
6	PHYSICS	18	10	6	3	37	18	10	6	3	37	14	10	6	3	33
	Total (C)	118	63	36	19	236	118	63	36	19	236	111	63	34	19	227+(1*)

D. Dual Degree

Sl No	Course	Sanction Strength					Admission Offered					Actually Admitted				
		GN	OB	SC	ST	Total	GN	OB	SC	ST	Total	GN	OB	SC	ST	Total
1	AEROSPACE ENGINEERING	10	5	3	1	19	10	5	3	1	19	9	5	3	1	18
2	AGRICULTURAL AND FOOD ENGINEERING	17	9	5	3	34	17	9	5	3	34	14	9	5	3	31
3	BIOTECHNOLOGY	13	7	4	2	26	13	7	4	2	26	11	7	3	2	23+(1*)
4	CHEMICAL ENGINEERING	13	7	5	2	27	13	7	5	2	27	13	7	4	2	26
5	CIVIL ENGINEERING	11	6	3	2	22	11	6	3	2	22	11	6	3	2	22
6	COMPUTER SCIENCE & ENGINEERING	20	11	6	3	40	20	11	6	3	40	20	11	6	3	40
7	ELECTRICAL ENGINEERING	11	6	3	2	22	11	6	3	2	22	11	6	3	2	22
8	ELECTRONICS & ELECTRICAL COMMUNICATION ENGG.	20	11	6	3	40	20	11	6	3	40	20	11	6	3	40
9	INDUSTRIAL AND SYSTEMS ENGINEERING	11	6	3	2	22	11	6	3	2	22	11	6	3	2	22+(1*)
10	MANUFACTURING ENGINEERING	8	4	2	1	15	8	4	2	1	15	8	4	2	1	15+(1*)
11	MECHANICAL ENGINEERING	23	13	8	4	48	23	13	8	4	48	23	14	7	4	48
12	METALLURGICAL & MATERIALS ENGINEERING	10	5	3	1	19	10	6	3	1	20	10	6	3	1	20
13	MINING ENGINEERING	10	5	3	1	19	10	5	3	1	19	9	5	3	1	18
14	MINING SAFETY ENGINEERING	9	5	3	1	18	9	5	3	1	18	9	5	2	1	17
15	OCEAN ENGG AND NAVAL ARCHITECTURE	12	6	4	2	24	12	6	4	2	24	11	6	4	2	23
16	QUALITY ENGINEERING DESIGN AND MANUFACTURING	7	4	2	1	14	7	4	2	1	14	7	4	2	1	14+(1*)
	Total (D)	205	110	63	31	409	205	111	63	31	410	197	112	59	31	399+(4*)
Total (A+B+C+D)		673	363	204	101	1341	671	367	203	101	1342	651	364	195	100	1310+(7*)

*** Preparatory Students**

Table A2

Admission to 2-Year M.Sc. Courses

Sl No	Course	Sanction Strength					Admission Offered					Actually Admitted				
		GN	OB	SC	ST	Total	GN	OB	SC	ST	Total	GN	OB	SC	ST	Total
1	CHEMISTRY	24	12	7	3	46	24	13	6	4	47	22	13	6	3	44
2	EXPLORATION GEOPHYSICS	12	6	4	2	24	12	6	4	2	24	11	4	2	2	19
3	GEOLOGY & GEOPHYSICS	15	8	5	2	30	15	8	5	2	30	15	8	5	2	30
4	MATHEMATICS	15	8	5	2	30	14	9	5	2	30	13	9	4	2	28
5	PHYSICS	24	12	7	3	46	16	17	9	4	46	16	15	8	4	43
	Total (C)	90	46	28	12	176	89	53	29	14	177	77	49	25	13	164

Table A-3

Students Awarded M.C.M. Scholarship

	Department	First Yr School	Second Yr School	Third Yr School	Fourth Yr School	Fifth Yr School	Total
(A) B Tech 4-Year							
1	AEROSPACE ENGINEERING	4	3	2	3		12
2	AGRICULTURAL AND FOOD ENGINEERING	9	3	7			19
3	BIOTECHNOLOGY	3	5	3			11
4	CHEMICAL ENGINEERING	5	10	11	4		30
5	CIVIL ENGINEERING	12	11	8	12		43
6	COMPUTER SCIENCE & ENGINEERING	11	7	16	8		42
7	ELECTRICAL ENGINEERING	9	18	24	15		66
8	ELECTRONICS & ELECTRICAL COMMUNICATION ENGG.	11	10	12	8		41
9	INDUSTRIAL AND SYSTEMS ENGINEERING	2	5	7	2		16
10	MECHANICAL ENGINEERING	10	13	17	11		51
11	METALLURGICAL & MATERIALS ENGINEERING	2	5	6	6		19
12	MINING ENGINEERING	4	5	7	8		24
13	OCEAN ENGG AND NAVAL ARCHITECTURE	2	4	1	1		8
(B) B Arch 5 Year							
1	ARCHITECTURE AND REGIONAL PLANNING	1	3	13	9	6	32
(C) Integrated MSc 5 Year							
1	CHEMISTRY	3	2	7	2	1	15
2	GEOLOGY & GEOPHYSICS	8	5	3	11	8	35
3	HUMANITIES & SOCIAL SCIENCES	2	7	10	9	10	38
4	MATHEMATICS	4	4	7	5	5	25
5	PHYSICS	5	5	2	5	3	20
(D) Dual Degree 5-Year							
1	AEROSPACE ENGINEERING	3	2	6	6		17
2	AGRICULTURAL AND FOOD ENGINEERING	5	7	4	8		24
3	BIOTECHNOLOGY	2	1	2	8		13
4	CHEMICAL ENGINEERING	2	5	5	5		17
5	CIVIL ENGINEERING	2	2	5	14		23
6	COMPUTER SCIENCE & ENGINEERING	3	6	7	6		22

7	ELECTRICAL ENGINEERING	1	4	5	4		14
8	ELECTRONICS & ELECTRICAL COMMUNICATION ENGG.	6	9	9	11		35
9	INDUSTRIAL AND SYSTEMS ENGINEERING		8	4	6		18
10	MECHANICAL ENGINEERING	5	8	13	11		37
11	METALLURGICAL & MATERIALS ENGINEERING		2	4	6		12
12	MINING ENGINEERING	11	9	9	10		39
13	OCEAN ENGG AND NAVAL ARCHITECTURE		3	2	2		7
14	RELIABILITY ENGINEERING		1	1	1		3
15	PETROLEUM ENGINERING			2			2
	Total	**147**	**192**	**241**	**217**	**33**	**830**

Table A-4

Students Awarded only Free Tuitionship Table

Sl. No	Department	First Yr Schol	Second Yr Schol	Third Yr Schol	Fourth Yr Schol	Fifth Yr Schol	Total
	(A) B Tech 4-Year						
1	AEROSPACE ENGINEERING			5			5
2	AGRICULTURAL AND FOOD ENGINEERING				1		1
3	BIOTECHNOLOGY			3	1		4
4	CHEMICAL ENGINEERING			3			3
5	CIVIL ENGINEERING		2	5	1		8
6	COMPUTER SCIENCE & ENGINEERING				1		1
7	ELECTRICAL ENGINEERING			1	3		4
8	ELECTRONICS & ELECTRICAL COMMUNICATION ENGG.			1			1
9	INDUSTRIAL AND SYSTEMS ENGINEERING		1	2	1		4
10	MECHANICAL ENGINEERING		2	4	2		8
11	METALLURGICAL & MATERIALS ENGINEERING			1			1
12	MINING ENGINEERING		1	2	1		4
13	OCEAN ENGG AND NAVAL ARCHITECTURE		0	0	0	0	0
	(B) B Arch 5 Year						
1	ARCHITECTURE AND REGIONAL PLANNING			1			1
	(C) Integrated MSc 5 Year						
1	CHEMISTRY		1	1		1	3
2	GEOLOGY & GEOPHYSICS		1	1	2		4
3	HUMANITIES & SOCIAL SCIENCES			1		2	3
4	MATHEMATICS			1	3	1	5
5	PHYSICS			1	1		2
	(D) Dual Degree 5-Year						
1	AEROSPACE ENGINEERING				1		1
2	AGRICULTURAL AND FOOD ENGINEERING		1				1
3	BIOTECHNOLOGY			1	1		2

4	CHEMICAL ENGINEERING			2	1		3
5	CIVIL ENGINEERING		1				1
6	COMPUTER SCIENCE & ENGINEERING				1		1
7	ELECTRICAL ENGINEERING		1	1	3		5
8	ELECTRONICS & ELECTRICAL COMMUNICATION ENGG.			1	1		2
9	INDUSTRIAL AND SYSTEMS ENGINEERING			1			1
10	MECHANICAL ENGINEERING			3	4		7
11	METALLURGICAL & MATERIALS ENGINEERING		1		2		3
12	MINING ENGINEERING		1	4			5
13	OCEAN ENGG AND NAVAL ARCHITECTURE		1	2	2		5
14	QUALITY & RELIABILITY ENGINEERING				2		2
15	PETROLEUM ENGINERING			1			1
	Total	0	14	49	35	4	102

Table A-5

Students (SC & ST) Awarded Financial Assistance

Count of Roll No.	1st year		2nd year		3rd year		4th Year		5th year		Grand Total
Departments	**SC**	**ST**	**SC**	**ST**	**SC**	**ST**	**SC**	**ST**	**SC**	**ST**	
AEROSPACE ENGINEERING	1				1				1		3
AGRICULTURAL AND FOOD ENGINEERING		1			4		2		1		8
ARCHITECTURE AND REGIONAL PLANNING							1			3	4
BIOTECHNOLOGY				1							1
CHEMICAL ENGINEERING	1		1		1			2		1	6
CHEMISTRY			2	1				1			4
CIVIL ENGINEERING		1	1	1	1			1	1		6
COMPUTER SCIENCE & ENGINEERING	1				2						3
ELECTRICAL ENGINEERING							1	1	1		3
ELECTRONICS & ELECTRICAL COMMUNICATION ENGG.		2	1		2						5
GEOLOGY & GEOPHYSICS	3		1					1			5
HUMANITIES & SOCIAL SCIENCES							1	1			2
INDUSTRIAL AND SYSTEMS ENGINEERING		1								1	2
MATHEMATICS			5	2	1						8
MECHANICAL ENGINEERING			1	1	1	1	1				5
METALLURGICAL & MATERIALS ENGINEERING										1	1
MINING ENGINEERING								1			1
OCEAN ENGG AND NAVAL ARCHITECTURE		1		1	1		1				4
PHYSICS	2		3	3							8
QUALITY & RELIABILITY ENGINEERING				1			1				2
Grand Total	**8**	**6**	**15**	**11**	**14**	**1**	**8**	**8**	**4**	**6**	**81**

Table A-6

1. INSTITUTE GOLD MEDALS :

Sl. No.	Name of Medal/Prize	Name of the winner	Roll No.	CGPA
1.	PRESIDENT OF INDIA GOLD MEDAL	Abhishek Panigrahi	14CS10001	9.90
2.	PRIME MINISTER OF INDIA GOLD MEDAL	Jeenu Grover	13CS30042	9.86
3.	DR. BIDHAN CHANDRA ROY MEMORIAL GOLD MEDAL	Soumya Dubey	14MF10026	9.90
4.	DR. JNAN CHANDRA GHOSH MEMORIAL GOLD MEDAL	Rishabh Kumar Shrivastava	13EE35012	9.86
5.	PROF. J. C. BOSE MEMORIAL GOLD MEDAL	Parnashree Ghosh	16MA40016	8.38

2. ENDOWMENT GOLD MEDALS:

Sl. No.	Name of Medal/Prize	Name of the winner	Roll No.	CGPA
1.	ANUKUL CHANDRA SARKAR MEMORIAL GOLD MEDAL	Sanat Kumar Saha	14CE10048	9.37
2.	PROF. R. G. CHATTERJEE MEMORIAL GOLD MEDAL	Arinjoy De	13PH20010	9.65

3. SILVER MEDALS :

A. 4-YEAR B. TECH.(HONS.) COURSES

Sl. No.	Course	Name of the winner	Roll No.	CGPA
1.	AEROSPACE ENGINEERING	RustagiPulkitDevinder	14AE10026	9.11
2.	BIOTECHNOLOGY & BIOCHEMICAL ENGINEERING	PayelSardar	14BT10015	8.96
3.	CIVIL ENGINEERING	Sanat Kumar Saha	14CE10048	9.37
4.	CHEMICAL ENGINEERING	Ushnish Rana	14CH10050	9.49
5.	COMPUTER SCIENCE & ENGINEERING	Abhishek Panigrahi	14CS10001	9.90
6.	ELECTRONICS & ELECTRICAL COMMUNICATION ENGINEERING	Arkadev Roy	14EC10066	9.88
7.	ELECTRICAL ENGINEERING	SangameshDhanayyaKodge	14EE10042	9.49
8.	INSTRUMENTATION ENGINEERING	GouravDatta	14IE10012	9.00
9.	INDUSTRIAL & SYSTEMS ENGINEERING	PulapakuraSravan	14IM10014	8.79
10.	MECHANICAL ENGINEERING	Shah Rohan Jayesh Bhai	14ME10052	9.58
11.	MANUFACTURING SCIENCE & ENGINEERING	Damle Nikhil Pradeep	14MF10017	8.74
12.	MINING ENGINEERING	Abhishek Kumar	14MI10001	8.54
13.	METALLURGICAL & MATERIALS ENGINEERING	PriyaAkshay Mehta	14MT10030	9.07
14.	OCEAN ENGINEERING & NAVAL ARCHITECTURE	Akhil Gupta	14NA10005	8.46

B. 5-YEAR B. ARCH.(HONS.) COURSE

Sl. No.	Course	Name of the winner	Roll No.	CGPA
15.	ARCHITECTURE	KaartikeyDwivedi	13AR10020	9.13

C. 5-YEAR DUAL DEGREE COURSES

Sl. No.	Course	Name of the winner	Roll No.	CGPA
16.	AEROSPACE ENGINEERING	HimanshuPrabhat	13AE30005	9.31
17.	AGRICULTURAL & FOOD ENGINEERING	Debmalya Ghosh	13AG32002	8.91
18.	BIOTECHNOLOGY & BIOCHEMICAL ENGINEERING	JugalMohapatra	13BT30028	9.12
19.	CIVIL ENGINEERING	Tejaswini Lakshmi Tavva	13CE33004	9.44
20.	CHEMICAL ENGINEERING	Vadera Krishna Satish	13CH30024	9.16
21.	COMPUTER SCIENCE & ENGINEERING	Jeenu Grover	13CS30042	9.86
22.	ELECTRONICS & ELECTRICAL COMMUNICATION ENGINEERING	Manish Mustafi	13EC32006	9.55
23.	ELECTRICAL ENGINEERING	Satyaki Mukherjee	13EE33003	9.61
24.	INDUSTRIAL & SYSTEMS ENGINEERING	Mohammad Haris Ali Khan	13IM30011	8.95
25.	MANUFACTURING SCIENCE & ENGINEERING	PharandeRohitSandip	13MF3IM08	8.81
26.	MECHANICAL ENGINEERING	SoumyaBandyopadhyay	13ME32003	9.54
27.	MINING ENGINEERING	PrithviChandak.K	13MI31020	8.91
28.	METALLURGICAL & MATERIALS ENGINEERING	Bharat Khurana	13MT30029	9.79
29.	OCEAN ENGINEERING & NAVAL ARCHITECTURE	Rahul Kamilla	13NA30014	8.90

D. M. SC. (5-YEAR) COURSES

Sl. No.	Course	Name of the winner	Roll No.	CGPA
30.	CHEMISTRY	Madhureeta Das Gupta	13CY20013	8.79
31.	APPLIED GEOLOGY	Sanket	13GG20022	8.69
32.	ECONOMICS	VinayakMahbubani	13HS20039	9.09
33.	MATHEMATICS & COMPUTING	Siddhartha Tekriwal	13MA20041	9.47
34.	PHYSICS	Koushik Sen	13PH20022	9.65
		Arinjoy De	13PH20010	9.65
35.	EXPLORATION GEOPHYSICS	Ritwik Bajaj	13EX20021	8.65

E. M.Sc.(2-YEAR) COURSES

Sl. No.	Course	Name of the winner	Roll No.	CGPA
36.	CHEMISTRY	SubhadipMallick	16CY40039	9.67
37.	GEOPHYSICS	Abhisek Dutta	16EX40025	8.51
38.	MATHEMATICS	Parnashree Ghosh	16MA40016	9.94
39.	PHYSICS	SwadhitiMaji	16PH40058	9.54
40.	GEOLOGY	DebarshiMajumder	16GG40006	9.33
41.	CHEMICAL & MOLECULAR BIOLOGY	Akriti Baby Kanth	16BS4JP04	9.41

4. ENDOWMENT PRIZES - (UNDER GRADUATE)

Sl. No.	Name of Prize	Name of the winner	Roll No.	CGPA
1.	Sarat Memorial Prize	Neha Banerjee	14EE10061	9.30
2.	Suhasini Devi Memorial Prize	Soumya Dubey	14MF10026	8.38
3.	P. K Bhattacharya Memorial Prize	Sanket	13GG20022	8.69
		Ritwik Bajaj	13EX20021	8.65
4.	Amlan Sen Memorial Prize	Shah Rohan Jayesh Bhai	14ME10052	9.58
5.	Swapan Kumar Saha Memorial Prize	Arkadev Roy	14EC10066	9.88
6.	MeduryBhanumurthy Memorial Prize	AshrujitGhoshal	14CS10060	9.79
7.	H. N. Bose Memorial Prize	Koushik Sen	13PH20022	9.65
8.	Sharmila Bose Memorial Prize	Madhureeta Das Gupta	13CY20013	8.79
9.	Bigyan Sinha Memorial Prize	Arkadev Roy	14EC10066	9.88
10.	Usha Martin Award	MridulAjit Kothari	14MT10024	8.37
11.	Systems Society Award	SangameshDhanayyaKodge	14EE10042	9.49
12.	Prof.K.L.Chopra Award	Gaurav Gardi	13PH20018	9.02
13.	Charubala Devi Memorial Prize	Kaustav Brahma	15EC10026	9.89
14.	Prof. Prabodh Chandra Sanyal Award	Parnashree Ghosh	16MA40016	9.94
15.	B. L. Nagpal Memorial Prize	Rahul Dev Kundu	15CE30014	9.42
16.	Pradeep Kumar Chakraborty Award	Swagata Roy	15MT30018	9.49
17.	G. B. Mitra Award	Arinjoy De	13PH20010	9.65
		Koushik Sen	13PH20022	9.65
18.	Bhartiya Cutler Hammer Prize	SouradipPoddar	15EE10045	9.49
19.	R. M. Lalwani Prize	Kaustav Brahma	15EC10026	9.89
20.	H. P. Bhadury Memorial Prize	ArijitMajumdar	15ME30008	9.76
21.	John Von Neuman Award	Kaustav Brahma	15EC10026	9.89
22.	Prof. S. K. Nandi Memorial Prize	AlokAnandPatra	15CH10004	9.45
23.	International Symposium (Microwave & Communication) 1981 Prize	Kaustav Brahma	15EC10026	9.89
24.	Class Of 1970 Alumni (US) Association Prize	ArkadebSengupta	16EE10008	9.98
25.	Technology Alumni Association (Delhi Chapter) Award	Prabhpreet Singh Sodhi	17CS10035	9.96
26.	IIT Kharagpur Alumni (California Chapter) Award	ArkadebSengupta	16EE10008	9.98
27.	Prof. S. P. Sengupta Memorial Prize	Shashwat Singh	14ME10074	9.11
28.	K. Rama Rao Endowment Prize	Anukool Raj	15AG10011	8.38
29.	Smt. Ava Sanyal Memorial Prize	Swagata Roy	15MT30018	9.49
30.	Prof. B.N. Avasthi Memorial Award For Sports	AbinDevassia	14NA30029	8.20
		Kale PruthaChandrashekhar	14AE30027	8.94
31.	Prof. Sunil Kanti Sen Memorial Award	Faraaz Rahman Mallick	17ME30015	9.82
32.	Prof.SudhirRanjanSengupta Memorial Prize	Sanat Kumar Saha	14CE10048	9.37
33.	Best B.Tech. Project Thesis Award By Mr. MitrajitMukhopadhyay	1ST Ankur Mehta	14CH10012	8.30
		2ND PinakBhusanMohapatra	14CH10038	9.05
		3RD ChagantiSainath Reddy	14CH10021	8.36
34.	Keshab K Parhi Endowment Prize	Satyaki Mukherjee	13EE33003	9.61
35.	NilanjanGanguly Memorial Award For E&E.C.E. Deptt	Aditya Sinha	14EC10002	9.61
36.	NilanjanGanguly Memorial Award For Physics Deptt	Koushik Sen	13PH20022	9.65
37.	KedarNath Singh Memorial Prize	Koushik Sen	13PH20022	9.65
38.	DwarakaNath Singh Memorial Prize	SoumyaBandyopadhyay	13ME32003	9.54
39.	Jugal Kishore Singh Memorial Prize	Shah Rohan Jayesh Bhai	14ME10052	9.58
40.	RajenderKumar Khanna Memorial Award	SangameshDhanayyaKodge	14EE10042	9.49
41.	RamneekSodhi Memorial Award	VenkateshPai	14MT3FP20	9.40

Sl. No.	Name of Prize	Name of the winner	Roll No.	CGPA
42.	Sushil Kumar Chowdhury Memorial Award	RustagiPulkitDevinder	14AE10026	9.11
43.	AshimRanjanGuha Memorial Award	SudhanshuVashisht	14AG10030	8.31
44.	TKT Srikrishnan Endowment Prize	Kevin Harshad Banker	14MF3IM06	9.29
45.	Prof. J.P.Ghose Memorial Award	Nelli Sri Vinay Krishna Rayudu	15NA10016	8.06
46.	Sikharini Nag Memorial Award	Shah Rohan Jayesh Bhai	14ME10052	9.58
		SoumyaBandyopadhyay	13ME32003	9.54
47.	Sikharini Nag Memorial Award for Girl Student	BhogiKeerthana	15EC10011	9.48
		Sharmila Reddy Nangi	15CS10058	9.48
48.	Prof.D.V.S.Murty Merit Award	GouravDatta	14IE10012	9.00
49.	Prof.P.K.Muhuri Memorial Award	PrakharTripathi	16NA30016	8.42
50.	Prof.SomnathSengupta Memorial Award	IndranilNayak	14EC10064	9.39
51.	Prof. K Venkataratnam Memorial Prize	KothaLeelaVenkata Sai Krishna	15EE30008	9.26
52.	GouriBasak Design Award	KosarajuAkhila	14AR10018	8.98
53.	Mansara Prize	KosarajuAkhila	14AR10018	8.98
54.	Ram Gopal Kabre Memorial Prize	Shivam Kumar	14AR10030	8.15

5. J. C. GHOSH MEMORIAL PRIZE

Sl. No.	Department	Name of the winner	Roll No.	CGPA
1.	AEROSPACE ENGINEERING	SwapnilMajumder	15AE30016	9.53
2.	AGRICULTURAL & FOOD ENGINEERING	Rajrishi A Bhaisare	15AG3FP16	8.85
3.	BIOTECHNOLOGY & BIOCHEMICAL ENGINEERING	Piyush Nanda	15BT10013	9.14
4.	CHEMICAL ENGINEERING	AlokAnandPatra	15CH10004	9.45
5.	CIVIL ENGINEERING	Rahul Dev Kundu	15CE30014	9.42
6.	COMPUTER SCIENCE & ENGINEERING	PrajwalSinghania	15CS30043	9.83
7.	ELECTRICAL ENGINEERING	SouradipPoddar	15EE10045	9.49
8.	INSTRUMENTATION ENGINEERING	Abhishek Gupta	15IE10037	9.03
9.	ELECTRONICS & ELECT. COMMU. ENGINEERING	Kaustav Brahma	15EC10026	9.89
10.	INDUSTRIAL AND SYSTEMS ENGINEERING	BoyaSrikaran Reddy	15IM10005	9.20
11.	MECHANICAL ENGINEERING	ArijitMajumdar	15ME30008	9.76
12.	MANUFACTURING SCIENCE & ENGINEERING	ThotaVenkataDurgaSumuganSwaroop	15MF10030	9.05
13.	METALLURGICAL & MATERIALS ENGINEERING	Swagata Roy	15MT30018	9.49
14.	MINING ENGINEERING	Anand Kumar	15MI10006	8.99
15.	OCEAN ENGINEERING & NAVAL ARCHITECTURE	Aditi Ajay Kambli	15NA3FP04	8.71
16.	ARCHITECTURE & REGIONAL PLANNING	Gunjal Jain	15AR10010	9.02
17.	CHEMISTRY	Anuj Kumar Gupta	14CY20007	8.53
18.	APPLIED GEOLOGY	Vaibhav Agrawal	14GG20037	8.68
19.	EXPLORATION GEOPHYSICS	Duttatreya Das	14EX20009	9.02
20.	MATHEMATICS & COMPUTING	VysyarajuNayan Raju	14MA20049	9.11
21.	PHYSICS	S AravindhSwaminathan	14PH20030	9.38
22.	ECONOMICS (HS)	ShashwatGangwal	14HS20035	8.85

6. BEST PROJECT AWARD :

A. 4-YEAR B. TECH.(HONS.) COURSES :

Sl. No.	Department	Name of the winner	Roll No.	CGPA
1.	AEROSPACE ENGINEERING	Arun Kumar Suthar	14AE30005	8.92
2.	AGRICULTURAL & FOOD ENGINEERING	Bharti Sharma	14AG32001	8.57
3.	BIOTECHNOLOGY & BIOCHEMICAL ENGINEERING	Nupur Jain	14BT30015	8.21
4.	CHEMICAL ENGINEERING	Manish Ayushman	14CH30033	9.14
5.	CIVIL ENGINEERING	Sanat Kumar Saha	14CE10048	9.37
6.	COMPUTER SCIENCE & ENGINEERING	AshrujitGhoshal	14CS10060	9.79
		Shashank Srivastava	14CS10042	9.41
7.	ELECTRICAL ENGINEERING	SayanSamanta	14EE33002	9.07
8.	INSTRUMENTATION ENGINEERING	SupratikPatra	14IE10029	8.87
9.	INDUSTRIAL AND SYSTEMS ENGINEERING	PulapakuraSravan	14IM10014	8.79
10.	ELECTRONICS & ELECT. COMM. ENGINEERING	Aditya Sinha	14EC10002	9.61
11.	MECHANICAL ENGINEERING	V S N Reddy Janga	14ME31006	7.93
12.	MANUFACTURING SCIENCE & ENGINEERING	Kevin Harshad Banker	14MF3IM06	9.29
13.	METALLURGICAL & MATERIALS ENGINEERING	MorankarSwapnilKishor	14MT30026	8.40
14.	MINING ENGINEERING	Ravi Prakash	14MI31016	7.81
15.	OCEAN ENGINEERING & NAVAL ARCHITECTURE	Amal Jose	14NA30003	7.37

B. 5-YEAR B. ARCH. (HONS.) COURSE :

Sl. No.	Name of Deptt.	Name of the winner	Roll No.	CGPA
1.	ARCHITECTURE & REGIONAL PLANNING	Sakshi Garg	13AR10040	8.88

C. 5-YEAR DUAL DEGREE COURSES :

Sl. No.	Name of Deptt.	Name of the winner	Roll No.	CGPA
1.	AEROSPACE ENGINEERING (AE1)	HimanshuPrabhat	13AE30005	9.31
		AvijitSaha	13AE30025	8.94
2.	AGRICULTURAL & FOOD ENGINEERING (AG1)	Debmalya Ghosh	13AG32002	8.91
3.	BIOTECHNOLOGY & BIOCHEMICAL ENGINEERING (BT1)	RhushikeshAnandPhadke	13BT30019	8.96
4.	CHEMICAL ENGINEERING (CH1)	Tushar Gupta	13CH30023	8.61
5.	CIVIL ENGINEERING (CED)	Ashwini Gupta	13CE31006	8.81
6.	COMPUTER SCIENCE & ENGINEERING (CS2)	Ken Kumar	13CS30044	9.50
7.	ELECTRICAL ENGINEERING (EED)	Satyaki Mukherjee	13EE33003	9.61
8.	ELECTRONICS & ELECT. COMMU. ENGINEERING(ECD)	Manish Mustafi	13EC32006	9.55
9.	INDUSTRIAL & SYSTEMS ENGINEERING (IM1)	EmaniPhani Deep	13IM30005	8.85
10.	MECHANICAL ENGINEERING (ME3)	Abhimanyu Das	13ME32006	9.41
		PitchikaDilip	13ME33014	8.82
11.	MINING ENGINEERING (MI1)	AbhashJha	13MI33001	8.22
12.	METALLURGICAL & MATERIALS ENGINEERING (MT1)	Bhupinder Singh Saini	13MT30021	8.39
13.	OCEAN ENGINEERING & NAVAL ARCHITECTURE (NA1)	Rahul Kamilla	13NA30014	8.90

D. 5-YEAR M. SC. COURSES :

Sl. No.	Name of Deptt.	Name of the winner	Roll No.	CGPA
1.	CHEMISTRY	RavinaMoirangthem	13CY20020	8.62
2.	EXPLORATION GEOPHYSICS	Rohan Gupta	13EX20022	8.10
3.	ECONOMICS	YashParakh	13HS20041	8.13
4.	MATHEMATICS & COMPUTING	Siddhartha Tekriwal	13MA20041	9.47
5.	PHYSICS	Arinjoy De	13PH20010	9.65

E. 2-YEAR M.Sc. COURSES :

Sl. No.	Name of Deptt.	Name of the winner	Roll No.	CGPA
1.	CHEMISTRY	Debankur Bhattacharyya	16CY40013	9.02
2.	GEOPHYSICS	AbhinavJaiswal	16EX40001	7.29
3.	GEOLOGY	Ashu Yadav	16GG40004	9.22
4.	MATHEMATICS	ChavdaDivyeshVinodbhai	16MA40004	8.24
5.	PHYSICS	Pema Chida Sherpa	16PH40026	8.54
6.	BIO-SCIENCE	DitipriyaMallick	16BS4JP12	8.97

Table : A-7

UG STUDENTS AWARDED SCHOLARSHIP BY EXTERNAL AGENCIES

Sl. No.	Awarding Organization	No. of Recipients
1	National Council of Education research & Training , Sri Aurobindo Marg, New Delhi-16	2
2	INSPIRE Scholarship awarded by Department of Science & Technology, Govt. of India, New Delhi to the students of 5-Yr. Int. M.Sc.Course(Science stream only)	468
3	Rajarshee Shahu Maharaj Merit Scholarship, Director of Social Welfare, Mahararashtra State, Pune.	7
4	SAIL Scholarship being awarded by Steel Authority of India Ltd. through Vishakhapatnam Steel Plant	2
5	Aditya Birla Scholarship, Aaditya Birla Group, Aditya Birla Management Corporation, Mumbai	6
6	BOEING Scholarship to the students of Aero Space Engg. Department from the ongoing Research Project "Boeing University Relations"(BUR) sponsored by Boeing Company, U.S.A	10
7	Scholarship under Scheme (Trust Fund) for Differently Abled Students being awarded by National Handicapped Finance & Development Corporation, (NHFDC), Faridabad.	1
8	KVPY Scholarship, IISc, Bangalore	10
9	FAEA Scholarship to BPL Cat. SC/ST students being awarded by Foundation for Academic Excellence & Access, New Delhi.	11
10	Post Matric Scholarship to SC/ST students , awarded through different District Welfare Officers in A.P. State Govt. of Anhdra Pradesh	1
11	Directorate of Technical Education, Chattisgarh	1
12	ST Scholarship awarded by Singapore Technologies Eng.. Ltd., to students of Computer Science Engg. and O.E. & Naval. Arch.	7
13	NTPC Scholarship	5
14	Schoarship from CALSOFT Pft. Ltd.	1
15	ONGC Scholarship	1
16	EIL Scholarship, Engineers India Ltd., HRD, New Delhi	3
17	STEEL Scholarship	10
18	Post-Matric Scholarship, Bihar	10
19	Central Sector Scholarship for ST	22
20	IFCO Kissan Sewa	1
21	Mukhyamantri Medhavi Vidyarthi Yojana	1
22	AICTE Jammu and Kashmir Scholarship	1
23	SCI CSR Scholarship (Shipping Corporation of India - for Naval Student)	11
	Total	592

Table A-8

Students from Foreign Countries on Roll – Undergraduate

Sl. No	Department	1st Year	2nd Year	3rd Year	4th Year	5th Year	Total
	(A) B Tech 4-Year						
1	AEROSPACE ENGINEERING						
2	AGRICULTURAL AND FOOD ENGINEERING						
3	BIOTECHNOLOGY						
4	CHEMICAL ENGINEERING						
5	CIVIL ENGINEERING						
6	COMPUTER SCIENCE & ENGINEERING	1		1			
7	ELECTRICAL ENGINEERING	1					
8	ELECTRONICS & ELECTRICAL COMMUNICATION ENGG.	1					
9	INDUSTRIAL AND SYSTEMS ENGINEERING	1					
10	MECHANICAL ENGINEERING						
11	METALLURGICAL & MATERIALS ENGINEERING						
12	MINING ENGINEERING						
13	OCEAN ENGG AND NAVAL ARCHITECTURE						
	(B) B Arch 5 Year						
1	ARCHITECTURE AND REGIONAL PLANNING						
	(C) Integrated MSc 5 Year						
1	CHEMISTRY						
2	GEOLOGY & GEOPHYSICS						
3	HUMANITIES & SOCIAL SCIENCES						
4	MATHEMATICS						
5	PHYSICS						
	(D) Dual Degree 5-Year						
1	AEROSPACE ENGINEERING	1					
2	AGRICULTURAL AND FOOD ENGINEERING						
3	BIOTECHNOLOGY			1			
4	CHEMICAL ENGINEERING						
5	CIVIL ENGINEERING						
6	COMPUTER SCIENCE & ENGINEERING						
7	ELECTRICAL ENGINEERING						
8	ELECTRONICS & ELECTRICAL COMMUNICATION ENGG.						
9	INDUSTRIAL AND SYSTEMS ENGINEERING						
10	MECHANICAL ENGINEERING						
11	METALLURGICAL & MATERIALS ENGINEERING						
12	MINING ENGINEERING						
13	OCEAN ENGG AND NAVAL ARCHITECTURE						
	(E) 2Yr MSc						
1	CHEMISTRY						
2	CHEMICAL AND MOLECULAR BIOLOGY						
3	GEOLOGY & GEOPHYSICS						
4	MATHEMATICS						
5	PHYSICS						
	Total	**5**		**2**			

Table A-9

STATEMENT OF RESULTS (UNDERGRADUATE) 2017-2018

STATEMENT OF RESULTS (UNDERGRADUATE) 2017-2018

S.No.	Course	1st yr.		2nd yr.		3rd yr.		4th yr.		5th yr.		
Total		**P**	**I**	**P**	**I**	**P**	**I**	**P**	**I**	**P**	**I**	
1	EXPLORATION GEOPHYSICS	2	0	1	1	0	0	0	0	0	0	**4**
2	GEOLOGY & GEOPHYSICS	0	0	2	0	0	0	0	0	0	0	**2**
(A) B.Tech												
1	AEROSPACE ENGINEERING	29	0	28	4	13	12	1	1	0	0	**88**
2	AGRICULTURAL AND FOOD ENGINEERING	27	3	13	19	9	14	2	1	0	0	**88**
3	BIOTECHNOLOGY	18	5	15	10	8	2	2	0	0	0	**60**
4	CHEMICAL ENGINEERING	46	8	50	8	25	19	3	5	0	0	**164**
5	CIVIL ENGINEERING	49	8	43	14	30	16	4	1	0	0	**165**
6	COMPUTER SCIENCE & ENGINEERING	55	6	58	6	57	9	1	8	0	0	**200**
7	ELECTRICAL ENGINEERING	55	6	51	9	38	15	2	9	0	0	**185**
8	ELECTRONICS & ELECTRICAL COMMUNICATION ENGG.	58	10	58	11	47	6	2	9	0	0	**201**
9	INDUSTRIAL AND SYSTEMS ENGINEERING	28	4	21	9	11	8	0	0	0	0	**81**
10	INSTRUMENTATION ENGINEERING	29	5	30	7	28	4	2	3	0	0	**108**
11	MANUFACTURING ENGINEERING	29	3	19	12	15	9	0	2	0	0	**89**
12	MECHANICAL ENGINEERING	60	12	62	16	40	17	3	14	0	0	**224**
13	METALLURGICAL & MATERIALS ENGINEERING	26	6	27	5	20	6	0	3	0	0	**93**
14	MINING ENGINEERING	22	10	19	15	21	7	4	6	0	0	**104**
15	OCEAN ENGG AND NAVAL ARCHITECTURE	17	10	5	16	12	3	1	2	0	0	**66**
Total(A)		**550**	**96**	**502**	**162**	**374**	**147**	**27**	**64**	**0**	**0**	**1922**
(B) B.Arch												
1	ARCHITECTURE AND REGIONAL PLANNING	31	8	31	4	23	14	20	20	1	4	**156**
Total(B)		**31**	**8**	**31**	**4**	**23**	**14**	**20**	**20**	**1**	**4**	**156**
(C) M.Sc(2yr)												
1	BIO SCIENCE	7	0	0	0	0	0	0	0	0	0	**7**
2	CHEMISTRY	41	2	0	1	0	0	0	0	0	0	**44**
3	EXPLORATION GEOPHYSICS	13	2	0	0	0	0	0	0	0	0	**15**
4	GEOLOGY & GEOPHYSICS	31	0	0	0	0	0	0	0	0	0	**31**
5	MATHEMATICS	27	3	0	0	0	0	0	0	0	0	**30**
6	PHYSICS	42	3	2	5	0	0	0	0	0	0	**52**
Total(C)		**161**	**10**	**2**	**6**	**0**	**0**	**0**	**0**	**0**	**0**	**179**
(D) M.Sc(5yr)												
1	CHEMISTRY	14	7	21	7	10	5	13	6	0	1	**84**
2	EXPLORATION GEOPHYSICS	22	7	13	13	26	2	21	6	0	0	**110**
3	GEOLOGY & GEOPHYSICS	21	7	13	10	15	6	21	5	0	2	**100**
4	HUMANITIES & SOCIAL SCIENCES	40	10	38	11	28	12	31	6	2	0	**178**
5	MATHEMATICS	48	8	47	7	40	18	45	11	2	1	**227**
6	PHYSICS	28	6	23	9	19	11	19	7	1	0	**123**
Total(D)		**173**	**45**	**155**	**57**	**138**	**54**	**150**	**41**	**5**	**4**	**822**

(E) Dual Degree												
1	AEROSPACE ENGINEERING	12	3	15	5	21	7	21	6	2	0	**92**
2	AGRICULTURAL AND FOOD ENGINEERING	27	5	14	16	22	7	32	7	2	2	**134**
3	BIOTECHNOLOGY	16	7	14	8	24	11	25	2	0	0	**107**
4	CHEMICAL ENGINEERING	31	2	24	8	27	13	34	6	0	3	**148**
5	CIVIL ENGINEERING	19	3	17	5	27	6	24	6	0	1	**108**
6	COMPUTER SCIENCE & ENGINEERING	43	1	39	7	43	5	39	8	2	4	**191**
7	ELECTRICAL ENGINEERING	21	3	23	2	31	4	31	6	0	3	**124**
8	ELECTRONICS & ELECTRICAL COMMUNICATION ENGG.	42	2	38	11	43	11	49	3	1	8	**208**
9	INDUSTRIAL AND SYSTEMS ENGINEERING	23	1	15	5	26	6	20	5	0	0	**101**
10	INSTRUMENTATION ENGINEERING	0	0	1	0	0	0	0	1	0	0	**2**
11	MANUFACTURING ENGINEERING	13	3	10	6	12	5	10	8	0	2	**69**
12	MECHANICAL ENGINEERING	43	12	45	13	61	10	55	14	0	7	**260**
13	METALLURGICAL & MATERIALS ENGINEERING	15	4	11	9	31	1	25	5	0	3	**104**
14	MINING ENGINEERING	28	8	19	18	29	9	38	6	1	2	**158**
15	OCEAN ENGG AND NAVAL ARCHITECTURE	12	9	7	12	25	5	34	2	1	1	**108**
16	QUALITY ENGINEERING DESIGN AND MANUFACTURING - INDUSTRIAL ELECTRONICS VERTICAL	6	1	4	2	1	4	5	1	1	0	**25**
17	QUALITY ENGINEERING DESIGN AND MANUFACTURING - MECHANICAL ENGINEERING VERTICAL	7	0	1	4	4	5	5	1	1	0	**28**
	Total(E)	**358**	**64**	**297**	**131**	**427**	**109**	**447**	**87**	**11**	**36**	**1967**
Total(A+B+C+D+E)		**1273**	**223**	**987**	**360**	**962**	**324**	**644**	**212**	**17**	**44**	**5046**

Table A-10

Student on roll Departmentwise (UNDERGRADUATE) 2017-2018

Sl. No	Department	First Yr		Second Yr		Third Yr		Fourth Yr		Fifth Yr		Total
		M	F	M	F	M	F	M	F	M	F	
	(A) B Tech 4-Year											
1	AEROSPACE ENGINEERING	26	1	32	1	25	0	21	2	0	0	108
2	AGRICULTURAL AND FOOD ENGINEERING	28	1	31	1	22	2	18	7	0	0	110
3	BIOTECHNOLOGY	21	6	21	6	8	3	12	2	0	0	79
4	CHEMICAL ENGINEERING	51	5	53	5	41	3	41	5	0	0	204
5	CIVIL ENGINEERING	58	4	56	4	49	2	40	4	0	0	217
6	COMPUTER SCIENCE & ENGINEERING	58	5	60	5	64	4	57	4	0	0	257
7	ELECTRICAL ENGINEERING	88	10	91	10	78	11	84	11	0	0	383
8	ELECTRONICS & ELECTRICAL COMMUNICATION ENGG.	59	10	61	10	48	6	69	6	0	0	269
9	INDUSTRIAL AND SYSTEMS ENGINEERING	29	3	29	3	19	2	17	1	0	0	103
10	MECHANICAL ENGINEERING	104	3	108	3	77	4	91	6	0	0	396
11	METALLURGICAL & MATERIALS ENGINEERING	31	1	33	1	21	5	25	3	0	0	120
12	MINING ENGINEERING	33	0	34	0	33	0	34	1	0	0	135
13	OCEAN ENGG AND NAVAL ARCHITECTURE	27	1	20	1	15	1	17	0	0	0	82
	Total (A)	613	50	629	50	500	43	526	52	0	0	2463
	(B) B Arch 5 Year										0	0
1	ARCHITECTURE AND REGIONAL PLANNING	37	9	27	9	34	5	32	15	46	8	222
	Total (B)	37	9	27	9	34	5	32	15	46	8	222
	(C) Integrated MSc 5 Year										0	0
1	CHEMISTRY	18	4	26	4	12	5	12	5	15	6	107
2	GEOLOGY & GEOPHYSICS	54	5	45	5	48	4	51	2	55	5	274
3	HUMANITIES & SOCIAL SCIENCES	38	11	39	11	38	3	27	10	41	4	222
4	MATHEMATICS	49	5	50	5	55	3	55	3	47	7	279
5	PHYSICS	32	0	33	0	26	6	26	1	32	0	156
	Total (C)	191	25	193	25	179	21	171	21	190	22	1038
	(D) Dual Degree 5-Year											0
1	AEROSPACE ENGINEERING	14	2	20	2	25	2	28	1	27	2	123
2	AGRICULTURAL AND FOOD ENGINEERING	30	5	25	5	28	4	34	5	32	4	172

3	BIOTECHNOLOGY	22	2	20	2	26	10	21	5	23	11	142
4	CHEMICAL ENGINEERING	27	3	29	3	39	2	35	5	30	2	175
5	CIVIL ENGINEERING	21	1	23	1	29	4	26	4	28	5	142
6	COMPUTER SCIENCE & ENGINEERING	42	4	44	4	45	4	48	2	43	2	238
7	ELECTRICAL ENGINEERING	22	3	23	3	33	3	35	2	26	3	153
8	ELECTRONICS & ELECTRICAL COMMUNICATION ENGG.	37	3	46	3	48	6	47	6	47	11	254
9	INDUSTRIAL AND SYSTEMS ENGINEERING	37	2	30	2	43	5	54	2	40	6	221
10	MECHANICAL ENGINEERING	67	1	73	1	91	1	73	1	65	4	377
11	METALLURGICAL & MATERIALS ENGINEERING	17	2	18	2	30	3	26	4	25	3	130
12	MINING ENGINEERING	34	0	38	0	38	0	44	0	34	1	189
13	OCEAN ENGG AND NAVAL ARCHITECTURE	24	1	19	1	29	2	36	4	30	2	148
	Total (D)	394	29	408	29	504	46	507	41	450	56	2464
	(E) 2Yr MSc											0
1	CHEMISTRY	35	9	33	9	0	0	0	0	0	0	86
2	CHEMICAL AND MOLECULAR BIOLOGY	5	0	0	0	0	0	0	0	0	0	5
3	GEOLOGY & GEOPHYSICS	46	7	37	7	0	0	0	0	0	0	97
4	MATHEMATICS	23	7	21	7	0	0	0	0	0	0	58
5	PHYSICS	39	10	32	10	0	0	0	0	0	0	91
	TOTAL(E)	148	33	123	33	0	0	0	0	0	0	337
	Total	2618	259	2637	259	2434	230	2472	258	1372	172	12711

TABLE – B-1 ADMISSION TO POSTGRADUATE COURSES IN 2017-2018

Deptt./ Centre	Specialization	Sanct - ioned	Admit.	Reg- ular	SP	QIP	DF	GN	SC	ST	PD	OBC	M	F
AE	Aerospace Engineering	24	18	18	00	00	00	07	04	01	01	06	15	03
AG	Farm Machinery & Power (AG1)	19	18	18	00	00	00	06	03	01	00	08	15	03
	Land & Water Resources Engineering (AG2)	18	19	19	00	00	00	07	04	01	01	07	15	04
	Food Process Engineering (AG3)	30	28	28	00	00	00	09	05	02	01	12	19	09
	Agricultural Biotechnology (AG4)	20	13	13	00	00	00	07	02	01	01	03	06	07
	Aquacultural Engineering (AG5)	18	12	12	00	00	00	07	02	00	00	03	10	02
	Agricultural Systems & Management (AG6)	19	19	19	00	00	00	09	03	01	00	06	13	06
AT	Embedded Controls and Software	12	12	12	00	00	00	05	02	02	00	03	08	04
BT	Biotechnology and Biochemical Engineering	24	26	26	00	00	00	11	06	02	00	07	19	07
CH	Chemical Engineering	75	65	65	00	00	00	30	09	04	02	22	48	17
CE	Hydraulic & Water Resources Engineering (CE1)	20	06	06	00	00	00	02	00	01	01	03	06	00
	Transportation Engineering (CE2)	20	18	17	00	00	01	09	04	01	01	04	15	03
	Environmental Engineering and Management (CE3)	18	10	09	01	00	00	06	03	00	00	01	07	03
	Geotechnical Engineering (CE4)	18	13	11	00	00	02	07	02	00	00	04	09	04
	Structural Engineering (CE5)	20	21	19	01	00	01	11	03	02	00	05	19	02
CS	Computer Science & Engineering	67	59	50	01	00	08	29	08	05	02	17	50	09
CR	Cryogenic Engineering	21	21	21	00	00	00	07	04	03	00	07	19	02
CL	Earth System Science and Technology	31	14	14	00	00	00	07	01	01	00	05	14	00
EE	Machine Drives and Power Electronics (EE1)	18	16	16	00	00	00	09	02	01	02	04	14	02
	Control System Engineering (EE2)	18	16	13	00	00	03	08	03	00	01	05	16	00
	Power and Energy System (EE3)	18	12	12	00	00	00	06	03	01	00	02	09	03
	Instrumentation Signal Processing (EE4)	18	21	17	00	00	04	12	03	01	01	05	16	05
EC	Microelectronics and VLSI Design (EC2)	29	23	23	00	00	00	12	04	01	00	06	22	01
	RF and Microwave Engineering (EC3)	28	11	09	00	00	02	03	04	02	00	02	08	03
	Telecommunication Systems Engineering (EC4)	28	21	15	00	00	06	13	02	02	01	04	20	01
	Visual Information and Embedded Systems Engineering (EC5)	28	22	22	00	00	00	09	03	02	01	08	19	03

Deptt./ Centre	Specialization	Sanct - ioned	Admit.	Reg- ular	SP	QIP	DF	GN	SC	ST	PD	OBC	M	F
ES	Energy Engineering	15	00	00	00	00	00	00	00	00	00	00	00	00
ET	Multimedia Information Processing	15	00	00	00	00	00	00	00	00	00	00	00	00
GG	Exploration Geosciences (GG1)	24	24	24	00	00	00	08	07	02	00	07	19	05
GS	G S Sanyal School of Telecommunication	10	07	07	00	00	00	03	00	01	00	03	05	02
IM	Industrial Engineering and Management	25	14	12	00	00	02	09	01	01	00	03	12	02
MM	Medical Imaging and Informatics (SM)	15	00	00	00	00	00	00	00	00	00	00	00	00
MS	Materials Science and Engineering	29	22	20	00	00	02	12	04	00	01	06	18	04
MA	Computer Science and Data Processing	34	26	26	00	00	00	14	04	01	00	07	19	07
ME	Manufacturing Science and Engineering (ME1)	26	15	14	01	00	00	06	02	02	01	05	15	00
	Thermal Science and Engineering (ME2)	33	22	22	00	00	00	13	03	01	01	05	22	00
	Mechanical System Design (ME3)	44	33	30	00	00	03	16	06	03	00	08	33	00
MT	Metallurgical & Materials Engineering	54	43	41	00	00	02	17	09	04	01	13	37	06
MN	Mining Engineering	22	17	17	00	00	00	04	02	02	00	09	16	01
NA	Ocean Engineering and Naval Architecture	20	21	13	03	00	05	11	03	00	00	07	20	01
PH	Solid State Technology	25	15	15	00	00	00	08	02	01	00	04	11	04
ID	Infrastructure Design and Management	31	15	15	00	00	00	04	03	01	00	07	15	00
RE	Quality and Reliability Engineering	20	13	08	01	00	04	08	01	02	00	02	13	00
RR	Railway Engineering	10	12	04	08	00	00	09	01	00	00	02	12	00
RT	Rubber Technology	24	23	23	00	00	00	10	04	01	00	08	20	03
WM	Water Management	12	10	10	00	00	00	03	02	01	00	04	07	03
AR	City Planning (**MCP)**	42	38	38	00	00	00	17	06	03	00	12	22	16
MM	Medical Science and Technology	15	08	07	01	00	00	07	00	00	00	01	08	00
IP	Intellectual Property Law (Bachelor of Laws)	80	34	34	00	00	00	27	02	00	00	05	27	07
IP	Intellectual Property Law (Master of Laws)	30	12	12	00	00	00	05	04	01	00	02	02	10
BM	Business Administration (MBA)	160	128	128	00	00	00	75	17	00	01	36	92	36
HS	Human Resources Management	30	17	17	00	00	00	13	02	00	00	02	09	08
EMBA	Executive MBA(Kolkata Campus)	50	20	00	00	20	00	18	00	00	00	02	19	01
PGDBA	Post-Graduate Diploma in Business Analytics	60	55	55	00	00	00	28	07	04	00	16	45	10

TABLE B-2 - POSTGRADUATE STUDENTS ON ROLL 2017-2018										
Dept./ Centre	**Specialization**	**Code**	1st year		2nd year		3rd year		Total	
			M	F	M	F	M	F	M	**F**
AE	Aerospace Engineering	AE	15	03	17	00	-	-	32	03
AG	Farm Machinery And Power	AG1	15	03	17	00	-	-	32	03
AG	Land and Water Resources Engineering	AG2	13	04	14	05	-	-	27	09
AG	Food Process Engineering	AG3	19	09	21	11	-	-	40	20
AG	Agricultural Biotechnology	AG4	06	06	06	05	-	-	12	11
AG	Aquacultural Engineering	AG5	07	02	11	03	-	-	18	05
AG	Agricultural Systems and Management	AG6	13	06	11	06	-	-	24	12
AT	Embedded Controls and Software		07	04	04	01	-	-	11	5
BT	Biotechnology and Biochemical Engineering	BT	19	07	13	08	-	-	32	15
CE	Hydraulic and Water Resources Engineering	CE1	06	00	03	00	-	-	09	00
CE	Transportation Engineering	CE2	12	03	21	02	-	-	33	05
CE	Environmental Engineering & Management	CE3	06	02	06	02	-	-	12	04
CE	Geotechnical Engineering	CE4	06	03	11	02	-	-	17	05
CE	Structural Engineering	CE5	12	02	14	01	-	-	26	03
CH	Chemical Engineering	CH	41	11	35	16	-	-	76	27
CL	Earth System Science and Technology	CL	12	00	12	01	-	-	24	01
CR	Cryogenic Engineering	CR	19	01	03	01	-	-	22	02
CS	Computer Science and Engineering	CS	46	08	48	12	-	-	94	20
EC	Microelectronics & V LSI Design	EC2	19	01	31	03	-	-	50	04
EC	RF and Microwave Engineering	EC3	07	02	11	02	-	-	18	04
EC	Telecommunication Systems Engineering	EC4	20	01	31	03	-	-	51	04
EC	Visual Information and Embedded Systems Engg.	EC5	18	03	24	02	-	-	42	05
EE	Machine Drives and Power Electronics	EE1	12	02	01	00	-	-	13	02
EE	Control System Engineering	EE2	13	0	11	0	-	-	24	0
EE	Power and Energy Systems	EE3	07	01	03	01	-	-	10	02
EE	Instrumentation Signal Processing	EE4	13	03	8	00	-	-	21	03
GG	Exploration Geosciences	GG1	16	03	8	00	-	-	24	03
ID	Infrastructure Design and	ID	11	00	13	04	-	-	24	04

TABLE B-2 - POSTGRADUATE STUDENTS ON ROLL 2017-2018										
Dept./ Centre	**Specialization**	**Code**	1st year		2nd year		3rd year		Total	
			M	F	M	F	M	F	M	**F**
	Management									
IM	Industrial Engineering and Management	IM	11	02	12	02	-	-	23	04
IT	Information Technology	IT	0	0	2	0	-	-	2	0
MA	Computer Science and Data Processing	MA	19	07	21	07	-	-	40	14
ME	Manufacturing Science and Engineering	ME1	13	0	15	01	-	-	28	01
ME	Thermal Science and Engineering	ME2	16	00	18	00	-	-	34	00
ME	Mechanical Systems Design	ME3	28	00	42	00	-	-	70	00
MI	Mining Engineering	MI	15	01	15	01	-	-	30	02
MM	Medical Imaging and Informatics	MM1	00	00	07	02	-	-	07	02
MS	Materials Science and Engineering	MS	15	04	25	03	-	-	40	07
MT	Metallurgical and Materials Engineering	MT1	31	06	39	04	-	-	70	10
NA	Ocean Engineering and Naval Architecture	NA	19	01	12	00	-	-	31	01
PH	Solid State Technology	PH2	10	04	10	04	-	-	20	08
RE	Reliability Engineering	RE	12	00	09	00	-	-	21	00
RR	Railway Engineering	RR	11	00	08	00	-	-	19	00
RT	Rubber Technology	RT	19	03	18	05	-	-	37	08
WM	Water Management	WM	07	03	07	00	-	-	14	03
AR	City Planning	MCP	22	16	21	21	-	-	43	37
MM	Medical Science And Technology	MM	08	00	10	03	08	02	26	05
BM	Business Administration	BM	88	36	88	27	-	-	176	63
HS	Human Resources Management	HS	09	08	10	10	-	-	19	18
BM	Executive MBA (3 Yrs.) (Kolkata Campus)	EMBA	17	01	34	02	26	05	77	08
EC	Electronics & Communication Engineering (3 Yrs.)	EC8	0	0	0	0	01	0	01	0
IP	Intellectual Property Law (Bachelor of Laws)	IP	27	7	16	15	12	18	55	40
IP	Intellectual Property Law (Master of Laws)	IP	01	10	01	9	-	-	02	19
PGDBA	Post Graduation Diploma in Business Analytics		42	10	46	06			88	16

TABLE- B -3 - STATEMENT OF RESULTS OF POSTGRADUATE EXAMINATION 2018

Deptt./ Centre	Specialisation	Code	Registered	Successful	Incomplete
AE	Aerospace Engineering	AE	15	15	0
AG	Farm Machinery and Power	AG1	19	17	2
AG	Land and Water Resources Engineering	AG2	19	18	1
AG	Food Processing Engineering	AG3	26	26	0
AG	Applied Botany	AG4	11	11	0
AG	Aquacultural Engineering	AG5	13	12	1
AG	Agricultural Systems and Management	AG6	15	15	0
AT	Embedded Controls and Software	AT	4	4	0
BT	Biotechnology and Biochemical Engineering	BT	19	19	0
CH	Chemical Engineering	CH	41	39	2
CE	Hydraulic and Water Resources Engineering	CE1	3	2	1
CE	Transportation Engineering	CE2	20	18	2
CE	Environmental Engineering and Management	CE3	7	7	0
CE	Geotechnical Engineering	CE4	13	9	4
CE	Structural Engineering	CE5	12	12	0
CS	Computer Science and Engineering	CS	53	53	0
CR	Cryogenic Engineering	CR	04	04	0
CL	Earth System Science and Technology	CL	13	13	0
EE	Control System Engineering	EE2	7	7	0
EE	Power and Energy System	EE3	1	1	0
EE	Instrumentation	EE4	7	7	0
EC	Microelectronics & V LS I Design	EC2	15	13	2
EC	RF and Microwave Engineering	EC3	11	11	0
EC	Telecommunication Systems Engineering	EC4	22	21	1
EC	Visual Information and Embedded Systems Engg.	EC5	21	19	2
ES	Energy Science and Engineering	ES	4	4	0
GG	Exploration Geosciences	GG1	13	13	0
IM	Industrial Engineering and Management	IM	11	11	0
MM	Medical Imaging and Informatics	MM	9	9	0
IT	Information Technology	IT	0	0	0
MS	Materials Science and Engineering	MS	25	25	0
MA	Computer Science and Data Processing	MA	27	27	0
ME	Manufacturing Science and Engineering	ME1	12	12	0
ME	Thermal Science and Engineering	ME2	12	12	0
ME	Mechanical Systems Design	ME3	29	28	1
MT	Metallurgical and Materials Engineering	MT	41	41	0
MI	Mining Engineering	MI	13	8	5
NA	Ocean Engineering and Naval Architecture	NA	10	10	0
PH	Solid State Technology	PH2	13	13	0
ID	Infrastructure Design and Management	ID	15	14	1
RE	Quality and Reliability Engineering	RE	9	9	0
RR	Railway Engineering	RR	7	6	1

TABLE- B -3 - STATEMENT OF RESULTS OF POSTGRADUATE EXAMINATION 2018

Deptt./ Centre	Specialisation	Code	Registered	Successful	Incomplete
RT	Rubber Technology	RT	23	23	0
WM	Water Management	WM	7	7	0
AR	City Planning	MCP	42	41	1
BM	Business Administration	MBA	112	112	0
MM	Medical Science and Technology	MMST	10	10	0
HS	Human Resources Management	MHRM	20	18	2
IP	Intellectual Property Law	IP3	30	29	1
IP	Intellectual Property Law(Masters law)	IP2	9	8	1
BM	Executive MBA Programme	EMBA	28	27	1
EC	Electronics and Communication Engineering	EC 8	1	1	0
BM	Post Graduation Diploma in Business Analytics	PGDBA	52	52	0
	Total		**975**	943	32

Table C-1- NUMBER OF PHD RESEARCH SCHOLARS ENROLLED IN 2017-18

Dept/Centre/School	CSIR/DBT/UGC								Employee	Project							QIP		Institute								Sponsored			Total
	GE		OB		SC		ST		OB	GE		OB		SC		ST	GE	OB	GE		OB		SC		ST		GE	OB	SC	
	F	M	F	M	F	M	F	M	M	F	M	F	M	F	M	M	F	M	F	M	F	M	F	M	F	M	M	M	M	
AE													1						2	3		5		1			1	1		14
AG										3		2				1			4	8	3	4	2		1	1			1	30
AR																			4	1		1	2							8
AT										5	3	3	1	1					3	13	1	3	1	1						35
BM		2		2					1										1	5										11
BS	1	1					1												2				1			1				7
BT		1		1	1						2								6			4		1						16
CE											1								3	19	1	4		2		1				31
CH											1				1				5	8	1	1	1	3		1				22
CL		1										1							2	5		3					1			13
CR																				8	1	2								11
CS										3	4	1	2						3	7			1	2		1				24
CY	6	7		2			1												3	8		3		1						31
EC										1							1	1	3	6	2	3		1						18
EE											5		3						4	12	1			2						27
EF											1								2	6	1			1						11
ES		1																	1	4	1	3								10
ET																			2	1										3
GG	1	2	1		2														6	3	1	4		3						23
GS																				3				1						4
HS	3	2			3	1		1			1	1							5	3								2		22
ID																			2	5		1		1						9
IM										1			1						2	4				1						9
IP																			2			1								3
MA	2		1			1													1	3		1	2	1						12
ME											1								4	33		9	1	4			2			54
MI																			2	4		2							1	9
MM				1	1		1				1								2	7		1	1	2	1					18
MS	1																		1	1		1								4
MT											1								1	6		5	1	1			1		1	17

Table C-1- NUMBER OF PHD RESEARCH SCHOLARS ENROLLED IN 2017-18

Dept/Centre/School	CSIR/DBT/UGC								Employee	Project							QIP		Institute								Sponsored			Total
	GE		OB		SC		ST		OB	GE		OB		SC		ST	GE	OB	GE		OB		SC		ST		GE	OB	SC	
	F	M	F	M	F	M	F	M	M	F	M	F	M	F	M	M	F	M	F	M	F	M	F	M	F	M	M	M	M	
NA										1		1	1						2	3	1	3		2						14
NT																			3	8	1	2								14
PH	1	2	1		1	2		1											4	5		1		5						23
RD							1												1	1				1						4
RE											1								1	2							1			5
RJ													1						2	1		2								6
RT	1	1								3	3	1	1						1								1	1		13
TS		1																	1			1								3
WM											1				1				1	2										5
Grand Total	16	21	3	6	8	4	4	2	1	17	26	10	11	1	2	1	1	1	94	208	15	70	13	37	2	5	7	4	3	593

Table C-2 NUMBER OF MS STUDENTS ENROLLED DURING 2017-18

Department	GE		OB		Total
	F	M	F	M	
AG		1		1	2
AT	2	8		2	12
BM	1				1
CE		1			1
CS	5	4		1	10
EE		3			3
ET			1		1
GS				1	1
ID	2				2
IM	1				1
ME		2		1	3
MI	1				1
MM	1				1
RE		1		1	2
Grand Total	13	20	1	7	41

Table C-2a NUMBER OF POST DOCTORAL FELLOWS AS ON 31/05/2018

Department	Total	Male	Female
AT	1	1	
BS	2		2
CE	2	1	1
CH	3	1	2
CL	1		1
CR	1	1	
CS	3	3	
CY	6	4	2
EE	1	1	
EF	1	1	
GS	2	1	1
ID	1		1
ME	1		1
MM	4	3	1
MT	3	2	1
PH	3	3	
TS	3	2	1

Table - C-3 NUMBER OF RESEARCH SCHOLARS ON ROLL AS ON 31.05.2018

Dept/ Centre/ School	Employee		CSIR/UGC/DBT								Project								QIP								Institute								Sponsored								Total
	GE	OB	GE		OB		SC		ST		GE		OB		SC		ST		GE		OB		SC		ST		GE		OB		SC		ST		GE		OB		SC		ST		
	M	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	
AE											1	1		2		1											5	29	1	10		5		2		5		1					63
AG			2	1		2		3	1		11	13	4	7		2		2									32	21	9	16	5	8	2	3	1	3		3	1	1			153
AR				3							1								1				1				17	8	1	5	6	2											45
AT			1	2							11	11	3	2	1	2	1										23	59	5	15	1	8		1		5		1					152
BM		1		6	2	5	1	1				1															7	19		3	1	9		1	3	9	1						70
BS			3	2			2		1																		6	3	2	1	1			1								22
BT			8	5	3	1	3	1			11	5	1	1						1							25	3		4		1											73
CE											2	4	1			1			1	2				1	1		21	50	4	15	2	10		1		6							122
CH												2				1				1							25	39	6	8	1	12		1		1							97
CL				3				2			1	3	1														8	10	1	5	2			1		1							38
CR																											2	17	1	3		1											24
CS											6	11	1	2													14	33	1	4	3	5	1	1	1	3							86
CY			14	42		6	2	7	1			2															19	31	4	13	4	6											151
EC			1								1	2		1	1				2	4		1		1			20	43	2	10		3				6							98
EE											2	12		3		1				2	1	2					16	50	3	15	1	3	1			2		1					115
EF												1															4	12	2	4		1				1							25
ES				2																							4	16	2	5								1				30
ET																											9	2		1	1	1											14
GG			9	12	2	2	4	2			2	3	1														17	24	7	8	3	5											101
GS												2								1							3	20	1	1		2			2	2		2					36
HS			6	6		2	3	2		1		3	3							1							27	11	2	5		1	1		7	4		2		1			88
ID			1																								8	11		2	1	1											24
IM						1					2	6		3						1							4	21		6		1				3							48
IP	1			1							1																5	1		6			1			1							17
IT	1					1					1	4		3					1	2	1	1					5	3		1													24
MA			9	7	2	4	2	2				2		1		1				1							19	31	2	14	5	5											107
ME						1						2		1						2				1			7	109		23	1	14		2	1	5							169

Table - C-3 NUMBER OF RESEARCH SCHOLARS ON ROLL AS ON 31.05.2018

Dept/ Centre/ School	Employee		CSIR/UGC/DBT								Project								QIP								Institute								Sponsored								Total
	GE	OB	GE		OB		SC		ST		GE		OB		SC		ST		GE		OB		SC		ST		GE		OB		SC		ST		GE		OB		SC		ST		
	M	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	
MI		1		1							3	5				2				1							4	18	1	13		6		2	1	1				1		60
MM			2	4		1	1	2	1		2	5		1		1											21	21	2	2	2	3	1	1		3				1	1	78
MS			4	9		1	1	1			2								1			2					7	9	1	7	1	1						1				48
MT			1								2	4		3		1							1	1			12	32	3	19	5	16	3	4	1	7				2	1	118
NA												2	1	1													3	18	1	8		2				2		2				40
NT				1								1															10	18	2	5		1										38
PH			2	7	1	2	1	1		1			1														16	32	4	11	2	11				1						93
RD						1		1	1																		3	2				1											9
RE			1									1								2							3	9		3						2						21
RJ	1				1							2		1													9	16	1	4		1										36
RT			1	3		2					3	6	2	2		2				1							1	8	2	1						2		2			1	39
TS				2								1															4	3		1		1										12
WM											1	3			1	1											6	11	1	1		2										27
Total	3	2	65	119	11	32	20	25	5	2	66	120	19	34	3	16	1	2	6	22	2	6	2	4	1	451	873	74	278	48	149	10	21	17	75	1	15	1	7	3	2611

INDIAN INSTITUTE OF TECHNOLOGY KHARAGPUR
BALANCE SHEET AS AT 31ST MARCH 2018

(Amount in Rupees)

SOURCES OF FUNDS	Schedule	Current Year	Previous Year
CORPUS/CAPITAL FUND AND LIABILITIES			
CORPUS / CAPITAL FUND	1	18187455879	16955960424
EARMARKED / ENDOWMENT FUNDS	2	7419752426	6494349026
CURRENT LIABILITIES AND PROVISIONS	3	12003094027	8276585388
TOTAL		**37610302332**	**31726894838**

APPLICATION OF FUNDS		Current Year	Previous Year
FIXED ASSETS	4		
- Tangible Assets		11810220336	11319995241
- Intangible Assets		114523842	115482558
- Capital Work in Progress		4264425375	3540553823
INVESTMENTS-FROM EARMARKED/ENDOWMENT FUNDS	5	6298735399	5194639231
- Long Term			
- Short Term			
INVESTMENTS - OTHERS	6	6940133897	3579323805
CURRENT ASSETS	7	2209735132	1547627825
LOANS, ADVANCES & DEPOSITS	8	5972528350	6429272355
TOTAL		**37610302332**	**31726894838**
SIGNIFICANT ACCOUNTING POLICIES	23		
CONTINGENT LIABILITIES AND NOTES ON ACCOUNTS	24		

(R. Das)	(CA. B. Bhattacharyya)	(Prof. B.N. Singh)	(Prof. P.P. Chakrabarti)
Asst. Registrar (Finance)	Dy. Registrar (Finance & Accounts)	Registrar	Director

Dated : 10th July 2018

INDIAN INSTITUTE OF TECHNOLOGY KHARAGPUR
INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31ST MARCH 2018

(Amount in Rupees)

Particulars	Schedule	Current Year	Previous Year
INCOME			
Academic Receipts	9	518422425	264684547
Grants / Subsidies	10	4895800000	3923045250
Income from Investments	11	9965489	19942615
Interest Earned	12	95752431	27445995
Other Income	13	172605247	227976877
Prior Period Income	14	2314868	4342266
TOTAL(A)		5694860460	4467437551
EXPENDITURE			
Staff Payments & Benefits (Establishments Expenses)	15	4139440196	2607226573
Academic Expenses	16	971071540	995312909
Administrative and General Expenses	17	751645095	616856587
Transportation Charges	18	6298625	3387557
Repairs & Maintenance	19	251971040	203724487
Finance Cost	20	3433738	402181
Depreciation	4	857862360	735847515
Other Expenses	21	493223	25326687
Prior Perod Expenses	22	497622	2787324
TOTAL(B)		6982713440	5190871819
Balance being excess of Expenditure over Income before adjustment of Depreciation (B-A)		1287852979	723434268
Transfer to Corpus for equivalent amount of Depreciation on Assets Purchased from Plan Grant/ Projects/ Transfer of ownership of assets etc		857348082	735353178
BALANCE BEING SURPLUS/ DEFICIT CARRIED TO CAPITAL FUND		-430504898	11918910
SIGNIFICANT ACCOUNTING POLICIES	23		
CONTINGENT LIABILITIES AND NOTES ON ACCOUNTS	24		

(R. Das)	(CA. B. Bhattacharyya)	(Prof. B.N Singh)	(Prof. P.P Chakrabarti)
Asst. Registrar (Finance)	Dy. Registrar (Finance & Accounts)	Registrar	Director

Dated : 10th July 2018

N INSTITUTE OF TECHNOLOGY KHARAGPUR

RECEIPTS AND PAYMENTS ACCOUNT FOR THE YEAR ENDED 31ST MARCH 2018

RECEIPTS	Amount(Rs)	Amount(Rs)	PAYMENTS	Amount(Rs)	Amount(Rs)
Opening Balance					
Cash Balance	82		Staff Payment & Benefits		2639366470
Bank Balance			Academic Expenses		157053268
Grant Savings SBI	199316429		Administrative Expenses		731816227
POS SBI	1251803		Transportation Expenses		6364694
Establishment SBI	24284378		Repairs & Maintenance		256120413
Main SBI	84208715		Prior Period Expenses		432622
POS PNB	98387		Payments against Earmarked/Endowment Funds		3103548
Pension A/c PNB	10042		Payment Against Sponsored Project/Scheme		6375320038
INCOME TAX A/C IIT KGP	450488		Payment Against Sponsored Fellowship/Scholarships		834669838
Pension SBI	3537905		Investment and Deposit made		
Entry Tax A/c SBI	2950515		a) Out of Earmarked/Endowment funds		0
Departmental Running and Maintenance A/c SBI	100000		b) Out of Own Fund (Investment Others)		3700657554
Pension A/c Syndicate	450436		Fixed assets		735380031
SBI MOPS	419752	317078930	Work-in Progress		276755426
Grants Received			Other payment Including Statutory payment		7169804654
From Govt. of India			Refund of grants		
Non Recurring Grant - In - Aid		1281900000	Deposit and Advance		600911791
Recurring Grant - In - Aid		4765980860			
Academic Receipts		1326654624	**Closing Balance**		
Receipts against Sponsored Project/Scheme		6076175284	Cash Balance	82	
Income on Investments from			Bank Balance		
a) Earmarked/Endowment funds		0	Grant Savings SBI	165283363	
b) Other Investments		4121092	POS SBI	76097	
Interest received on			Establishment SBI	14241667	
Bank Deposits		19516150	Main SBI	9631235	
Loan and advances		995279	POS PNB	214476	
Savings Bank Accounts		15730258	Pension A/c PNB	701328	
Investment encashed		2416652078	INCOME TAX A/C IIT KGP	1449408	
Term deposit with Scheduled Bank Encashed		675540155	Pension SBI	1724740	
Other Income (Including prior Period Income)		30814970	Entry Tax A/c SBI	3293922	
Deposits and Advances		56274510	Other Fees A/c SBI	2139752	
Mescellaneous Receipts including Statutory and other Receipts		6717070010	Pension A/c Syndicate	492066	
			SBI MOPS	17499493	216747628
TOTAL		**23704504202**	**TOTAL**		**23704504202**

(R. Das)
Asst. Registrar (Finance)

(C.A. B. Bhattacharyya)
Dy. Registrar(Finance & Accounts)

(Prof. B.N. Singh)
Registrar

(Prof. P.P. Chakraborti)
Director

Dated : 10th July 2018