

ANNUAL REPORT 2019-20



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



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 of 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://nitm.ac.in/>

THE AUTHORITIES:

VISITOR:

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

BOARD OF GOVERNORS:

- Shri Sajjan Bhajanka, Chairman
- 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 Tariatang, Retired Chief Engineer, PWD (Roads), Meghalaya, (w.e.f. 02.08.2018)
- Prof. S. K. Dwivedy, Professor, IIT Guwahati, Member (upto 13.08.2019)
- Dr. D. S. Roy, Associate Professor, NIT Meghalaya, Member (upto 13.08.2019)
- Prof. G. Panda, Professor, NIT Meghalaya, Member (w.e.f 09.09.2019)
- Dr. C. Marthong, NIT Meghalaya Member (w.e.f 09.09.2019)
- 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, Member Secretary

FINANCE COMMITTEE:

- Shri Sajjan Bhajanka, Chairman
- Director, IIT Guwahati
- 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
- Shri. S. Pyngrope, Retd. Secretary to the Govt. of Meghalaya, PWD (R&B) Department, Member (w.e.f. 01.01.2020)
- Shri T. R. Pdah, Addl. Chief Engineer (EZ), MePDCL, Member
- Shri K. K. Mawa, Superintending Engineer, PWD (Buildings), Member (w.e.f. 05.12.2019)
- Ms. Suhasini Gotmare, Director (NITs), 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

DEANS:

Dean (Academic Affairs)

Dean (Research & Consultancy)

Dean (Student Welfare)

Dean (Planning & Development)

Dean (Faculty Welfare)

Prof. G. Panda

Prof. A. Bhattacharjee

Dr. A. Banerjee

Dr. D. K. Sarma

Prof. G. Panda (upto 30.06.2019)

Prof. H. C. Das (w.e.f. 01.07.2019 onwards)

PROFESSORS INCHARGE:

Computer Centre

Centre of International Relations

Centre for Career Development

Centre for Technology Enabled Learning

Centre for Robotics & Mechatronics

Centre for Innovation Incubation & Entrepreneurship

Dr. D. S. Roy, CS

Dr. M. Saha, MA

Dr. R. S. Das, ME

Dr. P. K. Rathore, EC

Dr. B. K. Sarkar, ME

Dr. A. Dandapat, EC (upto 30.06.2019)

Dr. Ch. V. Rama Rao, EC (w.e.f. 01.07.2019 onwards)

HEADS OF DEPARTMENTS:

Computer Science & Engineering (CS)

Electronics and Communication Engineering (EC)

Electrical Engineering (EE)

Mechanical Engineering (ME)

Civil Engineering (CE)

Physics (PH)

Chemistry (CY)

Mathematics (MA)

Humanities and Social Sciences (HSS)

Dr. D. S. Roy (upto 30.06.2019)

Dr. Yogita (w.e.f. 01.07.2019 onwards)

Dr. Ch. V. Rama Rao (upto 30.06.2019)

Dr. P. Rangababu (w.e.f. 01.07.2019 onwards)

Dr. S. Das

Dr. B. K. Sarkar (upto 30.06.2019)

Dr. R. N. Mahapatra (w.e.f. 01.07.2019 onwards)

Dr. M. L. Patton

Dr. K. Senthilkumar (upto 30.06.2019)

Dr. A. Nath (w.e.f. 01.07.2019 onwards)

Dr. A. S. Roy

Dr. M. Saha

Dr. P. S. Mangang



STUDENTS ACTIVITY CENTRE (SAC):

President

Dr. P. N. Chatterjee, CY

Vice President (Cultural)

Dr. B. Kumbhakar, MA

Vice President (Technical)

Dr. D. Adak, CE

Vice President (Sports)

Dr. P. K. Rathore, EC

HOSTEL ADMINISTRATION:

Chief Warden

Dr. S. Mukherjee, MA

WARDENS:

Polo Boys Hostel

Dr. S. Moulik, CS

Kench's Trace Boys Hostel

Dr. B. Balabantaray, CS

Umpling Boys Hostel

Dr. R. Roy, EE

Lapalang I Boys Hostel

Dr. S. Majumdar, EC

Lapalang II Boys Hostel

Dr. A. K. Paul, CY

Lapalang III Boys Hostel

Dr. M. Rahang, ME

Lapalang IV Boys Hostel

Dr. K. Debnath, ME

Lapalang V Boys Hostel

Dr. S. Debbarma, EE

Nongthymmai Girls Hostel

Dr. S. Sharma, CE

Lapalang Girls Hostel

Dr. S. Sahoo, CE

REGISTRAR'S OFFICE:

Registrar

Shri B. N. Choudhury

Asst. Registrar (Establishment)

Shri B. Blahwar

Asst. Registrar (Academic Affairs)

Mrs. A. Rai

Asst. Registrar (Finance & Accounts)

Shri I. Mahesh (w.e.f. 15.10.2019 onwards)

Asst. Registrar (Director's Office)

Shri H. Yadav (w.e.f. 04.10.2019 onwards)

ENGINEERING SECTION:

Executive Engineer

Shri R. L. Kharpran

LIBRARY:

Asst. Librarian

Dr. R. Kharbihkhiew

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 ten years of its existence since its establishment in the year 2010. During the year 2019-20 the Institute made significant strides.

(I) ACADEMIC SECTION

The functioning of Academic Section is headed by Dean (Academic Affairs) and assisted by Professors-in Charge (PIC-UG & PIC-PG&R), Assistant Registrar (Academic Affairs), Superintendent, and Junior Assistants. The Section performs all the functions related to Academics of the Institute. It also provides administrative support to the Senate, which is the highest academic body of the Institute.

PEOPLE UNDER ACADEMIC SECTION

Sl. No.	Name	Designation
1	Prof. Gayadhar Panda	Dean (Academic Affairs)
2	Dr. P. Rangababu	PIC (AA, PG&R)
3	Dr. Vipin Pal	PIC (AA, UG)
4	Mrs. Ambika Rai	Assistant Registrar (Academic Affairs)
5	Mr. Chinmoy Hazarika	Superintendent (Academic Affairs)
6	Ms. Iobida Nongkhaw	Junior Assistant
7	Mr. Banshailang Myrthong	Junior Assistant
8	Mr. Julius lawphniaw	Junior Assistant
9	Mr. Manfred Kurbah	Junior Assistant

(II) PROGRAMMES OFFERED BY THE INSTITUTE:

1) UNDERGRADUATE PROGRAMME:

The Institute offers B.Tech (Bachelors of Technology) Programme in the following five disciplines:

- Computer Science and Engineering (CSE)
- Electronics and Communication Engineering (ECE)
- Electrical Engineering (EE)
- Mechanical Engineering (ME)
- Civil Engineering (CE)

2) POST GRADUATE PROGRAMMES:

The Institute offers Master of Technology (M.Tech) and Master of Science (M.Sc) as PG Programmes in the following disciplines:

a) Master of Technology (M.Tech) Programme

- Computer Science and Engineering
- Electronics and Communication Engineering (VLSI & Embedded system)
- Electrical Engineering (Power and Energy Systems)
- Mechanical Engineering (Fluids and Thermal Engineering).
- Civil Engineering (Structural Engineering)

b) Master of Science (M.Sc.) Programme:

- Physics
- Chemistry
- Mathematics

3) DOCTOR OF PHILOSOPHY (Ph.D) PROGRAMME:

This is offered with an objective to undertake quality researches for innovations and new technological developments. The Institute is currently offering Ph.D Programme in the following disciplines under both Full Time and Sponsored (Part-Time) Categories.

- Engineering
- Basic Sciences
- Humanities & Social Sciences

(III) ADMISSIONS TO THE VARIOUS PROGRAMMES DURING 2019-20

- Admission to the Bachelor of Technology Programme (B.Tech) was conducted on the basis of valid JEE Main scores and through the joint seat allocations made by Joint Seat Allocation Authority (JoSSA)/CSAB.
- Admission to the Master of Technology (M.Tech) Programme in the Institute was conducted on the basis of valid GATE scores and through the counseling conducted by the Centralized Counseling for M.Tech. / M.Arch. / M.Planning.
- Admission to Master of Science (M.Sc.) Programme was conducted on the basis of valid JAM scores and through Centralized Counseling CCMN. However, vacant seats after CCMN counseling were filled through Institute entrance examination.
- Admission to the Ph.D Programme was conducted based on the written examination, viva-voce or presentations. The advertisement for the same was published during May.

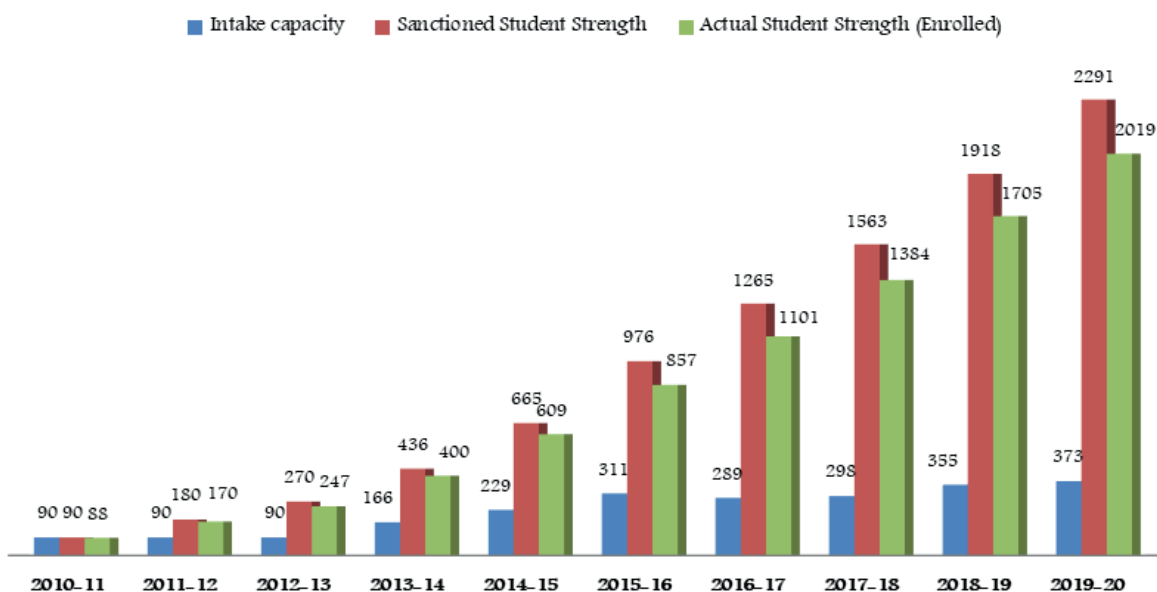
Admissions to various Programmes during the year were successfully conducted.

IV) STUDENT'S DATA UPTO 2019-20

Program	Discipline	Year of Starting	Intake Capacity	Admitted in 2019-20						Total Strength Admitted till 2019					
				M	F	SC	ST	OBC	Total	M	F	SC	ST	OBC	Total
B.Tech	Electronics and Communication Engineering	2010	30	22	9	2	12	6	31	226	60	29	90	60	286
	Electrical Engineering	2010	30	23	5	3	15	7	28	235	53	36	104	69	288
	Computer Science and Engineering	2010	30	27	9	5	12	6	36	227	50	35	89	52	277
	Mechanical Engineering	2013	30	25	5	3	13	4	30	176	19	19	85	37	195
	Civil Engineering	2013	30	19	10	3	14	6	29	155	45	19	103	41	200
	Sub Total		150	116	38	16	66	29	154	1019	227	138	471	259	1246
M.Tech	Electronics and Communication Engineering	2014	20	5	3	3	0	3	8	53	20	14	9	21	73
	Electrical Engineering	2014	20	4	2	0	2	2	6	66	18	12	9	21	84
	Computer Science and Engineering	2014	20	9	2	3	0	2	11	67	22	20	15	17	89
	Mechanical Engineering	2015	20	6	0	0	1	1	6	63	2	8	4	27	65
	Civil Engineering	2015	20	13	2	2	3	2	15	35	2	5	6	8	37
	Sub Total		100	37	9	8	6	10	46	284	64	59	43	94	348
M.Sc.	Physics	2015	16	9	5	2	2	4	14	51	19	4	20	15	70
	Chemistry	2015	16	9	7	2	1	6	16	32	42	9	5	29	74
	Mathematics	2015	16	6	3	1	2	0	9	30	20	5	24	7	50
	Sub Total		48	24	15	5	5	10	39	6	8	15	5	2	194

Program	Discipline	Year of Starting	Admitted in 2019-20						Total Strength Admitted till 2019					
			M	F	SC	ST	OBC	Total	M	F	SC	ST	OBC	Total
Ph.D	Electronics and Communication Engineering	2013	9	2	0	1	4	11	29	5	3	4	8	34
	Electrical Engineering	2013	10	3	1	0	1	13	29	7	6	0	4	36
	Computer Science and Engineering	2013	13	3	3	1	4	16	30	11	4	8	8	41
	Mechanical Engineering	2013	15	1	1	0	1	16	44	3	5	0	8	47
	Civil Engineering	2013	2	1	0	0	0	3	9	7	1	8	2	16
	Physics	2013	4	2	0	4	0	6	12	5	0	7	1	17
	Chemistry	2013	3	2	0	1	0	5	10	10	1	2	0	20
	Mathematics	2013	1	2	0	1	0	3	11	3	2	2	4	14
	Humanities & Management	2013	0	2	0	1	0	2	2	4	0	2	2	6
	Sub Total		57	18	5	9	10	75	176	55	22	33	37	231
Grand Total												2019		

STUDENT STRENGTH



The intake capacity of the Institute increased to 373 for total admitted student capacity of 2019 including Ph.D scholars.

V) MAJOR EVENTS

I) SIXTH CONVOCATION:

The Sixth Convocation of the Institute was held on 28th September 2019. Dr. G. Sathesh Reddy, Secretary to Gol, Department of Defence (R&D) and Chairman, DRDO graced the occasion as the Chief Guest. Shri Sajjan Bhajanka, Chairman, Board of Governors of the Institute, was the Chairman of the Convocation. The **sixth** batch of B.Tech, **fourth** batch of M.Tech, **third** batch of M.Sc and Ph.D scholars of the Institute graduated in June, 2019. The students who graduated under the different programmes are presented below;

Sl No	Name of the Programme	Number of the students graduated
1	B.Tech	107
2	M.Tech	45
3	M.Sc	35
4	Ph.D	10

Most of the qualified students were placed in reputed companies through campus placement.



(6th Convocation : Dated 28/09/2019)



(6th Convocation : Dated 28/09/2019)

2) RESEARCH CONCLAVE:

The First Research Conclave 2020 of NIT Meghalaya was held on the National Science Day, 28th February 2020 mainly to provide a platform for the young researchers of NIT Meghalaya as well as other higher education institutes to nourish the young minds towards accelerated research and innovations. Prof Amitava Chatterjee from Jadavpur University and Dr. Neena Gupta, (Shanti-Swarup Bhatnagar Awardee), from ISI Kolkata graced the event as expert speakers. Over 120 Research Scholars from NIT Meghalaya and other Institutes of repute viz., IIT Guwahati, NIT Durgapur, Tezpur University, BARC participated in the Research Conclave. Based on the recommendation of the jury from NEHU and NIT Meghalaya, the researchers were awarded in various technical programmes like Poster Presentations, Oral-Presentations, work Demonstrations etc.



(Research Conclave dated-28/02/2020)

VID NOTABLE ACHIEVEMENTS OF THE INSTITUTE:

1. NIT Meghalaya has been ranked 67th by NIRF 2019
2. NIT Meghalaya has been ranked at the 56th position by Business World, 2019.
3. NIT Meghalaya has been awarded recognising Exemplary Contributors of Education Sector by 14th World Education Summit 2019, Delhi, 9th-10th August



(Research Conclave dated-28/02/2020)

VID NOTABLE ACHIEVEMENTS OF THE STUDENTS

The notable achievements of the students in the field of academics/research during the year 2019-20 are presented below:

SI No	Name of the Student/ Name of the Team	Enrolment Number	Name of the Award	Name of International Institution/ Organisati on from where the award has been received	Year of receiving award
1	Kaibalya Prasad Panda	PI7EE002	Two months Exchange Programme	University of Warwick UK	2019
2	Prabhat Ranjan Bana	TI7EE015	Two months Exchange Programme	Cardiff University UK	2019

SI No	Name of the Student/ Name of the Team	Enrolment Number	Name of the Award	Name of International Institution/ Organisati on from where the award has been received	Year of receiving award
3	Devashish Dubey	BI6ME016	Globalink Research Internship Programme at McMaster University Hamilton	Mitacs	2019
4	Devansh Maurya	BI6CS024	Globalink Research Internship Programme at Dalhousie University Halifax	Mitacs	2019
5	Aniruddha Arun Agrawal	BI6EE013	Globalink Research Internship Programme at McMaster University Hamilton	Mitacs	2019
7	Ashutosh Kumar	BI6CS019	Globalink Research Internship Programme	Mitacs	2019

VIII) FINANCIAL ASSISTANCE TO THE STUDENTS

The Institute provides full exemption of tuition fees to students belonging to ST, SC & PH categories. Apart from that, full tuition fee remittance is provided to students whose annual family income is lesser than *one lakh*. The students with annual family income of lesser than *five lakhs* are remitted with *2/3rd of the tuition fees* as per MHRD guidelines from 2016 onwards. All the Ph.D /M.Tech/M.Sc students are receiving scholarships either from the Institute as per the MHRD norms or from different funding agencies.

STUDENTS ACTIVITIES

The students of NIT Meghalaya, 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, Painting, Essay writing and Quiz competitions etc.

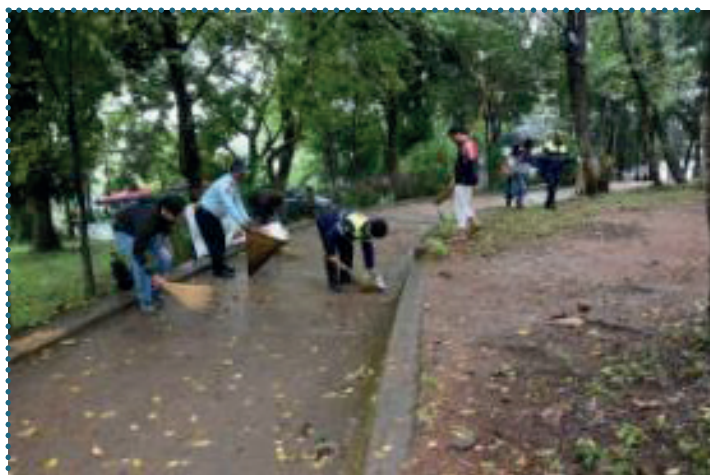
■ EK BHARAT SHRESHTHA BHARAT (EBSB)

Several student activities were conducted throughout the year within 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.

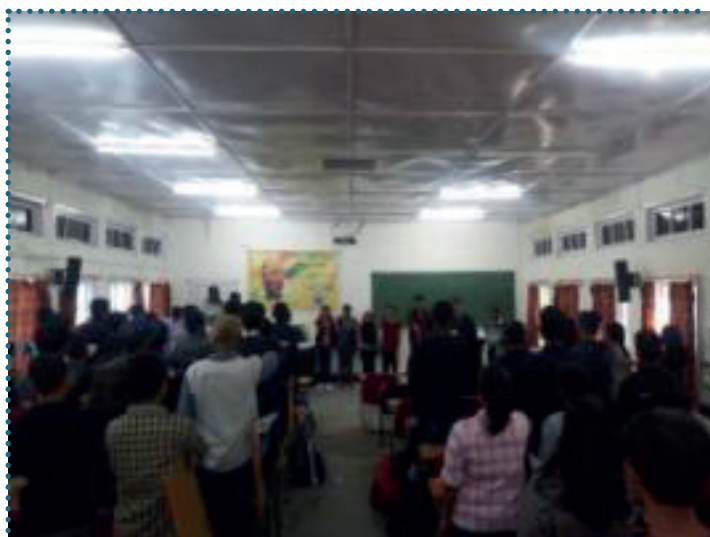
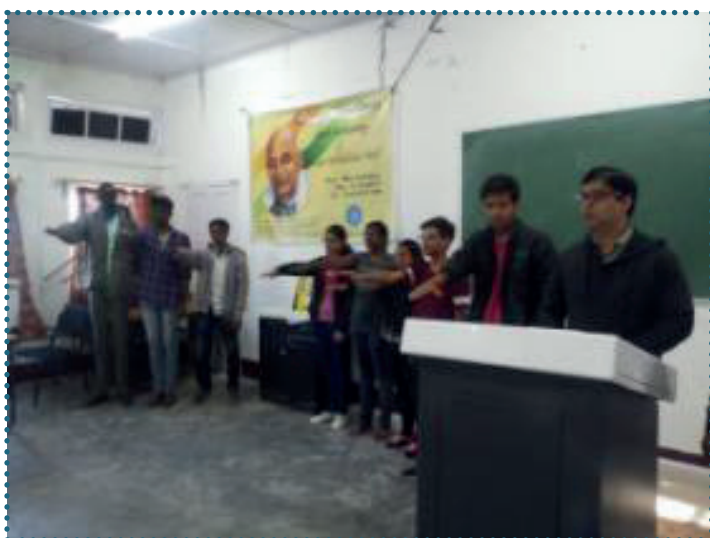
■ CELEBRATION OF “GANDHI JAYANTI” ON OCTOBER 2, 2019



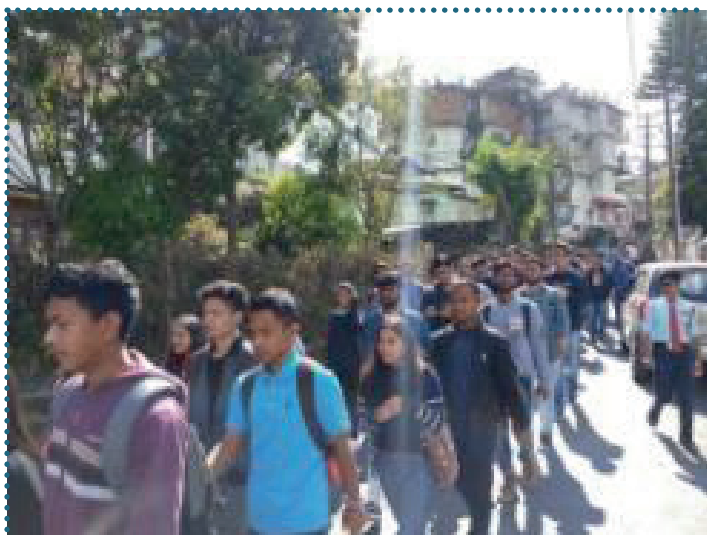
■ **CLEANING ACTIVITIES WITHIN THE CAMPUS ON THE OCCASION OF “GANDHI JAYANTI” ON OCTOBER 2, 2019**



■ **CELEBRATION OF “NATIONAL UNITY DAY” ON OCTOBER 31, 2019**



■ UNITY RUN ON THE OCCASION OF “NATIONAL UNITY DAY” ON OCTOBER 31, 2019



■ **WORKSHOP ON DRAMA, HISTORICAL AND GEOGRAPHICAL BACKGROUND AND FESTIVALS OF ARUNACHAL PRADESH, UTTAR PRADESH AND MEGHALAYA CONDUCTED ON NOVEMBER 6, 2019**



■ **QUIZ, ESSAY WRITING AND PAINTING COMPETITION HELD ON DECEMBER 11, 2019**

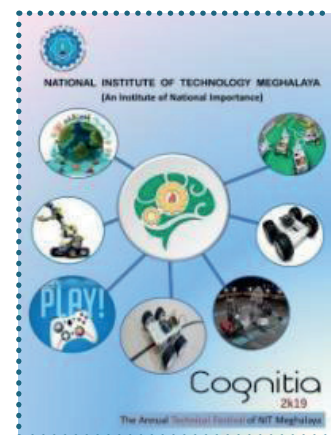


TECHNICAL ACTIVITIES

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.

■ TECHNICAL FESTIVAL (COGNITIA):

The Students Council organized the fourth Annual Technical Festival Cognitia 2019, October 2019. 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. Cognitia is the annual Technical Festival of NIT Meghalaya, held in the autumn semester of the academic year. It is a festival where students compete in various Technical events. The Technical events include Robotic and Departmental events, that are held by the various departments of the institute. The other events include Debate, Quiz, Science Exhibition and more. Cognitia is the biggest college based technical festival in all of Meghalaya, so we from NIT Meghalaya invites you to come joins us at our amazing techinal festival, where students apply their wit and knowledge of technology to see who's the best



EVENT NAME: - COGNITIA INAUGURATION



EVENT NAME: - QUIZ COMPETITION (OPEN TO ALL SCHOOLS AND COLLEGES)



EVENT NAME: - ROBOTIC EVENTS.



EVENT NAME – ROBOTIC WORKSHOP



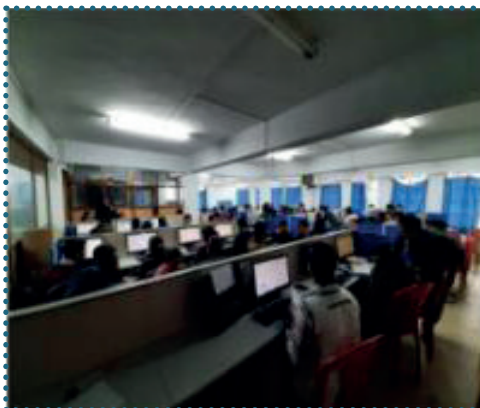
EVENT NAME: - PRIZE DISTRIBUTION.



■ ACTIVITIES OF CODING CLUB:

1. HacktoberFestoday workshop was conducted by Coding club on "Open Source". Students got awareness about the open source and they had been started contributing to open source. All the students who make a successful contribution was received cash prize and certificates. It was conducted on 26th October 2019 in which students from NIT Meghalaya were participated at Computer Lab, NIT Meghalaya.
2. 2nd Event, "Coder's Eye Coding Contest": It was conducted on 2nd November 2019 in which students from NIT Meghalaya were participated.
3. CodeChef Campus Chapter - Codastic is created

EVENT – CODING COMPETITION.



SPORTS & GAMES

Various Sports activities were held during the weekends throughout the year for the session 2019-20.

1. Intra NIT Meghalaya Table Tennis and Badminton Tournament 2019, held on 31.08.2019 & 01.09.2019 at Nehu Campus Indoor Stadium
2. Intra NIT Meghalaya Football Tournament 2019 held on 19.10.2019 & 20.10.2019 at Pohkseh Football Ground and Polo Ground.



3. Intra NIT Meghalaya Chess and Carrom Competition 2019, held on 02.11.2019 & 03.11.2019 at NIT Bijnai Complex Hall



4. Intra-NIT Meghalaya Cricket Tournament held on the 09.11.2019 and 10.11.2019 at NEHU Campus Sports ground.



5. Celebrated International Day of Yoga on 21/06/2019 at NIT Meghalaya.



NSS ACTIVITIES

Besides the regular cleaning drives in and around the campus, the NSS team organised a series of activities to observe SwachhtaPakhwada 2020.

1. A pledge taking ceremony took place on the 16th of January 2020.



2. Various competitions were organized in coordination with various teams of the Institute under the guidance of the respective patrons during the days from 16th – 31st January 2020.

- (i) Water conservation team – Dr. Debabrata Podder
 - (a) Drawing competition
 - (b) Poster making
- (ii) Environment Protection team – Dr. Susmita Sharma
 - (a) Slogan writing
 - (b) Photography contest
- (iii) Save Electricity team – Dr. Shaik Affijulla
 - (a) Speech competition
 - (b) Slogan writing
 - (c) Poster making

3. A Swachhta rally was organized on the 29th of January in coordination with the Swachcha Bharat team and Save the Environment team.





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 objective 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 Institute 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 a good number of companies for recruitment. The placement percentages of students graduated in 2020 are given below:

Discipline	Placement Percentage	
	Overall	Qualified Students (with cgpa >= 6.5)
Computer Science and Engineering	65.50%	70.83%
Electronics and Communication Engineering	50%	58.82%
Electrical and Electronics Engineering	60.87%	72.22%
Mechanical Engineering	47.40%	66.66%
Civil Engineering	21.73%	33.33%
Total	50.86%	61.62%

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

Sl No.	Company Name	Number of Offers	Package Offered (Rs in lakhs per annum)
1	Tredence Analytics	1	6.5
2	Capgemini	2	6.8
3	L&T Infotech	11	5 (GET II), 6.5 (GET VI)
4	Valuelabs	2	16 (for a span of 3yrs)
5	Tata Projects	2	4.65
6	Byju's (Associate Content Development/ Creative Associate)	4	5
7	Byju's (Business Development Associate)	1	10
8	CTL	24	3.6
9	L&T Construction	1	6.5
10	Virtusa	6	5
11	MyGate	1	11
12	CGI	1	7.11
13	IBM	1	7
14	L&T Groups	2	6



SI No.	Company Name	Number of Offers	Package Offered (Rs in lakhs per annum)
15	Infosys	12	3.6
16	Ceat	2	4.5
17	Sidfarm	1	3.5
18	TVS	3	6.75
19	Vedanta	3	7.95
20	Digite	4	6.5, 7.5
21	Cognizant	2	10 (CSE), 6.5 (EEE, ECE, ME)
22	Amazon	1	16 (PPO)
23	RAAM Group	1	6
24	POSOCO	5	19.20
25	IFB	3	6.5
26	Gap Inc.	1	9.08 (PPO)
27	Amazon Berlin	1	55.72
28	Tower Research	1	36
29	Swiggy	1	13.98

	(Rs in lakhs per annum)
Highest Package	55.72
Lowest Package	3.5
Average Package	6.78

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 talk's venue itself. The Committee also utilizes the Conference Hall of the Institute for carrying out video-conferencing and the Computer Centre when the need arises.

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 employability of the students. Furthermore, to make the employability opportunities easily accessible to the students, the centre 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 Central Library which is the heart of the Institute was established in 2012. It serves as a creative and innovative partner in supporting teaching, learning, scholarship and research activities of the Institute. The Library holds the knowledge resources predominantly related to Science and Technology, Humanities, Management & other allied subjects. It 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.

The mission of the Central Library, as an integral part of National Institute of Technology Meghalaya, is to support fully the instructional and research programs of the Institute by providing access to information through the teaching, acquisition, organization, and preservation of information resources in all formats to the Institute's academic community, the region, and the state.

BUDGETARY & EXPENDITURE DETAILS

The budget allocated for the Central Library for the FY 2019-20 is Rs. 1.5 Crore. Below table gives the detailed expenditure incurred on books, journals, newspaper, binding etc. for 2019-20:

Year	Printed Books	Online Databases/e-journals	Newspapers & Magazine ets
2019-20	136744.00	11567019.00	40000.00

The Central Library also received fund from **TEQIP-III** for procuring e-books, Desktop computers for e-library and Grammarly software. The expenditures are as follows:

Year	E-Books	Desktop Computers	Grammarly Software
2019-20	5086411.00	985479.00	916250.00

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 2020 stands as follows:

Sl. No.	Name of Resources	Collection as on 31 st March 2020
1.	Printed Books	15430
2.	E-Books	1579
3.	E-Databases/E-Journals	10
4.	Books Bank (SC/ST)	1162
5.	Theses	25
6.	Magazines	4
7.	Newspaper	8
8.	Reports/ Annual Reports/ Audit Reports	21



SEMINAR / CONFERENCE / WORKSHOP ORGANIZED:

1. Elsevier Author workshop was conducted at NIT Meghalaya on the 20th August, 2019 for the M.Tech, MSc. & Ph.D students .



2. The Third Technology Book Fair was organized in National Institute of Technology from 30th to 31st January 2020. The book fair was inaugurated by Prof. Bibhuti Bhusan Biswal, the Director of NIT Meghalaya. Twelve renowned publishers participated in the Book fair. Some of them are Pearson, Oxford University Press, Khanna, Wiley etc.



3. With the help of TEQIP-III, The Library was able to set-up the E-Library and was inaugurated on the 14th August, 2019 by Prof. Bibhuti Bhusan Biswal, Director, NIT Meghalaya in the presence of the Deans, HoDs and Library Committee members. The E-Library was set-up, so that the students can browse the various E-resources subscribed by the Library and the many open access resources available in the Internet.



ACHIEVEMENTS OF THE CENTRAL LIBRARY.

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. The E- library was set-up with 16 PCs for the students to browse the various e-resources subscribed by the Library and provided by ESS.

The library is an active member of many of the resource centers across the country being maintained and operated by MHRD, UGC etc. It also achieves maximum benefit from various programmes to its users.

INTERNAL COMPLAINTS COMMITTEE

- (1) Awareness programme on “Workplace Sexual Harassment Act 2013” was conducted on 14th August 2019 during induction & orientation program for newly joined students of 2019 batch of National Institute of Technology Meghalaya. The speaker was Ms. Namrata Deka (Student representative, ICC). The newly joined students were enlightened about “Constitution of Internal Complaints Committee: Forbidding Gender Based Harassment”.



- (2) In pursuance with Letter No.SD(I)/MISC/2019-20 dt 02.03.2020 from Prasar Bharati, India's Public Sector Broadcaster, All India Radio, Shillong, Dr.Arпита Nath (Department of Physics) and Dr.Susmita Sharma (Department of Civil Engineering) were nominated from the institute for panel discussion on the topic, “Women role models in male dominated fields such as Armed Forces, Science and Technology” at AIR Shillong on 3rd March 2020. This was in connection with the occasion of International Women's Day and was aired on 8th March 2020.

TEQIP 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.

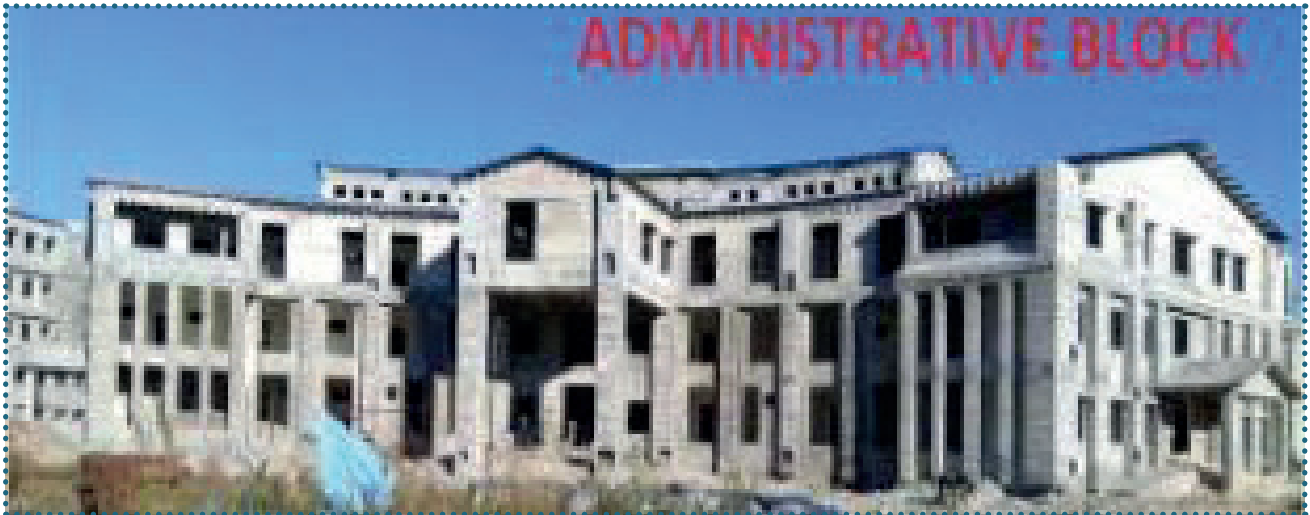
NIT Meghalaya is one of the focused institutes under sub-component I.1 of TEQIP. NIT Meghalaya has received a grant of rupees fifteen crores under this program that has been used to develop laboratories, procure state of the art equipment and for the development of student, staff and faculty of the institute. 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 4 students from NIT Meghalaya have been nominated under MITAC scheme to their summer internships at different universities in Canada.

NIT Meghalaya is one of the high performing institute under TEQIP and has been allocated an additional sum of Rupees One crore fifty lakhs (₹1,50,00,000.00) over the initial allocation of Rupees Fifteen crores. (₹15,00,00,000.00). NIT Meghalaya has procured a substantial number of e-books and e-resources under TEQIP which has facilitated the ongoing education even during the lockdown due to the COVID-19 pandemic. The equipment procured under this scheme are world class and have resulted in very high-end papers published in renowned journals and conferences, and a few patents have also been filed. Apart from the regular research and academic events, TEQIP has also facilitated innovathons, hackathons and mental wellness programs for the students and faculty of NIT Meghalaya.

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 2019-20 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 2022.







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 9 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 (ongoing)
Dr. Diptendu Sinha Roy	Associate Professor	Ph.D.	Distributed, Grid and Cloud Computing	01-07-2016	1- Full time 4- Part time
Dr. Alok Chakrabarty	Assistant Professor	Ph.D.	Pattern Recognition	20-06-2012	1- Full time 1- Part time
Dr. Akhileendra Pratap Singh	Assistant Professor	Ph.D.	Service Oriented Network Architecture, Computer Network, Wireless Sensor Network	03-09-2013	1- Full time 1- Part time
Dr. Surmila Thokchom	Assistant Professor	Ph.D.	Cloud Computing, cryptography	26-09-2012	1- Full time 2- Part time
Dr. Deepak Kumar	Assistant Professor	Ph.D.	Computational Arithmetic	20-12-2012	2- Part time
Dr. Yogita	Assistant Professor	Ph.D.	Data Mining	08-01-2018	2- Full time 2- Part time
Dr. Vipin Pal	Assistant Professor	Ph.D.	Computer Networks, Wireless Sensor Networks	28-12-2017	3- Full time
Dr. Soumen Moulik	Assistant Professor	Ph.D.	Wireless Body Area Networks, Wireless Sensor Networks, Internet of Things	15-12-2017	2- Full time
Dr. Bunil Kumar Balabantaray	Assistant Professor	Ph.D.	Computer Vision, Robotics	14-12-2017	1- Full time 3- Part time

4. LIST OF PUBLICATIONS:

(A) JOURNALS:

1. Mallikarjuna, B., Pathirikkat, G., Roy, D. S., & Maddikara, J. B. R. (2019). A Real-Time Synchronized Harmonic Phasor Measurements-Based Fault Location Method for Transmission Lines. *Journal of Control, Automation and Electrical Systems*, 30(6), 1082-1093.
2. Rajappa, M., Krithivasan, K., & Roy, D. S. (2019). Helly hypergraph based matching framework using deterministic sampling techniques for spatially improved point feature based image matching. *Multimedia Tools and Applications*, 78(11), 14657-14681.
3. Behera, R. K., Reddy, K. H. K., & Sinha Roy, D. (2019). Modeling and assessing reliability of service-oriented internet of things. *International Journal of Computers and Applications (Inderscience)*, 41(3), 195-206.
4. Pradhan, B., Vijayakumar, V., Hui, N. B., & Sinha Roy, D. (2019). Intelligent navigation of multiple coordinated robots. *Journal of Intelligent & Fuzzy Systems*, 36(5), 4413-4423.
5. Nalluri, M. S. R., Kannan, K., Gao, X. Z., & Roy, D. S. (2019). An efficient hybrid meta-heuristic approach for cell formation problem. *Soft Computing*, 23(19), 9189-9213.
6. Reddy, K. H. K., Pandey, V., & Roy, D. S. (2019). A novel entropy-based dynamic data placement strategy for data intensive applications in Hadoop clusters. *International Journal of Big Data Intelligence*, 6(1), 20-37.
7. Chang, C. Y., Lin, C. C., Shang, C., Chang, I. H., & Roy, D. S. (2019). DBDC: A Distributed Bus-Based Data Collection Mechanism for Maximizing Throughput and Lifetime in WSNs. *IEEE Access*, 7, 160506-160522.
8. Nalluri, M. R., Kannan, K., Gao, X. Z., & Roy, D. S. (2019). Multiobjective hybrid monarch butterfly optimization for imbalanced disease classification problem. *International Journal of Machine Learning and Cybernetics*, 1-29.
9. Pradhan, B., Nandi, A., Hui, N. B., Roy, D. S., & Rodrigues, J. (2019). A Novel Hybrid Neural Network Based Multi Robot Path Planning with Motion Coordination. *IEEE Transactions on Vehicular Technology*.
10. Nalluri, M. R., Kannan, K., Gao, X. Z., & Roy, D. S. (2020). Multi-Objective Optimization of Feature Selection Using Hybrid Cat Swarm Optimization. *Science China Technological Sciences*, Springer (Accepted)
11. Chang, I. H., Keh, H. C., Dande, B., & Roy, D. S. (2020). Smart Hat: Design and Implementation of a Wearable Learning Device for Kids Using AI and IoTs Techniques. *Journal of Internet Technology*, 21(2), 593-604.
12. Chang, C. Y., Chen, S. Y., Chang, I. H., Yu, G. J., & Roy, D. S. (2020). Multi-Rate Data Collection Using Mobile Sink in Wireless Sensor Networks. *IEEE Sensors Journal*. (Accepted)
13. Liao, W. H., Dande, B., Chang, C. Y., & Roy, D. S. (2020). MMQT: Maximizing the Monitoring Quality for Targets Based on Probabilistic Sensing Model in Rechargeable Wireless Sensor Networks. *IEEE Access*, 8, 77073-77088. (Accepted)
14. Wen, W., Shang, C., Chang, C. Y., & Roy, D. S. (2020). DEDC: Joint Density-Aware and Energy-Limited Path Construction for Data Collection Using Mobile Sink in WSNs. *IEEE Access*, 8, 78942-78955. (Accepted)
15. Shang, C., Chang, C. Y., Liu, J., Zhao, S., & Roy, D. S. (2020). FIID: Feature-Based Implicit Irregularity Detection Using Unsupervised Learning from IoT Data for Homecare of Elderly. *IEEE Internet of Things Journal*. (Accepted)
16. Dong, Zaixiu, Cuijuan Shang, Chih-Yung Chang, and Diptendu Sinha Roy. "Barrier Coverage Mechanism Using Adaptive Sensing Range for Renewable WSNs." *IEEE Access* 8 (2020): 86065-86080.
17. M S Rao, Kannan K, X Z Gao, Swaminathan V, D S Roy, (2020) "Parameter Evolution of the Classifiers for Disease Diagnosis with Offline Data-Driven Hybrid Systems" *Intelligent Data Analysis (IOS Press)* (Accepted).
18. N. Goel, A. Singh, Yogita, "Integrative Analysis of Multi-Genomic Data for Kidney Renal Cell Carcinoma" *Interdisciplinary Sciences: Computational Life Sciences* 2019.
19. Upasana, J. Sangma, V. Pal, Yogita "Data-Driven Extraction of Quantitative Multi-dimensional Associations of Cardiovascular Drugs and Adverse Drug Reactions." In *International Conference on Practical Applications of Computational Biology & Bioinformatics*, pp. 70-77. Springer, Cham, 2019.



20. Yogita, J W Sangma, S R Ngamwal, V Pal, "Clustering-Based Hybrid Approach for Identifying Quantitative Multidimensional Associations Between Patient Attributes, Drugs and Adverse Drug Reactions", *Interdisciplinary Sciences: Computational Life Sciences*, 2020.
21. Vipin Pal, Anju Yadav, Yogita, "DDC protocol to protract network lifetime of wireless sensor networks" *International Journal of Computers and Applications*, 2020.
22. K. Hemant Kumar Reddy, Ranjith Kumar Behera, Alok Chakrabarty, Diptendu Sinha Roy, (2020), "A Service Delay Minimization Scheme for QoS Constrained, Context Aware Unified IoT Applications", *IEEE Internet of Things Journal* (Accepted).
23. Vinay Kumar, Akshay Kulkarni, Sadanand Yadav, Akhilendra Pratap, Sanjay B dhok, "Modelling of Superconductor Enabled Magnetic Induction Transmitter and Relay Coil for Non-Conventional Media Communication" *Wireless Personal Communications*, Springer, *Wireless Personal Communications*, 111:2577–2603, December 2019.
24. Surmila Thokchom and Dilip Kr. Saikia, "Privacy preserving integrity checking of shared dynamic cloud data with user revocation", *Journal of Information Security and Applications*, Volume 50, February 2020.

(B) BOOK CHAPTERS:

1. Nihar Ranjan Pradhan, Anil Kumar, Akhilendra Pratap Singh, "Blockchain-Based Smart contract for Transportation of Blood Bank System", *Handbook of IoT and Blockchain: Methods, Solutions, and Recent Advancements* CRC Press Taylor and Francis Group, December 2019.
2. Jaswant Arya, Arun Kumar, Akhilendra Pratap Singh, Tapas Kumar Mishra, Peter H J Chong, "Blockchain: Basics, Applications, Challenges & Opportunities", *Vehicular Ad-Hoc Networks: Applications and Technology*, pp 1-42, NOVA Science Publisher, New York, December 2019.

(C) CONFERENCES: (INTERNATIONAL):

1. Pradhan, Buddhadeb, Diptendu Sinha Roy, and Nirmal Baran Hui. "Multi-agent Navigation and Coordination Using GA-Fuzzy Approach." In *Soft Computing for Problem Solving*, pp. 793-805. Springer, Singapore, 2019.
2. Singh, A. P., Kumar, G. H., Paik, S. S., & Roy, D. S. (2019). 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.
3. Roy, Diptendu Sinha. (2019) "A Study on DRX Mechanism for Wireless Powered LTE-Enabled IoT devices." In *2019 IEEE International Conference on Consumer Electronics-Taiwan (ICCE-TW)*, pp. 1-2. IEEE, 2019.
4. 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.
5. Nath, Bipasha, and Diptendu Sinha Roy. (2019) "Characterizing Single Line to Ground (SLG) Events with Indian Power Grid's Synchrophasor Data." In *International Conference on Innovation in Modern Science and Technology*, pp. 710-718. Springer, 2019.
6. Aji, M., Roy, D. S., & Pratihari, S. (2019). Plant Leaf Recognition using Geometric Features and Pearson Correlations. In *2019 International Conference on Image and Vision Computing New Zealand (IVCNZ)* (pp. 1-6). IEEE.
7. Behera, R. K., Reddy, K. H. K., & Roy, D. S. (2020). A Novel Context Migration Model for Fog-Enabled Cross-Vertical IoT Applications. In *International Conference on Innovative Computing and Communications* (pp. 287-295). Springer, Singapore.
8. Mudali, G., Reddy, K. H. K., & Roy, D. S. (2020). Efficient Evolutionary Approach for Virtual Machine Placement in Cloud Data Center. In *International Conference on Innovative Computing and Communications* (pp. 247-255). Springer, Singapore.
9. Pradhan, B., Hui, N. B., & Roy, D. S. (2020). Heuristic Coordination for Multi-agent Motion Planning. In *International Conference on Innovative Computing and Communications* (pp. 569-578). Springer, Singapore.
10. Ashu A, Mir Wajahat Hussain, Diptendu Sinha Roy and Hemant Kumar Reddy, (2020) "Intelligent Data Compression Policy for Hadoop Performance Optimization", In *SoCPaR 2019 (Accepted)*
11. K T Sai Akhil, D Rishabh, N Sai Suprabhath, Kritesh P, Balimidi Mallikarjuna, D S Roy, M Jaya Bharata Reddy and D K



Mohanta, (2020), “Dynamic State Estimation of Synchronous Generator Ro-tor Angle Using PMU and EKF”, *ICETSGAI 4.0 (Accepted)*.

12. SoumenMoulik, Debapratim Dey, Kaushik Ray, and Kamal Das, “Reliable Transmission of Critical Packets in IEEE 802.15.4-based Body Area Networks”, IEEE ANTS, Goa, India, Dec. 2019.
13. SoumenMoulik, Kaushik Ray, “d-CARE: Context-Aware Regulation of Backoff Delay in Wireless Personal Area Networks”, IEEE TENCON, Kerala, India, Oct. 2019, DOI: 10.1109/TENCON.2019.8929352.
14. Anil Ku. Swain, Bunil Kumar Balabantaray, Jitendra Kumar Rout and An Optimal Deep learning approach for Classification of Age Groups in Social Network”, 11th International Multi-Conference on Complexity, Informatics and Cybernetics (IMCIC 2020), Orlando, USA, on 10th -13th March, 2020.
15. S. C. Barik, S Mohapatra, B. Das, M. Acharya, B K Balabantaray, “Advanced Colored Image Encryption Method using Evolution Function”, in International Conference on Machine Learning and Computational Intelligence (2019-ICMLCI), 14th -15th December, 2019.
16. C. Lalengmawia, and A. Chakrabarty, “Compiling NCV Quantum Circuits for Nearest Neighbour Realization”, Proc. 2020 International Conference on Emerging Trends in Information Technology and Engineering, Vellore, India, IEEE Publications, 24-25 Feb 2020, pp. 1-5, doi: 10.1109/ic-ETITE47903.2020.305.
17. Deepak Kumar and Prabir Saha, “Accelerating latency of binary division through Vedic methodology”, Fourth International Conference on Smart Trends for Computing and Communications, Bangkok, Thailand, 24-25 January 2020.
18. M Sarkar, JW 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.
19. Upasana, J. Sangma, V. Pal, Yogita “Data-Driven Extraction of Quantitative Multi-dimensional Associations of Cardiovascular Drugs and Adverse Drug Reactions.” In International Conference on Practical Applications of Computational Biology & Bioinformatics, pp. 70-77. Springer, Cham, 2019.
20. I B Prasad, B Rout, V Pal, Yogita “M-Way Balanced Tree Data Aggregation Approach for Clustered Wireless Sensor Networks”, OWT, 2019.
21. V Pal Anju Yadav, Yogita, “Analysis of Optimal Number of Cluster Heads on Network Lifetime in Clustered Wireless Sensor Networks”, International Conference on Deep Learning, Artificial Intelligence and Robotics, (ICDLAIR) 2019.
22. V Pal, IB Prasad, B Rout, Yogita, “Fuzzy Logic Based Clustering for Energy Efficiency in Wireless Sensor Networks”, International Conference on Deep Learning, Artificial Intelligence and Robotics, (ICDLAIR) 2019.
23. Vinay Kumar, A alxim Prasanna, Dush Nalin, K Jayakody, Akhilendra Paratp 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
24. Nihar Ranjan Pradhan, Vinay Kumar, Akhilendra Pratap Singh, “Blockchain Enabled Traceable, Transparent Transportation System For Blood Bank”, 2nd International conference on VLSI (very-large-scale integration), communication and signal processing, Springer Nature, 2019, 21-23 October 2019, MNNIT Allahabad, India.

5. CONFERENCE /WORKSHOP/SEMINAR ORGANIZED:

1. Dr. Surmila Thokchom, “One Week National Workshop on Cyber Security”, NIT Meghalaya, Shillong in association with Relearn Academy, Chandigarh, 14th – 19th Oct 2019. Sponsored by TEQIP-III.
2. Dr. Diptendu Sinha Roy, “Application of Artificial Intelligence/ Deep Learning for Medical Big Data Analysis”, NIT Meghalaya, Shillong, 9 August 2019. Sponsored by TEQIP.
3. Dr. B. K. Balabantaray, Dr. P. Rangababu, “FDP on Advancements in signal processing and optimization techniques”, NIT Meghalaya, Shillong, 3- 7 June 2019.
4. Dr. B. K. Balabantaray, Dr. A. P. Singh, “FDP on Network Security”, NIT Meghalaya, Shillong, 20- 24 May 2019.
5. Dr. B. K. Balabantaray, Dr. A. P. Singh, “FDP on Deep Learning and Applications”, NIT Meghalaya, Shillong, 27- 31 May 2019.



6. Dr. B. K. Balabantaray, Dr. A. P. Singh, Dr. Surmila Thokchom, Dr. R. N. Mahapatra and Dr. P. Rangababu, "Machine Learning and Deep Learning Using Python", NIT Meghalaya, Shillong, 22- 26 July 2019. Funding agency: EICT Academy, IIT Guwahati and NIT Meghalaya.

6. CONFERENCES/WORKSHOPS/SEMINARS/TRAININGS ATTENDED BY FACULTY MEMBERS:

Sl. No.	Name of Faculty	Name of the programme attended	Duration
1	Dr. D S Roy	FDP on IoT at IIT Bombay under TEQIP-III	24-28 February, 2020
2	Dr. Bunil Kumar Balabantaray	FDP on Advancements in signal processing and optimization techniques, NIT Meghalaya	3- 7 June 2019
3	Dr. Bunil Kumar Balabantaray	FDP on Network Security, NIT Meghalaya, Shillong,	20- 24 May 2019.
4	Dr. Bunil Kumar Balabantaray	FDP on Deep Learning and Applications, NIT Meghalaya, Shillong.	27- 31 May 2019.
5	Dr. Bunil Kumar Balabantaray	Session Rapporteur of the technical session (IT) cum session chair, AICTE Sponsored National Conference on Digital Business Transformation in India, Organized by Global Institute of Management, BBSR, Odisha	11th, January, 2020
6	Dr. Bunil Kumar Balabantaray	Session Chair, ICMLCI 2019 organized by Interscience Institute of Management, BBSR, Odisha	14-15 December 2019
7	Dr. Yogita	International Conference on Practical Applications of Computational Biology and Bioinformatics	26th June to 28th June 2019
8	Dr. Yogita	International Workshop on Statistical Analysis of Neuronal Data	21st May to 23rd May 2019
9	Dr. Deepak Kumar	International Conference on Smart Trends for Computing and Communications	24-25 January 2020

7. INVITED TALKS DELIVERED:

Sl.No.	Title	Type	Event/Place	Any other information
1	Tutorial on Hadoop Big Data Analytics and Cloud Computig	Invited Talk	NESAC, Umiam on 18 Nov, 2019	Speaker: Dr. Diptendu Sinha Roy
2	a) Computer hardware and operating systems b) Cybersecurity awareness	Invited Talk	Invited lectures at NERLDC, POSOCO on 18 and 19 February, 2020	Speaker: Dr. Diptendu Sinha Roy
3	Concepts and Use of Internet-of-Things (IoT) in Agriculture	Power Point Presentation	Training Program on 'eExtension on Agriculture' at MAMETI, Meghalaya. Organized by MANAGE, Hyderabad. Date: 21 st January, 2020	Speaker: Dr. Soumen Moulik Co-speaker: Dr. Shubhankar Majumdar, Asst. Prof., Dept. of ECE, NIT Meghalaya
4	Cloud Computing	Resource person	Special Summer School in Basic Sciences and Technology, NEHU, Shillong	
5	Statistical and Sense-based Short- and Medium-sized Natural Language Text Classification	Invited Talk	One Week ATAL Workshop on ARTIFICIAL INTELLIGENCE, North-Eastern Hill University, Shillong, India, 22 Oct 2019	Speaker: Dr. Alok Chakrabarty
6	Introduction to M. S. Word, M. S. Excel and M. S. Powerpoint	Invited Talk	MHRD programme on "Fundamental IT Skills" in POSOCO, NERLDC, Shillong, India, on 19 Feb 2020	Speaker: Dr. Alok Chakrabarty



8. SPONSORED PROJECTS:

Sl No.	Title of the Project	Investigators (PI/ Co.-PI)	Funding Agency	Funding Amount	Duration	Status
1	Design of and Development of Intelligent Algorithms for Analysis and Detection of Obscene Content and Forgery in the Images Available in Social Media Platform	PI: Dr. B K Balabantaray, Co-PI: Dr. Diptendu S Roy and Dr. A. P. Singh	Cyber Crime Prevention against Women & Children (CCPWC), BPR&D, scheme of Ministry of Home affairs, Govt. of India.	21.888 Lakhs	1 Year	Ongoing
2	Development of a Wearable Sensor-based Fall Detection System Using Learning Algorithms	PI: Dr. Soumen Moulik	TEQIP-III	Rs. 1,99,500	2 Years	Ongoing
3	Prediction, Detection and Monitoring System for Landslide in Hilly Region	PI: Dr. Shubhankar Majumdar Co-PI: Dr. Soumen Moulik, Dr. Tanmoy Chakraborty	DST (Indo-Japan)	Rs. 6,26,000	2 Years	Ongoing
4	Cloud-assisted Data Analytics based Real-Time Monitoring and Detection of Water Leakage in Transmission Pipelines using Wireless Sensor Network for Hilly Regions	PI: Dr. Vipin Pal Co-PI: Dr. Yogita, Dr. Shubhankar Majumdar, Dr. Soumen Moulik	NMHS	44,70,000	03 years	On going

9. LABORATORIES SETUP:

Sl. No.	Laboratory	Major Equipment & Software	Location	Cost (Rupees in lakhs)
1	Computer Vision and Machine Learning	Machine Learning Server with NVIDIA GPU,	Old Computer Center	38

10. ADMINISTRATIVE RESPONSIBILITIES HELD:

Sl.No.	Name of Faculty	Responsibilities	Duration
1	Dr. Yogita	Head of Department	Since July, 2019 to till date
2	Dr. Diptendu Sinha Roy	Faculty in charge Computer Center	March 2018 to till date
3	Dr. Soumen Moulik	Warden, Polo Boys' Hostel	Jul. 2018 - Present
		Member, Cultural Committee	Aug. 2018 - Present
		Member, Website Committee	Apr. 2018 - Present
		Dept. Ph.D. Coordinator	Jul. 2018 - Present
		Member of CCMT 2019 and Coordinator of M.Tech Admission Team	Apr. – Jun. 2019
		Member, ERP Committee	Mar. 2019 - Present
		Lab-in-charge, Computer Center	Jul. 2019 - Present
		Faculty-in-charge, Music Club	Sep. 2019 - Present
		Convener Member, Industr-Academia Conclave 2019	Dec. 2019
		Coordinator, HACKATHON 2020	Feb. 2020



Sl.No.	Name of Faculty	Responsibilities	Duration
4	Dr. Bunil Kumar Balabantaray	Warden, KT Hostel	July 2018 to till continuing
		Convener, Volunteer Sub-Committee, Convocation 2019	Dated: 06.08.2019
		Member, Technical Committee, SAC	From 23.09.2019 till continuing
		Convener, NBA Preparation Committee	From 23.01.2018 to till continuing
		Member, CCMT-2019 and CCMT-2020	From April 2019 to till continuing
		Member, Outcome Based Education, Steering Committee	From 04.12.2018 to till continuing
		Member, Institute Start-up Committee under TEQIP-III	From 08.09.2018 to till continuing
5	Dr. Deepak Kumar	Curriculum and Accreditation Committee	19 July 2019 to till date
		Faculty Advisor for 2017 batch, CS	2017 to till date
		Sports committee under SAC	30 June 2019 to till date
6	Dr. Vipin Pal	PIC (UG-AA)	Since Oct, 2018
		Faculty In-charge (Social Media)	Since March, 2018
		Convener, Ranking and Accreditation	Since Oct, 2018
		Institute Information Committee	Since March, 2018
		Member, IQAC	June, 2019 – June 2020
		Faculty Advisor	June 2019 – June 2020

11. MEMBERSHIP OF PROFESSIONAL BODIES:

Sl.No.	Name of Faculty	Member of
1	Dr. Diptendu Sinha Roy	IEEE, CSI (Life Member), ISTE (Life Member)
2	Dr. Alok Chakrabarty	IEEE, CSI, ACM
3	Dr. Akhilendra Pratap Singh	CSI (Life Member), ISTE (Life Member)
4	Dr. Yogita	IEEE
5	Dr. Vipin Pal	IEEE
6	Dr. Bunil Kumar Balabantaray	ISTE (LM), Soft Computing Research Society, India, Associate Member (UACEE), Institute of Research Engineers and Doctors, (Membership No: AM10100057923)
7	Dr. Surmila Thokchom	ACM, IEEE
8	Dr. Soumen Moulik	IEEE
9	Dr. Deepak Kumar	IEEE

12. ANY OTHER NOTABLE INFORMATION:

- One MoU has been signed with North East Regional Load Despatch Centre (NERLDC) on Jan 17, 2020 with the Institute for collaboration for synchrophasor data analytics.
- Dr. Diptendu Sinha Roy received best paper award for the paper titled “Characterizing single line ground events with Indian power grid’s synchrophasor data” in conference named Springer ICIMSAT 2019 (1st International conference on innovation in modern science and technology 2019), Darjeeling, September 20-21, 2019.
- Dr. D. S. Roy has been elevated to senior member, IEEE.
- Dr. Yogita was Awarded Best Application Paper Award for work titled “ Data-Driven Extraction of Quantitative Multi-Dimensional Associations of Cardiovascular Drugs and Adverse Drug Reactions” in 13th International Conference on Practical Applications of Computational Biology and Bioinformatics held from 26th June to 28th June 2019 at Avila Spain.



5. Dr.Yogita was awarded travel grant by the Carneige Mellon University, Pittsburg, USA for participating and presenting a poster in 9th International Workshop on Statistical Analysis of Neuronal Data held from 21st May to 23rd May 2019 at University of Pittsburg, USA

13. CSE DEPARTMENT ACTIVITIES IN PHOTOGRAPHS:

1. One Week National Workshop on Cyber Security in association with Relearn Academy, Chandigarh, sponsored by TEQIP-III held on 14th – 19th Oct 2019 (Fig1-3)



Figure.1-3

2. Workshop on Application of Artificial Intelligence/ Deep Learning for Medical Big Data Analysis, NIT Meghalaya, Shillong, 9 August 2019. (Fig.4)

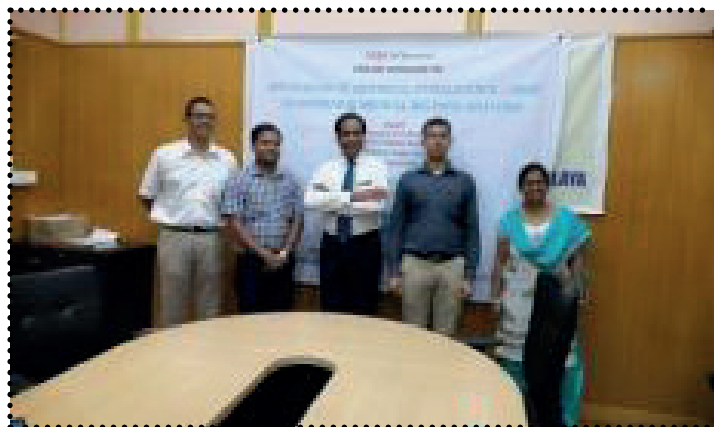


Figure.4

3. FDP on Network Security 20-24 May 2018 (Fig.5)



Figure.5

4. FDP on Deep Learning and Applications, NIT Meghalaya, Shillong, 27- 31 May 2019. (Fig.6)



Figure.6

5. Machine Learning and Deep Learning Using Python, NIT Meghalaya, Shillong, 22- 26 July 2019. (Fig.7-8)



Figure.7



Figure.8





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	Remark
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 Awarded –6	
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 – 2 Submitted–1	
Dr. Prabir Kumar Saha	Assistant Professor	Ph.D	VLSI Design, Computer Arithmetic, Digital Signal Processing	13.06.2012	Pursuing – 3	Part time - I
Dr. P Rangababu	Assistant Professor	Ph.D	FPGA-based Embedded Systems for Multimedia and DSP Applications, VLSI Chip Design, Reconfigurable Systems for Medical Diagnosis	11.08.2014	Pursuing – 3 Co-supervisor- I	Part time-2
Dr. Pradeep Kumar Rathore	Assistant Professor	Ph.D	Micro-Electro-Mechanical Systems (MEMS), Microelectronics, Device Fabrication Technology	11.08.2014	Pursuing – 2	

Name	Designation	Qualification	Specialization	Date of Joining	Ph.D. guidance	Remark
Dr. Bishnulatpam Pushpa Devi	Assistant Professor	Ph.D	Image processing	03.01.2013	Pursuing -2	
Dr. Abhishek Sarkhel	Assistant Professor	Ph.D	Microwave metamaterials and its applications, Microwave antennas	23.08.2013	Pursuing – 2	
Dr. Shubhankar Majumdar	Assistant Professor	Ph.D	RF, High Speed and Power Semiconductor Devices, VLSI circuit design and Modeling Low cost Energy efficient system for Agriculture & Health Sector	13.12.2017	Pursuing -2	Part time-I Regular -I
Dr. Salam Shuleenda Devi	Assistant Professor	Ph.D	Medical Image Analysis, Cancerous cell analysis, Pattern recognition, machine learning	24.09.2019	Pursuing-I	Part time-I
Dr. Satyendra Singh Yadav	Assistant Professor	Ph.D	Wireless Communication (5G and Beyond), Parallel Computing, Machine Learning	24.10.2019	Pursuing-I	Part time-I
Dr. Shravan Kumar Bandari	Assistant Professor	Ph.D	Beyond 5G communications, multi-carrier waveforms for next-generation wireless systems, cognitive radio and machine learning algorithms	30.09.2019	Nil	
Prof. Ganapati Panda	Adjunct Professor	Ph.D	Digital Signal Processing, Soft and Evolutionary Computing Wireless Sensor Networks	24.05.2018	Nil	
Mr. Mridupawan Sonowal	Assistant Professor	M.Tech.	Information theory and coding	07.08.2013	Nil	Resigned on 06.08.2019

4. LIST OF PUBLICATIONS:

A. JOURNALS:

1. T.V. Mahendra; S.W. Hussain; S. Mishra ; A. Dandapat, “A Novel Low-Power Matchline Evaluation Technique for Content Addressable Memory (CAM)” in the Special Issue On Advanced Networking And Communication Solutions For Wireless Mobile Networks, Journal of Information Science and Engineering, Vol. 36, no-5, Mar 2020.
2. T.V. Mahendra; S.W. Hussain; S. Mishra ; A. Dandapat, “Energy-Efficient Precharge-Free Ternary Content Addressable Memory (TCAM) for High Search Rate Applications” in the IEEE Transactions on Circuits and Systems I: Regular Papers, DOI:10.1109/TCSI.2020.2978295, Feb 2020.
3. S. Mishra, T.V. Mahendra, S.W. Hussain and A. Dandapat, “The analogy of matchline sensing techniques for content addressable memory (CAM),” in *IET Computers & Digital Techniques*, vol. 14, no. 3, pp. 87-96, 5 2020, doi: 10.1049/iet-cdt.2019.0178., 2020.
4. 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, Nov, 2019.
5. T.V. Mahendra, S.W. Hussain, S. Mishra, A. Dandapat “Low Discharge Precharge Free Matchline Structure for Energy-Efficient Search using CAM” Integration the VLSI Journal, Elsevier 69, 31-39, Nov 2019.
6. Anup Dandapat, “Methodologies for CAM and ADC design”, CSI Transactions on ICT, Springer, DOI <https://link.springer.com/article/10.1007%2Fs40012-019-00250-x>. June 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>, Apr 2019.



8. Dutta, A., Ashishkumar, G. & Rao, C.V.R. Designing of Gabor filters for spectro-temporal feature extraction to improve the performance of ASR system. *Int J Speech Technol* 22, 1085–1097 Nov, 2019
9. Dutta, A., Ashishkumar, G. & ChV Rama Rao. Performance analysis of ASR system in hybrid DNN-HMM framework using a PWL euclidean activation function. *Frontiers of Computer Science*, Accepted, 2020.
10. S. Baldev, K. K. Anumandla and R. Peesapati, "Scalable Wavefront Parallel Streaming Deblocking Filter Hardware for HEVC Decoder," in *IEEE Transactions on Consumer Electronics*, vol. 66, no. 1, pp. 41-50, Feb. 2020.
11. P. Naren B., R. Peesapati, G. Panda and G. Panda, "An Adaptive Differentiation Frequency-based Advanced Reference Current Generator in Grid-tied PV Applications," in *IEEE Journal of Emerging and Selected Topics in Power Electronics*. doi: 10.1109/JESTPE.2019.293314, Aug 2019.
12. P. Naren B, B. CB, Peesapati, R B, Panda, Gayadhar. "An optimal current control scheme in the grid-tied hybrid energy system with active power filters for harmonic mitigation". *International Trans Electric Energy Sys.* 30(3), doi:10.1002/2050-7038.12183, Dec 2019
13. Ahmed, R. U., Saha, P. "Modeling of Short P-Channel Symmetric Double-Gate MOSFET for Low Power Circuit Simulation", *Periodica Polytechnica Electrical Engineering and Computer Science*, 64(1), pp. 106-114, Dec, 2020
14. S.D. Thabab, P. Saha, "New Design Approaches of Reversible BCD Encoder using Peres and Feynman Gates", *ICT Express Elsevier*, 6 (1), Mar, 2020
15. R. U. Ahmed, E. A. Vijaykumar and P. Saha Single-Stage Operational Transconductance Amplifier Design in UTBSOI Technology Based on gm/Id Methodology *Electronics Journal* 23(2) 52-59, 2019.
16. Kumar, S., Ropmay, G., Rathore, P., Rangababu, P. and Akhtar, J. "Fabrication and testing of PMOS current mirror-integrated MEMS pressure transducer", *Sensor Review, Emerald*, doi:10.1002/2050-7038.12183, Nov, 2019
17. D. S. Saini, A. Ghosh, S. Tripathy, A. Kumar, S.K Sharma, N. Kumar, S. Majumdar, D. Bhattacharya A Promising Proton Conducting Electrolyte BaZr 1-x Ho x O 3-δ (0.05 ≤ x ≤ 0.20) Ceramics for Intermediate Temperature Solid Oxide Fuel Cells *Nature Scientific Report* 10(1), 1-12, 2020
18. S. Das, S. Dutta, C. Putcha, S. Majumdar, D. Adak A data-driven physics informed method for prognosis of infrastructure systems: Theory and application to crack prediction *ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems, Part A : Civil Engineering (American Society of Civil Engineers (ASCE))* 6(2), 4020013, 2020.
19. Devi, S.S., Singh, N.H. and Laskar, R.H., 2020. Fuzzy C-Means Clustering with Histogram based Cluster Selection for Skin Lesion Segmentation using Non-Dermoscopic Images. *International Journal of Interactive Multimedia & Artificial Intelligence*, 6(1), 2020

B. CONFERENCES:

1. Shashi Kumar, Gaddiella Diengdoh Ropmay, Peesapati Rangababu, Pradeep Kumar Rathore and Jamil Akhtar, "A Comparative Study on Sensitivity Enhancement of p-and n-channel MOSFET based Current Mirror Integrated Pressure Sensor Using Differential Amplifier", 2020 Flexible Electronics for Electric Vehicles (FlexEV-2020), Jaipur, India, 5-6 March 2020 (Presented and Accepted for AIP Proceedings).
2. Gaddiella Diengdoh Ropmay, Shashi Kumar, Peesapati Rangababu, Pradeep Kumar Rathore and Jamil Akhtar, "A novel MEMS-based Blood Glucose Measurement Sensor using Twin-Cantilever Structure", 2020 Flexible Electronics for Electric Vehicles (FlexEV-2020), Jaipur, India, 5-6 March 2020 (Presented and Accepted for AIP Proceedings).
3. V. M. Telajala, W. H. Sheikh, S. Mishra and A. Dandapat, "A Low-Power Split-Controlled Single Ended Storage Content Addressable Memory," 2019 IEEE International Symposium on Smart Electronic Systems (iSES) (Formerly iNiS), Rourkela, India, 2019, pp. 369-372, doi: 10.1109/iSES47678.2019.00091
4. T.V. Mahendra, S. W. Hussain, S. Mishra and A. Dandapat, "Design and Implementation of Drivers and Selectors for Content Addressable Memory (CAM)," 2019 IEEE 2nd International Conference on Electronics and Communication Engineering (ICECE), Xi'an, China, 2019, pp. 216-220, doi: 10.1109/ICECE48499.2019.9058571.
5. S.W. Hussain, T.V. Mahendra, S. Mishra and A. Dandapat, "Efficient Matchline Controller for Hybrid Content Addressable Memory," 2019 IEEE 2nd International Conference on Electronics and Communication Engineering (ICECE), Xi'an, China, 2019, pp. 418-422, doi: 10.1109/ICECE48499.2019.9058537.



6. S.W. Hussain, T.V. Mahendra, S. Mishra and A. Dandapat, "A Quasi-Static Storage and Decision Block for Performance-Efficient Content Addressable Memory," 2019 IEEE 6th International Conference on Engineering Technologies and Applied Sciences (ICETAS), Kuala Lumpur, Malaysia, 2019, pp. 1-6, doi: 10.1109/ICETAS48360.2019.9117334.
7. T.V. Mahendra, S.W. Hussain, S. Mishra and A. Dandapat, "Low Match-Line Voltage Swing Technique for Content Addressable Memory," 2019 7th International Conference on Smart Computing & Communications (ICSCC), Sarawak, Malaysia, Malaysia, 2019, pp. 1-5, doi: 10.1109/ICSCC.2019.8843590.
8. T.V. Mahendra, S. Wasmir Hussain, S. Mishra and A. Dandapat, "Performance Analysis of N-CAM, P-CAM and TG-CAM Using 45-nm Technology," 2019 International Conference on Intelligent Computing and Control Systems (ICCS), Madurai, India, 2019, pp. 621-625, doi: 10.1109/ICCS45141.2019.9065404.
9. A. Gudmalwar, A. Dutta and C.V.R. Rao, "Estimation of Fundamental Frequency of Noisy Speech Signals using Correlogram based on Subband Filtering," 2019 IEEE 6th International Conference on Engineering Technologies and Applied Sciences (ICETAS), Kuala Lumpur, Malaysia, 2019, pp. 1-5, doi: 10.1109/ICETAS48360.2019.9117333.
10. A. Dutta, G. Ashishkumar and C.V. Rama Rao, "Auditory inspired Acoustic Model for Hybrid ASR System using Gammatone based Gabor Filters," 2019 IEEE International Symposium on Signal Processing and Information Technology (ISSPIT), Ajman, United Arab Emirates, 2019, pp. 1-6, doi: 10.1109/ISSPIT47144.2019.9001859.
11. S. Gogoi and R. Peesapati, "Design and Implementation of low power $4 \times 4/8 \times 8$ 2D-DTT architecture for image and video compression," 2019 Women Institute of Technology Conference on Electrical and Computer Engineering (WITCON ECE), Dehradun Uttarakhand, India, 2019, pp. 200-205, doi: 10.1109/WITCONECE48374.2019.9092937.
12. S. J. Pinto, N. B. P. R. Peesapati and G. Panda, "Monitoring and Control of MultiBus Microgrid System Using FPGA Platform," 2019 IEEE Region 10 Symposium (TENSYP), Kolkata, India, 2019, pp. 260-265, doi: 10.1109/TENSYP46218.2019.8971116.
13. D. I. Kaplun et al., "Hardware Implementation of Video Processing Device using Residue Number System," 2019 42nd International Conference on Telecommunications and Signal Processing (TSP), Budapest, Hungary, 2019, pp. 701-704, doi: 10.1109/TSP.2019.8768827.
14. P. N. Babu, P. R. Bana, R. B. Peesapati and G. Panda, "An Interleaved Buck Converter Based Active Power Filter for Photovoltaic Energy Application," 2019 International Conference on Power Electronics Applications and Technology in Present Energy Scenario (PETPES), Mangalore, India, 2019, pp. 1-6, doi: 10.1109/PETPES47060.2019.9003964.
15. N. Babu P., R. B. Peesapati and G. Panda, "An Adaptive Current Control Technique in Grid-tied PV System with Active Power Filter for Power Quality Improvement," TENCON 2019 - 2019 IEEE Region 10 Conference (TENCON), Kochi, India, 2019, pp. 187-191, doi: 10.1109/TENCON.2019.8929487.
16. P. N. Babu, R. B. Peesapati and G. Panda, "A Pre-filtering based Current Control Strategy in Grid-tied Photovoltaic Systems with Active Power Filter for Harmonic Mitigation," TENCON 2019 - 2019 IEEE Region 10 Conference (TENCON), Kochi, India, 2019, pp. 1003-1008, doi: 10.1109/TENCON.2019.8929638.
17. S. Gogoi and R. Peesapati, "A Hybrid Motion Estimation Search Algorithm for HEVC/H.265," 2019 IEEE International Symposium on Smart Electronic Systems (iSES) (Formerly iNiS), Rourkela, India, 2019, pp. 129-132, doi: 10.1109/iSES47678.2019.00037.
18. R. Peesapati and S. L. Sabat, "Programmable Auxiliary Co-Processing Unit for H.264 Decoder," 2019 IEEE International Symposium on Smart Electronic Systems (iSES) (Formerly iNiS), Rourkela, India, 2019, pp. 172-176, doi: 10.1109/iSES47678.2019.00046.
19. S. Kumar, G. D. Ropmay, P. Rangababu and P. K. Rathore, "A Stress Sensitive CMOS Operational Amplifier Based Pressure Sensor with Varying Input and Gain," 2019 IEEE 9th International Conference on System Engineering and Technology (ICSET), Shah Alam, Malaysia, 2019, pp. 408-413, doi: 10.1109/ICSEngT.2019.8906336.
20. S. Kumar, G. D. Ropmay, P. Kumar Rathore and P. Rangababu, "An idea of implementing CMOS operational amplifier in summer configuration for the designing of highly sensitive pressure transducer," 2019 2nd International Conference on Innovations in Electronics, Signal Processing and Communication (IESC), Shillong, India, 2019, pp. 211-214, doi: 10.1109/IESPC.2019.8902445.



21. J.A.Arjun and S. Majumdar, "Development of Approximate Compressor Based Hybrid Dadda Multiplier for Image Denoising Applications," 2019 IEEE 16th India Council International Conference (INDICON), Rajkot, India, 2019, pp. 1-4, doi: 10.1109/INDICON47234.2019.9030269.
22. Kavita, C. Sahu and S. Majumdar, "RF parameter extraction and S-parameter analysis of junctionless silicon nanowire transistor," 2019 2nd International Conference on Innovations in Electronics, Signal Processing and Communication (IESC), Shillong, India, 2019, pp. 7-12, doi: 10.1109/IESPC.2019.8902348.
23. M. S. Singh and A. Sarkhel, "Isolation Enhancement of Antenna Pair for Implantable Application," 2020 URSI Regional Conference on Radio Science (URSI-RCRS), Varanasi, India, 2020, pp. 1-4, doi: 10.23919/URSIRCRS49211.2020.9113627.
24. N. Shafi, J.S. Parmaar, A. Porwal, A.M. Bhat, C. Sahu, C. Periasamy, S. Majumdar "Back Gate Tunable Thin Film α -Si Nanowire BioFET for pH Detection By Compatible CMOS Fabrication Process." In 2020 4th IEEE Electron Devices Technology & Manufacturing Conference (EDTM) 2020 (pp. 1-4). IEEE.
25. R. U. Ahmed, P. Saha, Implementation Aspects of Multi-bit Adders using UTBSOI Transistors, in Smartcom, 2020, 24-25 January.

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 (Filed).

D. BOOK CHAPTER:

1. Bhattacharya A., Majumdar S. Design of a 22 W (0.7 A) Current Controlled DC-DC Flyback Converter Operating in DCM Mode. In: HitendraSarma T., Sankar V., Shaik R. (eds) Emerging Trends in Electrical, Communications, and Information Technologies. Lecture Notes in Electrical Engineering, vol 569. Springer, Singapore Sep 2019
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, May 2019

5. EXTERNALLY SPONSORED R&D PROJECTS 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. Anup Dandapat	Special Manpower Development Project	Dec 2015-2021	DeitY	94	PI
2	Dr. Anup Dandapat	Assessment of climate change impacts on soils and various water basins of Meghalaya using existing and newer techniques	Mar 2019 - Mar 2022	DST	66.45	Co-PI
3	Dr. Ch.V. Rama Rao	Phonetic and prosodic analysis of Khasi language	10 Aug 2018 - 09 Aug 2021	SERB, DST	16.13	PI
4	Dr. Ch.V. Rama Rao	Masking of interfering sounds in a crowded environment for hearing aid applications	02 Mar 2019 - 01 Mar, 2022	SERB, DST	23.46	PI
5	Dr. Ch.V. Rama Rao	Post-processing of NQR signals in digital domain in FPGA	13 July 2018 - 30 Sep, 2020	BRNS, DAE	20.03	Co-PI
6	Dr. P. Rangababu	Post-processing of NQR signals in digital domain in FPGA	13 July 2018 - 30 Sep, 2020	BRNS, DAE	20.03	PI
7	Dr. P. Rangababu	A "Real-Time Control and Energy Management for Seamless Operation of DC Microgrid in Grid-connected and Standalone Modes	01 Aug 2018- 31 July 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]
8	Dr. P. Rangababu	Development of High Sensitivity CMOS-MEMS Integrated Smart Pressure Sensor and System for Space Applications	15Jan 2019 -31Jan 2021	ISRO	32.46	Co-PI (2)
9	Dr. Pradeep Kumar Rathore	Development of High Sensitivity CMOS-MEMS Integrated Smart Pressure Sensor and System for Space Applications	15 Jan 2019- 31 Jan 2021	ISRO	32.46	PI
10	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
11	Dr. Shubhankar Majumdar	Tensionmeter based automated IoT system for Irrigation	May 2019- Apr 2021	DST (Device Development Program)	16.85	PI
12	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	March2018- Feb 2021	NMHS (National Mission on Himalayan Studies)	44.70	Co-PI
13	Dr. Shubhankar Majumdar	1.Cloud-Assisted Hybrid Renewable Energy Sources for Electricity and Water Supply in Rural Area. 2. Smart Agro Modular System. 3. Smart Blind Stick 4. A Self Sustained Multiple Sensor IoT Based LandslideDetector Early Warning System. 5. A portable Wind-Hydro Hybrid Electronic ChargerTargeted for Outdoor Activities and Military Applications.	1 year	STSCE	2.654	PI

6. CONFERENCE/ WORKSHOP/ SEMINAR ORGANIZED:

1. Dr. Ch.V. Rama Rao organized a talk with Prof. IoanaVoiculescu from the City College of New York, USA delivered a talk on "Innovative MEMS Sensors for Biological Applications" on 29 Nov 2019
2. Dr. Ch.V Rama Rao & P. Rangababu Organized NKN workshopwith association of EICT academy "Antenna Trends" 01-05 July 2019.
3. Dr. P. Rangababu & Dr. Ch.V. Rama Rao organized NKN FDP with association of EICT academy on "Advancements in signal processing and optimization technique" 03-06 June 2019.
4. Dr. P. Ranga Babu organized a talk with Prof. Samrat L. Sabat, CASEST, University of Hyderabad. delivered a talk on "Implementation strategies for Digital Signal Processing Algorithms on FPGA" on 21st July 2019.
5. Dr. P. Rangababu, as one of the conveners organized the first Research conclave of NIT Meghalaya on 28th Feb 2020.
6. Dr. Shubhankar Majumdar organized a talk with Masahiro Fujita, Director of VLSI Design and Education Center, University of Tokyo delivered a talk on "Development of High Performance and Flexible Computing Systems with Electronic Design Automation" on 9th July 2019.



7. CONFERENCES / WORKSHOPS / SEMINARS / TRAININGS ATTENDED BY FACULTY MEMBERS:

Sl. No.	Name of Faculty	Name of the Programme attended	Duration
1	Dr. Anup Dandapat	IEEE International Symposium on Smart Electronic Systems (IEEE-iSES), on 16-18 December 2019, Rourkela, India 2nd International Conference on Electronics and Communication Engineering (ICECE'2019), on 9-11 December 2019, Xi'an, China. 7th International Conference on Smart Computing & Communications (ICSCC)] on 28-30 June 2019, Curtin University Malaysia, Miri, Malaysia.	16-18 Dec 2019 9-11 Dec 2019 28-30 June 2019
2	Dr. Ch.V. Rama Rao	Advancements in Signal Processing and Optimization Technique	3-7 Jun 2019
3	Dr. P. Rangababu	Advancements in Signal Processing and Optimization Technique Presented 2 papers in Intl conference on TENCON- 2019 Presented 1 Paper on Intl conference on ISES -2020	3-7 Jun 2019 17-20 Oct 2019 15-19 Dec 2019
4	Dr. Prabir Kumar Saha	Presented 1 Paper on Intl conference Smartcom -2020	24-25 Jan 2020
5	Dr. Pradeep Kumar Rathore	Workshop on "Enabling Technologies in Robotic through Sensor Integration" organized by Center for Robotics and Mechatronics, NIT Meghalaya from 24 – 28 May 2019 Presented 2 papers at FlexEV-2020 at Jaipur from 5-6 March 2020.	24 –28 May 2019 5 – 6 March 2020
6	Dr. Abhishek Sarkhel	Presented 1 article in URSI Regional Conference on Radio Science (URSI-RCRS), on 12-14 February 2020, IIT BHU, Varanasi, India.	2-14 Feb 2020,
7	Dr. Shubhankar Majumdar	Workshop - IEP on PCB Design Methodologies, CDAC Bangalore	10-14 Jun, 2019

8. INVITED TALKS DELIVERED:

1. Dr. A. Dandapat served as session chair in IEEE International Symposium on Smart Electronic Systems (IEEE-iSES), on 16-18 December 2019, Rourkela, India.
2. Dr. A. Dandapat Delivered a lecture in Manipur Technical University on "Recent Trends in Microelectronics and VLSI Technology" during the 26th-30th Aug, 2019.
3. Dr. P. Rangababu presented two papers in an International Conference Tencon 2019 at Cochin during February 17th –20th Oct, 2019.
4. Dr. P. Rangababu served as a Session Chair & presented a paper in International Conference on ISES 2019 conducted by NIT Rourkela during 15-19 Dec 2019.
5. 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
6. Dr Ch.V. Rama Rao delivered a talk on Research on Interpretation of Signals and Processing in the five-day workshop on Communication and Signal Processing held during 12 - 16 June 2020 at Tirumala Engineering College, Andhra Pradesh.

9. AWARDS WON/ RECOGNITION RECEIVED AT THE NATIONAL AND INTERNATIONAL LEVEL:

1. Dr. P. Rangababu was awarded IETE Fellow from IETE during April 2020.
2. Dr. Shubhankar Majumdar got Indo-Japan cooperative science programme (IJCSP) project based mobility grant
3. Mr. R. U. Ahmed Research scholar under guidance of Dr. P. Saha received the best paper award in International Conference on Recent Trends in Advanced Computing (ICRTAC) held at VIT University, Chennai on 11th and 12 November 2019 on A paper entitled "Fast and Area Efficient Implementation of RSA Algorithm"



10. LABORATORIES SETUP:

Sl. No.	Laboratory	Major Equipment & Software	Location	Cost (Rupees in lakhs)
1.	RF Microwave Laboratory	CST Studio Suite Electromagnetic Field Simulation Software (25 user)	RF Microwave Laboratory, Computing Laboratory, Communication Laboratory	Rs-10,46,141/- (Funded by TEQIP)
2.	RF Microwave Laboratory	Upgradation of Altair Feko research license with WinPro	RF Microwave Laboratory	Rs-3,28,925/-
3	DSP Laboratory	DSP Educational practice board for TMS320C6748 along with accessories; CCD Camera-Lense with power supply and cable accessories; Daughter board for general purpose board; GSM module with enclosure; Finger print module with enclosure; RFID module with enclosure	Computing Laboratory	Rs. 15,15,000/- (Funded by TEQIP)
4	High Performance Computing Laboratory	5-High performance Xeon Processor Systems manufactured by Fijitsu	Communication Laboratory & DSD Laboratory	Rs.24,62,959/- (Funded by TEQIP)
5	Microelectronics Laboratory	Visual TCAD tool (10 licenses)	Device laboratory	Rs 19,68,750/- (Funded by TEQIP)

11. ADMINISTRATIVE RESPONSIBILITIES HELD:

Sl. No.	Name of Faculty	Responsibilities	Duration
1	Dr. Ch.V. Rama Rao	HOD, EC	June 2017 to June 2019
		Liaison officer for SC/ST cell	Since March 2016 to April 2020
		Digital Signal Processing Laboratory	14-06-2017 to Till Date
		Chairman, Centre For Innovation Incubation and Entrepreneurship	July 2019-Till date
2	Dr. P. Rangababu	PIC (PG&Ph.D-AA)	Oct 2018-till date
		HOD, EC	July 2019-till date
		Nodal officer, Academics TEQIP-3	May 2019- till date
		Microprocessor and Microcontroller lab in charge, EC	July 2017-till date
3	Dr. Pradeep Kumar Rathore	Professor-in-charge, Centre for Technology Enabled Learning	Jan 2019 - till date
		Vice-President (Sports), Student Activity Center	July 2018 - till date
		Coordinator, Summer Internship Program 2019	Session 2019
4	Dr. Shubhankar Majumdar	Warden of Lapalang-I Boys Hostel	July 2018- till date
		Faculty Incharge of Departmental Stationary	July 2018- till date
		In Departmental OBE and NBA Committee	July 2018- till date
		Member of Startup Cell	July 2018- till date
5	Dr. Abhishek Sarkhel	Member of Routine Committee	June 2019-May 2020
		Member of UG PEC	June 2019-May 2020
		Member of Library Committee	June 2018 to till date
6	Dr. Satyendra Singh Yadav	Deputy Faculty In-Charge, Computer Center	February 2020- 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), ISCA
3	Dr. P. Rangababu	IEEE, IETE Fellow, IEI (Associate Member)
4	Dr. Prabir Saha	IEEE, IETE, IAENG
5	Dr. Abhishek Sarkhel	IEEE
6	Dr. Pradeep Kumar Rathore	IEEE
7	Dr. Shubhankar Majumdar	IEEE, URSI, IEI (Associate Member)
8	Dr. Satyendra Singh Yadav	IEEE
9	Dr. Shravan Kumar Bandari	IEEE

13. ANY OTHER NOTABLE INFORMATION:

Sl. No.	Name of Faculty	Technical Assistance	Name of Journal/Conference
1	Dr. A. Dandapat	Reviewer/Member	a. IEEE, Elsevier, Springer, IET b. TPC Member in ICECE 2019 conference held in China. c. TPC Member in 3rd IEEE conference held at IIIT Allahabad d. TPC Member in Comsys-20 Jalpaiguri Engineering College, WB
2	Dr. Ch.V. Rama Rao	Reviewer	a. Interspeech 2020, b. IET Signal Processing
3	Dr. P. Rangababu	Reviewer	a. IEEE Transactions on Industrial Electronics, b. IEEE TCAS-II, IEEE TCSVT, c. IEEE Access, IEEE BROADCAST
4	Dr. Prabir Kumar Saha	Reviewer	a. IEEE, Elsevier, Springer, Electronics Journal
5	Dr. Shubhankar Majumdar	Reviewer	a. IEEE Transaction of Devices, T-NANO b. IEEE Access, IET Electronics Letters c. Springer JCEL, Silicon Wiley IJNM d. Elsevier Microelectronics journal e. Vacuum, Super lattices and microstructure
6	Dr. Abhishek Sarkhel	Reviewer	a. IEEE Access
7	Dr. Satyendra Singh Yadav	Reviewer	a. IEEE Access
8	Dr. Shravan Kumar Bandari	Reviewer	a. IEEE Transactions on Wireless Communications, b. IEEE Communication Letters, IET Communication, c. IET Generation, Transmission and Distribution, d. Elsevier (AEU, Physical Communication, ICT Express), Wiley (IJCS, ETT), e. IETE Journal of research (Taylor & Francis)



14. PHOTOGRAPHS OF DEPT.ACTIVITIES:

Prof. Masahiro Fujita, Tokyo University, Prof. Ioana Voiculescu City College of New York, USA and Prof. Samrat L Sabat from the University of Hyderabad Expert talks:



DEPARTMENT OF ELECTRICAL ENGINEERING

1. BRIEF INTRODUCTION TO THE DEPARTMENT

The Department of Electrical Engineering started since the inception of NIT Meghalaya. Presently the department offers B.Tech, M.Tech and Ph.D Programs. The B.Tech program started in 2010 with an intake of 30 students at NIT Surat and since 2014 onward M.Tech program has been started with an intake of 20 students offering specialization in Power & Energy Systems. Presently there are full time and part time research scholars, registered for the Ph.D program in diverse specializations. The Department aims to impart high quality education to the students and carry out fundamental and industry-oriented research work. The research interest of faculties encompasses various areas of electrical engineering such as Power system Control, Smart Grid Technology, Synchrophasor Technology, Power Quality and Renewable energy integration to grid, Power Electronics & Drives, Control System and Instrumentation, Signal Processing and Biomedical Instrumentation, High Voltage Engineering etc. The department have well-equipped laboratory facilities to the students such as Basic Electrical Engineering Lab, Electrical Machine Lab, Network and Systems Lab, Digital Electronics Lab, Power System Lab, Computational Lab, Control & Instrumentation Lab, Power Electronics Lab, Electric Drives Lab, Microprocessor Lab, Microcontroller & Embedded Systems Lab. Specialized simulation softwares like Matlab, Simulink, FLUX, PSIM, PSS@E, EMYP etc. are available with the department to carry out experiments and research activities. Besides, faculty of EE department are very actively publishing papers in reputed journals and conferences such as IEEE, IET, Elsevier, Springer, Taylor and Francis, Wiley etc. Moreover, faculty members of EE department have received several sponsored research projects from various agencies like SERB-DST, CPRI, REC and State Council of Science Technology & Environment (SCSTE, Govt. of Meghalaya).

2. PROGRAMMES OFFERED:

Currently department is offering

- B.Tech in EEE
- M.Tech in Power & Energy Systems (Full-Time as well as Part-Time)
- Ph.D in various Specializations (Full-Time as well as Part-Time)

3. FACULTY PROFILE:

Name	Designation	Qualification	Specialization	Date of Joining	Ph.D. guidance	Remarks
Dr. S. Debbarma	Assistant Professor	B.E, M.Tech, Ph.D	Power Systems	19 June 2012	3 Ongoing	
Dr. P. P. Singh	Assistant Professor	Ph.D	Control Systems	31 May 2016	1 Ongoing	
Dr. Rakesh Roy	Assistant Professor	B.Tech, M.Tech, Ph.D	Power Electronics & Electric Machine Drives	3 January 2013	2 ongoing	
Dr. Shaik Affijulla	Assistant Professor	Ph.D	Power Systems	3 January 2013	2 ongoing	
Dr. Ksh Milan Singh	Assistant Professor	Ph.D	Instrumentation and Signal Processing	24 May 2016	1 Ongoing	

Name	Designation	Qualification	Specialization	Date of Joining	Ph.D. guidance	Remarks
Dr. Atanu Banerjee	Associate Professor	Ph.D	Power Electronics & Drives	25 August 2014	1 complete, 4 ongoing	
Prof. Gayadhar Panda	Professor	Ph.D	Power Electronics	29 November 2017	Guided: 5 Guiding: 6	
Dr. Supriyo Das	Assistant Professor	Ph.D	High Voltage Engineering	25 August 2020	1 ongoing	
Ms. Ramyani Chakrabarty	Trainee Teacher	M.Tech, Ph.D (Pursuing)	Power & Control	21 July 2014	NIL	

4. LIST OF PUBLICATIONS:

A. JOURNALS:

1. Siddhartha Deb Roy, Sanjoy Debbarma, Detection and Mitigation of Cyber-Attacks on AGC Systems of Low Inertia Power Grid, **IEEE Systems Journal**, Vol. 14, No. 2, pp. 2023-2031, June 2020.
2. P. P. Singh and B. K. Roy, Microscopic chaos control of chemical reactor system using nonlinear active plus proportional integral sliding mode control technique, **Eur. Phys. J. Special Topics**, vol. 228, pp. 169-184, May 2019.
3. M. Kumar and P. P. Singh, Chaos control of a four-dimensional fundamental power system using pole placement based proportional integral sliding mode control, **Int. J. of Automation and Control**, vol. 13, no. 6, pp. 679-697, June 2019. DOI: 10.1504/IJAAC.2019.102671
4. P. P. Singh and B. K. Roy, Memristor-based novel complex-valued chaotic system and its projective synchronisation using nonlinear active control technique, **Eur. Phys. J. Special Topics**, vol. 228, pp. 2197-2214, October 2019.
5. P. P. Singh and B. K. Roy, Inter network synchronisation of complex dynamical networks by using smooth proportional integral SMC technique, **Eur. Phys. J. Special Topics**, vol. 229, pp. 861-876, January 2020.
6. P. P. Singh and B. K. Roy, A novel chaotic system without equilibria, with parachute and thumb shapes of Poincare map and its projective synchronisation, **Eur. Phys. J. Special Topics**, vol. 229, pp. 1265-1278, March 2020.
7. Abhisekh Anand and Shaik Affijulla, Hilbert-Huang transform based fault identification and classification technique for AC power transmission line protection, **International Transactions on Electrical Energy Systems**, In Press, pp. 1-16, June, 2020
8. Pratikanta Mishra, Atanu Banerjee, Mousam Ghosh-“FPGA Based Real-Time Implementation of Quadral-Duty Digital PWM Controlled Permanent Magnet BLDC Drive” **IEEE/ASME Transactions on Mechatronics**, Vol. 25, issue 3, DOI: 10.1109/TMECH.2020.2977859, March, 2020, pp 1456-1467.
9. Chiranjit Sain, Atanu Banerjee, P K Biswas, “Modelling and Comparative Dynamic Analysis due to Demagnetization of a Torque Controlled Permanent Magnet Synchronous Motor Drive for Energy-Efficient Electric Vehicle” **ISA Transactions**, Elsevier (SCI), Vol. 97, August, 2019, pp 384-400.
10. Chiranjit Sain, Atanu Banerjee, P K Biswas “Performance Optimization for Closed Loop Control Strategies towards Simplified Model of a PMSM Drive by Comparing with Different Classical and Fuzzy Intelligent Controller” **International Journal of Automation and Control, Inderscience**, Vol 14, issue 4, DOI: 10.1504/IJAAC.2020.10020855. March, 2019, pp 469-493.
11. Narendra Babu. P, R. Peesapati and G. Panda, “An Adaptive Differentiation Frequency based Advanced Reference Current Generator in Grid-tied PV Applications,” in **IEEE Journal of Emerging and Selected Topics in Power Electronics**, doi: 10.1109/JESTPE.2019.2933140.
12. V. N. Kumar, Narendra Babu. P, R. Kiranmayi, P. Siano and G. Panda, “Improved Power Quality in a Solar PV Plant Integrated Utility Grid by Employing a Novel Adaptive Current Regulator,” in **IEEE Systems Journal**, doi: 10.1109/JSYST.2019.2958819.

13. Narendra Babu, P. J. M. Guerrero, P. Siano, R. Peesapati and G. Panda, "An Improved Adaptive Control Strategy in Grid-Tied PV System With Active Power Filter for Power Quality Enhancement," in *IEEE Systems Journal*, doi: 10.1109/JSYST.2020.2985164.
14. P. R. Bana, K. P. Panda, S. Padmanaban, L. Mihet-Popa, G. Panda and J. Wu, "Closed-Loop Control and Performance Evaluation of Reduced Part Count Multilevel Inverter Interfacing Grid-Connected PV System," in *IEEE Access*, vol. 8, pp. 75691-75701, 2020, doi: 10.1109/ACCESS.2020.2987620.
15. P. Panda, P. R. Bana and G. Panda, "A Switched-Capacitor Self-Balanced High-Gain Multilevel Inverter Employing a Single DC Source," in *IEEE Transactions on Circuits and Systems II: Express Briefs*, doi: 10.1109/TCSII.2020.2975299.
16. P. R. Bana, K. P. Panda, R. T. Naayagi, P. Siano and G. Panda, "Recently Developed Reduced Switch Multilevel Inverter for Renewable Energy Integration and Drives Application: Topologies, Comprehensive Analysis and Comparative Evaluation," in *IEEE Access*, vol. 7, pp. 54888-54909, 2019, doi: 10.1109/ACCESS.2019.2913447.
17. K. P. Panda, S. S. Lee and G. Panda, "Reduced Switch Cascaded Multilevel Inverter With New Selective Harmonic Elimination Control for Standalone Renewable Energy System," in *IEEE Transactions on Industry Applications*, vol. 55, no. 6, pp. 7561-7574, Nov.-Dec. 2019, doi: 10.1109/TIA.2019.2904923.
18. K. P. Panda, P. R. Bana and G. Panda, "FPA Optimized Selective Harmonic Elimination in Symmetric-Asymmetric Reduced Switch Cascaded Multilevel Inverter," in *IEEE Transactions on Industry Applications*, vol. 56, no. 3, pp. 2862-2870, May-June 2020, doi: 10.1109/TIA.2020.2981601.
19. P. R. Bana, K. P. Panda and G. Panda, "Power Quality Performance Evaluation of Multilevel Inverter With Reduced Switching Devices and Minimum Standing Voltage," in *IEEE Transactions on Industrial Informatics*, vol. 16, no. 8, pp. 5009-5022, Aug. 2020, doi: 10.1109/TII.2019.2953071.
20. P. Garanayak, R. T. Naayagi and G. Panda, "A High-Speed Master-Slave ADALINE for Accurate Power System Harmonic and Inter-Harmonic Estimation," in *IEEE Access*, vol. 8, pp. 51918-51932, 2020, doi: 10.1109/ACCESS.2020.2980115.
21. M. Patowary, G. Panda and B. C. Deka, "Reliability Modeling of Microgrid System Using Hybrid Methods in Hot Standby Mode," in *IEEE Systems Journal*, vol. 13, no. 3, pp. 3111-3119, Sept. 2019, doi: 10.1109/JSYST.2019.2925453.
22. P. Buduma, S. J. Pinto and G. Panda, "Loss of Utility Detection and Seamless Operation of Distributed Generation System," in *IEEE Transactions on Industry Applications*, vol. 56, no. 3, pp. 3149-3158, May-June 2020, doi: 10.1109/TIA.2020.2976800.
23. Prince, SK, Panda, KP, Panda, G. Kalman filter variant intelligent control for power quality improvement in photovoltaic active power filter system. *Int. Trans. Electr. Energ. Syst.* 2020; 30:e12239. <https://doi.org/10.1002/2050-7038.12239>.
24. Bana, PR, Panda, KP, Panda, G. Performance evaluation of a reduced components count single-phase asymmetric multilevel inverter with low standing voltage. *Int. Trans. Electr. Energ. Syst.* 2020; e12430. <https://doi.org/10.1002/2050-7038.12430>.
25. Swarnankur Ghosh, Mousam Ghosh and Supriyo Das, "Effect of Multiple Semiconducting Screens on Line Parameters and Wave Properties of Underground Cable", *IEEE Access*, Vol. 7, pp. 169371 – 169384, 2019.
26. Swarnankur Ghosh and Supriyo Das, "Effect of Parameteric Variations of Semiconductor Screen on Line Parameters and Wave Properties of Underground Cable", *International Journal of Recent Technology and Engineering*, Vol. 8, Issue – 4, pp. 5279 – 5287, November 2019.

B. BOOK CHAPTERS:

1. Chiranjit Sain, A Banerjee, P K Biswas, P Sanjeevikumar 'A Comprehensive Study on Induction Motor and Permanent Magnet Motor Drives for Electric Vehicles Application'. Book Title: Artificial Intelligent Techniques for Electric and Hybrid Electric Vehicles, *Scrivener Publishing, Wiley*, November 2019.
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. Narendra Babu P, K. P. Panda, B. C. Babu, P. R. Babu and G. Panda, "A Novel Adaptive Fuzzy based Controller Design using FPGA for grid connected PV systems", in *Advances in Smart Grid Power System: Network, Control and Security, Elsevier*, 2020, (In Press).



4. Patowary M., Deka B.C., Panda G. "Reliability Analysis of Microgrid Systems Using Hybrid Approaches." In: Karanki D., Vinod G., Ajit S. (eds) **Advances in RAMS Engineering. Springer Series in Reliability Engineering.** Springer, Cham. 2020.

C. CONFERENCES:

1. S. Deb Roy and Sanjoy Debbarma, "Mitigation of Intrusions to ACE Signals in Power System Networks", **IEEE PESGRE 2020**, 2nd - 4th January 2020, Kerala, India.
2. Sanjoy Debbarma, C. Hazarika and S. Deb Roy, "SPC based approach for Frequency Control of Power Systems Penetrated with Fast Acting Reserve", **8th IEEE International Conference on Power Systems 2019**, 20th - 22nd Dec 2019, Jaipur, India.
3. Prakash Chandra Gupta, Atanu Banerjee and Piyush Pratap Singh, Analysis and Control of Chaotic Oscillation in FOSMIB Power System Using AISMC Technique, **5th Students Conference on Engineering and Systems (SCES)**, MNNIT Allahabad, India, May 29-31, 2019.
4. Piyush Pratap Singh and Binoy Krishna Roy, A novel chaotic system with parachute and thumb shapes of Poincare map, **12th Conference on Nonlinear Systems and Dynamics (CNSD)**, IIT Kanpur, 12-15 December, 2019.
5. Sugandha and Piyush Pratap Singh, A complex state variable based novel hyperchaotic system with nine equilibria, **12th Conference on Nonlinear Systems and Dynamics (CNSD)**, IIT Kanpur, 12-15 December, 2019.
6. R. Wilson, R. Gandhi, A. Kumar and R. Roy, "Design and Analysis of Twin-Rotor Axial Flux Permanent Magnet Synchronous Motor for Electric Bicycle using 3D Finite Element Analysis," **2020 IEEE International Conference on Power Electronics, Smart Grid and Renewable Energy (PESGRE 2020)**, Cochin, India, 2020, pp. 1-6, doi: 10.1109/PESGRE45664.2020.9070706.
7. A. Kumar, R. Gandhi, R. Wilson and R. Roy, "Analysis of Permanent Magnet BLDC Motor Design with Different Slot Type," **2020 IEEE International Conference on Power Electronics, Smart Grid and Renewable Energy (PESGRE 2020)**, Cochin, India, 2020, pp. 1-6, doi: 10.1109/PESGRE45664.2020.9070532.
8. Mukesh Kumar and Shaik Affijulla, Estimation of Alternator Rotor Angle by using Synchronized Voltage and Current Phasors, **IEEE Calcutta Conference (CALCON)**, 28-29 February, 2020, Kolkata, India,.
9. Aniruddha Agarwal, Dallang M Momin, DonnagratiyaSyndor and Shaik Affijulla, Impact Analysis of Cyber Attack under Stable State of Power System: Voltage Stability, **IEEE Region 10 Symposium (TENSYP)**, 5-7 June 2020, Dhaka, Bangladesh,
10. Gaurav Bhatt and Shaik Affijulla, Integration of Solar Power into Electric Grid based on Voltage at Critical Contingency, **IEEE Region 10 Symposium (TENSYP)**, 5-7 June 2020, Dhaka, Bangladesh,
11. Avigyan Roy, Pratikanta Misra, Atanu Banerjee, "Effect of Sampling on Steady-State Time-Varying Output of DPWM Controlled Buck Converter", **IEEE International Conference on Power Electronics, Smart Grid and Renewable Energy (PESGRE-2020)**, Cochin, Kerala, 2nd -4th January, 2020.
12. Abhilash Sen, Atanu Banerjee, Haricharan Nannam, "A comparative analysis between two DPFC models in a grid connected Hybrid Solar- Wind Generation system" , **IEEE International Conference on Power Electronics, Smart Grid and Renewable Energy (PESGRE-2020)**, Cochin, Kerala, 2nd -4th January, 2020.
13. Abhilash Sen, Atanu Banerjee, Haricharan Nannam, " Performance Analysis of UPFC and DPFC in a Grid Connected Hybrid Solar-Wind Generation System", **11th International Exergy, Energy and Environment symposium (IEEEES 11-2019)**, SRM University, Chennai, India, July 14-18, 2019.
14. Hari Charan Nannam, Atanu Banerjee, "A novel fuzzy logic controlled Vienna rectifier to extract maximum power in the grid Connected wind energy system applications", **11th International Exergy, Energy and Environment symposium (IEEEES 11-2019)**, SRM University, Chennai, India, July 14-18, 2019.
15. Abhilash Sen, Atanu Banerjee, Haricharan Nannam, "A comparative analysis between UPFC and DPFC in a grid connected Photovoltaic System", **IEEE INCOSI9**, Madurai, India, April ,2019.
16. P.C. Gupta, A. Banerjee, P.P. Singh, - "Analysis and Control of Chaotic Oscillation in FOSMIB Power System Using AISMC



Technique,” in **5th Students’ Conference on Engineering and Systems, (SCES-2019)** at MNNIT Allahabad, 29th -31st May, 2019.

17. N. Babu P., R. B. Peesapati and G. Panda, “An Adaptive Current Control Technique in Grid-tied PV System with Active Power Filter for Power Quality Improvement,” **TENCON 2019 - 2019 IEEE Region 10 Conference (TENCON)**, Kochi, India, 2019, pp. 187-191, doi: 10.1109/TENCON.2019.8929487.
18. P. N. Babu, P. R. Babu, B. Chittibabu and G. Panda, “Three-Phase Grid-tied Photovoltaic System with an Adaptive Current Control Scheme in Active Power Filter,” **2019 IEEE 1st International Conference on Energy, Systems and Information Processing (ICESIP)**, Chennai, India, 2019, pp. 1-6, doi: 10.1109/ICESIP46348.2019.8938367.
19. K. P. Panda, P. R. Bana and G. Panda, “A Single Source Switched-Capacitor Based Multilevel Inverter for Photovoltaic Application,” **2020 IEEE International Conference on Power Electronics, Smart Grid and Renewable Energy (PESGRE 2020)**, Cochin, India, 2020, pp. 1-6, doi: 10.1109/PESGRE45664.2020.9070546.
20. S. K. Prince, K. P. Panda, M. Patowary and G. Panda, “FPA tuned Extended Kalman Filter for Power Quality Enhancement in PV integrated Shunt Active Power Filter,” **2019 International Conference on Computing, Power and Communication Technologies (GUCON)**, NCR New Delhi, India, 2019, pp. 257-262.
21. P. R. Bana, K. P. Panda and G. Panda, “Novel Reduced Source Switched-Capacitor Boost Multilevel Inverter for Photovoltaic Application,” **2020 IEEE International Conference on Power Electronics, Smart Grid and Renewable Energy (PESGRE 2020)**, Cochin, India, 2020, pp. 1-6, doi: 10.1109/PESGRE45664.2020.9070729.
22. K. P. Panda, P. R. Bana and G. Panda, “Design and Control of An Asymmetrical Cascaded Compact Module Multilevel Inverter for PV System,” **TENCON 2019 - 2019 IEEE Region 10 Conference (TENCON)**, Kochi, India, 2019, pp. 2616-2621, doi: 10.1109/TENCON.2019.8929608.
23. K. P. Panda, P. R. Bana and G. Panda, “Design and Control of A Switched-Diode Multilevel Inverter for Photovoltaic Application,” **2019 IEEE Milan PowerTech**, Milan, Italy, 2019, pp. 1-6, doi: 10.1109/PTC.2019.8810526.
24. P. N. Babu, P. R. Bana, R. B. Peesapati and G. Panda, “An Interleaved Buck Converter Based Active Power Filter for Photovoltaic Energy Application,” **2019 International Conference on Power Electronics Applications and Technology in Present Energy Scenario (PETPES)**, Mangalore, India, 2019, pp. 1-6, doi: 10.1109/PETPES47060.2019.9003964.
25. S. J. Pinto, N. B. P. R. Peesapati and G. Panda, “Monitoring and Control of MultiBus Microgrid System Using FPGA Platform,” **2019 IEEE Region 10 Symposium (TENSYP)**, Kolkata, India, 2019, pp. 260-265, doi: 10.1109/TENSYP46218.2019.8971116.
26. P. N. Babu, R. B. Peesapati and G. Panda, “A Pre-filtering based Current Control Strategy in Grid-tied Photovoltaic Systems with Active Power Filter for Harmonic Mitigation,” **TENCON 2019 - 2019 IEEE Region 10 Conference (TENCON)**, Kochi, India, 2019, pp. 1003-1008, doi: 10.1109/TENCON.2019.8929638.
27. Darshan Prakash Borthakur and Supriyo Das, “Understanding the Life and Ageing of XLPE Insulation considering Free Energy Barrier Concept”, **IEEE 4th International Conference on Condition Assessment Techniques in Electrical Systems (CATCON)**, November 2019, India.
28. Ashok Narayan Tripathi, Adnan Iqbal and Supriyo Das, “Understanding the Ageing of XLPE Cable Insulation using Impedance Analyser”, **IEEE International Conference on Electrical, Electronics and Computer Engineering (UPCON)**, November 2019, India.
29. B. Thangabalan and Supriyo Das, “Understanding the Flashover Characteristics across Stay Arm Insulator due to Lightning Stroke”, **IEEE 11th Asia – Pacific International Conference on Lightning (APL)**, June 2019, Hong Kong.
30. R. Chakrabarty and R. Adda, “Reduced Switch Single DC Source Cascaded H-bridge Multilevel Inverter based DSTATCOM,” **IECON 2019 - 45th Annual Conference of the IEEE Industrial Electronics Society**, Lisbon, Portugal, 2019, pp. 7074-7079, doi: 10.1109/IECON.2019.8927119.

5. PATENTS:

1. Haricharan Nannam, Atanu Banerjee, Pratikanta Mishra-“Impedance Network based Enhanced Voltage Cascaded H-bridge Converter” Published in Journal of Intellectual Property India (Journal No-03/2020), **Department of Industrial Policy**



& Promotions, Government of India, January, 2020, page no: 3117 & Patent (Application No: 202031000006 dated 01.01.2020) grant is awaited.

2. Pratikanta Mishra, Atanu Banerjee, Sushanta Gogoi, Mousam Ghosh- “A Low-cost Application-Specific Integrated Circuit (ASIC) employed in PMBLDCM Drive fed Domestic Application” **Published in Journal of Intellectual Property India (Journal No-04/2019), Department of Industrial Policy & Promotions, Government of India**, October, 2019, page no: 50268 & Patent (Application No: 201931034528 dated 27.08.2019) grant is awaited.
3. Gayadhar Panda, Kaibalya Prasad Panda, and Prabhat Ranjan Bana, “Double Stage Voltage Level Boost Optimized Multilevel Inverter” Indian Patent Filed and the Patent Application No: 201931030343, dated: 26/07/2019.
4. Prabhat Ranjan Bana, Kaibalya Prasad Panda, Gayadhar Panda and Sukumar Mishra, “High-gain dc-dc converter for solar-assisted electric vehicle”, Indian Patent Filed and the Patent Application No: No.202031004840 A, dated: 13/03/2020.

6. CONFERENCE/ WORKSHOP/ SEMINAR ORGANIZED:

1. Ten days National Training Program on Advancements for Renewable Energy Integration Systems (AREIS 2019), organized by Department of Electrical Engineering, NIT Meghalaya, from Dec 04th to 13th 2019.
2. Organized Research Conclave 2020, Department of Electrical Engineering, NIT Meghalaya, 28/02/2020.

7. CONFERENCES / WORKSHOPS / SEMINARS / TRAININGS ATTENDED BY FACULTY MEMBERS:

Sl. No.	Name of Faculty	Name of the programme attended	Duration
1	Dr. P. P. Singh	12 th Conference on Nonlinear Systems and Dynamics, IIT Kanpur	4 days
2	Prof. Gayadhar Panda	Technical programme committee member, 2nd International Conference on Electrical Engineering and Green Energy, 28-30 June- 2019.	3 Days
3	Prof. Gayadhar Panda	Technical programme committee member, IEEE International conference on computing, power and communication technologies (GUCON-2019), 27-28 September-2019.	2 Days
4	Prof. Gayadhar Panda	Attended IEEE First International Conference on Power Electronics Applications and Technology in Present Energy Scenario (PETPES-2019), 29-31 August 2019	3 Days
5	Prof. Gayadhar Panda	Attended IEEE Tencon-2019, region 10 international conference, 17-20 October-2019	4 Days
6	Dr. Sanjoy Debbarma	Attended IEEE ICPS 2019, MNIT Jaipur, India, 20th - 22nd Dec 2019.	3 Days
7	Dr. Supriyo Das	Attended IEEE 11 th Asia – Pacific International Conference on Lightning (APL), 12 th – 14 th June 2019, Hong Kong Attended IEEE 4 th International Conference on Condition Assessment Techniques in Electrical Systems (CATCON), 18 th – 21 st November 2019, India	3 days 4 days
8	R. Chakrabarty	Attended 45th Annual Conference of the IEEE Industrial Electronics Society, Lisbon, Portugal, Oct 14-17, 2019.	4 days

8. INVITED TALKS DELIVERED:

1. DR. KSH. MILAN SINGH

- (i) Invited talk on “**Fourier Transform and Filter Design**” in Advancement in Instrumentation and Signal Processing (AISP 2019), CIT Kokrajhar, Assam.

2. DR. ATANU BANERJEE:

- (i) Resource Person at FDP in GMIT, Guwahati, Assam.

3. PROF. GAYADHAR P ANDA:

- i. Invited keynote delivered in **IEEE First International Conference on Power Electronics Applications and Technology in Present Energy Scenario (PETPES-2019)**, 29-31 August 2019.

- ii. Invited talk delivered on “**Power quality control of multi-level inverter for Renewable energy Applications**”, organized by HIT Bhubaneswar, Odisha, 3-4 October-2019.

9. SPONSORED PROJECTS:

Sl. No.	Title of the Project	Investigators (P.I. / Co-P.I.)	Funding Agency	Funding amount	Duration	Status
1.	Design and implementation of chaos based secure communication in landline systems	Dr. P.P. Singh (P.I.)	TEQIP-III	1.68 Lakh	2 Years	Ongoing
2	Development of Electric Carrier to Transport Goods in Rural Hilly Area	Dr. R. Roy (P.I.)	State Council of Science Technology & Environment, Meghalaya	1 Lakh	1 year	Ongoing
3	Design & Development High frequency Multilevel Resonant Inverter based New Generation Induction Heated Autoclave System for Sterilization of Surgical Instruments.	Dr.A. Banerjee (PI)	MeitY, Govt. of India	25 lakh	2 year	Ongoing

10. AWARDS WON/ RECOGNITION RECEIVED AT THE NATIONAL AND INTERNATIONAL LEVEL:

1. Dr. Rakesh Roy, achieved third position in **IEEE India Covid Move** - Online Hackathon challenge, **IEEE India Council**.

11. LABORATORIES SETUP:

Sl. No.	Laboratory	Major Equipment & Software	Location	Cost (Rupees in lakhs)
1	Power Systems Lab	HVDC/AC Transmission Line Simulators with FACTS devices	Power Systems Lab	Rs. 7,44,293

12. ADMINISTRATIVE RESPONSIBILITIES HELD:

Sl. No.	Name of Faculty	Responsibilities	Duration
1	Dr. S. Debbarma	Warden, Lapalang 5 Boys Hostel	
2		Member, Construction & Development of NIT Meghalaya Permanent Campus	
3		Member, Center of Innovation Incubation & Entrepreneurship	
4		Member, SC/ST Cell, NIT Meghalaya	
5		Member, Institute Library Committee	
6		Member, Institute Furniture Committee,	
7	Dr. P. P. Singh	PIC, Security Committee	
8	Dr. Rakesh Roy	Warden, Umpling PG Men's Hostel	
9	Dr. Atanu Banerjee	Dean (SW)	
10	Dr. Ksh Milan Singh	Exam Cell committee member	



Sl. No.	Name of Faculty	Responsibilities	Duration
11	Prof. Gayadhar Panda	Part-time CVO	
12		Member ACOFAR	From 01/07/2019 to 30/06/2020
13		Dean Academics	From 11/10/2018 to till date
14		Chief guest during concluding ceremony of vigilance awareness week-2019	25/10/2019
15		Curriculum and Accreditation committee member	19/07/2019
16		Advisory committee member in Effective Industry-Academia Partnerships: Opportunities and Challenges	11/09/2019
17		Senate member of the board of governors	09/09/2019
18		Member of evaluation and sanctions of the projects under TEQIP-III	30/10/2019
19		Chairman of prevention of examination and malpractices committee	05/09/2019
20		Chairman of Institute ranking committee	08/09/2019
21		Chairman of Academic programme committee	14/08/2019
22		Member of DRC and DC committee	2019-2020
23		Chairman of programme evaluation committee	14/08/2019
24		Part-time CVO	
25	Dr. Supriyo Das	HOD EE	

13. MEMBERSHIP OF PROFESSIONAL BODIES:

Sl. No.	Name of Faculty	Member of
1.	Dr. S. Debbarma	IEEE, IEI
2.	Dr. P. P. Singh	IEEE
3.	Dr. Rakesh Roy	IEEE, IEI
4.	Dr. Shaik Affijulla	IEEE, IEI
5.	Dr. Atanu Banerjee	IEEE, IEI
6.	Dr. Ksh Milan Singh	IEEE
7.	Prof. Gayadhar Panda	Senior Member IEEE, Fellow IE (I), Life Member ISTE
8.	Dr. Supriyo Das	Member IEEE, IEEE DEIS society & IEEE PES society

14. ANY OTHER NOTABLE INFORMATION:

I. PROF. G. PANDA

- Editorial Activities: Associate Editor (AE) in International Journal of Renewable Energy Technology, Inderscience Publishers Ltd.
- Served as resource person/ expert/Committee Member:
 - Executive committee member for NIELIT Shillong.
- Served as external examiner for Ph D/ M.Tech/ M. Phil Thesis:



- a. External examiner for Ph.D. Thesis, Electrical Engineering, Siksha 'O' Anusandhan.
- b. External examiner for Ph.D. thesis, NIT Silchar.
- c. External examiner for Ph.D. thesis, KIIT (Deemed to Be University).
4. Guidance of Internship Projects of Students from Other Institutions:
 - a. One Internship project has been guided in the NIT Meghalaya.
5. Reviewing Activity:
 - a. IEEE Transactions on Industrial Electronics
 - b. IEEE Transactions on Smart Grids
 - c. IEEE Transactions on Industrial Informatics
 - d. IEEE Transactions on Sustainable Energy
 - e. IET Electrical Systems in Transportation
 - f. IET Renewable Power Generation
 - g. IET Generation, Transmission and Distribution
 - h. Transactions of the Institute of Measurement and Control, SAGE journal
 - i. IEEE Access
 - j. International Transactions on Electrical and Energy Systems (Wiley)

II. DR. S. DEBBARMA

1. Question paper setter for Meghalaya Public Service Commissions.
2. Expert Member, Selection Committee (Electrical Engineers), Meghalaya Energy Corporation Limited (MeECL).
3. **Reviewed for the Journals:** IEEE Transactions on Smart Grid, IEEE Transaction on Sustainable Energy, IEEE Transactions on Industrial Informatics, IEEE Systems Journal, IEEE Access Journal, IET Generation, Transmission & Distribution, , International Transactions on Electrical Energy Systems (Wiley), Electric Power Components and Systems (Taylor & Francis).
4. **Reviewed for the Conferences:** IEEE APEC 2019 (California), IEEE ICPS 2019 (India) and many more.

III. DR. SUPRIYO DAS

1. **Journal reviewer**
 - a. IEEE Transaction on Dielectrics and Electrical Insulation
 - b. International Transactions on Electrical Energy Systems
 - c. Nanomaterials and Nanotechnology
2. **Examiner/ Expert/ Resource person**
 - a. **External examiner** –Ph.D viva-voce, North – East Regional Institute of Science and Technology (NERIST), Arunachal Pradesh, India – December 2019
 - b. **Expert member of selection committee** – Recruitment of junior engineer, Meghalaya Energy Corporation Limited (MeECL), Shillong, India – July 2019
 - c. **Question paper setter** – Written test Diploma level, Meghalaya Public Service Commission (MPSC) – August 2019
 - d. **Question paper setter** – Written test for Consultant (Electrical Engineering) – degree level, North Eastern Council (NEC) – November 2019
 - e. **Question paper setter** – Screening test Degree level, Meghalaya Public Service Commission (MPSC) – March 2020





DEPARTMENT OF MECHANICAL ENGINEERING

1. BRIEF INTRODUCTION TO THE DEPARTMENT:

The Department of Mechanical Engineering started functioning 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 & 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 a 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. PROGRAMMES 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 Bhusan Biswal	Professor	PhD	Design and Manufacturing	17-05-2017	02	01 Part time
Prof. Harish Chandra Das	Professor	PhD	Thermal	28-12-2017	06	04 part time
Dr. Rabindra Narayan Mahapatra	Associate Professor	PhD	Design and manufacturing	28-12-2017	07	04 Part time
Dr. Subhendu Maity	Assistant Professor	PhD	Fluid Mechanics	16-07-2012	3	(one with Dr. Bikash Kr Sarkar)
Dr. Deba Kumar Sarma	Associate Professor & Dean (Planning & Development)	PhD	Manufacturing	23-08-2013	4	1 awarded 3 continuing (one co-guide with Dr. K. Debnath)
Dr. Bikash Kumar Sarkar	Assistant Professor	PhD	Fluid Power and Control	21-08-2013	05	02 Part time
Dr. Biplob Kumar Debnath	Assistant Professor	PhD	Thermal	30-07-2014	1	1 awarded, 2 Continuing (one co-guided with Dr. R.S. Das)
Dr. Koushik Das	Assistant Professor	PhD	Thermal	31-07-2014	3	1 completed, 2 ongoing

Name	Designation	Qualification	Specialization	Date of Joining	Ph.D. guidance	Remarks
Dr. Rajat Subhra Das	Assistant Professor	PhD	Thermal	16-07-2015	3	All ongoing/Shared with Dr. B.K. Debnath, Dr. B.K. Sarkar & Dr. K. Das
Dr. Kishore Debnath	Assistant Professor	PhD	Manufacturing	16-07-2015	3	All ongoing/Shared with Dr. D.K. Sarma & Dr. T. Bose
Dr. Pallekonda Ramesh Babu	Assistant Professor	PhD	Machine Design	27-07-2015	3	All ongoing One shared with Dr. Maneswar Rahang, One shared with Dr. J. P. Kalita, Apollo Hospitals Guwahati
Dr. Maneswar Rahang	Assistant Professor	PhD	Manufacturing	06-06-2016	2	1 Shared with Dr. Pallekonda Ramesh Babu
Dr. Tanmoy Bose	Assistant Professor	PhD	Machine Design	17-06-2016	2 Student	All ongoing, 1 Co-guidance with Dr. Kishore Debnath
Avilash Sahoo	Trainee Teacher	M.TECH	Machine Design	21-07-2014		
Dr. Md Nur Alom	Trainee Teacher	PhD	Fluids and Thermal	21-07-2014		
Sambit Majumder	Trainee Teacher	M.TECH	Fluids and Thermal	20-07-2015		

4. LIST OF PUBLICATIONS:

A. JOURNALS:

1. N. Hanuman, S. Roy, **T. Bose**, Resonant activation of different intermodulation frequencies using dual excitations, Ultrasonics, Vol.-106, 106138, 2020.
2. N. Hanuman, S. Roy, **T. Bose**, Detection of local defect resonance intermodulation peaks using bicoherence analysis, International Journal of Mechanical Sciences, Vol.-163, 105092, 2019.
3. S. Roy, **T. Bose**, K. Debnath, Behaviour of glass fiber-reinforced composite with delamination under Iosipescu shear test, International Journal of Modern Manufacturing Technologies, Vol.-11(2), 119-125, 2019.
4. **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.
5. P.J. Bezbaruah, **R.S. Das**, **B.K. Sarkar**. Overall performance analysis and GRA optimization of solar air heater with truncated half conical vortex generators. Solar Energy 196, 637-652, 2020.
6. P.J. Bezbaruah, **R.S. Das**, **B.K. Sarkar**. Solar air heater with finned absorber plate and helical flow path: A CFD analysis. Applied Solar Energy 56(1), 35-41, 2020.
7. P.J. Bezbaruah, **R.S. Das**, **B.K. Sarkar**. Thermal and fluid flow analysis of miller teeth shaped ribbed solar air heater-A CFD approach, Journal of Scientific and Industrial Research 78, 694-698, 2019.
8. S. Das, **B.K. Debnath**, **R.S. Das**, A. Stagni, T. Faravelli. Numerical investigation of a porous media combustor in a small-scale diesel engine. Energy 186, 1-15, 2019.
9. **M. Rahang** and P.K. Patowari, Pattern generation by selective area deposition of material in EDM, Materials and Manufacturing Processes, 34(16), 2019, 1847-1854
10. Rashed Mustafa Mazarbhuiya, Hrishikesh Dutta, Kishore Debnath and **Maneswar Rahang**, Surface modification of CFRP composite using reverse-EDM method, Surfaces and Interfaces 18, 2020, 100457
11. **M. Rahang** and P.K. Patowari, SELECTIVE AREA DEPOSITION FOR PATTERN GENERATION IN EDM USING



MASKING TECHNIQUE, Surface Review and Letters, 1950218, 2020, DOI: 10.1142/S0218625X19502184

12. S. Deka, P.R. Babu and **M. Rahang**, 2020. A new method for force prediction in an accelerometer force balance system using support vector regression. Transactions of the Institute of Measurement and Control, 42(4), pp.880-889.
13. Mazarbhuiya, R.M., Rahang, M. 'Reverse EDM Process for Pattern Generation using Powder Metallurgical Green Compact Tool', Materials and Manufacturing Process. (**Accepted**).
14. Khelkar AB, **Debnath BK**, & **Debnath K** (2020). Use of sinusoidal surface profile in the absorber tube of a parabolic trough solar collector to enhance its thermal performance. Journal of Thermal Analysis and Calorimetry, DOI: 10.1007/s10973-020-09929-9.
15. U. Kashyap, **K. Das**, **B. K. Debnath**, U. Kashyap, S. K. Saha. Numerical study on effect of secondary surface on rectangular vortex generator. Journal of Thermal Science and Engineering Applications. 2020, Page Nos. 1-33. DOI: <https://doi.org/10.1115/1.4047008>
16. A.C. Chandekar, **B. K. Debnath**. Effect of intake manifold design on the mixing of air and bio-CNG in a port-injected dual fuel diesel engine. Journal of Thermal Analysis and Calorimetry, 2020, Page Nos. 1-15. DOI: 10.1007/s10973-020-09591-1.
17. S. Vishwakarma, S. Roy, B. Das, and **B. K. Debnath**. Performance analysis of internally helically v-grooved absorber tubes using nanofluid. Thermal Science and Engineering Progress, 2020, Vol. 18 (1), Page Nos. 100538 (1-10), DOI: 10.1016/j.tsep.2020.100538.
18. S. Roy, B. Das, A. Biswas, **B. K. Debnath**, Energy and exergy analysis of a concrete-based thermal energy storage system. Journal of The Institution of Engineers (India): Series C, 2020, Page Nos. 1-13, <https://doi.org/10.1007/s40032-020-00564-9>.
19. H. Dutta, K. Debnath, **D. K. Sarma**, Improving the Performance of μ ED-Milling using Assisting Electrode for Fabricating Micro-Channels in CFRP Composites, Materials Today: Proceedings, Elsevier, Vol. 28, Page nos. 755-760, 2020
20. **D. K. Sarma**, S. Kr. Rajbongshi, A study in turning of AISI D2 steel with Textured and Non-textured coated carbide tool at the flank face, Materials Today: Proceedings, Elsevier, Vol. 28, Page nos. 574-581, 2020
21. **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 (IJMMM), Inderscience, Vol. 22, No. 1, Page Nos. 62-78, 2020
22. Sanjib Kr. Rajbongshi, **Deba Kumar Sarma**, Performance parameters studies in machining of AISI D2 steel with dot-textured, groove-textured & non-textured cutting tool at the flank face, *International Journal of Refractory Metals and Hard Materials*, Vol. 83, Page Nos. 1-16, September 2019
23. Hrishikesh Dutta, Kishore Debnath, **Deba Kumar Sarma**, A Study of Material Removal and Surface Characteristics in Micro-Electrical Discharge Machining of Carbon Fibre Reinforced Plastics, *Polymer Composite*, Willey, Vol. 40, No. 10, Page Nos. 4033-4041, 2019
24. 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 (IJMMM)*, Inderscience, Vol. 21, Nos. 5/6, Page Nos. - 390-436, 2019
25. U. Kashyap, **K. Das**, B. K. Debnath, U. Kashyap, S. K. Saha, Effect of Secondary Surface on Rectangular Vortex Generator: Numerical and Experimental Study, Journal of Thermal Science and Engineering Applications: ASME, <https://doi.org/10.1115/1.4047008>, 2020
26. A. Ranjan, S. S. Yadav, **K. Das**, Thermal and flow analysis of split drop shaped pin fins for improved heat transfer rate, Journal of Institution of Engineers (India) Series C, 101, 375-382(2020)
27. U. Kashyap, **K. Das**, B. K. Debnath, Numerical and experimental study of effect of secondary surfaces fixed over a rectangular vortex generator, Journal of Thermal Sciences and Engineering Applications: ASME, 061003-1-12 (11) 2019.
28. P. Venkaiah & B. K. Sarkar, Hydraulically actuated horizontal axis wind turbine pitch control by model free adaptive



controller, Renewable Energy, 147, 55-68, 2020.

29. S. Mohapatra, A. K. Behera, R. Mahapatra, H. Das, A deterministic inventory model in reverse supply chain, *Journal of Modelling in Management*, 15, 318-338, 2019
30. S. Mohapatra, A. K. Behera, R. Mahapatra, H. Das, M. Pradhan, A deterministic inventory model of aluminium refreshment cans in reverse supply chain, *International journal of services and operations management*, (Accepted May 2019).
31. A Rout, D Bbvl, BB Biswal, GB Mahanta, A fuzzy-regression-PSO based hybrid method for selecting welding conditions in robotic gas metal arc welding, *Assembly Automation*
32. A Das, SR Das, SK Patel, BB Biswal, Effect of MQL and nanofluid on the machinability aspects of hardened alloy steel, *Machining Science and Technology* 24 (2), 291-320
33. GB Mahanta, A Rout, DBB V. L, BB Biswal, An improved multi-objective antlion optimization algorithm for the optimal design of the robotic gripper, *Journal of Experimental & Theoretical Artificial Intelligence* 32 (2), 309-338
34. BM Gunji, B Deepak, BB Biswal, Effect of Considering Secondary Parts as Primary Parts for Robotic Assembly Using Stability Graph, *Arabian Journal for Science and Engineering* 45 (2), 743-764
35. A Rout, GB Mahanta, D Bbvl, BB Biswal, Kinematic and Dynamic Optimal Trajectory Planning of Industrial Robot Using Improved Multi-objective Ant Lion Optimizer, *Journal of The Institution of Engineers (India): Series C*, 1-11
36. A Das, SR Das, SK Patel, BB Biswal, Experimental investigation of various machining attributes and cost estimation during machining of hardened AISI 4340 steel with untreated and cryo treated cermet inserts, *Mechanics & Industry* 21 (1), 110
37. OP Sahu, BB Biswal, Sensor Integrated Robotic Hand for Industrial Application, *International Journal of Mechanical Engineering and Robotics Research* 9 (1 ...
38. A Das, SK Patel, BB Biswal, N Sahoo, A Pradhan, Performance evaluation of various cutting fluids using MQL technique in hard turning of AISI 4340 alloy steel, *Measurement* 150, 107079
39. A Rout, B Deepak, BB Biswal, GB Mahanta, Optimal trajectory planning of industrial robot for improving positional accuracy, *Industrial Robot: the international journal of robotics research and application*
40. A Rout, D Bbvl, BB Biswal, Optimal trajectory generation of an industrial welding robot with kinematic and dynamic constraints, *Industrial Robot: the international journal of robotics research and application*
41. S Panda, D Mishra, BB Biswal, An approach for design optimization of 3R manipulator using Adaptive Cuckoo Search algorithm, *Mechanics Based Design of Structures and Machines*, 1-26
42. A Das, O Pradhan, SK Patel, SR Das, BB Biswal, Performance appraisal of various nanofluids during hard machining of AISI 4340 steel, *Journal of Manufacturing Processes* 46, 248-270
43. S Datta, BB Biswal, Experimental studies on electro-discharge machining of Inconel 825 super alloy using cryogenically treated tool/workpiece, *Measurement* 145, 611-630
44. GB Murali, B Deepak, MVA Raju, BB Biswal, Optimal robotic assembly sequence planning using stability graph through stable assembly subset identification, *Proceedings of the Institution of Mechanical Engineers, Part C: Journal of ...*
45. A Das, SK Patel, BB Biswal, SR Das, Performance evaluation of aluminium oxide nano particles in cutting fluid with MQL technique in turning of hardened AISI 4340 alloy steel, *Scientia Iranica*
46. A Das, SK Patel, BB Biswal, SR Das, Machinability investigation and cost estimation during finish dry hard turning of AISI 4340 steel with untreated and cryo treated cermet inserts, *Journal of Superhard Materials* 41 (4), 247-264
47. GB Mahanta, A Rout, B Deepak, BB Biswal, Application of Meta-Heuristic Optimization Techniques for Design Optimization of a Robotic Gripper, *International Journal of Applied Metaheuristic Computing (IJAMC)* 10 (3), 107-133
48. BK Khamari, SS Dash, SK Karak, BB Biswal, Effect of welding parameters on mechanical and microstructural properties of GMAW and SMAW mild steel joints, *Ironmaking & Steelmaking*, 1-8
49. B Deepak, G Bala Murali, MVAR Bahubalendruni, BB Biswal, Assembly sequence planning using soft computing methods: a review, *Proceedings of the Institution of Mechanical Engineers, Part E: Journal of ...*



B. BOOK CHAPTERS:

Sl No.	Author Name	Title	Publisher	ISBN No	Pages	Year
1.	S. Roy, T. Bose , K. Debnath	Detection of Local Defect Resonance Frequencies for Defect Imaging: A Nonlinear Ultrasound-Based Approach	Springer	978-981-15-0124-1	1163-1172	2020
2.	M. Vashum, S. Roy, T. Bose	Shear Behaviour of the Delaminated Glass Fibre Reinforced Composite Laminates	Springer	978-981-15-0124-1	617-625	2020
3.	T. Bose , N. Hanuman, S. Roy	Non-Destructive Testing of Carbon Fibre Reinforced Polymer (CFRP) Composite Using Thermosonic Technique	IGI Global	978-1-7998-1831-1	348-365	2020
4.	A.C. Chandekar, and B.K. Debnath	Design and Optimization of Air–Biogas Mixing Device for Dual Fuel Diesel Engines	Springer	978-981-15-2662-6	515-527	2020
5.	S. Vishwakarma, K. Debnath , B. K. Debnath , and B. Das	Comparative Analysis of Absorber Tubes of Parabolic Trough Solar Collector Using Therminol VP-1 as Heat Transfer Fluid	Springer	978-981-15-0123-4	1227-1240	2020
6.	S. P. Singh, and B. K. Debnath	Exergy analysis of a variable compression ratio engine operated on diesel and pine seed oil biodiesel blends	Springer	978-981-15-0123-4	1241-1251	2020
7.	S. Vishwakarma, P. K. Meher, B. K. Debnath , and K. Debnath	Computational analysis of internally grooved absorber tubes of parabolic trough solar collector for constant mass flow rate of the heat transfer fluid	Springer	978-981-15-0123-4	1267-1279	2020
8.	S. Roy, B. Das, A. Biswas, and B.K. Debnath	Computational analysis of sensible energy storage for low-temperature application	Springer	978-981-15-0123-4	1315-1329	2020
9.	A. Ranjan, K. Das ,	Performance analysis of split drop-shaped pin fins for improved heat transfer rate	Springer	978-981-15-0123-4	857-867	2020
10.	S. Bhowmick, R. Gupta, K. Das ,	Thermal analysis and estimation of tumor properties in breast tissue	Springer	978-981-15-0123-4	963-973	2020
11.	S. Sharma, S. Anand, K. Das ,	Flow analysis of vortex generators in the shroud of a horizontal axis wind turbine	Springer	978-981-15-0123-4	51-64	2020
12.	Sushmita Deka, P. Ramesh Babu, M. Rahang	Dynamic Calibration of a Three Component Accelerometer Force Balance System and Force Prediction using Deconvolution	Springer	978-981-15-0123-4	1675-1683	2020
13.	N. Kumar, B. K. Sarkar, S. Maity	Recent Development and Application of the Hydrostatic Transmission System, in Advances in Mechanical Engineering Select Proceedings of ICRIDME 2018	Springer	978-981-15-0123-4	1613-1625	2020
14.	Neeraj Kumar, Emanuel Khraw Mawson, Bikash Sarkar	Adaptive Control of the Wind Turbine Transmission System for Smooth Power Generation	Springer	978-981-15-0123-4	1411-1423	2020
15.	Vinod J., B. K. Sarkar, S. Mookherjee, D. Sanyal	Active Power Control of the Francis Turbine System by Model-Free Adaptive Controller	Springer	978-981-15-0123-4	1627-1639	2020
16.	Sanjib Kr Rajbongshi , Deba Kumar Sarma , Meinam Annebushan Singh	A brief review of white layer formation in hard machining with a case study	Springer	978-981-15-0123-4		2020
17.	Bezbaruah P.J., Das A., Das R.S. & Sarkar B. K	Numerical investigation on triangular fin based solar air heater	Springer	978-981-15-2662-6	341-350	2020
18.	Bezbaruah P.J., Das R.S. , Sarkar B. K	CFD-Based Study on Thermal and Fluid Flow Dynamics Due to Miller Teeth Shaped Ribs Over Absorber Plate of Solar Air Collector	Springer	978-981-15-0124-1	1045-1053	2020
19.	H. Barman, R. S. Das	Simultaneous Heat and Mass Transfer Analysis in Falling Film Absorber	Springer	978-981-15-0124-1	1001-1011	2020



Sl No.	Author Name	Title	Publisher	ISBN No	Pages	Year
20.	A. Das, S. K. Patel, B.B. Biswal, R. N. Mahapatra	Comparative Study of Some Machining Characteristics During Hard Turning of Alloy Steel with Untreated and Cryotreated Cermet Inserts	Springer	978-981-15-0123-4	217-225	2020
21.	C. Champatiray, G. B. Mahanta, S. K. Pattanayak, R. N. Mahapatra	Analysis for Material Selection of Robot Soft Finger Used for Power Grasping	Springer	978-981-15-2695-4	961-970	2020

C. CONFERENCES:

1. **Alom N**, and Saha U. K., 2019. Determining the optimal location of vent augmenters in an elliptical-bladed Savonius rotor, Paper No. GTIndia2019-2344, ASME Gas Turbine India Conference, December 05 – 06, Chennai, India.
2. **Alom N**, Das R, and Saha U. K., 2019. Optimization of aerodynamic parameters of an elliptical-Bladed Savonius wind rotor using multi-objective genetic algorithm, Paper No. GTIndia2019-2346, ASME Gas Turbine India Conference, December 05 – 06, Chennai, India.
3. **Alom N**, Das R, and Saha U. K., 2019. A Differential Evolution-Based Inverse Method to Optimize Blade Configurations in Elliptical-Bladed Savonius Wind Turbines, Paper No. GTIndia2019-2352, ASME Gas Turbine India Conference, December 05 – 06, Chennai, India.
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. **T. Bose**, N. Hanuman, Fully acoustic non-destructive testing (NDT) for carbon fiber reinforced plastic (CFRP) plate, SINCE 2019, Period- 4-5 December, Place-Singapore, 2019.
6. S. Roy, **T. Bose**, K. Debnath, Nonlinear Ultrasonic Wave Spectroscopy for Detecting Local Defect Resonance Frequency in Delaminated GLARE Plate, IWUSHM 2019, Period- 10-12 September, Place- Stanford University, 2019.
7. N. Hanuman, **T. Bose**, Bicoherence based study of non-linear intermodulation in delaminated CFRP plate, Conference & Exhibition of the society for NDT (NDE 2019), Period: 5-7 December, Place: Bangalore, 2019.
8. S. Majumder, A. Ghosh, D. N. Basu, G. Natarajan, Development of an IB-TLB solver for fluid-particle interaction in energy management systems, International Conference on Sustainable Energy and Green Technology (SEGT 2019), IOP Conference Series: Earth and Environmental Sciences, 463 (2020), 0120144.
9. Mazarbhuiya, R. M. and **Rahang, M.**, 2019, March. Parametric Optimization in Photochemical Machining of Aluminium Using Taguchi Method. In IOP Conference Series: Materials Science and Engineering (Vol. 491, No. 1, p. 012033). IOP Publishing.
10. Mazarbhuiya, R. M. and **Rahang, M.**, 2020. Multi-objective Optimization of Photochemical Machining Parameters Using Taguchi Grey Relational Analysis. In Emerging Trends in Mechanical Engineering (pp. 283-291). Springer, Singapore.
11. Mazarbhuiya, R. M. and **Rahang, M.**, 2020. Parametric Study of Photochemical Machining of Aluminium Using Taguchi Approach. In Advances in Mechanical Engineering (pp. 497-504). Springer, Singapore.
12. Mazarbhuiya, R. M. and **Rahang, M.**, Surface Modification of Aluminium and its Parametric Optimization using Grey Relational Analysis. Materials today Proceedings. doi.org/10.1016/j.matpr.2020.02.327.
13. Mazarbhuiya, R. M. and **Rahang, M.**, Deposition of Tungsten and Copper Particle on CFRP Composite. (ICRAME 2020)
14. Deka, S., **Babu, P.R.** and **Rahang, M.**, 2019. Dynamic calibration of a stress wave force balance under various supports and loads using finite element analysis. In the 32nd International Symposium on Shock Waves (ISSW 32) during 14th to 19th July 2020 at NUS Singapore.
15. Deka, S., **Babu, P.R.** and **Rahang, M.**, 2019. Dynamic Calibration of a Single Component accelerometer force balance under application of impulse loads. In International Heat and Mass Transfer Conference (IHMTTC), during December 28-31, 2019, Place - IIT Roorkee, Roorkee, India



16. Deka, S., **Babu, P.R.** and **Rahang, M.**, 2020. Influence of stress bar length on the response of a stress wave force balance using finite element analysis. International Conference on Advances in Mechanical Engineering (ICAME-2020), during 10-11th January 2020.
17. Deka, S., **Babu, P.R.** and **Rahang, M.**, 2020. Finite element analysis on the effect of the cross sectional shape on the response of a stress wave force balance. In 6th National Symposium on Shock Waves (NSSW-2020), held from 26-28 February 2020.
18. Md. A. Ansari, **B. K. Debnath**, and **T. Bose**, Measurement of the extent of cavitation using vibration monitoring in a Francis turbine, 25th National and 3rd International ISHMT-ASTFE Heat and Mass Transfer Conference (IHMTTC-2019), Period -December 28-31, 2019, Place - IIT Roorkee, Roorkee, India. <http://ishmtdigitallibrary.com/conferences/18a7131602a3b186,7a56f09f53571cac,4f63e7d857012f7e.html>
19. S. Das, **B. K. Debnath**, and **R. S. Das**, Effect on combustion behaviour in the presence of ceramic porous materials on the piston bowl of a diesel engine, 25th National and 3rd International ISHMT-ASTFE Heat and Mass Transfer Conference (IHMTTC-2019), Period -December 28-31, 2019, Place - IIT Roorkee, Roorkee, India. <http://ishmtdigitallibrary.com/conferences/18a7131602a3b186,7a56f09f53571cac,77589e5408394c7b.html>
20. H. Dutta, K. Debnath, **D.K. Sarma**, Improving the Performance of μ ED-Milling using Assisting Electrode for Fabricating Micro-Channels in CFRP Composites, 2nd International Conference on Recent Advances in Materials and Manufacturing Technologies (IMMT 2019), Period 20-11-2019 to 22-11-2019, BITS PILANI, Dubai Campus, UAE, Page -6, 2019
21. **D. K. Sarma**, S. Kr. Rajbongshi, A study in turning of AISI D2 steel with Textured and Non-textured coated carbide tool at the flank face, 2nd International Conference on Recent Advances in Materials and Manufacturing Technologies (IMMT 2019), Period 20-11-2019 to 22-11-2019, BITS PILANI, Dubai Campus, UAE, Page -6, 2019
22. S. Kr. Rajbongshi, **D. K. Sarma**, Application of Taguchi's orthogonal array and overall evaluation criteria in turning of AISI D2 steel in dry and forced air-cooled environment, *1st International Conference on Emerging Trends in Mechanical Engineering (ICETME-2018)*, department of Mechanical Engineering, Srinivasa Ramanujan Institute of Technology, Anantapur, Andhra Pradesh, India, Period 20-12-2018 to 22-12-2018, Proceedings published in Springer Nature Singapore Pte Ltd., Page -177-185, 2020
23. A. Das, **R. S. Das, K. Das**, Investigation on Fluid Flow, Heat and Mass transfer Characteristics in a $\text{LiCl-H}_2\text{O}$ Falling Film Absorber, 25th National and 3rd International ISHMT-ASTFE Heat and Mass Transfer Conference, December 28-31, 2019, IIT Roorkee, Roorkee, India.
24. Bezbaruah, P.J., Kumar, R., **Das, R.S.**, "Thermohydraulic performance analysis of solar air heater with helical roughness," Proceedings of the 25th National and 3rd International ISHMT-ASTFE Heat and Mass Transfer conference (IHMTTC-2019), pp. 233-237.
25. U. Kashyap, **K. Das**, B. K. Debnath, U. Kashyap, S. K. Saha, Helicity Density Study of Rectangular Vortex Generator with Secondary Surfaces over It, 25th National and 3rd International ISHMT-ASTFE Heat and Mass Transfer Conference, December 28-31, 2019, IIT Roorkee, Roorkee, India.
26. 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 38th International Conference on Ocean, Offshore and Arctic Engineering (OMAE2019), June 9-14, 2019, Glasgow, Scotland.
27. N Kumar, BK Sarkar, S Maity, Leakage Based Condition Monitoring and Pressure Control of the Swashplate Axial Piston Pump, Gas Turbine India Conference, December, 2019, IIT Chennai, India
28. P Venkaiah, BK Sarkar, Modelling and Control of the Hydraulically Actuated Horizontal Axis Wind Turbine Pitch System, Gas Turbine India Conference, December, 2019, IIT Chennai, India.
29. J, Vinod¹, P. Kumar¹ and B. K. Sarkar, Modelling of the multiple Francis turbine by velocity diagram for speed control application, The 10th TSME International Conference on Mechanical Engineering, Pattaya, Thailand, 10th– 13rd December 2019,
30. L. Kushwaha¹, P.Venkaiah¹ and B. K. Sarkar, Performance analysis of vertical axis wind turbine with optimised pitch angle variation, The 10th TSME International Conference on Mechanical Engineering, Pattaya, Thailand, 10th– 13rd December 2019,



5. PATENTS:

1. U. Kashyap, **K. Das**, **B.K. Debnath**, A Vortex Generator For Efficient Heat Transfer, Application No. 201931050159 (under review)
2. **A. Sahoo**, S. K. Dwivedy, P. S. Robi, "An Underwater Vehicle", Application No. 201831046760 (Patent published, 12th June 2020.)

6. CONFERENCE/ WORKSHOP/ SEMINAR ORGANIZED:

A. WORKSHOP

SI No.	Title	Sponsors	National/ International	Duration	Faculty responsibility
1	Industry Academia Conclave	NECTAR, Maverick Technologies, Jindal steel, TEQIP-III	National	12-12-2019 to 13-12-2019	Dr. D.K. Sarma, Member, Advisory Committee Dr. R. N. Mahapatra, Member, Advisory committee Dr. K. Das, Member, Organising Committee Dr. B. K. Sarkar Member, Organising Committee Dr. R. S. Das, Member, Organising Committee Dr. H. C. Das, Member, Organising Committee
2	Research Conclave 2020, NIT Meghalaya	NIT Meghalaya	National	28-02-2020	Dr. D. K. Sarma, Member, Advisory Committee
3	Capacity building on Artificial Intelligence and Robotics to Master Trainers	State Council of Science, Technology & Environment	National	27/01/2020 to 31/01/2020	Dr. B. K. Sarkar Dr. R. N. Mahapatra
4	Workshop on Enabling Technologies in Robotic Through Sensor Integration, 2019	TEQIP-III	National	24/05/19 – 28/05/19	Dr. B. K. Sarkar Dr. R. N. Mahapatra
5	Workshop on Hands on Training on ANSYS for Computational Fluid Dynamics, 2019	TEQIP-III	National	06/09/19 – 10/09/19	Dr. B.K. Sarkar, & Prof. H.C. Das



Capacity building on Artificial Intelligence and Robotics to Master Trainer



Workshop on Enabling Technologies in Robotic Through Sensor Integration, 2019



Photos of Workshop on Hands-on Training on ANSYS for Computational Fluid Dynamics, 2019

7. CONFERENCES / WORKSHOPS / SEMINARS / TRAININGS ATTENDED BY FACULTY MEMBERS:

Sl. No.	Name of Faculty	Name of the programme attended	Duration
1	Dr. D.K. Sarma	2nd International Conference on Recent Advances in Materials and Manufacturing Technologies (IMMT 2019), BITS PILANI, Dubai Campus, UAE, 2019	20-11-2019 to 22-11-2019
2	Dr. B. K. Sarkar	The 10 th TSME International Conference on Mechanical Engineering	10-12-2020 to 13-12-2020
3	Dr. Biplab Kumar Debnath	25th National and 3rd International ISHMT-ASTFE Heat and Mass Transfer Conference (IHMTTC-2019), IIT Roorkee, Roorkee, India	December 28-31, 2019
4	Dr. P. Ramesh Babu	Presented paper at 32nd International Symposium on Shock Waves (ISSW 32) at NUS Singapore. Presented paper at International Conference on Advances in Mechanical Engineering (ICAME-2020), NIT Nagpur.	14th to 19th July 2020 10th-11th January 2020
5	Mr. Avilash Sahoo	KIT-TEQIP-III short term course on "Active/Passive Damping Composites for Structural Vibration Control", IIT Guwahati. KIT-TEQIP-III short term course on "Fabrication and Application of Micro Devices in Thermo-fluidic Engineering", IIT Guwahati.	6th-10th January, 2020 24th-28th Feb, 2020
6	Dr. Nur Alom	KIT-TEQIP-III short term course on "Fabrication and Application of Micro Devices in Thermo-fluidic Engineering", IIT Guwahati.	24th-28th Feb, 2020



Sl. No.	Name of Faculty	Name of the programme attended	Duration
7	Mr. Sambit Majumder	KIT-TEQIP-III short term course on “Fabrication and Application of Micro Devices in Thermo-fluidic Engineering”, IIT Guwahati.	24th-28th Feb, 2020
8	Dr. Subhendu Maity	6 th International Conference on Ship and Offshore Technology, ICSOT 2019 IIT Kharagpur,	November 7-8, 2019
		Presented a paper at 64th International Congress of ISTAM 9-12 December, 2019, IIT Bhubaneswar	December 9-12, 2019

8: STUDENTS INDUSTRIAL VISIT:

Sl No.	Title	Sponsors	National/ International	Duration	Faculty responsibility
1	Industrial visit to the Topcem Cement plant as a part of curriculum to visit the industry at Meghalaya Cements Limited, Thangskai, Lumshnong, East.	NIT Meghalaya	National	1 day (November 6th)	Dr. P. Ramesh Babu has communicated with the HR of the organization to conduct the industrial trip to the industry and accompanied the students to visit the plant to see various units of the plant and their merits and demerits. Various operations to be performed during the preparation of the cement.

9. PROJECTS

A. SPONSORED PROJECT

Sl. No.	Title of the Project	Investigators (P.I. / Co-P.I.)	Funding Agency	Funding amount	Duration	Status
1.	Aerodynamic performance evaluation of Savonius vertical axis rotor for small-scale power generation	Md.N.Alom, Co-PI	TEQIP-III	10.48 Lakhs	1 yr	Ongoing
2.	Low cost, faster and accurate low velocity impact damage imaging along with depth profiling for Carbon Fibre Reinforced Composite Materials using Vibro-thermography and Concept of Local Defect Resonance	Dr.Tanmoy Bose (PI)	SERB-DST	45.6 Lakhs	3 yrs	Ongoing
3.	Non-destructive inspection of low velocity impact damage in composite plate using ultrasound phased arrayDesign Innovation Center	Dr.Tanmoy Bose (PI) PC	TEQIP-III MHRD (through DIC, IITG)	2 Lakhs 100 lakhs	2 yrs 4 years	Ongoing
4.	Thermal Detection of Malignancy and Estimation of Its Properties in a Human Breast.	Dr. K. Das, (PI)	DST, SERB	17.46 Lakhs	3 years	Ongoing
5.	Design and Fabrication of Corn (Maize) Shelling Machine to Promote Productivity of Corn in Meghalaya	Dr. K. Das, (PI)	DIC NIT Meghalaya	2.95 Lakhs	1.5 years	
6.	Design of Shallow Water Turbine for energy Harvesting, Utilizing Stream Water in Hilly Places	Dr. K. Das, (PI)	DIC NIT Meghalaya	13.67 Lakhs	1.5 years	
7.	Standalone Solar Tea/ Coffee Maker Cum Multipurpose Water Heating System	Dr. Rajat Subhra Das (PI); Dr. Kishore Debnath (Co-PI)	DIC NIT Meghalay	8.572 Lakhs	2 Years	
8.	Solar based Room Heater cum Food Drier With Energy Storage Unit	Dr. Rajat Subhra Das (PI)	State Council of Science Technology & Environment, Meghalaya	97,834/-	1 Year	



Sl. No.	Title of the Project	Investigators (P.I. / Co-P.I.)	Funding Agency	Funding amount	Duration	Status
9.	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	Ongoing
10.	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
11.	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

B. CONSULTANCY

Sl. No.	Title	Consultant(s)	Client(s)	Value	Status
1	Testing of materials	Dr. D.K. Sarma	RITES Ltd., MPWD, CPWD, SIPMIU-Shillong	10,50,000.00	Completed
2	Time and Motion Study in the state of Meghalaya	Dr.R.N. Mahapatra	State Rural Employment Society, Meghalaya	15,93000	ongoing

10. AWARDS WON/ RECOGNITION RECEIVED AT THE NATIONAL AND INTERNATIONAL LEVEL:

Mr.Avilash Sahoo, NRDC National Budding Innovators Award of the Year 2019, for innovation/ invention “An Underwater Vehicle”

11. LABORATORIES SETUP:

Sl. No.	Laboratory	Major Equipment & Software	Location	Cost (Rupees in lakhs)
1	Fluid Mechanics Laboratory	Open Flow Channel	Fluid Mechanics Laboratory	808500.00
2	Thermal Science Laboratory	Solar/ Thermal Air Velocity, Temperature and Quality Measuring Unit with Das	Thermal Science Laboratory	2514750.00
		1. ACVFT Control Panel 2. 6 Channel Signal Converter Control Panel		182825.00
3	Computational Laboratory	Star Academic Bundle: Simcenter Star CCM+ Software	Computational Laboratory	2003640.00
		Altair Hyperworks Software		2467500
		TRNSYS v18x Software		481226.00
		MIMICS Software		3144750.00
		Materialize Magics Software		2086350.00
4	Strength of Materials Laboratory	High Speed High Voltage Amplifier	Strength of Materials Laboratory	197400.00
		PXIe based High speed data acquisition		1991933.00
5	Welding Shop-Mechanical Workshop	Plasma Welding Machine	Welding Shop-Mechanical Workshop	1834455.00
6	Tool Room Shop	Injection Moulding Machine	Tool Room Shop	2457000.00



3. ADMINISTRATIVE RESPONSIBILITIES HELD:

Sl. No.	Name of Faculty	Responsibilities	Duration
1	Dr. D. K. Sarma	Dean (P&D)	From 01-07-19 till date
2	Dr. D. K. Sarma	Nodal Officer (Procurement), TEQIP-III	From 2017 till date
3	Dr. Koushik Das	Faculty InCharge, Transportation	January 23, 2019-till date
4	Dr. Rajat Subhra Das	PiC, Centre for Career Development	19-01-2019 to till date
5	Dr. Rajat Subhra Das	GATE Coordinator	29-05-19 to till date
6.	Dr. B. K. Sarkar	PIC, Centre for Robotics and Mechatronics	19-01-2019 to till date

4. MEMBERSHIP OF PROFESSIONAL BODIES:

Name	Professional Body	Membership No. and status
Dr. Md Nur Alom	ASME	I02089520, Member
Dr. Rajat Subhra Das	ASHRAE	8225241, Member
Dr. D.K. Sarma	Indian Welding Society	Life member
Mr. Avilash Sahoo	ASME	I02607760, Member
	IEEE	94145936
Dr. Bikash Kumar Sarkar	ASME	I00784361, Member
	IEEE	92662020, Member
	NSFMFP	LM631, Life member
	ISHMT	I064, Life member
Dr. Subhendu Maity	ASME	I00732582, Member
	IEEE	93088281, Member
	NSFMFP	LM635, Life member
	ISHMT	I064, Life member
	ISTE	LM111112, Life member
	ISTAM	L/1067, Life member
	IEI	AMI66945-4, Associate Member
	SAISE	20151124001, Life Member

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.

The academic activities of the Department emphasize 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, Water Resources, Environmental and Transportation 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	02 Ongoing	
Dr. M. Longshithung Patton	Assistant Professor	Ph.D	Structural Engineering	October 06, 2013	01 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	02 Ongoing	
Dr. Debabrata Podder	Assistant professor	Ph.D	Structural Engineering	June 23, 2016	01 Ongoing	
Dr. Dibyendu Adak	Assistant Professor	Ph.D	Structural Engineering	January 03, 2018	-	
Dr. Ganesh Chandra Dhal	Assistant Professor	Ph.D	Environmental Engineering	September 24, 2019	-	
Dr. Pradeep Gautam	Assistant Professor	Ph.D	Transportation Engineering	October 14, 2019	-	
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 2020:

1. Hopeful Syiemiong and **Comingstarful Marthong** (2020). "Effect of mortar grade on the uniaxial compression strength of low-strength hollow concrete block masonry prisms" *Material Today: Proceedings*, 28 (2020) 842–845.
2. KH Lepcha, AL Marbaniang, **ML Patton**, A Khyriemujat, Behaviour and Design of Lean Duplex Stainless Steel (LDSS) Beams with Web Openings Under Pure Bending, *International Journal of Steel Structures*, Springer, Vol.-17, 1052–1068, 20.
3. K. Bora, **H. M. Kalita**, A semi-coupled model for morphological flow simulation in river bend, *Journal of Applied Fluid Mechanics*, Vol.- 13, Issue No.- 5, Page No- 1611-1622, 2020
4. **H. M. Kalita**, A simple and efficient numerical model for simulating one dimensional dam break flows, *International Journal of Hydrology Science and Technology*, Vol.- 10, Issue No.- 1, Page No- 1-16, 2020.
5. **Kaushik, S** and Siddagangaiah, A.K., "Characterization of cement grouted bituminous mixes using marginal aggregates", *Road Materials and Pavement Design*, Taylor & Francis (Under review).
6. Gidon, J.S., **Sahoo, S.** Rainfall-Induced Slope Failures and Use of Bamboo as a Remedial Measure: A Review. *Indian Geotech J* (2020). <https://doi.org/10.1007/s40098-020-00409-3>

7. S Das, S Dutta, C Putcha, S Majumdar, **D Adak**, A Data-Driven Physics-Informed Method for Prognosis of Infrastructure Systems: Theory and Application to Crack Prediction, **ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems, Part A: Civil Engineering**, 2020, 6 (2), 04020013 – 04020019

YEAR 2019:

1. Comingstarful Marthong (2019). "Rehabilitation of exterior RC beam-column connections using epoxy resin injection and FRP wrapping", *Structural Engineering and Mechanics*, Techno Press. 72(6), pp. 723-736.
2. Comingstarful Marthong (2019). "Behavior of repaired RAC beam-column joints using steel welded wire mesh jacketed with cement mortar" *Advance Concrete Construction*, Techno Press, 8(2), pp. 91-100.
3. 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.
4. 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.
5. K. Bora, **H. M. Kalita**, Determination of best groyne combination for mitigating bank erosion, *Journal of Hydroinformatics*, Vol.- 21, Issue No.- 5, Page No- 875-892, 2019
6. H Song, J Wang, A Garg, X Lin, Q Zheng, **S Sharma** (2019) Potential of Novel Biochars Produced from Invasive Aquatic Species Outside Food Chain in Removing Ammonium Nitrogen: Comparison with Conventional Biochars and Clinoptilolite, *Sustainability* 11 (24), 7136- 7156.
7. **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*, 3rd June, 2019, <https://doi.org/10.1007/s40194-019-00747-8>
8. H.S. Chouhan, P. Kalla, R. Nagar, **P.K. Gautam**, Gainful utilization of dimensional limestone waste as fine aggregate in cement mortar mixes, *Constr. Build. Mater.* 221 (2019) 363–374. <https://doi.org/10.1016/j.conbuildmat.2019.06.097>.
9. H. Singh Chouhan, P. Kalla, R. Nagar, **P. Kumar Gautam**, Influence of dimensional stone waste on mechanical and durability properties of mortar: A review, *Constr. Build. Mater.* 227 (2019) 116662. <https://doi.org/10.1016/j.conbuildmat.2019.08.043>.
10. **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 ISBN 978-981-13-6700-7, Online ISBN 978-981-13-6701-4)
11. **Dibyendu Adak**, Saroj Mandal, Strength and Durability Performance of Fly Ash–Based Process-Modified Geopolymer Concrete. **Journal of Materials in Civil Engineering**, © ASCE, 2019, 31 (9), 04019174-1 to 04019174-8.
12. Moumita Maiti, Manas Sarkar, Shilang Xu, Sukhen Das, **Dibyendu Adak**, Soumen Maiti, Application of silica nanoparticles to develop faujasite nanocomposite for heavy metal and carcinogenic dye degradation, **Environmental Progress & Sustainable Energy**, 38 (S1), S15-S23.

B. BOOK CHAPTERS:

YEAR 2020:

1. **H. M. Kalita**, R. K. Bhattacharjya, A. K. Sarma, Linked simulation optimization model for evaluation of optimal bank protection measures. *Nature-Inspired Methods for Metaheuristics Optimization: Algorithms and Applications in Science and Engineering*, Vol.- 16, Page No- 283-302, 2020
2. **D. Adak**, S. Dodda, H. Bish, Development and Characterization of Process Modified Alkali Activated Concrete for Sustainable Green Construction, *Innovative Civil Engineering Materials*, Cambridge Scholars Publishing (accepted)

YEAR 2019:

1. **Sharma S.** (2019) Uptake, Transport, and Remediation of Strontium, in *Strontium Contamination in the Environment* (eds.), ISBN/ ISSN No. 978-3-030-15313-7, Springer International Publishing, pp. 99-120.



C. BOOKS:

1. **D. Podder**, S. Chatterjee, Structural Analysis, CRC Press (accepted)

D. CONFERENCES:

YEAR 2020:

1. Umesh, R., **Kumar S.**, and Sharma, H. "Finite element analysis of hybrid composite materials under the ballistic impact" **Second ASCE conference on CRSIDE 2020 (Accepted)**
2. Umesh, R., **Kumar S.**, and Sharma, H. "Progress and Evolution in Fatigue studies of Advanced Composite Materials" **Second ASCE conference on CRSIDE 2020 (Accepted)**
3. Umesh, R., **Kumar S.**, and Sharma, H. "Blast Induced Brain Traumatic Injury: Current progress and challenges" **6th national symposium on shock waves 2020**, IIT Madras, **(Accepted)**
4. **Kaushik, S.**, Bairagi, S., Siddagangaiah, A.K., "**Moisture susceptibility assessment of cement and RBI-8I stabilized soils**", 2nd ASCE conference in India on Challenges of Resilient and Sustainable Infrastructure Development in Emerging Economies, Novotel Kolkata Hotel and Residences, Kolkata, India, March 02 - 04, 2020.
5. **Kaushik, S.**, Prodhani, S.I., Siddagangaiah, A.K. "**Characterization of a clayey soil using the cyclic CBR test**", 2nd ASCE conference in India on Challenges of Resilient and Sustainable Infrastructure Development in Emerging Economies, Novotel Kolkata Hotel and Residences, Kolkata, India, March 02 - 04, 2020.

YEAR 2019:

1. Jaswanth G., **Kumar S.**, Kumar A., and Sharma H., "Numerical technique for prestressing post-tensioning members subjected to missile impact load," **Proceedings of ICCMS 2019**, IIT Mandi, India
2. **Chakraborty R.**, Dey Arindam, "Effect of Spatial Variation of Soil on Probabilistic Slope Stability Analysis for Cut Slopes", In proceedings of International Conference on Landslide and Slope Stability (SLOPE 2019), Bali, Indonesia, 2019.
3. J SharailinGidon and **SmrutirekhaSahoo** (2019). "Stability of slope during rainfall: A finite element approach." Seventh Indian Young Geotechnical Engineers Conference, Silchar, India, March 15-16, 209-214.
4. Kruthi Kiran Ramagiri, Darshan Chauhan, Shashank Gupta, Arkamitra Kar, **Dibyendu Adak**, Evaluation of Structural Performance of Concrete with Ambient-Cured Alkali-Activated Binders, SECON 2019: Proceedings of SECON'19 pp 1-10.
5. **Dr. Ganesh Ch Dhal**, RAEHS -2019, Siksha 'O' Anusandhan Deemed to be University Bhubaneswar-751030, Odisha, India

5. CONFERENCE/ WORKSHOP/ SEMINAR ORGANIZED:

1. **Dr. Comingstarful Marthong and Dr. Dibyendu Adak**, Short term course on "Seismic Resistant Design, Assessment and Retrofitting of RC Building": Duration: 22nd to 29th July, 2019

6. CONFERENCES / WORKSHOPS / SEMINARS / TRAININGS ATTENDED BY FACULTY MEMBERS:

Sl. No.	Name of Faculty	Name of the programme attended	Duration
1.	Dr. C. Marthong	International Conference on Recent Advances in Materials & Manufacturing Technologies (IMMT 2019)	20-22 November 2019, Dubai, UAE
2.	Dr. Hriday Mani Kalita	Workshop on "Advances in Integrated Water Resources Management" at IIT Guwahati	16/12/2019-18/12/2019
3.	Dr. Hriday Mani Kalita	Brain Storming Workshop on River-research to Evolve Sustainable-projects for People with Eco-friendly Climate-resilient Technology.	15/11/2019
4.	Dr. Smrutirekha Sahoo	7iygec 2019 held at NIT Silchar, India (Conference)	15-16th March, 2019 (2 days)

Sl. No.	Name of Faculty	Name of the programme attended	Duration
5.	Dr. Smrutirekha Sahoo	International training course “LARAM-India 2020” at IIT Roorkee, India	17/02/2020 to 22/02/2020 (6 days)
6.	Dr. Dibyendu Adak	Second ASCE India Conference on “Challenges of Resilient and Sustainable Infrastructure Development in Emerging Economies.	3 days
7.	Rubi Chakraborty	International Conference on “Landslide and Slope Stability” (SLOPE 2019), Bali, Indonesia	Sep 26-27, 2019
8.	Rubi Chakraborty	Quantification of Seismic Hazard and Mitigation of Induced Effects in NER (Workshop)	Nov 8-9, 2019
9.	Supratim Kaushik	2nd ASCE conference in India on Challenges of Resilient and Sustainable Infrastructure Development in Emerging Economies, Novotel Kolkata Hotel and Residences, Kolkata, India	02-04 March, 2020

7. INVITED TALKS DELIVERED:

1. **Dr. Hriday Mani Kalita**, One day Workshop on “*Advancement in Water Modelling tools*” on 15 May 2019 at IIT Guwahati.
2. **Dr. Susmita Sharma**, On Training Program on Landslide Mitigation and DPR Preparations- sponsored by NDMA, New Delhi, organized by North-Eastern Hill University (NEHU) – 28th November 2019.

8. PROJECTS

A. SPONSORED PROJECT:

Sl. No.	Title of the Project	Investigators (P.I. / Co-P.I.)	Funding Agency	Funding amount	Duration	Status
1	Comparative Study on Structural Behaviour of Concrete filled steel tubes and Reinforce Cement Concrete stub Columns	Dr. M Longshithung Patton (PI)	TEQIP – III, NIT MEGHALAYA, INDIA	Rs. 2,00,000/- (Rs. Two Lakhs Only)	1 year (2019-2020)	Ongoing
	Structural behaviour of lean duplex stainless steel tubular beams with web openings		SERB-DST	Rs. 19,03,990/-	(2017-2020)	Ongoing
2	Cost effective combination of T-head groynes for river bank protection	Dr. Hriday Mani Kalita (PI)	DST, SERB	Rs. 19,16,150/-	2016-19	Project completion report submitted
3	Instrumentation, Real Time-Monitoring and Remediation of a steep soil slope in Meghalaya	Dr. Smrutirekh Sahoo (PI)	Science and Engineering Research Board (SERB), Department of Science and Technology, Government of India as Early Career Research Award	Rs. 35,03,500/- (Rs. Thirty-Five Lakh Three Thousand Five Hundred Only)	3 years (2019-2022)	Ongoing
4	Ground improvement using Waste Plastic coated Bamboo Grid (WPBG) reinforced soils	Dr. Smrutirekha Sahoo (PI)	State Council of Science, Technology and Environment (SCSTE) Meghalaya	Rs. 1,00,000/- (Rs. One Lakh Only)	1 year (2019-2020)	Ongoing
5	Slope stability aspects of using Waste Plastic coated Bamboo Nails (WPBNs) as reinforcing elements	Dr. Smrutirekha Sahoo (PI)	TEQIP – III, NIT MEGHALAYA, INDIA	Rs. 2,00,000/- (Rs. Two Lakhs Only)	2 years (2019-2021)	Ongoing



B. CONSULTANCY:

Sl. No.	Title	Consultants	Client(s)	Value (in Rupees)	Status
1	Testing of cement for construction of NEIAH, Shillong, Phase-II	Dr. C Marthong	NEIAH, Shillong, Phase-II	11,033	completed
2	Cement Testing for Construction of proposed 33/11 kV Mawpat S/s (415 bags)	Dr. C Marthong	Power Grid Corporation India Ltd, Shillong	20,060	completed
3	Testing of boulder, water for CPWD, Shillong IIM Shillong	Dr. C Marthong & Dr. S. Sharma	CPWD Shillong	3,43,321	completed
4	Testing of cement & cubes for Construction of proposed 220/132/33kV New Shillong	Dr. C Marthong	Power Grid Corporation India Ltd, Shillong	42,480	completed
5	Testing of cubes for construction of additional land fill area of 8500 sq.m	Dr. C Marthong	MPWD Shillong	3,540	completed
6	Testing of cement for construction of boundary wall for the additional land of NIT, Meghalaya	Dr. C Marthong	NIT, Meghalaya	11,033	completed
7	Material testing for Construction of under ground Reservoir, Pump House, internal water supply etc. in the campus of IIM, Shillong	Dr. C Marthong	CPWD Shillong	44,160	completed
8	Testing of cubes for construction of Shillong	Dr. C Marthong	Government College, Shillong	7,680	completed
9	Testing of Construction materials for Power Grid under NERPSIP Scheme, Shillong	Dr. C Marthong	Power Grid Corporation India Ltd, Shillong	55,165	completed
10	Testing of Cube sample for Power Grid, New Shillong GIS(Meg- SS-02), NERPSIP	Dr. C Marthong	Power Grid Corporation India Ltd, Shillong	11,682	completed
11	Vetting/ Design of Structures draw bonded warehouse godown Lad Rymbai	Dr. C Marthong	Lad Rymbai	6,000	completed
12	Testing of Boulder for CPWD, Shillong	Dr. C Marthong & Dr. ML Patton	CPWD Shillong	5,75,250	completed
13	Testing of concrete cubes, Power Grid corporation of India	Dr. C Marthong	Power Grid Corporation India Ltd, Shillong	38,940	completed
14	Testing of concrete cubes, Power Grid Corporation of India	Dr. C Marthong	Power Grid Corporation India Ltd, Shillong	11,682	completed
15	Testing of construction materials, CPWD, Shillong	Dr. C Marthong	Testing of construction materials, CPWD, Shillong	55,814	completed
16	Testing of construction materials, Meghalaya Information technology Society, Shillong	Dr. C Marthong	Meghalaya Information technology Society, Shillong	67,500	completed
17	Concrete mix design, IRCON Infrastructure & Service Ltd. at Dawki, Meghalaya	Dr. C Marthong	IRCON Infrastructure & Service Ltd. at Dawki, Meghalaya	44,781	completed
18	Testing of construction materials, Power Grid Corporation of India	Dr. C Marthong	Power Grid Corporation India Ltd, Shillong	37,347	completed
19	Testing of construction materials, PGCIL Shillong	Dr. C Marthong & Dr. ML Patton	Power Grid Corporation India Ltd, Shillong	38,291	completed



Sl. No.	Title	Consultants	Client(s)	Value (in Rupees)	Status
20	Testing of construction materials, Power Grid Corporation of India	Dr. C Marthong & Dr. ML Patton	Power Grid Corporation India Ltd, Shillong	22,066	completed
21	Structural Assessment of RCC building of M/s MarrinetteChallam building, Garikhana, lamavilla, Shillong	Dr. C Marthong	M/s Marrinette Challam	6,000	completed
22	Structural Design, MES Shillong	Dr. C Marthong & Dr. ML Patton	MES Shillong	6,85,224	completed
23	Testing of construction materials, Power Grid Corporation of India	Dr. C Marthong & Dr. ML Patton	Power Grid Corporation India Ltd, Shillong	11,682	completed
24	Testing of construction materials, CPWD Shillong	Dr. C Marthong	CPWD Shillong	82,836	completed
25	Testing of construction materials, CPWD Shillong	Dr. C Marthong	CPWD Shillong	44,132	completed
26	Testing of construction materials, CPWD Shillong	Dr. C Marthong	CPWD Shillong	33,099	completed
27	Testing of water, CPWD Shillong	Dr. C Marthong & Dr. ML Patton	CPWD Shillong	6,490	completed
28	Testing of construction materials, CPWD Shillong	Dr. C Marthong & Dr. ML Patton	CPWD Shillong	8,850	completed
29	Concrete mix design, CPWD Shillong	Dr. C Marthong & Dr. ML Patton	CPWD Shillong	44,160	completed
30	Testing of construction materials, Power Grid Corporation of India	Dr. C Marthong & Dr. ML Patton	Power Grid Corporation India Ltd, Shillong	14,160	completed
31	Testing of construction materials, Power Grid Corporation of India	Dr. C Marthong	Power Grid Corporation India Ltd, Shillong	99,946	completed
32	Testing of construction materials, Power Grid Corporation of India	Dr. C Marthong	Power Grid Corporation India Ltd, Shillong	7,788	completed
33	Testing of construction materials, Power Grid Corporation of India	Dr. C Marthong	Power Grid Corporation India Ltd, Shillong	19,470	completed
34	Concrete mix design, MPWD Shillong	Dr. C Marthong	MPWD Shillong	44,781	completed
35	Testing of construction materials, MPWD Shillong	Dr. C Marthong	MPWD Shillong	34,397	completed
36	NDT Tesing, NERPSIP Meghalaya	Dr. C Marthong & Dr. ML Patton	Power Grid Corporation India Ltd, Shillong	44,781	completed
37	Concrete mix design, MPWD Shillong	Dr. C Marthong	MPWD Shillong	44,160	completed
38	Concrete mix design, MPWD Shillong	Dr. C Marthong	MPWD Shillong	44,781	completed
39	Vetting of Estimate and structural design, construction of traditional indistry with furnitures cum skill development center, Mawkyllei, West Khasi Hills.	Dr. C Marthong	MPWD Shillong	82,600	completed
40	Testing of construction materials, Atomic Minerals Directorate for Exploration & research (NER), Shillong	Dr. C Marthong	Atomic Minerals Directorate for Exploration & research (NER), Shillong	5,310	completed



Sl. No.	Title	Consultants	Client(s)	Value (in Rupees)	Status
41	Testing of construction materials	Dr. C Marthong	CPWD Shillong	1,19,416	completed
42	Testing of construction materials	Dr. C Marthong	CPWD Shillong	6,490	completed
43	Testing of construction materials	Dr. C Marthong	NERIE, Umiam, Shillong	25,665	completed
44	Structural design of extension of Christian Youth Center Annex Building	Dr. C Marthong	Laitumkhrah Presbyterian Church, Shillong	45,000	completed
45	Soil testing	Dr. S. Sahoo	CPWD, Shillong	58,764	completed
46	Soil testing (for different parts of Meghalaya)	Dr. S. Sahoo	BPCL, Shillong Territory (Retail)	1,20,780	completed

9. LABORATORIES SETUP:

Sl. No.	Laboratory	Major Equipment & Software	Location	Cost (Rupees in lakhs)
Dr. H. M. Kalita	Hydrology and Water Resources Engineering Laboratory	Ground water flow apparatus, Open pan evaporimeter, Double ring infiltrometer, Rain gauge	NIT Meghalaya temporary campus	5.57
Dr. D. Adak	Advanced Concrete Technology Lab	RCPT, Carbonation Chamber		20 Lakh 10 Lakh

10. ADMINISTRATIVE RESPONSIBILITIES HELD:

Sl. No.	Name of Faculty	Responsibilities	Duration
1	Dr. C. Marthong	Faculty-in-charge of Structural Engineering Laboratory Faculty Advisor for M.Tech Students Chairman under Unnat Bharat Abiyan (UBA) (formerly known as Village adoption committee) in identifying villages for technical support.	1 year 1 year
2	Dr. M. Longshithung Patton	Head of Department of Civil Engineering and decision related to academic matters of CE Dept. EAP coordinator under TEQIP-III Chairman, Furniture Committee Faculty-in-charge of Computational Lab	2 year 3 year 1 year 1 year
3	Dr. Hriday Mani Kalita	Faculty-in-charge of Water Resource Engineering Laboratory Faculty-in-charge of Hydrology and Water Resource Engineering Laboratory Departmental BTP coordinator Chairman of On Campus Business Committee	1 year 1 year
4	Dr. Smrutirekha Sahoo	Faculty-in-charge of Geotechnical Engineering Laboratory Faculty Advisor of B.Tech 3rd year, Civil Engineering Warden of Lapalang Girls Hostel with effect from 01.07.2019 Member of Center for Innovation, Incubation and Entrepreneurship of NIT Meghalaya w.e.f 01/07/2019 DRC Member in the Department	1 year 1 year Continue
5	Dr. Susmita Sharma	Faculty-in-charge of Environmental Engineering Laboratory Faculty Advisor for 4 th Year B.Tech Students Institute Grievance committee Member TEQIP Environmental Coordinator	1 year 1 year 1 year
6	Dr. D. Podder	Faculty-in-charge of Structural Analysis Laboratory Faculty Advisor for 3 rd Year B.Tech Students Faculty-in-charge for Library related activities of CE Dept.	1 year 1 year 2 years



Sl. No.	Name of Faculty	Responsibilities	Duration
7	Dr. D. Adak	Vice-President of SAC (Technical) Member of IQAC. Faculty in charge of computational lab. Faculty Advisor for 1 st Year B.Tech Students Routine Committee member. Faculty-in-charge of Material Laboratory	1 year 1 year 1 year 1 year 1 year 1 year
8	Dr. P. Gautam	I. Faculty-in-charge of Transportation Engineering Laboratory	06 months
9	Dr. G. C. Dhal	Faculty Advisor for 3 rd Year B.Tech Students	6 months
10	Supratim Kaushik	I. Faculty-in-charge of Transportation Engineering Laboratory	06 months

11. 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
3	Dr. Debabrata Podder	Associate Member (ID: AM186488-5), The Institute of Engineers (India). Associate Member (ID: I1855874), American Society of Civil Engineers.
4	Rubi Chakraborty	Life member of IGS, Membership for the period of 2018-2021 of ISSMGE
5	Suman Kumar	Associate member of ASCE
6	Supratim Kaushik	American Society of Civil Engineers (ASCE)

12. ANY OTHER NOTABLE INFORMATION:

The Department faculty are also involved in service as requested by other organization as mentioned below:

Faculty	Extension Activity	Role	Contributions
Dr. Smrutirekha Sahoo	Question Setter for End Semester Examination, May 2020 of VSS University of Technology, Burla, Odisha-768018	Question Setter	Prepared 3 sets of Question Papers for End Semester Examination May-2020 on Dynamics of soils and Foundations, Earth Retaining Structures, Ground improvement Technique (2nd Semester M.Tech., CE-SE)
Dr. Susmita Sharma	Research/Technical Reports		(a) Performance Audit Reports for State Pollution Control Board/ Pollution Control Committee – Assam State Pollution Control Board – 27 th May 2019 (b) Performance Audit Reports for State Pollution Control Board/ Pollution Control Committee – Sikkim State Pollution Control Board -29 th May 2019 (c) Performance Audit Reports for State Pollution Control Board/ Pollution Control Committee – Manipur State Pollution Control Board-11 th June 2019 (d) Performance Audit Reports for State Pollution Control Board/ Pollution Control Committee – Mizoram State Pollution Control Board-13 th June 2019
Dr. Dibyendu Adak	Board of Studies Member in Haldia Institute of Technology, Haldia, West Bengal.	Member	Reviewer of course curriculum.





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 undergraduate 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	Remarks
Prof. Ayon Bhattacharjee	Professor	Ph.D	Experimental Condensed Matter Physics	24 July 2013	7 awarded 1 submitted 4 ongoing	
Dr. Arpita Nath	Assistant Professor	Ph.D	Laser Matter Interaction	03 October 2013	2 ongoing	
Dr. K. Senthilkumar	Assistant Professor	Ph.D	Condensed Matter Physics	14 July 2015	2 ongoing	
Dr. Tribedi Bora	Assistant Professor	Ph.D	Experimental Condensed Matter Physics	06 July 2015	1 ongoing	
Dr. W. L. Reenbohn	Assistant Professor	Ph.D	Nonequilibrium Statistical Mechanics	02 November 2015	2 ongoing	
Dr. A. C. Nayak	Assistant Professor	Ph.D	Particle Physics, Astro Particle Physics	16 October 2019	NA	

4. LIST OF PUBLICATIONS:

A. JOURNALS:

1. Mesomorphic, electro-optic and dielectric behaviour of a semi-fluorinated chiral liquid crystalline material forming polar smectic phases, D Gupta, P Kula, A Bhattacharjee, Journal of Molecular Structure, 128557, 2020
2. Detailed investigation of N-(4-n-pentyl-oxybenzylidene)-4'-n-hexylaniline liquid crystal molecule D Gupta, A Bhattacharjee, Journal of Molecular Structure 1196, 66-77, 2019

- Comparative Raman study of two laterally fluorinated LC compounds having different terminal chains, M Lyndem, R Dabrowski, A Bhattacharjee, Liquid Crystals 46 (7), 1145-1155, 2019
- Raman and FTIR Study of a 2,3'-difluoro-4"-isothiocyanato-4-propyl-1,1':4',1"-terphenyl compound or C3P (3F) P (3F) P-NCS, M Lyndem, A Bhattacharjee, R Dabrowski, Molecular Crystals and Liquid Crystals 681 (1), 45-57, 2019
- Experimental and DFT generated Raman study of two bent-core monomeric liquid crystalline compounds, D Bhattacharjee, R Mishra, R Dabrowski, A Bhattacharjee, Liquid Crystals 46 (3), 367-375, 2019
- Temperature-dependent Raman study of pure and silver nanoparticles dispersed N-(4-n-heptyloxybenzylidene)-4'-n-butylaniline (7O. 4), R Mishra, A Bhattacharjee, D Bhattacharjee, KN Singh, PR Alapati, Liquid Crystals 46 (3), 327-339, 2019
- Cosmological Dark Matter in a Conformal Model, Prasenjit Sanyal, Alekha C. Nayak, Gopal Kashyap, and Pankaj Jain, Phys. Rev. D 100 (11), 115032, 2019. DOI: [10.1103/PhysRevD.100.115032](https://doi.org/10.1103/PhysRevD.100.115032)
- Baryon-Dark matter interaction in presence of magnetic fields in light of EDGES signal, Jitesh R. Bhatt, Pravin K Natwariya, Alekha C. Nayak, Arun Kumar Pandey, Eur.Phys.J. C 80 (4), 334, 2020. DOI: [10.1140/epjc/s10052-020-7886-x](https://doi.org/10.1140/epjc/s10052-020-7886-x)
- Role of fluid mechanical effects in activating phase transition of laser induced TiO₂ nanoparticles, P. Sharma and A. Nath, Laser Physics (accepted), 2020.

B. CONFERENCES:

- Tribedi Bora, Particle size effect on the suppression of ferromagnetism in Nd_{0.8}K_{0.2}MnO₃, Accepted for AIP Conference Proceeding.
- P. Deb, P. K. Baruah, A. Khare and A. Nath, "Laser Induced Cavitation Bubble Dynamics from Twin Breakdown Sites," 2019 Workshop on Recent Advances in Photonics (WRAP), Guwahati, India, 2019, pp. 1-3, doi: [10.1109/WRAP47485.2019.9013922](https://doi.org/10.1109/WRAP47485.2019.9013922).

5. CONFERENCES / WORKSHOPS / SEMINARS / TRAININGS ATTENDED BY FACULTY MEMBERS:

Sl. No.	Name of Faculty	Name of the programme attended	Duration
1.	Dr. Tribedi Bora	64th DAE Solid State Physics Symposium	Dec 18-22, 2019
2.	Dr. A. Nath	2nd International Conference on Nanoscience and Nanotechnology	Nov 29-1 Dec, 2019
3.	Dr. A. Nath	4th Biennial Workshop on Recent Advances in Photonics (WRAP)	Dec 13-14, 2019
4.	Dr. A. Nath	First International Conference on Advances in Plasma Science and Technology	Feb 12-14, 2020

6. INVITED TALKS DELIVERED:

Prof. A Bhattacharjee delivered an invited talk on "Women in Science" at St. Mary's College, Shillong on the occasion of National Science Day, 28/02/2020

7. PROJECTS:

A. SPONSORED PROJECT

Sl. No.	Title of the Project	Investigators (P.I. / Co-P.I.)	Funding Agency	Funding amount	Duration	Status
1	Exploring High Density Magnetic Medium in Nanocrystalline Spinel Ferrites for Magnetic Recording System	Dr. Tribedi Bora	DST-SERB	Rs 21,71,730/-	36 months	Ongoing
2	Fabrication of 2D Materials for Energy Harvesting Devices	Dr. K. Senthilkumar (Project Coordinator)	DST-FIST	Rs 160,00,000/-	5 year	Sanctioned



Sl. No.	Title of the Project	Investigators (P.I. / Co-P.I.)	Funding Agency	Funding amount	Duration	Status
3	A study SnO ₂ nanoflakes doped liquid crystals	Prof.A Bhattacharjee	TEQIP Minor Project	Rs 195000/-	2 year	Ongoing
4	Fluid Dynamical Aspects in nucleation of laser produced nanoparticles in liquids	Dr.Arпита Nath	DST-SERB-ECR	Rs 5166893/-	3 year	Ongoing
5	Surface Waves from Electric Spark Generated Bubbles	Dr.Arпита Nath	TEQIP Minor Project	Rs 190000/-	2 year	Ongoing

8. LABORATORIES SETUP:

Sl. No.	Laboratory	Major Equipment & Software	Location	Cost (Rupees in lakhs)
1.	Laser Laboratory	Nd:YAG Laser, He-Ne Laser, Fast CCD Camera	Admin Block	Rs 51.93 Lakhs

9. ADMINISTRATIVE RESPONSIBILITIES HELD:

Sl. No.	Name of Faculty	Responsibilities	Duration
1	Prof A. Bhattacharjee	Dean (Research & Consultancy), NIT Meghalaya	Upto 30.06.2020
2	Prof A. Bhattacharjee	TEQIP Coordinator, NIT Meghalaya	Continuing
3	Prof A. Bhattacharjee	Chairman, Grievance Redressal Cell, NIT Meghalaya	Continuing
4.	Dr.W. L. Reenbohn	NSS (Chairperson)	Continuing
5.	Dr.A. Nath	Internal Complaints Committee (Chairperson)	Upto 30.06.2020
6.	Dr.A. Nath	HOD (Physics)	Since 30.06.2019

10. 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.Arпита 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

11. ANY OTHER NOTABLE INFORMATION:

1. Dr. K. Senthilkumar has worked as a reviewer of the following research articles
 - a. Journal of Physics and Chemistry of Solids
 - b. ACS Applied Nano Materials
2. Dr. K. Senthilkumar has evaluated doctoral dissertation of Madras University.
3. Dr.W. L. Reenbohn has evaluated a doctoral dissertation of Assam Don Bosco University.
4. Prof.A. Bhattacharjee has evaluated thesis for M. S University Tirunelveli, Tamil Nadu



5. Prof.A. Bhattacharjee is a member of the Senate of NIT Arunachal Pradesh
6. Prof.A. Bhattacharjee is a member of the Finance Committee of GKCIET, Malda, West Bengal.
7. Prof.A. Bhattacharjee acted as a moderator for a Public Service Commision.
8. Prof.A. Bhattacharjee nominated as a NAAC Assessor
9. Prof.A. Bhattacharjee acted as a reviewer for projects for DST and AICTE.
10. Prof.A. Bhattacharjee has reviewed journals
 - a. Chemical Engineering Journal
 - b. Applied Surface Science
 - c. Soft Matter
 - d. Thin Solid Films
 - e. Defence Science Journal
 - f. Journal of Molecular liquids
11. Dr.Alekha C. Nayak reviewed a journal paper of EPJST
12. Dr.Arпита Nath worked as a reviewer for Journal of Applied Physics

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 areas of Chemical Sciences like Organic Chemistry, Inorganic Chemistry, Biophysical Chemistry, Materials Chemistry and Computational Chemistry. Presently, the department has a total of seventeen (17) Ph.D. students working in various thrust areas.

The Department has a total 05 faculty members and 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) and
- Ph.D. (Full-time and Part-time)

3. FACULTY PROFILES:

Name	Designation	Qualification	Specialization	Date of Joining	Ph.D. guidance (ongoing)
Dr. Gitish K. Dutta	Associate Professor	Ph.D.	Organic and Hybrid Materials (Organic Chemistry)	08-08-2013	03
Dr. Paresh Nath Chatterjee	Associate Professor	Ph.D.	Organometallics and Catalysis (Organic Chemistry)	14-01-2013	05
Dr. Amit Kumar Paul	Assistant Professor	Ph.D.	Theoretical Chemistry (Physical Chemistry)	24-06-2016	04
Dr. Atanu Singha Roy	Assistant Professor	Ph.D.	Biophysical Chemistry (Physical Chemistry)	23-07-2015	04
Dr. Naba Kamal Nath	Assistant Professor	Ph.D.	Crystal Engineering and Energy Converting Smart Materials (Inorganic Chemistry)	28-07-2015	02
Dr. Mukul Pradhan	DST INSPIRE Faculty	Ph.D.	Nanomaterials (Inorganic Chemistry)	11-05-2016	Left the institute in the month of November 2019

4. LIST OF PUBLICATIONS

INTERNATIONAL JOURNALS

1. S. Rana, S. Sarmah, **A. Singha Roy**, K. S. Ghosh*, **Journal of Biomolecular Structure and Dynamics** (Accepted article), 2020, DOI: 10.1080/07391102.2020.1738960.
2. S. Das, Z. Hazarika, S. Sarmah, K. Baruah, M.A. Rohman, D. Paul, A. N. Jha, **A. Singha Roy***, **Journal of Photochemistry and Photobiology B: Biology**, (Accepted Article), 2020, DOI: 10.1016/j.jphotobiol.2020.111825.
3. S. Sarmah, S. Pahari, S. Das, V.K. Belwal, M. Jana*, **A. Singha Roy***, **Journal of Biomolecular Structure and Dynamics** (Accepted article), 2020, DOI: 10.1080/07391102.2019.1711196.
4. S. Das, S. Sarmah, Z. Hazarika, M. A. Rohman, P. Sarkhel, A. N. Jha, **A. Singha Roy***, **Physical Chemistry Chemical Physics** (Accepted article), 2020, DOI: 10.1039/C9CP05301H.
5. S. Das, S. Sarmah, **A. Singha Roy***, **New Journal of Chemistry** (Accepted article), 2019, DOI: 10.1039/C9NJ03938D.
6. S. Das, S. Pahari, S. Sarmah, M.A. Rohman, D. Paul, M. Jana*, **A. Singha Roy***, **Physical Chemistry Chemical Physics**, 2019, 21, 12649-12666. DOI: 10.1039/C9CP01128E.
7. N. K. Nath*, P. Gupta, P. J. Hazarika, N. Deka, A. Mukherjee and G. K. Dutta*, **Crystal Growth & Design**, 2019, 19, 6033-6038.
8. Poonam Gupta, Sumair A. Rather, Binoy K. Saha, Tamas Panda, Durga Prasad Karothu, and Naba K. Nath*, **Crystal Growth & Design**, 2020, 20, 5, 2847-2852.
9. N. Deka, J. Barman, S. Kasthuri, V. Nutalapati* and G. K. Dutta*, **Appl. Surf. Sci.**, 2020, 511, 145576.
10. N. K. Nath*, P. Gupta, P. J. Hazarika, N. Deka, A. Mukherjee and G. K. Dutta*, **Crystal Growth & Design**, 2019, 19, 6033-6038.
11. G. K. Dutta*, S. Kasthuri, G. Marappan, S.V. Jayaraman, Y. Sivalingam, C. Di Natale and V. Nutalapati*, **J. Mater. Chem. C**, 2019, DOI: 10.1039/C9TC02226K.
12. N. Deka, J. Barman, J. Deka, K. Raidongia and G. K. Dutta*, **ChemElectroChem**, 2019, 6, 3327-3336
13. D. Paul, A. Borah, S. Khatua, P. N. Chatterjee*, **Asian Journal of Organic Chemistry**, 2019, 8 (10), 1870-1878.
14. D. Paul, S. Khatua, P. N. Chatterjee*, **New Journal of Chemistry**, 2019, 43, 10056-10065.
15. M. L. Sawkmie, D. Paul, S. Khatua, P. N. Chatterjee*, **Journal of Chemical Sciences**, 2019, 131:51.
16. M. L. Sawkmie, D. Paul, G. Kalita, K. Agarwala, P. K. Maji, P. N. Chatterjee*, **Journal of Heterocyclic Chemistry**, 2019, 56 (12), 3277-3288.
17. H. Mahanta, D. Baishya, Sk. S. Ahamed, and A. K. Paul*, Accepted in **J. Chem. Phys. A** 123, 5019-5026 (2019).
18. S. S. Ahamed, H. Mahanta, A. K. Paul*, **Chem. Phys. Letts.** 730, 630-633
19. S. S. Ahamed, H. Mahanta, A. K. Paul*, **J. Phys. Chem. A** 123, 10663-10675 (2019)
20. S. Rudra, R. Chakraborty, P. K. Maji, S. Koley, A. K. Nayak, D. Paul and M. Pradhan, **Electrochim. Acta**, 2019, **324**, 134865-134879.
21. S. S. Singha, S. Rudra, S. Mondal, M. Pradhan, A. K. Nayak, B. Satpati, P. Pal, K. Das, A. Singha, **Electrochim. Acta**, 2020, **338**, 135815-135827.

BOOK CHAPTER(S)

1. Chakraborty, R.; Pradhan, M.;* Debnath, K. Band-Gap Engineering Using Metal-Semiconductor Interfaces for Photocatalysis and Particle-Reinforced Composites for Supercapacitor Application (ISBN: 9780081026656; Elsevier, 2019).



5. GUEST LECTURES HELD IN THE DEPARTMENT

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



II. **Dr. Mithun Chowdhury**, Assistant Professor, Department of Metallurgical Engineering and Material Science, IIT Bombay, **May 14, 2019**.

III. **Dr. Joyanta Choudhury**, Associate Professor, Department of Chemistry, IISER Bhopal on November 2, 2019.

6. CONFERENCES / WORKSHOPS / SEMINARS / TRAININGS ATTENDED BY FACULTY MEMBERS:

Sl. No.	Name of Faculty	Name of the programme attended	Duration
1	Dr. Amit K. Paul	17th meeting on Spectroscopy and Dynamics on Molecules and Clusters (SDMC)	February 20-23, 2020
2	Dr. Amit K. Paul	International Conference on Structure and Dynamics (ICSD-2020)	March 1-4, 2020
3	Dr. Naba Kamal Nath	International Conference on Emerging Trends in Chemical Sciences (ETCS-2020)	February 13-15, 2020

7. INVITED TALKS (AS RESOURCE PERSON IN CONFERENCE/SYMPOSIUM/WORKSHOP)

Title of the talk	Faculty Name	Event/Institute/University/Place	Duration
C-C Bond breaking reaction: unconventional route towards the synthesis of TRAMs	Dr. Paresh Nath Chatterjee	Recent Trends in Chemistry , Department of Chemistry, NEHU Shillong	31/10/2019-01/11/2019
Synthesis of Active Sn, Bi, and Cu ₂ O and their applications in suitable organic transformations	Dr. Paresh Nath Chatterjee	National Seminar and Discussion Meeting on 150 th anniversary of Periodic Table (NSDPT-2020), Department of Chemistry, NEHU Shillong	13/03/2020-14/03/2020
The Unimolecular Dissociation of Weakly Bound Aromatic Complexes at High Temperatures in Gas and Condensed Phase	Dr. Amit Kumar Paul	Recent Trends in Chemistry , Department of Chemistry, NEHU Shillong	31/10/2019-01/11/2019
Heteroatom-Doped Porous Carbons Derived from Microporous Organic Polymers for Electrochemical Energy Storage and Oxygen Reduction Reaction	Dr. Gitish Kishor Dutta	International Conference on Emerging Trends in Chemical Sciences (ETCS-2020)	13/02/2020-15/02/2020
Single, Dual and Multi-stimuli responsive material	Dr. Naba Kamal Nath	International Conference on Emerging Trends in Chemical Sciences (ETCS-2020)	13/02/2020-15/02/2020



8. SPONSORED PROJECT (RECEIVED/ONGOING/COMPLETED)

Sl. No.	Title of the Project(s)	Investigators (P.I. & Co-P.I.)	Funding Agency	Sanctioned 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. Snehadrikhatua, 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. 27,65,560/-	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
8.	Smart Biomimetic Molecular Crystal for Energy Conversion	Dr. Naba Kamal Nath	SERB	Rs. 37,07,000/-	2016-2019	Completed
9.	Synthesis of biocompatible silver and gold nanoparticles using dietary polyphenols as reducing agents: Further investigation into their binding efficacies with the carrier proteins, biomolecular detections, anti-bacterial properties and cell cytotoxicity	Dr. Atanu Singha Roy	SERB (CRG)	Rs. 25,12,400/-	2020-2023	Ongoing
10.	Post Transition State Dynamics On Chemical Reactions and the effect of Solvation	Dr. Amit Kumar Paul	CSIR	Rs. 13,96,000/-	2019-2022	Ongoing
11.	Multi-stimuli responsive smart crystalline material derived from organic molecular photoswitch	Dr. Naba Kamal Nath	DST-SERB-CRG	Rs. 31,72,400/-	2020-2023	Ongoing



9. ADMINISTRATIVE RESPONSIBILITIES HELD (BY THE FACULTY MEMBERS)

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	DRC, Chairman	July 2018-till date
4.	Dr. Paresh Nath Chatterjee	President, Student Activity Center	2018-till date
5.	Dr. Paresh Nath Chatterjee	Nodal Officer, EBSB	2018-2020
6.	Dr. Paresh Nath Chatterjee	Chief Editor, NITM Chronicle	Feb 2019-till date
7.	Dr. Paresh Nath Chatterjee	Local Coordinator, GIAN	2015-till date
8.	Dr. Atanu Singha Roy	Convener, Hostel Patrolling Committee	2019-till date
9.	Dr. Atanu Singha Roy	Member, Medical Facilitation Committee	2019-till date
10.	Dr. Amit K. Paul	Warden, Lapalang IV	2018-2019
11.	Dr. Amit K. Paul	Warden, Lapalang II	2019 - till date
12.	Dr. Amit K. Paul	Member, NSS committee	2016-till date
13.	Dr. Amit K. Paul	Member, Sports Committee	2018-till date
14.	Dr. Amit K. Paul	Member, Curriculum & Accreditation Committee	2019-till date
15.	Dr. Amit K. Paul	Vice-Chairman, Institute Day event	2020
16.	Dr. Gitish Kishor Dutta	Chairman, Library Committee	2019 till date
17.	Dr. Gitish Kishor Dutta	Member, Centre for Innovation, Incubation and Entrepreneurship	2019 till date
18.	Dr. Naba Kamal Nath	OBC Liaison Officer	2019 till date

10. MEMBERSHIP OF PROFESSIONAL BODIES:

Sl. No.	Name of Faculty	Member of
1	Dr. Atanu Singha Roy	Indian Photobiology Society (Life Member)
2	Dr. Atanu Singha Roy	Indian Chemical Society (Life Member)
3	Dr. Amit Kumar Paul	Indian Chemical Society (Life Member)
4	Dr. Amit Kumar Paul	American Chemical Society (2019-2020)

11. ANY OTHER NOTABLE INFORMATION:

11A. ACHIEVEMENTS, AWARDS AND RECOGNITION OF THE STUDENTS AND STAFFS

FACULTY MEMBERS

Sl. No.	Faculty Name	Role/Technical Assistance	Journal Name/Conference
1	Dr. Atanu Singha Roy	Reviewer	ACS Omega Toxicology Research BMC Genomics Journal of Biomolecular Structure and Dynamics Journal of King Saud University - Science Spectroscopy Letters
2	Dr. Paresh Nath Chatterjee	Reviewer	Journal of Organic Chemistry, Catalysis Letters
3	Dr. Paresh Nath Chatterjee	External examiner	Manipur University University of Science & Technology Meghalaya



Sl. No.	Faculty Name	Role/Technical Assistance	Journal Name/Conference
4	Dr. Gitish Kishor Dutta	Reviewer	Langmuir Chemistry Select Journal of Power Sources ChemElectroChem Journal of Electroanalytical Chemistry ACS Applied Nanomaterials
5	Dr. Naba Kamal Nath	Reviewer	Crystal Growth and Design (ACS) Nature Communication (Nature) Crystal Engineering Communication (RSC)

11B. PH.D. STUDENTS (BEST POSTER/PAPER AWARDS)

Sourav Das: Best Poster Award at the National Conference on Recent Trends in Chemistry (RAC) organized by the Department of Chemistry, NIT Meghalaya during October 14-15, 2019.

Sourav Das: Institute Best Research Award (1st Research Conclave 2020 of NIT Meghalaya, date: 28-02-2020).

Poonam Gupta: Best Research Work Demonstration Award in the Research Conclave-2020 organized on 28th February 2020 at NIT Meghalaya, Shillong, India.

Pragyan Hazarika: Best poster award in International Conference on Emerging Trends in Chemical Sciences (ETCS-2020) held in Gauhati University Guwahati.

Rishika Chakraborty: Best Poster Award at the National Conference on Recent Advances in Chemistry (RAC 2019) organized by the Department of Chemistry, NIT Meghalaya during 14th-15th October, 2019.

Rishika Chakraborty: Best Oral Presentation Award at the International Conference on Electrochemistry in Industry, Health and Environment (EIHE-2020) organized by Indian Society for ElectroAnalytical Chemistry in association with Department of Atomic Energy (DAE), Bhabha Atomic Research Centre (BARC) and Board of Research in Nuclear Sciences (BRNS), Mumbai during 2nd - 25th January.

Himashree Mahanta: Poster award at International Conference on Advances in Chemical Sciences and Technologies (ACST 2019) organized by Department of Chemistry, NIT Warangal during 23rd - 25th September, 2019.

Siddheswar Rudra won the **Best prize for poster presentation** in the international conference “Advances in chemical sciences and technologies” organized by Department of Chemistry, NIT Warangal, India during 23rd - 25th September, 2019.

11C. 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
Rishika Chakraborty	National conference on Recent Advances in Chemistry (RAC 2019)	Department of Chemistry, NITM	14 th -15 th October, 2019	Inherent N-Doped Porous Carbon Derived from Biomass of Tamarind leaf for High-Performance Supercapacitor Application
Rishika Chakraborty	International Conference on Electrochemistry in Industry, Health and Environment (EIHE-2020)	Indian Society for ElectroAnalytical Chemistry in association with Department of Atomic Energy (DAE), Bhabha Atomic Research Centre (BARC) and Board of Research in Nuclear Sciences (BRNS), Mumbai, India.	21 st -25 th January, 2020	Intercalation Pseudocapacitance at Enhanced van der Waals Gaps of Nanotubular Bi ₂ Se ₃ Matrix through MnO ₂ Incorporation: A Novel Route to High Electrochemical Energy Storage.

Name of the student	Name of the conference/ symposium/ workshop	Organizer(s)	Duration	Title of poster/ oral presentation
Himashree Mahanta	International Conference on Advances in Chemical Sciences and Technologies (ACST 2019)	Department of Chemistry, NIT Warangal	23 rd -25 th September, 2019	Detailed Understanding of Unimolecular Dissociation, Association Followed by Ensuing Dissociation of Benzene- Hexafluorobenzene System
Himashree Mahanta	National conference on Recent Advances in Chemistry (RAC 2019)	Department of Chemistry, NIT Meghalaya	14 th -15 th October, 2019	Dynamic Behaviors of Weakly Bound Aromatic Complexes at High Temperatures
Poonam Gupta	National conference on Recent Advances in Chemistry (RAC 2019)	Department of Chemistry, NIT Meghalaya	14 th -15 th October, 2019	Smart Crystalline materials of Acylhydrazone Photoswitch
Poonam Gupta	International Conference on Emerging Trends in Chemical Sciences (ETCS-2020)	Department of Chemistry, Gauhati University	13-15 th February, 2020	Multi-stimuli Responsive Molecular Crystal
Sk Samir Ahamed	National conference on Recent Advances in Chemistry (RAC 2019)	Department of Chemistry, NIT Meghalaya	14 th -15 th October, 2019	A Competition between Dissociation Pathway and Energy Transfer Pathway: Unimolecular Dissociation of Benzene- Hexafluorobenzene complex in Nitrogen Bath
Jayshree Barman	National conference on Recent Advances in Chemistry (RAC 2019)	Department of Chemistry, NIT Meghalaya	14 th -15 th October, 2019	Organic framework derived nitrogen doped porous carbon as metal free catalyst for oxygen reduction reaction
Sharat Sarmah	International Conference on Advances in Chemical Sciences and Technologies (ACST 2019).	Department of Chemistry, NIT Warangal	23 rd - 25 th September, 2019	A critical insight into the binding of chrysin with native and glycated form of human serum albumin
Sharat Sarmah	National conference on Recent Advances in Chemistry (RAC 2019)	Department of Chemistry, NIT Meghalaya	14 th -15 th October, 2019	Non-enzymatic glycation of HSA modulates its structure and binding efficacies towards the bioactive flavonoids
Gitumoni Kalita	International Conference on Advances in Chemical Sciences and Technologies (ACST 2019).	Department of Chemistry, NIT Warangal	23 rd -25 th September, 2019	PTSA catalyzed synthesis of indenenes from propargylic alcohols and electron-rich arenes.
Gitumoni Kalita	National conference on Recent Advances in Chemistry (RAC 2019)	Department of Chemistry, NIT Meghalaya	14 th -15 th October, 2019	One-pot synthesis of substituted benzopyrans using a microporous polymer based heterogeneous catalyst.
Sourav Das	National conference on Recent Advances in Chemistry (RAC 2019)	Department of Chemistry, NIT Meghalaya	14 th -15 th October, 2019	Lysozyme-luteolin binding: molecular insights into the complexation process and the role of luteolin as an inhibitor towards protein modification
Siddheswar Rudra	International Conference on Advances in Chemical Sciences and Technologies (ACST 2019).	Department of Chemistry, NIT Warangal	23 rd -25 th September, 2019	Intercalation Pseudocapacitance in Chemically Stable Au- α -Fe ₂ O ₃ -Mn ₃ O ₄ Composite Nanorod: Towards Highly Efficient Solid-State Symmetric Supercapacitor Device.
Siddheswar Rudra	National conference on Recent Advances in Chemistry (RAC 2019)	Department of Chemistry, NIT Meghalaya	14 th -15 th October, 2019	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
Sourav Das	National Symposium on Recent Trends in Chemistry (RTC-19)	Center for Advance studies in Chemistry, NEHU, Shillong	31 st Oct- 01 st Nov, 2019	Targeting hemoglobin by (-)-epigallocatechin gallate: A biophysical study



Name of the student	Name of the conference/ symposium/ workshop	Organizer(s)	Duration	Title of poster/ oral presentation
Namrata Deka	National conference on Recent Advances in Chemistry (RAC 2019)	Department of Chemistry, NITM	14 th -15 th October, 2019	N-Doped Porous Carbon Microspheres from Carbazole-Terephthalaldehyde Co-Polymers for Supercapacitor Application.
Namrata Deka	International Conference on Electrochemistry in Industry, Health and Environment (EIHE-2020)	Indian Society for ElectroAnalytical Chemistry in association with Department of Atomic Energy (DAE), Bhabha Atomic Research Centre (BARC) and Board of Research in Nuclear Sciences (BRNS), Mumbai, India.	21 st -25 th January, 2020	Turning trash into treasure: Waste derived N-doped porous carbon for energy applications
Dipankar Paul	National conference on Recent Advances in Chemistry (RAC 2019)	Department of Chemistry, NITM	14 th -15 th October, 2019	Ultrasound mediated synthesis of aldimines at room temperature in air atmosphere
Dipankar Paul	JNOST 2019	DU	18 th -21 st October, 2019	Use of electron-rich arenes as leaving group
Dipankar Paul	RTC 2019	NEHU	30 th -31 st October, 2019	NA
Dipankar Paul	ETCS 2020	GU	13 th -15 th February, 2020	The curious case of a labile C-C bond

11D. GATE 2020 RESULTS

Sl. No.	Name of the student	GATE Rank (AIR)	Remarks
1	Bhabani Shankar Nayak	0043	GATE 2020 (Chemistry)
2	Pulakesh Gogoi	2147	GATE 2020 (Chemistry)
3	Pavan Kumar	2702	GATE 2020 (Chemistry)
4	Ameek K	3032	GATE 2020 (Chemistry)

12. CONFERENCE/SYMPOSIUM/WORKSHOP ORGANIZED BY THE DEPARTMENT

A National Conference on Recent Advances in Chemistry 2019 (October 14-15, 2019)

Conveners: Dr. Atanu Singha Roy and Dr. Amit Kumar Paul

ORGANIZING SECRETARIES

Dr. Paresh Nath Chatterjee (Finance)

Dr. Dr. Gitish Kishor Dutta (Certificates and Mementos)

Dr. Naba Kamal Nath (Technical)

Dr. Mukul Pradhan (Transportation and Accommodation)

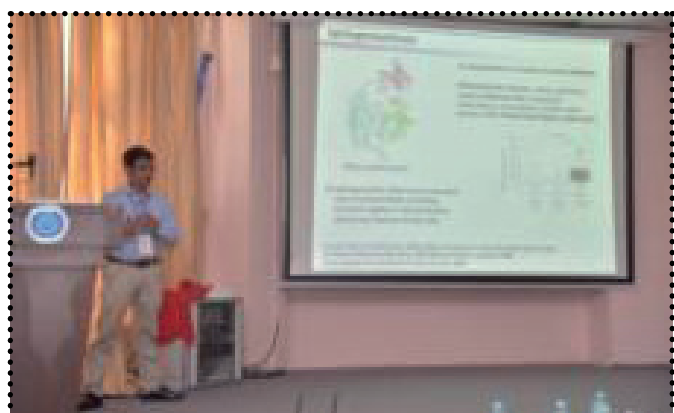
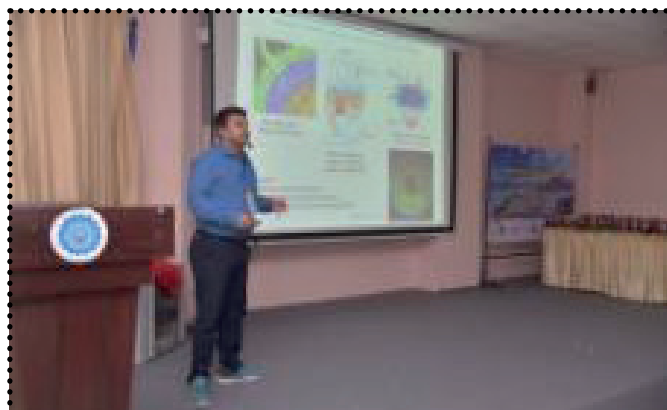
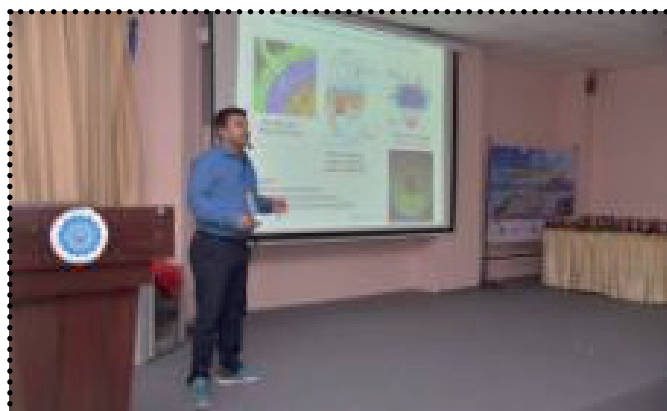
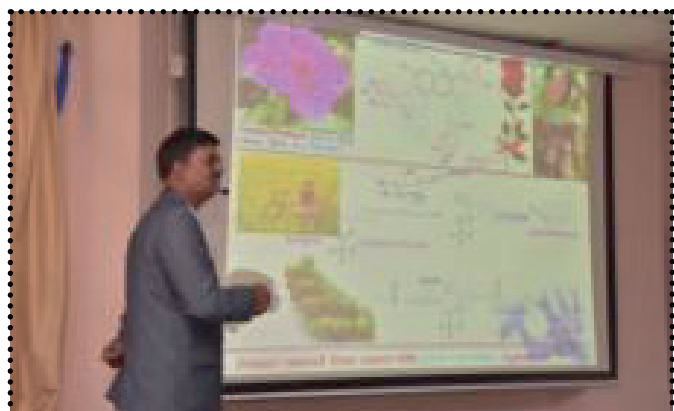
LIST OF INVITED SPEAKERS

1. Prof. S. Dasgupta, Department of Chemistry, IIT Kharagpur
2. Prof. S. Deep, Department of Chemistry, IIT Delhi
3. Prof. N. Chattopadhyay, Department of Chemistry, Jadavpur University
4. Prof. S. K. Pati, Theoretical Sciences Unit, JNCASR



5. Prof. S. Adhikari, School of Chemical Sciences, IACS
6. Prof. S. Patil, Solid State and Structural Chemistry Unit, IISc Bangalore
7. Dr. Apurba Kumar Sau, NII Delhi
8. **Dr. P. K. Mandal, Chemical Science Division, IISER Kolkata**
9. **Prof. S. Mitra, Department of Chemistry, NEHU Shillong**
10. **Dr. S. Dutta, Department of Chemistry, IIT Guwahati**
11. **Dr. M. Sarma, Department of Chemistry, IIT Guwahati**
12. **Prof. P. Phukan, Department of Chemistry, Gauhati University**
13. **Dr. A. K. Tiwari, Chemical Science Division, IISER Kolkata**
14. **Prof. G. Bez, Department of Chemistry, NEHU, Shillong**
15. **Prof. S. Nanda, Department of Chemistry, IIT Kharagpur**
16. **Dr. R. Chakrabarti, Department of Chemistry, IIT Bombay**
17. **Dr. V. K. Tiwari, Department of Chemistry, IIT BHU**
18. **Dr. M. Bhattacharjee, Department of Chemistry, Cotton University.**
19. Dr. R. Samanta, Department of Chemistry, IIT Kharagpur
20. Dr. B. Sarkar, Department Chemistry, NEHU Shillong
21. Dr. K. Raidongia, Department of Chemistry, IIT Guwahati
22. Dr. U. Manna, Department of Chemistry, IIT Guwahati
23. Dr. S. Rana, Material Research Centre, IISc Bangalore
24. Dr. S. Ghosh, Department of Chemistry, IIT Kanpur
25. Dr. N. Ghosh, CDRI Lucknow









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. The department offers Ph.D. and 2-year M.Sc. programme in Mathematics. The department also supports all the engineering departments by offering undergraduate and postgraduate level courses in mathematics to the B.Tech and M.Tech students over a number of semesters. The department has been organizing seminars and summer internship programs for students and research scholars. The department has at present six regular faculty members. The faculties are actively engaged in research, teaching, training and administrative work. The main objective of the department is to attract the students of science and engineering, and to provide them academically coherent programmes, with courses that range from the fundamental to the advanced.

2. PROGRAMMES OFFERED:

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

3. FACULTY PROFILE:

Name	Designation	Qualification	Specialization	Date of Joining	Ph.D. guidance	Remarks
Dr. Saikat Mukherjee	Assoc. Professor	Ph.D	Functional Analysis	25-07-2013	Four ongoing	One submitted his thesis
Dr. Tikaram Subedi	Asst. Professor	Ph.D	Abstract Algebra	01-06-2012	Three ongoing	One submitted his thesis
Dr. Manideepa Saha	Asst. Professor	Ph.D	Linear Algebra	22-07-2013	Four ongoing	One as Co-supervisor
Dr. Bidyasagar Kumbhakar	Asst. Professor	Ph.D	Fluid Dynamics	20-07-2015	Three ongoing	
Dr. Adarsha K. Jena	Asst. Professor	Ph.D	Statistics	01-10-2019	--	
Dr. Timir Karmakar	Asst. Professor	Ph.D	Fluid Dynamics	27-01-2020	--	
Dr. Bapan Ghosh	Asst. Professor	Ph.D	Mathematical Biology	28-01-2015	--	Left the institute on September 11, 2019
Dr. Srinivas Jangili	Asst. Professor	Ph.D	Fluid Dynamics	27-07-2015	--	Left the institute on November 28, 2019

4. LIST OF PUBLICATIONS:

A. JOURNALS:

1. A. Bhandari, D. Borah and **S. Mukherjee**, "Characterizations of Weaving K-Frames", Proc. Japan Acad. Ser. A Math. Sci., Vol. 96 (5), pp.39–43, 2020.
2. A. Bhandari and **S. Mukherjee**, "Characterizations of Woven Frames", to be appeared in Int. J. Wavelets Multiresolution Inf. Process., DOI: 10.1142/S0219691320500332,
3. A. Bhandari and **S. Mukherjee**, "Atomic Subspaces for Operators", to be appeared in Indian J. Pure Appl. Math, Springer.
4. 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), 93(11), pp. 1465–1476, 2019.
5. Debraj Roy and **Tikaram Subedi**, "Generalized semicommutative rings", Vestnik St. Petersburg Univ. Math, Vol 53, pp 68-76, 2020
6. Debraj Roy and **Tikaram Subedi**, "On a generalization of reversible rings", An. Stiint. Univ. Al. I. Cuza Iasi. Mat. (N.S.) Tomul LXV, 2019, f. 2
7. Debraj Roy and **Tikaram Subedi**, "On semireversible rings", To be appeared in Asian European Journal of Mathematics
8. **Tikaram Subedi** and Debraj Roy, "On a common generalization of symmetric rings and quasi duo rings", To be appeared in Algebra and Discrete Mathematics.
9. **B Ghosh**, OL Zhdanova, B Barman, EY Frisman, Dynamics of stage-structure predator-prey systems under density-dependent effect and mortality, Ecological Complexity 41, 100812, 2020.
10. D Pal, TK Kar, A Yamauchi, **B Ghosh**, Balancing maximum sustainable yield and ecological resilience in an exploited two-predator one-prey system, Biosystems 187, 104064, 2020.
11. D Pal, **B Ghosh**, TK Kar, Hydra effects in stable food chain models, Biosystems 185, 104018, 2019.
12. GP Neverova, OL Zhdanova, **B Ghosh**, EY Frisman, Dynamics of a discrete-time stage-structured predator-prey system with Holling type II response function, Nonlinear dynamics 98 (1), pp. 427-446, 2019.
13. B Barman, **B Ghosh**, Explicit impacts of harvesting in delayed predator-prey models, Chaos, Solitons & Fractals 122, 213-228, 2019.

5. CONFERENCE/ WORKSHOP/ SEMINAR ORGANIZED

Department organized Indian Women and Mathematics (IWM) Regional Workshop on Research and Opportunities, during October 19-20, 2019. National Board of Higher Mathematics (NBHM) funded the workshop.

6. CONFERENCES / WORKSHOPS / SEMINARS / TRAININGS ATTENDED BY FACULTY MEMBERS:

Sl. No.	Name of Faculty	Name of the programme attended	Duration
1	Manideepa Saha	National Conference on Recent Trends in Mathematics and its Applications, held at GITAM, Bengaluru	December 20-21, 2019
2	Srinivas Jangili	Five-day TEQIP-III Short Term Course on Computational Fluid Dynamics for Incompressible Flows at IIT Guwahati.	June 17-21, 2019
3	Srinivas Jangili	Two-day workshop on 5 th National Workshop on Research Methodology in Fluid Mechanics at IIT Guwahati.	June 22-23, 2019
4	Saikat Mukherjee	13th International Conference on "Mathematical Sciences for Advancement of Science and Technology" (MSAST 2019) of IMBIC at Kolkata	December 21-23, 2019

7. INVITED TALKS DELIVERED:

1. **M. Saha:** Delivered invited talk on “National Conference on Recent Trends in Mathematics and its Applications” held at GITAM, Bengaluru during December 20-21, 2019.
2. **S. Mukherjee:** Delivered invited talk “On Woven-ness of K-fusion frames” in the 13th International Conference on Mathematical Sciences for Advancement of Science and Technology (MSAST 2019) held during December 21-23, 2019 at Kolkata.
3. **S. Mukherjee:** Delivered three 1-hour lectures in the Indian National Mathematical Olympiad Training Camp (INMOTC, 2020) held at Dept. of Mathematics, NEHU during January 13-18, 2020.

8. SPONSORED PROJECTS

Sl. No.	Title of the Project	Investigators (P.I. / Co-P.I.)	Funding Agency	Funding amount	Duration	Status
1	K-Fusion Frames-Applications to Sensor Network and Coding Theory	Dr. Saikat Mukherjee	DST-SERB	6,60,000	3 Years	Ongoing
2	Iterative methods for solving non-square linear systems	Dr. Manideepa Saha	DST-SERB	17,05,200	3 Years	Ongoing
3	On LU-factorization of Generalized M-matrices	Dr. Manideepa Saha	DAE-NBHM	14,33,600	3 Years	Ongoing
4	A study on interval methods of system of interval linear equations	Dr. Manideepa Saha	TEQIP, NIT Meghalaya	1,52,250	2 Years	Ongoing
5	Modeling the dynamics and evolution of predator-prey communities under anthropogenic impacts: Comparison of discrete and continuous time approaches	Dr. Bapan Ghosh	DST (Indo-Russia Project)	962400	2 Years	Terminated
6	Modeling, Dynamics and Benefits of Marine Protected Areas	Dr. Bapan Ghosh	DST-SERB	14,69,600	3 Years	Completed

9. ADMINISTRATIVE RESPONSIBILITIES HELD:

Sl. No.	Name of Faculty	Responsibilities	Duration
1	Dr. Saikat Mukherjee	Chief Warden	Full Year
2	Dr. Tikaram Subedi	Chairman, Exam Cell	Full Year
3	Dr. Manideepa Saha	Head of the Department, Mathematics and Professor-In-Charge of Centre of International Relations	Full Year

10. 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).
2	Dr. Manideepa Saha	<ul style="list-style-type: none"> Society for Industrial and Applied Mathematics (SIAM), SIAM Activity Group on Linear Algebra 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



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

11. LIST OF ACHIEVEMENTS AND ACTIVITIES DURING THE YEAR 2018-19:

1. Department has received DST-FIST grant.
2. One GIAN proposal has been accepted.
3. Department organized IWM Regional Workshop funded by NBHM.
4. Faculty members of the department have published 13 research articles
5. Research scholars of the department have published 8 research articles, presented 5 posters, and attended 10 workshops.

12. ANY OTHER NOTABLE INFORMATION:

Department has received DST-FIST grant and one GIAN Proposal has been accepted.

13. DEPARTMENT ACTIVITIES IN PHOTOGRAPHS:

1. IWM Regional Workshop, October 19-20, 2019



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. Programme

3. FACULTY PROFILE:

Name	Designation	Qualification	Specialization	Date of Joining and Leaving	Ph.D. Guidance
Dr. P. S. Mangang	Associate Professor	Ph.D.	English	01.06.2012	1 completed, 1 Submitted, 3 Ongoing
Mr. A. D. Sarma	Assistant Professor (Contract)	MBA (Ph.D. Pursuing)	Management	January 2013 to June 2019	-
Dr. N. C. Bharali	Guest Lecturer	Ph.D.	Accounting	February 2019 to June 2019 (Per semester basis)	-
Dr. K. S. Rajput	Guest Lecturer	Ph.D.	Economics	February 2019 to June 2019 (Per semester basis)	-
Dr. N. Somola Devi	Assistant Professor (Adhoc)	Ph.D.	English	July 2019 to December 2019 (Per Semester Basis)	
Dr. Manohar Giri	Assistant Professor (Adhoc)	Ph.D.	Management	July 2019 to December 2019 (Per Semester Basis)	
Dr. Khelsoril Wanbe	Assistant Professor (Adhoc)	Ph.D.	English	January 2020 to May 2020 (Per Semester Basis)	
Dr. R. Anuradha	Assistant Professor (Adhoc)	Ph.D.	Management	January 2020 to May 2020 (Per Semester Basis)	

4. ADMINISTRATIVE RESPONSIBILITIES HELD OR MEMBERSHIP OF COMMITTEES:

Name	Role	Duration
P. S. Mangang	Head of Department	Whole Year
	Chairman, Departmental Research Committee	Whole Year
	Faculty-in-charge, Language Lab	Whole Year
	Member, Academic Programmes Committee	Whole Year
	Member, UG-PEC (Programme Evaluation Committee)	Whole Year
	Member, PG-PEC (Programme Evaluation Committee)	Whole Year
	Member, IQAC	2019-20
	Member, Library Committee	Whole Year
	Chairman, Routine Committee	Whole Year
	Liaison Officer for OBC	Till January 2020
	Coordinator, Examination Committee for Non-Faculty Selection 2019	May 2019
	Co-Chief Editor of NITM Chronicle	Whole Year

5. MEMBERSHIP OF PROFESSIONAL BODIES:

Name of Faculty	Member of
P. S. Mangang	Life member of English Literary Circle Manipur

6. PH.D. SCHOLARS PROFILE:

Name	Specialization	Supervisor	Remarks
Mr. A. D. Sarma	Management	Dr. Basav Roychoudhury	Advanced Stage
Ms. B. Samita Devi	Literature	Dr. P. S. Mangang	Completed
Mr. Rangehbok Lyngwa	Literature		Submitted
Ms. Arundhati Ashangbam	Literature		Registration Completed
Ms. Ankita Bhowmick	Literature		Undergoing Course Work
Ms. Amanda Basaiawmoit	Literature		Newly Admitted

7. LIST OF PUBLICATIONS IN JOURNALS:

1. R. Lyngwa, P. S. Mangang, 'Communicating and Resisting Oppression: Using Drama for Communication Skills and Social Consciousness in Language Classrooms', *International Journal of Recent Technology and Engineering*, Vol.8, Issue.3S2, October 2019.
2. R. Lyngwa, P. S. Mangang, 'Constructing Indigenous Oppression and Resistance in Tendulkar's Encounter in Umbugland', *RELIGACIÓN Revista de Ciencias Sociales y Humanidades*. Vol.4, Issue.19, September 2019.

8. LIST OF PRESENTATIONS IN CONFERENCES:

1. A. Ashangbam, 'The Drowned and the Saved: Testimony to Historical Discernment', ELCC-2019, Manipur University, 22nd & 23rd November 2019.
2. A. Bhowmick, 'Depiction of Disability in Greek Mythology', ELCC-2019, Manipur University, 22nd & 23rd November 2019.
3. R. Lyngwa, 'Conflict of Ideologies: Ambedkar Versus Gandhi in Tendulkar's *Kanyadaan*', International Conference on Interdisciplinarity - Intersections of Literature and History for Social and Cultural Change (COIN-2019), NIT Meghalaya, 19th & 20th October 2019.

4. A. Ashangbam, P. S. Mangang, 'Quest of Masculine Identity in Primo Levi's *If This is a Man*', International Conference on Interdisciplinarity - Intersections of Literature and History for Social and Cultural Change (COIN-2019), NIT Meghalaya, 19th & 20th October 2019.
5. A. Bhowmick, 'The Depiction of Disability in Indian Mythology', International Conference on Interdisciplinarity - Intersections of Literature and History for Social and Cultural Change (COIN-2019), NIT Meghalaya, 19th & 20th October 2019.
6. A. Ashangbam, P. S. Mangang, 'To be and not to be: A Discourse on Guilt and Resentment in Primo Levi's *The Drowned and the Saved*' (Poster Presentation) in the Research Conclave held at NIT Meghalaya on 28th February 2020.

9. RESEARCH PROJECTS:

Sl. No.	Title of the Project	Investigator	Funding Agency	Amount	Duration	Status
01	The Use of e-Writers in Teaching Writing Skill to Special Students of Dwarjinkyrmen	Dr. P. S. Mangang	ICSSR, New Delhi	Rs. 4,00,000/-	December 2019 – November 2020	Ongoing

10. INVITED TALKS (AS RESOURCE PERSON):

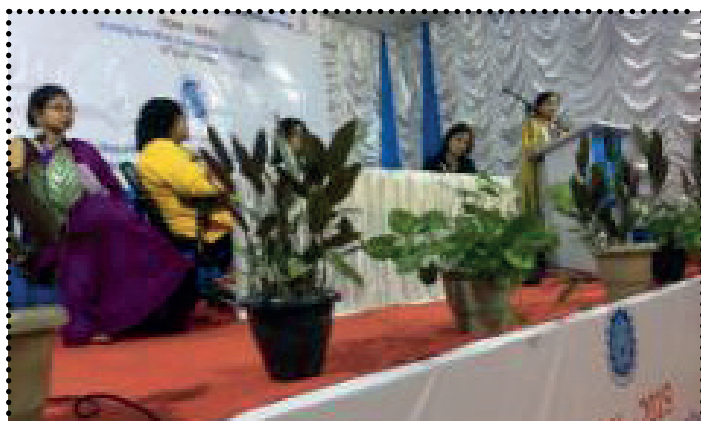
- I. Dr. P. S. Mangang, 'The Relevance of Interdisciplinarity in Modern Research', ELCC-2019, Manipur University, 22nd & 23rd November 2019.

11. WORKSHOPS/CONFERENCES ORGANISED:

- I. NIT Meghalaya Sponsored 'Workshop on Research Methodology' on 31st August and 1st September 2019. More than 100 Ph.D. Scholars of the Institute attended the workshop.



2. ICSSR-NERC and TEQIP III Sponsored 'International Conference on Interdisciplinarity: Intersections of Literature and History for Social and Cultural Change' (COIN-2019) on 19th & 20th October 2019. Many eminent academicians graced the conference with resourceful keynote lectures on various aspects of the theme of the conference. Around 175 delegates from India and abroad presented different perspectives on current research areas related to the theme of the conference.



12. RESOURCE PERSONS INVITED:

1. Prof.T. K. Bamon, Director (i/c), The English and Foreign Languages University, Shillong Campus, Meghalaya
2. Prof.Awadesh Mishra, Professor, The English and Foreign Languages University, Shillong Campus, Meghalaya
3. Prof.Th. Ratankumar Singh, Director, CDC, Manipur University, Imphal, Manipur
4. Prof. SaugataBhaduri, Professor, Jawaharlal Nehru University, New Delhi

5. Prof. Simi Malhotra, Director, Centre for North East Studies and Policy Research, Jamia Millia Islamia, New Delhi
6. Prof. Ahmed Ahsanuzzaman, Professor, Independent University, Dhaka, Bangladesh
7. Prof. Jyotirmoy Prodhan, Professor, North-Eastern Hill University, Shillong, Meghalaya
8. Prof. Uma Sankar Mishra, Professor, SOA University, Bhubaneswar, Odisha
9. Dr. Avishek Ray, Assistant Professor, National Institute of Technology Silchar, Assam
10. Dr. Binata Nongmaithem, Assistant professor, Manipur University of Culture (MUC), Imphal, Manipur

13. AWARDS/ACHIEVEMENTS:

1. Ms. B. Samita Devi (PI4HS001) successfully completed her Ph.D. in May 2019.
2. Ms. Arundhati Ashangbam (PI7HS001) received the Award for the Best Presentation among Ph.D Scholars at COIN-2019 (A Two Day International Conference on Interdisciplinarity: Intersections of Literature and History for Social and Cultural Change) held at NIT Meghalaya on 19th and 20th October 2019.





COMPUTER CENTRE

The Computer Centre is an important centre of NIT Meghalaya. It caters to all the departments, other centres and sections catering to services ranging from providing Internet to computing resources for research activities, training, workshops and daily activities.

Various facilities provided by the centre include:

- Networking
- Internet services
- Network connection facility
- Various software for general use as well as specialized requirements
- Computer laboratory

Campus wide networking consists of high bandwidth fiber optic backbone that connects the entire institute premise. The Institute data network is also extended to the hostels through the fiber optic backbone under contract with the SSNET.com.

The Internet line is connected with 1Gbps provided by the NKN (National Knowledge Network), a multi gigabit pan-India network for providing unified high-speed network backbone for all knowledge institutions commissioned by the MHRD and a backup line from BSNL.

Students, staff, faculties and guests can connect with desktops, laptops, mobile phones to a wireless access point. Power over Ethernet (PoE) access points are installed on most of the important junctions like the library, classrooms and hallways. Standard features like Internet security device (captive portal) are set up to limit guest access and also manage users within the Wi-Fi network without compromising network security. Wi-Fi hut is also present to enable students to do their research and academic activities in natural surroundings.

The servers housed provide data to another computer on the local network as well as over the Internet. Each of the servers runs specific software to the purpose of the server. The lists of software installed in the server are the ERP (Enterprise Resource Planning), File server, FTP server, Koha for library system and DHCP server. Some other services like antivirus and NPTEL videos are also hosted for campus use. The comprehensive list of all the servers is given in Table 1.

The Computer Centre also consists of a teaching area equipped with 50 Apple Macintosh machines (Table 2) and is heavily used all across the year. Physics and Chemistry lab classes are conducted in this laboratory.

Computer Centre also creates solutions to help with the daily tasks. Some of the applications developed and maintained by the Computer Centre are given in Table 3, along with other license software bought for research and academic use and general use by the campus. In Fig 1 a graph of the division of the resource utilization from the online resource portal as recorded during the period reported is given.

Table 1: List of servers housed in the Computer Centre

Sl. No.	Name of device	Details
1	Cyberoam CR500iNGXP (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 1 GbE Fiber /4 x 10GbE Fiber)
2	IBM Servers Tower Model with SAS HDD	4 Nos WINDOW SERVER 2012 & REDHAT 6 Arch:X64, Processor: Intel Xeon, 12 cores, 32 GB memory, 1.2TB HDD
3	IBM Servers Rack Model with SAS HDD	2 Nos WINDOW SERVER 2012 & REDHAT 6 Arch:X64, Processor: Intel Xeon, 12 cores & 4 cores , 16GB memory, 1TB HDD
4	PARAM SHAVAK SUPERCOMPUTER	1 No CENTOS 6.7 Arch:X64, Processor: Intel Xeon, 24 cores , 64GB memory, 6TB HDD
5	HP SERVER RACK MODEL	2 Nos REDHAT 6 Arch:X64, Processor: Intel Xeon, 24 cores & 12 cores , 32GB & 24 GB memory, 6TB & 2TB HDD

Table 2: Configuration of Apple Macintosh Machines (50 Nos.)

1	21.5 inch (diagonal) 16:9 widescreen LED – backlit display; 1920 x 1080 pixels; ambient light sensor
2	2,3GHz dual-core intel i5 with 64MB eDRAM and 4MB shared cache (Turbo boost upto 3,6GHz)
3	8GB of 2133MHz DDR4 Memory
4	1TB 5400-rpm hard drive
5	Intel Iris Plus Graphic 640
6	Preinstalled macOS.

Table 3: List of software managed and maintained by the Computer Centre.

1	ERP	The Enterprise Resource Planning is implemented with modules consisting of Academics, Human Resource Management System (HRMS) and the CampusAdministration.It has integrated all the functions from staff management, admission to maintaining the student data in a single database.
2	Website	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 standardized by the Government of India's National Informatics Centre. Certification of clearance for security audit was issued on the 26 th June 2020.
3	MATLAB	Academic license
4	Microsoft Volume Licensing	Operating System and Applications
5	Online service Request	Lodge request online: Staff and faculty can raise service request related to any hardware or software or any internet connectivity problem. Once the problem is lodged it is assigned to the faculty/ staff via an admin panel. This helps in keeping track of the status of the problems and the reports regarding the problems.



6	Supplementary Registration	Students register for Supplementary courses online.
7	End Semester Result	Display End term result of students.
8	Faculty Recruitment	Online application for faculty recruitment.
9	Staff Recruitment	Online application for staff recruitment.
10	Room Booking	Booking of different rooms online.
11	Summer Internship Registration	Online Registration for Summer Internship Programme provided by the Institute
12	Mtech (Part time) programme Registration	Online Registration for MTech (Part-time) Programme.
13	Ph.D Registration	Online Registration for Ph.D. Programme
14	Attendance Management System	Manage attendance of students in PG and Ph.D programs.

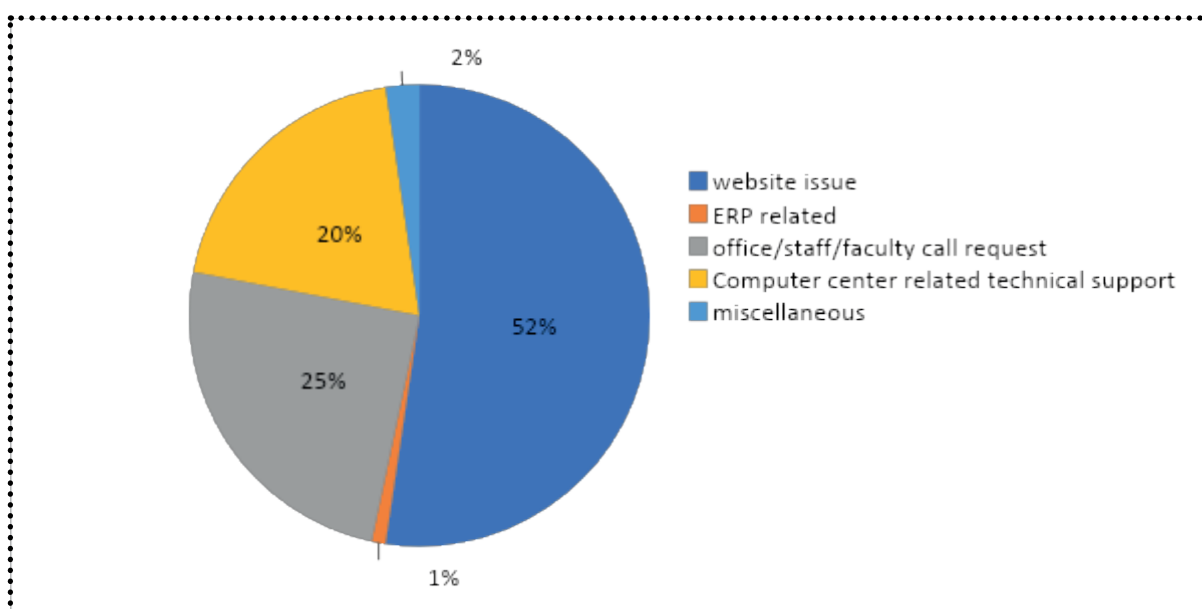


Fig 1: Category wise delivery of services /requests provided by CC, 2019-2020

Staff profile:

Bandonlang Wahlang
Medarisha Hynniewta Thangkhiew
Arkinsan Wankhar
Khrawkupar Hadia
Ribakor Ksanieng

Designation

TA(CC)
TA(CC)
Tech, CS
Tech, CC
Tech, CC

Date of joining

01-08-2012
17-08-2012
07-10-2013
15-07-2015
10-08-2016



CENTRE FOR TECHNOLOGY ENABLED LEARNING

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 endeavor 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 (CTEL) 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 neighboring Institutes can participate in developing contents and directly assist in national initiatives like NPTEL and SWAYAM.

STAFF DETAILS:

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

ACTIVITIES IN CTEL

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

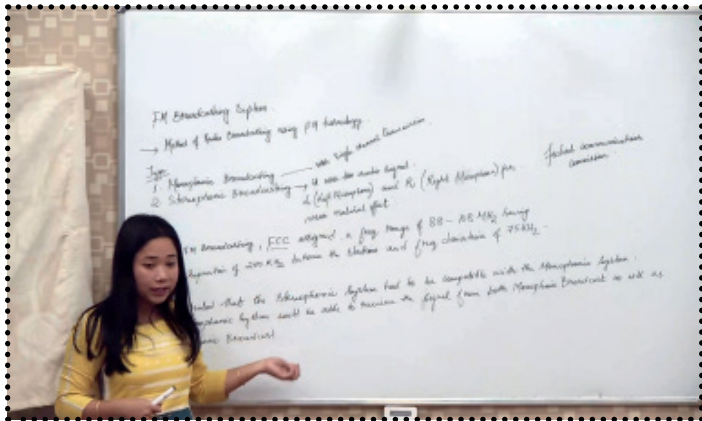
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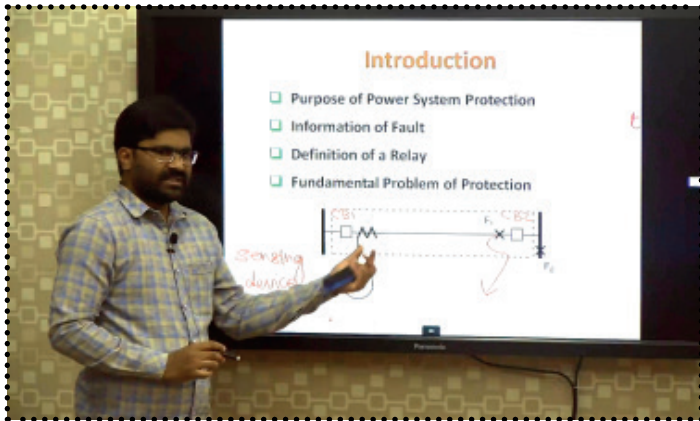
RECORDING ROOM



Dr. Vipin Pal
Department of Computer Science & Engineering



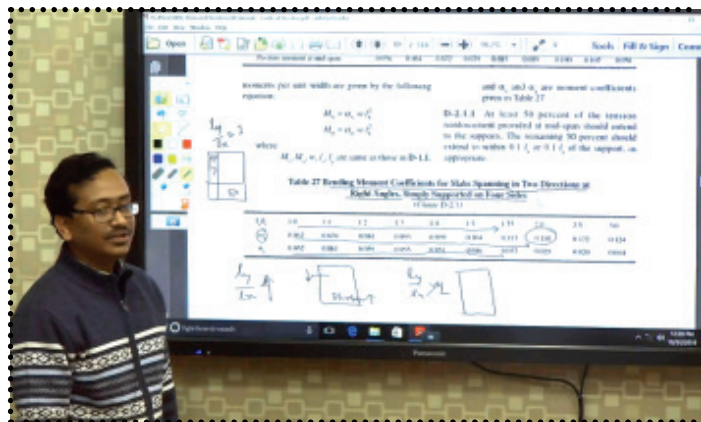
Dr. Salam Shuleenda Devi
Department of Electronics & Communication Engineering



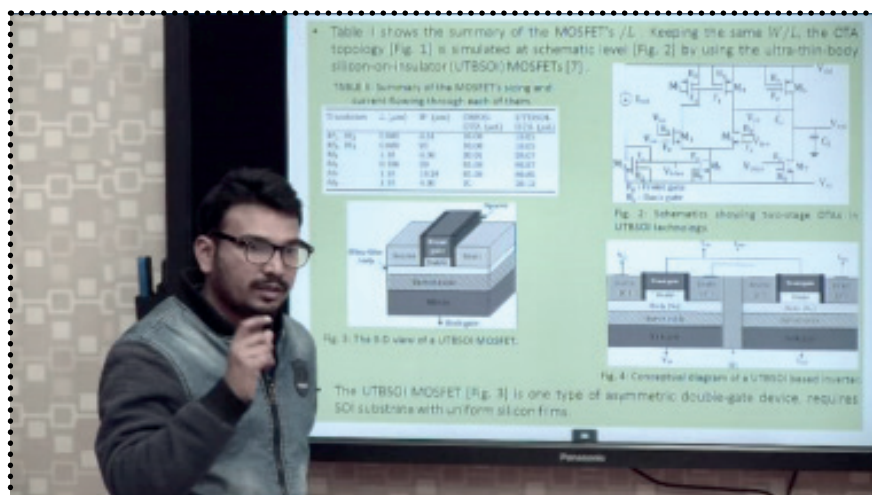
Dr. Shaik Affijulla
Department of Electrical Engineering



Mr. PhrangboklangThangkhiw
Ph.D Defense Seminar (CS)



Dr. Dibyendu Adak
Department of Civil Engineering



M.sc Project Presentation
Department of Physics

EQUIPMENT





LIST OF THE EQUIPMENT INSTALLED IN CTEL RECORDING ROOM

Sl. No.	Name of the Equipment
1	Panasonic LED Screen Display cum White Board
2	Ma240 Audio Mixing Amplifier
3	Wireless Hand-Held and Hand-worn Microphone (Both Teacher and Students)
4	Crestron Air board Capture Camera
5	Lumens Camera (for Students)
6	HDMI Switcher (connecting Laptop)
7	Crompton Light 36W LED Surface
8	Magnetic White Board 6ft X 4ft
9	Metallic Podium 19 inches (for Equipments)

CTEL DETAILS OF LECTURE RECORDED (COMPLETED ONE MODULE)

Sl. No.	Date	Name of The Faculty	Dept	Course Code	No. of Classes to be recorded
1	02-04-19	Dr.TikaramSubedi	MA	MA-408	4

Sl. No.	Date	Name ofThe Faculty	Dept	Course Code	No. of Classes to be recorded
2	09-05-19	Dr. Susmita Sharma	CE	CE-207	4
3	29-05-19	Dr. Tribedi Bora	PH	PH-408	4
4	11-06-19	Dr. K. Senthilkumar	PH	PH-403	4
5	02-07-19	Prof. Gayadhar Panda	EE	EE	4
6	24-07-19	Dr. Bapan Ghosh	MA	MA-203	4
7	16-08-19	Dr. Manideepa Saha	MA	MA-401	4
8	20-08-19	Dr. N. Somola Devi	HS	-	4
9	20-08-19	Dr. Paonam Sudeep Mangang	HS	-	4
10	21-08-19	Dr. Manohar Giri	HS	HS-301, 302, 401, 402	4
11	23-08-19	Dr. Saikat Mukherjee	MA	MA-502	4
12	23-08-19	Dr. Naba Kamal Nath	CY	-	4
13	27-08-19	Dr. Comingstarful Marthong	CE	CE	4
14	28-08-19	Dr. Hriday Mani Kalita	CE	CE-433, 304	4
15	04-09-19	Dr. M. Longshithung Patton	CE	CE-501	3
16	17-09-19	Dr. Piyush Pratap Singh	EE	EE-303	5
17	24-09-19	Dr. Anup Dandapat	EC	EC-503	4
18	14-10-19	Dr. Diptendu Sinha Roy	CS	CS	4
19	18-10-19	Dr. Ch V Rama Rao	EC	EC-302	4
20	18-10-19	Dr. Salam Shuleenda Devi	EC	EC-203 & CS 203	4
21	29-10-19	Dr. Rakesh Roy	EE	EE-302	4
22	30-10-19	Dr. Dibyendu Adak	CE	CE-301	4
23	31-10-19	Dr. Sanjoy Debbarma	EE	EE-501	4
24	31-10-19	Dr. Ksh Milan Singh	EE	EE-303	6
25	01-11-19	Dr. Shaik Affijulla	EE	EE-306	4
26	01-11-19	Dr. Soumen Moulik	CS	CS	3
27	17-01-20	Dr. K. Senthilkumar	PH	PH-403	6
28	31-01-20	Dr. M. Longshithung Patton	CE	CE-512	4
29	31-01-20	Dr. Debabrata Podder	CE	CE-305, 504	4
30	13-02-20	Dr. Vipin Pal	CS	CS	11
31	14-02-20	Dr. Phidahunlang Chyne	CS	CS-206	3
32	06-03-20	Dr. Prabir Saha	EC	EC-526	4
33	09-03-20	Dr. Anup Dandapat	EC	EC-518	4

LIST OF OTHER ACTIVITIES

Sl. No.	Date	Name of the Student/ Faculty/Staff	Department	Activities
1	16-05-19	Mr. Deepak Gupta	PH	Ph.D Progress Seminar
2	17-05-19	Dr. P.S. Mangang	HS	Ph.D Defense Seminar
3	29-05-19	Mrs. Ambika Rai	Academic Section	UG- PEC Meeting
4	23-05-19	Dr. Rajat Subhra Das	ME	Ph.D Progress Seminar
5	04-06-19	Prof. Gayadhar Panda	EE	Progress presentation for M.Tech and Ph.D Scholar
6	07-06-19	Dr. Kishore Debnath	ME	Workshop Innovation & Entrepreneurship



Sl. No.	Date	Name of the Student/ Faculty/Staff	Department	Activities
7	02-07-19	Mr. Phrangboklang Thangkhiw	CSE	Ph.D Defense Seminar
8	29-07-19	Mrs. Ambika Rai (29 th July – 8 th Aug 2019)	Academic Section	M.Sc Admission
9	06-09-19	Mrs. Probidita Roychoudhury	CSE	Ph.D Defense Seminar
10	15-10-19	Dr. Rajat Subhra Das	ME	Online Test for Pool Campus
11	06-11-19	Mr. Eliyash Ahmed	PH	Ph.D Registration Seminar
12	15-11-19	Dr. Tribedi Bora	PH	M.Sc. 3rd Semester Laboratory Presentation
13	26-11-19	Ms. Priyanki Kalita	PH	Ph.D Progress Seminar
14	04-12-19	Mr. Deepak Gupta	PH	Ph.D Progress Seminar
15	06-12-19	Anup Jyoti Das Pritam Majumder	ME	Ph.D Progress Seminar Research Scholar
16	08-01-20	Dr. Tribedi Bora	PH	Presentation
17	14-02-20	Lincoln A Ranee Nakita Lakyntiew Marbaniang (14 th Feb – 27 th Feb 2020)		Project Work
18	01-03-20	Ms. Farhana Begum	ECE	Ph.D Defense Seminar
19	06-03-20	Dr. Pares Nath Chatterjee (06 th March – 13 th Mar 2020)	CY	Online NPTEL Video Lectures.

CENTER FOR ROBOTICS AND MECHTRONICS

1. BRIEF INTRODUCTION TO THE CENTER:

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

2. PROGRAM OFFERED:

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

3. FACULTY PROFILE:

Name	Designation	Qualification	Specialization	Date of Joining	Ph.D. guidance	Remarks
Prof. Bibhuti Bhusan Biswal	Professor and Director, NIT Meghalaya	Ph.D	Design and manufacturing	17-05-2017	01	
Dr. Rabindra Narayan Mahapatra	Associate Professor, HoD, ME	Ph.D	Design and manufacturing	28-12-2017	02	
Dr. Bikash Kumar Sarkar	Assistant Professor and PIC	Ph.D	Fluid Power and Control	21-08-2013	03	One Project Scholar, One shared with Dr. S. Maity
Dr. Kishore Debnath	Assistant Professor, ME	Ph.D	Manufacturing	16-07-2015	03	3 Sponsored projects
Dr. P. Rangababu	Assistant Professor, EC	Ph.D	VLSI & Embedded Systems	11-08-2014	04	1-PI +2-co-PI On-going 1 scholar as Co-PI
Dr. Pradeep Kumar Rathore	Assistant Professor	Ph.D	Micro-Electro-Mechanical Systems (MEMS), Microelectronics, Device Fabrication Technology	11-08-2014	02	1 sponsored project
Dr. Satyendra Singh Yadav	Assistant Professor, EC	Ph.D	Wireless Communications, Signal Processing for 5G Systems and Beyond, Machine Learning, Parallel (GPU) Computing	10-2019	Nil	Nil
Dr. Shubhankar Majumdar	Assistant Professor, EC	Ph.D	Microelectronics Device fabrication, Sensor	13-12-2017	02	3 Sponsored projects 5 State Government Projects 2 Ongoing Ph.D

Name	Designation	Qualification	Specialization	Date of Joining	Ph.D. guidance	Remarks
Dr. Prabir Saha	Assistant Professor, EC	Ph.D	VLSI Design, Computer Arithmetic	13-06-2012	02	Nil
Dr. Ch.V. Rama Rao	Assistant Professor, EC	Ph.D	Acoustics sensor signal processing, Human robot interfacing	28-08-2014	03	3 Sponsored projects
Dr. Bunil Kumar Balabantaray	Assistant Professor	Ph.D	Robotics, Computer Vision and Digital Heritage, Human Computer Interaction	14-12-2017	05	Full Time - 1 and with co-supervisor with Prof. R. N. Mahapatra and 3 Part time Ph. D. scholars
Dr. Alok Chakrabarty	Assistant Professor, CSE	Ph.D	Computational Intelligence, Pattern Recognition	20-06-2012	02	
Dr. Piyush Pratap Singh	Assistant Professor, EE	Ph.D	Control Systems, Nonlinear Dynamics and Chaos	31-05-2016	01	1 sponsored project
Dr. Sanjoy Debbarma	Assistant Professor, EE	Ph.D	Power System Control, Smart Grid, Optimization, Cyber-Security	19 June 2012	03	1. Sponsored Research projects: 2 2. Sponsored consultancy: 1
Mr. Avilash Sahoo	Trainee Teacher	M.Tech.	Machine Design, Dynamics, Trajectory Tracking Control of Underwater Robots	July 21, 2014		

4. LIST OF PUBLICATIONS:

A. JOURNALS:

1. PJ Bezbaruah, RS Das, BK Sarkar, Overall performance analysis and GRA optimization of solar air heater with truncated half conical vortex generators, Solar Energy 196, 637-652
2. 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.
3. P. Venkaiah, Bikash K. Sarkar, Hydraulically actuated horizontal axis wind turbine pitch control by model free adaptive controller, Renewable Energy
4. PJ Bezbaruah, RS Das, BK Sarkar, Thermal and Fluid Flow Analysis of Miller Teeth Shaped Ribbed Solar Air Heater-A CFD Approach, NISCAIR-CSIR, India
5. A Rout, D Bbvl, BB Biswal, GB Mahanta, A fuzzy-regression-PSO based hybrid method for selecting welding conditions in robotic gas metal arc welding, Assembly Automation
6. A Das, SR Das, SK Patel, BB Biswal, Effect of MQL and nanofluid on the machinability aspects of hardened alloy steel, Machining Science and Technology 24 (2), 291-320
7. GB Mahanta, A Rout, DBB V. L, BB Biswal, An improved multi-objective antlion optimization algorithm for the optimal design of the robotic gripper, Journal of Experimental & Theoretical Artificial Intelligence 32 (2), 309-338
8. BM Gunji, B Deepak, BB Biswal, Effect of Considering Secondary Parts as Primary Parts for Robotic Assembly Using Stability Graph, Arabian Journal for Science and Engineering 45 (2), 743-764
9. A Rout, GB Mahanta, D Bbvl, BB Biswal, Kinematic and Dynamic Optimal Trajectory Planning of Industrial Robot Using Improved Multi-objective Ant Lion Optimizer, Journal of The Institution of Engineers (India): Series C, 1-11
10. A Das, SR Das, SK Patel, BB Biswal, Experimental investigation of various machining attributes and cost estimation during machining of hardened AISI 4340 steel with untreated and cryo treated cermet inserts, Mechanics & Industry 21 (1), 110
11. OP Sahu, BB Biswal, Sensor Integrated Robotic Hand for Industrial Application, International Journal of Mechanical Engineering and Robotics Research 9 (1 ...



12. A Das, SK Patel, BB Biswal, N Sahoo, A Pradhan, Performance evaluation of various cutting fluids using MQL technique in hard turning of AISI 4340 alloy steel, *Measurement* 150, 107079
13. A Rout, B Deepak, BB Biswal, GB Mahanta, Optimal trajectory planning of industrial robot for improving positional accuracy, *Industrial Robot: the international journal of robotics research and application*
14. A Rout, D Bbvl, BB Biswal, Optimal trajectory generation of an industrial welding robot with kinematic and dynamic constraints, *Industrial Robot: the international journal of robotics research and application*
15. S Panda, D Mishra, BB Biswal, An approach for design optimization of 3R manipulator using Adaptive Cuckoo Search algorithm, *Mechanics Based Design of Structures and Machines*, 1-26
16. A Das, O Pradhan, SK Patel, SR Das, BB Biswal, Performance appraisal of various nanofluids during hard machining of AISI 4340 steel, *Journal of Manufacturing Processes* 46, 248-270
17. S Datta, BB Biswal, Experimental studies on electro-discharge machining of Inconel 825 super alloy using cryogenically treated tool/workpiece, *Measurement* 145, 611-630
18. GB Murali, B Deepak, MVA Raju, BB Biswal, Optimal robotic assembly sequence planning using stability graph through stable assembly subset identification, *Proceedings of the Institution of Mechanical Engineers, Part C: Journal of ...*
19. A Das, SK Patel, BB Biswal, SR Das, Performance evaluation of aluminium oxide nano particles in cutting fluid with MQL technique in turning of hardened AISI 4340 alloy steel, *Scientia Iranica*
20. A Das, SK Patel, BB Biswal, SR Das, Machinability investigation and cost estimation during finish dry hard turning of AISI 4340 steel with untreated and cryo treated cermet inserts, *Journal of Superhard Materials* 41 (4), 247-264
21. GB Mahanta, A Rout, B Deepak, BB Biswal, Application of Meta-Heuristic Optimization Techniques for Design Optimization of a Robotic Gripper, *International Journal of Applied Metaheuristic Computing (IJAMC)* 10 (3), 107-133
22. BK Khamari, SS Dash, SK Karak, BB Biswal, Effect of welding parameters on mechanical and microstructural properties of GMAW and SMAW mild steel joints, *Ironmaking & Steelmaking*, 1-8
23. B Deepak, G Bala Murali, MVAR Bahubalendruni, BB Biswal, Assembly sequence planning using soft computing methods: a review, *Proceedings of the Institution of Mechanical Engineers, Part E: Journal of ...*
24. S Mohapatra, AK Behera, R Mahapatra, H Das, A deterministic inventory model in reverse supply chain, *Journal of Modelling in Management*
25. N Kumar, A Singh, K Debnath, Influence of Surface Modification on the Performance of Borassus Fruit Fiber Composites, *Emerging Materials Research*, 1-9
26. MR Choudhury, K Debnath, Experimental analysis of tensile and compressive failure load in single-lap adhesive joint of green composites, *International Journal of Adhesion and Adhesives* 99, 102557
27. D Prakash, M Tariq, R Davis, A Singh, K Debnath, Influence of cryogenic treatment on the performance of micro-EDM tool electrode in machining of magnesium alloy AZ31B
28. AKR Sharma, MR Choudhury, K Debnath, Experimental investigation of friction stir welding of PLA, *Welding in the World*, 1-11
29. RM Mazarbhuiya, H Dutta, K Debnath, M Rahang, Surface modification of CFRP composite using reverse-EDM method, *Surfaces and Interfaces* 18, 10045
30. H Dutta, K Debnath, DK Sarma, Improving the performance of μ ED-milling using assisting electrode for fabricating micro-channels in CFRP composites, *Materials Today: Proceedings*
31. MR Choudhury, K Debnath, Analysis of tensile failure load of single-lap green composite specimen welded by high-frequency ultrasonic vibration, *Materials Today: Proceedings*
32. MR Choudhury, K Debnath, A Study of Drilling Behavior of Unidirectional Bamboo Fiber-Reinforced Green Composites, *Journal of The Institution of Engineers (India): Series C*, 1-9
33. N Kumar, A Singh, K Debnath, N Kumar, Water absorption and mechanical behaviour of *Borassus* fruit fibre-reinforced composites, *Emerging Materials Research* 9 (1), 10-17



34. MR Choudhury, K Debnath, On the analysis of compressive failure load of single-lap bolted joint of green composites, IOP Conference Series: Materials Science and Engineering 635 (1), 012028
35. MR Choudhury, K Debnath, A review of the research and advances in electromagnetic joining of fiber-reinforced thermoplastic composites, Polymer Engineering & Science 59 (10), 1965-1985
36. MR Choudhury, K Debnath, Experimental analysis of tensile and compressive failure load in single-lap bolted joint of green composites, Composite Structures 225, 111180
37. H Dutta, K Debnath, DK Sarma, A study of material removal and surface characteristics in micro-electrical discharge machining of carbon fiber-reinforced plastics, Polymer Composites 40 (10), 4033-4041
38. T Bose, S Roy, K Debnath, Detection of Delamination in Fiber Metal Laminates Based on Local Defect Resonance, Reinforced Polymer Composites: Processing, Characterization and Post Life ...
39. PK Gupta, K Debnath, Electrochemical discharge machining of glass fiber-reinforced epoxy composites: a challenging approach, Journal of Physics: Conference Series 1240 (1), 012044
40. N Babu, JM Guerrero, P Siano, R Peesapati, G Panda, An Improved Adaptive Contategy in Grid-Tied PV System With Active Power Filter for Power Quality Enhancement, IEEE Systems Journal
41. V Aarthi, VRS Dhulipala, P Rangababu, Attenuation Factor approach to minimize the correlation effect in Soft Output Viterbi Algorithm, Physical Communication 39, 101021
42. NP Babu, CB Babu, RB Peesapati, G Panda, An optimal current control scheme in grid-tied hybrid energy system with active power filter for harmonic mitigation, INTERNATIONAL TRANSACTIONS ON ELECTRICAL ENERGY SYSTEMS 30 (3)
43. S Baldev, KK Anumandla, R Peesapati, Scalable Wavefront Parallel Streaming Deblocking Filter Hardware for HEVC Decoder, IEEE Transactions on Consumer Electronics 66 (1), 41-50
44. R Peesapati, SL Sabat, Programmable Auxiliary Co-Processing Unit for H.264 Decoder, 2019 IEEE International Symposium on Smart Electronic Systems (iSES ...
45. G Panda, RB Peesapati, A Pre-filtering based Current Control Strategy in Grid-tied Photovoltaic Systems with Active Power Filter for Harmonic Mitigation, IEEE
46. S Kumar, GD Ropmay, PK Rathore, P Rangababu, J Akhtar, Fabrication and testing of PMOS current mirror-integrated MEMS pressure transducer, Sensor Review
47. N Babu, R Peesapati, G Panda, An adaptive differentiation frequency based advanced reference current generator in grid-tied pv applications, IEEE Journal of Emerging and Selected Topics in Power Electronics
48. S Kumar, GD Ropmay, PK Rathore, P Rangababu, J Akhtar, Fabrication and testing of PMOS current mirror-integrated MEMS pressure transducer, Sensor Review
49. PAC Lopes, SS Yadav, A Ilic, SK Patra, Fast block distributed CUDA implementation of the Hungarian algorithm, Journal of Parallel and Distributed Computing 130, 50-62
50. S.Das, S. Dutta, C. Putcha, S. Majumdar, D. Adak, "A data-driven physics informed method for prognosis of infrastructure systems : Theory and application to crack prediction," ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems, Part A : Civil Engineering (American Society of Civil Engineers (ASCE)) , vol 6, no 2, pp 04020013.
51. DS Saini, A Ghosh, S Tripathy, A Kumar, SK Sharma, N Kumar, A Promising Proton Conducting Electrolyte BaZr 1-x Ho x O 3-δ (0.05 ≤ x ≤ 0.20) Ceramics for Intermediate Temperature Solid Oxide Fuel Cells, Scientific Reports 10 (1), 1-12
52. R. Nayak, D. Patra, D. and B. K. Balabantaray, B., 2020. Super-Resolution Image Reconstruction Using Molecular Docking. IET Image Processing (<https://doi.org/10.1049/iet-ipr.2019.0491>). (SCI and Impact Factor 2.004).
53. R. Nayak, B. K. Balabantaray, and D. Patra, D., 2020. A new single image super-resolution using efficient feature fusion and patch similarity in Non-Euclidean space, Arabian Journal for Science and Engineering (4662), (DOI: 10.1007/s13369-020-04662-9), (SCI and Impact Factor 1.518) DOI: <https://doi.org/10.1007/s13369-020-04662-9>
54. KHK Reddy, RK Behera, A Chakrabarty, DS Roy, A Service Delay Minimization Scheme for QoS Constrained, Context Aware Unified IoT Applications, IEEE Internet of Things Journal



55. PP Singh, BK Roy, A novel chaotic system without equilibria, with parachute and thumb shapes of Poincare map and its projective synchronisation, *The European Physical Journal Special Topics* 229, 1265-1278
56. PP Singh, BK Roy, Inter network synchronisation of complex dynamical networks by using smooth proportional integral SMC technique, *The European Physical Journal Special Topics* 229 (5), 861-876
57. PP Singh, BK Roy, Memristor-based novel complex-valued chaotic system and its projective synchronisation using nonlinear active control technique, *The European Physical Journal Special Topics* 228 (10), 2197-2214
58. M. Kumar and P. P. Singh, Chaos control of a four-dimensional fundamental power system using pole placement based proportional integral sliding mode control, *Int. J. of Automation and Control*, vol. 13, no. 6, pp. 679-697, June 2019.
59. SD Roy, S Debbarma, Detection and Mitigation of Cyber-Attacks on AGC Systems of Low Inertia Power Grid, *IEEE Systems Journal* 14 (2), 2023-2031
60. S Debbarma, R Shrivastwa, Grid Frequency Support From V2G Aggregators and HVdc Links in Presence of Nonsynchronous Units, *IEEE Systems Journal* 13 (2), 1757 - 1766
61. Mondeep Mazumder, Sanjoy Debbarma, EV Charging Stations with a Provision of V2G and Voltage Support in a Distribution Network, *IEEE Systems Journal*, 2020.
62. D. S. Saini, A. Ghosh, S. Tripathy, A. Kumar, S. K. Sharma, N. Kumar, S. Majumdar, D. Bhattacharya, "A Promising Proton Conducting Electrolyte BaZr_{1-x}Ho_xO_{3-δ} (0.05 ≤ x ≤ 0.20) Ceramics for Intermediate Temperature Solid Oxide Fuel Cells" *Scientific Reports* (Nature Publishing Group), vol. 10, no. 1, pp 1-12. (Impact Factor: 4.525)
63. S. Moulik, S. Majumdar, "FallSense: An automatic fall detection and alarm generation system in IoT-enabled environment," *IEEE Sensor Journal*, vol. 19, no. 19, pp. 8452-8459, October 2019
64. C. Lalengmawia and A. Chakrabarty, "A New Technique for 2D Nearest Neighbour Realization of Quantum Circuits using Weighted Look-ahead," *IET Computers & Digital Techniques*, Jun 2020. (Accepted)
65. P. P. Singh and B. K. Roy, Inter network synchronisation of complex dynamical networks by using smooth proportional integral SMC technique, *Eur. Phys. J. Special Topics*, vol. 229, pp. 861-876, January 2020.
66. P. P. Singh and B. K. Roy, A novel chaotic system without equilibria, with parachute and thumb shapes of Poincare map and its projective synchronisation, *Eur. Phys. J. Special Topics*, vol. 229, pp. 1265-1278, March 2020.

Sl. No.	Name	Number of Journals (From June 2019 to July 2020)
1	Prof. Bibhuti Bhusan Biswal	19
2	Dr. Rabindra Narayan Mahapatra	01
3	Dr. Bikash Kumar Sarkar	04
4	Dr. Kishore Debnath	15
5	Dr. P. Rangababu	08
6	Dr. Pradeep Kumar Rathore	01
7	Dr. Satyendra Singh Yadav	01
8	Dr. Shubhankar Majumdar	03
9	Dr. Prabir Saha	Nil
10	Dr. Ch.V. Rama Rao	Nil
11	Dr. Bunil Kumar Balabantaray	04
12	Dr. Alok Chakrabarty	02
13	Dr. Piyush Pratap Singh	06
14	Dr. Sanjoy Debbarma	03
15	Mr. Avilash Sahoo	01



B. CONFERENCES:

1. 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), Glasgow, Scotland, 9-14 June, 2019.
2. N Kumar, BK Sarkar, S Maity, Leakage Based Condition Monitoring and Pressure Control of the Swashplate Axial Piston Pump, Gas Turbine India Conference 83532,V002T09A005
3. P Venkaiah, BK Sarkar, Modelling and Control of the Hydraulically Actuated Horizontal Axis Wind Turbine Pitch System, Gas Turbine India Conference 83532,V002T06A005
4. AP Chakraverty, S Beura, UK Mohanty, SC Mishra, BB Biswal, Gamma-Irradiation of E-Glass/Epoxy Composite: A Study of its Mechanical and Thermal Sustainability, Materials Science Forum 978, 296-303
5. A Das, SK Patel, BB Biswal, A Santoshwar Comparative Study of some Machining Characteristics during Hard Turning of Alloy Steel with Untreated and Cryotreated Cermet Inserts, Materials Science Forum 978, 64-76
6. A Das, SK Patel, BB Biswal, A Santoshwar, , Comparative Study of some Machining Characteristics during Hard Turning of Alloy Steel with Untreated and Cryotreated Cermet Inserts, Materials Science Forum 978, 64-76
7. 2nd International Conference on Recent Advances in Materials & Manufacturing Technologies (IMMT - 2019), BITS Pilani, Dubai Campus, Dubai, **UAE**, November 20-22, 2019.
8. International Symposium on Sustainable Polymers (ISSP - 2019), Indian Institute of Technology Guwahati, Assam, **India**, August 23-25, 2019
9. S Gogoi, R Peesapati, A Hybrid Motion Estimation Search Algorithm for HEVC/H.265, 2019 IEEE International Symposium on Smart Electronic Systems (iSES ...
10. R Peesapati, SL Sabat, Programmable Auxiliary Co-Processing Unit for H.264 Decoder, 2019 IEEE International Symposium on Smart Electronic Systems (iSES ...
11. S Gogoi, R Peesapati, Design and Implementation of low power $4 \times 4/8 \times 8$ 2D-DTT architecture for image and video compression, 2019 Women Institute of Technology Conference on Electrical and Computer ...
12. PN Babu, RB Peesapati, G Panda, A Pre-filtering based Current Control Strategy in Grid-tied Photovoltaic Systems with Active Power Filter for Harmonic Mitigation, TENCON 2019-2019 IEEE Region 10 Conference (TENCON), 1003-1008
13. BP Narendra, RB Peesapati, G Panda, An Adaptive Current Control Technique in Grid-tied PV System with Active Power Filter for Power Quality Improvement, TENCON 2019-2019 IEEE Region 10 Conference (TENCON), 187-191
14. S Kumar, GD Ropmay, P Rangababu, PK Rathore, A Stress Sensitive CMOS Operational Amplifier Based Pressure Sensor with Varying Input and Gain, 2019 IEEE 9th International Conference on System Engineering and Technology
15. PN Babu, PR Bana, RB Peesapati, G Panda, An Interleaved Buck Converter Based Active Power Filter for Photovoltaic Energy Application, 2019 International Conference on Power Electronics Applications
16. NI Chervyakov, PA Lyakhov, AS Ionisyan, MV Valueva, Hardware Implementation of Video Processing Device using Residue Number System DI Kaplunf, 2019 42nd International Conference on Telecommunications and Signal
17. SJ Pinto, N Babu, RB Peesapati, G Panda, Monitoring and control of multibus microgrid system using FPGA platform, 2019 IEEE Region 10 Symposium (TENSYP), 260-265
18. S Kumar, GD Ropmay, P Rangababu, PK Rathore, A Stress Sensitive CMOS Operational Amplifier Based Pressure Sensor with Varying Input and Gain, 2019 IEEE 9th International Conference on System Engineering and Technology
19. Gaddiella Diengdoh Ropmay, Shashi Kumar, Peesapati Rangababu, Pradeep Kumar Rathore and Jamil Akhtar , “ A Comparative Study on Sensitivity Enhancement of p-and n-channel MOSFET based Current Mirror Integrated Pressure Sensor Using Differential Amplifier ”, 2019 IEEE International Conference on Engineering, Technology and Education (2019 IEEE TALE), Yogyakarta, Indonesia, 29th October 2019 (Accepted).
20. Shashi Kumar, Deepak Kumar, Gaddiella Diengdoh Ropmay, Peesapati Rangababu, Pradeep Kumar Rathore and Jamil Akhtar , “ A novel MEMS-based Blood Glucose Measurement Sensor using Twin-Cantilever Structure ”, 2019 IEEE



International Conference on Engineering, Technology and Education (2019 IEEE TALE), Yogyakarta, Indonesia, 26th September 2019 (Accepted).

21. N Shafi, JS Parmar, A Porwal, AM Bhat, C Sahu, C Periasamy, Back Gate Tunable Thin Film – Si Nanowire BioFET for pH Detection By Compatible CMOS Fabrication Process 2020 4th IEEE Electron Devices Technology & Manufacturing Conference (EDTM), 1-4
22. JA Arjun, S Majumdar, Development of Approximate Compressor Based Hybrid Dadda Multiplier for Image De-noising Applications, 2019 IEEE 16th India Council International Conference (INDICON), 1-4
23. DACVRR G.Ashishkumar, Estimation of Fundamental Frequency of Noisy Speech Signals using Correlogram based on Subband Filtering, IEEE 6th International Conference on Engineering Technologies and Applied ...
24. AGCVRR Dutta A., Auditory Inspired Acoustic Model for Hybrid ASR System Using Gammatone Based Gabor Filters, 19th IEEE International Symposium on Signal Processing and Information (ISSPIT)
25. C Lalengmawia, A Chakrabarty, Optimization of Local Ordering Technique for Nearest Neighbour Circuits, Machine Learning, Image Processing, Network Security and Data Sciences (MIND 2020)
26. C Lalengmawia, A Chakrabarty, Compiling NCV Quantum Circuits for Nearest Neighbour Realization, 2020 International Conference on Emerging Trends in Information Technology and Engineering (ic-ETITE 2020), Vellore, India, IEEE publications, 2020, pp. 1-5.
27. Piyush Pratap Singh and Binoy Krishna Roy, A novel chaotic system with parachute and thumb shapes of Poincare map, 12th Conference on Nonlinear Systems and Dynamics, IIT Kanpur, 12-15 December, 2019.
28. Sugandha and Piyush Pratap Singh, A complex state variable based novel hyperchaotic system with nine equilibria, 12th Conference on Nonlinear Systems and Dynamics, IIT Kanpur, 12-15 December, 2019
29. SD Roy, S Debbarma, Mitigation of Intrusions to ACE Signals in Power System Networks, 2020 IEEE International Conference on Power Electronics, Smart Grid
30. S Debbarma, C Hazarika, SD Roy, SPC based approach for Frequency Control of Power Systems Penetrated with Fast Acting Reserve, 2019 8th IEEE International Conference on Power Systems (ICPS), 1-6
31. N. Shafi, J.S. Parmar, A. Porwal, A.M. Bhat, C. Sahu, C. Periasamy, S. Majumdar “Back Gate Tunable Thin Film α -Si Nanowire BioFET for pH Detection By Compatible CMOS Fabrication Process.” In 2020 4th IEEE Electron Devices Technology & Manufacturing Conference (EDTM) 2020 Apr 6 (pp. 1-4). IEEE.
32. A. Bhattacharya, S. Majumdar, “Design of a 22 W (0.7 A) Current Controlled DC-DC Flyback Converter Operating in DCM Mode,” In Emerging Trends in Electrical, Communications, and Information Technologies 2020 (pp. 247-258). Springer, Singapore.
33. Anil Ku. Swain, Bunil Kumar Balabantaray, Jitendra Kumar Rout and S. Satpathy, “An Optimal Deep learning approach for Classification of Age Groups in Social Network”, 11th International Multi-Conference on Complexity, Informatics and Cybernetics (IMCIC 2020), Orlando, USA, on 10th -13th March, 2020.
34. S. C. Barik, S Mohapatra, B. Das, M. Acharya, B K Balabantaray, “Advanced Colored Image Encryption Method using Evolution Function”, in International Conference on Machine Learning and Computational Intelligence (2019-ICMLCI), 14th -15th December, 2019.
35. B. K. Balabantaray, R. Chakravarty, A. K. Panda and R. Nayak, Melanoma Classification Through Transfer Learning by the Analysis of Skin Lesion Images, 3rd International Conference On Computing and Communication Systems (I3CS 2020), NEHU Shillong (Accepted)
36. L. Sahkhar and B. K. Balabantaray, 2020, “Scheduling Cloudlets to improve Response Time using CloudSim Simulator”, 3rd International Conference On Computing and Communication Systems (I3CS 2020), NEHU Shillong (Accepted)
37. P. Sharma, K. Bora and B. K. Balabantaray, 2020 Identification of significant frames from colonoscopy video: an approach towards early detection of Colo-rectal cancer The International Conference on Computational Performance Evaluation (ComPE-2020), NEHU Shillong (Accepted)



Sl. No.	Name	Number of Conferences (From June 2019 to July 2020)
1	Prof. Bibhuti Bhusan Biswal	03
2	Dr. Rabindra Narayan Mahapatra	01
3	Dr. Bikash Kumar Sarkar	04
4	Dr. Kishore Debnath	02
5	Dr. P. Rangababu	09
6	Dr. Pradeep Kumar Rathore	03
7	Dr. Satyendra Singh Yadav	Nil
8	Dr. Shubhankar Majumdar	03
9	Dr. Prabir Saha	Nil
10	Dr. Ch V Rama Rao	02
11	Dr. Bunil Kumar Balabantaray	05
12	Dr. Alok Chakrabarty	02
13	Dr. Piyush Pratap Singh	02
14	Dr. Sanjoy Debbarma	02
15	Mr. Avilash Sahoo	01

5. PATENTS:

1. Sketch completion using machine learning, P Singh, V Kumar, S Gupta, N Jha, N Arya, R Gupta, US Patent 10,650,290
2. S. Majumdar, S. Akashe, A. Chaudhary, A. Verma, "Automatic refilling soil tensiometer and tip rinsing mechanism through fluid whirls," Indian Patent, Application No. 201931005912 (Filed).

6. WORKSHOP ORGANIZED:

1. Dr. B. K. Sarkar, Dr. R. N. Mahapatra, Capacity building on Artificial Intelligence and Robotics to Master Trainers, Association with: State Council of Science, Technology & Environment
2. Dr. B. K. Balabantaray, Dr. P. Rangababu, FDP on Advancements in signal processing and optimization techniques, NIT Meghalaya, Shillong, 3- 7 June 2019.
3. Dr. B. K. Balabantaray, Dr. A. P. Singh, FDP on Network Security, NIT Meghalaya, Shillong, 20- 24 May 2019.
4. Dr. B. K. Balabantaray, Dr. A. P. Singh, FDP on Deep Learning and Applications, NIT Meghalaya, Shillong, 27- 31 May 2019.
5. Dr. B. K. Balabantaray, Dr. A. P. Singh, Dr. Surmila Thokchom, Dr. R. N. Mahapatra and Dr. P. Rangababu, Machine Learning and Deep Learning Using Python, NIT Meghalaya, Shillong, 22- 26 July 2019. Funding agency: EICT Academy, IIT Guwahati and NIT Meghalaya.



Capacity building on Artificial Intelligence and Robotics to Master Trainer

7. CONFERENCES / WORKSHOPS / SEMINARS / TRAININGS ATTENDED BY FACULTY MEMBERS:

Sl. No.	Name of Faculty	Name of the program attended	Duration
1	Bunil Kumar Balabantaray	FDP on Advancements in signal processing and optimization techniques, NIT Meghalaya	3- 7 June 2019
2	Bunil Kumar Balabantaray	FDP on Network Security, NIT Meghalaya, Shillong,	20- 24 May 2019
3	Bunil Kumar Balabantaray	FDP on Deep Learning and Applications, NIT Meghalaya, Shillong,	27- 31 May 2019
4	Bunil Kumar Balabantaray	Session Rapporteur of the technical session (IT) cum session chair, AICTE Sponsored National Conference on Digital Business Transformation in India, Organized by Global Institute of Management, BBSR, Odisha	11th, January, 2020
5	Bunil Kumar Balabantaray	Session Chair, ICMLCI 2019 organized by Interscience Institute of Management, BBSR, Odisha	14-15 December 2019
6	Dr. Sanjoy Debbarma	Attended IEEE ICPS 2019, MNIT Jaipur, India,	20th - 22nd Dec 2019.

8. SPONSORED PROJECTS

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	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	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 Green Composites-based Products using Injection Moulding	Dr. K. Debnath	TEQIP-III	2,00,550/-	2 years	On-going
5	Development of Low-Cost Fully-Biodegradable Plastic-Bamboo Board for Structural Applications	Dr. K. Debnath	SCSTE	1,00,000/-	1 year	On-going
6	Standalone solar Tea/Coffee Maker Cum Multipurpose Water Heating System	Dr. K. Debnath	DIC-MHRD	8,57,200.00	2 year	On-going
7	A "Preprocessing of NQR Signal in Digital domain in FPGA	Dr. P. Rangababu PI	BRNS, BARC, DAE, GOI	20.1 Lakhs	2 Year	On-going
8	A "Real-Time Control and Energy Management for Seamless Operation of DC Microgrid in Grid-connected and Standalone Modes	Dr. P. Rangababu Co-PI	SERB, DST, GOI	44.56 Lakhs	3 Year	On-going
9	Development of High Sensitivity CMOS-MEMS Integrated Smart Pressure Sensor and System for Space Applications	Dr. P. Rangababu (co-PI)	ISRO, GOI	32,46,000/-	2 Year	On-going
10	Development of High Sensitivity CMOS-MEMS Integrated Smart Pressure Sensor and System for Space Applications	Dr. Pradeep Kumar Rathore (PI)	ISRO, GOI	32,46,000/-	2 Year	On-going
11	Prediction, Detection and monitoring System for Landslide in Hilly Region	Dr. Shubhankar Majumdar	Department of Science & Technology (International Bilateral Cooperation Division)	626000 +\$50000 (japanese side)	2 Year	On-going



Sl. No.	Title of the Project	Investigators (P.I. / Co-P.I.)	Funding Agency	Funding amount (INR)	Duration	Status
12	Tensiometer based automated IoT system for irrigation	Dr. Shubhankar Majumdar	DST-DDP	16,84,941.00	2 Year	On-going
13	Cloud-assisted Data Analytics based Real-Time Monitoring and Detection of Water Leakage in Transmission Pipelines using Wireless Sensor Network for Hilly Regions	Dr. Shubhankar Majumdar	MoEF&CC under (NMHS)	44,70,880	3 Year	On-going
14	Phonetic and Prosodic Analysis of Khasi Language	Dr. Ch.V. Rama Rao	DST-SERB	16,13,280.00		On-going
15	Post-Processing of NQR Signals in Digital Domain in FPGA	Dr. Ch.V. Rama Rao	BRNS, DAE, GoI	20,03,000.00		On-going
16	Masking of interfering sounds in a crowded environment for hearing aid applications	Dr. Ch.V. Rama Rao	DST-SERB-	23,46,447.00		On-going
17	Cloud-Assisted Hybrid Renewable Energy Sources for Electricity and Water Supply in Rural Area. Smart Agro Modular System. Smart Blind Stick. A Self Sustained Multiple Sensor IoT Based Landslide Detector Early Warning System. A portable Wind-Hydro Hybrid Electronic Charger Targeted for Outdoor Activities and Military Applications.	Dr. Shubhankar Majumdar	State Council of Science, Technology & Environment	99,960 INR 46,465 INR 19,950 INR 49,335 INR 49,742 INR	1 year	On-going
18	Design of and Development of Intelligent Algorithms for Analysis and Detection of Obscene Content and Forgery in the Images Available in Social Media Platform	PI: B K Balabantaray, Co-PI: Diptendu S Roy and A P Singh	Cyber Crime Prevention against Women & Children (CCPWC), BPR&D, scheme of Ministry of Home affairs, Govt. of India.	21.888 Lakhs	1 Year	On-going

9. AWARDS WON/ RECOGNITION RECEIVED AT THE NATIONAL AND INTERNATIONAL LEVEL:

Sl. No.	Name of Faculty	National and International Awards	Awarding Agency	Year
1.	Mr.Avilash Sahoo	NRDC National Budding Innovators Award of the Year 2019	NRDC	2019

10. LABORATORIES SETUP:

Sl. No.	Laboratory	Major Equipment & Software	Location	Cost (Rupees in lakhs)
1	Centre for Robotics & Mechatronics	ANSYS ADDITIVE SUITE	Centre for Robotics & Mechatronics	39,83,700.00
2	Centre for Robotics & Mechatronics	INDUSTRIAL INTERNET OF THINGS	Centre for Robotics & Mechatronics	27,87,750.00
3	Centre for Robotics & Mechatronics	INDUSTRIAL INTERNET OF THINGS	Centre for Robotics & Mechatronics	22,93,918.20
4	Centre for Robotics & Mechatronics	2 Jaw Servo Gripper	Centre for Robotics & Mechatronics	5,26,575.00
5	Centre for Robotics & Mechatronics	2 Jaw Servo Gripper	Centre for Robotics & Mechatronics	5,09,775.00
6	Centre for Robotics & Mechatronics	Robotic Gripper	Centre for Robotics & Mechatronics	5,08,725.00



11. 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	
4	Dr. K. Debnath	Faculty-In-Charge, Mechanical Workshop	July 2015 - till date
5	Dr. P. Rangababu	Microprocessors Microcontrollers Lab HOD, EC PIC (PG&PhD -AA) TEQIP-III nodal officer (Academic)	2016-till date July 2019-till date Sep 2018-till date May 2019-till date
6	Dr. Shubhankar Majumdar	NBA Departmental Committee. Warden of Lapalang Boy's Hostel-I. Faculty Advisor of B.Tech. EC-2018 batch	On-going
7	Dr. Ch.V. Rama Rao	Taking care of administrative issues in the Library, Library Chairman. Preparing and monitoring of class routine for ECE Department. Member in Class Routine Committee.	2015 - till date 2015-2016
8	Dr. Piyush Pratap Singh	Institute Technical Committee CSAB Admission Committee Institute Cultural Committee TEQIP Start-Up Committee UG-Programme Evaluation Committee Security Committee	2017 2018 2018 2018 2019 2019
9	Dr. Sanjoy Debbarma	Associate Warden, Associate Warden, Boys Hostel, Bamboo Hut, NIT Meghalaya Warden, Lapalang V Boys Hostel, NIT Meghalaya Member, Construction & Development of NIT Meghalaya Permanent Campus, Sohra Member, Center of Innovation Incubation & Entrepreneurship, NIT Meghalaya Member, Institute Library Committee, NIT Meghalaya	July 2014 to July 2015 July 2018 to Till date Feb 2020 - Till date 1st July 2019 - Till date July 2019 - Till date
10	Dr. Alok Chakrabarty	Member, Library committee Member, PG-Programme Evaluation Committee Faculty Advisor of B.Tech. CS-2018 batch	July 2019 - till date
11	Dr. Bunil Kumar Balabantaray	Institute Internship Warden, KT Hostel Convener, Volunteer Sub-Committee, Convocation 2019 Member, Technical Committee, SAC Convener, NBA Preparation Committee Member, CCMT-2019 and CCMT-2020 Member, Outcome Based Education, Steering Committee Member, Institute Start-up Committee under TEQIP-III	July 2018 to till continuing Dated: 06.08.2019 From 23.09.2019 till continuing From 23.01.2018 to till continuing From April 2019 to till continuing From 04.12.2018 to till continuing From 08.09.2018 to till continuing From 08.09.2018 to till continuing



12. MEMBERSHIP OF PROFESSIONAL BODIES:

Sl. No.	Name of Faculty	Member of
1	Dr. Bikash Kumar Sarkar	ASME Member 100784361, 2016 IEEE, IEEE Control Systems Society Member 92662020, 2016 NSFMFP Life Member, LM631 ISHMT Life Member, 1064
2	Mr. Avilash Sahoo	ASME Member 102607760, 2019 IEEE Member 94145936, 2020
3	Dr. R. N. Mahapatra	ISTE, Life member ACSIT, Member
4	Dr. P. Rangababu	IEEE, Member IETE, Fellow IEI, Member
5	Dr. Shubhankar Majumdar	Institute of Electrical and Electronics Engineers (IEEE) - 927753442. Electrochemical Society (ECS) - 406059 Union Radio-Scientifique Internationale (URSI) - M1838573204 International Association of Engineers (IAENG) - 208814 (Lifetime)
6	Dr. Piyush Pratap Singh	Institute of Electrical and Electronics Engineers (IEEE) Society-92736920-GSM IEEE Signal Processing Society-92736920-GSM IEEE Control System Society
7	Dr. Sanjoy Debbarma	Member, IEEE (USA), Member ID: 93151403 Member, Institute of Engineers (IE), India, Member ID: 159683-5
8	Dr. Alok Chakrabarty	Member, IEEE, Member No. 93522092 Member, ACM, Member No. 4491763 Member, Computer Society of India Member, Indowordnet research group
9	Dr. Bunil Kumar Balabantaray	ISTE (LM), Soft Computing Research Society, India., Associate Member (UACEE), Institute of Research Engineers and Doctors, (Membership No: AM10100057923)

13. ANY OTHER NOTABLE INFORMATION:

Dr. B. K. Sarkar delivered a Lecture 'How to prepare SAR for NBA accreditation' at NIT Arunachal Pradesh.

ANNUAL ACCOUNTS 2019-20



Shefali S. Andaleeb, IA & AS
Accountant General (Audit)



भारतीय लेखापरीक्षा तथा लेखा विभाग
मेघालय, शिल्लंग - 793001
INDIAN AUDIT & ACCOUNTS DEPARTMENT
Meghalaya, Shillong - 793001

No. AMG-I/NIT/11-5/2020-21/1236

Date: 04 March 2021

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 – 110 001.

Sub: Separate Audit Report on the accounts of the National Institute of Technology (NIT), Shillong for the year ended 31 March 2020.

Sir,

I am to forward herewith the Separate Audit Reports on the accounts of the National Institute of Technology (NIT), Meghalaya for the year 2019-20 and a set of audited Annual Accounts of NIT for the year 2019-20.

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 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 sent herewith may please be treated as confidential till it is placed before both Houses of Parliament.

Kindly acknowledge receipt.

Yours faithfully,

Encl: As stated above.

Sd/-

Accountant General (Audit)

Ph. No. : 0364-2224171 (O), 2223494 (Fax)

05 MAR 2021

Memo No. AMG-I/NIT/11-5/2020-21/1237

Date: 04 March 2021

Copy of the Separate Audit Report on the accounts of the **National Institute of Technology (NIT), Meghalaya** for the year **2019-20** forwarded to:

**The Director,
National Institute of Technology (NIT),
Bijini Complex, Laitumkhrah,
Shillong-793003.**

2. Necessary arrangement may please be made for preparation of a Hindi version of the Separate Audit Report and issue the same to the Government of India, Ministry of Human Resource Development with a 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.

 4/3/2021
**Deputy Accountant General
Audit Management Group-I**

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 2020

We have audited the attached Balance Sheet of the National Institute of Technology (NIT), Meghalaya as at 31 March 2020, 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

A1: Current Liabilities & Provisions (Schedule-3): ₹ 13969.94 lakh

The construction of boundary wall for the additional land (Plot No 258) of NIT, Meghalaya at Sohra (Group-II) is under progress. In the XVth Building and Works Committee (BWC) meeting it was found that till September 2019, the physical progress of the work was 60% (approx), against that the Contractor- M/s Victor Suja raised 1st RA bill (March 2019) amounting ₹ 65.79 lakh but the Institute could not make payment to the contractor due to paucity of fund during the year 2019-20 also. But no provision was made in the books of accounts during the year 2019-20 for the said work.

This has resulted in understatement of current liabilities and provisions as well as understatement of deficit by ₹ 65.79 lakh.

A2: Current Liabilities & Provisions- ₹ 13969.94 lakh

The construction of boundary wall for the additional land (Plot No 281) of NIT, Meghalaya at Sohra (Group-I) for a total value of work of ₹ 231.16 lakh was completed in December 2018 by Collinstar Sawkmie. Against the final bill raised by the contractor, an amount of ₹ 48.96 lakh was yet to be paid to the contractor till the end of the financial year 2019-20. Moreover, the Security Deposit @5% amounting ₹ 9.11 lakh was also not released by NIT, Shillong during the year 2019-20. However, no provision for the outstanding amount was made in the books of account for the year 2019-20.

This has resulted in understatement of current liabilities and provisions as well as understatement of deficit by ₹ 58.07¹ lakh.

A3: Current Liabilities and Provision (Schedule 3) - ₹ 139.70 crore
Intangible Assets (Schedule 4)- ₹1.14 crore

During the year 2019-20, software valuing ₹ 57.12² lakh was procured and installed for Mechanical Department but payment was made during 2020-21 but no provision was made for the amount payable in the books of account during the year 2019-20.

This has resulted in understatement of current liabilities and provisions as well as understatement of deficit by ₹57.12 lakh.

A4: Current Liabilities & Provisions (Schedule-3)
Current Liabilities: ₹134. 11 crore

The above includes liabilities to the tune of ₹8.74 crore which do not relate to the current financial year and have been carried forward since many years as detailed below:

¹ 48.96 lakh +9.11 lakh

²Transys v18-x+ MM Software+ Materialise software ₹(4.81+31.45+20.86)lakh

Sl. No.	Details of Current Liabilities	Relating to Year	Amount (₹)
1	Current Liabilities	2013-14	77,664
2	Current Liabilities	2014-15	1,97,374
3	Current Liabilities	2016-17	1,63,504
4	Current Liabilities	2018-19	7,09,27,261
5	Tuition Fees Refundable to SC/ST	2012-13	6,900
6	Sundry Receipts	2012-13	2,62,760
7	SVNIT Surat	2012-13	1,24,375
8	Suspense Account	2012-13	2,95,292
9	CSAB Administrative Charges	2012-13	99,142
10	B.Tech Remuneration	2012-13	42,000
11	NMEICT	2012-13	14,166
12	CCMT Adm Expenses	2012-13	4,212
13	NIT Mess Account	2012-13	11,38,500
14	Excess Fee Refundable	2012-13	7,80,625
15	External Transfer	2012-13	16,69,445
16	Hostel Mess Fees	2012-13	92,23,570
17	Book Purchase	2012-13	23,94,000
Total			8,74,20,790

As these liabilities have been carried forward since 2012-13, it should have been treated as long term liabilities. The Institute should initiate action to ascertain the actual position of the liabilities on case to case basis..

A5: Current Liabilities and Provisions
Receipts against Sponsored Projects [Schedule-3 (a)]

The above does not include interest to the tune of ₹17.89 lakh earned on Savings Bank Accounts of Sponsored Projects which are to be refunded resulting in understatement of Current Liabilities during 2019-20 as detailed below:

Project Accounts					
Sl. No.	Name of the Bank	Type of Account	Particulars	Account Number	Interest earned during 2019-20
1	UCO Bank	Savings	Project & Consultancy	23730110010280	1599236.00
2	UCO Bank	Savings	RECTCPL	23730110019580	143751.00
3	UCO Bank	Savings	PHD-Visvesvaraya	23730110015353	19379.00
4	UCO Bank	Savings	Sponsored Project-CE/02-Khwairakpam	23730110013106	212.00
5	UCO Bank	Savings	Sponsored Project/DeITY/ K.Datta	23730110016640	48.00
6	UCO Bank	Savings	Sponsored Project/COMP/ RAY	23730110016657	4394.00
7	UCO Bank	Savings	Sponsored Project/DST/Chem/Gitish	23730110015889	9455.00
8	UCO Bank	Savings	Sponsored Project/Chem/Indo-Korean	23730110015209	12414.00
Total					1788889.00

A6: Tangible Assets (Schedule-4) ₹19.41 crore

The construction of boundary wall for the additional land (Plot No 281) of NIT, Meghalaya at Sohra (Group-I) for a total value of work of ₹ 231.16 lakh was completed in December 2018 by Collinstar Sawkmie. But the value of work completed by the Contractor was yet to be transferred to Tangible Assets in the books of account either in 2018-19 or in 2019-20 also.

This has resulted in understatement of depreciation by ₹9.25 lakh³ with corresponding understatement of deficit by ₹9.25 lakh. Moreover, the tangible assets are understated by ₹221.91 lakh due to non-transfer of above completed assets under the head "Tangible Assets".

A7: Current Assets (Schedule-7)

Cash & Bank Balances

Bank Balances with Scheduled Banks (Current & Savings Accounts): ₹59.91 crore

Audit could not vouchsafe the closing balances with Scheduled Banks (Current & Savings Accounts) as on 31 March 2020 on account of non-reconciliation and absence of details in the Bank reconciliation statement.

A8: Current Assets (Schedule-7)

Cash in hand: ₹1.74 lakh

The above is understated by ₹0.83⁴ lakh as actual expenditure incurred by various Departments was ₹1.73 lakh (instead of ₹2.56 lakh as shown in the ledger) against the total imprest of ₹4.30 lakh leaving a cash balance (cash in hand) to the tune of ₹ 2.57 lakh. This has resulted in understatement of current assets by ₹0.83 lakh for the year 2019-20.

B: Income and Expenditure Account

B1: Grants and Subsidies (Schedule 10) - ₹37.10 crore

NIT, Shillong submitted (August 2020) duly authenticated provisional Utilization Certificates (UCs) against Grants received during the year 2019-20 to the Ministry of Education, New Delhi. The figure shown as Capital and Revenue Expenditure was different from the figure as depicted in the books of Accounts of the Institute. The difference in both the records is as tabulated below:

Amount in ₹

Object Head	Cap. Ex as per UC (1)	Rev. Exp as per UC (2)	Cap. Ex as per Accounts (3)	Rev. Exp as per Accounts (4)	Difference in Cap Ex (5=1-3)	Difference in Revenue Ex (6=2-4)	Grand Total (7=5+6)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
112-31		16,97,15,536	-				
112-35	2,65,51,129		-				
112-36		15,91,,55,774	-				
789-31		1,60,25,000	-				
789-35	NIL		-				
789-36		3,61,00,000	-				
796-31		55,33,000	-				
796-35	NIL		-				
796-36		1,85,00,000	-				
Total	2,65,51,129	405029310	2,29,52,731	37,10,50,030	35,98,398	3,39,79,280	3,75,77,678

³ (231.16x0.02)x2 years

⁴ ₹(2.57-1.74)lakh

This has resulted in understatement of Income by ₹3.40 crore as well as overstatement of unutilized Grants by ₹3.76 crore (Net adjusted figure). The capital expenditure is also understated by ₹0.36 crore with corresponding understatement of Corpus/Capital Fund to an equal extent.

B2: Interest Earned (Schedule-12)

On Savings Accounts with Scheduled Banks: ₹7.29 lakh

The above does not include interest to the tune of ₹9.93 lakh earned on Savings Bank Accounts resulting in overstatement of deficit with corresponding understatement of Capital/Corpus Fund during 2019-20 as detailed below:

Amount in ₹					
Sl. No.	Name of the Bank	Type of Account	Particulars	Account Number	Interest earned during 2019-20
NIT, Meghalaya Accounts					
1	Canara Bank	Savings	Institute Account	1184101015456	155854.00
2	ICICI Bank	Savings	Corpus Fund Account	747701000081	578936.00
3	ICICI Bank	Savings	Corpus Fund Account	332701000053	258577.00
Total					993367.00

B3: Repairs and Maintenance (Schedule-19)

Others-Repairs and Maintenance: ₹1.35 crore

The above includes items to the tune of ₹19.73 lakh which should have been capitalized and depreciation provided on them during the year 2019-20.

This has resulted in overstatement of deficit by ₹18.65 lakh (₹19,73,174 - ₹1,08,439) with corresponding understatement of fixed assets and Capital/Corpus Fund during 2019-20.

B4: Administrative and General Expenses (Schedule-17)

Others-Miscellaneous Expenses: ₹15.90 lakh

The above includes expenditure to the tune of ₹1.37 lakh incurred for purchase of equipments for up-gradation of wireless LAN at Samanjanai Polo Boys' Hostel, Shillong (due to shifting from Bamboo Hut Boys' Hostel, NEHU, Shillong) which should have been capitalized and depreciation @ 20 per cent to be provided on it during 2019-20 instead of charging the full amount as revenue expenditure as detailed below:

Sl. No.	Description of Goods	Quantity	Rate (₹)	Amount (₹)
1	Dlink Wireless PoE Outdoor Access Point	18	5127.12	92288
2	Dlink DES-1210-28P Network POE Switch	2	22457.63	44915
Total				1,37,203

This has resulted in overstatement of deficit by ₹ 1.10 lakh (₹1,37,203 - ₹27,441⁵) with corresponding understatement of fixed assets and Capital/Corpus Fund during 2019-20

C. Receipts and Payments Account

Nil

D. General

D1: Schedule 24: Notes on Accounts

During the year Scientific and laboratory equipment amounting ₹2.99 crore was procured by the Institute for sponsored projects funded by external agencies but no disclosure in this regard has been made by the Institute in the books of accounts. No details were made available to audit for assets procured for sponsored projects prior to 2019-20 and neither any Physical verification of Assets has been conducted for the assets procured through External Funding Agencies.

The Institute should disclose the Assets procured during 2019-20 as well as assets procured prior to 2019-20 in the form of a statement under Schedule 24- **Notes to Account**.

D2: General

Reference is invited to the approved Separate Audit Report (SAR) for the year 2018-19, wherein it was mentioned that '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.' But the same was not done in the year 2019-20 also.

Non execution of Actuarial valuation tantamounts to non-compliance of the comment approved in the previous SAR of the C&AG.

E: Grants-in-Aid:

The opening balance of Grants-in-Aid was ₹19.64 crore. During the year 2019-20, an amount of ₹130.56 crore was received. Out of available balance, an amount of ₹2.30 crore was utilised for Capital expenditure out of Internal Revenue Fund and ₹37.10 crore was utilised for Revenue expenditure, leaving an unspent balance of ₹110.80 crore as on 31 March 2020 as depicted in the books of account. The incorrect depiction in the books of account was commented vide Para B1.

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

⁵ Depreciation at the rate of 20 *per cent* per annum under Straight Line Method

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 2020; 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**



**(Shefali Srivastava Andaleeb
Accountant General (Audit))**

Place: Shillong

Date: 04 MAR 2021



Annexure I to Separate Audit Report
Adequacy of Internal Control Mechanism

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 Audit System: Internal control systems has deficient due to :

- The Institute has not developed any manual relating to Accounts and Audit.
- Non reconciliation of Bank accounts.

3. System of Physical Verification of Fixed Assets:

Though NIT, Meghalaya had conducted Physical Verification of its assets as on 31 March 2020, no disclosure was made by the Institute in the books of account regarding procurement of Scientific and laboratory equipment (sponsored projects funded by External agencies) to the tune of ₹ 2.99 crore during the year by the Institute. No details were made available to audit for assets procured for sponsored projects prior to 2019-20 neither any Physical verification of Assets was conducted for those assets procured through External Funding Agencies.

System of physical verification of Inventory:

NIT, Meghalaya had conducted Physical Verification of Inventory as on 31 March 2020. However, there was no proper bifurcation of items into capital and revenue/consumable in nature.

4. Regularity in payment of statutory dues:

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


Sr. Audit Officer/AMG-I

SEPARATE AUDIT REPORT

NATIONAL INSTITUTE OF TECHNOLOGY MEGHALAYA SHILLONG, MEGHALAYA BALANCE SHEET AS AT 31ST MARCH 2020

[Amount in ₹]

SOURCES OF FUNDS	Schedule	Current Year	Previous Year
CORPUS/CAPITAL FUND	1	2,15,52,09,032	2,20,56,16,346
DESIGNATED/ EARMARKED / ENDOWMENT FUNDS	2	10,10,86,038	7,61,40,691
CURRENT LIABILITIES & PROVISIONS	3	1,39,69,94,106	40,58,38,906
TOTAL		3,65,32,89,176	2,68,75,95,943

APPLICATION OF FUNDS	Schedule	Current Year	Previous Year
FIXED ASSETS	4		
Tangible Assets		19,41,27,390	23,54,89,050
Intangible Assets		1,13,76,857	90,96,933
Capital Works-In-Progress		2,00,44,34,163	2,00,14,34,163
INVESTMENTS FROM EARMARKED / ENDOWMENT FUNDS	5		
Long Term		-	-
Short Term		-	-
INVESTMENTS - OTHERS	6	-	-
CURRENT ASSETS	7	70,72,47,208	42,62,08,333
LOANS, ADVANCES & DEPOSITS	8	73,61,03,558	1,53,67,464
TOTAL		3,65,32,89,176	2,68,75,95,943

SIGNIFICANT ACCOUNTING POLICIES		23	
CONTINGENT LIABILITIES AND NOTES TO ACCOUNTS		24	

For NIT Meghalaya

Director

Registrar

NATIONAL INSTITUTE OF TECHNOLOGY MEGHALAYA
SHILLONG, MEGHALAYA
INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31ST
MARCH 2020

[Amount in ₹]

Particulars	Schedule	Current Year	Previous Year
INCOME			
Academic Receipts	9	1,13,54,473	88,69,850
Grants / Subsidies	10	37,10,50,030	31,53,34,446
Income from investments	11	1,17,58,869	36,93,524
Interest earned	12	7,29,333	7,50,376
Other Income	13	1,06,08,308	1,15,42,966
Prior Period Income	14	-	-25,36,650
TOTAL (A)		40,55,01,013	33,76,54,512
EXPENDITURE			
Staff Payments & Benefits (Establishment expenses)	15	22,94,33,196	16,43,23,751
Academic Expenses	16	5,66,55,758	4,44,30,368
Administrative and General Expenses	17	6,05,49,676	5,66,69,961
Transportation Expenses	18	93,98,134	1,23,13,619
Repairs & Maintenance	19	6,37,98,137	4,24,57,323
Finance costs	20	22,306	26,669
Depreciation	4	6,08,94,105	6,48,05,990
Other Expenses	21	-	-
Prior Period Expenses	22	19,27,943	3,27,97,392
TOTAL (B)		48,26,79,256	41,78,25,073
Balance being excess of Income over Expenditure (A-B)		(7,71,78,243)	(8,01,70,561)
Transfer to / from Designated Fund			
Building fund			
Others (specify)			
Balance Being Surplus / (Deficit) Carried to Capital Fund		(7,71,78,243)	(8,01,70,561)
Significant Accounting Policies	23		
Contingent Liabilities and Notes to Accounts	24		

For NIT Meghalaya

Director

Registrar

**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	2,20,56,16,346	2,20,40,66,932
Add:	Contributions towards Corpus/Capital Fund	-	-
Add:	Grants from UGC, Government of India and State Government to the extent utilized for capital expenditure	2,29,52,731	3,57,13,854
Add:	Assets Purchased out of IRG	38,18,198	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	2,23,23,87,275	2,28,57,86,907
(Deduct)	Deficit transferred from the Income & expenditure Account	7,71,78,243	8,01,70,561
	Balance at the year end	2,15,52,09,032	2,20,56,16,346



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	7,13,09,021	48,31,670	7,61,40,691	8,99,01,162
b) Additions during the year	3,35,45,029	30,03,427	3,65,48,456	3,21,80,449
c) Income from investments made of the funds	-	-	-	-
d) Accrued Interest on investments/Advances	-	-	-	-
e) Interest on Savings Bank a/c	-	-	-	65,201
f) Other additions (Specify nature)	-	-	-	-
Total (A)	10,48,54,050	78,35,097	11,26,89,147	12,21,46,812
B.				
Utilisation/Expenditure towards objectives of funds				
ii) Capital Expenditure	38,18,198	-	38,18,198	4,60,06,121
ii) Revenue Expenditure	70,18,090	7,66,821	77,84,911	-
Total (B)	1,08,36,288	7,66,821	1,16,03,109	4,60,06,121
Closing balance at the year end (A - B)	9,40,17,762	70,68,276	10,10,86,038	7,61,40,691

**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	3,07,861	1,78,626
2. Deposits from students	74,72,301	56,27,095
3. Sundry Creditors		
a) For Goods & Services	-	-
b) Others	-	-
4. Deposit-Others (including EMD, Security Deposit) (As per Annexure 'A')	1,22,04,096	1,26,41,458
5. Statutory Liabilities (GPF, TDS, WC TAX, CPF, GIS, NPS): (As per Annexure 'B')		
a) Overdue	-	-
b) Others	11,11,452	5,51,218
6. Other Current Liabilities		
a) Salaries	-	-
b) Receipts against sponsored projects	4,74,10,716	4,62,38,676
c) Receipts against sponsored fellowships & scholarships	26,32,430	29,36,474
d) Unutilised Grants	1,10,79,60,783	19,63,88,544
e) Grants in advance	-	-
f) Other funds	14,87,456	10,60,981
g) Other liabilities (As per Annexure 'C')	16,04,86,393	9,86,20,794
Total (A)	1,34,10,73,487	36,42,43,865
B. PROVISIONS		
1. For Taxation	-	-
2. Gratuity	2,15,68,204	1,54,20,662
3. Superannuation Pension	-	-
4. Accumulated Leave Encashment	3,43,52,415	2,61,74,379
5. Trade Warranties/Claims	-	-
6. Others - Provision for Expenses	-	-
Total (B)	5,59,20,619	4,15,95,041
Total (A+ B)	1,39,69,94,106	40,58,38,906



NATIONAL INSTITUTE OF TECHNOLOGY MEGHALAYA
SHILLONG, MEGHALAYA
SCHEDULE 3(a) - SPONSORED PROJECTS

[Amount in ₹]

SI No.	Name of Project	Opening Balance		Receipts / Recoveries during the year	Total	Expenditure during the year	Closing Balance	
		Credit	Debit				Credit	Debit
1	2	3	4	5	6	7	8	9
1	NIT R&D Account	3,59,43,619	-	3,21,95,615	6,81,39,234	2,87,16,533	3,94,22,701	-
2	Sponsored Project/NMHS-PMU/Vipin	18,81,302	-	-	18,81,302	17,67,749	1,13,553	-
3	Sponsored Project - CE/02	5,996	-	-	5,996	-	5,996	-
4	PHD-Visvesvaraya	7,39,416	-	25,31,100	32,70,516	19,15,460	13,55,056	-
5	Sponsored Project/Chem/Indo-Korean	4,22,188	-	-	4,22,188	4,22,188	-	-
6	Sponsored Project/Chem/Paresh	73,333	-	2,688	76,021	43,491	32,530	-
7	Sponsored Project/COMP/RAY	4,22,269	-	27,478	4,49,747	4,49,747	-	-
8	Sponsored Project/DelTY/K. Datta	1,498	-	-	1,498	-	1,498	-
9	Sponsored Project/DST/Chem/Gitish	3,84,536	-	4,991	3,89,527	3,89,527	-	-
10	Sponsored Project SDMA/Marthong	(205)	-	205	-	-	-	-
11	Sponsored Project/SMDP/Dandapat	19,02,916	-	18,74,864	37,77,780	2,74,570	35,03,210	-
12	RECPTL	44,61,808	-	1,62,751	46,24,559	16,48,387	29,76,172	-
Total		4,62,38,676	-	3,67,99,692	8,30,38,368	3,56,27,652	4,74,10,716	-

NATIONAL INSTITUTE OF TECHNOLOGY MEGHALAYA
SHILLONG, MEGHALAYA
SCHEDULE 3(b) - SPONSORED FELLOWSHIPS AND SCHOLARSHIPS

[Amount in ₹]

SI 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	11,46,705	-	15,75,000	18,79,044	8,42,661	-
		-	-	-	-	-	-
	Total	29,36,474	-	15,75,000	18,79,044	26,32,430	-



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	19,63,88,544	5,96,36,843
	Add: Receipts during the year	1,30,55,75,000	48,78,00,000
	Total (a)	1,50,19,63,544	54,74,36,843
	Less: Refunds	-	-
	Less: Utilized for Revenue Expenditure	37,10,50,030	31,53,34,446
	Less: Utilized for Capital Expenditure	2,29,52,731	3,57,13,854
	Total (b)	39,40,02,761	35,10,48,300
	Unutilized carried forward (a-b)	1,10,79,60,783	19,63,88,544
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)	1,10,79,60,783	19,63,88,544



NATIONAL INSTITUTE OF TECHNOLOGY MEGHALAYA

SHILLONG, MEGHALAYA

SCHEDULE 4 FIXED ASSETS

[Amount in ₹]

S. No.	Assets Heads	Gross Block				Depreciation				Net Block	
		Opening Balance	Additions	Deductions	Closing Balance	"Opening Balance"	Depreciation for the Year	Deductions/Adjustment	Closing Balance	31.03.2020	31.03.2019
1	Land	20,00,000	-	-	20,00,000	-	-	-	-	20,00,000	20,00,000
2	Site Development	-	-	-	-	-	-	-	-	-	-
3	Buildings	-	-	-	-	-	-	-	-	-	-
4	Roads & Bridges	-	-	-	-	-	-	-	-	-	-
5	Tubewells & Water Supply	4,46,375	-	-	4,46,375	35,710	8,928	-	44,638	4,01,737	4,10,665
6	Sewerage & Drainage	-	-	-	-	-	-	-	-	-	-
7	Electrical Installation and equipment	52,30,109	37,11,105	-	89,41,214	8,44,189	4,47,061	-	12,91,250	76,49,964	43,85,920
8	Plant & Machinery	-	-	-	-	-	-	-	-	-	-
9	Scientific & Laboratory Equipment	17,65,67,971	19,84,429	-	17,85,52,400	4,63,38,564	1,42,84,192	-	6,06,22,756	11,79,29,644	13,02,29,407
10	Office Equipment	5,81,50,705	-	-	5,81,50,705	2,57,04,454	43,61,303	-	3,00,65,757	2,80,84,948	3,24,46,251
11	Audio Visual Equipment	-	-	-	-	-	-	-	-	-	-
12	Computers & Peripherals	8,39,73,591	-	-	8,39,73,591	7,43,82,837	1,67,94,718	-	9,11,77,555	-72,03,964	95,90,754
13	Furniture, Fixtures & Fittings	6,47,87,472	44,880	-	6,48,32,352	2,44,95,670	48,62,426	-	2,93,58,096	3,54,74,256	4,02,91,802
14	Vehicles	32,43,960	-	-	32,43,960	14,36,202	3,24,396	-	17,60,598	14,83,362	18,07,758
15	Lib. Books & Scientific Journals	2,06,68,416	14,11,798	65,28,533	1,55,51,681	63,41,924	15,55,168	(6,52,853)	72,44,239	83,07,442	1,43,26,492
16	Small Value Assets	-	-	-	-	-	-	-	-	-	-
	Total (A)	41,50,68,599	71,52,212	65,28,533	41,56,92,278	17,95,79,550	4,26,38,192	(6,52,853)	22,15,64,889	19,41,27,390	23,54,89,050
17	Capital Work in Progress (B)	2,00,14,34,163	30,00,000	-	2,00,44,34,163	-	-	-	-	2,00,44,34,163	2,00,14,34,163
S. No.	Intangible Assets	Opening Balance	Additions	Deductions	Closing Balance	"Opening Balance"	Amortization for the Year	Deductions/Adjustments	Closing Balance	Balance as on 31.03.2020	Balance as on 31.03.2019
18	Computer Software	5,48,77,916	54,89,663	-	6,03,67,579	5,46,30,116	24,43,665	-	5,70,73,781	32,93,798	2,47,800
19	E-Journals	4,74,30,488	1,74,07,787	-	6,48,38,275	3,85,81,355	1,58,12,248	26,11,413.00	5,70,05,016	78,33,259	88,49,133
20	Patents	-	2,49,800	-	2,49,800	-	-	-	-	2,49,800	-
	Total (C)	10,23,08,404	2,31,47,250	-	12,54,55,654	9,32,11,471	1,82,55,913	26,11,413	11,40,78,797	1,13,76,857	90,96,933
	Grand Total (A+B+C)	2,51,88,11,167	3,32,99,462	65,28,533	2,54,55,82,096	27,27,91,021	6,08,94,105	19,58,560	33,56,43,686	2,20,99,38,410	2,24,60,20,146

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

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	-	-



NATIONAL INSTITUTE OF TECHNOLOGY MEGHALAYA
SHILLONG, MEGHALAYA
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	-	-



NATIONAL INSTITUTE OF TECHNOLOGY MEGHALAYA

SHILLONG, MEGHALAYA

SCHEDULE 7: CURRENT ASSETS

[Amount in ₹]

	Current Year	Previous Year
I. 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	39,79,91,659	9,62,45,639
In term deposit Accounts	10,80,01,726	8,59,00,061
In Savings Accounts	20,10,80,116	24,40,62,633
b) With non-Scheduled Banks:		
In term deposit Accounts	-	-
In Savings Accounts	-	-
c) Cash in hand:	1,73,706	-
4. Post Office- Savings Accounts	-	-
TOTAL	70,72,47,208	42,62,08,333

NATIONAL INSTITUTE OF TECHNOLOGY MEGHALAYA

SHILLONG, MEGHALAYA

SCHEDULE 8 - LOANS, ADVANCES & DEPOSITS

[Amount in ₹]

	Current Year	Previous Year
1. Advances to employees: (Non-interest bearing)		
a) Salary	-	3,050
b) Festival	-	-
c) Medical Advance	-	-
d) Other - PDA Advance	6,86,585	93,232
e) Other - LTC Advance	42,770	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	73,09,857	68,10,977
b) To Suppliers	-	-
c) Others - Travelling Advance	-	-
d) Others - Temporary Advance	23,81,468	17,61,742
e) Advance against Rent	28,20,978	28,20,978
f) Advance against Projects	-	-
4. Prepaid Expenses		
a) Insurance	-	-
b) Other expenses -Leased Line Charges	1,98,540	3,97,080
5. Deposits		
a) Telephone	-	-
b) Lease Rent	-	-
c) Electricity	-	-
d) AICTE, if applicable	-	-
f) Others	14,34,940	14,34,940
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)	22,90,887	13,28,660
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	71,65,00,000	-
d) Other receivables from UGC	-	-
8. Claims Receivable		
Sundry Receivables	24,37,533	5,85,323
TOTAL	73,61,03,558	1,53,67,464



NATIONAL INSTITUTE OF TECHNOLOGY MEGHALAYA

SHILLONG, MEGHALAYA

SCHEDULE 9 - ACADEMIC RECEIPTS

[Amount in ₹]

		Current Year	Previous Year
A. FEES FROM STUDENTS			
A. Academic			
1	Admission Fee	-	-
2	Enrollment and Registration Fee	10,34,011	9,97,800
3	Application Fee	13,21,050	-
4	Summer Term Course Fee	6,57,000	3,48,000
5	Laboratory and Internet Fee	35,77,000	33,16,000
6	Library Fee	5,36,400	4,96,500
7	Provisional Certificate Fee	31,100	32,100
8	Student Activity Fee	26,77,500	24,82,500
9	Book Purchase	-	-
10	Student Welfare Fund	-	-
Total (A)		98,34,061	76,72,900
B. Examinations			
1	Examination Fee and Grade Fee	11,27,050	9,97,800
Total (B)		11,27,050	9,97,800
C. Other Fees			
1	Identity Card Fee	46,650	48,150
2	Hostel Admission Fee	1,02,000	26,000
3	Fine	2,44,712	1,25,000
4	Transportation Fee	-	-
Total (C)		3,93,362	1,99,150
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)		1,13,54,473	88,69,850

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

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	19,63,88,544	-	-	19,63,88,544	-	19,63,88,544	5,96,36,843
Add: Receipts during the year	1,30,55,75,000	-	-	1,30,55,75,000	-	1,30,55,75,000	48,78,00,000
Total	1,50,19,63,544	-	-	1,50,19,63,544	-	1,50,19,63,544	54,74,36,843
Less: Refund to UGC Balance	-	-	-	-	-	-	-
Less: Utilised for Capital expenditure (A)	2,29,52,731	-	-	2,29,52,731	-	2,29,52,731	3,57,13,854
Balance	1,47,90,10,813	-	-	1,47,90,10,813	-	1,47,90,10,813	51,17,22,989
Less: Utilized for Revenue Expenditure (B)	37,10,50,030	-	-	37,10,50,030	-	37,10,50,030	31,53,34,446
Balance C/F (C)	1,10,79,60,783	-	-	1,10,79,60,783	-	1,10,79,60,783	19,63,88,544



NATIONAL INSTITUTE OF TECHNOLOGY MEGHALAYA
SHILLONG, MEGHALAYA
SCHEDULE 11- INCOME FROM INVESTMENTS

[Amount in ₹]

Particulars	Earmarked / Endowment Funds		Other Investments	
	Current Year	Previous Year	Current Year	Previous Year
I. Interest				
a. On Government Securities	-	-	-	-
b. Other Bonds/Debentures	-	-	-	-
2. Interest on Term Deposits	-	-	1,00,38,318	36,93,524
3. Income accrued but not due on Term Deposits/Interest bearing advances to employees	-	-	17,20,551	-
4. Interest on Savings Bank Accounts	-	-	-	-
5. Others (Specify)	-	-	-	-
Total	-	-	1,17,58,869	36,93,524
Transferred to Earmarked/Endowment Funds	-	-		
Balance	-	-		



**NATIONAL INSTITUTE OF TECHNOLOGY MEGHALAYA
SHILLONG, MEGHALAYA
SCHEDULE 12: INTEREST EARNED**

[Amount in ₹]

Particulars	Current Year	Previous Year
1. On Savings Accounts with scheduled banks	7,29,333	7,50,376
2. On Loans		
a. Employees/Staff	-	-
b. Others	-	-
3. On Debtors and Other Receivables	-	-
Total	7,29,333	7,50,376



NATIONAL INSTITUTE OF TECHNOLOGY MEGHALAYA

SHILLONG, MEGHALAYA

SCHEDULE 13- OTHER INCOME

[Amount in ₹]

	Current Year	Previous Year
A. Income from Land & Buildings		
1.Hostel Seat Rent	62,34,091	60,25,000
2.License fee	8,045	1,87,922
3.Hostel Electricity and Water Charges	18,18,000	18,07,500
4.Hostel Establishment Fee	25,42,500	24,63,000
5.Electricity charges recovered	-	-
6.Water charges recovered	-	-
7.House Rent - Staff	-	-
Total	1,06,02,636	1,04,83,422
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	-	-
Total	-	-
D. Others		
1. Income from consultancy	-	-
2. RTI fees	672	-
3. Income from Royalty	-	-
4. Sale of application form (recruitment)	-	9,51,900
5. Misc. receipts (Sale of tender form)	-	5,200
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	5,000	1,02,444
b) External Scholarship	-	-
c) Liquidated Damages	-	-
Total	5,672	10,59,544
Grand Total (A+B+C+D)	1,06,08,308	1,15,42,966

NATIONAL INSTITUTE OF TECHNOLOGY MEGHALAYA
SHILLONG, MEGHALAYA
SCHEDULE 14 - PRIOR PERIOD INCOME

[Amount in ₹]

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



**NATIONAL INSTITUTE OF TECHNOLOGY MEGHALAYA
SHILLONG, MEGHALAYA
SCHEDULE 15 — STAFF PAYMENTS & BENEFITS (ESTABLISHMENT
EXPENSES)**

[Amount in ₹]

	Current Year		Previous Year		Capital	Total
	Revenue	Capital	Total	Revenue		
a)Salaries and Wages	20,17,93,373	-	20,17,93,373	14,17,09,813	-	14,17,09,813
b)Allowances and Bonus	-	-	-	-	-	-
c)Contribution to Provident Fund	-	-	-	-	-	-
d)Contribution to Other Fund (specify)	-	-	-	-	-	-
e)Staff Welfare Expenses	-	-	-	-	-	-
f)Retirement and Terminal Benefits	1,84,41,049	-	1,84,41,049	1,11,70,249	-	1,11,70,249
g)LTC facility	16,52,888	-	16,52,888	13,23,484	-	13,23,484
h)Medical facility	-	-	-	-	-	-
i)Children Education Allowance	-	-	-	-	-	-
j)Honorarium	-	-	-	-	-	-
k) Gratuity	61,47,542	-	61,47,542	86,44,227	-	86,44,227
l) Others - Medical Expenses	13,98,344	-	13,98,344	14,75,978	-	14,75,978
TOTAL	22,94,33,196	-	22,94,33,196	16,43,23,751	-	16,43,23,751

NATIONAL INSTITUTE OF TECHNOLOGY MEGHALAYA
SHILLONG, MEGHALAYA
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	55,019	-	55,019	-	-	-
d) Payment to visiting faculty	46,500	-	46,500	2,05,500	-	2,05,500
e) Examination	-	-	-	-	-	-
f) Student Welfare expenses	-	-	-	-	-	-
g) Admission expenses	-	-	-	-	-	-
h) Convocation expenses	17,95,477	-	17,95,477	18,59,466	-	18,59,466
i) Publications	-	-	-	-	-	-
j) Stipend/means-cum-merit scholarship	4,39,53,100	-	4,39,53,100	3,03,10,041	-	3,03,10,041
k) Subscription Expenses	-	-	-	-	-	-
l) Others						
i) Recurring Contingency	40,01,451	-	40,01,451	52,61,897	-	52,61,897
ii) Students Activities	21,04,161	-	21,04,161	15,73,873	-	15,73,873
iii) Other Academic Activities	44,63,690	-	44,63,690	44,77,734	-	44,77,734
iv) Consumables	2,32,580	-	2,32,580	6,88,064	-	6,88,064
v) Startup Project	3,780	-	3,780	53,793	-	53,793
TOTAL	5,66,55,758	-	5,66,55,758	4,44,30,368	-	4,44,30,368



NATIONAL INSTITUTE OF TECHNOLOGY MEGHALAYA
SHILLONG, MEGHALAYA
SCHEDULE 17 - ADMINISTRATIVE AND GENERAL EXPENSES

[Amount in ₹]

	Current Year			Previous Year		
	Revenue	Capital	Total	Revenue	Capital	Total
A Infrastructure						
a)Electricity and power	54,30,349	-	54,30,349	48,12,222	-	48,12,222
b)Water charges	5,45,480	-	5,45,480	-	-	-
c)Insurance	-	-	-	-	-	-
d)Rent, Rates and Taxes (including property tax)	4,12,92,898	-	4,12,92,898	4,14,58,000	-	4,14,58,000
B Communication						
e)Postage and Telegram	-	-	-	-	-	-
f)Telephone, Fax and Internet Charges	12,90,652	-	12,90,652	10,10,806	-	10,10,806
C Others						
g)Printing and Stationery (consumption)	-	-	-	-	-	-
h)Travelling and Conveyance Expenses/TA/DA	10,56,149	-	10,56,149	14,65,986	-	14,65,986
i)Hospitality	-	-	-	-	-	-
j)Auditors Remuneration	3,00,000	-	3,00,000	2,01,550	-	2,01,550
k)Professional Charges	20,000	-	20,000	-	-	-
l) Advertisement and Publicity	-	-	-	-	-	-
m)Magazines & Journals	-	-	-	-	-	-
n)Others (as per details below)						
Contingencies	74,73,319	-	74,73,319	59,14,245	-	59,14,245
Recruitment Expenses	15,51,310	-	15,51,310	4,26,071	-	4,26,071
Miscellaneous Expenses	15,89,519	-	15,89,519	13,81,081	-	13,81,081
	-	-	-	-	-	-
TOTAL	6,05,49,676	-	6,05,49,676	5,66,69,961	-	5,66,69,961

**NATIONAL INSTITUTE OF TECHNOLOGY MEGHALAYA
SHILLONG, MEGHALAYA
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	1,47,353	-	1,47,353	1,36,195	-	1,36,195
	b) Repairs & maintenance	-	-	-	-	-	-
	c) Insurance expenses	-	-	-	-	-	-
2	Vehicles taken on rent/lease						
	a) Rent/lease expenses	92,50,781	-	92,50,781	1,21,77,424	-	1,21,77,424
3	Vehicle (Taxi) hiring expenses	-	-	-	-	-	-
	Total	93,98,134	-	93,98,134	1,23,13,619	-	1,23,13,619



NATIONAL INSTITUTE OF TECHNOLOGY MEGHALAYA
SHILLONG, MEGHALAYA
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	5,03,06,676	-	5,03,06,676	3,91,51,292	-	3,91,51,292
m)	Others - Repairs and Maintenance	1,34,91,461	-	1,34,91,461	33,06,031	-	33,06,031
Total		6,37,98,137	-	6,37,98,137	4,24,57,323	-	4,24,57,323

NATIONAL INSTITUTE OF TECHNOLOGY MEGHALAYA
SHILLONG, MEGHALAYA
SCHEDULE 20 — FINANCE COSTS

[Amount in ₹]

Particulars	Current Year			Previous Year		
	Revenue	Capital	Total	Revenue	Capital	Total
a) Bank charges	22,306	-	22,306	26,669	-	26,669
b) Others (specify)	-	-	-	-	-	-
Total	22,306	-	22,306	26,669	-	26,669

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	-	-	-	-	-	-



NATIONAL INSTITUTE OF TECHNOLOGY MEGHALAYA

SHILLONG, MEGHALAYA

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	(30,617)	-	(30,617)	(2,150)	-	-2,150
4	Transportation expenses	-	-	-	-	-	-
5	Repairs & Maintenance	-	-	-	3,71,80,725	-	3,71,80,725
6	Communication and Transport	-	-	-	-	-	-
6	Depreciation	19,58,560	-	19,58,560	1,35,125	-	1,35,125
	Total	19,27,943	-	19,27,943	3,27,97,392	-	3,27,97,392



**NATIONAL INSTITUTE OF TECHNOLOGY MEGHALAYA
SHILLONG, MEGHALAYA
ANNEXURE A : DETAILS OF EMD & SECURITY DEPOSIT AS ON 31-03-
2020**

S.No	Name of the Firm / Company	Amount
1	Earnest Money Deposit	55,96,790
2	Security Deposit - Contractors and Suppliers	66,07,306
Total		1,22,04,096

**NATIONAL INSTITUTE OF TECHNOLOGY MEGHALAYA
SHILLONG, MEGHALAYA
ANNEXURE B : DETAILS OF STATUTORY LIABILITIES AS ON 31-03-2020**

Sl.No.	Particulars	Amount
1	TDS - Contracts	23,789
2	VAT	27,967
3	TDS - Pay and Allowances	2,09,951
4	Professional Tax	5,87,850
5	Labour Cess	2,61,895
		11,11,452



NATIONAL INSTITUTE OF TECHNOLOGY MEGHALAYA
SHILLONG, MEGHALAYA
ANNEXURE C : DETAILS OF OTHER LIABILITIES AS ON 31-03-2020

Sl.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	3,30,947
6	CSAB Administrative Charges	4,65,642
7	B.Tech Remuneration	42,000
8	Other Current Liabilities	12,11,58,156
9	Returned Cheques	7,34,800
10	NMEICT	14,166
11	CCMT / CSAB Admission Expenses	14,212
12	Current Liabilities (Projects)	-
13	NIT Mess Account	11,38,500
14	Excess Fee Refundable	3,64,108
15	External Transfer	6,66,275
16	Hostel Mess Fees	3,01,78,813
17	Book Purchase	40,94,000
18	Student Educational Loan	78,000
		16,04,86,393



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

**ANNEXURE D : DETAILS OF BALANCES IN SAVINGS BANK / CURRENT /
FIXED DEPOSIT ACCOUNTS WITH BANKS AS ON 31-03-2020**

Sl.No.	Particulars	Purpose	Account No.	Amount
Current Bank Accounts				
1.	Bank of India	Project		1,13,553
2.	State Bank of India	Main Account	32047142365	39,78,78,106
3.	State Bank of India	Account with NIT, Surat	31098433485	-
				39,79,91,659
Savings Bank Accounts				
1.	Canara Bank	Fees Account	1184101015456	39,03,657
2.	HDFC Bank	Fees Account	50200018556850	0
3.	ICICI Bank	Corpus Fund	332701000053	-
4.	ICICI Bank	Corpus Fund	747701000081	9,70,68,276
5.	State Bank of India	SBI Collect - Fees Collection		2,00,65,759
6.	State Bank of India	Hostel Mess Account	3776829245	3,15,96,563
7.	State Bank of India	SBI Power Jyoti - Fees Collection		4,30,378
8.	State Bank of India	Recruitment	38070817950	17,03,549
9.	State Bank of India	Project		35,03,210
10.	UCO Bank	Fees Account	23730110003381	(9,85,229)
11.	UCO Bank	Project		-
12.	UCO Bank	Project		5,996
13.	UCO Bank	Project		32,530
14.	UCO Bank	Project		1,498
15.	UCO Bank	Project		-
16.	UCO Bank	Project		-
17.	UCO Bank	Project		-
18.	UCO Bank	Project and Consultancy	23730110010280	3,94,22,701
19.	UCO Bank	Project		29,76,172
20.	UCO Bank	Project		-
21.	UCO Bank	Project		13,55,056
				20,10,80,116.37
Term Deposits				
1.	UCO Bank			1,46,20,068.00
2.	Canara Bank			9,33,81,658.00
				10,80,01,726.00
Total				70,70,73,501.83



NATIONAL INSTITUTE OF TECHNOLOGY MEGHALAYA SHILLONG, MEGHALAYA

RECEIPTS AND PAYMENTS ACCOUNT FOR THE YEAR ENDED 31ST MARCH 2020

Amount in Rupees

	RECEIPTS	Current Year	Previous Year		PAYMENTS	Current Year	Previous Year
I.	Opening Balance			I.	Expenses		
	a) Cash Balances	-	-		a) Establishment Expenses	21,51,07,618	14,90,94,305
	b) Bank Balance				b) Academic Expenses	5,66,55,758	4,44,30,368
	i. In Current accounts	9,62,45,639	10,79,59,116		c) Administrative Expenses	6,05,49,676	5,66,69,961
	ii. In Deposit accounts	8,59,00,061	1,28,19,666		d) Transportation Expenses	93,98,134	1,23,13,619
	iii. Savings accounts	24,40,62,633	11,04,76,896		e) Repairs & Maintenance	6,37,98,137	4,24,57,323
II.	Grants Received				f) Prior period expenses	-30,617	3,26,62,267
	a) From Government of India	1,30,55,75,000	48,78,00,000		g) Finance Cost	22,306	26,669
	b) From State Government	-	-	II.	Payments against Earmarked/ Endowment Funds	77,84,911	-
	c) From others	-	-	III.	Payments against Sponsored Projects/Schemes	3,56,27,652	3,68,04,609
				IV.	Payments against Sponsored Fellowships/Scholarships	18,79,044	2,05,800
				V.	Investments and Deposits made		
III.	Academic Receipts	1,13,54,473	88,69,850		a) Out of Earmarked/ Endowments funds	-	-
IV.	Receipts against Earmarked/ Endowment Funds	3,65,48,456	3,21,80,449		b) Out of own funds (Investments- Others}	-	-
V.	Receipts against Sponsored Projects/Schemes	3,67,99,692	4,56,83,295	VI.	Term Deposits with Scheduled Banks	-	-
VI.	Receipts against sponsored Fellowships and Scholarships	15,75,000	8,38,300	VII.	Expenditure on Fixed Assets and Capital Works - in- Progress		
VII.	Income on Investments from				a) Fixed Assets	2,37,70,929	45,33,827
	a) Earmarked/Endowment funds	-	-		b) Capital Works- in- Progress	30,00,000	7,71,86,148
	b) Other investments	-	-	VIII.	Other Payments including statutory payments	-	-
VIII.	Interest received on						
	a) Bank Deposits	1,00,38,318	37,58,725	IX.	Refunds of Grants		
	b) Loans and Advances			X.	Deposits and Advances	71,90,15,543	83,98,752
	c) Savings Bank Accounts	7,29,333	7,50,376	XI.	Other Payments	-	-
IX.	Investments encashed	-	-	XII.	Closing balances		

	RECEIPTS	Current Year	Previous Year		PAYMENTS	Current Year	Previous Year
X.	Term Deposits with Scheduled Banks encashed	-	-		a) Cash in hand	1,73,706	-
XI.	Other income (including Prior Period Income)	1,06,08,308	90,06,316		b) Bank balances		
XII.	Deposits and Advances	6,43,89,387	7,08,48,991		In Current Accounts	39,79,91,659	9,62,45,639
XIII.	Miscellaneous Receipts including Statutory Receipts	-	-		In Savings Accounts	20,10,80,116	24,40,62,633
XIV.	Any Other Receipts - Capital Work in Progress refund	-	-		In Deposit Accounts	10,80,01,726	8,59,00,061
TOTAL		1,90,38,26,299	89,09,91,980		TOTAL	1,90,38,26,299	89,09,91,980

For NIT Meghalaya

Director

Registrar



notes

