



ANNUAL REPORT

2018-19

NATIONAL INSTITUTE OF TECHNOLOGY MEGHALAYA

NATIONAL INSTITUTE OF TECHNOLOGY MEGHALAYA
BIJNI COMPLEX, LAITUMKHRAH, SHILLONG 793003



Annual Report

2018-19

The Vision

A Centre of Excellence vibrant with academic activities and bubbling with youthful creative energy, making significant contribution to the World of Knowledge and Technology and to the Development of the State, the Region and the Nation.



The Mission

- To impart quality education in the fields of Engineering, Science and Technology at Undergraduate as well as Postgraduate levels with special attention to encourage innovation and creativity in these fields.
- To engage in creation of knowledge and development of technologies through effective research programs.

The Guiding Principles

- Every entity deserves respect; responsiveness, fairness and transparency are keys to it.
- Role of an academic institution is to enable unhindered exchange of knowledge.
- True education promotes the spirit of enquiry.
- Nurturing of talent and promotion of creativity must for achieving excellence.
- Learning is a lifelong process.
- Examination and evaluation processes are tools to enable better learning, not the ends.
- Every effort should be made to take the benefit of science and technology to the poor and underprivileged.
- Rural development is must for balanced development of the nation.
- Protection of the environment must get priority.



The Code of Ethics:

The Institute follows the IEEE code of ethics for research:

- To accept responsibility in making engineering decisions consistent with the safety, health, and welfare of the public, and to disclose promptly factors that might endanger the public or the environment.
- To avoid real or perceived conflicts of interest whenever possible, and to disclose them to affected parties when they do exist.
- To be honest and realistic in stating claims or estimates based on available data.
- To reject bribery in all of its forms.
- To improve understanding of technology, its appropriate application, and potential consequences.
- To maintain and improve our technical competence and to undertake technological tasks for others only if qualified by training or experience, or after full disclosure of pertinent limitations.
- To seek, accept, and offer honest criticism of technical work, to acknowledge and correct errors, and to credit properly the contributions of others.
- To treat fairly all persons regardless of such factors as race, religion, gender, disability, age, or national origin.
- To avoid injuring others, their property, reputation, or employment by false or malicious action.
- To assist colleagues and co-workers in their professional development and to support them in following this code of ethics.

The Institute:

Permanent Campus Location: Sohra, East Khasi Hills District, Meghalaya 793108

Present Location: Bijni Complex, Laitumkhrah, Shillong 793003, Meghalaya

Website: <http://nitmeghalaya.in/nitmeghalaya/>

The Authorities:

Visitor: Shri Ram Nath Kovind, The Hon'ble President of India

Board of Governors:

- » Shri Sajjan Bhajanka, Chairman (w.e.f. 25.02.2019)
- » Prof. B. B. Biswal, Director, NIT Meghalaya, Member
- » Addl. Secretary (TE)/ Jt. Secretary(TE), MHRD, Member
- » Financial Adviser, MHRD, Member
- » Shri W. Roy, MD, Meghalaya Power Carriers (India) Pvt. Ltd, Member
- » Shri Medrickson Tariang, Retired Chief Engineer, PWD (Roads), Meghalaya, (w.e.f. 02.08.2018)
- » Prof. S. K. Dwivedy, Professor, IIT Guwahati, Member
- » Dr. D. S. Roy, Associate Professor, NIT Meghalaya, Member
- » Director, IIT Guwahati, Member
- » Shri B. N. Choudhury, Registrar, NIT Meghalaya, Secretary

Senate:

- » Prof. B. B. Biswal, Director, NIT Meghalaya, Chairman
- » Prof. N. C. Shivaprakash, Dept. of Instrumentation and Applied Physics, IISc Bangalore, Member.
- » Prof. R. K. Sahoo, Professor, Department of Mechanical Engineering, NIT Rourkela, Member
- » Prof. M. K. Paswan, Professor, Department of Mechanical Engineering, NIT Jamshedpur, Member
- » Prof. N. Tripathy, Professor, IIM Shillong, Member
- » Professors of NIT Meghalaya, Member
- » Deans and Heads of the Departments, Special Invitees
- » Shri B. N. Choudhury, Registrar, NIT Meghalaya, Secretary

Finance Committee:

- » Shri Sajjan Bhajanka, Chairman (w.e.f. 25.02.2019)
- » Prof. B. B. Biswal, Director, NIT Meghalaya, Member
- » Jt. Secretary (TE), MHRD or his nominee, Member
- » Finance Adviser, MHRD or his nominee, Member
- » Shri W. Roy, MD, Meghalaya Power Carriers (India) Pvt. Ltd, Member
- » Shri B. N. Choudhury, Registrar, NIT Meghalaya, Member Secretary

Building & Works Committee:

- » Prof. B. B. Biswal, Director, NIT Meghalaya, Chairman
- » Prof. S. K. Deb, IIT Guwhati, Member (upto 13.09.2018)
- » Shri C. D. Saio, Chief Technical Adviser to Power Dept, Govt. of Meghalaya, Member (upto 13.09.2018)
- » Shri T. R. Pdah, Addl. Chief Engineer(EZ), MePDCL, Member (w.e.f. 10.05.2018)
- » Shri K. K. Mawa, Superintending Engineer, PWD (Buildings), Member
- » Shri Madan Mohan, DDG (Statistics), Nodal Officer (IEC) MHRD, Member
- » Dr. D. K. Sarma, Dean (Planning & Development), NIT Meghalaya, Member
- » Shri B. N. Choudhury, Registrar, NIT Meghalaya, Member Secretary

Administration:

Director Prof. B. B. Biswal	
Dean (Academic): Dr. A. Dandapat (upto 31.08.2018) Dean (Academic): Prof. G. Panda (w.e.f 01.09.18 onwards)	Head, CSE: Dr. D. S. Roy
Dean (R & C): Prof. A. Bhattacharjee Assoc. Dean (Student Welfare): Dr. S. Mukherjee (upto 30.06.2018) Dean (Student Welfare): Dr. A. Banerjee (w.e.f. 01.07.2018 onwards)	Head, ECE: Dr. Ch. V. Rama Rao Head, EE: Dr. A. Banerjee (upto 30.06.2018) Head, EE: Dr. S. Das (w.e.f. 01.07.2018 onwards)
Assoc. Dean (Planning & Development): Dr. D. K. Sarma (upto 30.06.2018) Dean (Planning & Development): Dr. D. K. Sarma (w.e.f. 01.07.2018 onwards)	Head, ME: Dr. B. K. Sarkar
Dean (Faculty Welfare): Prof. G. Panda (w.e.f. 01.07.2018 onwards)	Head, CE: Dr. C. Marthong (upto 30.06.2018) Head, CE: Dr. M. L. Patton (w.e.f. 01.07.2018 onwards)
President, Students Activity Centre (SAC): Dr. P. N. Chatterjee (w.e.f. 01.07.2018 onwards)	Head, Physics: Dr. K. Senthilkumar
Chief Warden: Dr. S. Mukherjee, (w.e.f. 01.07.2018 onwards)	Head, Chemistry: Dr. G. K. Dutta (upto 30.06.2018) Head, Chemistry: Dr. Atanu Singha Roy (w.e.f. 01.07.2018 onwards)
Registrar: Shri B. N. Choudhury	Head, Mathematics: Dr. M. Saha
Asst. Registrar (Estt.): Shri B. Blahwar	Head, HSS: Dr. P. S. Mangang
Asst. Registrar (F&A) (i/c): Shri B. Blahwar	Faculty (i/c), Computer Centre: Dr. D. S. Roy
Asst. Registrar (Acad.): Mrs. A. Rai	Faculty (i/c), Centre of International Relations: Dr. M. Saha, Dept. of Mathematics

Exec. Engineer: Shri R. L. Kharpran

Asst. Librarian: Dr. R. Kharbihkhiew

Faculty (i/c), Centre for Career Development: Mr. A. D. Sarma, HS (upto 16.01.2019)
Faculty (i/c), Centre for Career Development: Dr. R. S. Das, ME (w.e.f. 17.01.2019 onwards)

Faculty (i/c), Centre for Technology Enabled Learning: Dr. K. Datta, CS (upto 10.01.2019)
Faculty (i/c), Centre for Technology Enabled Learning: Dr. P. K. Rathore, EC (w.e.f. 17.01.2019 onwards)

Faculty (i/c), Centre for Robotics & Mechatronics: Dr. B. K. Sarkar, ME

Faculty (i/c), Centre for Innovation Incubation & Entrepreneurship : Dr. A. Dandapat, EC

THE DIRECTOR'S REPORT

The National Institute of Technology Meghalaya is currently operating from its temporary campus at the Bijni Complex, Laitumkhrah in Shillong.



The Institute has completed nine years of its existence since its establishment in the year 2010. During the year 2018-19 the Institute made significant strides.

The fifth batch of B. Tech, third batch of M. Tech, second batch of M.Sc and five Ph.D scholars of the Institute graduated in June, 2018. Hundred and twenty nine (129) students from B. Tech, Fifty Seven (57) students from M. Tech, Thirty (30) students from M.Sc and Five (5) Ph. D scholars graduated from the various disciplines offered by the Institute. Most of the qualified students were placed in reputed companies through campus placement.



The successful students were awarded their degrees in the Fifth Convocation of the Institute held on 6th October, 2018. Shri. Lahkmen Rymbui, Minister of Education Department, Border Areas Development Department and Forests and Environment Department, Government of Meghalaya, graced the occasion as the Chief Guest. Prof. Gautam Biswas, Director of IIT Guwahati was the Chairman of the Convocation.



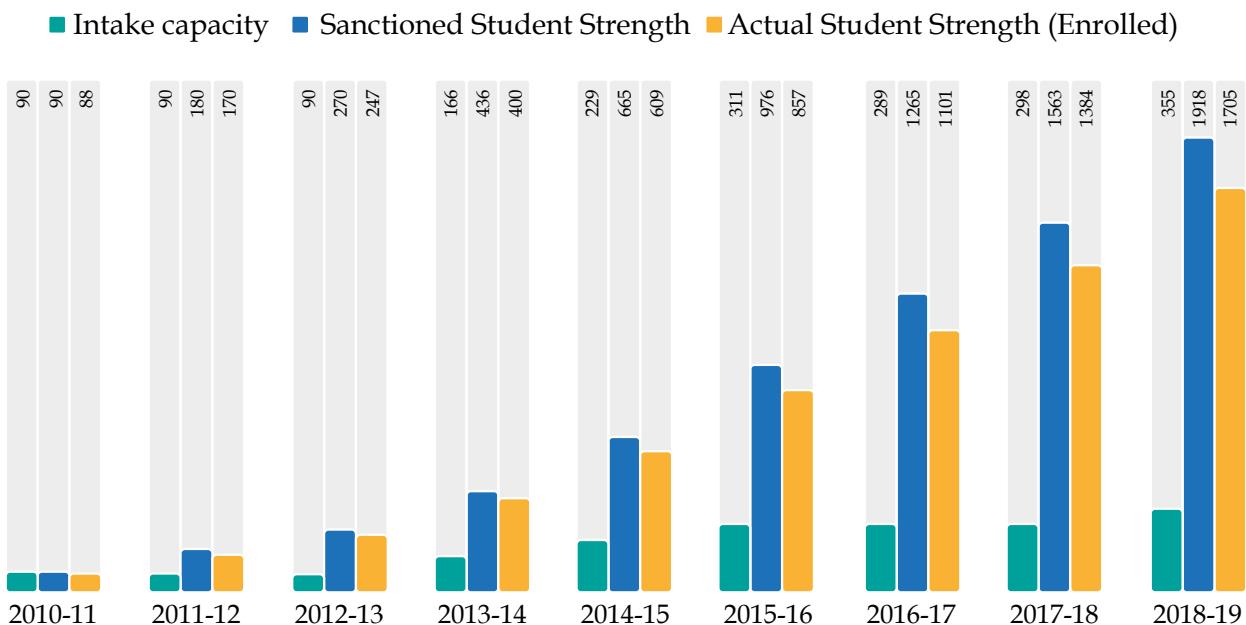
Programmes offered by the Institute during the year include:

- The B. Tech Programme in the five disciplines of Computer Science and Engineering, Electronics and Communication Engineering, Electrical Engineering, Civil Engineering and Mechanical Engineering.
- The M. Tech Programme in the Five disciplines of Civil Engineering (Structural Enginerring), Computer Science and Engineering, Electronics and Communication Engineering (VLSI & Embedded Systems), Electrical Engineering (Power and Energy Systems) and Mechanical Engineering (Fluids and Thermal Engineering).
- M. Sc. Programme in the three disciplines of Physics, Chemistry and Mathematics.
- PhD Programme in all the disciplines mentioned above and in Humanities and Social Sciences.

The intake capacity of the Institute increased to 321 for total admitted student capacity of 1705 including PhD scholars. To cater to the increased need the faculty sanctioned strength was increased to 78 (seventy eight). The student strength in the various programmes in the Institute during the year is shown in the table below:

Program	Discipline	Year of Starting	Intake Capacity	Admitted in 2018-19						Total Strength Admitted till 2018					
				M	F	SC	ST	OBC	Total	M	F	SC	ST	OBC	Total
B. Tech	Electronics and Communication Engineering	2010	30	24	7	1	14	7	31	204	51	27	78	54	255
	Electrical Engineering	2010	32	26	7	3	15	7	33	212	48	33	89	62	260
	Computer Science and Engineering	2010	30	25	4	4	12	7	29	200	41	30	77	46	241
	Mechanical Engineering	2013	30	25	3	3	11	5	28	151	14	16	72	33	165
	Civil Engineering	2013	30	22	9	3	16	7	31	136	35	16	89	35	171
	Sub Total		152	122	30	14	68	33	152	903	189	122	405	230	1092
M. Tech	Computer Science and Engineering	2014	20	9	3	3	2	0	12	58	20	17	15	15	78
	Electronics and Communication Engineering	2014	20	6	1	1	1	1	7	48	17	11	9	18	65
	Electrical Engineering	2014	20	13	3	3	1	5	16	62	16	12	7	19	78
	Mechanical Engineering	2015	20	18	0	2	2	9	18	57	2	8	3	26	59
	Civil Engineering	2015	20	16	0	3	2	4	16	22	0	3	3	6	22
	Sub Total		100	62	7	12	8	19	69	247	55	51	37	84	302
M. Sc.	Physics	2015	16	10	5	1	4	3	15	42	14	2	18	11	56
	Chemistry	2015	16	9	7	2	1	7	16	23	35	7	4	23	58
	Mathematics	2015	16	5	7	3	5	2	12	24	17	4	22	7	41
	Sub Total		48	24	19	6	10	12	43	89	66	13	44	41	155
Program	Discipline	Year of Starting	Admitted in 2018-19						Total Strength Admitted Since 2010						
			M	F	SC	ST	OBC	Total	M	F	SC	ST	OBC	Total	
PhD	Electronics and Communication Engineering	2013	6	1	1	2	0	7	20	3	3	3	4		23
	Electrical Engineering	2013	8	0	3	0	1	8	19	4	5	0	3		23
	Computer Science and Engineering	2013	5	4	1	2	2	9	17	8	1	7	4		25
	Mechanical Engineering	2013	13	0	0	0	1	13	29	2	4	0	7		31
	Civil Engineering	2013	0	2	0	1	0	2	7	6	1	8	2		13
	Physics	2013	4	1	0	2	1	5	8	3	0	3	1		11
	Chemistry	2013	4	4	0	0	0	8	7	8	1	1	0		15
	Mathematics	2013	5	0	2	0	1	5	10	1	2	1	4		11
	Humanities & Management	2013	0	0	0	0	0	0	2	2	0	1	2		4
	Sub Total		45	12	7	7	6	57	119	37	17	24	27		156
Grand Total												1705			

STUDENT STRENGTH



The Institute provides full waiver/remission of tuition fees to students belonging to ST and SC categories and to those with annual family income of less than one lakh. Further, students with annual family income of less than five lakhs are remitted with 2/3rd of the tuition fees as per MHRD guidelines from 2016 onwards. The Institute also provides merit and merit-cum-means scholarship with the waiver of 40% of the tuition fees to top performing 5% of the students from each batch based on merit and weak economic background. All the M. Tech students are GATE qualified and receive fellowships as do the PhD scholars. A good fraction of the remaining students of the Institute also receive scholarships from various agencies.

The Institute has been able to attract very good quality faculty from premier institutions all over the country as well as abroad. All regular faculty members hold Ph.D. degrees.

Achievements during 2018-19:

1. NIT Meghalaya was ranked 98th under top ranked Engineering Institutes in NIRF Ranking 2018.
2. NIT Meghalaya was awarded by India's Education Excellence Award 2018 as the best Engineering College in North East India.
3. NIT Meghalaya was Ranked 28th under Top 35 Government Engineering Colleges by India Today in 2018
4. NIT Meghalaya has been ranked at the 56th position by Business World, 2019.

Students Activities:

The students, in addition to their academics, engaged themselves with various extracurricular activities such as sports and games, cultural activities, elocution, technical activities, NSS activities etc. The students of the Institute also participated in inter-institutional sports, cultural and technical events in different parts of the country and brought laurels to the Institute.

Cultural Activities:

Various cultural activities were conducted at the Institute throughout the year. Some of the activities are like Events under EBSB, Celebration of Gandhi Jayanti, National Unity Day, Matribhasha Diwas, SPIC MACAY, SHISHIR, Painting, Essay writing and Quiz competitions, Exhibition, Food Festival etc.

❖ EK BHARAT SHRESHTHA BHARAT (EBSB)

Several student activities were conducted throughout the year within and outside the institute under "Ek Bharat Shreshtha Bharat (EBSB)" movement initiated by Govt. of India. As per the paired list, Meghalaya is paired with Arunachal Pradesh and Uttar Pradesh. So, students participated in various activities related to different cultural, traditional dance and song, food, cuisine, tourist spots, quiz etc. related to these three states.

➤ Workshop on Festival, Drama, Historical and Geographical Background of Arunachal Pradesh, Uttar Pradesh and Meghalaya





Celebration of "Gandhi Jayanti" on October 2, 2018





Quiz Competition held on October 9, 2019



Celebration of "National Unity Day" on October 31, 2018





Theatre Festival organized jointly with NEHU during December 13-15, 2018.

DEPARTMENT OF ENGLISH, NEHU, & NIT, MEGHALAYA IN ASSOCIATION WITH NSO, NEW DELHI
PRESENT
NEHU NIT
UNDER THE PINE TREE
THEATRE FESTIVAL
[LITERATURE TO THEATRE]

BEES SAAL BAAD
(BASED ON THE STORY OF O. HENRY)
NEWGEST REPERTORY BOORNELA
DIRECTOR KHUSHI KR JENA
13 DECEMBER THURSDAY 3:30PM

MANTO KI MOZEL
(A BOLD PLAY BASED ON THE STORY OF SAADAT HASAN MANTO)
PURVABHYAS, MUMBAI
DIRECTOR NAVIN AGARWAL
14 DECEMBER FRIDAY 3:30PM

**WOH KABAZ KI KASHTI,
WOH BARISH KA PAANI**
(BASED ON THE STORY OF PREMCHAND)
MOHUA MUKHAM MANOH, NEW DELHI
DIRECTOR SUNGAR LAL CHHAWA
15 DECEMBER SATURDAY 2PM

You are cordially invited

13-15 DECEMBER 2018 | VENUE NEHU OLD GUEST HOUSE, SHILLONG

PRO. ANUPRAKASH
COORDINATOR, THEATRE FESTIVAL
DEPT. OF ENGLISH, NEHU, SHILLONG
E-MAIL: nehu@nehu.ac.in



❖ **Visit to Arunachal Pradesh as a part of exchange programme under EBSB during January 28-31, 2019**

To celebrated 150 years of Mahatma Gandhi's Birth Anniversary, a visit to NIT Arunachal Pradesh and nearby tourist spots is conducted during January 30 to February 01, 2019. Six under graduate students accompanied by one faculty member have visited Arunachal Pradesh and made an interaction with students of NIT Arunachal Pradesh to explore the culture activities of the institutes. During this visit, the students have interacted with the Director of NIT Arunachal Pradesh. Moreover, they visited some of the remote villages, tourist spots etc. to know about the local culture, tradition etc. of Arunachal Pradesh.



Meeting with Director, NIT Arunachal Pradesh



Lake near POTIN, Arunachal Pradesh



Paddy field at ZIRO village, Arunachal Pradesh



ZIRO village, Arunachal Pradesh



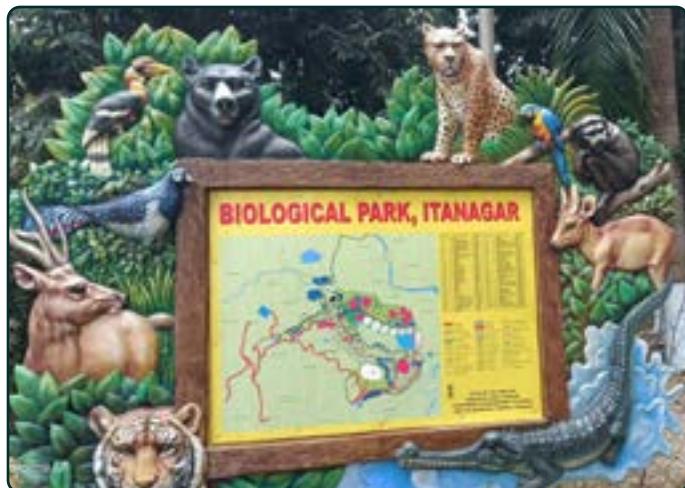
Aircraft Runway at ZIRO,
Arunachal Pradesh



Ganga Lake at Itanagar Arunachal
Pradesh



Siva Linga at ZIRO, Arunachal Pradesh



Biological Park, Itanagar,

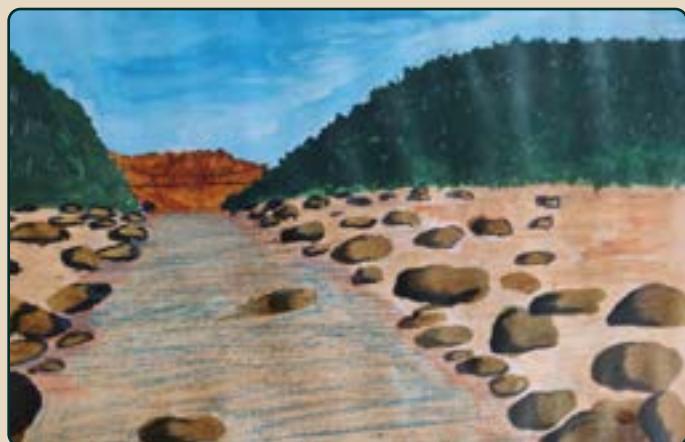
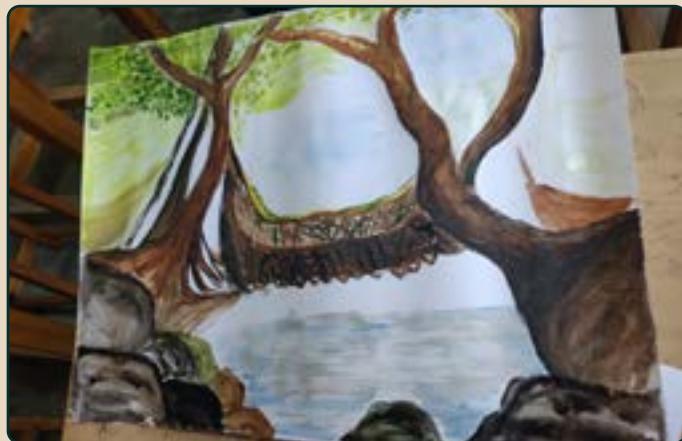


Gumpa Temple- Center for
Buddhist Culture



Outside of Gumpa Temple, Itanagar

Painting Competition held on February 6, 2019



Essay Writing Competition held on February 6, 2019



Celebration of "Matribhasha Diwas" on 21st February 2019





Students participating in Debate competition during the celebration of "Matribhasha Diwas"

Exhibition on different Tradition, Culture, Food etc. of North, East, West and South Zones of India held on April 5, 2019



Food Festival held on April 6, 2019



SPIC MACAY

The Society for the Promotion of Indian Classical Music And Culture Amongst Youth (SPIC MACAY) is a voluntary youth movement which organises programmes of classical music and dance, folk arts, crafts, yoga, classic cinema screenings, heritage walks, etc. inside school and college campuses throughout the world to make students more aware about Indian and world heritage. Like every year, this time also NIT Meghalaya conducted the event **Instrumental Classical Music-Sarod** performed by Mr. Debanjan Bhattacharjee and his co-artist under SPIC MACAY on April 5, 2019.



The Annual Cultural Festival "Shishir"

The Sixth edition of Annual Cultural Festival, i.e., SHISHIR-2019 of the Institute was organized with full enthusiasm during April 5-6, 2019. Students competed in various cultural events such as singing, dancing, drama, panache etc. with fun and fare to explore and hone their talents. This time, popular Bollywood singer Mr. Sreerama Chandra Mynampati was the celebrity performer during SHISHIR-2019.







Technical Festival (Cognitia):

The Students Council organized the fourth Annual Technical Festival **Cognitia 2018** in November, 2018. There were many competitive events such as- robotics, structural design, mechanical design, circuitry design, programming, quizzes, debates etc. In addition to these there were several invited talks, workshops also organized during the event.

Event Name: - COGNITIA INAUGURATION



Event Name: - ROBO RUMBLE



Event Name: - Goal Against Time (GAT)



Event Name: - LAN GAME



Event Name: - PRISON BREAKOUT



Event Name: - ROBODICTION



Sports & Games:

Various Sports activities including Intra-NIT Meghalaya and All India Inter NIT Sports events were held throughout the year for the session 2018-19. Our students have actively participated in the following sports and other events:

1. Yoga activities were conducted under the Physical Activity of Induction Program for our newly admitted first year B.Tech. Students (2018 Batch).



2. Intra-NIT Football and Athletics tournament on 27-28 October, 2018 at Rynjah Sports Club Football Ground.



3. Intra-NIT Basketball tournament on 10th and 11th of November 2018 at Lower Lachumiere Sports Complex.



4. All India Inter NIT Football Tournament organized by NIT Rourkela from 25 to 27 January 2019.



5. Intra-NIT Meghalaya Tennis Ball Cricket Tournament on 23rd – 24th February 2019 at Umpling Play Ground.



6. Intra-NIT Meghalaya Chess and Carom Tournament on 2nd - 3rd March 2019 at Bijni Complex, NIT Meghalaya.



7. All India Inter NIT Chess Tournament organized by NIT Agartala from 7th to 10th March 2019

NSS Activities:

- i) Cleaning activities in Bijni campus and the surrounding area were performed by students on a weekly basis.





ii) Pamphlets were distributed to people living in the nearby locality to spread awareness on cleanliness.



iii) Plantation program was carried out at NITM Sohra campus to ensure the premises within the permanent campus will be environment friendly.



Students' Placement:

Placement activities are an integral part of National Institute of Technology Meghalaya (NIT Meghalaya) and the activities were carried out during the year by the Centre for Career Development. The aim of the Centre is to make each and every student of NIT Meghalaya a success story and to impart legendary leadership qualities to all the students. It not only ensures that the graduation outcome of the student is a fruitful and upright one, but also ensures that the students develop into a complete human being with the perfect combination of professional and business ethics while still maintaining the values within themselves. The Centre is privileged to generate manpower resources for both the domestic and global economic growth engine over the years by functioning as a vital bridge between the students of the institute and the industries. Just like the previous years, the placement of the B.Tech students was taken up with high priority and the Institute could bring substantial number of companies for recruitment. The placement percentages of students who graduated in 2019 are given below:

Discipline	Placement Percentage	
	Overall	Among Qualified Students
Computer Science and Engineering	82.6%	90.00%
Electronics and Communication Engineering	71.42%	90.00%
Electrical and Electronics Engineering	52.63%	56.25%
Mechanical Engineering	61.11%	68.75%
Civil Engineering	42.10%	61.53%
Total	63%	73.25%

The details of the recruiting organizations along with the number of job offers and packages are given below:

Company Name	Number of Offers	Package Offered (Rs. in lakhs per annum)
Capgemini	6	6.8
Gap Inc.	8	9.08
Analytics Quotient	2	5.5
Mu Sigma	4	7
MathWorks	1	13
L&T Constructions	6	6.55
Virtusa	1	5
Volkswagen IT Services	9	3.75
L&T Group	2	6
Infosys	15	3.6
Vedanta Ltd.	11	7.95
SKF	2	4.5
Reliance Jio	5	4.5
KEC International	2	4.5
Star Cement	3	2.5
Technoforte	2	4.5
Coriolis Technologies	3	5
Nissan Digital	1	6.25

Mtatva	1	8
VAP Technology	16	1.2
Samsung	1	10.5
NHIDCL	1	4.2
Source DotCom	5	1.2
Bridge & Roof	1	8.4
Power Grid	1	19.2
Total	109	

Rs. in lakhs per annum	
Highest Package	19.2
Average Package	5.81

The Centre has all the state-of-the-art facilities to facilitate the campus hiring activities of the companies. It has a well-furnished hall for pre-placement talks with a capacity of 100 persons; a well-furnished group discussion room to hold group discussion for a group of 12 persons with 3 moderators; and 3 interview rooms. Additionally, the hall has 30 computers with thin client servers to conduct online tests in the pre-placement talks venue itself. The Centre also utilizes the Conference Hall of the Institute for carrying out video-conferencing and the Computer Centre when the need arises. The Centre for Career Development also made arrangements for internships for the students in industries and research institutions in the country and abroad.

In a bid to improve the soft skill sets (viz. communication, managerial, team working, leadership, etc.) required for working in the industry, the Center for Career Development conducted Employability Skills Training with the generous support of the TEQIP III Scheme of the Ministry of HRD, Government of India as finishing course covering verbal/quantitative aptitude, logical reasoning, GD, PI, resume writing etc. Employability Assessment Tests were conducted before and after the Employability Skills Training as an employability checkup and based on the comprehensive report, efforts were made to improve the overall student employability. Furthermore, to make the employability opportunities easily accessible to the students, the centre has integrated the institute portal with the National Career Service Portal under Ministry of Labour and Employment, creating a common database and availability of career related information at one place.

Central Library

The Institute Central Library continues to offer automated library services to its clientele. It functions as an important and vital component of the Institute information systems. The Library is now computerized with an integrated system connected to the Campus Network providing e-resource facility to the institutional community. The entire Library collections including the online databases are made available through Institute's network. Users can access the online databases through Institute's network. Library collection can also be searched through Web OPAC.

National Institute of Technology Meghalaya Central Library is an active member of **E-ShodhSindhu** Consortium (to access online full text journals) and also member of **NDL** (National Digital Library) in order to avail the benefits of various services. The library has made a significant progress during the year 2018-19 in the aspect of procuring e-journals, databases and e-books.

Budgetary & Expenditure Details:

The budget allocated for the Central Library for the FY 2018-19 is Rs. 1.5 Crore. Below table gives the detailed expenditure incurred on books, journals, newspaper, binding etc. for 2018-19:

Year	Printed Books	e-Books	Online Database/e-Journals	Newspaper & Magazine
2018-19	944370.00	0.00	10915185.56	20694

Membership Details:

Sl. No.	Members	2018-19
1	Btech	523
2	Mtech	105
3	Msc.	75
4	Ph.D	127
5	Faculty Members	73
6	Satff	56
	Total	959

Library Collections:

The collections of central library consist of books, e-resources, theses, reports, and other reading materials in areas of science, engineering & technology, humanities, social sciences and management. The total collection of library as on 31st March 2019 stands as follows:

Sl. No.	Name of Resources	Collection as on 31 st March 2019
1	Printed Books	13886
2	E-Books	1381
3	E-Database/E-Journals	10
4	Book Bank (SC/ST)	1462
5	Theses	14
6	Magazines	4
7	Newspaper	8
8	Reports/Annual Reports/Audit Reports	12

Human Resources:

To man the Central Library, the Institute has four permanent staffs and one outsource staff. The staff details of the Central Library are as follows:

Sl.No.	Name of the Staff	Designation	Qualifications
1	Dr. Rokester Kharbihkhiew	Assistant Librarian	Ph.D, MLISc (With NET & JRF), BSc. Computer Science, PGDCA
2	Dr. Khrawbok Nongrang	Technical Assistant (LB)	Ph.D, MLISc (With NET), BSc. Computer Science, PGDCA
3	Mr. Donny Bryan Thabah	Junior Assistant (LB)	MLISc, B.A. (Geography)
4	Mr. Rahul Kharbangar	MTS (LB)	Bachelor of Arts, C-Lib
5	Marvellisa K. Kharlukhi	Junior Assistant (LB) (Outsource)	MLISc (With NET), B.A. (Pol. Sc.)

Seminar / Conference / Workshop Organized:

1. Wiley Author workshop was conducted at NIT Meghalaya on the 3rd September, 2018 for the M.Tech, MSc. & Ph.D students on the following topics:
 - a. Structuring the manuscript to impress SCI journal editors.
 - b. Selecting a journal and preparing a great submission package
 - c. Responding to reviewer comments



2. The Second Technology Book Fair was organized in National Institute of Technology from the 21st to 22nd February, 2019. Twelve renowned publishers participated in the Book fair. Some of them are Pearson, Oxford University Press, Khanna, Wiley etc.



Achievements of the Central Library:

- Books as well as the new Identification cards of the faculty and students have the Barcode Identification. This help in the fast circulation process and weed away the errors in issuing of books to the right person.
- Users of the Library can check the books they issued/returned through the web OPAC (online access public catalogue).
- Faculty/students can browse the catalogue using the web OPAC.
- IDR (Dspace) has already been set up.

Internal Complaints Committee

Nation Wide Competition based on laws related to women was conducted on 3rd November 2018 in National Institute of Technology Meghalaya. The innovative, sponsored initiative was started by National Commission for Women (NCW), India to create awareness about Legal Rights of Women across India.



The competition was organised in accordance with the circulated guidelines by NCW, India which emphasizes on awareness of constitutional and legal rights of women wherein the constitution of Internal Complaints Committee also originates. Total 61 students participated inclusive of undergraduate and postgraduate students of all stream representing NIT Meghalaya. 7 awardees were selected for cash prizes which includes 1st Prize (1 nos.), 2ND Prize (1 nos.) and 3RD Prize (5 nos.). The picture shows the award winners.



TEQIP Cell

1. Brief Introduction to the Cell:

The TEQIP Cell of NIT Meghalaya was established in Jan 2017 for management and execution of the World Bank assisted project called Technical Education Quality Improvement Program (TEQIP). TEQIP is aimed at overall development of NIT Meghalaya with a focus on the development of technical education at the undergraduate level. The project envisages to develop the institutions to world class levels so that the students from these institutions are at par with the best in the world. Post signing of the Washington accord, the degrees awarded by technical institutes in India get worldwide recognition subject to fulfilling certain conditions that are being facilitated by TEQIP.

The following are the members of the TEQIP Cell:

Sl. No	Coordinators	Name
1	Institutional Project Director	Prof. B.B Biswal
2	TEQIP III Coordinator	Prof. Ayon Bhattacharjee
3	Nodal Officer Procurement	Dr. D. K Sarma
4	Nodal Officer Academic	Dr. Rangababu P
5	NBA Coordinator	Prof. G. Panda
6	Start-up Coordinator	Prof. H. C. Das
7	GATE Coordinator	Dr. Rajat Subhra Das
8	EAP Coordinator	Dr. M. L. Patton
9	TEQIP Assistants	Ms. Evadoline Lyngdoh Mawlieh Ms. Lucky Das Mr. Preacher Born Pathaw

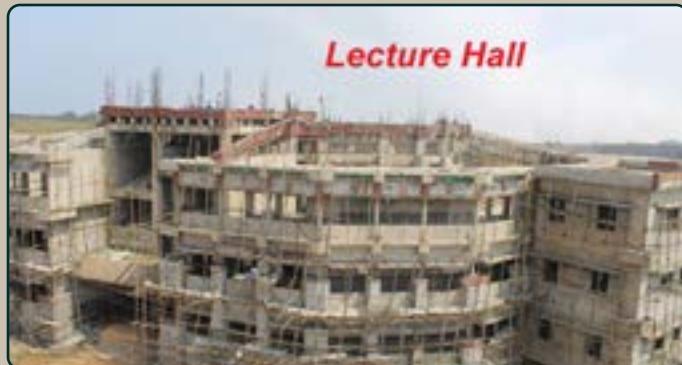
NIT Meghalaya is one of the focused institutes under sub-component 1.1 of TEQIP. NIT Meghalaya has received a grant of rupees fifteen crores under this program that has been used to develop laboratories, procure state of the art equipment and for the development of student, staff and faculty of the institute. Research scholars have been provided assistantship under TEQIP and their journey for attending Conferences, Workshops etc., have been facilitated under this program. It is noteworthy that 5 students from NIT Meghalaya have been nominated under MITAC scheme to their summer internships at different universities in Canada.

Permanent Campus:

The construction activities in the permanent campus of the Institute have been making good progress till 2017-18 under the overall supervision of RITES Ltd, the Project Management Consultant (PMC) for the Phase-I constructions of the permanent campus of the Institute at Sohra (Cherrapunjee). In this first phase of constructions for a built-up space of about one lakh square meters, construction works in the four packages of Academic, Administrative, Residential Buildings, Guest House, Hostels, Sports Complex, Road works, Site Development works, etc. are being carried out. However, the construction activities during 2018-19 have been going in a slow pace due non-receipt of fund from the Ministry. The fencing of the additional land of the Institute is in progress. The construction of water storage reservoir inside the campus is also slowed down due to non-availability of fund. Overall progress of Phase-I construction works is about 65% only and the Institute re-scheduled to shift to the permanent campus by the end of 2020, provided sufficient fund is made available in time.

ADMINISTRATIVE BLOCK





Boundary Wall for Addl. Land: Group-I



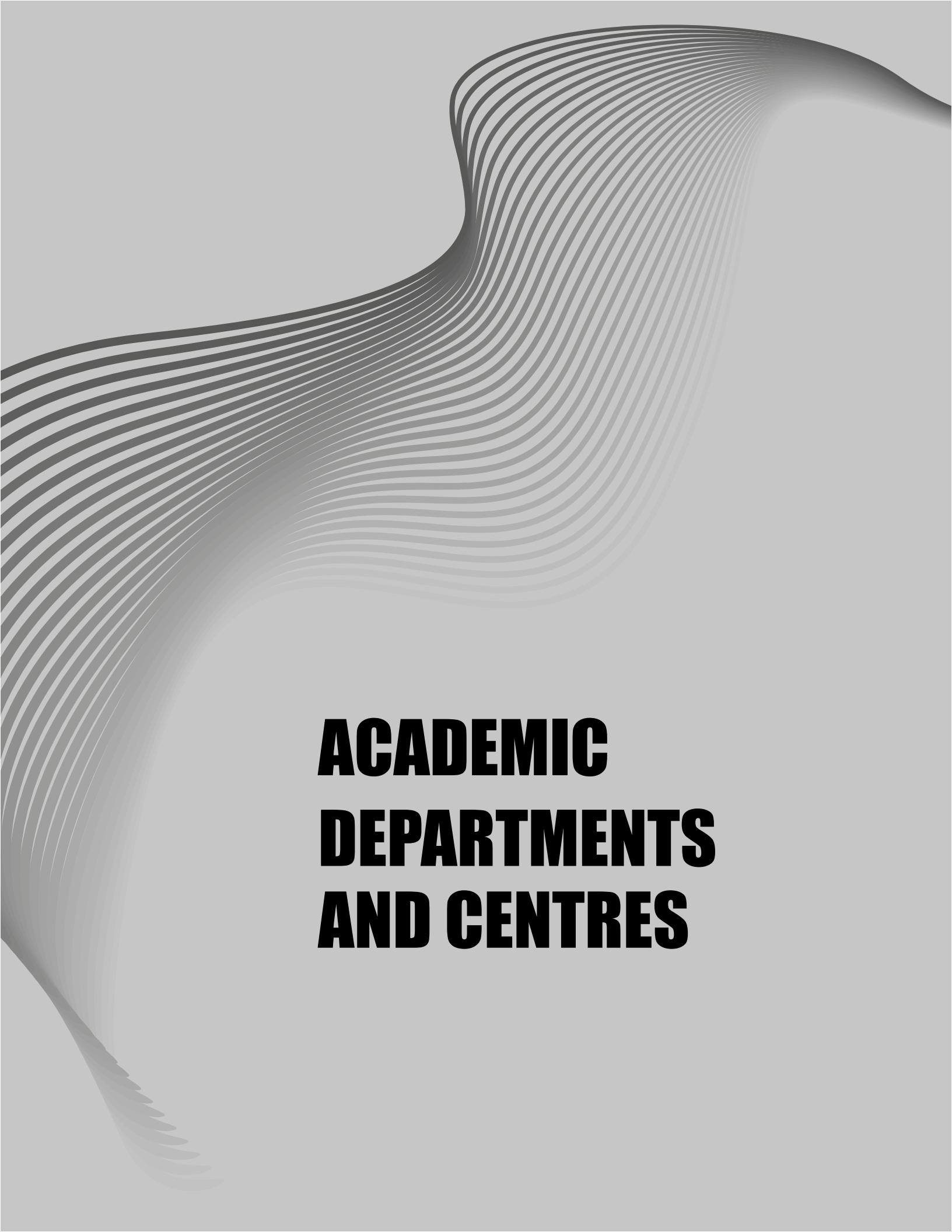
Boundary Wall for Addl. Land: Group-II



WATER STORAGE RESERVOIR (U/S WEIR)



WATER STORAGE RESERVOIR



ACADEMIC DEPARTMENTS AND CENTRES

Department of Computer Science & Engineering

1. Brief Introduction to the Department:

The Department of CSE at NITM has adequate facilities to support teaching activities needed for a batch of 30 students (per semester). It has a well-qualified and experienced faculty team consisting of 11 faculty members. The Computer Science & Engineering department makes all efforts in imparting high quality education to its motivated students. One of the aims of this department is to play its role of producing Computer Engineers ready to satisfy the needs of the Computer and IT world. The Department is also actively involved in various research activities.

2. Programmes Offered:

The Department of Computer Science & Engineering offers the B. Tech programme, the full-time M.Tech. programme and the Ph.D. programme (full-time and part-time).

3. Faculty Profile:

Name	Designation	Qualification	Specialization	Date of Joining	Ph.D. guidance
Dr. Diptendu Sinha Roy	Associate Professor	Ph.D.	Distributed, Grid and Cloud Computing	01-07-2016	3 ongoing
Dr. Alok Chakrabarty	Assistant Professor	Ph.D.	Pattern Recognition	20-06-2012	1
Dr. Kamalika Datta	Assistant Professor	Ph.D.	Emerging Technologies, Logic Design	31-07-2014	2 completed
Dr. Rajarshi Ray	Assistant Professor	Ph.D.	Formal Methods in System Verification	03-09-2013	1 completed, 1 submitted
Dr. Akhilendra Pratap Singh	Assistant Professor	Ph.D.	Service Oriented Network Architecture, Computer Network, Wireless Sensor Network	03-09-2013	2 ongoing
Dr. Surmila Thokchom	Assistant Professor	Ph.D.	Cloud Computing, cryptography	26-09-2012	
Dr. Deepak Kumar	Assistant Professor	Ph.D.	Computational Arithmetic	20-12-2012	
Dr. Yogita	Assistant Professor	Ph.D.	Data Mining	08-01-2018	01 (Ongoing)
Dr. Vipin Pal	Assistant Professor	Ph.D.	Computer Networks, Wireless Sensor Networks	28-12-2017	2 (Ongoing)
Dr. Soumen Moulik	Assistant Professor	Ph.D.	Wireless Body Area Networks, Wireless Sensor Networks, Internet of Things	15-12-2017	2 (Ongoing)

Name	Designation	Qualification	Specialization	Date of Joining	Ph.D. guidance
Dr. Bunil Kumar Balabantaray	Assistant Professor	Ph.D.	Computer Vision, Robotics	14-12-2017	3 (Ongoing)
Dr. Aloke Datta	Assistant Professor	Ph.D.	Computer Vision, Remote Sensing	25-08-2014	

4. List of Publications:

(a) Journals:

1. Sinha Roy, Diptendu, Behera, Ranjit K, Reddy, K. Hemant Kumar, Buyya, Rajkumar, (2018) "A Context- Aware, Fog Enabled Scheme for Real-Time, Cross Vertical IoT Applications", IEEE Internet of Things Journal, DOI10.1109/JIOT.2018.2869323.
2. Pradhan, B., Roy,D. S. , & Hui, N. B. (2018). Motion planning and coordination of multi-agent systems. International Journal of Computational Vision and Robotics, 8(5), 492-508.
3. Reddy, K. H. K, Pandey, Vishal, Roy, D. S, (2018), A Novel Entropy Based Dynamic Data Placement Strategy for Data Intensive Applications in Hadoop Clusters, International Journal of Big Data Intelligence, Inderscience Publication
4. Rao, Nalluri Madhu Sudana, Krishivasan Kannan, Xiao-zhi Gao, and Diptendu Sinha Roy. "Novel classifiers for intelligent disease diagnosis with multi-objective parameter evolution." Computers & Electrical Engineering 67 (2018):483-496.
5. Behera, Ranjit Kumar, K. Hemant Kumar Reddy, and Diptendu Sinha Roy. "Modeling and assessing reliability of service- oriented internet of things." International Journal of Computers and Applications (2018):1-12.
6. Pradhan, B., Vijayakumar, V., Hui, N. B., & Sinha Roy, D. (2019). Intelligent navigation of multiple coordinated robots. Journal of Intelligent & Fuzzy Systems, (Preprint), 1-10.
7. Mallikarjuna, B., Pathirikkat ,G., Sinha Roy, D., Bharata Reddy, M. J. (2019), A Real-Time Synchronized Harmonic Phasor Measurements-Based Fault Location Method for Transmission Lines. Journal of Control, Automation and Electrical Systems (Springer), <https://doi.org/10.1007/s40313-019-00500-y> (Accepted).
8. Rajappa, M., Krishivasan, K., & Roy, D. S. (2018). Helly hypergraph based matching frame work using deterministic sampling techniques for spatially improved point feature based image matching. Multimedia Tools and Applications, 1-25.
9. B K Balabantaray, R N Mahapatra and B B Biswal, "Efficient Part Recognition Method in Vision Guided Robots using Orthogonal Moments, International Journal of Engineering & Technology, 7 (4.41) (2018) 60-65, 2018, DOI:10.14419/ijet.v7i4.41.24301.
10. Sasmita Mohapatra, R. N. Mahapatra, B. B. Biswal, B K Balabantaray, A. K. Behera, "A Deterministic Model for Remanufacturing Inventory for Reverse Supply Chain, International Journal of Engineering & Technology, 7 (4.41) (2018) 207-210, DOI:10.14419/ijet.v7i4.41.24529.
11. Soumen Moulik, Shubhankar Majumdar, Fall Sense: An automatic fall detection and alarm generation system in IoT-enabled environment, IEEE Sensors Journal, Nov.2018.
12. Soumen Moulik, Sudip Misra, Chandan Chakraborty, Performance Evaluation and Delay-Power Trade-off Analysis of ZigBee Protocol, IEEE Transactions on Mobile Computing, Vol. 18, No. 2, pp. 404 - 416, Feb.2019.

13. P. L. Thangkhiew, K. Datta, "Scalable In-Memory Mapping of Boolean Functions in Memristive Crossbar Array Using Simulated Annealing", Journal of Systems Architecture, DOI:10.1016/j.sysarc.2018.07.002,2018 (Accepted).
14. L. Marbaniang, K. Datta, "Efficient Design of Quantum Circuitsusing Nearest Neighbor Constraint in 3D Architecture", Journal of Circuits, Systems and Computers, Vol. 28, No. 5, pp. 1950084:1-1950084:19, 2019, DOI: 10.1142/S0218126619500841, 2018(Accepted).
15. P. L. Thangkhiew, R. Gharpinde, K. Datta, "Efficient Mapping of Boolean Functions to Memristor Crossbar using MAGICNOR Gates", IEEE Transactions on Circuits and Systems-I: Regular Papers, Vol. 65, No. 8, pp. 2466-2476, August2018.
16. R. Gharpinde, P. L. Thangkhiew, K. Datta, I. Sengupta, "A Scalable In-Memory Logic Synthesis Approach using Memristor Crossbar", IEEE Transactions on Very Large Scale Integration Systems, Vol. 26, No. 2, pp. 355-366, February2018.
17. Kole, K. Datta, I. Sengupta, "A New Heuristic for N-Dimensional Nearest Neighbor Realization of a Quantum Circuit", IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems, Vol. 37, No. 1, pp. 182-192, January2018.
18. Gurung, A., Ray, R., Bartocci, E., Bogomolov, S., & Grosu, R. (2018). Parallel reachability analysis of hybrid systems in speed. International Journal on Software Tools for Technology Transfer, 1-23.
19. Shubham Singh, Akhilendra Pratap,"Ensuring Data Security in Cloud Storage", International Journal of Machine Learning and Computing, April 2018. (Accepted).
20. S Thokchom, S., & Saikia, D. K. (2019). Privacy Preserving and Public Auditable Integrity Checking on Dynamic Cloud Data. IJ Network Security, 21(2), 221-229.

(b) Book Chapters:

1. Akhilendra Pratap Singh, Vinee Brahma, Nabhyoti Medhi, "An Energy-Efficient Model Using Cooperative MIMO in Wireless Sensor Network", Ambient Communications and Computer Systems, Springer, 2018.
2. Vinay Kumar, Sadanand Yadav, D N Sandeep, Sanjay B. Dhok, , Rabindra K Barik, Akhilendra P. Singh and Gaurav Srivastava, Cluster Count and Coverage analysis in a Gaussian Distributed WSNsusing TESM, In Frontiers in Intelligent Computing: Theory and Applications, Springer, Volume2.

(c) Edited Book:

1. Das, H., Barik, R. K., Dubey, H., & Roy, D. S. (Eds.). (2018). Cloud Computing for Geospatial Big Data Analytics: Intelligent Edge, Fog and Mist Computing (Vol. 49).Springer.

(d) Conferences: (International):

1. Singh Akhilendra Pratap, Kumar, G. Hemant, Paik, Subhendu Sekhar, Sinha Roy, Diptendu, "Storage and Analysis of Synchrophasor Data for Event Detection in Indian Power System Using Hadoop Ecosystem." In 2018 Proceedings of International Conference on Computing, Power and Communication Technologies (GUCON 2018), (Accepted)
2. Sadanand Yadav, Vinay Kumar, S. B. Dhok, Akhilendra Pratap Singh, Gaurav Srivastava," Performance Evaluation of Modulation Techniques for UW-FSO Communication System, International Conference on VLSI, Communication and Signal Processing, VCAS, November 29 to December 1, 2018.

3. V. Kumar, A. L. Prasanna, Dushantha Nalin K. Jayakody, A. P. Singh , Compressive Data Gathering for MI Based Clustered Non-Conventional WSNs, International Conference on Emerging Technologies of Information and Communications (ETIC 2019), Bhutan, March, 2019.
4. Mudali, G., Reddy, K. H. K., Roy, D. S., Efficient Evolutionary Approach for Virtual Machine Placement in Cloud Data Center, International Conference on Innovative Computing and Communication (ICICC-2019), TECHNICAL UNIVERSITY OF OSTRAVA, Czech Republic, March 21-22, 2019.(Accepted)
5. Behera, R. K., Reddy, K. H. K., Roy, D. S., A Novel Context Migration Model for Fog-enabled Cross-Vertical IoT Applications. International Conference on Innovative Computing and Communication (ICICC-2019), TECHNICAL UNIVERSITY OF OSTRAVA, Czech Republic, March 21-22, 2019.(Accepted)
6. B. Pradhan, N.B. Hui, D.S. Roy, Heuristic Coordination for Multi-Agent Motion Planning, International Conference on Innovative Computing and Communication (ICICC-2019), TECHNICAL UNIVERSITY OF OSTRAVA, Czech Republic, March 21-22, 2019 (Accepted).
7. Pradhan, B., Roy, D. S., & Hui, N. B. (2019). Multi-agent Navigation and Coordination Using GA-Fuzzy Approach. In Soft Computing for Problem Solving (pp. 793-805). Springer,Singapore.
8. Diptendu Sinha Roy(2019),A Study on DRX Mechanism for wireless Powered LTE-Enabled IoT device, (Accepted in ICCET 2019).
9. Pradhan, Buddhadeb, Nandi, Arijit, Sinha Roy, Diptendu, Hui, Nirmal Kumar. "A Game Theoretic Group Coordination Strategy for multi Robot Navigation" In 2018 Proceedings of the 8th International Workshop on Soft Computing Applications (SOFA 2018), (Accepted)
10. S. Shirinzadeh, K. Datta, R. Drechsler, "Logic Design using Memristors: An Emerging Technology (EmbeddedTutorial)", 48th Intl. Symposium on Multiple-Valued Logic (ISMVL), Linz, Austria, May 2018.
11. A. Zulehner, P. M. N. Rani, K. Datta, R. Wille, I. Sengupta, "Generalizing the Concept of Scalable Reversible Circuit Synthesis for Multiple-valued Logic, 48th Intl. Symposium on Multiple-Valued Logic (ISMVL), Linz, Austria, May 2018.
12. Gurung, A., & Ray, R. (2018, March). Planar Projection of Polytopes using Hough Transforms. In 2018 IEEE International Conferenceon Electronics, Computing and Communication Technologies (CONECCT) (pp. 1-7).IEEE.
13. Sutirtha Chakraborty, Shubham Singh, Surmila Thokchom, "Integrity checking using third party auditor in Cloud storage", 2018 11th International Conference on Contemporary Computing (IC3), Jaypee Institute of Information Technology, Noida, 2-4 August 2018.
14. S. Roy, D. Kumar, A. Dandapat and P. Saha, "Discretized Sinusoidal Waveform Generators for Signal Processing Applications," accepted in International Conference on Trends in Electronics and Informatics (ICOEI 2018), Tirunelveli, India, 11-12 May 2018.
15. P. Sahu, B. Khamari, B. Balabantaray and B. B. Biswal, "Geodesic Approach For Trajectory Planning Of Mobile Robot Manipulators", International Conference on Recent Innovations & Developments in Mechanical Engineering (IC-RIDME2018).
16. Sadanand Yadav, Vinay Kumar, S. B. Dhok, Akhilendra Pratap Singh, Gaurav Srivastava, "Performance Evaluation of Modulation Techniques for UW-FSO Communication System, International Conference on VLSI, Communication and Signal Processing, VCAS, November 29 to December 1, 2018.

17. V. Kumar, A. L. Prasanna, Dushantha Nalin K. Jayakody, A. P. Singh , Compressive Data Gathering for MI Based Clustered Non-Conventional WSNs, International Conference on Emerging Technologies of Information and Communications (ETIC 2019), Bhutan, March, 2019.
18. B K Balabantaray, R Nayak and B B Biswal, "Image based Visual Servoing using Non-Orthogonal Moment Invariants", International Conference on Innovative Product Design and Intelligent Manufacturing System (ICIPDIMS-19), NIT Rourkela, 17-18 June 2019.
19. H. K. Paikray, P. K Das, S. Panda, B. K. Balabantaray,"Improved shuffled frog Leaping Algorithm for Path Planning of multiple Mobile Robot",2ND INTERNATIONAL CONFERENCE ON INNOVATIONS IN ELECTRONICS, SIGNAL PROCESSING AND COMMUNICATION (IESC) 2019.
20. Shubham Singh, Surmila Thokchom, "Public integrity auditing for shared dynamic cloud data", Procedia Computer Science Volume 125, 2018, Pages 698-708.
21. Surmila Thokchom, Dilip Kr. Saikia, "Efficient scheme for dynamic Cloud data shared within a static group with privacy preserving auditing and traceability", Proceedings of the 2018 International Conference on Cloud Computing and Internet of Things, Singapore,Pages 25-32.
22. Ikkurthi Bhanu Prasad, Biswajit Rout, Yogita. "M-way Balanced Tree Data Aggregation Approach for Clustered Wireless Sensor Networks". 3rd International Conference on Optical and Wireless Technologies, India, March, 2019.
23. Upasana Chutia, Jerry W Sangma, Vipin Pal, and Yogita. "Data-Driven Extraction of Quantitative Multi- Dimensional Associations of Cardiovascular Drugs and Adverse Drug Reactions". 13th International Conference on Practical Applications of Computational Biology & Bioinformatics, Spain, June 2019.
24. Lokesh Pawar, Rohit Bajaj, Jaspreet Singh, Vipin Pal "Smart City IoT: Smart Architectural Solution for Networking, Congestion and Heterogeneity" International Conference on Intelligent Computing and Control Systems, 2019.
25. M Sarkar, J W Sangma, Yogita, V Pal "Human Behaviour Analysis: Using Clustering for Identifying Co-evolving EEG Data Streams", Ninth International Workshop Statistical Analysis of Neuronal Data (SAND9), University of Pittsburgh, Pittsburgh, USA, May 21 - 23, 2019.

5. Conference / Workshop / Seminar Organized:

1. Dr. Akhilendra Pratap Singh, Dr. Bunil Kumar Balabantaray Workshop on "Recent Trends in Internet of Things: Design, Architecture, Security", 27-28 May 2018. (Co-ordinator)
2. Dr. Akhilendra Pratap Singh, Dr. Bunil Kumar Balabantaray Faculty Development Program on "Mobile and Wireless Communication" NIT Meghalaya with collaboration of IIT Guwahati ,Sponsored by Ministry of Electronics and Information Technology Govt. of India, 03-07 December 2018. (Co-ordinator)
3. Dr. Akhilendra Pratap Singh, Dr. Bunil Kumar Balabantaray Faculty Development Program on "Network Security" NIT Meghalaya with collaboration of IIT Guwahati ,Sponsored by Ministry of Electronics and Information Technology Govt. of India, 20-24 May 2019. (Co-ordinator)
4. Dr. Akhilendra Pratap Singh, Faculty Development Program on "Deep learning and applications "NIT Meghalaya with collaboration of IIT Guwahati ,Sponsnserd by Ministry of Electronics and Information Technology Govt. of India, 27-31 May 2019. (Co-ordinator)

5. Dr. Alok Chakrabarty, Organizing member of a five-days workshop on “Data Science: Industry and Research Perspectives” held during the period 29 October 2018 to 02 November 2018, organized by NIT Meghalaya, India,
6. Dr. Bunil Kumar Balabantaray, FDP on Machine Learning and Deep Learning using Python, funded by EICT Academy, IIT Guwahati, and Probyto, IIT Guwahati. From 22.07.2019 to 26.07.2019, No. of Participants: 40
7. Dr. Bunil Kumar Balabantaray, FDP on Advancements in signal processing and optimization technique, EICT Academy, IIT Guwahati, From 03.06.2019 to 07.06.2019, No. of Participants: 30
8. Dr. Bunil Kumar Balabantaray, FDP on Network Security, EICT Academy, IIT Guwahati, From 20.05.2019 to 24.05.2019, No. of Participants: 24
9. Dr. Bunil Kumar Balabantaray, Workshop on Enabling Technologies in Robotic Through Sensor Integration, TEQIP-3 and Center for Robotics and Mechatronics, NIT Meghalaya, From 24.05.2019 to 28.05.2019, No. of Participants: 40
10. Dr. Bunil Kumar Balabantaray, FDP on Deep Learning and Applications, EICT Academy, IIT Guwahati, From 27.05.2019 to 31.05.2019, No. of Participants: 30
11. Dr. Bunil Kumar Balabantaray, FDP on DSP and Sensors, EICT Academy, IIT Guwahati, From 10.12.2018 to 14.12.2018, No. of Participants: 30
12. Dr. Bunil Kumar Balabantaray, FDP on AI and Machine Learning, EICT Academy, IIT Guwahati, From 17.12.2018 to 21.12.2018, No. of Participants: 27
13. Dr. Bunil Kumar Balabantaray, FDP on ANN and Deep Learning, EICT Academy, IIT Guwahati, From 11.06.2018 to 15.06.2018, No. of Participants: 21
14. Dr. Bunil Kumar Balabantaray, FDP on Big Data Analytics, EICT Academy, IIT Guwahati, 21.05.2018 to 25.05.2018, No. of Participants: 22
15. Dr. Bunil Kumar Balabantaray, Recent Trends in Internet of Things: Design, Architecture, and Security, Sponsored by TEQIP-3 and organized by the Department of Computer Science and Engineering, NIT Meghalaya, From 27.04.2018 to 28.04.2018, No. of Participants: 35
16. Dr. Vipin Pal, Workshop on “Data Science: Industry and Research Perspective” 29/Oct/2018 to 02/Nov/2018
17. Dr. Yogita, Workshop on “Data Science: Industry and Research Perspective” 29/Oct/2018 to 02/Nov/2018

6. Conferences/Workshops/Seminars/Trainings Attended by faculty members:

Sl. No.	Name of Faculty	Name of the programme attended	Duration
1	Diptendu Sinha Roy	GUCON 2019 at Noida, India for presenting paper titled “Storage and Analysis of Synchrophasor Data for Event Detection in Indian Power System Using Hadoop Ecosystem”. In Data and Communication Networks (pp. 291-304). Springer, Singapore	28-29 September, 2018
2	Diptendu Sinha Roy	ICCE-TW 2019 at Yilan Taiwan for presenting paper titled “A Study on DRX Mechanism for Wireless Powered LTE-Enabled IoT devices.”	18-20 May, 2019

Sl. No.	Name of Faculty	Name of the programme attended	Duration
3	Bunil Kumar Balabantaray	International Conference on Innovative Product Design and Intelligent Manufacturing System (ICIPDIMS-19), NIT Rourkela,	17-18 June 2019
4	Bunil Kumar Balabantaray	International Conference on Engineering, Computers and Natural Sciences Goa.	18-19 October 2018
5	Dr. Surmila Thokchom	2018 International Conference on Cloud Computing and Internet of Things, Singapore	Oct 29-31, 2018
6	Bunil Kumar Balabantaray	2nd International Conference On Innovations In Electronics, Signal Processing And Communication (IESC) 2019.	1-2 Mar 2019

7. Invited Talks Delivered:

Sl. No.	Title	Type	Event / Place	Any other information
1	Cloud Computing	Invited talk.	Special Summer School In Basic Sciences and Technology, 8 th -21 st July 2019, NEHU, Shillong	Talk invited on 10 th July, 2019 organized by UGC-HRDC, NEHU, Shillong.
2	Cloud Computing	Invited talk.	ABIT, Cuttack, Odisha	Talk invited By ABIT, Cuttack on 13.03.2019

8. Sponsored Projects:

SI No.	Title of the Project	Investigators (PI/Co.-PI)	Funding Agency	Funding Amount	Duration	Status
1	Investigation on Data-Driven Event Detection using Indian Power Grid's Synchrophasor	PI: Dr. Diptendu Sinha Roy	SERB (Core Research Grant)	Rs. 19.41 Lakhs	October 2018 to October 2021	Ongoing
2	Efficient Multi-dimensional Qubit Placement in Quantum Circuits	PI: Kamalika Datta	DST, Government	Rs.14.82 Lakhs	Mar-2016 to Mar-2019	Ongoing
3	Development of CAD Tools for Synthesis, Optimization and Verification of Digital Circuits using Memristors	PI: Kamalika Datta (Robert Wille is the PI from Austria)	DST, Government of India (Indo-Austria Joint Project)	Rs.8.65 Lakhs	July-2017 to Jul-19	Ongoing
4	Development of Solid State Transformer based Efficient Power Conditioning Unit for Photovoltaic System for Hybrid AC/DC Microgrid Applications	Co-PI: Kamalika Datta PI: A. Datta, Mizoram University	DST, Government of India (Indo-Mexico Joint Project)	Rs. 9.78 Lakhs	July-2017 to Jul-20	Ongoing
5	Cloud-assisted Data Analytics based Real-Time Monitoring and Detection of Water Leakage in Transmission Pipelines using Wireless Sensor Network for Hilly Regions" Ministry of Environment, Forest & Climate Change	P.I. – Dr. Vipin Pal Co-P.I.- Dr. Yogita, Dr. Soumen Moulik, Dr. Shubhankar Majumdar	NMHS	Rs44,40,880.00	3 Years	On-going

SI No.	Title of the Project	Investigators (PI/Co.-PI)	Funding Agency	Funding Amount	Duration	Status
6	Prediction, Detection and Monitoring System for Landslide in Hilly Region	PI: Dr. Subhankar, EC Co-PI: Dr. S Moulik, CS	Indo-Japan (DST)	Rs. 6.26 Lakhs	3 Years	On going

9. Laboratories Setup:

Sl. No.	Laboratory	Major Equipment & Software	Location	Cost (Rupees in lakhs)
1	Computer Center	HoneyNet Purchase and Installation	CS Lab	Approx. 190 L
2	Data Science Laboratory	Computer Systems and Data Science Software	CS Lab	-
3	Embedded Lab	Micro tutor workbench	CS Lab	16.45 L
4	Computer Vision and Automation Laboratory	Vision System, Mobile Robots	CSE Department	In Process

10. Administrative Responsibilities Held:

Sl. No.	Name of Faculty	Responsibilities	Duration
1	Dr. Diptendu Sinha Roy	Head, Department of CSE	January 2017 – till date
2	Dr. Diptendu Sinha Roy	Faculty-in-charge, Computer Centre	August 2018 – till date
3	Dr. Diptendu Sinha Roy	Senate nominated Member, BoG, NIT Meghalaya	July 2017 – till date
4	Dr. Diptendu Sinha Roy	Member Convenor, Campus Networking Committee	August 2018 – till date
5	Dr. Diptendu Sinha Roy	Chairman, Website Committee	August 2018 – till date
6	Dr. Diptendu Sinha Roy	Chairman, ERP Coordination Committee	September 2017- till date
7	Dr. Yogita	Warden, Lapalang Girls Hostel	August 2018 – till date
8	Dr. Bunil Kumar Balabantaray	Internship Related Matter	01.08.2018 - till date
9	Dr. Bunil Kumar Balabantaray	Start -Up Committee	
10	Dr. Bunil Kumar Balabantaray	NBA Preparatory work	01.08.2018 - till date
11	Dr. Bunil Kumar Balabantaray	Warden Kench Trace Boys Hostel	01.08.2018 - till date
12	Dr. Surmila Thokchom	NIT Meghalaya Nodal Officer, AISHE	August 2018 – till date

11. Membership of Professional Bodies:

Sl. No.	Name of Faculty	Member of
1	Diptendu Sinha Roy	IEEE, CSI (Life Member), ISTE (Life Member)
2	Dr. Alok Chakrabarty	IEEE, ACM
3	Kamalika Datta	IEEE and ACM
4	Rajarshi Ray	ACM Professional
5	Akhilendra Pratap Singh	CSI (Life Member), ISTE (Life Member)
6	Dr. Yogita	IEEE
7	Dr. Vipin Pal	IEEE

Sl. No.	Name of Faculty	Member of
8	Bunil Kumar Balabantaray	ISTE (LM), Soft Computing Research Society, India., Associate Member (UACEE), Institute of Research Engineers and Doctors, (Membership No: AM10100057923)
9	Surmila Thokchom	ACM, IEEE
10	Soumen Moulik	IEEE

12. Any other notable information:

Dr. Alok Chakrabarty, Acting as Counsellor CSI student branch, NIT Meghalaya since July 2017.

13. CSE Department activities in photographs:

1. FDP on Network Security 20-24 May 2018



2. FDP on Deep Learning and Machine Learning 22-26 July 2019



3. FDP On Deep Learning and Application 27-31 May 2019



4. FDP on Deep Learning and Machine Learning 22-26 July 2019



5. Five-Day Workshop on Data Science



Department of Electronics and Communication Engineering

1. Brief Introduction to the Department:

The Department of Electronics and Communication Engineering (ECE) was established in 2010 with the inception of National Institute of Technology Meghalaya. The department offers B. Tech Programme with an intake capacity of thirty & M.Tech Programme with an intake capacity of twenty in VLSI and Embedded Systems and Ph.D. program in various specialized areas of Electronics and Communication Engineering. The major research areas of the department include High Speed and Low Power VLSI, Computer Arithmetic, Wireless Sensor Networks, Cognitive Radio, Antenna Design, Signal Processing and MEMS. The major objective of the Department is to impart high-quality technical education and research with a strong foundation in Electronics and Communication Engineering. The major areas of faculty expertise of the department include VLSI Systems, Microelectronics & MEMS, High-Performance Computing, Signal and Speech Processing, Digital Signal Processing, Communication and RF & Microwave Engineering.

2. Programmes Offered:

- I. B. Tech in Electronics and Communication Engineering
- II. M.Tech in VLSI and Embedded Systems
- III. Ph. D

3. Faculty Profile:

Name	Designation	Qualification	Specialization	Date of Joining	Ph.D. guidance
Dr. Anup Dandapat	Associate Professor	Ph.D	Low Power VLSI, Low Power Digital Circuits, Low Power High Speed Multipliers, Low Power High Speed Memories	20.12.2012	Pursuing -2 Submitted -1 Awarded - 5
Dr. Ch. V. Rama Rao	Assistant Professor	Ph.D	Speech Technology, Pattern Recognition, Statistical Signal processing, Signal processing issues in Advanced Communication Systems.	28.08.2014	Pursuing - 5
Dr. Prabir Kumar Saha	Assistant Professor	Ph.D	VLSI Design, Computer Arithmetic, Digital Signal Processing	13.06.2012	Pursuing - 2
Dr. P Rangababu	Assistant Professor	Ph.D	FPGA-based Embedded Systems for Multimedia and DSP Applications, VLSI Chip Design, Crypto-Processors, Reconfigurable Systems for Medical Diagnosis	11.08.2014	Pursuing - 3
Dr. Pradeep Kumar Rathore	Assistant Professor	Ph.D	Micro-Electro-Mechanical Systems (MEMS), Microelectronics, Device Fabrication Technology	11.08.2014	Pursuing - 2

Name	Designa-tion	Qualifi-cation	Specialization	Date of Joining	Ph.D. guidance
Dr. Bishnulatpam Pushpa Devi	Assistant Professor	Ph.D	Image processing	03.01.2013	Nil
Mr. Mridupawan Sonowal	Assistant Professor	M.Tech.	Information theory and coding	07.08.2013	Nil
Dr. Abhishek Sarkhel	Assistant Professor	Ph.D	Microwave metamaterials and its applications, Microwave antennas	23.08.2013	Pursuing - 1
Dr. Shubhankar Majumdar	Assistant Professor	Ph.D	RF, High Speed and Power Semiconductor Devices, VLSI circuit design and Modeling (Device to circuit interfacing), Low cost Energy efficient system for Agriculture & Health Sector	13.12.2017	Nil

4. List of Publications:

(a) Journals:

1. S. Moulik, S. Majumdar, "FallSense: An automatic fall detection and alarm generation system in IoT-enabled environment", IEEE Sensor, 2018 (Early Access).
2. S.D. Thabah, P. Saha, "New Design Approaches of Reversible BCD Encoder using Peres and Feynman Gates", Accepted, 2019
3. P. Saha, P. Samanta, "Design and Architecture of new 11:2 Decimal Compressors", Sadhana, Accepted 2019
4. Ashishkumar Prabhakar Gudmalwar, Ch V Rama Rao and Anirban Dutta, "Improving the performance of the speaker emotion recognition based on low dimension prosody features vector", in International Journal of Speech Technology, doi.org/10.1007/s10772-018-09576-4, pp. 1-11, 2018.
5. Farhana Begum, S. Mishra ; A. Dandapat,, "Low Power 10-Bit Flash ADC with Divide and Collate Sub ranging Conversion Scheme", Transactions on Computer Science & Engineering and Electrical Engineering, Scientiairanica, DOI: 10.24200/SCI.2019.5162.1129, 2019.
6. Anup Dandapat, "Methodologies for CAM and ADC design", CSI Transactions on ICT, Springer, June 2019, DOI <https://link.springer.com/article/10.1007%2Fs40012-019-00250-x>. 2019.
7. Farhana Begum, S. Mishra ; Najrul Islam ; A. Dandapat,, "A 10-bit 2.33 fJ/conv. SAR-ADC with High Speed Capacitive DAC Switching using a Novel Effective Asynchronous Control Circuitry", Analog Integrated Circuits and Signal Processing, Springer, <https://doi.org/10.1007/s10470-019-01450-w>, 2019.
8. Farhana Begum, S. Mishra ; Najrul Islam ; A. Dandapat,, "Frequency Improvement of 10-bit SAR-ADC using TSPC based Control Circuitry", IEEE VLSI Circuits & Systems Letter (VCAL), Vol-5, issue-1, pp-1-8, 2019.
9. S. W. Hussain, T. V. Mahendra ; S. Mishra ; A. Dandapat,, "Match-Line Division and Control to Reduce Power Dissipation in Content Addressable Memory", IEEE Transactions on Consumer Electronics, Vol. 64, Issue 3, pp-early access , 2018.
10. Shashi Kumar, Pradeep Kumar Rathore, B.S. Panwar, J. Akhtar, "Development of a Current Mirror Integrated Pressure Sensor using CMOS-MEMS Cofabrication Techniques", Microelectronics International Journal, Volume 35, No. 4, pp. 203-210, 2018

(b) Conferences:

1. S. Das, S. Majumdar, S. Ghosh, A. Bag, S. K. Sharma and D. Biswas, "Acetone Adsorption Characteristics of Pd/AlGaN/GaN Heterostructure Grown by PAMBE: A Kinetic Interpretation at Low Temperature," 2018 IEEE SENSORS, New Delhi, India, 2018, pp. 1-4.
2. R. Ahmed, P. Saha, "Power and Delay Comparison of 7:3 Compressor Designs Based on Different Architectures of XOR Gate" Int. Conf. on Inventive Communication and Computational Technologies. Accepted, 2019.
3. Priya Pallavi and Ch V Rama Rao, "Phase-Locked Loop (PLL) Based Phase Estimation in Single Channel Speech Enhancement," in Interspeech 2018, Hyderabad, 2 - 6 September, 2018.
4. T. V. Mahendra, Sh. Wasmir Hussain, S. Mishray and A. Dandapat, ""Low Match-Line Voltage Swing Technique for Content Addressable Memory" (paper #1570538547), in 7th International Conference on Smart Computing & Communications (ICSCC)] on 28-30 June 2019, Curtin University Malaysia, Miri, Malaysia.
5. T. V. Mahendra, Sh. Wasmir Hussain, S. Mishray and A. Dandapat, ""Performance Analysis of N-CAM, P-CAM and TG-CAM Using 45-nm Technology (Paper ID)ICICCS-045"", in IEEE International Conference on Intelligent Computing and Control Systems [ICICCS 2019] on 15-17 May 2019, Tamilnadu, India.
6. S. Roy ; D. Kumar ; A. Dandapat ; P. Saha, "Discretized Sinusoidal Waveform Generators for Signal Processing Applications", in IEEE 2018 2nd International Conference on Trends in Electronics and Informatics (ICOEI) on 11-12 May 2018, Tirunelveli, India.
7. Farhana Begum, Sandeep Mishra, Md. Najrul Islam and Anup Dandapat, "Analysis and Proposal of A Flash Subranging ADC Architecture", in International Conference on Microelectronics, Computing & Communication Systems (MCCS-2018) on 12-13th May-2018, Ranchi.
8. Panda, Gayadhar, Satabdy Jena, and Peesapati Rangababu. "A Low Voltage Ride Through Scheme for three phase grid connected PV inverter with an adaptive window based MAF-PLL." In 2018 8th IEEE India International Conference on Power Electronics (IICPE), pp. 1-6. IEEE, 2018.
9. Shashi Kumar, Pradeep Kumar Rathore, Peesapati Rangababu, "Implementation of operational amplifier for the designing of novel piezoresistive pressure sensor", 2018 IEEE 2nd International Conference on Smart Sensors and Application (ICSSA), Kuching, Malaysia, pp. 126-129, 2018
10. Shashi Kumar, Pradeep Kumar Rathore, Peesapati Rangababu, "Sensitivity enhancement of current mirror readout circuit based piezoresistive pressure transducer using differential amplifier", 17th IEEE Sensors conference, New Delhi, 2018, pp. 1-4, 2018
11. Shashi Kumar, Gaddiella Diengdoh Ropmay, Pradeep Kumar Rathore and Peesapati Rangababu, "An idea of implementing CMOS operational amplifier in summer configuration for the designing of highly sensitive pressure transducer", 2019 IEEE 2nd international conference on innovations in electronics, signal processing and communication, Shillong (Presented)
12. Diptarup Bhattacharya, Pradeep Kumar Rathore, Shubhankar Majumdar, "Non-Invasive Piezoelectric Sensor for Detection of Lung Cancer", IEEE International Conference on Communication and Electronics Systems (ICCES 2018), COIMBATORE, pp. 1-4, 2018

(c) Patent:

1. S. Majumdar, S. Akashe, A. Chaudhary, A. Verma, "Automatic refilling soil tensiometer and tip rinsing mechanism through fluid whirls," Indian Patent, Application No. 201931005912 (Filled).

(d) Book Chapter:

1. Khalid M., Majumdar S., Siddiqui M.J. (2019) "Reduction of Hardware Complexity of Digital Circuits by Threshold Logic Gates Using RTDs." In Satapathy S., Joshi A. (eds) Information and Communication Technology for Intelligent Systems. Smart Innovation, Systems and Technologies, vol 106. Springer, Singapore.
2. Farhana Begum, Sandeep Mishra, Md. Najrul Islam and Anup Dandapat "Analysis and Proposal of A Flash Sub ranging ADC Architecture", https://doi.org/10.1007/978-981-13-7091-5_26 Springer, Singapore, ISBN 978-981-13-7091-5, pp-283-290, 2019

5. Externally Sponsored R&D Project[s] as PI/Co-PI:

Sl. No.	Name of the faculty member	Title of the Project	Period (From -To)	Sponsoring Organisation	Amount [in Lakhs]	Role [PI/ Co-PI]
1	Dr Ch V Rama Rao	Phonetic and prosodic analysis of Khasi language	10 August, 2018 to 09 August, 2021	SERB, DST	16.13	PI
2	Dr Ch V Rama Rao	Masking of interfering sounds in a crowded environment for hearing aid applications	02 March, 2019 to 01 March, 2022	SERB, DST	23.46	PI
3	Dr Ch V Rama Rao	Post-processing of NQR signals in digital domain in FPGA	13 July, 2018 to 12 July, 2020	BRNS, DAE	20.03	Co-PI
4	Dr. Anup Dandapat	Dynamic Reconfigurable Implementation of Cryptographic Algorithms on FPGA Platform	Jan 2016- Mar 2017	DeitY	15	Co-PI
5	Dr. Anup Dandapat	Special Manpower Development Project	Dec 2015- 2021	DeitY	94	PI
6	Dr. Anup Dandapat	Ultra Low Power Multi Array 64K X 16 Dual Bit Associative Memory with partial matching Capability	Mar 2016- Mar2019	DST-SERB	26.3	PI
7	Dr. Anup Dandapat	Assessment of climate change impacts on soils and various water basins of Meghalaya using existing and newer techniques	Mar 2019- Mar2022	DST	66.45	Co-PI
8	Dr. P. Rangababu	Post-processing of NQR signals in digital domain in FPGA	13 July, 2018 to 12 July, 2020	BRNS, DAE	20.03	PI
9	Dr. P. Rangababu	A "Real-Time Control and Energy Management for Seamless Operation of DC Microgrid in Grid-connected and Standalone Modes	Aug 2018- Aug 2021	SERB	44.56	Co-PI(2)

Sl. No.	Name of the faculty member	Title of the Project	Period (From -To)	Sponsoring Organisation	Amount [in Lakhs]	Role [PI/ Co-PI]
10	Dr. P. Rangababu	Development of High Sensitivity CMOS-MEMS Integrated Smart Pressure Sensor and System for Space Applications	Jan 2019-Jan 2021	ISRO	32.46	Co-PI(2)
11	Dr. Pradeep Kumar Rathore	Development of High Sensitivity CMOS-MEMS Integrated Smart Pressure Sensor and System for Space Applications	Jan 2019-Jan 2021	ISRO	32.46	PI
12	Dr. Shubhankar Majumdar	Prediction, Detection and Monitoring System for Landslide in Hilly Region	June 2019-May 2021	Indo-Japan Project Department of Science & Technology (International Bilateral Co-operation Division)	6.26 + 36,000 \$ (Japanese Side)	PI
13	Dr. Shubhankar Majumdar	Tensionmeter based automated IoT system for Irrigation	May 2019-Apr 2021	DST (Device Development Program)	16.85	PI
14	Dr. Shubhankar Majumdar	Cloud-assisted Data Analytics based Real Time Monitoring and Detection of Water Leakage in Transmission Pipelines using Wireless Sensor Network for Hilly Regions	March 2018-Feb 2021	NMHS (National Mission on Himalayan Studies)	44.70	Co-PI

6. Conference/ Workshop/ Seminar Organized:

- 2nd International Conference on Innovations in Electronics, Signal Processing and Communication (IESC 2019)



- The Department of Electronics and Communication Engineering organized an IEEE Technically Co-sponsored 2nd International Conference on Innovations in Electronics, Signal Processing and Communication (IESC 2019) during 1st & 2nd March 2019 at State Convention Centre, Shillong.
- The conference received a total of 169 submissions. After a thorough peer review process, 60 papers were selected for presentation in the conference. The following leading experts in their fields delivered keynote speeches.

Experts	Organization and Designation	Keynote Speech on
Prof. Ganapati Panda	Former Deputy Director, Indian Institute of Technology Bhubaneswar Bhubaneswar, Odisha, India.	Intelligent Signal Processing
Dr. N.N.S.S.R.K. Prasad	Scientist 'H', Outstanding Scientist, Technology Director (LCA Payloads) and Aeronautical Development Agency (ADA), Bangalore.	Innovations of Avionics Sensor Technologies for a Combat Aircraft.
Dr. P. H. Rao	Scientist, SAMEER – Centre for Electromagnetics.	Massive MIMO and Phased Array Antenna Configurations for Indigenous End to End to 5G Test Bed.
Dr. Manish Mathew	Senior Scientist, CSIR-CEERI, Pilani.	Growth and Fabrication of Different III-Nitride Semiconductor Material and Their Applications.

7. Conferences/Workshops/Seminars/Trainings Attended by faculty members:

Sl. No.	Name of Faculty	Name of the Programme attended	Duration
1	Dr. Shubhankar Majumdar	1. Workshop - IEP on PCB Design Methodologies, CDAC Bangalore 2. Conference- ICEE, IISc Bangalore 3. Two days Workshop on Outcome Based Accreditation (Challenges and Opportunities) organized by TEQIP, NIT Meghalaya 4. IEEE 2 nd International Conference on Innovations in Electronics and Communication Engineering (IESC) 2019 conducted by NIT Meghalaya at Shillong	10-14 Jun, 2019 16-19 Dec ,2018 22- 23 Sep,2018 1-2 Mar , 2019
2	Dr Ch V Rama Rao	1. Faculty Development Program on Big Data Analytics 2. Faculty Development Program on ANN and Deep Learning 3. Summer Training Program on Active learning for senior faculty 4. Outcome-based education 5. IESC 2019, .Convenor 6. Advancements in Signal Processing and Optimization Technique	21 - 25 May,2018 11 -15 Jun, 2018 2-6 Jul,2018 22- 23 Sep, 2018 1-2 Mar, 2019 3-7 Jun, 2019

Sl. No.	Name of Faculty	Name of the Programme attended	Duration
3	Dr P. Rangababu	1. Summer training Program on Active learning for senior faculty 2. Outcome-based education 3. DSP& Sensors 4. Project Presentation Delivered Development of a Sensor less Adaptive Nonlinear Digital Controller for High Gain DC-DC Converter in Micro-grid System 5. IEEE 2 nd International Conference on Innovations in Electronics and Communication Engineering (IESC) 2019 conducted by NIT Meghalaya at Shillong from 1 – 2 March 2019 6. Advancements in Signal Processing and Optimization Technique	2-6 Jul,2018 22- 23 Sep, 2018 10- 14 Dec, 2018 14 Jul,2018 1-2 Mar, 2019 3-7 Jun, 2019
4	Dr. Pradeep Kumar Rathore	1. IEEE 2 nd International Conference on Smart Sensors and Applications (ICSSA 2018) held at Kuching, Malaysia from 24 – 26 July 2018 2. IEEE 2 nd International Conference on Innovations in Electronics and Communication Engineering (IESC) 2019 conducted by NIT Meghalaya at Shillong from 1 – 2 March 2019 3. “Summer Training Program on Active Learning for Senior Faculty” organized by TEQIP, IIT Indore from 2 – 6 July 2018 4. Two days Workshop on Outcome Based Accreditation (Challenges and Opportunities) organized by TEQIP, NIT Meghalaya from 22 – 23 September 2018 5. Workshop on “Enabling Technologies in Robotic through Sensor Integration” organized by Center for Robotics and Mechatronics, NIT Meghalaya from 24 – 28 May 2019	24 –26 Jul,2018 1-2 Mar,2019 2-6 Jul, 2018 22-23 Sep, 2018 24 –28 May 2019

8. Invited Talks Delivered:

1. Dr.Shubhankar Majumdar delivered a talk on *Approximate Computing in the IEI Sponsored* five day workshop on Cutting edge technology held from 29th April-3rd May, 2019 in the CoochBehar Government Engineering College
2. Dr.P.Rangababu Delivered two sessions in a 3-Day National Workshop on “*Embedded systems and its applications (ES&A-2019)*” organized by Dept. of Electronics and Communication Engineering, NEHU Shillong during February 20th –February 22nd, 2019.
3. Dr.P.Rangababu served a Session Chair 2nd International Conference on Innovations in Electronics and Communication Engineering (IESC) 2019 conducted by NIT Meghalaya During 1st March to 2nd March 2019
4. Dr.Shubhankar Majumdar served a Session Chair 2nd International Conference on Innovations in Electronics and Communication Engineering (IESC) 2019 conducted by NIT Meghalaya During 1st March to 2nd March 2019

9. Awards Won/ Recognition received at the national and international level:

1. Dr. Shubhankar Majumdar got Indo-Japan cooperative science programme (IJCSP) project based mobility grant

10. Laboratories Setup:

Sl. No.	Laboratory	Major Equipment & Software	Location	Cost (Rupees in lakhs)
1	Speech Processing	Laptop, Recorder, Microphone and Headworn Microphone	Communication Systems Lab	1.50
2	IOT Lab	Cypress IOT Kits (10), Cypress DSP kits (10), ARM DS-Pro software (50), STM Processors and sensors	DSD lab	1.0

11. Administrative Responsibilities Held:

Sl. No.	Name of Faculty	Responsibilities	Duration
1	Dr Ch V Rama Rao	HoD	June 2017 to June 2019
2	Dr Ch V Rama Rao	Liaison officer for SC/ST cell	Since March 2016
3	Dr Ch V Rama Rao	Digital Signal Processing Laboratory	14-06-2017 to Till Date
4	Dr. Pradeep Kumar Rathore	Professor-in-charge, Centre for Technology Enabled Learning	Jan 2019 - till date
5	Dr. Pradeep Kumar Rathore	Vice-President(Sports), Student Activity Center	July 2018 - till date
6	Dr. Pradeep Kumar Rathore	Coordinator, Summer Internship Program 2019	Session 2019
7	Dr. Shubhankar Majumdar	Warden of Lapalang-1 Boys Hostel Faculty Incharge of Departmental Stationary In Departmental OBE and NBA Committee Member of Startup Cell	July 2018- till present
8	Dr. A. Dandapat	Dean (AA)	Till Oct 2018
9		PIC (PG & AA)	Oct 2018-till date
10		Member, Accreditation Ranking Committee	Sep 2018-June 2019
11		Convenor Selection Drive PG/Ph.D. program at NIT Meghalaya	April 2019-till date
12		Member, FEE remittance	Jan 2019-till date
13		Nodal officer, Academics TEQIP-3	May 2019- Till date
14	Dr.P.Rangababu	Convenor NBA, EC	July 2018-June-2019
15		EC coordinator PGPEC	July 2018-Till date
16		EC coordinator, Routine committee,	July 2018-May2019
17		External member, DRC Committee of Physics	July 2018-till date
18		Microprocessor and Microcontroller lab in charge, EC	July 2018-till date
19		Member, Sports Committee (SAC)	July 2018-till date

12. Membership of Professional Bodies:

Sl. No.	Name of Faculty	Member of
1	Dr.Anup Dandapat	Senior Member, IEEE
2	Dr. Ch. V. Rama Rao	IEEE, IETE (life member)
3	Dr.Abbhishek Sarkhel	IEEE
4	Dr.Pradeep Kumar Rathore	IEEE
5	Dr. P. Rangababu	IEEE, IETE,IEI (Associate Member)
7	Dr.Prabir Saha	IEEE, IETE, IAENG
8	Dr.Shubhankar Majumdar	IEEE, URSI, IEI (Associate Member)

13. Any Other Notable Information:

Sl. No.	Name of Faculty	Technical Assistance	Name of Journal/Conference
1	Dr. Shubhankar Majumdar	Reviewer	IEEE Transaction of Devices, IEEE Access, Vaccum IET Electronics Letters
2	Dr Ch V Rama Rao	Reviewer	Interspeech 2019
3	Dr. A. Dandapat	Reviewer	IEEE, Elsevier, Springer, IET
4	Dr,P.Rangababu	Reviewer	IEEE Transactions on Industrial Electronics, IEEE Access,

Department of Electrical Engineering

1. Brief Introduction to the Department:

The Department of Electrical Engineering offers 4 years B. Tech. program in Electrical and Electronics Engineering and 2 years M.Tech. program with specialization in Power & Energy Systems with annual intake of 30 and 20 students respectively. The department also offers PhD program in various research areas such as renewable energy, power electronics & drives, power system & high voltage, control system, Instrumentation and signal processing. The Department of Electrical Engineering started in 2010 with four years B.Tech. program and since its inception, the department has grown up with dedicated faculties and students. The major objective of the department is to impart high quality education to the students with strong impetus on latest technologies, research and innovation.

Presently, the department has 11 laboratories equipped with experimental and simulation facilities for the undergraduate and postgraduate programs. These laboratories include Power System, Control & Instrumentation, Electrical Machines, Electrical Drives, Power Electronics, Basic Electrical, Microprocessor, Network & Systems, Digital & Analog Electronics, Digital Signal Processing. In addition, advance research labs are developed to facilitate the research scholars to carry out experimental and simulation work. These laboratories include REPCTL, advanced electrical drives, renewable energy and electrical insulation diagnostic lab. At present, there are 13 PhD students working in different research areas under the guidance of faculties of EE Deptt. In 2018-19, 4 students are awarded with PhD degree.

The Electrical Engineering Department have esteemed and dedicated faculties with various specialization and expertise. Besides regular classes, all faculties carry out research work in their respective domains. As an outcome of research work, the faculties have published their work in highly reputed journals and international conferences. In 2018 – 19, the 16 journal and 24 conference papers are published. In the department, there are 5 ongoing projects and 2 more projects are sanctioned in 2018-19 year. The projects are being funded by various Govt. agencies. Also the faculties are involved in various other activities such as invited lecture, book/book chapter publication, organizing short term courses or workshops, reviewer of reputed journals and consultancy work. The most notable achievement of the department was hosting of 2nd IEEE International Conference on Energy, Power and Environment (ICEPE), 2018. The conference was held on 1st – 2nd June 2018 and was organized by EE Deptt. NIT Meghalaya.

2. Programmes Offered:

- Four years B.Tech. program in Electrical & Electronics Engineering
- Two years M.Tech. program with specialization in Power & Energy System
- Ph.D in different research areas of Electrical Engineering such as Renewable Energy, Power Electronics & Drives, Power & Energy System, High Voltage Engineering, Control & Instrumentation, Signal Processing.

3. Faculty Profile:

Name	Designation	Qualification	Specialization	Date of Joining	Ph.D. guidance	Remarks
Gayadhar Panda	Professor	Ph.D.	Power Electronics	29.01.2013	Completed: 5, Ongoing: 5,	

Name	Designation	Qualification	Specialization	Date of Joining	Ph.D. guidance	Remarks
Atanu Banerjee	Assoc. Professor	Ph.D.	Power Electronics & Drives	25.08.2014	Ongoing: 4	
Sanjoy Debbarma	Assistant Professor	Ph.D.	Power & Energy Systems	19.06.2012	Ongoing: 2	
Piyush Pratap Singh	Assistant Professor	Ph.D.	Control Systems,	31.05.2016	Nil	
Rakesh Roy	Assistant Professor	Ph.D.	Power Electronics and machine drives	03.01.2018	Ongoing: 1	
Shaik Affijulla	Assistant Professor	Ph.D.	Power Systems	03.01.2013	Nil	
Supriyo Das	Assistant Professor	Ph.D.	High Voltage Engineering	25.08.2014	Ongoing: 1	
Ksh Milan Singh	Assistant Professor	Ph.D.	Instrumentation and Signal Processing	24/05/2016	Ongoing: 1	
Ramyani Chakrabarty	Trainee Teacher	M. Tech	Power Electronics	21/07/ 2014	NA	Pursuing PhD in IIT Guwahati
Biswajit Halder	Assistant Professor	Ph.D.	Control and Instrumentation	23.07.2012	Nil	Left NIT Meghalaya on 07.12.2018
Mousam Ghosh	Assistant Professor	ME (Ph.D. Pursuing)	Power Electronics & Drives	23-08-2013	NA	Left NIT Meghalaya on 13.08.2018

4. List of Publications:

(a) Journals:

1. Piyush Pratap Singh, K. M. Singh and B. K. Roy, Chaos control in biological system using recursive backstepping sliding mode control, *Eur. Phys. J. Special Topics*, Vol. 227, pp. 731-746, October 2018.
2. Kaushik Neogi , Moumita Sadhu, Niladri Das, Pradip Kumar Sadhu, Agamani Chakraborty, Ankur Ganguly, Atanu Banerjee "A new approach for the stability analysis of high-frequency series resonant inverter-fitted induction heater"- Ain Shams Engineering Journal, Elsevier, Vol.10, No.1, April, 2018,pp.185-194.
3. Ksh Milan Singh, "Simultaneous Estimation of Moving-Vibration Parameters by Sliding Goertzel Algorithm in PLL Technique," *IEEE Trans. Instrum. Meas.*, vol. 2, pp. 334-343, Feb., 2019.
4. Shaik Affijulla, Praveen Tripathy,"Development of Dictionary-Based Phasor Estimator Suitable for P-Class Phasor Measurement Unit," *IEEE Transactions on Instrumentation and Measurement*, vol. 67, no.11, pp. 2603-2615, Nov 2018.
5. K. P. Panda, S. S. Lee and Gayadhar Panda, "Reduced Switch Cascaded Multilevel Inverter with New Selective Harmonic Elimination Control for Standalone Renewable Energy System", *IEEE Transactions on Industry Applications*, Early Access, March 2019.
6. S. Sahoo, B. Subudhi, Gayadhar Panda, "Comparison of Output Power Control Performance of Wind Turbine using PI, Fuzzy Logic and Model Predictive Controllers", *International Journal Of Renewable Energy Research*, vol. 8, no. 2, June 2018.

7. Moushumi Patowary, Gayadhar Panda, Bimal C Deka, "Power quality enrichment using enhanced adaptive control-detuned-LC proposal in voltage source control conquered distributed generation with hardware implementation", *Transactions of the Institute of Measurement and Control (SCIE)*, October 2018, Pages: 0142331218801157.
8. Moushumi Patowary, Gayadhar Panda, Bimal C Deka, "A Comparative Study on Neural Network Based Controllers Used in Grid-Interactive Solar System", *International Journal of Emerging Electric Power Systems (IJEEPS) (ESCI)*, November 2018, <https://doi.org/10.1515/ijeeps-2018-0019>.
9. Parusharamulu Buduma, Gayadhar Panda, "Robust Nested Loop Control Scheme for LCL-Filtered Inverter-Based DG Unit in Grid-Connected and Islanded Microgrid Modes" *IET Renewable Power Generation*, August 2018, vol. 12, no. 11, pp.1269-1285.
10. Kaibalya Prasad Panda, Gayadhar Panda, "Application of swarm optimization-based modified algorithm for selective harmonic elimination in reduced switch count multilevel inverter" *IET Power Electronics*, June 2018, vol. 11, no. 8, pp.1472-1482.
11. Bonu Ramesh Naidu, Gayadhar Panda, and Pierluigi Siano "A Self-Reliant DC microgrid: Sizing, Control, Adaptive Dynamic Power Management and Experimental Analysis", *IEEE Transactions on Industrial Informatics*, August 2018, vol. 14, no. 8, pp. 3300-3313.
12. P. Garanayak, G. Panda and S. Mishra, "Harmonic elimination using SW based HSAPF system and evaluation of compensation effect employing ADALINE-DFFRLS algorithm", *European Power Electronics and Drives*, pp. 1-18, June 2018.
13. K. P. Panda, A. Anand, P. R. Bana and Gayadhar Panda, " Novel PWM Control with Modified PSO-MPPT Algorithm for Reduced Switch MLI Based Standalone PV System", *International Journal of Emerging Electric Power Systems (IJEEPS) (ESCI)*, September 2018.

(b) Book chapters:

1. Sanjoy Debbarma, Rituraj Shrivastwa, Inertia emulation from HVDC links for LFC in the presence of smart V2G networks, Chapter 12, *Smart Power Distribution Systems: Control, Communication, and Optimization*, ISBN - 978-0-12-812154-2, pp. 251-265, Elsevier 2018 (Imprint: Academic Press)
2. Chiranjit Sain, Atanu Banerjee, P K Biswas, P Sanjeevikumar- "A State of the Art Review on Solar Powered Energy Efficient PMSM Drive Smart Electric Vehicle for Sustainable Development" Advances in Greener Energy Technologies & Springer Book Series: Green Energy and Technology (ISSN: 1865-3529), Springer.
3. B.Ramesh Naidu, Gayadhar Panda, B.Chitti Babu, "Adaptive Dynamic Energy Management and Seamless Control for DC Microgrid System", *Control, Communication and Optimization of Smart Power Distribution Systems: Efficient and secure operation of Smart Grids*, Elsevier, 2018.

(c) Conferences:

1. R. Chakrabarty and R. Adda, "Model predictive control of DSTATCOM employing a single DC source cascaded H-bridge multilevel inverter in a weak distribution system" *20th IEEE National Power System Conference (NPSC)* ,Dec. 2018
2. R. Chakrabarty and R. Adda, "Constant Switching Frequency State Feedback Control of Cascaded H-bridge Multilevel Inverter with Reduced Switches" *8th IEEE International Conference on Power Electronics, Drives and Energy Systems (PEDES)*, Dec. 2018
3. Ritu Raj Shrivastwa, Ahmad Hably, Sanjoy Debbarma, Seddik Bacha, "Frequency Control Using V2G and Synchronous Power Controller based HVDC Links in Presence of Wind and PV Units", *The 44th Annual Conference of the IEEE Industrial Electronics Society (IECON 2018)*, Oct 2018, Washington DC, United States.

4. Sanjoy Debbarma, Chhandashree Hazarika, Ksh. Milan. Singh, "Virtual Inertia Emulation from HVDC Transmission Links to Support Frequency Regulation in Presence of Fast Acting Reserve", *2nd International Conference on Energy, Power & Environment (IEEE ICEPE 2018)*, June 2018, NIT Meghalaya, Shillong.
5. Bhabani Kumari Choudhury, Sanjoy Debbarma, "Managing Vehicle-to-grid Mobile Energy Network as Demand Response in Power Systems", *2nd International Conference on Energy, Power & Environment (IEEE ICEPE 2018)*, June 2018, NIT Meghalaya, Shillong.
6. Siddhartha Deb Roy, Sanjoy Debbarma, "Inertia Emulation Using Battery Management System in a Low Inertia Grid with HVDC Links", *2nd International Conference on Energy, Power & Environment (IEEE ICEPE 2018)*, June 2018, NIT Meghalaya, Shillong.
7. Darshan Prakash Borthakur and Supriyo Das, "Life Estimation of XLPE Cable under Electrical and Thermal Stress", *International Conference on High Voltage Engineering & Technology (ICHVET)*, February 2019, CPRI Hyderabad.
8. Adnan Iqbal and Supriyo Das, "Estimation of Support Vector Machine Parameters Based on Breakdown Voltage Characteristics", *IEEE International Conference on Energy, Power and Environment (ICEPE)*, June 2018, NIT Meghalaya.
9. Thangabalan and Supriyo Das, "The Effect of Lightning on Insulator Flashover Characteristics", *IEEE International Conference on Energy, Power and Environment (ICEPE)*, June 2018, NIT Meghalaya.
10. Eshan Tiwari, Vikash Kumar, and Piyush Pratap Singh, Anti-synchronisation of Vallis Chaotic Systems using Nonlinear Active Control Technique, *2nd IEEE International Conference on Energy, Power and Environment (ICEPE), NIT Meghalaya, Shillong, India*, June 1-2, 2018.
11. Piyush Pratap Singh and B K Roy, Secure Communication Using NAC Based Synchronisation Between Nonidentical Chaotic Systems, *2nd IEEE International Conference on Energy, Power and Environment (ICEPE)*, NIT Meghalaya, Shillong, Meghalaya, India, June 1-2, 2018.
12. Manish Kumar and Piyush Pratap Singh, Chaos control of an extended four dimensional fundamental power system using sliding mode control, *5th IEEE Uttar Pradesh Section International Conference on Electrical, Electronics and Computer Engineering (UPCON)*, MMMUT Gorakhpur, Uttar Pradesh, India, Nov. 2-4, 2018.
13. Prakash Chandra Gupta, Atanu Banerjee and Piyush Pratap Singh, Analysis of Global Bifurcation and Chaotic Oscillation in Distributed Generation Integrated Novel Renewable Energy System, *15th IEEE India Council International Conference (INDICON)*, Amrita Vishwa Vidyapeetham Coimbatore, India, Dec. 16-18 2018.
14. Hari Charan Nannam , Atanu Banerjee –"A Detailed Modeling and Comparative Analysis of Hysteresis Current Controlled Vienna Rectifier and Space Vector Pulse Width Modulated Vienna Rectifier in Mitigating the Harmonic Distortion on the Input Mains"- 2018 IEEE International Conference on Industrial Engineering and Engineering Management (IEEM),16th -19th December,2018, Bangkok, DOI:10.1109/IEEM.2018.8607388 pp.371-375.
15. Pratikanta Misra , Atanu Banerjee, Mousam Ghosh- "FPGA-based Real-time Performance Analysis of Buck-regulator Fed Current Source Inverter " 8th IEEE India International Conference on Power Electronics (IICPE), 13th -15th December, 2018,MNIT Jaipur , DOI: 10.1109/IICPE.2018.8709443, pp.1-6.
16. Pratikanta Mishra , Atanu Banerjee , Hari Charan Nannam , Mousam Ghosh- "A Novel Modified Digital PWM Control Technique to Reduce Speed Ripples in BLDC Motors" 2018 IEEE 4th Southern Power Electronics Conference (SPEC) , 10-13th Deember,2018,Singapore, DOI: 10.1109/SPEC.2018.8635993, pp.1-8.

17. Susmita Bhattacharjee, Nayanita Sikder, Ksh. Milan Singh, "Ultrasonic Vibration Measurement based on FM demodulation in PLL Technique," *2nd IEEE International conference on Innovations in Electronics and Signal Processing and Communication (IESC-2019)*, March 2019 EC Dept., NIT Meghalaya, India
18. Nayanita Sikder, Susmita Bhattacharjee, Ksh. Milan Singh, "Harmonic Extraction based on mHDFT Algorithm in PLL Technique," *2nd IEEE International conference on Innovations in Electronics and Signal Processing and Communication (IESC-2019)*, March 2019, EC Dept., NIT Meghalaya, India
19. Shaik Affijulla, Praveen Tripathy, "A Special Protection Scheme for Transmission Lines based on Wide Area Monitoring System," *IEEE 59th International Scientific Conference on Power and Electrical Engineering of Riga Technical University (RTUCON)*, Riga, Latvia, 12-13 Nov, 2018.
20. V. Narendra Kumar, Moushumi Patowary and Gayadhar Panda, " Dynamic Power Management Controller to the Self-Sustained Wind-Solar DC microgrid in the Transportation Applications", in *IEEE I2CT 2018*, April 7-8, Pune.
21. S. Jena, Gayadhar Panda and Rangababu P, "A Low Voltage Ride Through Scheme for three phase grid connected PV inverter with an adaptive window based MAF-PLL", *2018 8th IEEE India International Conference on Power Electronics (IICPE)*, 2018.
22. M. Patowary, Gayadhar Panda, Bimal. C. Deka, "Relative Influence of Intelligent Current Controllers on Power Quality in Grid-interactive Solar Inverter System", *2018 2nd International Conference on Power, Energy and Environment: Towards Smart Technology (ICEPE)*, June 2018.
23. P. Buduma, V. N. Kumar and Gayadhar Panda, "Assimilation of Wind Plant to the Utility Grid by An Improved Active and Reactive Power Control", *2018 IEEE International Conference on Power Electronics, Drives and Energy Systems (PEDES)*, December 2018.
24. S. Murali, K. P. Panda and Gayadhar Panda, "PV-HESS fed BLDC Driven Water Pumping System with PSO-based MPP Tracking Employing Zeta Converter", *2018 IEEE Innovative Smart Grid Technologies - Asia (ISGT Asia)*, May 2018.

5. Conference/ Workshop/ Seminar Organized:

1. 2nd International Conference on Energy, Power & Environment, Sponsored by IEEE, IEEE IAS, NEEPCO, NEC, 1st - 2nd June, 2018. Organizing Chair: Dr. S. Debbarma, Organizing Co-chair: Dr. P. P. Singh & Dr. S. Affijulla, General Co-chair: Dr. A. Banerjee.





2. "Virtual Lab Workshop", organised by the Department of Electrical Engineering, NIT Meghalaya in association with Virtual Labs, EE Deptt. IIT Roorkee and Typhoon HIL. The workshop was held on 18th - 22nd April 2018.



6. Conferences / Workshops / Seminars / Trainings Attended by faculty members:

Sl. No.	Name of Faculty	Name of the programme attended	Duration
1	Dr. Sanjoy Debbarma	<i>Two Days workshop on Outcome Based Accreditation (Challenges & Opportunities)</i>	22 nd -23 rd September 2018, NIT Meghalaya.
2	Dr. Supriyo Das	1. <i>Two Days workshop on Outcome Based Accreditation (Challenges & opportunities)</i> 2. Summer Training Program on Active Learning - organised by TEQIP, IIT Indore 3. <i>2nd IEEE International conference on Energy, Power and Environment (ICEPE), Organized by Department of Electrical Engineering, NIT Meghalaya, Shillong, Meghalaya.</i>	1. 22 nd -23 rd September 2018, NIT Meghalaya. 2. 2nd - 6th July 2018 3. 1 st – 2 nd June 2018
3	Dr. P. P. Singh	1. <i>2nd IEEE International conference on Energy, Power and Environment (ICEPE), Organized by Department of Electrical Engineering, NIT Meghalaya, Shillong, Meghalaya.</i> 2. <i>Two Days workshop on Outcome Based Accreditation (Challenges & Opportunities)</i> 3. Three days workshop on "Emerging Applications of Nonlinear Dynamics and Chaos in Science and Engineering", Indian Institute of Technology Jodhpur, Rajasthan, 2018.	1. 1-2 June 2018 2. 22-23 September 2018 3. 13-15 December, 2018
4	Dr. Ksh Milan Singh	1. Three days workshop on "Emerging Applications of Nonlinear Dynamics and Chaos in Science and Engineering", Indian Institute of Technology Jodhpur, Rajasthan, 2018. 2. <i>2nd IEEE International conference on Innovations in Electronics and Signal Processing and Communication (IESC-2019), Organized by Department of Electronics and Communication Engineering, NIT Meghalaya, Shillong, Meghalaya.</i> 3. <i>Two Days workshop on Outcome Based Accreditation (Challenges & Opportunities)</i> 4. <i>Five days Summer training program on Active Learning for Senior Faculty Organized by TEQIP, IIT Indore</i>	1. 13-15 December, 2018 2. 1-2 March, 2019 3. 22-23 September 2018 4. 2-6 July 2018
5	Dr. Shaik Affijulla	1. Two Days workshop on Outcome Based Accreditation (Challenges & Opportunities) organized by TEQIP, NIT Meghalaya. 2. IEEE 59 th International Scientific Conference on Power and Electrical Engineering of Riga Technical University (RTUCON), organized by Riga Technical University, Riga, Latvia. 3. 1 st Power System Protection Conclave organized by POSOCO, NERLDC Shillong.	1. 22-23 Sep 2018 2. 12-13 Nov 2018 3. 08-09 Mar, 2019
6	Dr. Gayadhar Panda	1. Attended for paper presentations in IEEE PES Innovative Smart Grid Technologies Conference, Singapore	1. 22 nd – 25 th May 2018

7. Invited Talks Delivered:

- The aegis of RECTPCL funded CSR project conducted an invited talk on 16-05-2018 at NIT Meghalaya. The talk was delivered by Prof. S A Soman, Professor, Dept. of Electrical Engineering, IIT Bombay, on "Overview of PMU Analytics".



8. Projects

(a) Sponsored Project

Sl. No.	Title of the Project	Investigators (P.I. / Co-P.I.)	Funding Agency	Funding amount	Duration	Status
1	Design & Development of a Cost-effective & Energy-efficient Grid -connected Pumped Hydro System employed with Sensor-less PMBLDCM	PI	CPRI, Ministry of Power, Govt. of India	32.96 lakh	1.5 years	Ongoing (Sanctioned in FY 2018-19)
2	Real-Time Control and Energy Management for Seamless Operation of DC Microgrid in Grid-connected and Standalone Modes	Dr. Gayadhar Panda	DST-SERB Govt. of India	4456450	3 Years	Ongoing (Sanctioned in FY 2018-19)

(b) Consultancy

Sl. No.	Title	Consultant(s)	Client(s)	Value	Status
1	Augmentation of 132/33 kV Mawlai Substation from (3 X 20 MVA) to (3 X 50 MVA) along with Re-engineering of 132 kV Bus-Bar	Dr. Sanjoy Debbarma, Dr. Atanu Banerjee Dr. Shaik Affijulla	Meghalaya Power Transmission Corporation Limited (MePTCL)	50 Crore	Completed

9. Laboratories Setup:

Sl. No.	Laboratory	Major Equipment & Software	Location	Cost (Rupees in lakhs)
1	RECTPCL- CSR Lab	DC and AC Microgrid setups with FPGA Software	Near Machines Lab	25 (approx.)

10. Administrative Responsibilities Held:

Sl. No.	Name of Faculty	Responsibilities	Duration
1	Dr. Sanjoy Debbarma	Warden, Lapalang V Boys Hostel	July 2018 - Till date
2	Dr. Supriyo Das	HOD EE	July 2018 - till date
3	Dr. Gayadhar Panda	1. Part-time CVO 2. Dean Faculty Welfare 3. Dean Academics 4. Director In-charge	1. For 3 Years 2. July 2018 to June 2019 3. October 2018 to till date 4. For one week
4	Dr. Atanu Banerjee	1. HOD EE 2. Dean Student Welfare	1. April 2018 – June 2018 2. July 2018 – till date

11. Membership of Professional Bodies:

Sl. No.	Name of Faculty	Member of
1	Ramyani Chakrabarty	Student member, IEEE
2	Sanjoy Debbarma	IEEE Member
3	Supriyo Das	IEEE Member, IEEE DEIS society member, IEEE PES society member
4	Piyush Pratap Singh	IEEE Member
5	Atanu Banerjee	IE(I), IEEE member
6	Ksh Milan Singh	IEEE Member
7	Shaik Affijulla	IE(I), IEEE
8	Dr. Gayadhar Panda	Senior Member IEEE, Fellow IE (I), Life Member ISTE

12. Any Other Notable Information:

1. Prof. Akshya Swain, Adjunct Faculty, EE Deptt. visited NIT Meghalaya from 10th - 14th February 2019.
2. Prof. Sukumar Mishra, Adjunct faculty, EE Deptt., visited NIT Meghalaya from 5th to 6th March 2019.
3. Dr. Supriyo Das, EE Deptt. served as session chair in IEEE ICHVET conference organised by CPRI Hyderabad, held from 7th - 8th Feb 2019.
4. Dr. Shaik Affijulla, Dept. of EE served as General Co-chair for International Conference on New Technological Opportunities in Networking and Sciences organized by Seemant Institute of Technology, Uttarakhand, held during 08-10 June, 2018.
5. Invited as guest for inaugural of EMOOT-2018 on 14th -15th July-2018 at Hi-tech Institute of Technology, Khurda.
6. Dr. G. panda served as (1) Executive committee member for NIELIT Shillong, (2) Conducting All India Competitive Examinations for higher and technical education in Shillong.
7. Dr. G. Panda served as external examiner for four (4) PhD thesis.

8. Dr. G. Panda served as reviewer for the following journals:

- i. IEEE Transactions on Industrial Electronics
- ii. IEEE Transactions on Smart Grids
- iii. IEEE Transactions on Industrial Informatics
- iv. IEEE Transactions on Sustainable Energy
- v. IET Electrical Systems in Transportation
- vi. IET Renewable Power Generation
- vii. IET Generation, Transmission and Distribution
- viii. Transactions of the Institute of Measurement and Control, SAGE journal
- ix. The Journal of the Franklin Institute, Elsevier
- x. IEEE Access
- xi. International Transactions on Electrical and Energy Systems (Wiley)

9. Dr. S. Debbarma served as reviewer for the following journals:

- i. IEEE Systems Journal
- ii. IEEE Transactions on Power System
- iii. International Journal of Electrical Power & Energy Systems
- iv. Journal of Energy Storage

10. Dr. A. Banerjee served as reviewer for the following journals:

- i. Journal of Renewable and Sustainable Energy
- ii. Electric Power Components and Systems

Department of Mechanical Engineering

1. Brief Introduction to the Department:

The department of Mechanical Engineering started functioning of its academic curriculum from the session July 2013. The department consists of combination of bright, young and highly potential experienced faculty members. The main objective of the department is to cater the students with class tutorial and in hand practice with the state-of-the-art laboratories and workshop. The basic aim of the department is to provide the students with perfect principles and practice in mechanical engineering, which helps them to serve the society and address variety of needs. Another objective of the department is to come up with courses containing interdisciplinary concepts keeping in view of the advancement of today's world in the field of robotics, mechatronics, nanotechnology etc. The department also plans to have industry-academic collaboration so that both can complement each other in study, research and overall development.

2. Programs Offered:

- Bachelor of Technology in Mechanical Engineering (intake capacity: 30 per year)
- Master of Technology in Mechanical Engineering with specialization in Fluids and Thermal Engineering (intake capacity: 20 per year)
- Doctor of Philosophy in Mechanical Engineering (in respective specializations)

3. Faculty Profile:

Name	Designation	Qualification	Specialization	Date of Joining	Ph.D. guidance	Remarks
Prof. Bibhuti Bhushan Biswal	Professor & Director	PhD	Manufacturing	May 17. 2018	1	
Dr. Bikash Kumar Sarkar	Assistant Professor & Head of the Department	PhD	Fluid Power and Control	August 21, 2013	3	One Project Scholar, One shared with Dr. S. Maity
Prof. Harish Chandra Das	Professor	PhD	Thermal and Fluid Engineering	December 28, 2017	5 completed and 1 on going at SOA University and 3 ongoing at NITM	--
Dr. Rabindra Narayan Mahapatra	Associate Professor	PhD	Design and manufacturing	December 28, 2017	4	2 full time and 2 part time

Name	Designation	Qualification	Specialization	Date of Joining	Ph.D. guidance	Remarks
Dr. Deba Kumar Sarma	Associate Professor & Dean (Planning & Development)	PhD	Manufacturing	August 23, 2013	3	1 degree awarded, 1 submitted 1 continuing (shared with Dr. K. Debnath)
Dr. Subhendu Maity	Assistant Professor	PhD	Fluid Mechanics	July 16, 2012	3	
Dr. Biplab Kumar Debnath	Assistant Professor	PhD	Thermal	July 30, 2014	4	1 Completed 3 continuing, 1 Shared with Dr. R. S. Das, 1 Shared with Dr. K. Das
Dr. Koushik Das	Assistant Professor	PhD	Thermal	July 31, 2014	3	Shared with Dr. B. K. Debnath & Dr. R.S. Das
Dr. Rajat Subhra Das	Assistant Professor	PhD	Thermal	July 16, 2015	3	All ongoing/ Shared with Dr. B.K. Debnath, Dr. B.K.Sarkar & Dr. K. Das
Dr. Kishore Debnath	Assistant Professor	PhD	Manufacturing	July 16, 2015	3	All ongoing/ Shared with Dr. D.K. Sarma & Dr. T. Bose
Dr. Pallekonda Ramesh Babu	Assistant Professor	PhD	Machine Design	July 27, 2015	2	Shared with Dr Maneswar Rahang,Dr. J P Kalita
Dr. Maneswar Rahang	Assistant Professor	PhD	Manufacturing	June 06, 2016	2	01 JRF and 01 shared with Dr. Pallekonda Ramesh Babu
Dr. Tanmoy Bose	Assistant Professor	PhD	Machine Design	June 17, 2016	2	1 Co-guidance with Dr. Kishore Debnath
Mr. Avilash Sahoo	Trainee Teacher	M. TECH	Machine Design	July 21, 2014		
Mr. Nur Alom	Trainee Teacher	M. TECH	Fluids and Thermal	July 21, 2014		
Mr. Sambit Majumder	Trainee Teacher	M.TECH	Fluids and Thermal	July 20, 2015		

4. List of Publications:

(a) Journals:

1. S Datta, BB Biswal, Experimental Studies on Electro-Discharge Machining of Inconel 825 Super Alloy using Cryogenically Treated Tool/Workpiece, Measurement, Volume 145, 2019, Page Nos 611-630
2. BBVL Deepak, G. B. Murali, MVA R. Bahubalendruni, B.B. Biswal, Assembly sequence planning using soft computing methods: A review, Proc IMechE Part E: J Process Mechanical Engineering, Page Nos 1-31, 2019
3. A. Das, S. K. Patel, T. K. Hotta, B. B. Biswal, Statistical analysis of different machining characteristics of EN-24 alloy steel during dry hard turning with multilayer coated cermet inserts, Measurement Volume 134, February 2019, Page Nos 123-141
4. Gunji Bala Murali, B. B. V. L. Deepak, Golak Bihari Mahanta, Amruta Rout, B. B. Biswal, Design for Assembly Approach for Energy-Efficient Optimal Assembly Sequence Planning Using Improved Firefly Algorithm Research into Design for a Connected World 2019, Page Nos 665-675.
5. G. B. Mahanta, B. B. V. L. Deepak, M. Dileep, B. B. Biswal, S. K. Pattanayak, Prediction of Inverse Kinematics for a 6-DOF Industrial Robot Arm Using Soft Computing Techniques, Soft Computing for Problem Solving 2018, Page Nos 519-530.
6. G. Bala Murali B. B. V. L. Deepak B. B. Biswal Bijaya Kumar Khamari, Integrated Design for Assembly Approach Using Ant Colony Optimization Algorithm for Optimal Assembly Sequence Planning, 2018, Computational Intelligence in Data Mining pp 249-259 |
7. Pradip Kumar Sahu, Gunji Balamurali, Golak Bihari Mahanta, Bibhuti Bhushan Biswal, A Heuristic Comparison of Optimization Algorithms for the Trajectory Planning of a 4-axis SCARA Robot Manipulator, 2018 Computational Intelligence in Data Mining pp 569-582 |
8. Balamurali Gunji, B. B. V. L. Deepak, Amruta Rout, Golak Bihari Mohanta, B. B. Biswal, Hybridized Cuckoo-Bat Algorithm for Optimal Assembly Sequence Planning, Soft Computing for Problem Solving, 2019, pp 627-638
9. M. V. A. Raju Bahubalendruni, Bibhuti Bhushan Biswal, An Efficient Stable Subassembly Identification Method Towards Assembly Sequence Generation, National Academy Science Letters, 2018, Volume 41, Issue 6, pp 375-378
10. A. Das, N. Tirkey, S. K. Patel, S. R. Das, B. B. Biswal, A Comparison of Machinability in Hard Turning of EN-24 Alloy Steel Under Mist Cooled and Dry Cutting Environments with a Coated Cermet Tool, Journal of Failure Analysis and Prevention 2019, Volume 19, (1) pp 115-130 |
11. C. Upadhyay , Rahul , S. Datta , S. S. Mahapatra , B. B. Biswal An experimental investigation on electro discharge machining of Inconel 601, International Journal of Industrial system and engineering
12. J. Bezbaruah, R. S. Das, B. K. Sarkar, Thermo-hydraulic performance augmentation of solar air duct using modified forms of conical vortex generators, Heat Mass Transfer, Page Nos 1-17, 2018. <https://link.springer.com/article/10.1007/s00231-018-2521-1#citeas>
13. B. K. Sarkar, Modeling and Validation of a 2-DOF Parallel Manipulator for Pose Control Application Reference, Robotics and Computer Integrated Manufacturing, Vol.-50, Page Nos -234-241, 2018. <http://www.sciencedirect.com/science/article/pii/S0736584516302903>
14. D. Sharma, B. K. Debnath, Computational investigation of porous media combustion technology in spark ignition engine, Iranian Journal of Science and Technology, Transactions of Mechanical Engineering, 2019, DOI 10.1007/s40997-019-00285-0.

15. U. Kashyap, K. Das, B. K. Debnath, Numerical and experimental study of the effect of secondary surfaces fixed over a rectangular vortex generator, *Journal of Thermal Science and Engineering Applications*, 2019, DOI:10.1115/1.4043007.
16. U. Kashyap, K. Das, B. K. Debnath, Effect of surface modification of a rectangular vortex generator on heat transfer rate from a surface to fluid: An extended study, *International Journal of Thermal Sciences*, Vol.-134, Page Nos -269–281, 2018.
17. U. Kashyap, K. Das, B. K. Debnath, Numerical and Experimental Study of the Effect of Secondary Surfaces Fixed over a Rectangular Vortex Generator, *Journal of Thermal Science and Engineering Application*, 1948-5085, 2019.
18. Alom, N., and Saha, U. K., 2019. Examining the aerodynamic drag and lift characteristics of a newly developed elliptical-bladed Savonius rotor, *ASME Journal of Energy Resources Technology*, Vol. 141, No. 5, p. 051201.
19. Alom, N., and Saha, U. K., 2019. Evolution and progress in the development of Savonius wind turbine rotor blade profiles and shapes, *ASME Journal of Solar Energy Engineering*, Vol. 141, No.3, p. 030801.
20. Ranjan, R. K., Alom, N., Singh, J., and Sarkar, B. K., 2019, "Performance investigation of cross flow hydro turbine with the variation of blade and nozzle entry arc angle" *Energy Conversion and Management*, Vol. 182, pp.41–50
21. Alom, N., and Saha, U. K., 2019. Influence of blade profiles on Savonius rotor performance: Numerical simulation and experimental validation, *Energy Conversion and Management*, Vol. 186, pp: 267-277
22. Alom, N., and Saha, U. K., 2019. Drag and lift characteristics of a novel elliptical-bladed Savonius rotor with vent augmenters, *ASME Journal of Solar Energy Engineering*, Vol. 141, No. 5, p. 051007.
23. M. Roy Choudhury and K. Debnath. Experimental Analysis of Tensile and Compressive Failure Load in Single-Lap Bolted Joint of Green Composites. *Composite Structures*, Vol. 225, 111180, 2019.
24. S. Kachhap, A. Singh, and K. Debnath. A Study of Material Removal during Electrical-Discharge Drilling of Hybrid Metal Matrix Composites. *Journal of Scientific & Industrial Research*, Vol. 78(6), pp. 364-367, 2019.
25. H. Dutta, K. Debnath, and D.K. Sarma. A Study of Material Removal and Surface Characteristics in Micro-electrical Discharge Machining of Carbon Fiber-Reinforced Plastics. *Polymer Composites*, 2019. (DOI: 10.1002/pc.25264)
26. K. Debnath, V. Dhawan, I. Singh, and T.S. Srivatsan. Wear and Frictional Behaviour of Composites Filled with Agro-Based Waste Materials. *Emerging Materials Research*, Vol. 8(1), pp. 84-93, 2019.
27. M. Roy Choudhury, M.S. Srinivas, and K. Debnath. Experimental Investigations on Drilling of Lignocellulosic Fiber Reinforced Composite Laminates. *Journal of Manufacturing Processes*, Vol.34, pp. 51-61, 2018.
28. S. Kachhap, A. Singh, and K. Debnath. Electric Discharge Drilling of Hybrid Metal Matrix Composites using Different Tool Electrodes. *Journal of Scientific & Industrial Research*, Vol. 77(6), pp. 325-329, 2018.
29. S. Roy, T. Bose, and K. Debnath. Detection of Local Defect Resonance Frequencies using Bicoherence Analysis. *Journal of Sound and Vibration*, Vol. 443, pp. 703-716, 2019.
30. S. Roy, T. Bose. Efficient determination of local defect resonance frequencies from bicoherence plots using double excitations. *Mechanical Systems and Signal Processing* 127, 595-609.
31. Deba Kumar Sarma, Meinam Annebushan Singh, Machining of thin sections using multi-pass Wire Electrical Discharge Machining process, *Int. J. of Machining and Machinability of Materials (IJM&MM)*, Inderscience, Accepted, (In press), 2019

32. M. A. Singh, Sanjib Kr. Rajbongshi, D. K. Sarma, O. Hanzel, J. Sedláček, P. Šajgalík, Surface and porous recast layer analysis in μ -EDM of MWCNT-Al₂O₃ composites, *Materials and Manufacturing Processes*, Taylor & Francis, Vol.34, No.5, Page Nos.567-579, 2019
33. Sanjib Kr. Rajbongshi, Meinam annebushan Singh, Deba Kumar Sarma, A comparative study in machining of AISI D2 steel using textured and non-textured coated carbide tool at the flank face, *Journal of Manufacturing Processes*, Elsevier, Vol.-36, Page Nos- 360-372, 2018
34. Sanjib Kr. Rajbongshi, Deba Kumar Sarma, A comparative study in prediction of surface roughness & flank wear using artificial neural network & response surface methodology method during hard turning in dry and forced air-cooling condition, *Int. J. of Machining and Machinability of Materials (IJMMA)*, Inderscience, Vol.-Accepted, (In press), 2018
35. M. A. Singh, D. K. Sarma, O. Hanzel, J. Sedláček, P. Šajgalík, Surface Characterstics and Erosion Phenomena in WEDM of Alumina Composites, *Materials and Manufacturing Processes*, Taylor & Francis, Vol.-33, Issue No.16, Page Nos- 1815-1821, 2018.
36. M. A. Singh, D. K. Sarma, O. Hanzel, J. Sedláček, P. Šajgalík, Surface Characterstics Enhancement of MWCNT alumina composites in Multi Pass WEDM process, *Journal of the European Ceramic Society*, Elsevier, Vol.-38(11), Page Nos -4035-4042, 2018.
37. M. A. Singh, K. Das, D. K. Sarma, Thermal Simulation of Machining of Alumina with Wire Electrical Discharge Machining Process using Assisting Electrode, *Journal of Mechanical Science and Technology*, Springer, Vol.-32(1), Page Nos -333-343, 2018.
38. M.A. Singh, D.K. Sarma, Parametric and Subsurface Analysis of MWCNT Alumina Composites in WEDM Process, *Ceramics International*, Elsevier, Vol.-44(2), Page Nos -2186-2197, 2018.
39. S. Mohapatra, R .N. Mahapatra, B. B.Biswal, ,B. Balabantray, A. K. Behera, A Deterministic Model for Remanufacturing Inventory for Reverse Supply Chain International Journal of Engineering & Technology 7, Page Nos 207-210, 2018
40. B K Balabantaray, R N Mahapatra and B B Biswal, " Efficient Part Recognition Method in Vision Guided Robots using Orthogonal Moments, International Journal of Engineering &Technology, 7(4.41) (2018) 60-65, 2018, DOI: 10.14419/ijet.v7i4.41.24301.

(b) Book chapters:

Sl. No.	Author Name	Title	Publisher	ISBN No	Pages	Year
1	K. Debnath	Drilling of Composite Laminates using a Special Tool Point Geometry	Elsevier	9780081023976	63-76	2019
2	K. Debnath	Application of Ultrasonic-Assisted Machining Process for Making Hole in Composite Laminates	Elsevier	9780081023976	77-87	2019
3	K. Debnath, S. Roy, T. Bose, S. Adhikari, V. Sinha, and V. Rabha	A Study of Chemical Treatment of Natural Fiber and Its Effect on the Mechanical Properties of Developed Composites	Springer	978-981-13-6019-0	65-80	2019

(c) Conferences:

1. G. Bala Murali1, P. K. Sahu, B.B.V.L. Deepak., B.B. Biswal, Modified BAT Algorithm for Optimum Assembly Sequence Planning, IOP Conference Series: Materials Science and Engineering, Volume 377, conference 1

2. B. K. Khamari, P. K. Sahu, B B Biswal, Microstructure Analysis of Arc Welded Mild Steel Plates, IOP Conference Series: Materials Science and Engineering, Volume 377, conference 1
3. Comparative Study of Two Immersed Boundary Approaches in the Lattice Boltzmann Framework, Arnab Ghosh, Sambit Majumder, Ganesh Natarajan, Dipankar Narayan Basu, 7th International Conference on Fluid Mechanics and Fluid Powers, December 10-12, 2018, IIT Bombay, Mumbai.
4. Alom, N., Kumar, N., and Saha, U. K., 2019. Analyzing the effect of shaft and end-plates of a newly developed elliptical-bladed Savonius rotor from wind tunnel tests, Paper No. OMAE2019-95570, ASME 38th International Conference on Ocean, Offshore and Arctic Engineering, June 9-14, 2019, Glasgow, Scotland, UK.
5. Alom, N., Borah, B., and Saha, U. K., 2018. An insight into the drag and lift characteristics of modified Bach and Benesh profiles of Savonius rotor, 4th International Symposium on Hydrogen Energy, Renewable Energy and Materials (HEREM), June 13-14, Bangkok, Thailand (Also appears in Energy Procedia, Vol. 144, pp: 50-56).
6. M. Roy Choudhury and K. Debnath. Experimental Analysis of Failure Load in Single-Lap Hybrid Joint (Bonded/Bolted) of Green Composites. 40th MATADOR International Conference on Advanced Manufacturing and Design (MATADOR-2019), Hangzhou, China, 8-10th July, 2019.
7. P.K. Gupta and K. Debnath. Experimental Study on Electro Chemical Discharge Machining of Sustainable Materials. Third International Conference on Sustainable Energy and Environmental Challenges (3rd SEEC), Indian Institute of Technology Roorkee, Uttarakhand, India, 18-21st December, 2018.
8. S. Vishwakarma, K. Debnath, and B.K. Debnath. Thermal Performance Study of Helically Grooved Absorber Tubes for Parabolic Trough Solar Collector. Proceedings of the ASME 2018 Power Conference (ASME, POWER 2018), The Disney's Contemporary Resort, Lake Buena Vista, USA, 24-28th June, 2018, pp. V001T06A009.
9. S. Roy, and B. K. Debnath, Heat transfer enhancement of sensible energy storage for low temperature application, Proceedings of the ASME 2018 Power and Energy Conference (PowerEnergy2018), Lake Buena Vista, Florida, USA, June 24-28, 2018, pp. V001T06A010.
10. S. Roy, T. Bose, and K. Debnath. Analytical and Numerical Study of Local Damage Resonance Frequencies in Fibre Metal Laminates. 2nd International Conference on Energy, Power and Environment: Towards Smart Technology (ICEPE 2018), National Institute of Technology Meghalaya, Meghalaya, India, 1-2nd June, 2018, pp. 1-5.
11. S. Roy, T. Bose. Bicoherence Analysis based Delamination Detection in Glass Fibre Reinforced Polymer Composite Plate. Conference and exhibition on Non-destructive evaluation (NDE 2018), Navi Mumbai, India, 19-21 December, 2018.
12. N. S. V. N. Hanuman, T. Bose. Acoustic non destructive evaluation of Glass-Fibre Reinforced Plastic (GFRP) Plate. Conference and exhibition on Non-destructive evaluation (NDE 2018), Navi Mumbai, India, 19-21 December, 2018.
13. S. Roy, T. Bose, K. Debnath. Detection of Local Defect Resonance Frequencies for Defect Imaging: a Nonlinear Ultrasound Based Approach. International conference on Recenet Innovations and Developments in Mechanical Engineering, NIT Meghalaya, Shillong, India, 8-10 November, 2018.
14. M. Vashum, S. Roy, T. Bose. Shear Behaviour of the Delaminated Glass Fiber Reinforced Composite Laminates. International conference on Recent Innovations and Developments in Mechanical Engineering, NIT Meghalaya, Shillong, India, 8-10 November, 2018.

15. Sanjib Kr. Rajbongshi, D. K. Sarma, M. A. Singh, A brief review of white layer formation in hard machining with a case study, *International Conference on Recent Innovations and Developments in Mechanical Engineering (IC-RIDME 2018)*, Period 08-11-18 to 10-11-18, 2018, NIT Meghalaya, Shillong, India, Page -6, 2018.
16. M. A. Singh, D. K. Sarma, Sanjib Kr. Rajbongshi, O. Hanzel, P. Šajgalík, Investigation of machining capabilities of 2.5 vol. % MWCNT Al₂O₃ composites in μ -EDM, *International Conference on Recent Innovations and Developments in Mechanical Engineering (IC-RIDME 2018)*, Period 08-11-18 to 10-11-18, 2018, NIT Meghalaya, Shillong, India, Page -6, 2018.
17. S. Kr. Rajbongshi, D. K. Sarma, Process parameters optimization using Taguchi's orthogonal array and grey relational analysis during hard turning of AISI D2 steel in forced air-cooled condition, 4th International Conference on Mechanical and Aeronautical Engineering (ICMAE 2018), Hong Kong Society of Mechanical Engineers, Period 13-12-2018 to 16-12-2018, Bangkok, Thailand, Page -6, 2018.
18. Sushmita Deka, Ramesh Babu Pallekonda, Maneswar Rahang, Dynamic Calibration of a Three Component Accelerometer Force Balance System and Force Prediction using Deconvolution. International Conference on Recent Innovations and Developments in Mechanical Engineering, NIT Meghalaya, Shillong, India, 8-10 November, 2018.
19. Sushmita Deka, Ramesh Babu Pallekonda, Maneswar Rahang, Dynamic Calibration of a stress wave force balance under various supports and loads using finite element analysis. International Symposium on Shock Waves (ISSW 32), conducted by NUS at Engineering Avenue, NUS Singapore, During 15-19th July 2019.
20. H. Barman, R.S. Das. Simultaneous Heat and Mass Transfer Analysis in Falling Film Absorber. International Conference on Recent Innovations and Developments in Mechanical Engineering (IC-RIDME 2018), Nov 8-10, 2018.
21. P. J. Bezbaruah, R.S. Das, B.K. Sarkar. 2D CFD Analysis of Solar Air Collector with Miller Teeth Shaped Roughness International Conference on Recent Innovations and Developments in Mechanical Engineering (IC-RIDME 2018), Nov 8-10, 2018.
22. Rashed Mustafa Mazarbhuiya and Maneswar Rahang, Parametric Optimization in Photochemical Machining of Aluminium Using Taguchi Method 4th International Conference on Mechanical and Aeronautical Engineering IOP Conf. Series: Materials Science and Engineering 491 (2019) 012033 doi:10.1088/1757-899X/491/1/012033
23. Rashed Mustafa Mazarbhuiya and Maneswar Rahang, Multi-Objective Optimization of Photochemical Machining parameters using Taguchi-Grey Relational Analysis, International Conference on Emerging Trends in Mechanical Engineering (ICETME-2018), Anantapur, India.
24. Rashed Mustafa Mazarbhuiya and Maneswar Rahang, Parametric Study of Photochemical Machining of Aluminium using Taguchi Approach International Conference on Recent Innovations and Developments in Mechanical Engineering (IC-RIDME 2018), Nov 8-10, 2018.
25. S. Mohapatra, R.N. Mahapatra, B. B. Biswal, , B. Balabantray, A. K. Behera, A Deterministic Model for Remanufacturing Inventory for Reverse Supply Chain ICECNS, 19-21 October 2018
26. B K Balabantaray, R N Mahapatra and B B Biswal, " Efficient Part Recognition Method in Vision Guided Robots using Orthogonal Moments, International Journal of Engineering & Technology, ICECNS, 19-21 October 2018

5. Conference/ Workshop/ Seminar Organized:

Sl. No.	Title	Sponsored	National/ International	Duration	Faculty Responsible
1	International Conference on Recent Innovations and Developments in Mechanical Engineering	SERB, NEC, NEEPCO, NIT Arunachal Pradesh, TEQIP-III, RITES, etc.	International	November 8-10, 2018	All faculties of the department



Fig. 1: Some Photograph from International Conference on Recent Innovations and Developments in Mechanical Engineering

6. Lectures Organized:

Sl. No.	Title of the Lecture	Resource Person	Date	Faculty Responsible
1	Green Manufacturing	Prof. P.N. Rao University of Northern Iowa, USA	May 14, 2018	Dr. B. K. Sarkar, Dr. K. Debnath

7. Conferences / Workshops / Seminars / Trainings Attended by faculty members:

Sl. No.	Name of Faculty	Name of the program attended	Duration
1.	Dr. K. Debnath	10th International Conference on Mechatronics and Manufacturing (ICMM - 2019), Chulalongkorn University, Bangkok, Thailand.	January 21-23, 2019
2.	Dr. K. Debnath	TEQIP Sponsored Summer Training Program on "Active Learning for Senior Faculty" Organized by the TEQIP, Indian Institute of Technology Indore, India	July 02-06, 2018
3.	Dr. K. Debnath	TEQIP Sponsored Two Days Workshop on "Outcome Based Accreditation: Challenges and Opportunities" Organized by the TEQIP, National Institute of Technology Meghalaya, India.	September 22-23, 2018
4.	Dr. BK Debnath	"Summer Training Program on Active Learning" at IIT Indore	July, 02-06, 2018
5.	Mr. Sambit Majumder	7th International Conference on Fluid Mechanics and Fluid Powers (FMFP) 2018	3 days
6.	Sambit Majumder	TEQIP Short Term Course on "Computational Fluid Dynamics for Incompressible Flows"	5 days
7.	Dr. D.K. Sarma	"Summer Training Program on Active Learning" at IIT Indore	July, 02-06, 2018
8.	Dr. D. K. Sarma	"Workshop on Good Governance" at Gauhati University	29-01-2019
9.	Dr P Ramesh Babu	TEQIP Short Term Course on Vibration and Noise Analysis of Mechanical Systems.	(December,4-8 2018) (5 Days)
10.	Dr P Ramesh Babu	TEQIP Workshop on MEMS & NEMS (Fundamentals, Design and Fabrication).	December,17-22, 2018 (6 Days)
11.	Dr. K. Das	"Summer Training Program on Active Learning" at IIT Indore	July, 02-06, 2018
12.	Dr. R.S. Das	TEQIP Sponsored Two Days Workshop on "Outcome Based Accreditation: Challenges and Opportunities" Organized by the TEQIP, National Institute of Technology Meghalaya, India.	September 22-23, 2018
13.	Dr. M. Rahang	4th International Conference on Mechanical and Aeronautical Engineering, Bangkok, Thailand.	13-16 Dec 2018
14.	Dr. R. N. Mahapatra	Materials managements and transportation in telecom sector, Organized by OATS, Bhubeneshwar	18 th to 20 th March 2019
15.	Dr. R. N. Mahapatra	Awareness program on productivity improvement, Organized by OATS, Bhubeneshwar	22 nd to 28 th December 2018
16.	Dr. R. N. Mahapatra	International Conference on Engineering, Computers and Natural Sciences, Goa.	19 th to 21 st October 2018

8. Students Industrial Visit:

Sl. No.	Title	Sponsored	National/International	Duration	Faculty Responsible
1.	MeCL	NIT Meghalaya	National	1 day	Dr. P. R. Babu

9. Projects

(a) Sponsored Project

Sl. No.	Title of the Project	Investigators (P.I./ Co-P.I.)	Funding Agency	Funding amount	Duration (in years)	Status
1.	Modeling and Control of the hydraulically actuated Ring Inlet Guide Vane of Francis Turbine by Adaptive Neural Network Sliding mode Controller Design	Dr. B. K. Sarkar	DST-SERB	39,42,600	3years	Ongoing
2.	Design and Development of the Small Wind Turbine Combined with Solar system for Household Application	Dr. B. K. Sarkar, Dr. D. K. Sarma, Dr. S. Maity	MHDR-DIC	3.2 lakhs	2 years	Ongoing
3.	Design and development of the Nano-hydro Turbine for Standalone Household Power Generation	Dr. B. K. Sarkar, Dr. H. M. Kalita	MHDR-DIC	1.1 lakhs	2 years	Ongoing
4.	Aerodynamic performance evaluation of Savonius vertical axis rotor for small-scale power generation.	P.I: Dr. P. K Talukdar (JEC, Assam) Co-P.I.s: Md Nur Alom, Dr. D. K Rabha (JEC), Dr. V. N. Kulkarni (IITG)	TEQIP-III	4.5 Lakhs	1 yr	Ongoing
5	Standalone Solar Tea/Coffee Maker Cum Multipurpose Water Heating System	PIs: Dr. R.S. Das & S. Debbarma Co-PIs: Dr. K. Debnath & Mr. S. Nath	DIC-MHRD	8.572 lakhs	2 Years	Ongoing
6	Design and fabrication of pineapple peeler cum slicer	Dr. T. Bose	DIC-MHRD	0.75 lakhs	1.5 years	Completed
7	Design Innovation Center	Dr. D. K. Sarma, Dr. K. Das	MHRD through HUB IITGuwahati	100 lakhs	3 Years	Ongoing
8	Design of a shallow water turbine for energy harvesting, utilizing stream water in hilly places	Dr. D. K. Sarma, Dr. K. Das	DIC-MHRD	13.668 lakhs	2 yrs	Ongoing
9	A low cost thermoelectric generator based energy generating probe that can be used with existing stoves in rural villages in North-East india	Dr. D. K. Sarma	DIC-MHRD	1.1 lakh	1 yr	Completed
10	Thermal Detection of Malignancy and Estimation of Its Properties in a Human Breast	Dr. K. Das	SERB-DST	17.46 lakhs	3 years	Ongoing

Sl. No.	Title of the Project	Investigators (P.I./ Co-P.I.)	Funding Agency	Funding amount	Duration (in years)	Status
11	Application of Masking Technique and Reverse EDM for Pattern Generation by Selective Area Deposition using Powder Metallurgical Green Compact Tool and Sintered Tool Electrode	Dr. M. Rahang	SERB DST	27.84 Lakh	3 years	Ongoing
12	Design and Fabrication of Coconut Deshelling Machine for Domestic and Small-Scale Industry Applications	Dr. M. Rahang	DIC-MHRD	3.244 Lakh	1.5 years	Ongoing

(b) Consultancy

Sl. No.	Title	Consultant(s)	Client(s)	Value	Status
1.	Technical Study of Firing and Combustion of the Blend Coal in Pulverized Coal Fired Subcritical Boilers and Identification of Ill Effects (If Any) Through Three Dimensional CAD Modeling and Computational Fluid Dynamics Simulation	Prof. H.C. Das, Prof. B.B. Biswal and Dr. B.K. Debnath	M/S Vedanta Limited	20 Lakhs	Completed
2	Testing of materials	Dr. D.K. Sarma	CPWD, Shillong	35,400	Completed
3	Testing of materials	Dr. D.K. Sarma	Mr. C. Swakmie, Shillong	36,580	Completed
4	Third part inspection of JCB	Dr. D.K. Sarma	State Investment Programme Management & Implementation Unit, Govt. of Meghalaya	87,000	Completed
5	Material Testing	Dr. D.K. Sarma	State Investment Programme Management & Implementation Unit, Govt. of Meghalaya	47,790	Completed
6	Testing of materials	Dr. D.K. Sarma	CPWD, Shillong	37,760	Completed
7	Testing of materials	Dr. D.K. Sarma	MPWD, Shillong	56,640	Completed
8	Testing of materials	Dr. D.K. Sarma	B.D. Marbaniang, Shillong	47,790	Completed
9	Testing of materials	Dr. D.K. Sarma	MPWD, Shillong	51,920	Completed
10	Work time motion study	Dr. R. N. Mahapatra	State Rural Employment Society, Meghalaya	15,93,000	Ongoing

10. Awards won/ recognition received at the national and international level:

- Md Nur Alom:** DST-SERB International Travel Support
- Md Nur Alom:** ASME Outreach to Engineers Forum Scholarship
- Dr. K. Debnath:** Recipient of “Excellent Research Contribution Award” for the year 2018-19 on the Occasion of Institute Day of NIT Meghalaya, April 01, 2019.

4. **Dr. K. Debnath:** Recipient of “Excellent Oral Presentation Award” of the Session during “10th International Conference on Mechatronics and Manufacturing (ICMM-2019)” Held at Chulalongkorn University, Bangkok, Thailand, January 21-23, 2019.
5. **Dr. R. N. Mahapatra,** “Best Engineer 2018 Award”, by IJRULA accredited with ILTC, Malaysia.

11. Laboratories Setup:

Sl. No.	Laboratory	Major Equipment & Software	Location	Cost (Rupees in lakhs)
1.	Fluid Mechanics	Pipe Friction for Laminar and Turbulent Flow Make: Finite Technologies Model No.: HD-150.01 Pipe Friction for Laminar and Turbulent Flow Make: Finite Technologies Model No.: HD-150.01	Acedemic Block	1,52,250.00
2.	Fluid Mechanics	Aerodynamic Trainer Make: Finite Technologies Model No.: HD 225	Academic Block	12,49,500.00
3.	Fluid Mechanics	Measurement of Jet apparatus Make: Finite Technologies Model No.: HD 150.08	Academic Block	1,31,250.00
4.	Strength of Material	Universal Testing Machine Model: UNITEK 9450 Make: FIE	Academic Block	18,64,400.00
5.	Strength of Material Laboratory	UltraSonic Flaw Detector with Phase Array Capability Model: Omniscan Make: Olympus Scientific Solutions Americas Corps	Academic Block	27,14,250.00
6.	Thermal Science	Pressure Gauge Maker: Wika Model: 213.53.63 Range:0-7 kg per cm square Dial size: 63mm Measuring System: Copper Alloy	Administrative Block	1,917.00
7.	Welding Shop	Spot & Projection Welding Machine. Model: PPN 63 Make: CEA	Academic Block	10,81,500.00
8.	Tool Room	Wire Electric Discharge Grinding Setup/ Device(WEDG) Compatible with Hyper-15 Motion controller	Academic Block	9,45,000.00
9.	Welding Shop	3-Phase Thyristor (SCR) Power Drive Full Automatic With Current Limit For Precision Control(Steeple) Maker: Voltam	Academic Block	50,400.00

12. Administrative Responsibilities Held:

Sl. No.	Name of Faculty	Responsibilities	Duration
1	Dr. Maneswar Rahang	Lab-In-Charge, Material Science Lab	2.5
2	Dr. Tanmoy Bose	Lab-In-Charge, Strength of Materials Lab	2.5

S1. No.	Name of Faculty	Responsibilities	Duration
3	Dr. Pallekonda Ramesh Babu	In-Charge, Metrology and Instrumentation Lab	2.5
4	Dr. Subhendu Maity	Lab-In-Charge, Fluid Mechanics Lab	3
5	Dr. D.K.Sarma	Lab-In-Charge, Advanced Manufacturing Lab	4
6	Dr. B.K.Debnath	1. Lab-In-Charge, Thermal Science Lab 2. External Member, Departmental Research Committee, Mathematics 3. Convener, Institute Start-up Committee (TEQIP-III)	3 1 1
7	Dr. Koushik Das	Lab-In-Charge, Computational Lab	4
8	Dr. K. Debnath	In-charge, Mechanical Workshop	4
9	Dr. B.K.Sarkar	Lab-In-Charge, Theory of Machines Lab Head, Mechanical Engineering Department PIC, Center for Robotics and Mechatronics Chairman, Departmental Research committee Member, Academic probation committee	3
10	Dr. R. S. Das	BTP, MTP Coordinator	4
11	Prof. H. C. Das	Chairman, Library committee	
12.	Dr. R. N. Mahapatra	Chairman, On campus business committee Convenor, CPDA committee Chairman, Food committee, Convocation	

13. Membership of Professional Bodies:

S1. No.	Name of Faculty	Member of
1	Prof. Bibhuti Bhushan Biswal	1. Fellow, IE (I) 2. Member, ASME 3. Sr. Member, IEEE 4. Life Member, ISTE 5. Life Member, Association for Machines and Mechanisms (AMM) 6. Member, ISTAM 7. Member, International Association of Computer Science and Information Technology (IACSIT) 8. Member, International Association of Engineers (IAENG)
2	Dr. Bikash Kumar Sarkar	1. ASME Member 100784361, 2016 2. IEEE, IEEE Control Systems Society Member 92662020, 2016 3. NSFMFP Life Member, LM631 4. ISHMT Life Member, 1064
3	Dr. Biplob K Debnath	1. Member, ASME (101982384) 2. Associate Member, IE(I) - (AM159023-8)
4	Md Nur Alom	ASME (No:102089520)
5	Mr. Sambit Majumder	Associate Member, IE(I)
6	Dr. D.K. Sarma	Life member, Indian Welding Society (IWS)
7	Dr. R. S. Das	Associate Member, ASHRAE (MBR# 8225241)
8	Dr. R. N. Mahapatra	ISTE, Life member IACSIT, Member

14. List of Achievements and Activities:

Invited Talk:

- **Md. Nur Alom:** On the topic of 'Problem Solving Approaches Using CFD Tools' in 5th National Workshop on Research Methodology in Fluid Mechanics, Jointly Organized by Department of Mechanical Engineering, IIT Guwahati & National Society of Fluid Mechanics and Fluid Power, India, held at IIT Guwahati during June 22-23, 2019.

Institute outside activities:

- **Dr. D. K. Sarma**, External Examiner, M Tech thesis evaluation, NIT Arunachal Pradesh, 9-5-19 to 11-5-19
- **Dr. D. K. Sarma**, Chairman, Project Review Committee (PEC), DSIR, GOI, at IITGuwahtai, 22-04-2019 and Member, Project Review Committee (PEC), DSIR, GOI, at IITGuwahtai, 17-06-2019.
- **Dr. D. K. Sarma**, Member, Short listing committee for faculty recruitment, NIT Arunachal, 8-1-19 to 9-1-2019
- **Prof. H. C. Das**, External Examiner, M Tech thesis evaluation, NIT Arunachal Pradesh, 9-5-19 to 11-5-19

Department of Civil Engineering

1. Brief Introduction to the Department:

NIT Meghalaya's Civil Engineering department first began its session from July 2012. The Department, which has an intake capacity of 30 students, offers 4 years (eight semesters) B. Tech programme in Civil Engineering. Since 2014, the Department has initiated the Ph.D programme. Additionally, the department has started an M.Tech programme in Structural Engineering since July 2018 with an intake capacity for 20 students of which 15 students have enrolled in the programme.

The academic activities of the Department emphasizes on deep understanding of the fundamental principles on Civil Engineering, development of creative ability to handle the challenges of Civil Engineering and the analytical ability to solve problems which are interdisciplinary in nature. The Department also encourages its students to engage in extra-curricular and co-curricular activities, essential for their own personal development apart from nurturing team spirit and developing organizational skills. The faculty members of the Department are involved in high-quality researches and they continue to explore new frontiers of breakthrough technical knowledge, recent inventions and discoveries. The findings through these researches on latest knowledge are being imparted to the students so that they are acquainted with the latest trends of the emerging engineering world. The Department actively promotes curriculum development activities by updating existing courses, develops new courses and prepares updated resource material for teaching. The Department also aims to contribute to interdisciplinary academic and research activities of NIT Meghalaya.

Moreover, the department also encourages both students and faculty members, along with all others concerned, in working for the development of Meghalaya, the North East region and the nation as a whole.

Vision:

A Centre of Excellence of global repute in Civil Engineering education, research and consultancy by producing quality manpower and creating knowledge and technologies in these fields and contributing to the economic development of the region through extension activities.

Mission:

- To impart quality education in the fields of Civil Engineering and allied areas through academic programs at both UG and PG levels.
- To carryout research for advancement of knowledge and development of technologies in the fields of Civil Engineering and allied areas for the benefit of the society.
- To participate in extension activities for the socio-economic development of the region.

2. Programmes Offered:

- Four year (Eight semester) B.Tech Degree with 30 intake capacity per year.
- Two year (Four semester) M.Tech Degree in Structural Engineering with 20 intake capacity.
- Ph.D. programme with the specialization of Structural, Geotechnical, and Water Resources Engineering.

3. Faculty Profile:

Name	Designation	Qualification	Specialization	Date of Joining	Ph.D. guidance	Remarks
Dr. Comingstarful Marthong	Associate Professor	Ph.D	Structural Engineering	January 10, 2013	03 Ongoing	
Dr. M. Longshithung Patton	Assistant Professor	Ph.D	Structural Engineering	October 06, 2013	02 Ongoing	
Dr. Hriday Mani Kalita	Assistant Professor	Ph.D	Water Resources Engineering	August 12, 2014	01 Ongoing	
Dr. Smrutirekha Sahoo	Assistant Professor	Ph.D	Geotechnical Engineering	November 02, 2015	01 Ongoing	
Dr. Susmita Sharma	Assistant Professor	Ph.D	Geotechnical Engineering	May 10, 2016	01 Ongoing	
Dr. Debabrata Podder	Assistant professor	Ph.D	Structural Engineering	June 23, 2016	-	
Dr. Dibyendu Adak	Assistant Professor	Ph.D	Structural Engineering	January 03, 2018	-	
Mr. Suman Kumar	Trainee Teacher	M.Tech	Structural Engineering	July 21, 2014	NA	Ph.D Pursuing
Ms. Rubi Chakraborty	Trainee Teacher	M.Tech	Geotechnical Engineering	July 21, 2014	NA	Ph.D Pursuing
Mr. Supratim Kaushik	Trainee Teacher	M.Tech	Transportation systems Engineering	20 July, 2015	NA	Ph.D Pursuing

4. List of Publications:

(a) Journals:

Year 2019:

1. **Comingstarful Marthong** (2019). "Behavior of repaired RAC beam-column joints using steel welded wire mesh jacketed with cement mortar". *Advance Concrete Construction*, Techno Press, Accepted.
2. Hopeful Syiemiong, **Comingstarful Marthong** (2019). "Effect of moisture on the compressive strength of low-strength hollow concrete blocks". *Computer and Concrete*, Techno Press. 23(4), pp. 267-272.
3. **Comingstarful Marthong** (2019). "Rehabilitation of exterior RC beam-column connections using epoxy resin injection and galvanized steel wire mesh", *Earthquake and Structures*, Techno Press. 16 (3), pp. 253-263.
4. **H. H. Kalita**, R. Das, A. Hajong, N. Kumar, D. Kharnaor, H. C. Dkhar, Experimental and numerical flow simulation over weirs, Water Resources, Accepted for publication.
5. **H. M. Kalita**, A simple and efficient numerical model for simulating one dimensional dam break flows, *International Journal of Hydrology Science and Technology*, In press.

6. D. Podder, O.P. Gupta, S. Das, N.R. Mandal, Experimental and numerical investigation of effect of welding sequence on distortion of stiffened panels, *Welding in the World*, 2019, Accepted, <https://doi.org/10.1007/s40194-019-00747-8>.
7. D. Adak, S. Mandal (2019). Strength and Durability Performance of Fly Ash-Based Process-Modified Geopolymer Concrete. *Journal of Materials in Civil Engineering*, © ASCE, Vol. – 31, Issue No – 9, `Page No - 04019174-1 to 04019174-8.

Year 2018:

1. **Comingstarful Marthong**, Risukka N. Pyrbota, Stevenly L. Trona, Lam-I D. Mawroha, Md. Sakil A. Choudhury and Ganesh S. Bhartia (2018). "Micro-concrete composites for strengthening of RC frame made of recycled aggregate concrete", *Computers and Concrete*, Techno Press, 22 (5), pp. 461-468.
2. **Comingstarful Marthong** (2018). Behaviour of recycled aggregate concrete beam-column connections in presence of PET fibers at the joint region, *Computers and Concrete*, Techno Press, 2018, 21(6), pp. 669-679.
3. **D. Podder**, S. Das, N. R. Mandal, Distortions in Large Stiffened Ship Panels caused by Weldings: An Experimental Study, *Journal of Ship Production and Design*, 2018, Accepted, <https://doi.org/10.5957/JSPD.180019>.
4. M. Maiti, M. Sarkar, S. Xu, S. Das, **D. Adak** (2018). Application of silica nanoparticles to develop faujasite nano-composite for heavy metal and carcinogenic dye degradation. *Environmental Progress & Sustainable Energy*, Vol. – 38, Issue - s1, Page no - S15 - S23.
5. P. Pathak, **S.Sharma**, Sorption isotherms, kinetics and thermodynamics of the contaminants onto Indian soils, *Journal of Environmental Engineering*, ASCE, Vol.144 (10), 2018.
6. N.Koshy, S.S U, **S.Sharma**, J. Joseph, V.Sharma, D.N. Singh, B. Jha, Characterization of the Soil Samples from the Lonar Crater, India, *Geotechnical Engineering Journal of the SEAGS & AGS-SEA*, Vol.49(10), 2018.

(b) Book chapters:

1. **Comingstarful Marthong** (2018). Use of Polyethylene teraphthalate fibers for strengthening of reinforced concrete frame of low grade aggregate "Earthquakes - Forecast, Prognosis and Earthquake Resistant Construction", InTech - open science, <http://dx.doi.org/10.5772/intechopen.76616>, pp.285-297. Edited by: Valentina Svalova.
2. **Chakraborty R.**, Dey A. (2019). A Comparison of 1D and 2D Spatial Variability in Probabilistic Slope Stability Analysis. In: Sundaram R., Shahu J., Havanagi V. (eds) *Geotechnics for Transportation Infrastructure*. Lecture Notes in Civil Engineering, vol 28. Springer, Singapore
3. **Chakraborty R**, Dey A, (2019). Stochastic Modeling of the Spatial Variability of Soil. *Advances in Numerical Methods in Geotechnical Engineering*, Chapter 11, Publisher: Springer Nature Switzerland.
4. **Chakraborty R**, Dey A, (2019). Effect of Toe Cutting on Hillslope Stability. In: I.V. A., Maji V.(eds) *Geotechnical Applications*. Lecture Notes in Civil Engineering, vol 13. Springer, Singapore, pp 191-198.
5. P. Pathak, **S.Sharma**, (2018). Sorption isotherms, kinetics and thermodynamics of the contaminants onto Indian soils, *Journal of Environmental Engineering*, ASCE, Vol.144 (10).

6. **Sharma S.**, 2019. Uptake, Transport, and Remediation of Strontium, *Strontium Contamination in the Environment*, ISBN/ ISSN No. 978-3-030-15313-7, Springer International Publishing.
7. **Sahoo S.**, Manna B., Sharma K.G. (2019) Seismic Response of a Steep Nailed Soil Slope: Shaking Table Test and Numerical Studies. In: Sundaram R., Shahu J., Havanagi V. (eds) Geotechnics for Transportation Infrastructure. Lecture Notes in Civil Engineering, vol 28. Springer, Singapore. (DOI: https://doi.org/10.1007/978-981-13-6701-4_39), (Print ISBN978-981-13-6701-4, Online ISBN978-981-13-6701-4)

(c) Conferences:

Year 2019:

1. **C. Marthong**, D Sutnga, O Kharshandi, I J Khryiemmujat and A Shangpliang (2019). Mechanical Strength of Galvanized Steel Wire Mesh (GSWM) as a Strengthening Material of Short RC Column, 4th International Conference on Mechanical and Aeronautical Engineering , IOP Conf. Series: Materials Science and Engineering , **491**, doi:10.1088/1757-899X/491/1/012014.
2. J Sharailin Gidon and **Smrutirekha Sahoo** (2019). "Stability of slope during rainfall: A finite element approach." Seventh Indian Young Geotechnical Engineers Conference, Chennai, India, March 15-16, 209-214.

Year 2018:

1. D. Dutta, **H. M. Kalita**, Performances of Straight head and T-head groynes as river training structures, 4th International Conference on Mechanical and Aeronautical Engineering, Period -13-16 December, Place -Bangkok, Page -6, 2018.
2. **Sahoo, S.**, Manna, B. andSharma, K.G. (2018). "Seismic responseof a steep nailed soil slope: Shaking table test and numerical studies."International Symposium on Geotechnics of Transportation Infrastructure (ISGTI 2018), IIT Delhi, India, April 07-08.

5. Patents:

1. A blast simulator for testing of specimens of variable dimensions (filed National (Application No.: 201831017926) and international (Application No.: PCT/IB2019/053914) By **Mr. Suman Kumar**.
2. Bamboo for construction of frangible structures for aviation industry (filed National (Application No.: 201831024409) and international (Application No.: PCT/IB2019/054012) By **Mr. Suman Kumar**.

6. Conference/ Workshop/ Seminar Organized:

- Short term course on "Structural Detailing of RCC and Steel Structures" 14th – 18th January 2019.

7. Conferences / Workshops / Seminars / Trainings Attended by faculty members:

Sl. No.	Name of Faculty	Name of the programme attended	Duration
1.	Dr. Comingstarful Marthong	Attended 4th International Conference on Mechanical and Aeronautical Engineering, Dec 13-16, 2018, Bangkok, Thailand.	4 days

Sl. No.	Name of Faculty	Name of the programme attended	Duration
2	Dr. Hriday Mani Kalita	1. Land erosion in Brahmaputra and Barak Basin - Causes & Remedies at Guwahati on 15/02/2019 2. Two days workshop on Outcome Based Accreditation (Challenges and Opportunities) at NIT Meghalaya on 22/09/2018-23/09/2018. 3. Summer training program on Active Learning for Senior Faculty at IIT Indore on 02/07/2018-06/07/2018 4. 4th International Conference on Mechanical and Aeronautical Engineering, Period -13-16 December, Place -Bangkok, Page -6, 2018.	1 day 2 days 5 days 4 days
3.	Dr. Smrutirekha Sahoo	1. Attended Seventh Indian Young Geotechnical Engineers Conference (7IYGEC-2019) by the organizing committee of 7iygec 2019 held at NIT Silchar on 15- 16th March, 2019. 2. Participated in a two days' workshop on Outcome Based Accreditation: Challenges and Opportunities for Faculties & Trainee Teachers on 22 nd and 23 rd September 2018 at NIT Meghalaya.	2 days 2 days
4.	Dr. Dibyendu Adak	Attended Advance Course on Corrosion of Reinforcement and its Control, at CSIR-SERC Chennai from 29-30 November, 2018	2 days
5.	Mr. Suman Kumar	1. Introduction to CFD for Incompressible Flows 2. Outcome Based Education	5 days 2 days
6.	Mr. Supratim Kaushik	Outcome Based Education	2 days

8. Invited Talks Delivered:

- Dr. Hriday Mani Kalita, One day Workshop on "Advancement in Water Modelling tools" on 15 may 2019 at IIT Guwahati.

9. Projects

(a) Sponsored Project:

Sl. No.	Title of the Project	Investigators (P.I. / Co-P.I.)	Funding Agency	Funding amount	Duration	Status
1	Cost effective combination of T-head groynes for river bank protection	Dr. Hriday Mani Kalita (PI)	DST, SERB	Rs. 19,16,150	2016-19	Ongoing
2	Bioremediation of waste water employing a low cost waste water cell	Dr Susmita Sharma (PI)	MHRD	3.5lakhs	1.4	ongoing
3	Structural Behaviour of Lean Duplex Stainless Steel Tubular Beams with Web Openings	Dr.M. Longshithung Patton (PI)	SERB-DST, GOI, New Delhi	19.04 Lakhs	2017-2020 36 months	Ongoing
4	Instrumentation, Real Time Monitoring and Remediation of a steep soil slope stability in Meghalaya	Dr. S.Sahoo	SERB, DST	35.035 Lakhs	2019-2022	Ongoing
5	Feasibility study on use of locally available material (low-grade aggregates) for road construction (BRO project Pushpak in Mizoram)	Dr. C. Marthong (PI)	BRO, Shillong	4.95 lakhs	2017-18	Ongoing

(b) Consultancy:

Sl. No.	Title	Consultants	Client(s)	Value	Status
1	Testing of Boulders, coarse agg. and cement.	Dr. C. Marthong & Dr. M.L.Patton	CPWD Shillong.	5,01,500.00	completed
2	Testing of Concrete Cubes.	Dr. C. Marthong & S.Sahoo	PGCIL, Shillong	10,620.00	completed
3	Testing of coarse agg.	Dr. C. Marthong	NCC Kolkata	5,900.00	completed
4	Testing of Cement.	Dr. C. Marthong & Dr. M.L.Patton	PGCIL, Shillong	18,360.00	completed
5	Testing of Concrete Cubes and Cement.	Dr. C. Marthong & S.Sahoo	PGCIL, Shillong.	27,000.00	completed
6	Testing of Cement.	Dr. C. Marthong & Dr. M.L.Patton	RITES Ltd.	20,060.00	completed
7	Testing of Concrete Cubes, Cement and mix design	Dr. C. Marthong & Dr. M.L.Patton	PGCIL, Shillong.	77,290.00	completed
8	Testing of Boulders, concrete cubes, water. and cement	Dr. C. Marthong & Dr. M.L.Patton	CPWD Shillong	433,945.00	completed
9	Testing of Cement	Dr. C. Marthong & Dr. M.L.Patton	RITES Ltd.	10,030.00	completed
10	Structural design of OTM ACCN for ALH SQN (PH-11)	Dr. C. Marthong & Dr. M.L.Patton	Dinjan Military station (Job no: E/1994)	690,000.00	completed
11	Testing of Concrete Cubes	Dr. C. Marthong	PGCIL, Shillong	3,540.00	completed
12	Testing of Concrete Cubes	Dr. C. Marthong & Dr. M.L.Patton	PGCIL, Shillong	12,390.00	completed
13	Testing of Concrete Cubes	Dr. C. Marthong	PGCIL, Shillong	7,080.00	completed
14	Mix design	Dr. C. Marthong	M/S Blackberry Pvt Ltd.	35,400.00	completed
15	Testing of Concrete Cubes, Cement and bricks	Dr. C. Marthong & Dr. M. L. Patton	PGCIL, Shillong	57,820.00	completed
16	Testing of Boulders, fine agg. And cement	Dr. C. Marthong & Dr. M. L. Patton	PGCIL, Shillong	16,520.00	completed
17	Testing of Cement	Dr. C. Marthong	RITES Ltd.	10,030.00	completed
18	Testing of Cement for RITES Ltd.	Dr. C. Marthong	RITES Ltd.	10,030.00	completed
19	Testing of Concrete Cubes	Dr. C. Marthong & Dr. M. L. Patton	PGCIL, Shillong	7,080.00	completed
20	Testing of Cement	Dr. C. Marthong	for NIT Meghalaya	20,060.00	completed
21	Testing of Concrete Cubes	Dr. C Marthong & Dr. M. L. Patton	PGCIL, Shillong	36,580.00	completed
22	Testing of Coarse agg., Fine agg. & Cement	Dr. C Marthong & Dr. M. L. Patton	NERCCDIP, Meghalaya	20,650.00	completed
23	Testing of concrete beams	Dr C Marthong	Airport Authority of India, Shillong	7,080.00	completed

Sl. No.	Title	Consultants	Client(s)	Value	Status
24	Testing of concrete cubes	Dr C Marthong	NERCCDIP, Meghalaya	3,540.00	completed
25	Testing of cement	Dr. C Marthong & Dr. M. L. Patton	CPWD Shillong.	40,120.00	completed
26	Testing of cement and concrete cubes	Dr. C Marthong & Dr. M. L. Patton	CPWD Shillong	27,140.00	completed
27	Testing of Concrete Cubes	Dr. C Marthong & Dr. M. L. Patton	PGCIL, Shillong	10,620.00	completed
28	Testing of Concrete Cubes	Dr. C Marthong	PGCIL, Shillong	8,850.00	completed
29	Testing of concrete cubes	Dr. C Marthong	St Teresa International School, Shillong	2,000.00	completed
30	Testing of cement	Dr. C Marthong & Dr. M. L. Patton	CPWD Shillong.	10,030.00	completed
31	Testing of Concrete Cubes	Dr. C Marthong & Dr. M. L. Patton	PGCIL, Shillong	10,620.00	completed
32	Testing of Coarse Agg. Bricks	Dr. C Marthong & Dr. M. L. Patton	PGCIL, Shillong	20,650.00	completed
33	Testing of Cement	Dr. C Marthong & Dr. M. L. Patton	PGCIL, Shillong	10,030.00	completed
34	Testing of Fine agg, Coarse agg & Cement	Dr. C Marthong	PGCIL, Shillong	64,310.00	completed
35	Testing of Concrete Core cutting samples for PGCIL, Shillong	Dr. C Marthong & Dr. M. L. Patton	PGCIL, Shillong	37,170.00	completed
36	Testing of Vrick, Cement, Concrete cube & water	Dr. C Marthong	CPWD, Shillong	52,805.00	completed
37	Testing of Bricks , Cement, concrete cubes	Dr C Marthong	PGCIL, Shillong	40,120.00	completed
38	Vetting of structural design	Dr. C Marthong & Dr. M. L. Patton	NEIAH, Shillong	1,47,500.00	completed
39	Vetting of DPR "Greater Sohra water supply" scheme	Dr. C Marthong, Dr. H M Kalita, Dr. D Podder & Dr. D Adak	PHE, Govt. of Meghalaya	18,75,000.00	completed
40	Vetting of DPR "Laying of new feeder mains under Tura Phase- I&II water supply scheme	Dr. C Marthong, Dr. H M Kalita, Dr. D Podder & Dr. D Adak	Govt. of Meghalaya	26,24,250.00	completed
41	Testing of cement, concrete cubes	Dr. C Marthong	PGCIL Shillong	30,680.00	completed
42	Testing of cement, concrete cubes	Dr. C Marthong & Dr. M. L. Patton	PGCIL Shillong	33,630.00	completed
43	Testing of cement, concrete cubes	Dr. C Marthong & Dr. M. L. Patton	PGCIL Shillong	27,140.00	completed
44	Testing of cement, concrete cubes	Dr. C Marthong	PGCIL Shillong	40,170.00	completed

Sl. No.	Title	Consultants	Client(s)	Value	Status
45	Testing of bricks, concrete cube	Dr. C Marthong & Dr. M. L. Patton	PGCIL, Shillong	27,730.00	completed
46	Testing of concrete cube, fine agg, coarse agg.	Dr. C Marthong	NERCCDIP, Shillong	31,860.00	completed
47	Testing of Concrete Cubes	Dr. C Marthong & Dr. M. L. Patton	PGCIL, Shillong	12,390.00	completed
48	Cantonment Board, Shillong	Dr. C Marthong & Dr. M. L. Patton	Cantontment Board, Shillong	100,000.00	Completed
49	Testing of cement & concrete cubes	Dr. C Marthong	PGCIL, Shillong	20,650.00	completed
50	Testing of Cement.	Dr. C Marthong & Dr. M. L. Patton	PGCIL, Shillong	40,120.00	completed
51	Testing of Concrete Cubes	Dr. C Marthong	PGCIL, Shillong	8,850.00	completed
52	Vetting Report on Up-gradation of Mawsmai-Shella road from km 8/00 (Laityra village) to km 15/500 (Kynrem falls)	Dr. ML Patton, Dr. S. Sahoo and Dr. S. Sharma	Public works (Roads & Buildings) Department, Special Works Branch, Government of Meghalaya	11,50,000.00	Completed
53	Vetting Report on DPR regarding Construction including Metalling and Blacktopping of Pynursla-Latangrian Road towards Mawlynnong (Length = 12.781 km)	Dr. ML Patton, Dr. S. Sahoo and Dr. S. Sharma	Public works (Roads & Buildings) Department, Special Works Branch, Government of Meghalaya	22,50,000.00	Completed
55	Soil testing	Dr. S. Sahoo	D.D.U., Community college, NEHU	Rs. 23,400.00	Completed

10. Laboratories Setup:

Sl. No.	Laboratory	Major Equipment & Software	Location	Cost (Rupees in lakhs)
Dr. Susmita Sharma	Environmental Engineering Laboratory	<ol style="list-style-type: none"> 1. Laboratory Refrigerator with accessories 2. Microbial Hood with Laminar Flow Prism 3. Vortex Mixer 4. Water Purification System 5. Digital Colony Counter 6. Hot plate 7. Vertical Autoclave with low water level cut off 8. Fume Hood 9. Research Centrifuge 10. Orbital Shaker Incubator 	Environmental Engineering Laboratory	Rs 14.74
		x. Atomic Absorption Spectrophotometer		Rs.16.21

11. Administrative Responsibilities Held:

Sl. No.	Name of Faculty	Responsibilities	Duration
1	Dr. C. Marthong	1. Faculty-in-charge of Structural Engineering Laboratory 2. Faculty Advisor for M.Tech Students 3. Chairman under Unnat Bharat Abhiyan (UBA) (formerly known as Village adoption committee) in identifying villages for technical support.	1 year 1 year
2	Dr. M. Longshithung Patton	1. Head of Department of Civil Engineering and decision related to academic matters of CE Dept. 2. EAP coordinator under TEQIP-III 3. Chairman, Furniture Committee 4. Faculty-in-charge of Computational Lab	2 year 3 year 1 year 1 year
3	Dr. Hriday Mani Kalita	1. Faculty-in-charge of Water Resource Engineering Laboratory 2. Member-Branch change committee, Member-Planning and preparation committee for shifting to the permanent campus, Convenor-Grade evaluation committee, Member-On campus business committee, Member-Under graduate program evaluation committee,	1 year 1 year
4	Dr. Smrutirekha Sahoo	1. Faculty-in-charge of Geotechnical Engineering Laboratory 2. Faculty Advisor of B.Tech 2nd year, Civil Engineering 3. B.Tech Project Co-ordinator for the 4th year students 4. Member of the Departmental screening committee for the selection of non-faculty positions at NIT Meghalaya	1 year 1 year 1 year 1 year
5	Dr. Susmita Sharma	1. Faculty-in-charge of Environmental Engineering Laboratory 2. Faculty Advisor for 4 th Year B.Tech Students 3. Institute Grievance committee Member	1 year 1 year 1 year
6	Dr. D. Podder	1. Faculty-in-charge of Engineering Laboratory 2. Faculty Advisor for 3 rd Year B.Tech Students 3. Faculty-in-charge for Library related activities of CE Dept.	1 year 1 year
7	Dr. D. Adak	1. Faculty Advisor for 1 st Year B.Tech Students 2. Routine Committee member. 3. Faculty-in-charge of Material Laboratory 4. Faculty-in-charge for Placement activities of CE Dept.	1 year 1 year 1 year

12. Membership of Professional Bodies:

Sl. No.	Name of Faculty	Member of
1	Dr. Smrutirekha Sahoo	Life member of IGS, Membership for the period of 2018-2021 of ISSMGE
2	Dr. C. Marthong	Life member of Institution of Engineers India

13. Any Other Notable Information:

The Department faculties were also involved in service as requested by other organization as mentioned below:

Faculty	Extension Activity	Role	Contributions
Dr. C. Marthong	Investigating member	Technical member	Helping the Police Department, Govt. Of Meghalaya for investigation of existing road at Jowai NH.
	Recruitment of Assistant Engineer, Meghalaya Forest Services (Civil) for MPSC, Shillong	Moderation of question paper	Responsible for moderating question paper recruitment of Assistant Engineer and Meghalaya Forest Services (MFS) for Meghalaya Public Service commission, Govt. of Meghalaya.

Faculty	Extension Activity	Role	Contributions
Dr. Sahoo	Recruitment of Civil Engineering Consultant at North Eastern Council, Govt. of India.	Question setter, invigilator and evaluator	Question setter, invigilator and evaluator of the Examination conducted for the recruitment of Civil Engineering Consultant at North Eastern Council, Govt. of India.
	Reviewed three Journal papers from Journal of Geotechnical and Geological Engineering, Journal of Mathematics and Computers in Simulation And Journal of Pipeline Systems - Engineering and Practice	Reviewer	Reviewed three Journal papers from Journal of Geotechnical and Geological Engineering, Journal of Mathematics and Computers in Simulation And Journal of Pipeline Systems - Engineering and Practice
	Technical committee members of Seventh Indian Young Geotechnical Engineers Conference (7IYGEC-2019) by the organizing committee of 7iygec 2019 held at NIT Silchar on 15-16th March, 2019	Reviewer of submitted papers, Chairing a session, etc.	Reviewed 3 nos. of technical papers for the conference and also chaired a session in the conference as a technical committee member of 7IYGEC-2019

14. List of achievements and activities in the Civil Dept. during the Year 2018-19:

The Department of Civil Engineering organised a Short Term Course on "*Structural Detailing of RCC and Steel Structures*" for the participants from Academic or Industry organization from 14th to 18th January 2019. Dr. C Marthong was the coordinator for the programme. The course delivers the knowledge necessary to produce robust and rigorous detailing and scheduling of structural concrete for building structures as per relevant codal specification in order to avoid the most common design mistakes in detailing practice. Around 30 participants consisting of Engineers and students attended the programme. The programme was inaugurated in presence of Prof. B. B. Biswal, Director, NIT Meghalaya.

Department of Physics

1. Brief Introduction to the Department:

The Department of Physics with its induction has evolved by offering two years full time Master of Science programme. The department has also progressed in furnishing the Doctor of Philosophy programme and so far the degree has been awarded to 2 nos. of aspirants. In addition, the department supports the engineering branches of the institute by floating the foundation courses for B.Tech (1st year) and advanced science electives for B.Tech (2nd Year onwards) students. The department is well equipped with experimental laboratories which make corroboration with classroom physics for both under graduate and post graduate level. The functionality and progressiveness of the department is accredited to young, dynamic and potential faculty pool with necessary support from the staff.

2. Programmes Offered:

- Master of Science (Physics)
- Doctor of Philosophy (Physics)

3. Faculty Profile:

Name	Designation	Qualification	Specialization	Date of Joining	Ph.D. guidance
Prof. Ayon Bhattacharjee	Professor	PhD	Experimental Condensed Matter Physics	24 July 2013	7 awarded 1 submitted 4 ongoing
Dr. Arpita Nath	Assistant Professor	PhD	Laser Matter Interaction	03 October 2013	1 ongoing
Dr. K. Senthilkumar	Assistant Professor	PhD	Condensed Matter Physics	14 June 2015	1 ongoing
Dr. Tribedi Bora	Assistant Professor	PhD	Experimental Condensed Matter Physics	06 July 2015	1 ongoing
Dr. W. L. Reenbohn	Assistant Professor	PhD	Nonequilibrium Statistical Mechanics	02 November 2015	1 ongoing

4. List of Publications:

(a) Journals:

1. S. K. Srivastava, B. Samantaray, T. Bora and S. Ravi, Magnetic and Electrical Properties of Mn Substituted (La_{0.85}Ag_{0.15})CoO₃ Compounds, Journal of Magnetism and Magnetic Materials, 605-612, 474, 2019.
2. M Lyndem, R Dabrowski, A Bhattacharjee, Comparative Raman study of two laterally fluorinated LC compounds having different terminal chains, Liquid Crystals 46 (7), 1145-1155, 2019
3. D Bhattacharjee, R Mishra, R Dabrowski, A Bhattacharjee Experimental and DFT generated Raman study of two bent-core monomeric liquid crystalline compounds, Liquid Crystals 46 (3), 367-375, 1, 2019

4. R Mishra, A Bhattacharjee, D Bhattacharjee, KN Singh, PR Alapati, Temperature-dependent Raman study of pure and silver nanoparticles dispersed N-(4-n-heptyloxybenzylidene)-4'-n-butyylaniline (7O. 4), Liquid Crystals 46 (3), 327-339, 2019
5. D Gupta, A Bhattacharjee, Detailed investigation of N-(4-n-pentyl-oxybenzylidene)-4'-n-hexylaniline liquid crystal molecule, Journal of Molecular Structure 1196, 66e77, 2019
6. D Bhattacharjee, TK Devi, R Dabrowski, A Bhattacharjee, Birefringence, polarizability order parameters and DFT calculations in the nematic phase of two bent-core liquid crystals and their correlation, Journal of Molecular Liquids 272, 239-252, 1, 2018
7. K Bhuyan, A Bhattacharjee, PR Alapati, Sensing of ammonia gas by undoped and aluminum-doped tin oxide nanoparticles by Raman spectroscopy, Pramana 91 (3), 32, 2018
8. R Mishra, A Bhattacharjee, D Bhattacharjee, KN Singh, B Gogoi, Temperature-dependent vibrational spectroscopic studies of pure and gold nanoparticles dispersed 4-n-Hexyloxy-4'-cyanobiphenyls, Liquid Crystals 45 (9), 1333-1341, 2018

(b) Conferences:

1. Eliyash Ahmed, Ranit Roy, R Rajaraman, and **K Senthilkumar**, Anomalous multiphonon features of hyper-Raman in ZnO NPs, IOP Conference Series Materials Science and Engineering, Accepted.
2. Prahlad K. Baruah, **Arpita Nath**, Ishani Chakrabarty, Anuma Singh, Archana Das, Latha Rangan, Ashwini K. Sharma and Alika Khare, Surface Enhanced Raman Scattering and Antibacterial Capability of Pulsed Laser Ablated Metal/Metal Oxide Nanoparticles, Advances in Science and Technology, 140-144, 1, 2019.

5. Conferences / Workshops / Seminars / Trainings Attended by faculty members:

Sl. No.	Name of Faculty	Name of the programme attended	Duration
1	Dr. K Senthilkumar	First International Conference on Materials Science and Manufacturing Technology.	12-13 April 2019
2	Dr. Tribedi Bora	International Conference on Magnetic Materials and Applications	9-13 Dec 2018

6. Invited Talks Delivered:

1. Prof. Ayon Bhattacharjee delivered a invited talk at National Conference on Hard and Soft Condensed Matter Physics, held at Tezpur University
2. Prof. Ayon Bhattacharjee delivered the S N Paul Memorial Lecture at St. Anthony's College, Shillong.

7. Laboratories Setup:

Sl. No.	Laboratory	Major Equipment & Software	Location	Cost (Rupees in lakhs)
	Synthesis Laboratory (Dr. Tribedi Bora)	1. Fume Hood 2. Pre Sintering Furnace (upto Temperature 1000 degree Celsius) 3. Sintering Furnace (upto temperature 1400 degree Celsius)	Dean's Block (Basement Area)	1. 2,47,800/- 2. 99,503/- 3. 1,81,660/-

8. Administrative Responsibilities Held:

Sl. No.	Name of Faculty	Responsibilities	Duration
1.	Dr. K. Senthilkumar	Head Physics, Overall administration of the Department	September 2016 – June 2019
2.	Dr. Arpita Nath	Chairperson, Institute Complaint Committee	February 2017 Onwards
3.	Dr. W. L. Reenbohn	Chairman, NSS Committee	1st February 2016 Onwards
4.	Dr Ayon Bhattacharjee	Dean (Research & Consultancy)	11 July 2017 till date
5.	Dr Ayon Bhattacharjee	TEQIP Coordinator	January 2017 till date
6.	Dr Ayon Bhattacharjee	Chairman, Grievance Redressal Committee	July 2018 onwards

9. Membership of Professional Bodies:

Sl. No.	Name of Faculty	Member of
1	Dr. K. Senthilkumar	1. Energy Science Society of India(ESSI) 0309201301L
2	Dr. Arpita Nath	1. Plasma Science and Society of India (PSSI) 2. Indian Society of Atomic and Molecular Physics (ISAMP)
3.	Dr Ayon Bhattacharjee	1. IEEE 2. Indian Liquid Crystal Society 3. International Liquid Crystal Society
4	Dr. Tribedi Bora	1. Life member of Magnetic Society of India 2. Life member of Physics Academy of North East

10. Any Other Notable Information:

1. Dr. K. Senthilkumar has peer-reviewed six research articles of Journal of Physics and Chemistry of Solids - Elsevier Since Aug 2018.
2. 3 MSc students, 1-PhD Scholar, 1- Faculty (Dr. K. Senthilkumar) got selected the Sakura Science Exchange Research Program with Shimane University Japan offered by JST with complete Airfare, DA and Accommodations etc. for 20 days.
3. Dr. K. Senthilkumar has done 2-PhD thesis evaluation of Manonmaniam Sundaranar University, Tirunelveli, TN.
4. Dr. K. Senthilkumar was invited as External Examiner for PhD thesis defense (one) at Manonmaniam Sundaranar University, Tirunelveli, TN.
5. Dr. Arpita Nath was invited for M.Phil (2 nos.) thesis evaluation from Dibrugarh University.
6. Dr. Arpita Nath has peer reviewed 2 research article of Applied Surface Science -Elsevier.
7. Prof Ayon Bhattacharjee was nominated as a member of the Finance Committee of Ghani Khan Institute of Engineering and technology (GKCIET), Malda, West Bengal.
8. Prof Ayon Bhattacharjee was nominated as a member of the Senate of NIT Arunachal Pradesh.
9. Prof Ayon Bhattacharjee was invited to Tezpur University as an external examiner for MSc Nano-Science and Technology.
10. Prof Ayon Bhattacharjee evaluated (3 nos.) thesis from different universities and was the external expert for defense at NERIST for one candidate.

Department of Chemistry

1. Brief Introduction to the Department:

The Department of Chemistry, National Institute of Technology Meghalaya has started in 2012. In addition to the B.Tech. Chemistry course, the department is also offering 2 yrs M.Sc. program in Chemistry from 2015 onwards with all the major areas of Chemistry such as Inorganic, Organic, Physical, and Theoretical Chemistry. The intake capacity of M.Sc. program is sixteen (16).

Currently, it is offering Ph.D. programs in broad area of Chemical Sciences like Organic Chemistry, Inorganic Chemistry, Biophysical Chemistry, Materials Chemistry and Computational Chemistry. Presently, the department has total twelve (13) Ph.D. students working in various thrust areas.

The department has total 6 faculty members including one DST-INSPIRE faculty. The faculty members are involved in quality research works apart from their regular teaching and administrative works.

The M.Sc. students of the department are encouraged to apply for summer-internship programmes in various reputed institutes and universities of the country.

The department is attracting students from various other institutes and universities for M.Sc. and Ph.D. programmes in view of the concepts of interdisciplinary teaching and research for the advancement in the fields of organic materials, nanoscience and technology, biological chemistry etc.

2. Programmes Offered:

- M.Sc. in Chemistry (2 years)
- Ph.D. (Full-time and Part-time)

3. Faculty Profile:

Name	Designation	Qualification	Specialization	Date of Joining	Ph.D. guidance (ongoing)
Dr. Gitish K. Dutta	Assistant Professor	Ph.D.	Organic and Hybrid Materials (Organic Chemistry)	08-08-2013	02
Dr. Paresh Nath Chatterjee	Assistant Professor	Ph.D.	Organometallics and Catalysis (Organic Chemistry)	14-01-2013	03
Dr. Amit Kumar Paul	Assistant Professor	Ph.D.	Theoretical Chemistry (Physical Chemistry)	24-06-2016	02
Dr. Atanu Singha Roy	Assistant Professor	Ph.D.	Biophysical Chemistry (Physical Chemistry)	23-07-2015	02
Dr. Naba Kamal Nath	Assistant Professor	Ph.D.	Crystal Engineering and Energy Converting Smart Materials (Inorganic Chemistry)	28-07-2015	02

Name	Designation	Qualification	Specialization	Date of Joining	Ph.D. guidance (ongoing)
Dr. Mukul Pradhan	DST-INSPIRE Faculty	Ph.D.	Inorganic Nanomaterials (Inorganic Chemistry)	11-05-2016	02

4. List of Publications

(a) International Journals

1. S. Das, P. Khanikar, Z. Hazarika, M. A. Rohman, A. Uzir, A. N. Jha*, **A. Singha Roy***, Deciphering the Interaction of 5, 7-Dihydroxyflavone with Hen-Egg-White Lysozyme through Multispectroscopic and Molecular Dynamics Simulation Approaches, *ChemistrySelect*, 2018, 3, 4911-4922.
2. S. Das, S. Santra, M. A. Rohman, M. Ray, M. Jana*, **A. Singha Roy***, An Insight into the Binding of 6-Hydroxyflavone with Hen Egg White Lysozyme: A Combined Approach of Multi-Spectroscopic and Computational Studies, *Journal of Biomolecular Structure and Dynamics*, 2018 (Accepted Article). DOI: 10.1080/07391102.2018.1535451.
3. S. Das, N. Bora, M. A. Rohman, R. Sharma, A. N. Jha*, **A. Singha Roy***, Molecular recognition of bio-active flavonoids quercetin and rutin by bovine hemoglobin: An overview of the binding mechanism, thermodynamics and structural aspects through multi-spectroscopic and molecular dynamics simulation studies, *Physical Chemistry Chemical Physics*, 2018, 20, 21668-21684.
4. D. Paul, S. Rudra, P. Rahman, S. Khatua, **M. Pradhan,* P. N. Chatterjee*** Synthesis and characterization of Pd- γ -Fe₂O₃ nanocomposite and its application as a magnetically recyclable catalyst in ligand-free Suzuki-Miyaura reaction in water, *Journal of Organometallic Chemistry*, 2018, 871 (15), 96-102.
5. D. Paul, S. Khatua, **P. N. Chatterjee*** Iron-catalyzed tandem C-N and C-C bond cleavage in diaryl methanamines: use of electron-rich arenes as leaving group to generate triarylmethanes, *ChemistrySelect*, 2018, 3, 11649-11656.
6. D. Paul, **P. N. Chatterjee*** A facile iron-catalyzed coupling of N-activated benzyl amines with 1,3-dicarbonyl compounds through C-N bond cleavage, *ChemistrySelect*, 2018, 3, 12150-12154.
7. **P. N. Chatterjee***, D. Paul, M. L. Sawkmie, A. K. Sinha, S. Khatua, Synthesis, characterization of active Sn(0), and its application in selective propargylation of aldehyde at room temperature in water, *Canadian Journal of Chemistry*, 2019, 97 (1), 29-36.
8. **A. K. Paul**, N. A. West, J. D. Winner, R. D. W. Bowersox, S. W. North, and W. L. Hase. Non-statistical intermolecular energy transfer from vibrationally excited benzene in a mixed nitrogen-benzene bath. *J. Chem. Phys.* 149, 134101 (2018).
9. H. Mahanta, D. Baishya, Sk. S. Ahamed, and **A. K. Paul***. A Better Understanding of the Unimolecular Dissociation Dynamics of Weakly Bound Aromatic Compounds at High Temperature: A Study on C₆H₆-C₆F₆ and Comparison with C₆H₆ Dimer. *J. Phys. Chem. A* 123, 2517-2526 (2019).
10. N. Deka, J. Deka, **GK Dutta***, Nitrogen Doped Porous Carbon Derived from Carbazole Substituted Tetraphenylethylene Based Hypercrosslinked Polymer for High Performance Supercapacitor *ChemistrySelect* 2018 3(29), 8483-8490.
11. J. Deka, K. Saha, T.J. Konch, RK Gogoi, S Saikia, PP Saikia, GK Dutta, K. Raidongia*. Reconstruction of Soil Components into Multifunctional Freestanding Membranes *ACS Omega* 2019, 4 (1), 1292-1299

12. SM Lee, HR Lee, **GK Dutta**, J Lee, JH Oh, C Yang*, Furan-flanked diketopyrrolopyrrole-based chalcogenophene copolymers with siloxane hybrid side chains for organic field-effect transistors **Polymer Chemistry** **2019** **10** (22), 2854-2862
13. N. Deka, R Patidar, S Kasthuri, N Venkatramaiyah*, **GK Dutta***, Triazine based polyimide framework derived N-doped porous carbons: a study of their capacitive behaviour in aqueous acidic electrolyte **Materials Chemistry Frontiers** **2019** **3** (4), 680-689.
14. R Thakuria, **Naba K. Nath**, B. K. Saha, The Nature and Applications of π - π Interactions: A Perspective, **Cryst. Growth Des.** **2019**, **19**, 523-528.
15. P. Gupta, D. P. Karothu, E. Ahmed, P. Naumov, **N. K. Nath**, Thermally Twistable, Photobendable, Elastically Deformable, and Self-Healable Soft Crystals, **Angew. Chem. Int. Ed.** **2018**, **57**, 8498-8502. (Hot paper).
16. Poonam Gupta, Tamas Panda, Suryanarayana Allu, Silpisikha Borah, Anamika Baishya, Anilkumar Gunnam, Ashwini Nangia, Panče Naumov, **Naba K. Nath**, Crystalline Acylhydrazone Photoswitches with Multiple Mechanical Responses, **Crystal Growth & Design**, **2019**, **19**, 3039-3044.
17. O. M. El-Kadri, A. A. Siddique, M. D. Eaton, **Naba K. Nath**, Synthesis and characterization of two dioxidomolybdenum(VI) complexes bearing amidinato and pyrazolato ligands and their use in thin film growth and oxygen atom transfer reactions, **Polyhedron** **2018**, **147**, 36-41.
18. S. Rudra, A. K. Nayak, S. Koley, R. Chakraborty, P. K. Maji, **M. Pradhan***. Redox-Mediated Shape-transformation of Fe₃O₄ Nanoflake to Chemically Stable Au-Fe₂O₃ Composite Nanorod for High-Performance Asymmetric Solid-State Supercapacitor Device. **ACS Sustainable Chemistry & Engineering**, **2019**, **7**, 724-733.
19. S. Rudra, A. K. Nayak, R. Chakraborty, P. K. Maji and **M. Pradhan***. Synthesis of Au-V₂O₅ composite nanowires through the shape transformation of a vanadium(III) metal complex for high-performance solid-state supercapacitors, **Inorg. Chem. Front.**, **2018**, **5**, 1836-1843.

5. Guest Lectures in the department:

1. Dr. Prasenjit Mal, Associate Professor, NISER Bhubaneswar, on May 30, 2019.



2. **Dr. Pradip Kumar Maji, Assistant Professor**, Dept. of Polymer & Process Engineering, IIT Roorkee, on September 25, 2018.
3. **Dr. Mithun Chowdhury, Assistant Professor**, Department of Metallurgical Engineering and Material Science, IIT Bombay, May 14, 2019.

6. Conferences/Workshops/Seminars/Trainings Attended by faculty members:

Sl. No.	Name of Faculty	Name of the programme attended	Duration
1	Dr. Atanu Singha Roy	Summer Training Program on Active Learning (Organized by IIT Indore)	July 2-6, 2018
2	Dr. Paresh Nath Chatterjee	International Conference on Organometallics & Catalysis at Goa	December 13-16, 2018
3	Dr. Paresh Nath Chatterjee	Workshop on Outcome Based Accreditation (Challenges & Opportunities) sponsored by TEQIP III, NIT Meghalaya	September 22-23, 2018
4	Dr. Gitish K Dutta	Workshop on Outcome Based Accreditation (Challenges & Opportunities) sponsored by TEQIP III, NIT Meghalaya	September 22-23, 2018
5	Dr. Naba Kamal Nath	Organix-2018, an international conference in chemistry	December 21-22, 2018
6	Dr. Naba Kamal Nath	Workshop on Outcome Based Accreditation (Challenges & Opportunities) sponsored by TEQIP III, NIT Meghalaya	September 22-23, 2018
7	Dr. Atanu Singha Roy	National Seminar on Contemporary Challenges in Chemistry (NSC3-2018), North Eastern Hill University Shillong 793022	November 20-21, 2018

7A. Invited Talks (as resource person)

Title of the talk	Faculty Name	Event/Institute/University/Place	Duration
Study of interactions between bioactive dietary flavonoids and lysozyme	Dr. Atanu Singha Roy	National Seminar on Contemporary Challenges in Chemistry (NSC3-2018) , North Eastern Hill University Shillong 793022	November 20-21, 2018
Magnetically recyclable Pd- γ -Fe ₂ O ₃ nanocomposite as a catalyst for Suzuki-Miyaura cross coupling reaction in water	Dr. Paresh Nath Chatterjee	National Seminar on Frontiers in Chemical Sciences (NSFCS-2018) at Triveni Devi Bhalotia College, Raniganj, West Bengal	April 5-6, 2018
Multi-stimuli responsive smart materials	Dr. Naba Kamal Nath	Organix-2018 , Department of Chemical Science, Tezpur University, Assam	December 21-22, 2018
Single Crystal X-Ray Diffraction: Recent Advances In Structure Determination	Dr. Naba Kamal Nath	Workshop on crystallography , Department of Chemistry and Physics, Gauhati University, Guwahati, Assam	July 28, 2018

7B. Invited Talks (others)

Title of the talk	Faculty Name	Event/Institute/University/Place	Duration
A Unified Model for Simulating Intermolecular Collisional Energy Transfer from a Highly Excited Molecule to a Thermalized Bath	Dr. Amit K. Paul	Department of Chemical Science, Indian Institute of Science Education and Research (IISER) Mohali	May 23, 2018
Nanocomposite Materials for Energy Harvesting/Storage Application	Dr. Mukul Pradhan	School of Mechanical Engineering, VIT Vellore	August 23, 2018
Synthesis of Anisotropic Nanostructures Materials for SERS Based Sensing.	Dr. Mukul Pradhan	School of Advanced Sciences, VIT Vellore	August 16, 2018

8. Projects

(a) Sponsored Project (Received/Ongoing/Completed)

Sl. No.	Title of the Project	Investigators (P.I. & Co-P.I.)	Funding Agency	Funding amount	Duration	Status
1.	An investigation into the molecular interaction of dietary polyphenols with hen egg white lysozyme using biophysical techniques	Dr. Atanu Singha Roy	SERB (ECR)	Rs. 36,69,000/-	2016-2019	Completed
2.	Molecular interactions of the antioxidant polyphenols and their copper complexes with human serum albumin and its glycated analogues	Dr. Atanu Singha Roy	CSIR (EMR)	Rs. 6,90,000/-	2017-2020	Ongoing
3	Transition metal catalyzed cleavage of carbon-carbon bonds: synthetic, mechanistic and theoretical studies	Dr. Paresh Nath Chatterjee	SERB	Rs. 24,70,000/-	2015-2018	Completed
4	Assessment of climate change impact on soils and various water basins of Meghalaya using existing and newer techniques	Dr. Paresh Nath Chatterjee (PI) + 4 Co-PIs (Dr. Mukul Pradhan, Dr. Snehadri khatua, Dr. Anup Dandapat, Dr. Susmita Sharma)	DST	Rs. 66,45,175/-	2019-2022	Ongoing
5	QM + MM Chemical Dynamics on Chemical Reactions and Non-Adiabatic Processes in Condensed Phase Molecular Systems	Dr. Amit K. Paul	SERB, DST	Rs. 36,58,000	2018-2021	Ongoing
6	Development of 3-D Supramolecular Structure-Based Optoelectronic Materials Towards Photovoltaic Devices	Dr. Gitish K Dutta	DST_ Indo_ Korea	Rs 27,65560	2015-2018	Completed
7	Diketopyrrolopyrrole and isoindigo based luminescent conjugated polymers for colorimetric and fluorogenic sensors	Dr. Gitish K Dutta	SERB-DST	Rs 22,38,000	2015-2018	Completed

Sl. No.	Title of the Project	Investigators (P.I. & Co-P.I.)	Funding Agency	Funding amount	Duration	Status
8	Smart Biomimetic Molecular Crystal for Energy Conversion	Dr. Naba Kamal Nath	SERB	Rs. 37,07,000	2016-2019	Completed
9	Novel Biocompatible Nanocomposites for SERS Based Sensing of Biomolecules and Toxic Metal Ions	Dr. Mukul Pradhan	DST (INSPIRE)	Rs. 83,00,000	2016-2021	Ongoing

9. Administrative Responsibilities Held:

Sl. No.	Name of Faculty	Responsibilities	Duration
1	Dr. Atanu Singha Roy	Head of the Department, Chemistry	July 2018-till date
2	Dr. Atanu Singha Roy	Member, Examination Committee	01-04-2017-till date
3	Dr. Atanu Singha Roy	Member, Library Committee	2018-2019
4	Dr. Amit Kumar Paul	Faculty advisor, MSc, 1st year	2018-2019
5.	Dr. Paresh Nath Chatterjee	Member PG-PEC (Programme Evaluation Committee)	21/05/2018-till date
6.	Dr. Paresh Nath Chatterjee	President, Student Activity Center	26/06/2018-till date
7.	Dr. Paresh Nath Chatterjee	Chief Editor, NITM Chronicle	18/02/2019-till date
8.	Dr. Paresh Nath Chatterjee	Nodal Office, EBSB	05/09/2018-till date
9.	Dr. Amit K. Paul	Chairman, Routine Committee	07/06/2018-31/03/2019
10.	Dr. Amit K. Paul	Faculty in Charge, Institute Cultural Committee	01/04/2018-01/07/2018
11.	Dr. Amit K. Paul	Vice Chairman, Institute Day 2018	01/04/2018
12.	Dr. Amit K. Paul	Warden, Lapalang-IV (PhD hostel)	26/06/2018-till date
13.	Dr. Gitish K. Dutta	Member UG-PEC (Programme Evaluation Committee)	21/05/2018-till date
14	Dr. Gitish K. Dutta	Member of Center For International Relation	16/10/2015 till date
15	Dr. Atanu Singha Roy	DRC, Chairman	July 2018-till date
16	Dr. Naba Kamal Nath	Faculty advisor, MSc, 2 nd year	2018-2019

10. Membership of Professional Bodies:

Sl. No.	Name of Faculty	Member of
1	Dr. Paresh Nath Chatterjee	Indian Chemical Society

11. Any Other Notable Information:

(a) Achievements, awards and recognition of the student and staff

Faculty Members

Sl. No.	Faculty Name	Role/Technical Assistance	Journal Name/Conference
1	Dr. Atanu Singha Roy	Reviewer	1. Scientific Reports (Nature Research) 2. Journal of Agricultural and Food Chemistry (ACS) 3. Food Hydrocolloids (Elsevier) 4. Journal of King Saud University (Elsevier)
2	Dr. Paresh Nath Chatterjee	Reviewer	1. Journal of Organic Chemistry (ACS) 2. Catalysis Letters (Springer)
3	Dr. Paresh Nath Chatterjee	External Examiner for M.Sc. project dissertation at USTM, Meghalaya	---
4	Dr. Gitish K Dutta	Reviewer	1. ChemistrySelect (Wiley) 2. Solar Energy (Elsevier)
5	Dr. Gitish K Dutta	Member of Expert committee for water quality parameter checking, PHE, Meghalaya	---
6	Dr. Mukul Pradhan	Reviewer	1. Journal of Inorganic and Organometallic Polymers and Materials (Springer) 2. Frontiers in Materials (Frontiers) 3. Catalysis Today (Elsevier)
7	Dr. Naba Kamal Nath	Reviewer	1. Crystal Growth and Design (ACS)

8. An interview of **Dr. Naba Kamal Nath** was telecasted in National Television Channel **Rajya Sabha TV** in a science based program called **Science Monitor and Gyan Vigyan**. In this program along with his interview, the recent development of smart materials by his research group was also highlighted. The title of the programme based on his research activities is "**Development of Bendable crystals**".

Schedule of the telecast was:

Science Monitor in English

7th July, 2018, Saturday 2.30 PM

8th July, 2018, Sunday 11.00 AM

9th Monday, 2018, 5.00 PM

Gyan Vigyan in Hindi -

7th July, 2018, Saturday 2.00 PM

8th July, 2018 Sunday 11.30 AM

10th July, 2018 Tuesday 5.00 PM

Youtube link are given below:

<https://www.youtube.com/watch?v=56ouQbB2bH0&feature=share>

<https://www.youtube.com/watch?v=xx1dAppJZOE&feature=share>

Few snapshots of the program are shown below:



Ph.D. Students

- Rishika Chakraborty** received *best poster award* among 142 participants in the international conference “INTERNATIONAL MEETING ON ENERGY STORAGE DEVICES (IMESD)-2018 & INDUSTRY-ACADEMIA CONCLAVE (IAC)” organized by Department of Physics, IIT Roorkee.
- Siddheswar Rudra** has won the *first prize for oral presentation* in the national conference “NATIONAL CONFERENCE ON INNOVATIVE STRUCTURAL MATERIALS (NCISM)-2018” organized by Advanced Engineering Research Foundation.
- Poonam Gupta** received *best poster award* in the international conference “ORGANIX-2018: An International Conference in Chemistry” organized by Department of Chemical Sciences, Tezpur University.

(b) Conference/symposium/workshop attended by the Ph.D. students

Name of the student	Name of the conference/ symposium/ workshop	Organizer(s)	Duration	Title of poster/oral presentation
Sourav Das	Frontiers in Chemical Sciences (FICS 2018)	IIT Guwahati	December 6-8, 2018	Molecular recognition of bio-active flavonoids quercetin and rutin by bovine hemoglobin: An overview of the binding mechanism, thermodynamics and structural aspects through multi-spectroscopic and molecular dynamics simulation studies

Name of the student	Name of the conference/ symposium/ workshop	Organizer(s)	Duration	Title of poster/oral presentation
Sourav Das	National Seminar on Contemporary Challenges in Chemistry (NSC3-2018)	NEHU Shillong	November 20-21, 2018	Biophysical and Computational Explorations of Hemoglobin-Flavonoid Complexes
Sharat Sarmah	National Workshop on Fluorescence and Raman Spectroscopy (FCS 2018)	JNU Delhi	November 12-17, 2018	Biophysical study on the binding behaviour of a bio-active compound luteolin with hen egg white lysozyme using spectroscopic and molecular docking methods
Namrata Deka	Frontiers in Chemical Sciences (FICS 2018)	IIT Guwahati	December 6-8, 2018	Heteroatom-doped porous carbon from porous organic polymer and detailed investigation of its capacitive behaviour.
Dipankar Paul	Frontiers in Chemical Sciences (FICS 2018)	IIT Guwahati	December 6-8, 2018	Use of electron-rich arenes as leaving group in FeCl ₃ catalyzed tandem C-N and C-C bond cleaving reaction
Rishika Chakraborty	International Meeting On Energy Storage Devices (IMESD) 2018 & Industry Academia Conclave (IAC)	IIT Roorkee	December 10-12, 2018	Synthesis of Au-V ₂ O ₅ Composite Nanowire through Shape Transformation of Vanadium(III) Metal Complex for High- Performance Solid-State Supercapacitor
Siddheswar Rudra	National Conference On Innovative Structural Materials (NCISM)-2018	Advanced Engineering Research Foundation.		Redox-Mediated Shape-transformation of Fe ₃ O ₄ Nanoflakes to Chemically Stable Au-Fe ₂ O ₃ Composite Nanorods for a High-Performance Asymmetric Solid-State Supercapacitor Device
Poonam Gupta	ORGANIX-2018: An International Conference In Chemistry	T e z p u r University	December 20-21, 2018	A Versatile Multifunctional Smart Molecular Crystal

(c) GATE 2019 Results

Sl. No.	Name of the student	GATE Rank	Remarks
1	Palash Barua	2720	Joining Ph.D. in NIT Meghalaya
2	Ankita Agarwal	2181	---
3	Mahabul Haque	2267	Joining Ph.D. in NIT Meghalaya
4	Debika Barman	4927	Joining Ph.D. in IIT Guwahati

Department of Mathematics

1. Brief Introduction to the Department:

The Department of Mathematics was established in 2012 with the inception of National Institute of Technology Meghalaya to offer engineering Mathematics and elective courses for undergraduate (B.Tech.) programs. From 2015 onwards, the department started Ph.D. and 2 year-M.Sc. program in Mathematics. The department also supports all the engineering departments by offering postgraduate level courses in mathematics for M.Tech. and Ph.D. program. The department has been organizing seminars and summer internship programs for students and research scholars. The Department has six highly qualified regular faculty members all of them being Ph. D. holders, with specialization in recent and advanced fields in Analysis, Algebra, Fluid Mechanics etc. The faculties are actively engaged in research, teaching, training and administrative work, and publish a good number of research papers published in refereed International and National Journals. The main objective of the department is to attract the students of science and engineering, and to provide them academically coherent programs, with courses that range from the fundamental to the advanced.

2. Programs Offered:

- 2-year M.Sc. program
- Ph.D. program.

3. Faculty Profile:

Name	Designation	Qualification	Specialization	Date of Joining	Ph.D. guidance
Dr. Saikat Mukherjee	Assoc. Professor	Ph.D	Functional Analysis	25-07-2013	Two ongoing
Dr. Tikaram Subedi	Asst. Professor	Ph.D	Abstract Algebra	01-06-2012	Two ongoing
Dr. Manideepa Saha	Asst. Professor	Ph.D	Linear Algebra	22-07-2013	Two ongoing
Dr. Bapan Ghosh	Asst. Professor	Ph.D	Mathematical Biology	28-01-2015	Three ongoing
Dr. Bidyasagar Kumbhakar	Asst. Professor	Ph.D	Fluid Dynamics	20-07-2015	One ongoing
Dr. Srinivas Jangili	Asst. Professor	Ph.D	Fluid Dynamics	27-07-2015	One ongoing

4. List of Publications:

(a) Journals:

1. Barman, **B. Ghosh**, Explicit impacts of harvesting in delayed predator-prey models. Chaos, Solitons & Fractals, 2019, Vol. 122, pp. 213-228.

2. T.K. Kar, D. Pal, **B. Ghosh**, Managing yield and resilience in a harvested tri-trophic food chain model. Journal of Theoretical Biology, 2019, Vol. 469, pp.35-46.
3. **Ghosh**, D. Pal, T. Legović, T.K. Kar, Harvesting induced stability and instability in a tri-trophic food chain. Mathematical Biosciences, Vol. 304, pp. 89-99.
4. **T. Subedi** and D. Roy, On a common generalization of symmetric rings and quasi duo rings, (Accepted in Algebra and Discrete Mathematics).
5. Roy and **T. Subedi**, On a generalization of reversible rings (Accepted in Scientific Annals of Alexandru Ioan Cuza University of Lasi(NS). Mathematics)
6. G. Nagaraju, **J. Srinivas**, J.V.R. Murthy, O.A. Beg, A. Kadir Second Law Analysis of Flow in a Circular Pipe with Uniform Suction and Magnetic Field Effects, Journal of Heat Transfer (ASME), 141(1) (2018) 012004-1-9.
7. **J. Srinivas**, S.O. Adesanya, O.A. Hammed, R.S. Lebelo, Couple Stress Fluid Flow with Variable Properties: A Second Law Analysis, Mathematical Methods in the Applied Sciences, 42 (2019) 85-98.
8. G. Gopi Krishna, **Srinivas Jangili**, S.R. Mishra, S. Sreenadh, Numerical Investigation of entropy generation in microporous channel with thermal radiation and buoyancy force, Indian Journal of Physics (Springer), Article in-press, 2019.

5. Conferences / Workshops / Seminars / Trainings Attended by faculty members:

Sl. No.	Name of Faculty	Name of the programme attended	Duration
1	Tikaram Subedi	Summer Training Program on Active Learning at IIT Indore	July 02-06, 2018
2	Tikaram Subedi	Workshop on Outcome Based Accreditation (Challenges and Opportunities), at NIT Meghalaya	September 22-23, 2018
3	Bidyasagar Kumbhakar	Workshop on Outcome Based Accreditation (Challenges and Opportunities), at NIT Meghalaya	September 22-23, 2018
4	Bapan Ghosh	Workshop on Outcome Based Accreditation (Challenges and Opportunities) at NIT Meghalaya	September 22-23, 2018
5	Srinivas Jangili	Workshop on Outcome Based Accreditation (Challenges and Opportunities) at NIT Meghalaya	September 22-23, 2018
6	Srinivas Jangili	TEQIP-III Short Term Course on Scientific Computing and Applications to Industrial Problems at IIT Kharagpur.	November 19-23, 2018
7	Saikat Mukherjee	Summer Training Program on Active Learning at IIT Indore	July 02-06, 2018
8	Saikat Mukherjee	ICLAA 2019 – 21st International Conference on Linear Algebra and Applications in London, UK	January 21-22, 2019
8	Saikat Mukherjee	Workshop on “Outcome Based Accreditation” (Challenges and Opportunities) at NIT Meghalaya.	September 22-23, 2018
9	Manideepa Saha	Summer Training Program on Active Learning at IIT Indore	July 02-06, 2018
10	Manideepa Saha	Workshop on “Outcome Based Accreditation” (Challenges and Opportunities) at NIT Meghalaya.	September 22-23, 2018
11	Manideepa Saha	21st International Conference on Linear Algebra and Applications in London, UK	January 21-22, 2019

6. Invited Talks Delivered:

- Dr. Saikat Mukherjee: Delivered an invited talk on “Growth of entire functions to signal spaces” in *National Seminar on Pure and Applied Mathematics*, held during 18-19 September, 2018 organized by Department of Mathematics, St. Mary’s College, Shillong.

7. Projects

(a) Sponsored Project

Sl. No.	Title of the Project	Investigators (P.I. / Co-P.I.)	Funding Agency	Funding amount	Duration	Status
1	Modeling, Dynamics and Benefits of Marine Protected Areas	Bapan Ghosh	SERB (ECR)	1469600	3 Years	Ongoing
2	Modeling the dynamics and evolution of predator-prey communities under anthropogenic impacts: Comparison of discrete and continuous time approaches	Bapan Ghosh	DST (Indo-Russia Project)	962400	2 Years	Ongoing
3	K-Fusion Frames-Applications to Sensor Network and Coding Theory	Saikat Mukherjee	DST-SERB	660000	3 Years	Ongoing
4	Iterative methods for solving non-square linear system	Manideepa Saha	DST-SERB	1748560	3 Years	Ongoing
5	On LU-factorization of Generalized M-matrices	Manideepa Saha	DAE-NBHM	1433600	3 Years	Ongoing

8. Administrative Responsibilities Held:

Sl. No.	Name of Faculty	Responsibilities	Duration
1	Dr.Saikat Mukherjee	Associate Dean, SW till June 30, 2018 Chief Warden from July 1, 2018	3 months 9 months
2	Dr.Tikaram Subedi	Chairman , Examination Committee	1 year
3	Dr.ManideepaSaha	HoD, Mathematics Professor-in-charge, Center of International Relations	1 year 1 year
4	Dr. Bidyasagar Kumbhakar	Warden of Kench’s Trace Boys’ Hostel till June 30, 2018	3 months

9. Membership of Professional Bodies:

Sl. No.	Name of Faculty	Member of
1	Dr. Saikat Mukherjee	<ul style="list-style-type: none"> • Society for Industrial and Applied Mathematics (SIAM), • American Mathematical Society (AMS), • Indian Mathematical Society (IMS). • Indian Science Congress Association (ISCA).
2	Dr. Manideepa Saha	<ul style="list-style-type: none"> • Society for Industrial and Applied Mathematics (SIAM), • American Mathematical Society (AMS), • Indian Mathematical Society (IMS).
3	Dr. Bapan Ghosh	<ul style="list-style-type: none"> • Calcutta Mathematical Society (CMS), • Indian Statistical Institute (ISI)-Kolkata
4	Dr. Srinivas Jangili	<ul style="list-style-type: none"> • Indian Society of Theoretical and Applied Mechanics (ISTAM), IIT Kharagpur • Indian Society for Heat and Mass Transfer (ISHMT), IIT Madras • Indian Mathematical Society (IMS)

S1. No.	Name of Faculty	Member of
5	Dr. Bidyasagar Kumbhakar	<ul style="list-style-type: none"> • Society of Applied Mathematics, ISM Dhanbad • Indian Society Of Theoretical and Applied Mechanics (ISTAM), IIT Kharagpur

10. List of achievements and activities during the Year 2018-19:

1. Department has received one international and one national sponsored project.
2. One of our faculty member received best presentation award in the international conference entitled "21st International Conference on Linear Algebra and Applications" held in London, UK during January 21-22, 2019.
3. Faculty members of the department have published 7 research articles.
4. Department organized departmental seminar series for research scholars and faculty members of the institute.

11. Any Other Notable Information:

Research Scholars from our department presented seminars in the departmental seminar series.

Department of Humanities and Social Sciences

1. Brief Introduction to the Department:

The main aim of the department is the holistic and all round development of the technical graduates into socially responsible individuals by providing allied knowledge essential to engineering students. The department is equipped with a modern Computer Assisted Language Learning Laboratory.

2. Programmes Offered:

- Ph.D. in English

3. Faculty Profile:

Name	Designation	Qualification	Specialization	Date of Joining	Ph.D. Guidance
Dr. P. S. Mangang	Assistant Professor	Ph.D.	English	01.06.2012	1 completed, 2 pursuing
Mr. A. D. Sarma	Assistant Professor	Ph.D. Pursuing	Management	22.01.2013	-
Dr. N. C. Bharali	Guest Lecturer	Ph.D.	Accounting	Per semester basis	-
Dr. K. S. Rajput	Guest Lecturer	Ph.D.	Economics	Per semester basisx	-

4. Ph.D. Scholars Profile:

Name	Subject/Specialization	Remarks
Mr. A. D. Sarma	Management	Advanced Stage
Ms. B. Samita Devi	Literature	Completed
Mr. Rangehbok Lyngwa	Literature	Advanced Stage
Ms. Arundhati Ashangbam	Literature	Registration completed

5. List of Publications:

(a) Journals:

1. B. Samita Devi, P. S. Mangang, "Man's Entrapment within the Construct of Masculinity: An Analysis of Strindberg's The Dance of Death", *Gnosis: An International Refereed Journal of English Language and Literature*, Vol.-4, Issue No.-4, 2018.
2. R. Lyngwa, P.S. Mangang, "Tendulkar's Oppressed Dehumans: The Oppression- Dehumanization link in Sakharam Binder", *International Journal of English Language, Literature in Humanities*, Vol-6, Issue 11, November 2018, ISSN-2321-7065 (UGC Approved)

3. R. Lyngwa, P.S. Mangang, "Vijay Tendulkar's Angry Young Man: Dissecting Arun Athavale's Character in Kanyadaan", Spectrum: An International Journal of Humanities and Social Sciences. Vol.7, Issue 1, Jan-Jun 2019.
4. Arundhati Ashangbam, "The Emasculation of the Captain in Strindberg's Play The Father: An Analysis from a Masculinity Studies Perspective", Spectrum: An International Journal of Humanities and Social Sciences. Vol.7, Issue 1, Jan-Jun 2019.

(b) Conferences:

1. Arundhati Ashangbam, "Deconstructing Utopia: A Reflection in Primo Levi's Works", 18th MELOW International Conference on **Sunny Pleasure Domes and Caves of Ice: Utopias and Dystopias in World Literature** to be held at Jamia Millia Islamia, Delhi, 15-17 March 2019

6. Administrative Responsibilities Held or Members of Committees:

Name	Role	Duration
P. S. Mangang	Head of Department	Whole Year
P. S. Mangang	Liaison Officer for OBC	Whole Year
P. S. Mangang	Faculty-in-charge, Language Lab	Whole Year
P. S. Mangang	Coordinator, Examination Committee for Non-Faculty Selection 2019	May 2019
P. S. Mangang	Member, Academic Programmes Committee	Whole Year
A. D. Sarma	Head of the Centre, Centre for Career Development (CCD)	Till November 2018
A. D. Sarma	Member, Library Committee	Whole Year

7. Membership of Professional Bodies:

Name of Faculty	Member of
P. S. Mangang	Life member of English Literary Circle, Manipur
A. D. Sarma	Life Member of Indian Institute of Banking and Finance (IIBF), Mumbai
A. D. Sarma	Life Member of NEI Council for Social Science Research

Computer Centre

The computer Centre caters to all the computing needs of the institute. It houses advanced and modern infrastructure that enables both research work and high-speed computation. The network infrastructure constitutes of firewall, a Core switch, distribution switches, access switches and the access points. The internet connection is provided by NKN with a 1GBPS speed and a fail-safe backup connection from BSNL.

Table 1: List of Servers in the Computer Centre

Sl No.	Name of machine	Quantity	Features	
1	Cyberoam CR500iNG-XP (Next Generation Firewall)	1	8x10/100/1000 Ethernet ports, 18000 Mbps Firewall throughput, 3250 Mbps NGFW Throughput with flexi slot with add-on port modules of (8 copper/8 x 1GbE Fiber /4 x 10GbE Fiber)	
	Quantity	OS	Features	
2	IBM Servers Tower Model with SAS HDD	4	WINDOW SERVER 2012 & REDHAT 6	Arch:X64, Processor: Intel Xeon, 12 cores , 32 GB memory, 1.2TB HDD
	IBM Servers Rack Model with SAS HDD	2	WINDOW SERVER 2012 & REDHAT 6	Arch:X64, Processor: Intel Xeon, 12 cores & 4 cores , 16GB memory, 1TB HDD
	PARAM SHAVAK SUPERCOMPUTER	1	CENTOS 6.7	Arch:X64, Processor: Intel Xeon, 24 cores , 64GB memory, 6TB HDD
	HP SERVER RACK MODEL	2	REDHAT 6	Arch:X64, Processor: Intel Xeon, 24 cores & 12 cores , 32GB & 24 GB memory, 6TB & 2TB HDD

The computer centre hosts servers for the institute ERP server, FTP server, NPTEL videos, DHCP, Backup server, Koha for Library and Antivirus. Some of the newly installed softwares acquired recently include MATLAB Campus License and the Microsoft Volume Licensing.

Table 2: List of Softwares maintained by the Computer Center

Sl No	Software	Use
1	MATLAB	Academic
2	Microsoft Volume Licensing	Operating System and Applications
3	Online service Request	Lodge request online.

S1 No	Software	Use
4	Supplementary Registration	Students register for Supplementary subject online.
5	End Semester Result	Display End term result of students.
6	Faculty Recruitment	Online application for faculty recruitment.
7	Staff Recruitment	Online application for staff recruitment.
8	Room Booking	Booking of different rooms online.
9	Summer Internship Registration	Online Registration for Summer Internship Programme provided by the Institute
10	Mtech (Part time) programme Registration	Online Registration for MTech (Part-time) Programme.
11	PhD Registration	Online Registration for Ph.D. Programme

Roles and Responsibilities of the Computer Centre:

(a) Website:

The institute website is the first contact point for all institute related information dissemination for all stakeholders. All institute related information and overall facilities are made available for dissemination from time to time as and when available. The institute website has been developed to comply with the Guidelines for Indian Government Websites standardised by Government of India's National Informatics Center. The Website is registered to be tested for Standardisation Testing and Quality Certification (STQC).

(b) Online Resource Request:

The Computer Centre manages and delivers all requests from its online portal in the institute intranet. The requests are lodged online where a token is generated upon lodgment it is assigned to the staffs via an admin panel. This helps in keeping tracking the status of the problems and the reports regarding the problems. Apart from the issues generated from the online portal which can be software or hardware related, the CC also deals with procurement of new hardware by facilitating the process by indenting and preparing comparison statements.

(c) ERP

The Enterprise Resource Planning is implemented with modules consisting of Academics, Human Resource Management System (HRMS) and the Campus Administration. It has integrated all the functions from staff management, admission to maintaining the student data in a single database. Any issues related to college administration in ERP is handled by CC staff.

Staff Profile:

Bandonlang Wahlang	TA(CS)	01-08-2012
Medarisha Hynniewta Thangkhiew	TA(CS)	17-08-2012
Arksinsan Wankhar	Technician,CS	07-10-2013
Khrawkupar Hadia	Technician, CC	15-07-2015
Ribakor Ksanieng	Technician, CC	10-08-2016

NATIONAL INSTITUTE OF TECHNOLOGY MEGHALAYA
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HOME | INSTITUTE | ADMINISTRATION | ACADEMICS | RESEARCH & CONSULTANCY | STUDENTS WELFARE

Convocation 2018 | (SPR-H) Handbook Training on INDIA's First Computational Fluid Dynamics 2018 | 10th September - 10th September 2018 | Call for proposals for "WIDeW-MeG" | WID Internship 2018

BB News | Events | Tenders | Recruitment

Registration for Convocation 2018 [Last date : 10 September, 2018] (Updated on 26-Aug-2018)

All Shortlisted Candidates for SERB Project "Investigation On Data-Driven Event Detection Using Indian Power Grid's Synchronous Data" (Updated on 26-Aug-2018)

Registration for Convocation 2018 [Last date : 10 September, 2018] (Updated on 26-Aug-2018)

ABOUT NIT MEGHALAYA

The National Institute of Technology (NIT) Meghalaya is one among the thirty one NITs in India established under the NIT Act 2007 (Amended 2013) of the Parliament of India as Institutes of National Importance with full funding support from the Ministry of Human Resource Development, Government of India.

The Vision:
A centre of excellence vibrant with academic activities and buzzing with youthful creative energy, making a significant contribution to the pool of knowledge and technology and to the development of the State, the Region and the Nation.

The Mission:
To impart quality education in the fields of Engineering, Science and Technology at Undergraduate as well as Postgraduate levels with special attention to encourage innovation and creativity in these fields in a clean and healthy environment.

To engage in creation of knowledge and development of technologies through effective research programs.

MESSAGE FROM DIRECTOR


NIT Meghalaya was established in 2010 and started functioning from its temporary campus in Shillong in 2012. Its permanent campus is currently under development at Cherrapunji. The campus will come up with state-of-the-art infrastructure and all the necessary modern amenities while maintaining harmony with the serene environment of Cherrapunji. The aim is to build it to be a center of excellence in education and research in the fields of engineering, science and technology. The vision is to develop it to be an institution vibrant with academic activities and buzzing with youthful creative energy. The challenge is to overcome the apparent disadvantages of its remote location and turn them into advantage.

The institution's efforts since the starting of its functioning in Shillong have been to set up the best possible facilities within the constraints of a temporary campus with limited available space, building a very... [Read More](#)

<http://nitmeghalaya.in>

Student Portal

Student Login
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STAFF LOGIN

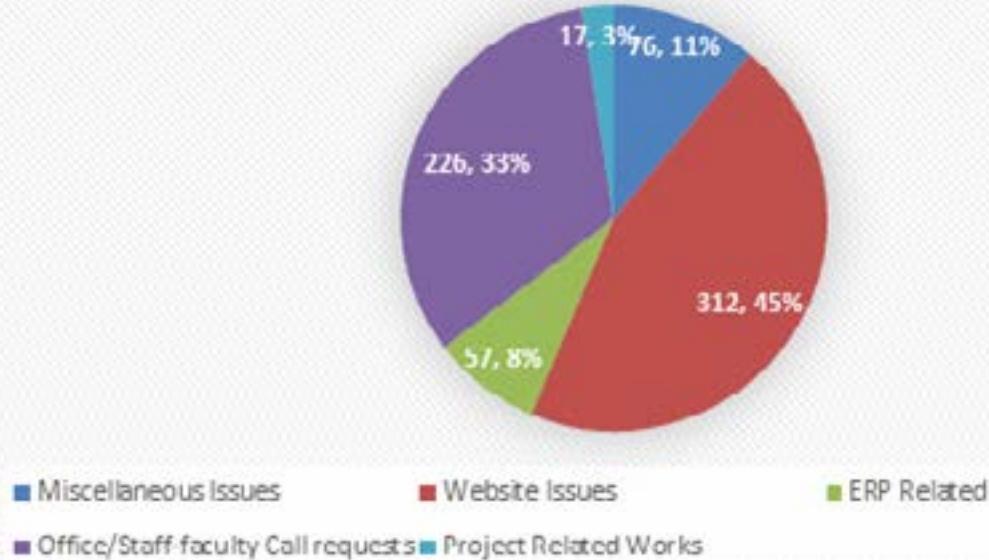
*ID:

*Password :

Login **Reset**

Forgot Password

CC Resource Utilization on Request, 2018-2019



Centre for Technology Enabled Learning

1. Brief Introduction to the CTEL:

The fantastic growth of Information technology (IT) over the last few decades has changed almost every part of our daily life. In order to exploit the technology to benefit our society in a major way, it is necessary to devote time and attention to engineering, expansion, as well as spreading of quality education in related areas. As part of a national initiative from the Ministry of Human Resource Development, the present endeavour has been mainly towards providing the required infrastructure and connectivity to the institutions of higher education like IITs and NITs. The objective is to create and manage a rich pool of digital resources and utilize them to provide quality certification programme and courses, which can be used by the universities as well as government and non-government organizations.

In its quest to make quality higher education accessible to the masses, the Government of India has been very keen to use the technological resources that are being developed to achieve the mission. As a major step in this direction, it had launched the National Mission on Education through Information and Communication Technology (NMEICT) in 2009 to allow eminent teachers and experts in the country to pool their collective wisdom for the benefit of every Indian individual who is willing to learn. This will greatly help in reducing the digital divide, which has traditionally plagued our society. In addition to quality content generation, the mission also aims to promote research in critical areas relating to imparting education to the masses.

In the present context, it has been felt that there is a need to extend the reach of the mission to the north-eastern states of the country where reach ability of quality higher education is severely hampered due to unfriendly terrains, societal orientations, etc. As the first step in this direction, the Centre for Technology Enabled Learning (TEL) has been set up in the NIT Meghalaya Campus, which will allow teachers to develop content, spread awareness in various regions of the north-east, and join the national initiative in a big way. The Centre strives to become the gateway of the north-east to achieve the goals of the national mission.

A state-of-the-art studio has been set up in the centre where facilities for both content creation and content distribution are being provided. Faculty members of the Institute as well eminent experts from other institutions and organizations are being approached to develop technically high-quality video contents, which will be made available to the students through on-line streaming technology. Through this studio, faculty members of NIT Meghalaya and also neighbouring Institutes can participate in developing contents and directly assist in national initiatives like NPTEL and SWAYAM.

2. STAFF DETAILS:

Sl. No.	NAME	DESIGNATION
1.	Dr. Pradeep Kumar Rathore	Professor-In-Charge
2.	Mr. Sanju Mizar	Technical Assistant

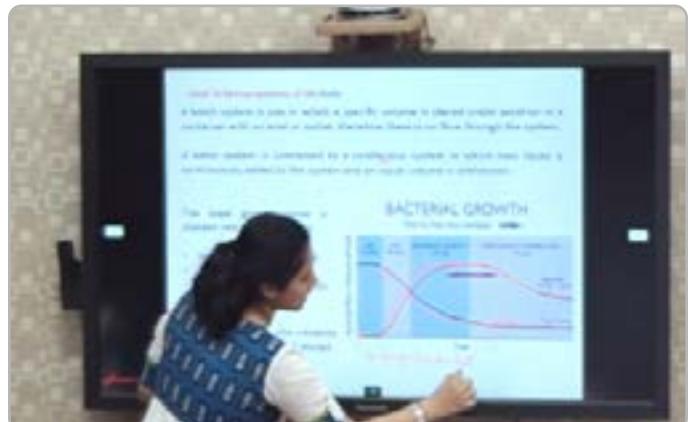
3. ACTIVITIES IN CTEL

- I. Course Lecture Recording
- II. PhD Defense Seminar
- III. Invite Talk/ Guest Lecture
- IV. Other Activities.

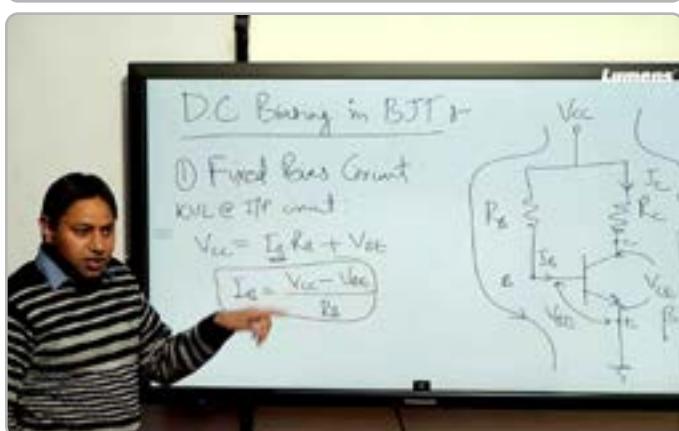
4. AFTER UPGRADATION OF CTEL RECORDING ROOM



RECORDING ROOM



Dr. Susmita Sharma
Department of Civil Engineering



Dr. Pradeep Kumar Rathore Department of
Electronics & Communication Engineering



Dr. Saikat Mukherjee
Department of Mathematics



Dr. P. Sudeep Mangang
Department of Humanities & Social Science

Students Attending Video Lecture

5. LIST OF THE EQUIPMENT INSTALLED IN CTEL RECORDING ROOM

Sl. No.	Name of the Equipment
1	Wireless Hand-Held and Hand-worn Microphone (Both Teacher and Students)
2	Crestron Air board Capture Camera
3	Lumens Camera (for Students)
4	HDMI Switcher (connecting Laptop)
5	Crompton Light 36W LED Surface
6	Magnetic White Board 6ft X 4ft
7	Metallic Podium 19 inches (for equipment)

As per the previous course recording, details for year 2018-19 are as given below:

Sl. No.	Name of the Faculty	Department
1	Dr. Indranil Sen Gupta	CSE
2	Deepak Gupta (PhD Progress Seminar)	PH
3	Phrangboklang Thangkhiew (PhD Progress Seminar)	CSE

6. CTEL DETAILS OF LECTURE RECORDING (COMPLETED ONE MODULE)

Sl. No.	Date	Name of The Faculty	Dept.	Course Code	No. of Classes to be recorded
1	12-02-2019	Dr. Amit K Paul	CY	CH 538	4
2	13-02-2019	Dr. Atanu Singha Roy	CY	CH407	8
3	12-02-2019	Dr. B. Kr. Debnath	ME	ME 321	4
4	14-02-2019	Dr Smrutirekha Sahoo	CE	CE 519	5
5	15-02-2019	Dr. Tanmoy Bose	ME	ME 437	4
6	15-02-2019	Dr. B.K Sarkar	ME	ME 326	4

Sl. No.	Date	Name of The Faculty	Dept.	Course Code	No. of Classes to be recorded
7	19-02-2019	Dr. Deba Kr Sharma	ME	ME 205	4
8	19-02-2019	Dr. P. R. Babu	ME	ME 433	5
9	21-02-2019	Dr. Abhishek Sarkhel	EC	EC 413	4
10	22-02-2019	Dr. A.P. Singh	CS	CS 206	4
11	25-02-2019	Dr. P. Saha	EC	EC 526	4
12	25-02-2019	Prof. Akshya Swain	Adjunct Faculty (EE)		4
13	07-03-2019	Dr. Deepak Kumar	CS	CS306	4
14	07-03-2019	Dr. Srinivas Jangili	MA	MA 411	4
15	11-03-2019	Dr. P. Kr . Rathore	EC	EC	4
16	13-03-2019	Dr. S. Maity	ME	ME 504	5
17	14-03-2019	Prof. Sukumar Mishra	Adjunct Faculty (EE)		3

7. LIST OF OTHERS ACTIVITIES

Sl. No.	Name of the Student/ Faculty/Staff	Department	Activities
1	Devansh	CSE	Presentation
2	Teesta Koch	CSE	Presentation
3	Leon Patrick Mawlong	CSE	Presentation
4	Jasmine Sangma	CSE	Presentation
5	Priyank L Kalita		PhD Research Scholar
6	Director Office		Conference
7	P Mercy Nesa Rani	CSE	PhD Defense Seminar
8	Dr. A. Banerjee	EE	Statement Recording (Incident happen on Shishir Day)
9	Deepak Gupta	PH	PhD Progress Seminar
10	Dr. P. S. Mangang	HS	PhD Defense Seminar
11	Ambika Rai	Academic Section	UG- PEC Meeting
12	B Parusharamulu	EE	Presentation
13	Dr. R. S Das	ME	PhD Progress Seminar
14	Dr. Kishore Debnath	ME	Workshop Innovation & Entrepreneurship
15	Phrangboklang Thangkhiew	CSE	PhD Defense Seminar

Center for Robotics and Mechatronics

1. Brief Introduction to the Center:

The center started in the year of 2017, with the faculty member from various departments like, Mechanical Engineering, Electrical Engineering, Electronics and Communication Engineering and Computer Science Engineering. The Center officially inaugurated by Shri Sajjan Bhajanka, Chairman, Board of Governors, NIT Meghalaya and Founder & Chairman, Century Plyboards (India) Ltd on 1st April 2019.



Inauguration of the Centre for Robotics and Mechatronics, 1st April, 2019

2. Program Offered:

The Center for Robotics and Mechatronics offered finishing school program for UK graduate students under UKIERI program.

3. Faculty Profile:

Name	Designation	Qualification	Specialization	Date of Joining	Ph.D. guidance	Remarks
Dr. Rabindra Narayan Mahapatra	Associate Professor	PhD	Design and manufacturing	28-12-2017	2	
Dr. Bikash Kumar Sarkar	Assistant Professor and HoC	PhD	Fluid Power and Control	21-08-2013	3	One Project Scholar, One shared with Dr. S. Maity
Dr. Bunil Kumar Balabantaray	Assistant Professor	PhD	Robotics, Computer Vision and Digital Heritage, Human Computer Interaction	14.12.2017	5	Full Time- 1 and With Co-supervisor with Prof. R. N. Mahapatra and 3 Part time Ph.D. scholars
Dr. Pradeep Kumar Rathore	Assistant Professor	Ph D	Micro-Electro-Mechanical Systems (MEMS), Microelectronics, Device Fabrication Technology	11-08-2014	2	
Mr. Avilash Sahoo	Trainee Teacher	M.Tech	Machine Design, Dynamics , Trajectory Tracking Control of Underwater Robot	July 21, 2014		

4. List of Publications:

(a) Journals:

1. R K. Ranjan, N. Alom, J. Singh, B. K. Sarkar, Performance investigations of cross flow hydro turbine with the variation of blade and nozzle entry arc angle, Energy Convention and Management, Vol. 182, Page Nos 41-50, 2019. <https://www.sciencedirect.com/science/article/pii/S0196890418314201?dgcid=author>
2. P. J. Bezbaruah, R. S. Das, B. K. Sarkar, Thermo-hydraulic performance augmentation of solar air duct using modified forms of conical vortex generators, Heat Mass Transfer, Page Nos 1-17, 2018. <https://link.springer.com/article/10.1007/s00231-018-2521-1#citeas>
3. B. K. Sarkar, Modeling and Validation of a 2-DOF Parallel Manipulator for Pose Control Application Reference, Robotics and Computer Integrated Manufacturing, Vol.-50, Page Nos -234-241, 2018. <http://www.sciencedirect.com/science/article/pii/S0736584516302903>

4. A. Sahoo, S. K. Dwivedy, and P. S. Robi, "Advancements in the field of Autonomous Underwater Vehicle," Ocean Engineering, vol. 181, pp. 145-160, 2019. <https://www.sciencedirect.com/science/article/pii/S0029801819301623?via%3Dihub>
5. S. Kumar, P. K. Rathore, B.S. Panwar, J. Akhtar, "Development of a Current Mirror Integrated Pressure Sensor using CMOS-MEMS Cofabrication Techniques", Microelectronics International Journal, Volume 35, No. 4, pp. 203-210, 2018. <https://www.emerald.com/insight/content/doi/10.1108/MI-05-2017-0022/full/html>
6. B K Balabantaray, R N Mahapatra, B B Biswal, " Efficient Part Recognition Method in Vision Guided Robots using Orthogonal Moments, International Journal of Engineering &Technology, 7(4.41) (2018) 60-65, 2018, DOI: 10.14419/ijet.v7i4.41.24301.
7. S. Mohapatra, R. N. Mahapatra, B. B. Biswal, B K Balabantaray, A. K. behera, "A Deterministic Model for Remanufacturing Inventory for Reverse Supply Chain, International Journal of Engineering & Technology, 7 (4.41) (2018) 207-210, DOI: 10.14419/ijet.v7i4.41.24529.
8. P. Nemalipuri, M. K. Pradhan, H. C. Das, R. N. Mahapatra, B. Das, Prediction of air pollutants emitting from chimney of a CHP using CFD International journal of scientific & Engineering research 9 (4), 105-110

(b) Conferences:

1. A. Sahoo, S. K. Dwivedy, and P. S. Robi , "Dynamic modelling and control of a compact autonomous underwater vehicle," in Proceedings of the 6th International Conference on Robot Intelligence Technology and Applications, RITA18, Putrajaya, Malaysia, 16-18 Dec, 2018.
2. A. Sahoo, S. K. Dwivedy, and P. S. Robi, "Development of a PID Control Strategy for a Compact autonomous underwater vehicle," in Proceedings of the ASME 2019 38th International Conference on Ocean, Offshore and Arctic Engineering (OMAE2019), June 9-14, 2019, Glasgow, Scotland.
3. S. Kumar, P. Kumar Rathore, P. Rangababu, "Implementation of operational amplifier for the designing of novel piezoresistive pressure sensor", 2018 IEEE 2nd International Conference on Smart Sensors and Application (ICSSA), Kuching, Malaysia, pp. 126-129, 2018
4. S. Kumar, P. K. Rathore, P. Rangababu, "Sensitivity enhancement of current mirror readout circuit based piezoresistive pressure transducer using differential amplifier", 17th IEEE Sensors conference, New Delhi, 2018, pp. 1-4, 2018
5. S. Kumar, G, D, Ropmay, P, K, Rathore, P. Rangababu, "An idea of implementing CMOS operational amplifier in summer configuration for the designing of highly sensitive pressure transducer", 2019 IEEE 2nd international conference on innovations in electronics, signal processing and communication, Shillong (Presented)
6. D. Bhattacharya, P. K. Rathore, S. Majumdar, "Non-Invasive Piezoelectric Sensor for Detection of Lung Cancer", IEEE International Conference on Communication and Electronics Systems (ICCES 2018), COIMBATORE, pp. 1-4, 2018
7. P. K. Sahu, B. K. Khamari, B. K. Balabantaray, B. B. Biswal, S. N. Panda, " Geodesic Approach For Trajectory Planning Of Mobile Robot Manipulators", International Conference on Recent Innovations and Developments in Mechanical Engineering, NIT Meghalaya, Shillong, India, November 8 - 10, 2018.
8. S. Mohapatra, R. N. Mahapatra, B. B. Biswal, B. Balabantaray, A. K. Behera, A Deterministic Model for Remanufacturing Inventory for Reverse Supply Chain ICECNS, 19-21 October 2018

5. Workshop organized:

Sl No.	Title	Sponsors	National/ International	Duration	Faculty responsibility
1	Workshop on Enabling Technologies in Robotic Through Sensor Integration, 2019	TEQIP, Embasys Technologies	National	24 th to 28 th May 2019	Dr. Bikash Kumar Sarkar Dr. R. N. Mahapatra Dr. Bunil Kumar Balabantary



Some Photographs of Workshop on Enabling Technologies in Robotic Through Sensor Integration, 2019

6. Conferences / Workshops / Seminars / Trainings Attended by faculty members:

Sl. No.	Name of Faculty	Name of the program attended	Duration
1	Avilash Sahoo	KIC TEQIP Short Term Course on "Vibration and Noise analysis of Mechanical Systems"	4 th to 8 th Dec, 2018
2	Dr. Pradeep Kumar Rathore	(1) IEEE 2 nd International Conference on Smart Sensors and Applications (ICSSA 2018) held at Kuching, Malaysia from 24 – 26 July 2018 (2) IEEE 2 nd International Conference on Innovations in Electronics and Communication Engineering (IEC) 2019 conducted by NIT Meghalaya at Shillong from 1 – 2 March 2019 (3) "Summer Training Program on Active Learning for Senior Faculty" organized by TEQIP, IIT Indore from 2 – 6 July 2018 (4) Two days Workshop on Outcome Based Accreditation (Challenges and Opportunities) organized by TEQIP, NIT Meghalaya from 22 – 23 September 2018	24 – 26 Jul, 2018 1 – 2 Mar, 2019 2 – 6 Jul, 2018 22 – 23 Sep, 2018

7. Projects

(a) Sponsored Project

Sl. No.	Title of the Project	Investigators (P.I. / Co-P.I.)	Funding Agency	Funding amount (INR)	Duration	Status
1	Modeling and Control of the hydraulically actuated Ring Inlet Guide Vane of Francis Turbine by Adaptive Neural Network Sliding mode Controller Design	Dr. B. K. Sarkar	DST-SERB	30,42,600	3 years	On-going
2	Design and Development of the Small Wind Turbine Combined with Solar system for Household Application	Dr. B. K. Sarkar, Dr. D. K. Sarma, Dr. S. Maity	MHDR-DIC	3.2 lakhs	2 years	On-going
3	Design and development of the Nano-hydro Turbine for Standalone Household Power Generation	Dr. B. K. Sarkar, Dr. H. M. Kalita	MHDR-DIC	1.1 lakhs	2years	On-going
4	Development of High Sensitivity CMOS-MEMS Integrated Smart Pressure Sensor and System for Space Applications	Dr. Pradeep Kumar Rathore (PI)	ISRO	32,46,000/-	2 years	On-going

8. Awards Won/ Recognition received at the national and international level:

Sl. No.	Name of Faculty	National and International Awards	Awarding Agency	Year
1.	Avilash Sahoo	Outreach to Engineers Speciality Forum Award	ASME	2019
2	Dr. R. N. Mahapatra,	"Best Engineer 2018 Award",	IJRULA accredited with ILTC, Malaysia.	2018

9. Laboratories Setup:

Sl. No.	Laboratory	Major Equipment & Software	Location	Cost (Rupees in lakhs)
1.	Center for Robotics and Mechatronics	a. NI PXI Based Vision, Motion System b. Automation Test And Validation Software. c. Robotics Library. d. Integration, Installation, Commissioning and Training TOTAL GST@5% GRAND TOTAL	Basement of the Deans' Block	35,85,000.00 5,60,000.00 1,40,000.00 2,00,000.00 44,85,000.00 2,24,250.00 47,09,250.00
2.		a. NI Elvis II+ Plug In Module Development Kit. b. Vision Based Mobile Robotics Starter Kit c. Integration, Installation, Commissioning and Training TOTAL GST@5% GRAND TOTAL		23,29,180.00 1,60,000.00 2,00,000.00 26,89,280.00 1,34,459.00 28,23,639.00

Sl. No.	Laboratory	Major Equipment & Software	Location	Cost (Rupees in lakhs)
3.		a. cRIO Based Controller. b. cRIO Accessories. c. NI- cRIO Compatible Sensor Bundle. d. Integration, Installation, Commissioning and Training TOTAL GST@5% GRAND TOTAL		6,40,360.00 4,27,950.00 2,63,856.3 2,00,000.00 15,38,166.30 76,908.31 16,15,075.00
4.		Articulated Robot-I		15,22,500.00
5.		Articulated Robot-II		18,21,750.00
6.		Scara Robot.		20,63,250.00
7.		Ansys Additive Suite.		39,83,700.00
8.		Industrial Internet Of Things(IIOT).		27,87,750.00
9.		Industrial Internet Of Things (IIOT).		22,93,918.00

10. Administrative Responsibilities Held:

Sl. No.	Name of Faculty	Responsibilities	Duration
1.	Dr. B. K. Sarkar	Lab-In-Charge, Theory of Machines Lab & HoD, ME	
2.	Dr. Pradeep Kumar Rathore	Professor-in-charge, Centre for Technology Enabled Learning Vice-President (Sports), Student Activity Center Coordinator, Summer Internship Program 2019	Jan 2019 - till date July 2018 - till date Session 2019
3	Dr. R. N. Mahapatra	Chairman, On campus business Committee Convener, CPDA committee Chairman, Food committee, Convocation	

11. Membership of Professional Bodies:

Sl. No.	Name of Faculty	Member of
1	Dr. Bikash Kumar Sarkar	1. ASME Member 100784361, 2016 2. IEEE, IEEE Control Systems Society Member 92662020, 2016 3. NSFMFP Life Member, LM631 4. ISHMT Life Member, 1064
2	Mr. Avilash Sahoo	ASME Member 102607760, 2019
3	Dr. R. N. Mahapatra	1. ISTE, Life member 2. IACSIT, Member

Center of International Relations

1. Brief Introduction to the Center:

The Center for International Relations at NIT Meghalaya was established in 2017. The center is a comprehensive unit committed to developing, promoting and implementing international education initiatives for our students, faculty members and staffs. The center also takes care of admission of international students through various agencies like ICCR, Study-in-India, DASA etc. There are 13 international students currently studying undergraduate program in various departments of NIT Meghalaya.

2. Courses Offered:

Two Short Term Bridge courses under SII - UKIERI programme:

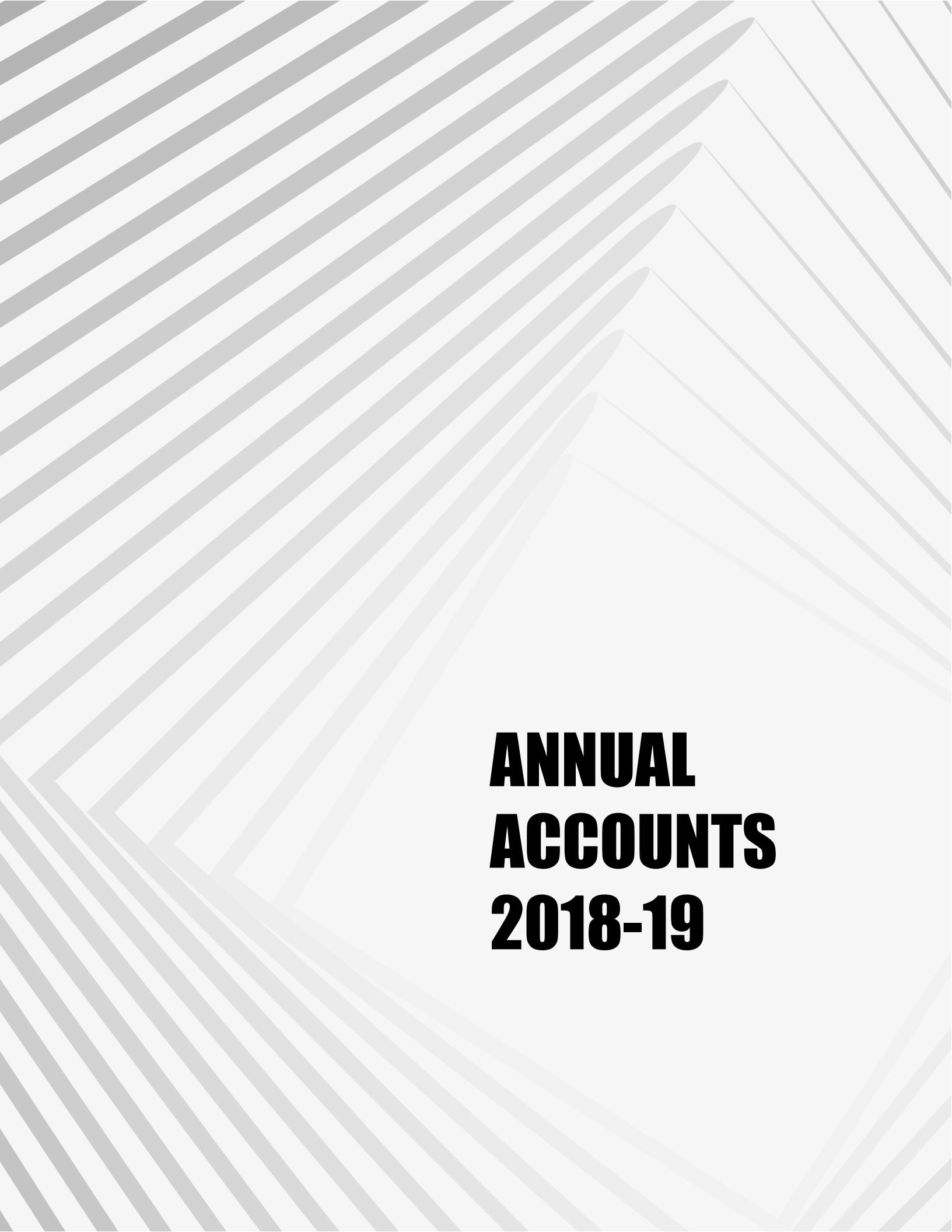
- Finishing college training program for engineers (6 weeks)
- Industrial Robotics & Mechatronics (4 weeks)

3. Faculty Profile:

Name	Designation	Qualification	Specialization
Dr. Manideepa Saha	Faculty-in-Charge	Ph.D	Mathematics
Dr. Gitish Dutta	Member	Ph.D	Chemistry
Dr. Kishor Debnath	Member	Ph.D	Mechanical Engineering

4. List of achievements and activities during the Year 2018-19:

- Three undergraduate students got selected under for **Student Research Mobility programme with Mitacs, Canada under the Project TEQIP-III**, for research internship.
- Three international students got admission at NIT Meghalaya through Study-in-India in undergraduate program at NIT Meghalaya.
- Three SPARC proposals were submitted by various Departments of the Institute.



ANNUAL ACCOUNTS 2018-19



प्रधान महालेखाकार (लेखा परीक्षा) का कार्यालय,
मेघालय - शिलांग - 793 001

OFFICE OF THE
PRINCIPAL ACCOUNTANT GENERAL(AUDIT)
MEGHALAYA, SHILLONG - 793 001

Email : agauMeghalaya@cag.gov.in
Tele No. (0364) 222 4171
Fax No. (0364) 222 3494

संख्या
No. ES-II/4-8/Accts/NIT/2019-20/260

दिनांक
Date 27 November 2019

To,

The Secretary to the Government of India,
Ministry of Human Resource Development,
(Department of Higher Education),
Room No-128, C Wing,
Shastri Bhavan,
New Delhi – 110001.

Sub: Separate Audit Report on the accounts of the National Institute of Technology, Meghalaya for the year ended 31 March 2019.

Sir,

I am to forward herewith the Separate Audit Report on the accounts of the National Institute of Technology (NIT), Meghalaya for the year 2018-19 and a set of audited Annual Accounts of NIT for the year 2018-19.

2. The Hindi version of the Separate Audit Report will be prepared by the NIT.
3. The Separate Audit Report and the Annual Accounts sent herewith may please be placed before both Houses of Parliament as soon as possible. The date(s) of placing of the Report and Accounts may please be intimated and ten copies of the Report, placed before Parliament, may please be sent to this office for record.
4. The Separate Audit report may please be treated as Confidential till it is placed before the Parliament.

Kindly acknowledge receipt.

Yours faithfully,

Encl: As stated above

Sd/-
Pr. Accountant General (Audit)

Speed Post/Confidential

Ltr.No. ES-II/4-8/Accts/NIT/2019-20/261

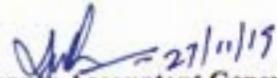
Date: 27 November 2019

Copy of the Separate Audit Report on the accounts of the **National Institute of Technology (NIT), Meghalaya** for the year **2018-19** is forwarded to:

✓ Director,
National Institute of Technology (NIT),
Bijini Complex, Laitumkhrah,
Shillong – 793003.

2. Necessary arrangement may please be made for preparation of Hindi version of the Separate Audit Report and issue of the same to the Government of India, Ministry of Human Resource Development with copy to this office.
3. The date(s) of the placing of the Separate Audit Report and Annual Accounts before both Houses of Parliament may please be intimated early.
4. The Separate Audit Report sent herewith may please be treated as **Confidential** till it is placed before both Houses of Parliament.

Kindly acknowledge receipt.


= 27/11/19
Deputy Accountant General
Economic Sector-II

**Separate Audit Report of the Comptroller and Auditor General of India on
the accounts of National Institute of Technology (NIT), Meghalaya for the
Year ended 31 March 2019**

We have audited the attached Balance Sheet of the National Institute of Technology (NIT), Meghalaya as at 31 March 2019, the Income and Expenditure Account and Receipts and Payments Account for the year ended on that date under Section 19(2) of the Comptroller and Auditor General's (Duties, Powers and Conditions of Service) Act, 1971 read with Section 22(2) of the National Institute of Technology (NIT) Act, 2007. These financial statements are the responsibility of the NIT's Management. Our responsibility is to express an opinion on these financial statements based on our audit.

2. This Separate Audit Report contains the comments of the Comptroller & Auditor General of India (CAG) on the accounting treatment only with regard to classification, conformity with the best accounting practices, accounting standards and disclosure norms, etc. Audit observations on financial transactions with regard to compliance with the Law, Rules & Regulations (Propriety and Regularity) and efficiency-cum-performance aspects, etc., if any, are reported through Inspection Reports/CAG's Audit Reports separately.

3. We have conducted our audit in accordance with auditing standards generally accepted in India. These standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material mis-statements. An audit includes examining, on a test basis, evidences supporting the amounts and disclosure in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of financial statements. We believe that our audit provides a reasonable basis for our opinion.

4. Based on our audit, we report that:

I. We have obtained all the information and explanations which to the best of our knowledge and belief were necessary for the purpose of our audit.

II. The Balance Sheet and Income and Expenditure Account/Receipt and Payment Account dealt by this Report have been drawn in the revised format of accounts prescribed by Ministry of Human Resources Development, Government of India for Central Educational Institutions.

III. In our opinion, proper books of accounts and other relevant records have been maintained by the NIT as required under Section 22(1) of the NIT Act, 2007 in so far as it appears from our examination of such books.

IV. We further report that:

A. Balance Sheet

Application of Funds

Fixed Assets

Intangible Assets- ₹ 90.97 lakh

A1: The Institute had purchased E Journals amounting to ₹65.29 lakh during the year which was accounted as Library Books instead of E-Journals. This has resulted in overstatement of Library Books and understatement of E Journals by ₹65.29 lakh each. Further, the Institute had provided depreciation for the same at the rate of 10 *per cent* instead of 40 *per cent*. This has resulted in understatement of Depreciation and Deficit for the year by ₹19.59 lakh each.

B. General

B1: The actuarial valuation in respect of the provision for Gratuity and Accumulated Leave Encashment was not done by the Institute as required under Accounting Standard 15 issued by ICAI.

B2: In Schedule-11 (Income from Investments), the figures for interest on term deposits and income accrued but not due on Term Deposits should be depicted separately.

B3: The Institute has not prepared the financial statements of New Pension Scheme Account.

C. Grants-in-Aid:

C1: Opening balance of Grants-in-Aid was ₹5.96 crore. During the year 2018-19, an amount of ₹48.78 crore was received. Out of available balance, an amount of ₹3.57 crore was utilised for Capital expenditure out of Internal Revenue Fund and ₹31.53 crore was utilised for Revenue expenditure, leaving an unspent balance of ₹19.64 crore as on 31 March 2019.

D: Management letter:

D1: Deficiency which have not been included in the Audit Report have been brought to the notice of the Institute through a management letter issued separately for remedial/corrective action.

V. Subject to our observations in the preceding paragraphs, we report that the Balance Sheet, Income and Expenditure Account and Receipts and Payments Account dealt with by this report are in agreement with the books of accounts; and

VI. In our opinion and to the best of our information and according to the explanations given to us, the said financial statements read together with the Accounting Policies and Notes on Accounts, and subject to the significant matters stated above and other matters mentioned in Annexure to this Audit Report give a true and fair view in conformity with accounting principles generally accepted in India:

- (a) In so far as it relates to the Balance Sheet, of the state of affairs of the National Institute of Technology (NIT), Meghalaya as at 31 March 2019; and
- (b) In so far as it relates to Income and Expenditure Account of the deficit for the year ended on that date.

**For and on behalf of the Comptroller and
Auditor General of India**

Place: Shillong
Date: 27 November 2019


(Stephen Hongray)
Principal Accountant General (Audit)

Annexure I to Separate Audit Report

1. Adequacy of Internal Audit System:

- The Institute has established an Internal Audit Wing which covers all the activities/wings of the Institute. However, the Internal Audit Wing has not published their Internal Audit Report.
- No Internal Audit Manual has also been prepared by the Institute.

2. Adequacy of Internal Control System:

Evaluation of the internal control system of the Institute revealed the following deficiency/weakness:

- Confirmation of the bank balance (Current Account No.31098433485–non-operating) maintained with SBI, Surat was not obtained from the bank.

3. System of Physical Verification of Fixed Assets.

Physical Verification of Fixed Assets was conducted during the year.

4. System of physical verification of Inventory.

Physical verification of Inventory was conducted during the year.

5. Regularity in payment of statutory dues.

Instances of delay in payment of statutory dues/obligations were not observed.



**Sr. Audit Officer
Economic Sector-II**

NATIONAL INSTITUTE OF TECHNOLOGY MEGHALAYA
SHILLONG, MEGHALAYA

BALANCE SHEET AS AT 31ST MARCH 2019

[Amount in ₹]

SOURCES OF FUNDS	Schedule	Current Year	Previous Year
CORPUS/CAPITAL FUND	1	2,20,56,16,346	2,20,40,66,932
DESIGNATED/ EARMARKED / ENDOWMENT FUNDS	2	7,61,40,691	8,99,01,162
CURRENT LIABILITIES & PROVISIONS	3	40,58,38,906	17,34,97,583
TOTAL		2,68,75,95,943	2,46,74,65,676

APPLICATION OF FUNDS	Schedule	Current Year	Previous Year
FIXED ASSETS	4		
Tangible Assets		23,54,89,050	24,83,12,834
Intangible Assets		90,96,933	1,59,39,178
Capital Works-In-Progress		2,00,14,34,163	1,96,49,89,274
INVESTMENTS FROM EARMARKED / ENDOWMENT FUNDS	5		
Long Term		-	-
Short Term		-	-
INVESTMENTS - OTHERS	6	-	-
CURRENT ASSETS	7	42,62,08,333	23,12,55,678
LOANS, ADVANCES & DEPOSITS	8	1,53,67,464	69,68,712
TOTAL		2,68,75,95,943	2,46,74,65,676

SIGNIFICANT ACCOUNTING POLICIES	23
CONTINGENT LIABILITIES AND NOTES TO ACCOUNTS	24

For NIT Meghalaya

Registrar

Director

NATIONAL INSTITUTE OF TECHNOLOGY MEGHALAYA
SHILLONG, MEGHALAYA

INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31ST MARCH 2019

[Amount in ₹]

Particulars	Schedule	Current Year	Previous Year
INCOME			
Academic Receipts	9	88,69,850	93,11,660
Grants / Subsidies	10	31,53,34,446	27,06,50,651
Income from investments	11	36,93,524	8,81,533
Interest earned	12	7,50,376	3,62,524
Other Income	13	1,15,42,966	1,02,93,355
Prior Period Income	14	(25,36,650)	1,13,000
TOTAL (A)		33,76,54,512	29,16,12,723

EXPENDITURE			
Staff Payments & Benefits (Establishment expenses)	15	16,43,23,751	15,15,82,394
Academic Expenses	16	4,44,30,368	4,22,69,347
Administrative and General Expenses	17	5,66,69,961	5,76,51,691
Transportation Expenses	18	1,23,13,619	1,44,97,609
Repairs & Maintenance	19	4,24,57,323	3,89,22,419
Finance costs	20	26,669	34,787
Depreciation	4	6,48,05,990	7,52,68,979
Other Expenses	21	-	-
Prior Period Expenses	22	3,27,97,392	26,133
TOTAL (B)		41,78,25,073	38,02,53,359
Balance being excess of Income over Expenditure (A-B)		(8,01,70,561)	(8,86,40,636)
Transfer to / from Designated Fund			
Building fund			
Others (specify)			
Balance Being Surplus / (Deficit) Carried to Capital Fund		(8,01,70,561)	(8,86,40,636)

Significant Accounting Policies 23

Contingent Liabilities and Notes to Accounts 24

For NIT Meghalaya

Registrar

Director

NATIONAL INSTITUTE OF TECHNOLOGY MEGHALAYA
SHILLONG, MEGHALAYA

SCHEDULE - 1 CORPUS/CAPITAL FUND

[Amount in ₹]

	Particulars	Current Year	Previous Year
	Balance at the beginning of the year	2,20,40,66,932	1,68,95,07,122
Add:	Contributions towards Corpus/Capital Fund	-	-
Add:	Grants from UGC, Government of India and State Government to the extent utilized for capital expenditure	3,57,13,854	60,32,00,445
Add:	Assets Purchased out of IRG	4,60,06,121	-
Add:	Assets Purchased out of Sponsored Projects, where ownership vests in the institution	-	-
Add:	Assets Donated/Gifts Received	-	-
Add:	Depreciation for prior period	-	-
Add:	Excess of Income over expenditure transferred from the Income & Expenditure Account	-	-
(Deduct)	B/F Unutilized Grant transferred to Current Liabilities	-	-
Total		2,28,57,86,907	2,29,27,07,567
(Deduct)	Deficit transferred from the Income & expenditure Account	8,01,70,561	8,86,40,636
Balance at the year end		2,20,56,16,346	2,20,40,66,932

NATIONAL INSTITUTE OF TECHNOLOGY MEGHALAYA
SHILLONG, MEGHALAYA

SCHEDULE 2 - DESIGNATED/ EARMARKED / ENDOWMENT FUNDS

[Amount in ₹]

Particulars	Fund wise Breakup		Total	
	Internal Resources Fund	Corpus Fund	Current Year	Previous Year
A.				
a) Opening balance	8,79,48,593	19,52,569	8,99,01,162	6,72,46,100
b) Additions during the year	2,93,66,549	28,13,900	3,21,80,449	2,26,23,899
c) Income from investments made of the funds	-	-	-	-
d) Accrued Interest on investments/ Advances	-	-	-	-
e) Interest on Savings Bank a/c	-	65,201	65,201	31,163
f) Other additions (Specify nature)	-	-	-	-
Total (A)	11,73,15,142	48,31,670	12,21,46,812	8,99,01,162

B.				
Utilisation/Expenditure towards objectives of funds				
ii) Capital Expenditure	4,60,06,121	-	4,60,06,121	-
ii) Revenue Expenditure	-	-	-	-
Total (B)	4,60,06,121	-	4,60,06,121	-
Closing balance at the year end (A - B)	7,13,09,021	48,31,670	7,61,40,691	8,99,01,162

NATIONAL INSTITUTE OF TECHNOLOGY MEGHALAYA
SHILLONG, MEGHALAYA

SCHEDULE 3- CURRENT LIABILITIES & PROVISIONS

[Amount in ₹]

	Current Year	Previous Year
A. CURRENT LIABILITIES		
1. Deposits from staff	1,78,626	14,41,696
2. Deposits from students	56,27,095	39,99,195
3. Sundry Creditors		
a) For Goods & Services	-	-
b) Others	-	-
4. Deposit-Others (including EMD, Security Deposit) (As per Annexure 'A')	1,26,41,458	1,47,70,612
5. Statutory Liabilities (GPF, TDS, WC TAX, CPF, GIS, NPS): (As per Annexure 'B')		
a) Overdue	-	-
b) Others	5,51,218	46,76,933
6. Other Current Liabilities		
a) Salaries	-	-
b) Receipts against sponsored projects	4,62,38,676	3,73,59,990
c) Receipts against sponsored fellowships & scholarships	29,36,474	23,03,974
d) Unutilised Grants	19,63,88,544	5,96,36,843
e) Grants in advance	-	-
f) Other funds	10,60,981	6,71,581
g) Other liabilities (As per Annexure 'C')	9,86,20,794	2,22,71,164
Total (A)	36,42,43,865	14,71,31,988
B. PROVISIONS		
1. For Taxation	-	-
2. Gratuity	1,54,20,662	67,76,435
3. Superannuation Pension	-	-
4. Accumulated Leave Encashment	2,61,74,379	1,95,89,160
5. Trade Warranties/Claims	-	-
6. Others - Provision for Expenses	-	-
Total (B)	4,15,95,041	2,63,65,595
Total (A+ B)	40,58,38,906	17,34,97,583

**NATIONAL INSTITUTE OF TECHNOLOGY MEGHALAYA
SHILLONG, MEGHALAYA**

SCHEDULE 3(a) - SPONSORED PROJECTS

Sl No.	Name of Project	Opening Balance		Receipts / Recoveries during the year		Total	Expenditure during the year	Closing Balance	
		Credit	Debit	5	6			Credit	Debit
1	2	3	4				7	8	9
1	NIT R&D Account	2,66,13,606	-	3,98,23,003	6,64,36,609	3,04,92,990	3,59,43,619	-	
2	Sponsored Project/NMHS-PMU/Vipin	-	-	22,94,000	22,94,000	4,12,698	18,81,302	-	
3	Sponsored Project - CE/02	(1,02,134)	-	2,50,385	1,48,251	1,42,255	5,996	-	
4	PHD-Visvesvaraya	9,24,266	-	19,31,350	28,55,616	21,16,200	7,39,416	-	
5	Sponsored Project/Chem/Indo-Korean	5,96,030	-	96,723	6,92,753	2,70,565	4,22,188	-	
6	Sponsored Project/Chem/Paresh	4,78,389	-	16,876	4,95,265	4,21,932	73,333	-	
7	Sponsored Project/COMP/RAY	2,17,780	-	3,14,169	5,31,949	1,09,680	4,22,269	-	
8	Sponsored Project/DSTY/K. Datta	1,498	-	-	1,498	-	1,498	-	
9	Sponsored Project/DST/Chem/Gitish	2,49,609	-	5,15,788	7,65,397	3,80,861	3,84,536	-	
10	Sponsored Project SDMA/Marthong	(205)	-	-	(205)	-	(205)	-	
11	Sponsored Project/SMDP/Dandapat	20,25,739	-	2,37,764	22,63,502	3,60,586	19,02,916	-	
12	RECP TL	63,55,412	-	2,03,238	65,58,650	20,96,842	44,61,808	-	
Total		3,73,59,990	-	4,56,83,295	8,30,43,285	3,68,04,609	4,62,38,676	-	

Notes:

- The Projects may be listed agency-wise, with sub-totals for each agency.
- The total of Col. 8 (Credit) will appear under the above head on the liabilities side of the Balance Sheet (Schedule 3).
- The total of Col. 9 (Debit) will appear as Receivables in Schedule 8, Loans, Advances and Deposits, on the Assets side of the Balance Sheet.

NATIONAL INSTITUTE OF TECHNOLOGY MEGHALAYA
SHILLONG, MEGHALAYA

SCHEDULE 3(b) - SPONSORED FELLOWSHIPS AND SCHOLARSHIPS

[Amount in ₹]

Sl No.	Name of Sponsor	Opening Balance		Transactions during the year		Closing Balance	
		Credit	Debit	Credit	Debit	Credit	Debit
1	2	3	4	5	6	7	8
1	Scholarship - Top Class	17,89,769	-	-	-	17,89,769	-
2	External Individual Scholarships	5,14,205	-	8,38,300	2,05,800	11,46,705	-
		-	-	-	-	-	-
Total		23,03,974	-	8,38,300	2,05,800	29,36,474	-

Notes:

1. The total of Column 7, (Credit) will appear under the above head, on the liabilities side of the Balance Sheet (Schedule 3)
2. The total of Column 8 (Debit) will appear as Receivables on the Assets side of the Balance Sheet in Schedule 8 (Loans, Advances and Deposits).

**NATIONAL INSTITUTE OF TECHNOLOGY MEGHALAYA
SHILLONG, MEGHALAYA**

SCHEDULE 3(c) - UNUTILIZED GRANTS FROM UGC, GOVERNMENT OF INDIA AND STATE GOVERNMENTS

		[Amount in ₹]	
		Current Year	Previous Year
A	Revenue Grants: Government of India		
	Balance B/F	5,96,36,843	23,34,87,939
	Add: Receipts during the year	48,78,00,000	70,00,00,000
	Total (a)	54,74,36,843	93,34,87,939
	Less: Refunds	-	-
	Less: Utilized for Revenue Expenditure	31,53,34,446	27,06,50,651
	Less: Utilized for Capital Expenditure	3,57,13,854	60,32,00,445
	Total (b)	35,10,48,300	87,38,51,096
	Unutilized carried forward (a-b)	19,63,88,544	5,96,36,843
B	UGC Grants: Revenue		
	Balance B/F	-	-
	Add: Receipts during the year	-	-
	Total (a)	-	-
	Less: Refunds	-	-
	Less: Utilized for Revenue Expenditure	-	-
	Less: Utilized for Capital Expenditure	-	-
	Total (b)	-	-
	Unutilized carried forward (a-b)	-	-
C	UGC Grants: Capital		
	Balance B/F	-	-
	Add: Receipts during the year	-	-
	Total (a)	-	-
	Less: Refunds	-	-
	Less: Utilized for Revenue Expenditure	-	-
	Less: Utilized for Capital Expenditure	-	-
	Total (b)	-	-
	Unutilized carried forward (a-b)	-	-
D	Grants from State Government		
	Balance B/F	-	-
	Add: Receipts during the year	-	-
	Total (a)	-	-
	Less: Utilized for Revenue Expenditure	-	-
	Less: Utilized for Capital Expenditure	-	-
	Total (b)	-	-
	Unutilized carried forward (a-b)	-	-
Grand Total (A+B+C+D)		19,63,88,544	5,96,36,843

Notes:

Unutilized grants includes advances on Capital Account

Unutilized grants include grants received in advance for the next year

Unutilized grants are represented on the Assets side by Bank balances, Short term Deposits with Banks and Advances on Capital Account

NATIONAL INSTITUTE OF TECHNOLOGY MEGHALAYA
SHILLONG, MEGHALAYA

SCHEDULE 4 FIXED ASSETS

S.No.	Assets Heads	Gross Block				
		Opening Balance	Additions	Deductions	Closing Balance	
1	Land	-	2,000,000	-	2,000,000	
2	Site Development	-	-	-	-	
3	Buildings	-	-	-	-	
4	Roads & Bridges	-	-	-	-	
5	Tubewells & Water Supply	4,46,375	-	-	4,46,375	
6	Sewerage & Drainage	-	-	-	-	
7	Electrical Installation and equipment	52,17,129	12,980	-	52,30,109	
8	Plant & Machinery	-	-	-	-	
9	Scientific & Laboratory Equipment	15,95,18,039	1,70,49,932	-	17,65,67,971	
10	Office Equipment	5,68,19,085	13,31,620	-	5,81,50,705	
11	Audio Visual Equipment	-	-	-	-	
12	Computers & Peripherals	8,38,80,101	93,490	-	8,39,73,591	
13	Furniture, Fixtures & Fittings	6,26,34,866	21,52,606	-	6,47,87,472	
14	Vehicles	32,43,960	-	-	32,43,960	
15	Lib. Books & Scientific Journals	1,31,95,513	74,72,903	-	2,06,68,416	
16	Small Value Assets	-	-	-	-	
Total (A)		38,49,55,068	3,01,13,531	-	41,50,68,599	
17	Capital Work in Progress (B)	1,96,49,89,274	7,71,86,148	4,07,41,259	2,00,14,34,163	
S.No.	Intangible Assets	Opening Balance	Additions	Deductions	Closing Balance	
18	Computer Software	5,44,64,916	4,13,000	-	5,48,77,916	
19	E-Journals	3,26,81,933	1,47,48,555	-	4,74,30,488	
20	Patents	-	-	-	-	
Total (C)		8,71,46,849	1,51,61,555	-	10,23,08,404	
Grand Total (A+B+C)		2,43,70,91,192	12,24,61,234	4,07,41,259	2,51,88,11,167	

Note:

The figure in Column "Deductions' under Gross Block against the head Capital Work in Progress represents the transfer from Work in Progress to Assets during the year; A16The figures in column "Additions during the year under Gross Block against Assets 1 to 14 include transfer from Work in Progress during the year, as well as further acquisitions during the year

[Amount in ₹]

	Depreciation			Net Block		
	Opening Balance	Depreciation for the Year	Deductions/ Adjustment	Closing Balance	31.03.2019	31.03.2018
	-	-	-	-	2,000,000	-
	-	-	-	-	-	-
	-	-	-	-	-	-
	-	-	-	-	-	-
26,782	8,928	-	-	35,710	4,10,665	4,19,593
	-	-	-	-	-	-
5,82,684	2,61,505	-	-	8,44,189	43,85,920	46,34,445
	-	-	-	-	-	-
3,20,78,001	1,41,25,438	1,35,125	-	4,63,38,564	13,02,29,407	12,74,40,038
2,13,43,151	43,61,303	-	-	2,57,04,454	3,24,46,251	3,54,75,934
	-	-	-	-	-	-
5,75,88,119	1,67,94,718	-	-	7,43,82,837	95,90,754	2,62,91,982
1,96,36,610	48,59,060	-	-	2,44,95,670	4,02,91,802	4,29,98,256
11,11,806	3,24,396	-	-	14,36,202	18,07,758	21,32,154
42,75,082	20,66,842	-	-	63,41,924	1,43,26,492	89,20,431
	-	-	-	-	-	-
13,66,42,235	4,28,02,190	1,35,125	-	17,95,79,550	23,54,89,050	24,83,12,834
	-	-	-	-	2,00,14,34,163	1,96,49,89,274
	Opening Balance	Amortization for the Year	Deductions/ Adjustments	Closing Balance	Balance as on 31.03.2019	Balance as on 31.03.2018
4,75,61,287	70,68,829	-	-	5,46,30,116	2,47,800	69,03,629
2,36,46,384	1,49,34,971	-	-	3,85,81,355	88,49,133	90,35,549
	-	-	-	-	-	-
7,12,07,671	2,20,03,800	-	-	9,32,11,471	90,96,933	1,59,39,178
20,78,49,906	6,48,05,990	1,35,125	-	27,27,91,021	2,24,60,20,146	2,22,92,41,286

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SCHEDULE 5 : INVESTMENTS FROM EARMARKED/ ENDOWMENT FUNDS

		[Amount in ₹]	
		Current Year	Previous Year
1	In Central Government Securities	-	-
2	In State Government Securities	-	-
3	Other approved Securities	-	-
4	Shares	-	-
5	Debentures and Bonds	-	-
6	Term Deposits with Banks	-	-
7	Others (to be specified)	-	-
Total		-	-

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SCHEDULE 6: INVESTMENTS - OTHERS

		[Amount in ₹]	
		CURRENT YEAR	PREVIOUS YEAR
1	In Central Government Securities	-	-
2	In State Government Securities	-	-
3	Other approved Securities	-	-
4	Shares	-	-
5	Debentures and Bonds	-	-
6	Others	-	-
Total		-	-

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SCHEDULE 7: CURRENT ASSETS

[Amount in ₹]

	Current Year	Previous Year
1. Stock:		
a) Stores and Spares	-	-
b) Loose Tools	-	-
c) Publications	-	-
d) Laboratory chemicals, consumables and glass ware	-	-
e) Building Material	-	-
f) Electrical Material	-	-
g) Stationery	-	-
h) Water supply material	-	-
2. Sundry Debtors:		
a) Debts Outstanding for a period exceeding six months	-	-
b) Others	-	-
3. Cash and Bank Balances		
a) With Scheduled Banks:		
In Current Accounts	9,62,45,639	10,79,59,116
In term deposit Accounts	8,59,00,061	1,28,19,666
In Savings Accounts	24,40,62,633	11,04,76,896
b) With non-Scheduled Banks:		
In term deposit Accounts	-	-
In Savings Accounts	-	-
c) Cash in hand:		
4. Post Office- Savings Accounts	-	-
Total	42,62,08,333	23,12,55,678

Note: Annexure A shows the details of Bank Accounts

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SCHEDULE 8 - LOANS, ADVANCES & DEPOSITS

[Amount in ₹]

	Current Year	Previous Year
1. Advances to employees: (Non-interest bearing)		
a)Salary	3,050	1,32,006
b)Festival	-	-
c)Medical Advance	-	-
d)Other - PDA Advance	93,232	82,522
e)Other - LTC Advance	1,31,482	-
2. Long Term Advances to employees: (Interest bearing)		
a)Vehicle loan	-	-
b)Home loan	-	-
c)Others (to be specified)	-	-
3. Advances and other amounts recoverable in cash or in kind or for value to be received:		
a)On Capital Account	68,10,977	-
b)To Suppliers	-	-
c)Others - Travelling Advance	-	-
d)Others - Temporary Advance	17,61,742	4,63,560
e)Advance against Rent	28,20,978	28,20,978
f)Advance against Projects	-	96,000
4. Prepaid Expenses		
a)Insurance	-	-
b)Other expenses -Leased Line Charges	3,97,080	5,95,620
5. Deposits		
a)Telephone	-	-
b)Lease Rent	-	-
c)Electricity	-	-
d)AICTE, if applicable	-	-
f)Others	14,34,940	14,44,940
6. Income Accrued:		
a)On Investments from Earmarked/ Endowment Funds	-	-
b)On Investments-Others	-	-
c)On Loans and Advances	-	-
d)Others (includes income due unrealized) (Term Deposits)	13,28,660	7,15,531
7. Other - Current assets receivable from UGC/sponsored projects		
a)Debit balances in Sponsored Projects	-	-
b)Debit balances in Sponsored Fellowships & Scholarships	-	-
c)Grants Receivable	-	-
d)Other receivables from UGC	-	-
8. Claims Receivable		
Sundry Receivables	5,85,323	6,17,555
Total	1,53,67,464	69,68,712

Note:

- If revolving funds have been created for House Building, Computer and Vehicle advances to employees, the advances will appear as part of Earmarked/endowment Funds. The balance against these interest – bearing advances will not appear in this schedule.

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SCHEDULE 9 - ACADEMIC RECEIPTS

[Amount in ₹]

	Current Year	Previous Year
A. FEES FROM STUDENTS		
A. Academic		
1. Admission Fee	-	-
2. Enrollment and Registration Fee	9,97,800	9,26,400
3. Application Fee	-	-
4. Summer Term Course Fee	3,48,000	32,500
5. Laboratory and Internet Fee	33,16,000	30,64,000
6. Library Fee	4,96,500	4,59,600
7. Provisional Certificate Fee	32,100	27,400
8. Student Activity Fee	24,82,500	11,23,500
9. Book Purchase	-	7,49,000
10. Student Welfare Fund	-	68,500
Total (A)	76,72,900	64,50,900
B. Examinations		
1. Examination Fee and Grade Fee	9,97,800	9,26,400
Total (B)	9,97,800	9,26,400
C. Other Fees		
1. Identity Card Fee	48,150	41,210
2. Hostel Admission Fee	26,000	1,16,500
3. Fine	1,25,000	90,000
4. Transportation Fee	-	16,86,650
Total (C)	1,99,150	19,34,360
D. Sale of Publications		
1. Sale of Admission forms	-	-
2. Sale of syllabus and Question Paper, etc.	-	-
3. Sale of prospectus including admission forms	-	-
Total (D)	-	-
E. Other Academic Receipts		
1. Registration fee for workshops, programmes	-	-
2. Registration fees (Academic Staff College)	-	-
Total (E)	-	-
Grand Total (A+B+C+D+E)	88,69,850	93,11,660

Note:

In case fees like entrance fee, subscriptions etc are material and are in the nature of capital receipts, such amount should be recognized to the Capital Fund. Otherwise such fees will be appropriately incorporated in this schedule.

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SCHEDULE 10 - GRANTS / SUBSIDIES (IRREVOCABLE GRANTS RECEIVED)

[Amount in ₹]

Particulars	Revenue			Total Revenue	Capital Govt. of India	Current Year Total	Previous Year Total				
	Govt. of India	UGC									
		Revenue	Specific Schemes								
Balance B/F	5,96,36,843	-	-	5,96,36,843	-	5,96,36,843	23,34,87,939				
Add: Receipts during the year	48,78,00,000	-	-	48,78,00,000	-	48,78,00,000	70,00,00,000				
Total	54,74,36,843	-	-	54,74,36,843	-	54,74,36,843	93,34,87,939				
Less: Refund to UGC Balance	-	-	-	-	-	-	-				
Less: Utilised for Capital expenditure (A)	3,57,13,854	-	-	3,57,13,854	-	3,57,13,854	60,32,00,445				
Balance	51,17,22,989	-	-	51,17,22,989	-	51,17,22,989	33,02,87,494				
Less: Utilized for Revenue Expenditure (B)	31,53,34,446	-	-	31,53,34,446	-	31,53,34,446	27,06,50,651				
Balance C/F (C)	19,63,88,544	-	-	19,63,88,544	-	19,63,88,544	5,96,36,843				

A-Appears as addition to Capital Fund as well as additions to Fixed Assets during the year.

B-Appears as income in the Income & Expenditure Account.

C-(I) Appears under Current Liabilities in the Balance Sheet and will become the opening balance next year.

(II) Represented by Bank balances, Investments and Advances on the assets side.

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SCHEDULE 11- INCOME FROM INVESTMENTS

[Amount in ₹]

Particulars	Earmarked / Endowment Funds		Other Investments	
	Current Year	Previous Year	Current Year	Previous Year
1. Interest				
a.On Government Securities	-	-	-	-
b.Other Bonds/Debentures	-	-	-	-
2. Interest on Term Deposits	-	-	36,93,524	8,81,533
3. Income accrued but not due on Term Deposits/ Interest bearing advances to employees	-	-	-	-
4. Interest on Savings Bank Accounts	-	-	-	-
5. Others (Specify)	-	-	-	-
Total	-	-	36,93,524	8,81,533
Transferred to Earmarked/Endowment Funds	-	-		
Balance	-	-		

Note:

Interest accrued but not due on Term Deposits from HBA fund, conveyance advance fund and Computer Advance fund and on interest bearing advances to employees will be included here (Item 3), only where Revolving funds (EMF) for such advances have been set up.

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SCHEDULE 12: INTEREST EARNED

[Amount in ₹]

Particulars	Current Year	Previous Year
1. On Savings Accounts with scheduled banks	7,50,376	3,62,524
2. On Loans		
a.Employees/Staff	-	-
b.Others	-	-
3. On Debtors and Other Receivables	-	-
Total	7,50,376	3,62,524

Note:

- 1.The amount against item 1, in respect of Bank Accounts of Earmarked/Endowment Funds is dealt with in Schedule 11 (First Part) and Schedule 2.
- 2.Item 2(a) is applicable only if Revolving funds have not been constituted for such advances.

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SCHEDULE 13- OTHER INCOME

[Amount in ₹]

A. Income from Land & Buildings	Current Year	Previous Year
1.Hostel Seat Rent	60,25,000	38,92,650
2.License fee	1,87,922	3,22,095
3.Hostel Electricity and Water Charges	18,07,500	13,98,550
4.Hostel Establishment Fee	24,63,000	11,23,500
5.Electricity charges recovered	-	-
6.Water charges recovered	-	-
7.House Rent - Staff	-	-
Total	1,04,83,422	67,36,795
B. Sale of Institute's publications	-	-
C. Income from holding events		
1.Gross Receipts from annual function/ sports carnival	-	-
Less: Direct expenditure incurred on the annual function/ sports carnival	-	-
2.Gross Receipts from fetes	-	-
Less: Direct expenditure incurred on the fetes	-	-
3.Gross Receipts for educational tours	-	-
Less: Direct expenditure incurred on the tours	-	-
4.Overhead Charges	-	6,40,470
Total	-	6,40,470
D. Others		
1. Income from consultancy	-	-
2. RTI fees	-	-
3. Income from Royalty	-	-
4. Sale of application form (recruitment)	9,51,900	13,55,550
5. Misc. receipts (Sale of tender form)	5,200	33,350
6. Profit on Sale/disposal of Assets	-	-
a)Owned assets	-	-
b)Assets received free of cost	-	-
7. Grants/Donations from Institutions, Welfare Bodies and International Organizations	-	-
8. Others		
a) Miscellaneous	1,02,444	4,77,240
b) External Scholarship	-	-
c) Liquidated Damages	-	10,49,950
Total	10,59,544	29,16,090
Grand Total (A+B+C+D)	1,15,42,966	1,02,93,355

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SCHEDULE 14 - PRIOR PERIOD INCOME

[Amount in ₹]

Particulars	Current Year	Previous Year
1.Academic Receipts	(25,36,650)	1,13,000
2.Income from Investments	-	-
3.Interest earned	-	-
4. Other Income	-	-
Total	(25,36,650)	1,13,000

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SCHEDULE 15 – STAFF PAYMENTS & BENEFITS (ESTABLISHMENT EXPENSES)

[Amount in ₹]

	Current Year			Previous Year		
	Revenue	Capital	Total	Revenue	Capital	Total
a)Salaries and Wages	14,17,09,813	-	14,17,09,813	13,27,26,287	-	13,27,26,287
b)Allowances and Bonus	-	-	-	-	-	-
c)Contribution to Provident Fund	-	-	-	-	-	-
d)Contribution to Other Fund (specify)	-	-	-	-	-	-
e)Staff Welfare Expenses	-	-	-	-	-	-
f)Retirement and Terminal Benefits	1,11,70,249	-	1,11,70,249	95,01,613	-	95,01,613
g)LTC facility	13,23,484	-	13,23,484	12,92,971	-	12,92,971
h)Medical facility	-	-	-	-	-	-
i)Children Education Allowance	-	-	-	-	-	-
j)Honorarium	-	-	-	-	-	-
k) Gratuity	86,44,227	-	86,44,227	67,76,435	-	67,76,435
l) Others - Medical Expenses	14,75,978	-	14,75,978	12,85,088	-	12,85,088
TOTAL	16,43,23,751	-	16,43,23,751	15,15,82,394	-	15,15,82,394

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SCHEDULE 16 - ACADEMIC EXPENSES

[Amount in ₹]

	Current Year			Previous Year		
	Revenue	Capital	Total	Revenue	Capital	Total
a)Laboratory expenses	-	-	-	-	-	-
b)Field work/Participation in Conferences	-	-	-	-	-	-
c)Expenses on Seminars/Workshops	-	-	-	-	-	-
d)Payment to visiting faculty	2,05,500	-	2,05,500	5,10,500	-	5,10,500
e)Examination	-	-	-	-	-	-
f)Student Welfare expenses	-	-	-	-	-	-
g)Admission expenses	-	-	-	-	-	-
h)Convocation expenses	18,59,466	-	18,59,466	18,06,288	-	18,06,288
i) Publications	-	-	-	-	-	-
j)Stipend/means-cum-merit scholarship	3,03,10,041	-	3,03,10,041	2,83,17,473	-	2,83,17,473
k)Subscription Expenses	-	-	-	-	-	-
l) Others						
i) Recurring Contingency	52,61,897	-	52,61,897	31,01,477	-	31,01,477
ii) Students Activities	15,73,873	-	15,73,873	38,88,948	-	38,88,948
iii) Other Academic Activities	44,77,734	-	44,77,734	39,03,227	-	39,03,227
iv) Consumables	6,88,064	-	6,88,064	4,65,620	-	4,65,620
v) Startup Project	53,793	-	53,793	2,75,814	-	2,75,814
TOTAL	4,44,30,368	-	4,44,30,368	4,22,69,347	-	4,22,69,347

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SCHEDULE 17 - ADMINISTRATIVE AND GENERAL EXPENSES

[Amount in ₹]

	Current Year			Previous Year		
	Revenue	Capital	Total	Revenue	Capital	Total
A Infrastructure						
a) Electricity and power	48,12,222	-	48,12,222	61,19,683	-	61,19,683
b) Water charges	-	-	-	-	-	-
c) Insurance	-	-	-	-	-	-
d) Rent, Rates and Taxes (including property tax)	4,14,58,000	-	4,14,58,000	4,06,24,235	-	4,06,24,235
B Communication						
e) Postage and Telegram	-	-	-	-	-	-
f) Telephone, Fax and Internet Charges	10,10,806	-	10,10,806	27,92,201	-	27,92,201
C Others						
g) Printing and Stationery (consumption)	-	-	-	-	-	-
h) Travelling and Conveyance Expenses/TA/ DA	14,65,986	-	14,65,986	16,36,045	-	16,36,045
i) Hospitality	-	-	-	-	-	-
j) Auditors Remuneration	2,01,550	-	2,01,550	3,00,000	-	3,00,000
k) Professional Charges	-	-	-	-	-	-
l) Advertisement and Publicity	-	-	-	-	-	-
m) Magazines & Journals	-	-	-	-	-	-
n) Others (as per details below)						
Contingencies	59,14,245	-	59,14,245	26,67,064	-	26,67,064
Recruitment Expenses	4,26,071	-	4,26,071	23,93,883	-	23,93,883
Miscellaneous Expenses	13,81,081	-	13,81,081	11,18,580	-	11,18,580
	-	-	-	-	-	-
TOTAL	5,66,69,961	-	5,66,69,961	5,76,51,691	-	5,76,51,691

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SCHEDULE 18 TRANSPORTATION EXPENSES

[Amount in ₹]

Particulars	Current Year			Previous Year		
	Revenue	Capital	Total	Revenue	Capital	Total
1 Vehicles (owned by Institution)						
a) Running expenses	1,36,195	-	1,36,195	2,08,723	-	2,08,723
b) Repairs & maintenance	-	-	-	-	-	-
c) Insurance expenses	-	-	-	-	-	-
2 Vehicles taken on rent/lease						
a) Rent/lease expenses	1,21,77,424	-	1,21,77,424	1,42,88,886	-	1,42,88,886
3 Vehicle (Taxi) hiring expenses	-	-	-	-	-	-
Total	1,23,13,619	-	1,23,13,619	1,44,97,609	-	1,44,97,609

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SCHEDULE 19 – REPAIRS & MAINTENANCE

[Amount in ₹]

Particulars	Current Year			Previous Year		
	Revenue	Capital	Total	Revenue	Capital	Total
a) Buildings	-	-	-	-	-	-
b) Furniture & Fixtures	-	-	-	-	-	-
c) Plant & Machinery	-	-	-	-	-	-
d) Office Equipment	-	-	-	-	-	-
e) Computers	-	-	-	-	-	-
f) Laboratory & Scientific equipment	-	-	-	-	-	-
g) Audio Visual equipment	-	-	-	-	-	-
h) Cleaning Material & Services	-	-	-	-	-	-
i) Book binding charges	-	-	-	-	-	-
j) Gardening	-	-	-	-	-	-
k) Estate Maintenance	-	-	-	-	-	-
l) Others - Security and Cleaning	3,91,51,292	-	3,91,51,292	3,08,31,259	-	3,08,31,259
m) Others - Repairs and Maintenance	33,06,031	-	33,06,031	80,91,160	-	80,91,160
Total	4,24,57,323	-	4,24,57,323	3,89,22,419	-	3,89,22,419

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SCHEDULE 20 – FINANCE COSTS

[Amount in ₹]

Particulars	Current Year			Previous Year		
	Revenue	Capital	Total	Revenue	Capital	Total
a) Bank charges	26,669	-	26,669	34,787	-	34,787
b) Others (specify)	-	-	-	-	-	-
Total	26,669	-	26,669	34,787	-	34,787

Note:-

If the amount is not material, the head Bank charges could be omitted and these could be accounted as Administrative expenses in Schedule 17.

SCHEDULE 21 - OTHER EXPENSES

[Amount in ₹]

Particulars	Current Year			Previous Year		
	Revenue	Capital	Total	Revenue	Capital	Total
a) Provision for Bad and Doubtful Debts/ Advances	-	-	-	-	-	-
b) Irrecoverable Balances Written - off	-	-	-	-	-	-
c) Grants/Subsidies to other institutions/ organizations	-	-	-	-	-	-
d) Others (specify)	-	-	-	-	-	-
Total	-	-	-	-	-	-

Note:-

Other expenses shall be classified as writes - off, provisions, miscellaneous expenses, loss on sale of investments, loss of fixed assets and loss on sale of fixed assets etc and disclosed accordingly.

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SCHEDULE 22: PRIOR PERIOD EXPENSES

[Amount in ₹]

Particulars	Current Year			Previous Year		
	Revenue	Capital	Total	Revenue	Capital	Total
1 Establishment expenses	(45,16,308)	-	(45,16,308)	-	-	-
2 Academic expenses	-	-	-	-	-	-
3 Administrative expenses	(2,150)	-	(2,150)	26,133	-	26,133
4 Transportation expenses	-	-	-	-	-	-
5 Repairs & Maintenance	3,71,80,725	-	3,71,80,725	-	-	-
6 Communication and Transport	-	-	-	-	-	-
6 Depreciation	1,35,125	-	1,35,125	-	-	-
Total	3,27,97,392	-	3,27,97,392	26,133	-	26,133

SCHEDULE 23: Significant Accounting Policies

1. BASIS OF ACCOUNTING:

The financial statements have been prepared under the historical cost convention and on accrual basis except stated otherwise.

2. FORMAT OF ACCOUNTS:

The Accounts have been prepared on the basis of Revised Format of Accounts of Central Education Institutions prescribed by Government of India, Ministry of Human Resource Development, Department of Higher Education.

3. REVENUE/ EXPENDITURE RECOGNITION:

- Fees from Students (except Tuition Fees), Sale of Admission Forms, Royalty and Interest on Savings Bank account are accounted on cash basis.
- Income from Land, Buildings and Other Property and Interest on Investments are accounted on accrual basis.

4. FIXED ASSETS:

Fixed Assets are stated at cost of acquisition inclusive of inward freight, duties and taxes and incidental and direct expenses related to acquisition.

5. DEPRECIATION:

Depreciation on fixed Assets has been provided on Straight line method at the rates given in the below table.

Tangible Assets:	
1. Land	0%
2. Site Development	0%
3. Buildings	2%
4. Roads & Bridges	2%
5. Tube Wells & water Supply	2%
6. Sewerage & Drainage	2%
7. Electrical Installation and Equipment	5%
8. Plant & Machinery	5%
9. Scientific & Laboratory Equipment	8%
10. Office Equipment	7.5%
11. Audio Visual Equipment	7.5%
12. Computer & Peripherals	20%
13. Furniture, Fixture & Fittings	7.5%
14. Vehicles	10%
15. Library Books & Scientific Journals	10%
16. Sports Equipments	10%
Intangible Assets (amortization):	
1. E-Journals	40%
2. Computer Software	40%
3. Patents & Copyrights	9years

Depreciation is provided for the whole year on additions during the year.

6. INTANGIBLE ASSETS:

Patents and copy rights, E Journals and Computer Software are grouped under Intangible Assets.

- Electronic Journals (E-Journals) are separated from Library Books in view of the limited benefit that could be derived from the on-line access provided. E-journals are not in a tangible form, but temporarily capitalized and in view of the magnitude of expenditure and the benefit derived in terms of perpetual knowledge acquired by the Academic and Research Staff; Depreciation is provided in respect of E-journals at a higher rate of 40% as against depreciation of 10% provided in respect of Library Books.
- Expenditure on acquisition of software has been separated from computers and peripherals, as apart from being intangible assets, the rate of obsolescence in respect of these is very high. Depreciation is provided in respect of software at a higher rate of 40% as against depreciation of 20% provided in respect of Computers & Peripherals.

7. INTERNAL RESOURCES FUND

Registration and admission related fee from students is transferred to Internal Resources Fund. The Internal Resources Fund is utilized for expenditure as laid down by the Executive Council of the Institution from time to time.

8. GOVERNMENT GRANTS

- Government Grants are accounted on realization basis. However, where a sanction for release of grant pertaining to the financial year is received before 31st March and the grant is actually received in the next financial year, the grant is accounted on accrual basis and an equal amount is shown as recoverable from the Grantor.
- To the extent utilized towards capital expenditure, (on accrual basis) government grants are transferred to the Capital Fund.
- Government grants for meeting Revenue Expenditure (on accrual basis) are treated, to the extent utilized, as income of the year in which they are realized.
- Unutilized grants (including advances paid out of such grants) are carried forward and exhibited as a liability in the Balance Sheet.

9. SPONSORED PROJECTS

In respect of ongoing Sponsored Projects, the amounts received from sponsors are credited to the head "Current Liabilities and Provisions -Current Liabilities -Other Liabilities -Receipts against ongoing sponsored projects." As and when expenditure is incurred / advances are paid against such projects, or the concerned project account is debited with allocated overhead charges, the liability account is debited.

10. INCOME TAX:

The income of the Institution is exempt from Income Tax under Section 10(23C) of the Income Tax Act. No provision for tax is therefore made in the accounts.

SCHEDULE 24: Contingent Liabilities and Notes to Accounts

1. Contingent liabilities and capital commitments:

	(Amount In ₹ Lakh)	
	Current Year	Previous Year
a) Claims against the Institute not acknowledged as debts - Hostel Rent	5.60	-
b) Capital Commitments (net of advances)	29074.78	29212.04

2. Expenditure in Foreign Currency:

Particulars	Amount (in Rs. Lakh)
Journals and Subscriptions	5.48
Equipments	13.01
Total	18.49

3. Cost of machineries and equipments for Start-up Projects amounting to Rs.16.89 lakh put to use during the financial year 2017-18 which was wrongly kept in capital work-in-progress has been rectified during the current financial year in terms of C&AG observation.
4. Rs.20.00 lakh compensation paid to the Director, Animal Husbandry & Veterinary Department, Government of Meghalaya for vacating five acres of land in their possession allotted to the Institute by GoM at Sohra during the financial year 2017-18 which was wrongly booked under capital work-in-progress has been rectified during the current financial year in terms of C&AG observation.
5. Rs.370.52 lakh being the payment made to Public Works Department, Government of Meghalaya for widening of existing PWD Road including MBT and Construction of RCC Culvert from Sohra-Shella junction to NIT Campus, Sohra during the financial year 2017-18 which was wrongly booked under capital work-in-progress has been rectified during the current financial year in terms of C&AG observation.
6. Prior Period Expenses include Rs.1.35 lakh being recalculation of retrospective depreciation necessitated in terms of C&AG observations relating to rectification of cost machineries and equipments for Start-up Projects amounting to Rs.16.89 lakh wrongly kept under capital work-in-progress.
7. Purchases of Printing & Stationery and other consumable items during the year are treated as expenditure and charged to appropriate Revenue heads.
8. In the opinion of the Management, the current assets, loans and advances have a value on realization equal or at least to the aggregate amount shown in the Balance Sheet.
9. Previous year's figures have been rearranged and regrouped wherever considered necessary to facilitate comparison.
10. Figures in the Final accounts have been rounded off to the nearest rupee.
11. Schedules I to 22 are annexed to and form an integral part of the Balance Sheet at 31st March 2019 and the Income & Expenditure account for the year ended on that date.

For NIT Meghalaya

Registrar

Director

NATIONAL INSTITUTE OF TECHNOLOGY MEGHALAYA
SHILLONG, MEGHALAYA

ANNEXURE A : DETAILS OF EMD & SECURITY DEPOSIT AS ON 31-03-2019

[Amount in ₹]

S.No	Name of the Firm / Company	Amount
1	Earnest Money Deposit	41,91,965
2	Security Deposit - Contractors and Suppliers	84,49,493
Total		1,26,41,458

NATIONAL INSTITUTE OF TECHNOLOGY MEGHALAYA
SHILLONG, MEGHALAYA

ANNEXURE B : DETAILS OF STATUTORY LIABILITIES AS ON 31-03-2019

S1.No.	Particulars	Amount
1	TDS - Contracts	47,973
2	VAT	27,967
3	TDS - Pay and Allowances	-
4	Professional Tax	2,88,850
5	Labour Cess	1,86,428
		5,51,218

NATIONAL INSTITUTE OF TECHNOLOGY MEGHALAYA
SHILLONG, MEGHALAYA

ANNEXURE C : DETAILS OF OTHER LIABILITIES AS ON 31-03-2019

S.I.No.	Particulars	Amount
1	Tuition Fee Refundable to SC/ST	6,900
2	Stale Cheques	8,12,738
3	Sundry Receipts	2,62,760
4	SVNIT Surat	1,24,375
5	Suspense Account	2,95,292
6	CSAB Administrative Charges	99,142
7	B. Tech Remuneration	42,000
8	Other Current Liabilities	8,06,30,335
9	Returned Cheques	6,84,734
10	NMEICT	14,166
11	CCMT / CSAB Admission Expenses	14,212
12	Current Liabilities (Projects)	4,28,000
13	NIT Mess Account	11,38,500
14	Excess Fee Refundable	7,80,625
15	External Transfer	16,69,445
16	Hostel Mess Fees	92,23,570
17	Book Purchase	23,94,000
		9,86,20,794

NATIONAL INSTITUTE OF TECHNOLOGY MEGHALAYA
SHILLONG, MEGHALAYA

ANNEXURE D : DETAILS OF BALANCES IN SAVINGS BANK / CURRENT / FIXED DEPOSIT ACCOUNTS WITH BANKS AS ON 31-03-2019

S.I.No.	Particulars	Purpose	Account No.	Amount
	Current Bank Accounts			
	Bank of India	Project		18,81,302
	State Bank of India	Main Account	32047142365	9,00,69,541
	State Bank of India	Account with NIT, Surat	31098433485	42,94,795
				9,62,45,639
	Savings Bank Accounts			
	Canara Bank	Fees Account	1184101015456	15,39,31,004
	HDFC Bank	Fees Account	50200018556850	0
	ICICI Bank	Corpus Fund	332701000053	48,31,670
	State Bank of India	SBI Collect - Fees Collection		1,12,93,193
	State Bank of India	Hostel Mess Account	3776829245	95,33,319
	State Bank of India	SBI Power Jyoti - Fees Collection		4,30,378
	State Bank of India	Recruitment	38070817950	6,70,140
	State Bank of India	Project		19,02,916
	UCO Bank	Fees Account	23730110003381	1,85,87,556
	UCO Bank	Project		3,48,000
	UCO Bank	Project		5,996
	UCO Bank	Project		73,333
	UCO Bank	Project		1,498
	UCO Bank	Project		4,22,269
	UCO Bank	Project		3,84,536
	UCO Bank	Project		4,22,188
	UCO Bank	Project and Consultancy	23730110010280	3,59,43,619
	UCO Bank	Project		44,61,808
	UCO Bank	Project		79,795
	UCO Bank	Project		7,39,416
				24,40,62,633.19
	Term Deposits			
	UCO Bank			1,36,93,670.00
	State Bank of India			7,22,06,391.00
				8,59,00,061.00
	Total			42,62,08,332.76

NATIONAL INSTITUTE OF TECHNOLOGY MEGHALAYA
SHILLONG, MEGHALAYA

RECEIPTS AND PAYMENTS ACCOUNT FOR THE YEAR ENDED 31ST MARCH 2019

[Amount in ₹]

RECEIPTS		Current Year	Previous Year		PAYMENTS	Current Year	Previous Year
I.	Opening Balance			I.	Expenses		
a)	Cash Balances	-	-	a)	Establishment Expenses	14,90,94,305	13,82,10,737
b)	Bank Balance			b)	Academic Expenses	4,44,30,368	4,22,69,347
i.	In Current accounts	10,79,59,116	29,53,48,987	c)	Administrative Expenses	5,66,69,961	5,76,51,691
ii.	In Deposit accounts	1,28,19,666	1,19,01,624	d)	Transportation Expenses	1,23,13,619	1,44,97,609
iii.	Savings accounts	11,04,76,896	6,58,39,556	e)	Repairs & Maintenance	4,24,57,323	3,89,22,419
II.	Grants Received			f)	Prior period expenses	3,26,62,267	26,133
a)	From Government of India	48,78,00,000	70,00,00,000	g)	Finance Cost	26,669	34,787
b)	From State Government	-	-	II.	Payments against Earmarked/ Endowment Funds	-	-
c)	From others	-	-	III.	Payments against Sponsored Projects/ Schemes	3,68,04,609	3,08,64,873
				IV.	Payments against Sponsored Fellowships/ Scholarships	2,05,800	9,86,490
				V.	Investments and Deposits made		
III.	Academic Receipts	88,69,850	1,57,26,360	a)	Out of Earmarked/ Endowments funds	-	-
IV.	Receipts against Earmarked/ Endowment Funds	3,21,80,449	2,26,23,899	b)	Out of own funds (Investments- Others)	-	-
V.	Receipts against Sponsored Projects/Schemes	4,56,83,295	3,99,60,292	VI.	Term Deposits with Scheduled Banks	-	-
VI.	Receipts against sponsored Fellowships and Scholarships	8,38,300	6,86,180	VII.	Expenditure on Fixed Assets and Capital Works - in- Progress		
VII.	Income on Investments from			a)	Fixed Assets	45,33,827	10,19,96,121
a)	Earmarked/Endowment funds	-	-	b)	Capital Works- in- Progress	7,71,86,148	50,12,04,324
b)	Other investments	-	-	VIII.	Other Payments including statutory payments	-	-
VIII.	Interest received on						
a)	Bank Deposits	37,58,725	9,12,696	IX.	Refunds of Grants		
b)	Loans and Advances			X.	Deposits and Advances	83,98,752	-1,51,35,658
c)	Savings Bank Accounts	7,50,376	3,62,524	XI.	Other Payments	-	-
IX.	Investments encashed	-	-	XII.	Closing balances		
X.	Term Deposits with Scheduled Banks encashed	-	-	a)	Cash in hand	-	-
XI.	Other income (including Prior Period Income)	90,06,316	39,91,655	b)	Bank balances		
XII.	Deposits and Advances	7,08,48,991	-1,45,69,222		In Current Accounts	9,62,45,639	10,79,59,116

RECEIPTS		Current Year	Previous Year		PAYMENTS	Current Year	Previous Year
XIII.	Miscellaneous Receipts including Statutory Receipts	-	-		In Savings Accounts	24,40,62,633	11,04,76,896
XIV	Any Other Receipts - Capital Work in Progress refund	-	-		In Deposit Accounts	8,59,00,061	1,28,19,666
TOTAL		890,991,980	1,142,784,550	TOTAL		89,09,91,980	1,14,27,84,550

For NIT Meghalaya

Registrar

Director



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