ANNUAL REPORT 2020-21

NATIONAL INSTITUTE OF TECHNOLOGY MEGHALAYA

ANNUAL REPORT 2020-21

National Institute of Technology Meghalaya
Bijni Complex, Laitumkhrah, Shillong 793003

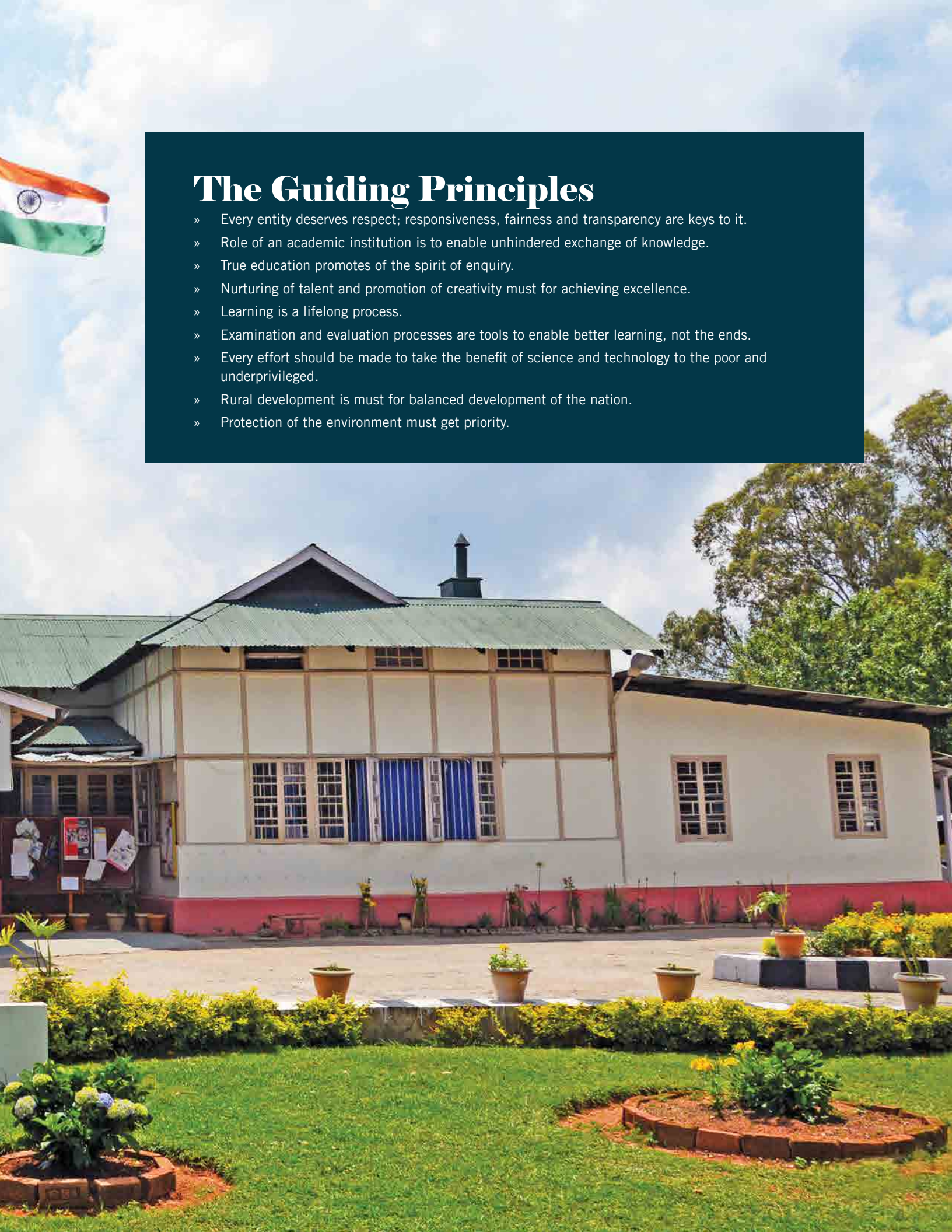
Content

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, it's 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), Ministry of Education, Govt. of India, Member
- Financial Adviser, Ministry of Education, Govt. of India, Member
- Shri W. Roy, MD, Meghalaya Power Carriers (India) Pvt. Ltd, Member
- Shri Medrickson Tariang, Retired Chief Engineer, PWD (Roads), Meghalaya,
- Prof. G. Panda, Professor, NIT Meghalaya, Member
- Dr. C. Marthong, NIT Meghalaya Member
- Director, IIT Guwahati, Member
- Shri B. N. Choudhury, Registrar, NIT Meghalaya, Secretary

Senate

- Prof. B. B. Biswal, Director, NIT Meghalaya, Chairman
- Prof. N. C. Shivaprakash, Professor, 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
- Prof. G. Panda, Professor, NIT Meghalaya, Member
- Prof. A. Bhattacharjee, Professor, NIT Meghalaya, Member
- Prof. H. C. Das, Professor, NIT Meghalaya, Member
- 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), Ministry of Education, Govt. of India or his nominee, Member
- Finance Adviser, Ministry of Education, Govt. of India 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
- Director (NITs), Ministry of Education, Govt. of India, Member
- Shri. S. Pyngrope, Retd. Secretary to the Govt. of Meghalaya, PWD (R&B), Member
- Shri T. R. Pdah, Addl. Chief Engineer (EZ), MeECL, Member
- Shri K. K. Mawa, Superintending Engineer, PWD (Buildings), Member
- Dr. C. Marthong, 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)	Prof. G. Panda
Dean (Research& Consultancy)	Prof. A. Bhattacharjee (upto 30.06.2020) Dr. G. K. Dutta (w.e.f. 01.07.2020 onwards)
Dean (Student Welfare)	Dr. A. Banerjee
Dean (Planning & Development)	Dr. D. K. Sarma (upto 30.06.2020) Dr. C. Marthong (w.e.f. 01.07.2020 onwards)
Dean (Faculty Welfare)	Prof. H. C. Das

Professors Incharge:	
Computer Centre	Dr. D. S. Roy, CS (upto 30.06.2020) Dr. S. S. Yadav, EC (w.e.f. 01.07.2020 onwards)
Centre of International Relations	Dr. M. Saha, MA
Centre for Career Development	Dr. R. S. Das, ME
Centre for Technology Enabled Learning	Dr. P. K. Rathore, EC
Centre for Robotics & Mechatronics	Dr. B. K. Sarkar, ME
Centre for Innovation Incubation & Entrepreneurship	Dr. Ch. V. Rama Rao, EC
Academic Affairs – Postgraduates & Research	Dr. P. Rangababu, EC
Academic Affairs – Undergraduates	Dr. V. Pal, CS

Heads of Departments:	
Computer Science & Engineering (CS)	Dr. Yogita
Electronics and Communication Engineering (EC)	Dr. P. Rangababu
Electrical Engineering (EE)	Dr. S. Das (upto 30.06.2020) Dr. S. Debbarma (w.e.f. 01.07.2020 onwards)
Mechanical Engineering (ME)	Dr. R. N. Mahapatra
Civil Engineering (CE)	Dr. M. L. Patton
Physics (PH)	Dr. A. Nath
Chemistry (CY)	Dr. A. S. Roy
Mathematics (MA)	Dr. M. Saha (upto 30.06.2020) Dr. B. Kumbhakar (w.e.f. 01.07.2020 onwards)
Humanities and Social Sciences (HSS)	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 & Games)	Dr. Ksh. M. Singh, EE

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 (upto 30.06.2020) Dr. D. Podder, CE (w.e.f. 01.07.2020 onwards)
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
Asst. Registrar (Director's Office)	Shri H. Yadav

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 Bijni Complex, Laitumkhrah, Shillong. The Institute has completed ten years since its establishment in the year 2010. During the year 2020-21, the Institute has made many significant strides.

1. 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.

2. People under Academic Section

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) (upto 30.10.2020)
6. **Ms. Iobida Nongkhlaw**
   Junior Assistant (upto 29.06.2020)
7. **Mr. Banshailang Myrthong**
   Junior Assistant
8. **Mr. Julius Iawphniaw**
   Junior Asssitant
9. **Mr. Manfred Kurbah**
   Junior Assistant

3. Programmes offered by the Institute

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

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

(ii) 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

- Civil Engineering (Structural Engineering) [CE]
- Computer Science and Engineering [CSE]

- » Electronics and Communication Engineering (VLSI & Embedded system) [ECE]
- » Electrical Engineering (Power and Energy Systems) [EE]
- » Mechanical Engineering (Fluids and Thermal Engineering) [ME]

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

- » Physics (PH)
- » Chemistry (CY)
- » Mathematics (MA)

(iii) 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 (HSS)

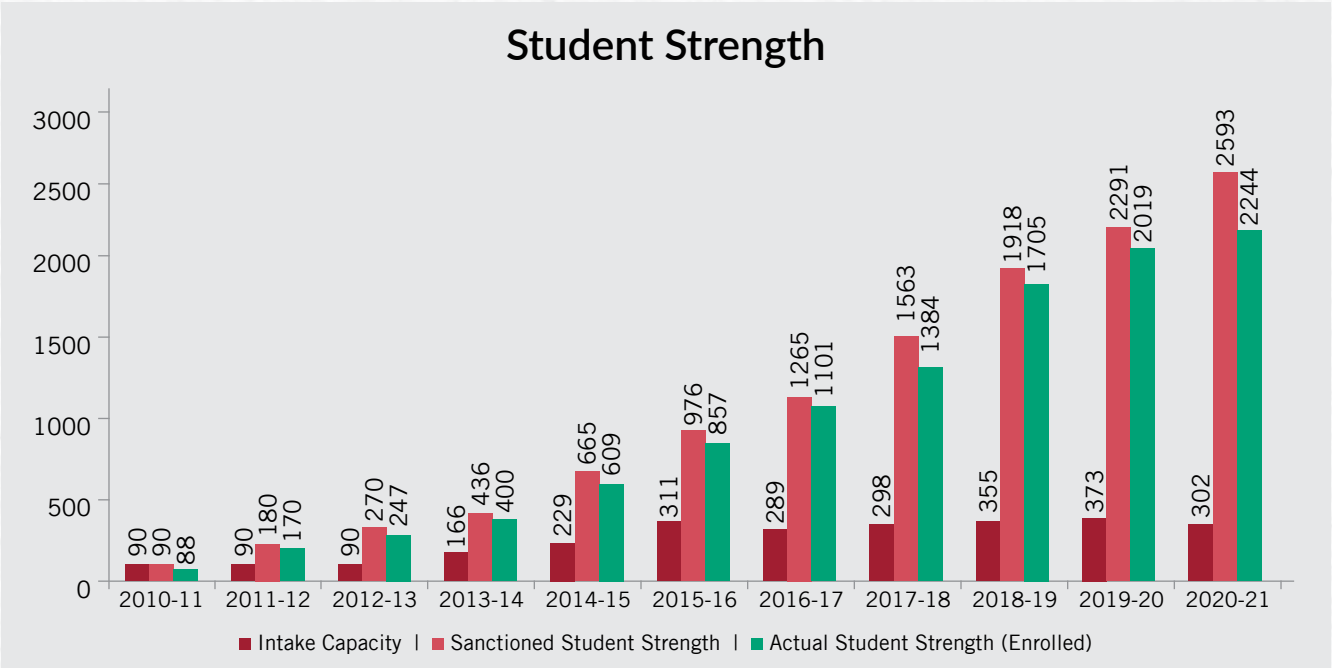
4. Admissions to the various Programmes during 2020-21:

- » 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. Plan.
- » Admission to Master of Science (M.Sc.) Programme was conducted on the basis of valid JAM scores and through Centralized Counselling CCMN. However, vacant seats after CCMN counseling were filled through Institute entrance examination.
- » Ph.D admissions were not advertised during 2020-21 due to the Covid-19 pandemic situation. However, four Project Follows of the departments took admission into the Full Time Ph.D Programme as per the Institute norms.

Admissions to various Programmes during the year were successfully conducted.

5. Student's Data upto 2020-21

Admitted in 2020-21										Total Strength						
Programme	Discipline	Year of Starting	Intake Capacity	M	F	SC	ST	OBC	Total	Dept.	Male	Female	SC	ST	OBC	Grand Total
B.Tech	CE	2013	30	22	7	3	15	8	29	CE	177	52	22	118	49	229
	CS	2010	30	26	7	4	12	5	33	CSE	253	57	39	101	57	310
	EC	2010	30	23	5	2	12	6	28	ECE	249	65	31	102	66	314
	EE	2010	30	19	10	3	15	6	29	EE	254	63	39	119	75	317
	ME	2013	30	22	7	4	15	2	29	ME	198	26	23	100	39	224
	Sub Total	-	150	112	36	16	69	27	148	Total	1131	263	154	540	286	1394
M.Tech	CE	2015	20	16	2	2	1	4	18	CE	51	4	12	7	7	55
	CSE	2014	20	6	1	3	1	0	7	CSE	73	23	17	23	16	96
	ECE	2014	20	6	2	1	1	0	8	ECE	59	22	21	15	10	81
	EE	2014	20	4	0	3	1	0	4	EE	70	18	21	15	10	88
	ME	2015	20	6	0	0	0	2	6	ME	69	2	29	8	4	71
	Sub Total	-	100	38	5	9	4	6	43	Total	322	69	100	68	47	391
M.Sc.	PH	2015	16	6	5	2	3	1	11	PH	57	24	6	23	16	81
	CY	2015	16	6	6	0	2	3	12	CY	38	48	9	7	32	86
	MA	2015	16	5	2	0	2	2	7	MA	35	22	5	26	9	57
	Sub Total	-	48	17	13	2	7	6	30	Total	130	94	20	56	57	224
Ph.D.	CE	2013	NA	0	0	0	0	0	0	CE	9	7	1	8	2	16
	CSE	2013	NA	0	0	0	0	0	0	CSE	30	11	4	8	8	41
	ECE	2013	NA	0	0	0	0	0	0	ECE	29	5	3	4	8	34
	EE	2013	NA	0	0	0	0	0	0	EE	29	7	6	0	4	36
	ME	2013	NA	1	0	0	0	0	1	ME	45	3	5	0	8	48
	PH	2013	NA	1	0	0	1	0	1	PH	13	5	0	8	1	18
	CY	2013	NA	0	2	0	0	2	2	CY	10	12	1	2	2	22
	MA	2013	NA	0	0	0	0	0	0	MA	11	3	2	2	4	14
	HSS	2013	NA	0	0	0	0	0	0	HSS	2	4	0	2	2	6
	Sub Total	-	NA	2	2	0	1	2	4	Total	178	57	22	34	39	235
											Male	Female	SC	ST	OBC	Grand Total
										Total	1761	483	296	698	429	2244



A total of 302 students were admitted during the Academic Year 2020-21, including the Ph.D scholars

6. Major Events

(i) Seventh Convocation: The Seventh Convocation of the Institute was held on 4th December, 2020 via online mode. Dr. Ramesh Pohkriyal "Nishank", Union Cabinet Minister of Education, Government of India graced the occasion as the Chief Guest. Shri Sajjan Bhajanka, Chairman, Board of Governors of the Institute, was the Chairman of the Convocation. The seventh batch of B. Tech, fifth batch of M. Tech, fourth batch of M.Sc and Ph.D scholars of the Institute graduated in June, 2020. 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	123
2	M.Tech	56
3	M.Sc	38
4	Ph.D	10

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

7th Convocation 04/12/2020

7th Convocation 04/12/2020

(ii) Research Conclave: The Second Research Conclave 2021 of NIT Meghalaya was held on 28th February 2021 and 1st March 2021. Shri P. L. N Raju, Director, NESAC, graced the occasion as the Chief Guest in the Inauguration ceremony.

Prof. Sushmita Mitra, ISI Kolkata, Prof. Radhakant Padhi, IISc Bangalore and Prof. Samaresh Bhattacharya, Jadavpur University graced the event as expert speakers. Overall, 78 young research scholars (full time, project fellows and partime sponsored) showcased their research work in the form of poster presentations, 24 number of students presented the oral paper presentations across 2 parallel tracks consisting of Track-1 (Electrical, Mechanical, Civil Engineering and Computer Science and Engineering, Electronics and Communication Engineering), Track-2 (Mathematics, Physics, Chemistry, Humanities and Social Science). Two students demonstrated their research work in short video form.

There were 18 Panel members to judge all the technical sessions – 13 Panel members from NIT Meghalaya, 4 from NEHU and 1 from EFLU Shillong. Based on the recommendation of the jury, the researchers were awarded in various technical programmes like Poster Presentations, Oral-Presentations, Research work Demostrations etc.

Award			Name	Department
Institute Best Research Award			Mr.Kaibalya Prasad Panda	Electrical Engineering
Oral Paper Presentation	Engineering Discipline	1st Prize	Mr. Sheikh Wasmir Hussain	Electronics and Communication Engineering
		2nd Prize	Mr.Kaibalya Prasad Panda	Electrical Engineering
		3rd Prize	Mr. C. Lalengmawia	Computer Science and Engineering
	Science and Humanities Discipline	1st Prize	Ms. Poonam Gupta	Chemistry
		2nd Prize	Ms.ArundhatiAshangbam	Humanities
		3rd Prize	Mr.Susmay Nandi	Mathematics
Poster Presentation	Engineering Discipline	1st Prize	Mr. Pratikanta Mishra	Electrical Engineering
		2nd Prize	Mr.Moirangthem Santosh kumar Singh	Electronics and Communication Engineering
		3rd Prize	Ms. Natasha Kakati	Civil Engineering
	Science and Humanities Discipline	1st Prize	Ms. Rishika Chakraborty	Chemistry
		2nd Prize	Ms. Binandita Barman	Mathematics
		3rd Prize	Mr. Deepak Gupta	Physics
Research Work Demonstration		1st Prize	Ms. Poonam Gupta	Chemistry

Inauguration ceremony- Research Conclave 28/02/2021

Poster presentation- Research Conclave 01/03/2021

2nd Research Conclave Souvenier- Research Conclave 28/02/2021

Oral paper presentation (Engineering Discipline) - Research Conclave 01/03/2021

Poster presentation (Engineering Discipline) - Research Conclave 01/03/2021

Poster presentation (Science and Humanities Discipline) - Research Conclave 01/03/2021

Research Work Demonstration - Research Conclave 01/03/2021

Institute Best Research Award - Research Conclave 01/03/2021

Research Conclave 01/03/2021

7. Notable Achievements of the Institute:

(i) NIT Meghalaya has been placed at 61st in the NIRF rankings for 2020.

(ii) NIT Meghalaya has been ranked 29th by India Today Ranking in 2020.

(iii) NIT Meghalaya organized A Blended Workshop on National Education Policy 2020 with a focus on "Higher Education and Research" on 17th February 2021.

(iv) NIT Meghalaya organized its 2nd Research Conclave on 29th Feb 2021 and 1st March 2021.

8. Notable Achievements of the Students:

The notable achievements of the students in the filed of academics/research during the year 2020-21 are presented below:

Sl. No.	Name	Programme	Enrolment No.	Name of the Award/ Recognition	Name of International Institution/Organisation from where the award has been received	Year of receiving award
1	Himanshu Bisht	M.Tech	T18CE005	Best Paper Award, ERTSE 2020	Virtual International Conference on emerging Research Trends in Structural Engineering, VIT Chennai.	2020
2	Sourav Das	Ph. D	P16CH001	Rearch Excellence Award (in oral presentation category)	Recent Advances in Chemistry & Material Sciences-2020, Indian Chemical Society	2020
3	Sheikh Wasmir Hussain	Ph. D	P17EC002	Top12 Best Thesis Works, Student Research Forum	34th International Conference on VLSI Design and The 20th International Conference on Embedded Systems	2021
4	Villash	B. Tech	B18CS020	Winner in the Microsoft Learn Student Ambassador	CODEFEVER	2021
5	Meenakshi Kharel	B. Tech	B19CS006	3rd runner-up position in the Microsoft Learn Student Ambassador	CODEFEVER	2021

9. Financial Assistance to the Students

The Institute provides full exemption of tuition fees to students belonging to SC, ST & 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 Ministry of Education, Govt. of India guidelines from 2016 onwards. All the Ph.D /M.Tech/ M.Sc students are receiving scholarships from Institute funds as per norms as well as from different funding agencies.

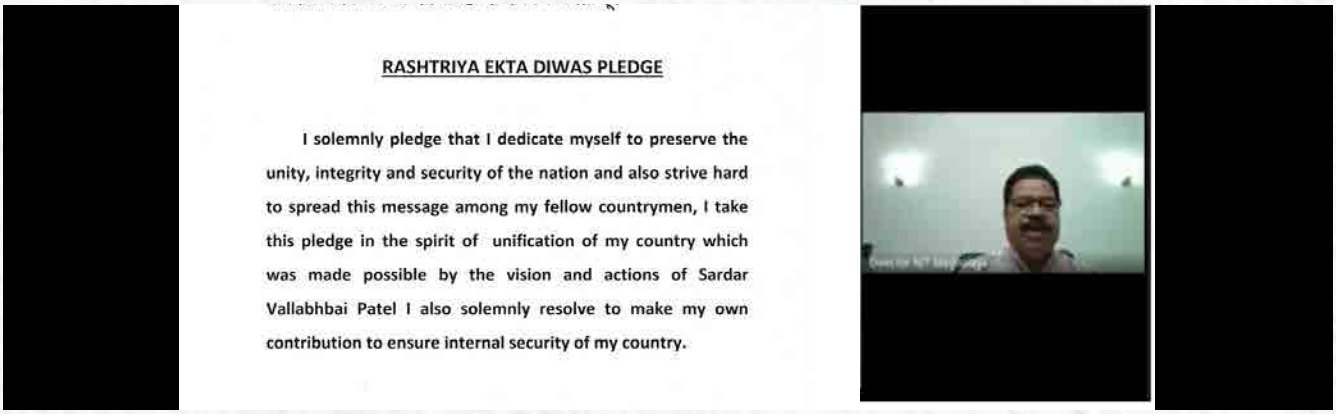
Students Activities

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 at 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 organized under different Clubs under Cultural Committee are namely, Celebration of Gandhi Jayanti, National Unity Day, Matribhasha Diwas, Painting, Essay Writing and Quiz Competitions, etc. All the events, which were conducted through the Academic Year 2020-2021, are summarized as follows.

- Event No: **1**
- Event Name: **5 Episodes of Webinar Series on Meghalaya and her rich indigenous Culture and Custom**
- Club Organized: **EBSB Club**
- Date: **07.09.2020 to 11.09.2020**
- Mode: **Online**
- Additional Information: **Student Competition for 4 days, Expert Lecture for 1 day**



Address by Director, NIT Meghalaya

Expert Lecture by Ms. Evelyne Khongsit from All India Radio, Shillong (On "Culture & Heritage of Meghalaya" – 09th September, 2020)

The shortlisted students were judged on their presentation skill during the power point presentations on each episode (for 4 days) from where the 1st, 2nd and 3rd positions were evaluated.

The result has been declared as follows:

Event Name	Date	Position	Roll No	Name
Festivals of Meghalaya	07th Sept 2020	First	B17CE008	Medarton Nongrum
		Second	B19EC002	Tanisha Kant
		Third	B18EE012	Dathrang I Kyndiah
Traditional Foods of Meghalaya	08th Sept 2020	First	B18EE020	Ankur Sarkar
		Second	B17CE008	Medarton Nongrum
		Third	B18EE026	Pinkylin Nonglang
Freedom Fighters of Meghalaya	10th Sept 2020	First	P17PH003	Deepak Gupta
		Second	B18EE005	Abhijeet Kumar
		Third	B19CS013	Shivam Pandit
Tourist Places of Meghalaya	11th Sept 2020	First	B18EC006	Debasmita Das
		Second	B18ME012	Shubham Singal
		Third	B19CS023	Prashant Kumar

» Event No: **2**

» Event Name: **Annual Quiz Competition**

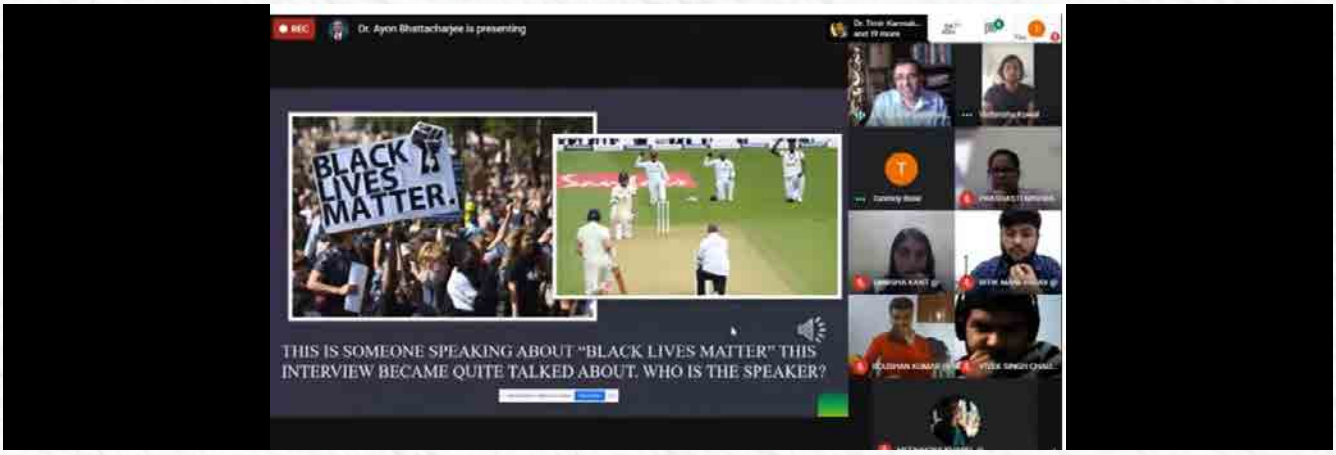
» Club Organized: **Literary Club**

» Date: **02.10 2020**

» Mode: **Online Mode**

» Additional Information:

Vice-President Cultural is addressing the event.



Prof. Ayon Bhattacharjee (Quiz-master) is presenting.

The results are as follows:-

Position	Name	Roll No
First	Tanisha Kant	B19EC002
Second	Prashasti Mishra	B19EC032
Third	Ritik Mani Yadav	B19CS027

» Event No: **3**

» Event Name: **49th Statehood Day of Meghalaya**

» Club Organized: **EBSB Club**

» Date: **21.01.2021**

» Mode: **Online**

» Additional Information: **A total of 61 students participated**

Dr. Biplab Kumar Debnath SAC Vice – President (Cultural) is Addressing the event.

Antothijah Bhoi (Student) with a special number.

» Event No: **4**

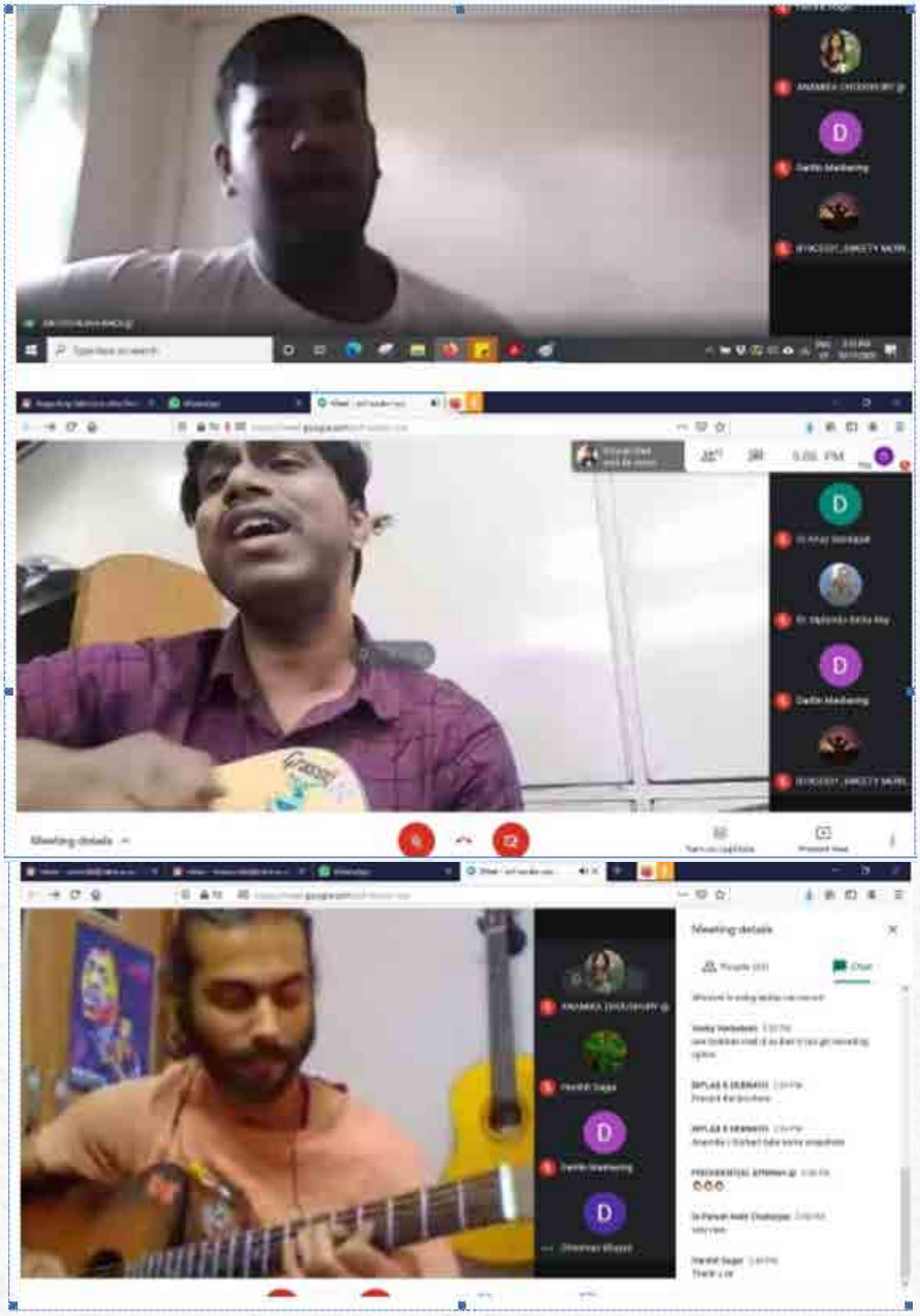
» Event Name: **Annual Music Competition**

» Club Organized: **Music Club**

» Date: **17.10.2020**

» Mode: **Online**

» Additional Information: **The competition had a total of 27 participants.**



Students performing their song.

Details of the winners are as follows –

Category	Position	Name	Roll Number
Students' Solo Vocal	**First**	Balagopalmarar	S20PH006
	Second	Antothijah Bhoi	B19CS004
	Third	Debasmita Das	B18EC006
		Wanpynbha Lyngdoh	B19ME017
Students' Solo Instrumental	**First**	Harshit Sagar	B19EC023
	Second	Tushar Sharma	T20CE006
	Third	Ibashisha A. Marbaniang	B17CS003
Employees' Combined Solo and Instrumental	**First**	Diptendu Sinha Roy (CS)	
	Second	Subhendu Maity (ME)	
	Third	Sushanta Nath (EE)	

- Event No: **5**
- Event Name: **Annual Intra Institute Painting Competition**
- Club Organized: **Photography and Fine Arts Club**
- Date: **28/10/2020**
- Mode: **Online**
- Additional Information: **The theme/topic of the poster was Integrity & Honesty – a way of life.**

The Photography and Fine arts Club of SAC in collaboration with Chief Vigilance Officer organized an Annual Intra Institute Painting Competition on 28/10/2020 from 11:00 AM to 1:00 PM on the eve of National Vigilance Awareness week. On that day; a Poster Painting Competition was organized through online mode. The theme/topic of the poster was Integrity & Honesty- a way of life.

Dr. Atanu Banerjee, Dean (SW) addressing the event.

Neekshitha Reddy (Student Convener) giving the rules and regulation of the event.

The results are as follows:-

Position	Name	Roll No
First	Jahnavi Kashyap	B19CS007
Second	Sushmita Paul	B18CS007
Third	Rohit Kumar Prasad	B19ME015

» Event No: **6**

» Event Name: **Annual Debate Competition**

» Club Organized: **Literary Club**

» Date: **30/10/2020**

» Mode: **Online**

» Additional Information: **Dr. Indrani Bora Bhuyan, Registrar of ICFAI University has judged this event.**

NIT Meghalaya, Literary Club of Cultural Committee under Student Activity Center (SAC) in collaboration with Chief Vigilance Officer, NIT Meghalaya has organized the "Annual Debate Competition" on 30th October 2020, from 10:30 A.M. to 12:30 P.M. to celebrate the Vigilance Awareness Week, 2020. The programme was taken place in online mode. Dr. Indrani Bora Bhuyan, Registrar of ICFAI University has judged this event. The awardee list is as follows:

Award	Awardee
Best Team Award	Team D Preeti Polai (B18EC003) Debasmita Das (B18EC006) Shubham Singal (B18ME012)
Speaker Award	1st:- Meenakshi Kharel (B19CS006) 2nd:- Tanisha Kant (B19EC002) 3rd:- Debasmita Das (B18EC006)
Best Interjector Award	Shubham Singal (B18ME012)

» Event No: **7**

» Event Name: **Rashtriya Ekta Diwas**

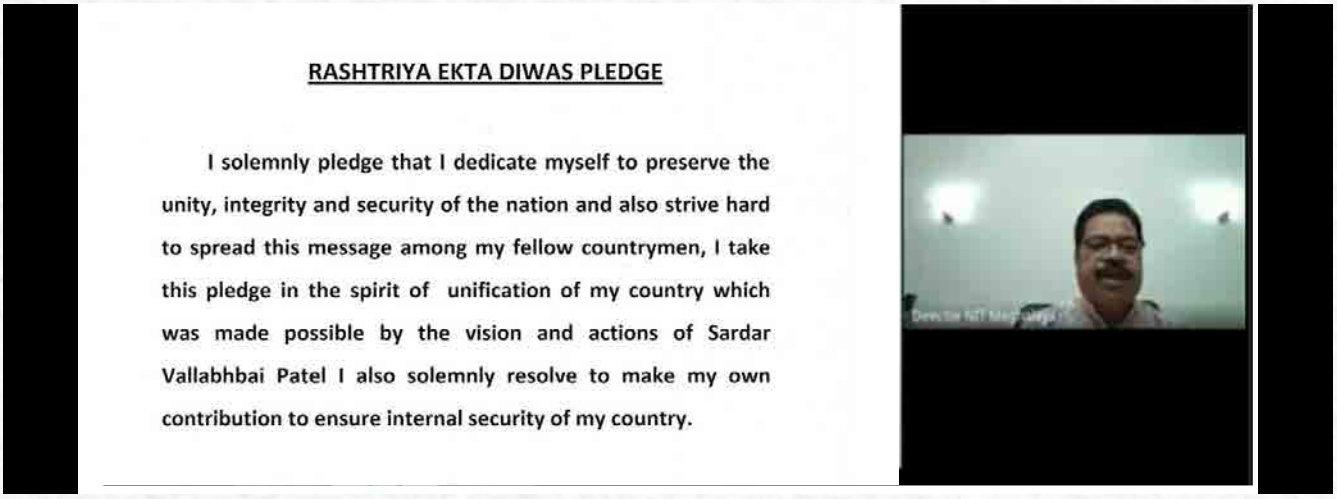
» Club Organized: **EBSB Club**

» Date: **31/10/2020**

» Mode: **Online**

» Additional Information: **NIT Meghalaya, of Cultural Committee, SAC NIT Meghalaya celebrated on the 31.10.2020 through online mode.**

Address by Director, NIT Meghalaya



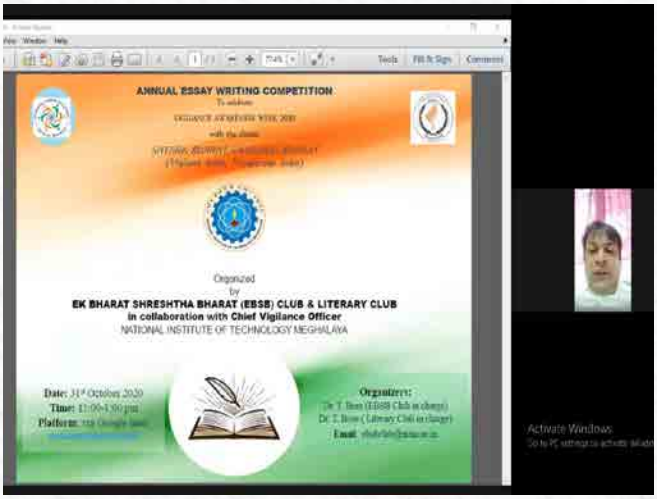
RASHTRIYA EKTA DIWAS PLEDGE

I solemnly pledge that I dedicate myself to preserve the unity, integrity and security of the nation and also strive hard to spread this message among my fellow countrymen, I take this pledge in the spirit of unification of my country which was made possible by the vision and actions of Sardar Vallabhbhai Patel I also solemnly resolve to make my own contribution to ensure internal security of my country.

Pledge taking Ceremony during the Program

Song (AeWatan) by Debsmita Das

» Event No: **8**
» Event Name: **Annual Essay Writing Competition**
» Club Organized: **EBSB Club**
» Date: **31/10/2020**
» Mode: **Online**
» Additional Information: **Dr. W. L. Reenbohn, Assistant Professor, Department of Physics, NIT Meghalaya has judged this event**



Dr. Atanu Banerjee, Dean (SW) addressing the event.

Victor Sharma (Student)

Anjali Kashyap (Student)

The awardees list as follows:-

Award	Name	Roll No
First	Debasmita Das	(B18EC006)
Second	Shivam Pandit	(B19CS013)
Third	Durga Gajula	(B19EE025)

Yabhakriti

The Robotics Club of NIT Meghalaya

Faculty Incharge : Dr. Bunil Kumar Balabantaray, Assistant Professor, Department of Computer Science and Engineering
Convener : Preeti Polai, B18EC003
Convener : Mayank Singh, B18EC005

About us

'YABHAKRITI' The Robotics Club of NIT Meghalaya is one of the dedicated clubs to encourage and prepare the students to develop robotics-based solutions towards the real-time problems faced in day-to-day activities in human life. It also prepares the students (club members) to participate in different competitions at different levels. The NIT Meghalaya family is well known for its unique training programs and working procedures to develop trainers and technically good technocrats for society. The year 2018 gave its total effort towards training and project developments in Robotics and drone fields. Since its birth, it is associated with the Govt. of Meghalaya as one of the state's school children's training partners.

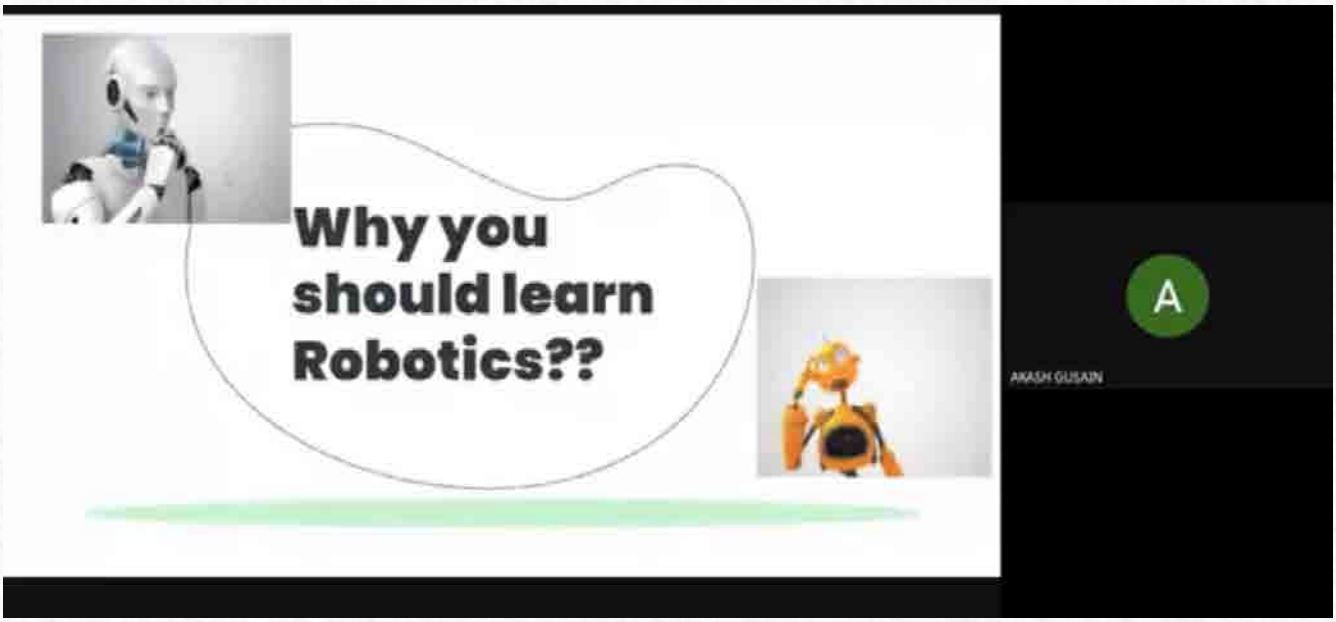
Events organised

Event	Date	Description
Freshers' Orientation program (2020 Batch)	November 28, 2020	A fundamental introductory session was organized by the club in the orientation program of the 2020 B.Tech batch. The prime objective of the event was to introduce and familiarise students with the establishment, aim, activities and achievements of Yabhakriti.
Alumni Talk	December 20, 2020 - January 09, 2021	The club conducted an online series of sessions, where the experienced and professional Alumni of the Institute in Robotics and IoT were invited to share their Journey and advise the students for future career paths.
A session with Abhishek Acharya	February 01, 2021	Mr. Abhishek Acharya, the co-founder of Nibrus Technologies, had an interactive session with the 2019 B.Tech Batch and guided them with the importance of Industrial Projects.

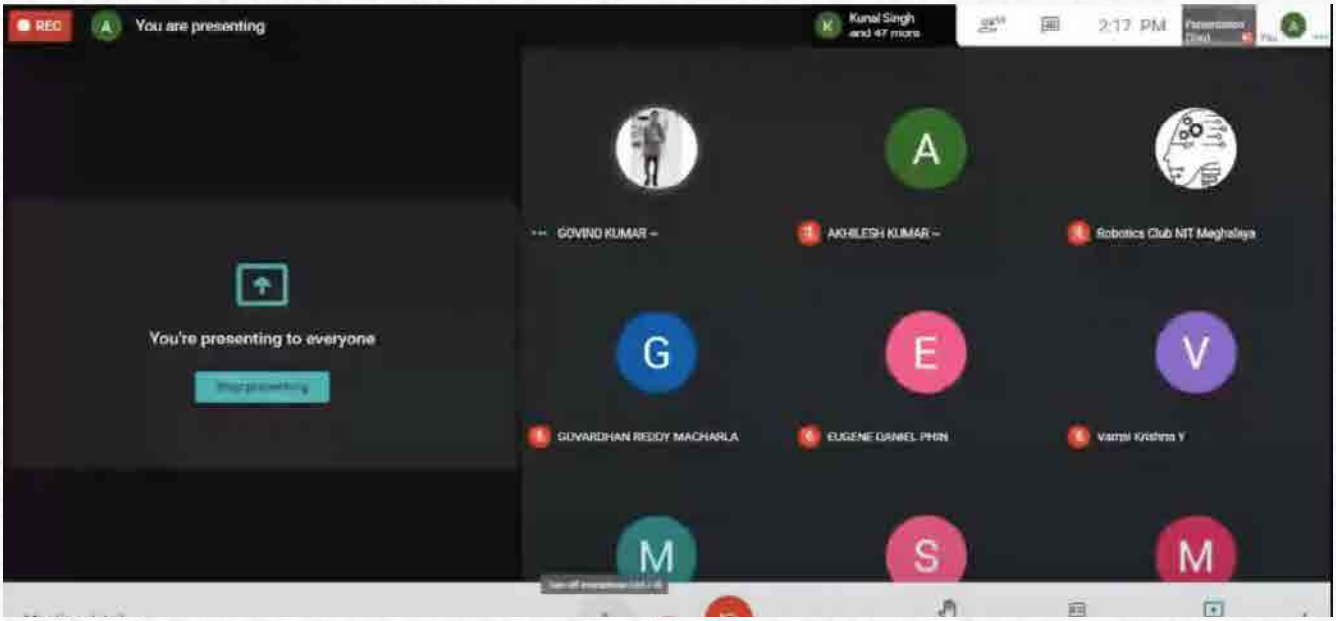
Freshers' Orientation program (2020 Batch)

This session was organized under the orientation program for the 2020 B.Tech batch; It was an introductory session for the freshers. We introduced Yabhakriti – the Robotics club of NIT Meghalaya, and its establishment, broad function areas and long-term goals. The club achievements, activities and workshops were also familiarized to them.

This session was fascinating and informative. The students were very excited about the participation in the club. We successfully conducted our introductory session for freshers with great enthusiasm for our club members' collaborative efforts.



A glimpse of the PowerPoint presentation

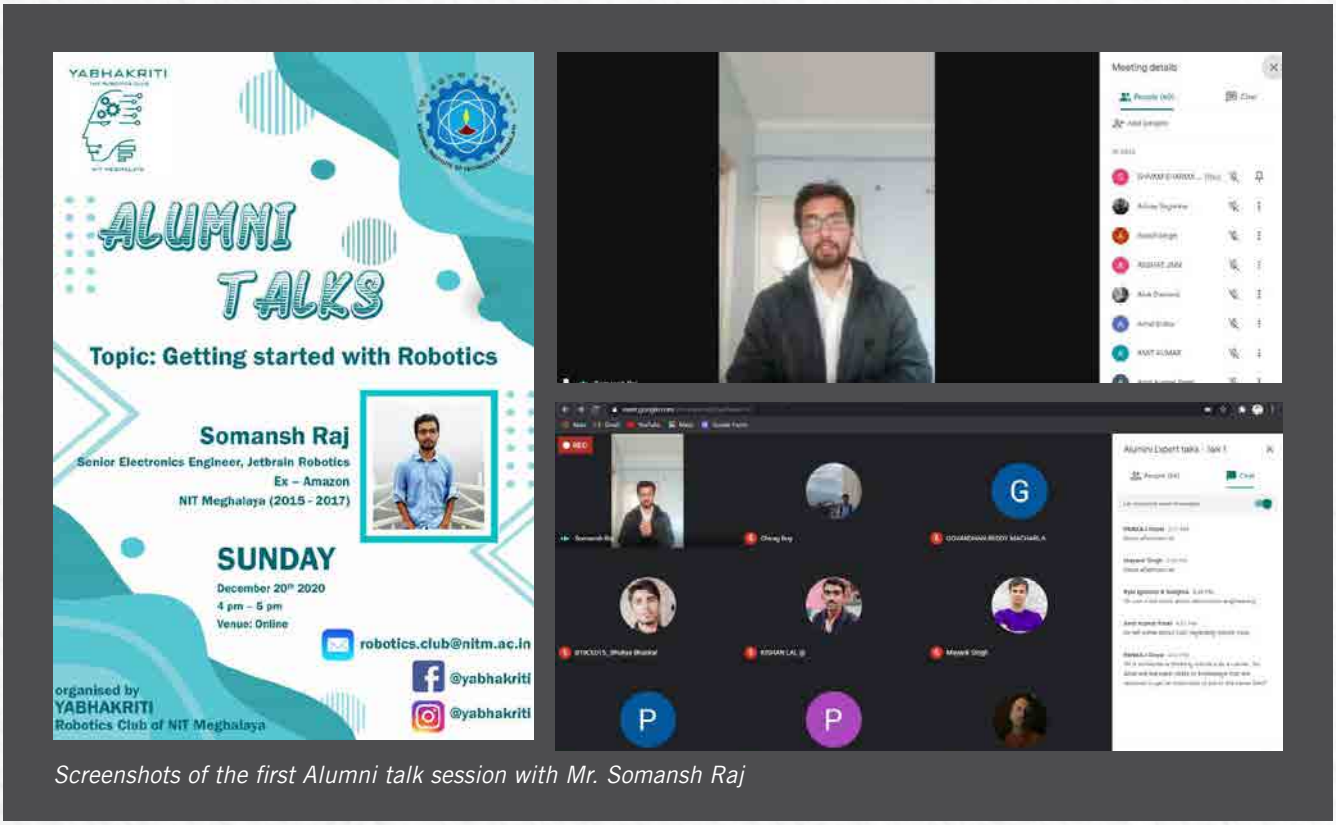


A glimpse of the online orientation program

Alumni Talk

Yabhatriki has always been working to build a suitable robotics environment in our Institute. Freshers have consistently been our primary focus. They are steadily being familiarised with robotics and its associated assets for the future, making them realize that robotics is not limited to a particular domain or department and has many scopes for contribution.

» **The first session of Alumni Talk:** The first session of Alumni Talk was organized on December 20, 2020. The guest Somansh Raj (M.Tech 2015 - 2017), Senior Electronics Engineer, Jetbrain Robotics, briefed our students on "Getting Started with Robotics and its way ahead." It was a highly interactive and productive session—a great head-start to the series of Alumni Talk.



Screenshots of the first Alumni talk session with Mr. Somansh Raj

» **The Second session of Alumni Talk:** The second session of the "Alumni Talk" was organized with Mr. Anurag Shakya (B.Tech 2015 - 2019), a Software Engineer at GAP Inc. and a participant at the 2018 AMC-ICPC Regionals on December 27, 2020. The interaction was on "Familiarization with the Robotics Techniques in Demand," which was highly informative and valuable.

Screenshots of the second Alumni talk session with Mr. Anurag Shakya

» **The third Session Of Alumni Talk:** The Alumni talk session was with Mr. Sunasheer Bhattacharjee (B.Tech 2010-2014), organized on January 03, 2021. He is pursuing a Ph.D. at the Faculty of Engineering, Kiel University, Germany. He is also employed as a Research and Teaching Assistant at the Chair of Information and Coding Theory. The guest delivered a talk on "Carving a Career in Scientific Research," discussing his roadmap of pursuing research as a career.

Screenshots of the Third Alumni talk session with Mr. Sunasheer Bhattacharjee

» **The fourth Session Of Alumni Talk:** For the fourth session of our ALUMNI TALK series organized on January 10, 2021, the guest, Mr. Rounak Kar, B.Tech 2014-2018, Cloud Consultant, Microsoft, had a marvelous interaction on "Transitioning to corporate life" with the students.

» The session was graced by another dear alumnus, Miss Ankita Nandi, President Gold Medalist during B. Tech 2014-2018, Ph.D. at Indian Institute of Science (IISc) Bangalore, shared her experiences while clearing students' doubts.

Screenshots of the first Alumni talk session with Mr. Ronak Kar and Miss Ankita Nandi

» **A session with Abhishek Acharya**: Mr. Abhishek Acharya, B.Tech Batch 2013 – 2017, had an interactive session with the second-year students on DATE. He is the Co-Founder of Nibrus Technologies and has been contributing there since March 2019.

Industry Based Projects

To be in tune with the Industries' working environment, we initiated to collaborate with Industrial people. We have got great mentors from industries who are our alumni. Therefore, we started two major projects under their guidance which are -

» **Learning ROS :** This project is developed to enhance the knowledge of ROS in Robotics. It also helps the design get into the CAD design of the end product and makes you understand the main differences between Idea and product development.

Essential skills of the project are –

1. It can move from one place to another by ROS commands.
2. It contains all valuable sensors like a laser, lidar, IMU, GPS, Vision and others
3. It can navigate through the entire room without colliding.
4. It will follow the shortest root with the help of PID control.

» **Connected Plug Project:** This project revolves around the design and development of an IoT-based product with three to four AC intelligent sockets. Some of the cool features of the product are mentioned below:

1. The electrical parameters of all AC sockets should be monitored.
2. The monitored parameters should be communicated to an online hosted server at a particular frequency (such as 1Hz) and visualized in a web-based application.
3. If any electrical parameters are abnormal, the socket should be cut from the main supply. The same should be communicated back to the online hosted server.
4. Every device should have a unique ID, and users should register their device on a web portal with the same unique ID.
5. Users should be able to configure a few important parameters of their device through a web portal.

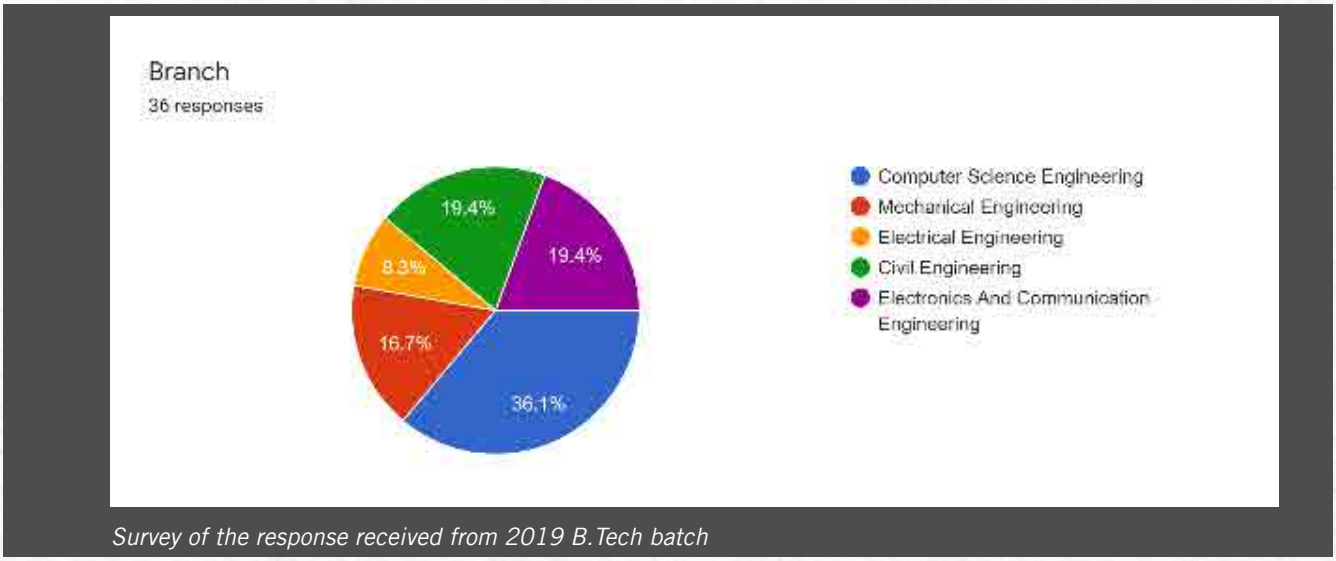
Club activities organized:

Activities	Date	Description
Membership in YABHAKRITI for 2019 batch	December 16-17, 2020	An online mode selection procedure was organized to enroll the 2019 Btech batch students into the club. » **Total responses:** 36 students » **Selected students:** 11 students These students were given the responsibility of conducting workshops and events together with the core team.
Introductory session for freshers	December 19, 2020	A preliminary session was conducted with the 2020 B.Tech batch for briefing the students with robotics and its broad applications.
IoT session for 2019 Batch	January 11, 2021	As a secondary session after the Arduino workshop was organized for the 2019 B.Tech batch on the Internet of Things (IoT), the students here were given a head start with the broad concepts and practical implementations of IoT.

Membership in YABHAKRITI for 2019 batch

During December 16-17, 2020, the core team planned to give the membership to the 2019 B.Tech batch (Second - year). The response we received from the 2nd year was highly positive and encouraging. A total of 36 students had registered for enrollment into the club. The procedure of selection of members was done online through PowerPoint presentations on fundamental concepts of robotics. The selection procedure was a two-day session, where the Core Team and Technical Team closely examined the students.

Through the collaborative decision of the core and technical team, 12 students were filtered out and designated positions in various domains of the club. These selected students now hold responsible positions in the club and contribute their best towards building a robotics environment in the Institute.

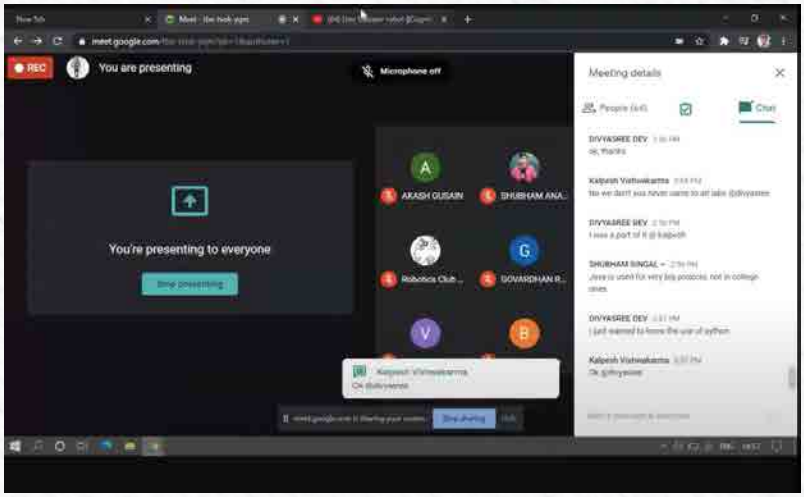


Survey of the response received from 2019 B.Tech batch

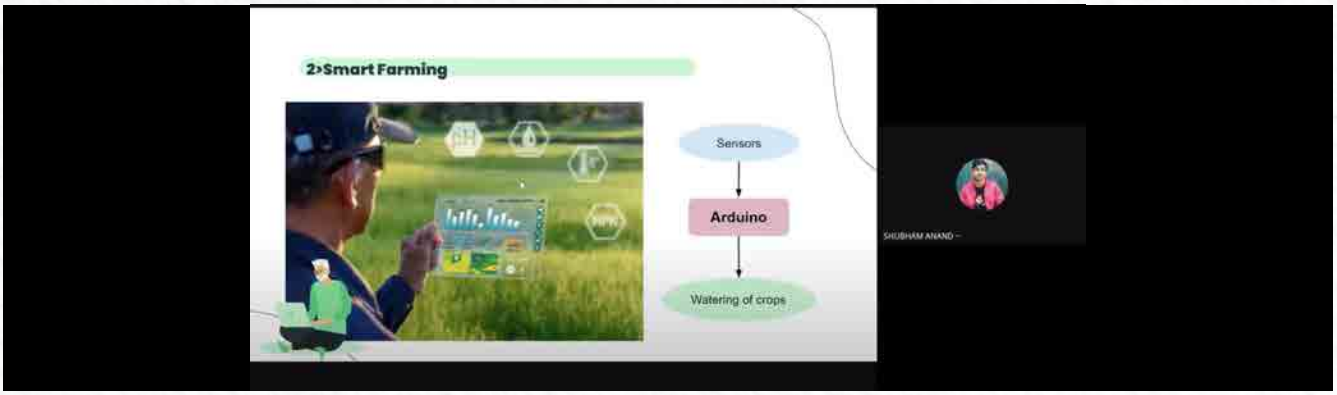
Introductory session for freshers

In the introductory session, we interacted with the freshers (2020 B.Tech Batch). It was an online session through google meet where the students shared their ideas about Robotics. What they know about Robotics. What is the Yabhakriti? How will Yabhakriti help them in Robotics? We cleared their doubts regarding robotics and made their vision clear about Yabhakriti and Robotics.

We discussed all the possibilities in robotics and all the fields where robotics plays a vital role. It was our second interactive session with them, so we made this very simple, and we thoroughly discussed all the things and only the outline of the robotics. Our session was user-friendly. We explained everything from the ground that made them more curious to learn the basics.



A glimpse of the Google meet interaction

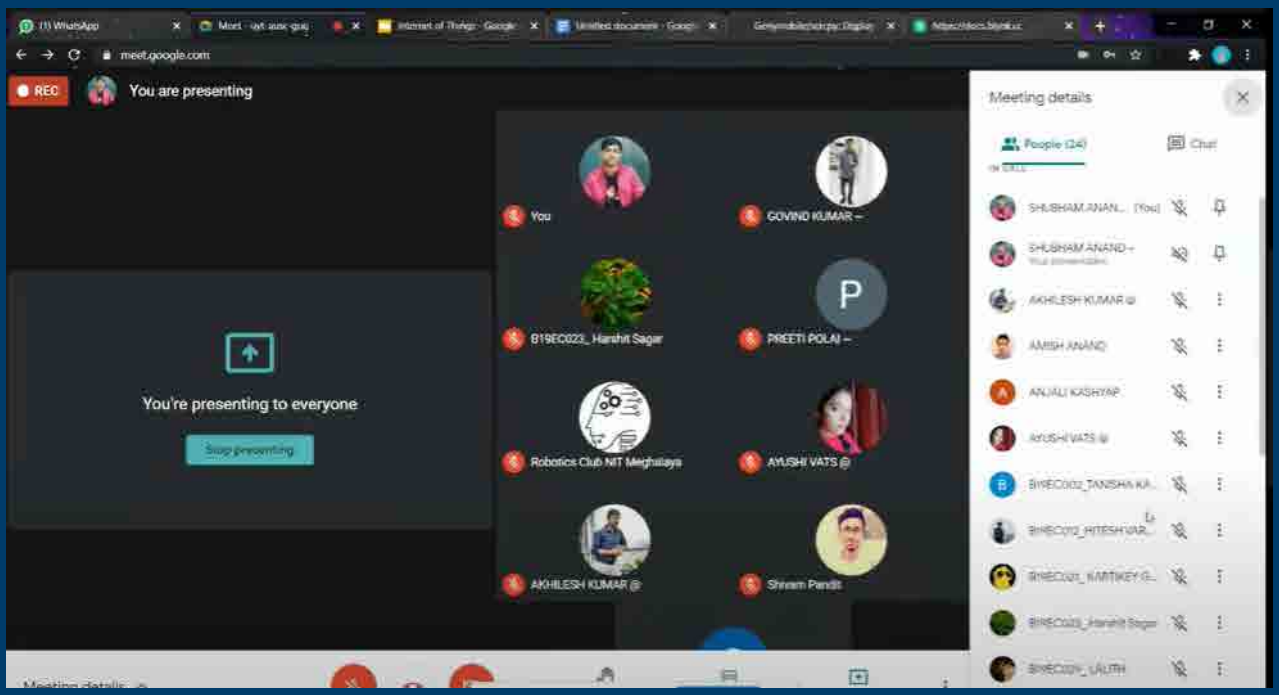


A glimpse of the PowerPoint presentation

IoT session for 2019 Batch

The Internet of Things (IoT) refers to connecting objects to each other and humans through the Internet. The applications of IoT technologies are multiple because it is adjustable to almost any technology capable of providing relevant information about its operation, about the performance of an activity and even about the environmental conditions that we need to monitor and control at a distance.

Hence, with the same motive and enthusiasm, the core team of the club delivered a session on IoT to the 2019 B.Tech Batch on January 11, 2021, familiarizing them with the broad concepts and applications. The core team also presented their projects on the same. The entire session was highly interactive and successful to a great extent.



A glimpse of the Google meet interaction

Conclusion

Yabhakriti is looking forward to doing some new activities which can be executed in the current covid situation which are the industrial projects. We are also buying some new components to move on to new technologies which can help our students for a brighter future in Robotics like Drone technologies, ROS-related components and some other components which can help in online education in the robotics domain.

Since robotics is the branch where hardware components are required and also for the learning phase hardware setup is necessary. So due to the current pandemic situation, we are unable to do all the plans which need hardware and offline mode so we kept our plans limited to virtual mode only. We introduced some simulation software where we can do such things and get the results.

It is very sad that corona has a harder impact on our club but we the members of the robotics club are determined with our full effort for the best results in upcoming sessions. We are planning to get in touch with industries and today's robotics environment in the world and we are putting our best to be the best in robotics among other roboticists and looking forward to the great opportunities in robotics to serve the nation in a better way.

The Robotics club has participated in some of the Inter-Institutional events which are mentioned in the table below:

Sl. No.	Competition Name	Team Details	Date	Organization	Position
1	MEGHALAYA POLICE HACKATHON	1. Pankaj Goyal 2. Preeti Polai 3. Govind Kumar 4. Debasmita Das 5. Mayank Singh	28/09/2020	Meghalaya Police	1st
2	E-yantra	» Group 1 – Preeti Polai, Pragati Kumari, M. Govardhan, Y. Vamsi Krishna » Group 2 – Pankaj Goyal, Debasmita Das, Govind Kumar, Shubham Anand	28/08/2020	IIT Bombay	second stage
3	ROC 2020	Kishan Lal	12/10/2020	Tezpur University	1st

Coding Club

Achievements, initiatives and activities

Faculty incharge : Dr. Shubhankar Majumdar, Assistant Professor, Dept. of Electronics and Communication Engineeering

Convenors : Jaswant Arya, Utkarsh Kumar

Achievements:

1. **05 November 2020:** Coding Club convenor- Jaswant Arya was awarded with Rs.6,000/- scholarship by Codechef.
2. **18 November 2020:** Coding Club convenor- Jaswant Arya was selected as Microsoft learn student ambassador and established a Microsoft.
3. **28 November 2020:** Related to recent technology- Coding Club convenor- Jaswant Arya got his book chapter "Blockchain: Applications and Challenges in the Industry" published in "Intelligent and Cloud Computing" Proceedings of ICICC 2019, Volume 1.
4. **01 December 2020:** Coding Club convenor- Jaswant Arya qualified for the semi-final round of the global level coding contest at Code Gladiators.

Initiatives:

1. Reformed club team structure with 5 departments and 20 posts.
2. Started to follow a standard hiring process with multiple rounds and interviews as followed in multinational companies job/internship hiring process.
3. Started Alumni talk series.
4. Structured a well defined DSA full course
5. Started a daily 3-4 hours lecture series on competitive programming to create good coders in NIT Meghalaya.
6. Started conducting monthly global level webinars in association with Microsoft.
7. Started conducting weekly institute level coding competitions named Coding Race-1, Coding Race-2, Coding Race-3 and so on…
8. Created female coders' community at institute level named "NITM Girls who code".

Activities:

Date	Event Title	Description	Duration	Number of students
05 Dec. 2020	Introductory session	Introduced daily DSA lecture series, references, resources and coding websites	2 hours	90
05 Dec. 2020	Alumni Talk-1	Invited Ketan Anand, B.Tech batch-2015-2019, Senior-Member technical staff @ Mentor Graphics, winner of infosys hackathon, top ranker in Google Kickstart.	1 hour	90
06 Dec. 2020 - 26 Dec. 2020	Daily 3-4 hours competitive programming lecture	Conducted 3-4 hours lecture for creating good coders in college.	11 days	60
06 Dec. 2020- 14 Dec. 2020	Daily 10 minutes-quiz	The students getting highest score were declared as winner	9 days	60

Date	Event Title	Description	Duration	Number of students
07 Dec. 2020	Motivation session	Invited Dr. Vipin Pal, Computer Science faculty, NIT Meghalaya	1 hour	90
09 Dec. 2020	Discussion session-1	Discussed practice problems, students' coding related problems, development related problems, and other problems and best solution for the same	3 hours	60
12 Dec. 2020	Alumni Talk-2	Invited Devansh Maurya, B.Tech batch 2016-2020, president Gold medalist, NIT Meghalaya, Ex-research intern at Dalhousie University, Canada	3 hours	90
16 Dec. 2020	Discussion session-2		2 hours	40
17 Dec. 2020	Coding Race-1	Coding competition of 2 hours. Award positions: winner, runner up and fastest finger	2 hours	40
17 Dec. 2020	National level Webinar on Git, GitHub and open source	Webinar in association of Microsoft Learn Student ambassadors program	2.5 hours	90
23 Dec. 2020	Coding Race-2	Coding competition of 2 hours. Award positions: winner, runner up and fastest finger	2 hours	40
24 Dec. 2020	Discussion session-3		2 hours	40
27 Dec. 2020	Club head hiring Coding Round	Coding round for club head hiring was conducted	1.5 hours	60
27 Dec. 2020	Alumni talk-3	Invited- Prem Kumar Tiwari, B.Tech batch 2014-2018, software engineer at Google.	4 hours	150
30 Dec. 2020	Coding Race-3	Coding competition	2 hours	40
13 Jan. 2021	CODEFEVER	Coding competition	2 hours	60
14 Jan. 2021	Hiring	Coding Club team hiring process started	3 interview rounds	80
16 Mar. 2021	Collaboration	Coding Club has collaborated with Myways Organization for Conducting Workshops, Webinar in club.	1 hour	23

Industrial talks:

Date	Speaker	Company	No. of students
17 Jan. 2021	Zeel Thakkar	Morgan Stanley	150
30 Jan. 2021	Amit Pandey	Thales	150
10 Feb. 2021	Gabi Stein	Microsoft	150
10 Feb. 2021	Amy Shan	Microsoft	150
10 Feb. 2021	Tessa Wiedmann	Microsoft	150

Summary:

Total number of coding sessions	21
Total number of coding contests	4
Total Quiz	9
Total industrial talk	3
Total alumni talk	3
Total discussion sessions	3
Collaboration with startups	1
Total webinars	1

Sports & Games

Games & Sports Section, SAC, NIT Meghalaya had organized an event **"FIT India Freedom Run"** under the aegis of FIT India Movement during 15-08-2020 to 02-09-2020 with the permission our Director, NIT Meghalaya. The event had organized to promote FIT INDIA mission following the social distancing norms. All the participants were advised to follow the Government guideline SOP norms while running/ walking. Numbers of 46 interested participants from Faculty, Staff and Students enrolled for the event. FIT India T-shirts were distributed to the participants along with face mask based on the availability of number of T-shirt and their interest. As per the Government guideline, a participant run/ walks as per their convenient time and location. Participant details, video recording, 5 photos of running/walking, including the number of days, distance covered and timing were collected by the committee to submit the FIT India portal. After the event we have upload all the details in their website as per the requirement. At the end of the event, our Institute received participate certificate as an appreciation from Fit India website. For smooth conducting of this event, advanced money of Rs. 12,000/- received from SAC, NIT Meghalaya.

Certificate of Participation

Photos of few participants:





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NSS Activities

Due to the absence of physical attendance of students in the Institute campus during the Covid – 19 pandemic, the regular NSS activities in the campus and outside could not be conducted during the session 2020-21.

However, the NSS team did constitute a team of 23 students in 2020 to be headed by a faculty member of NIT Meghalaya for working towards drug addiction eradication campaign for the session 2020.

1. The student volunteers along with the faculty members conducted an awareness program on drug abuse in NIT Meghalaya campus and hostels by distributing leaflets containing useful and basic information on the consequences of drug abuse on the individual, the family and society at large.
2. A few local rehab centres in Meghalaya were contacted for conducting a training and awareness session for early detection of drug abuse, identifying individuals with drug addiction, and most importantly for drug de-addiction. However due to Covid – 19 pandemic, this could not be pursued as yet.

Students' Placement

Placement activities are an integral part of National Institute of Technology 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 helps that the students to 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 students was taken up with high priority and the Institute could bring a good number of companies for recruitment. Taking cognisance of the uncertain times in the wake of COVID-19 outbreak, infrastructural facilities were ramped up for conducting the placement related activities of the students smoothly through online modes. Facilities were upgraded for remotely conducting the tests, facilitating interviews through VCs and interacting with the students and the recruiters through a number of virtual platforms on AV modes. All the recruitment drives were held virtually through online mode, to ensure the safety and health of the students. The details of the recruiting organizations along with their job offers and packages are given below:

Sl. No.	Company Name	No. of Offers	Package Offered (Rs in lakhs per annum)
1.	Publicis Sapient	2	7.5
2.	LTI	2	5
3.	Incture	6	8
4.	Infosys Hackwithinfy	4	8, 5, 3.6
5.	Zopsmart	2	8
6.	Technoforte	3	4.5

Sl. No.	Company Name	No. of Offers	Package Offered (Rs in lakhs per annum)
7.	Infosys	4	5
8.	C-DAC	1	6
9.	Nokia	1	7
10.	Coriolis	3	6
11.	L&T Construction	4	6.5
12.	GAP	2	9.08
13.	TCS	5	9.3
14.	CGI	5	6.8
15.	Vedanta	5	7.95
16.	Alstom	1	6.5
17.	Meesho	1	25
18.	Deloitte	5	7.6
19.	Tata Power	2	6.06
20.	Cognizant	2	7
21.	Tredance Analytics	3	6.5
22.	Maventic	1	3.8
23.	CADVision Engineers Pvt Ltd	1	4.5
24.	INVENIO	2	5
25.	Perfect VIPs Techno Solutions Pvt Ltd.	3	3.6 (B. Tech) & 4.5 (M. Tech)
26.	FEEDCO	1	3

	Rs. in lakhs per annum
Highest Package	25.00
Lowest Package	3.00
Average Package	7.10

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 Centre 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 help the students brush up the technical knowledge, the Center for Career Development conducted GATE Training remotely with the generous support of the TEQIP III Scheme of the Ministry of HRD, Government of India, to improve the quality of technical education. Employability Assessment Tests were also conducted as an employability checkup and based on the comprehensive report, efforts are made to improve the overall student employability.

Central Library

The NITM Central Library is computerized with an integrated system connected to the Campus Network, providing an e-resources facility to the institutional community. The entire Library collections, including the online databases, are made available through Institute's network. The users can also search Library collection (print) through Web OPAC. The various e-resources subscribed by NITM and as provided by E-Shodh Sindhu (ESS) are as follows:

(1). IEEE (2). Science Direct (3). Scopus (4). Springer Nature (5). ASME (6). ASCE (7). MathSciNet (8). J-Gate (9). ACM Digital Library (10) Turnitin anti-plagiarism software

The E-books purchased by The Central Library are:

(1) Wiley e-books (1005 Titles)

(2) Pearson e-books (175 Titles)

The Central Library also received funds from TEQIP-III for procuring e-books from various publishers {i.e., Elsevier (581 titles), Springer Nature (3931 titles), McGraw-hills (185 titles), E-Lib 4u e-books (100 titles), and Grammarly software for checking the grammars.

Budgetary & Expenditure Details

The budget allocated for the Central Library for the FY 2020-21 is Rs. 1.5 Crore. Below table gives the detailed expenditure incurred on books, journals, newspaper, binding etc. for 2020-21:

Year	Printed Books	Online Databases/e-Journals	Newspaper & Magazine etc
2020-21	----	11917753.00	10000.00

The Central Library also received fund from TEQIP-III for procuring e-books, The expenditures (in Rupees) are as follows:

Year	McGraw Hill Schaum's Outline Series	Elib 4u e-Books from multiple publishers (Indian)	Springer Nature e-Books	Elsevier e-Books	Total Amount
2020-21	709078.00	694575.00	1997093.00	2108221.00	5508967.00

Library Collections

The collections of the 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 the library as on 31st March 2021 stands as follows:

Sl. No.	Name of Resources	Collection as on 31st March 2021
1	Printed Books	15404
2	E-books	5977
3	E-Databases/E-Journals	12
4	Books Bank (SC/ST)	1462
5	Theses	33
6	Magazines	4
7	Newspaper	8
8	Report/Annual Reports/Audit Reports	21

Achievements of the Central Library

To enable the student's community and faculty members to access the various e-resources subscribed by the Library remotely during the Pandemic. Individual e-resource such as Science Direct, IEEE, and others provide the login details, whereby a user can log in and access the resources from anywhere as long as he/she has Internet connectivity.

To avoid the various login details provided by different publishers and enable the user community to access the multiple e-resources subscribed/purchased in one platform, either within campus or remotely. The Library has subscribed to KNIMBUS mLibrary. Through this, the users can access the various e-resources through their mobile app or desktop/ laptop as long as they have Internet Connectivity.

TEQIP Cell

The TEQIP Cell of NIT Meghalaya was established in January 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 1.1 of TEQIP. NIT Meghalaya has received a grant of rupees fifteen crores under this program that has been used to develop laboratories, procure state of the art equipment and for the development of student, staff and faculty of the institute. Research scholars have been provided assistantship under TEQIP and their journey for attending Conferences, Workshops etc., have been facilitated under this program. It is noteworthy that 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. At the end of the 2020-2021 financial year, NIT Meghalaya was able to achieve nearly 100% expenditure in the procurement heads which was one of the major challenges in TEQIP. The performance audit score of NIT Meghalaya was above the National average and one of the best in Northeastern part of India. In addition to the additional allocation, NIT Meghalaya has been promised with a reward of smart classrooms as another incentive under TEQIP.

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). As per RCE approved by the Cabinet and circulated vide Ministry letter F No.33-1/2012.TS-III dated New Delhi, 4th March 2020 an amount of Rs.429.70 crores has been earmarked for Civil Works. As per RCE approval, only the following buildings are to be completed in order of their priority, viz; Administrative Building, Academic Building (4 blocks) , Hostel Buildings (Boys and Girls), Faculty & Staff Quarters, Library cum Computer Centre Workshop Building, Sub Station(ESS) Building (2 Nos). The other works/buildings, viz; Lecture Hall, Auditorium Building, Director's Bungalow, Guest House, Medical Centre, Sports Complex, Roadworks, Service and Utilities, External Electrical works, etc. have been foreclosed.

The construction activities during 2019-20 have been going in a slow pace due to COVID-19 pandemic, law and order situation in Sohra area, restriction of migrant labourers by State Govt., etc. 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 above stated reasons. Overall progress of works undertaken by RITES Ltd. (PMC) is about 68%only. The Institute re-scheduled shifting to the permanent campus by 2022.

Attached herewith few photographs of ongoing works in the permanent campus.


ADMINISTRATIVE BLOCK


ACADEMIC BLOCK- A


ACADEMIC BLOCK- B


ACADEMIC BLOCK- C


ACADEMIC BLOCK-D


LIBRARY


WORKSHOP

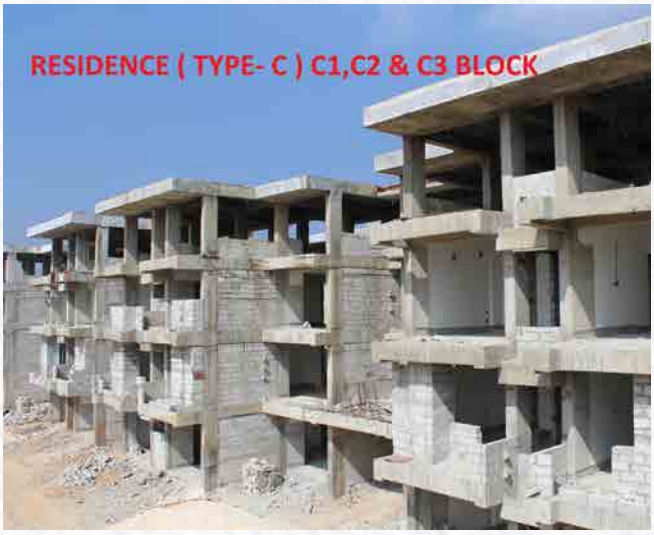

BOY'S HOSTEL THREE SEATER


BOY'S HOSTEL -B BLOCK (SINGLE SEATER)


GIRL'S HOSTEL


RESIDENCE (TYPE-A) A1,A2&A3 BLOCK


RESIDENCE (TYPE-B) B1,B2 &B3 BLOCK


RESIDENCE (TYPE- C) C1,C2 & C3 BLOCK


RESIDENCE (TYPE -D) A & B BLOCK


RESIDENCE (TYPE -E) A & B BLOCK


E.S.S. -1 (Pkg-1)

Academic Departments and Centres

Department of Civil Engineering

1. Brief Introduction to the Department:

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

The academic activities of the Department emphasizes on deep understanding of the fundamental principles on Civil Engineering, development of creative ability to handle the challenges of Civil Engineering and the analytical ability to solve problems which are interdisciplinary in nature. The Department also encourages its students to engage in extra-curricular and co-curricular activities, essential for their own personal development apart from nurturing team spirit and developing organizational skills. The faculty members of the Department are involved in high-quality research 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.

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	-	
Dr. Needhi Kotoky	Assistant Professor	Ph.D	Structural Engineering	September 8, 2020	-	
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

List of Publications:

a. Journals:

Year 2021:

1. 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
2. Hopeful Syiemiong, **Comingstarful Marthong** (2021). "The effect of mortar grade on the out-of-plane behaviour of low-strength masonry wall strengthened with welded wire mesh", Construction and Building Materials, 279,1-17,https://doi.org/10.1016/j.conbuildmat.2021.122393..
3. Jonathan Vanlalruata, **Comingstarful Marthong** (2021). "Behaviour of RC beam-column joint with varying location of construction joints in the column", Earthquake and Structure, Techno Press, 20(1), 29-38,https://doi.org/10.12989/eas.2021.20.1.299
4. GSR Reddy, M Bolla, **ML Patton**, **D Adak**. Comparative Study on Structural Behaviour of Circular and Square Section-Concrete Filled Steel Tube (CFST) and Reinforced Cement Concrete (RCC) Stub Column, Structures, Elsevier, Vol.-29, Page Nos 2067-2081, 2021. https://doi.org/10.1016/j.istruc.2020.12.078
5. KH Lepcha, **ML Patton**. Numerical study on structural behaviour of lean duplex stainless steel tubular beams with rectangular web openings, Structures, Elsevier, Vol.-32, Page Nos 1233-1249, 2021. https://doi.org/10.1016/j.istruc.2021.01.081
6. K.K. Ramagiri, D.R. Chauhan, S. Gupta, A. Kar, D. **Adak**, A Mukherjee, High temperature performance of ambient cured alkali activated binder concrete, Innovative Infrastructure Solutions, 2021, 6, 3 - 11.
7. S. Das, S. Dutta, **D. Adak**, S. Majumdar, "On the crack characterization of reinforced concrete structures: Experimental and data-driven numerical study",

Structures, 2021, 30, 134-145.

8. GSR Reddy, M Bolla, **ML Patton**, **D Adak**. Comparative Study on Structural Behaviour of Circular and Square Section-Concrete Filled Steel Tube (CFST) and Reinforced Cement Concrete (RCC) Stub Column, Structures, Elsevier, Vol.-29, Page Nos 2067-2081, 2021. https://doi.org/10.1016/j.istruc.2020.12.078
9. Das S, Dutta S, **Adak D**, Majumdar S (2021), Serviceability-based design of civil structure and infrastructure systems: A review on design aspects and way forward for sustainable and resilient designs. International Journal of Ocean Systems Management, Inderscience. (Accepted, in press)
10. **Sahoo, S**., Manna, B. and Sharma, K. G. (2021). "Shaking table tests to evaluate the seismic performance of soil nailing stabilized embankments." International Journal of Geomechanics (ASCE), Volume 21, Issue 4. DOI: 10.1061/(ASCE)GM.1943-5622.0001981.
11. Fabio Freddi, Jayadipta Ghosh, **Needhi Kotoky** and Meera Raghunandan. (2021) "Device uncertainty propagation in low-ductility RC frames retrofitted with BRBs for seismic risk mitigation", Accepted in Earthquake Engineering and Structural Dynamics.

Year 2020:

1. Hopeful Syiemiong, **Comingstarful Marthong** (2020). "Effect of mortar grade on the uniaxial compression strength of low-strength hollow concrete block masonry prisms" Material Today: Proceedings, 28(2), 842-845, https://doi.org/10.1016/j.matpr.2019.12.309.
2. **Comingstarful Marthong** (2020). "Compressive behavior of galvanized steel wire mesh (GSWM) strengthened RC short column of varying shapes", Structural monitoring and maintenance-An Intl. 7(3), 5-231, https://doi.org/10.12989/smm.2020.7.3.215
3. Hopeful Syiemiong, **Comingstarful Marthong** (2020). "Flexural behavior of low strength masonry wallettes strengthened with welded wire mesh", Material Today: Proceedings, https://doi.org/10.1016/j.matpr.2020.10.452.
4. KH 5. Lepcha, AL Marbaniang**, ML Patton**, A Khyriemmujat. Behaviour and Design of Lean Duplex Stainless Steel (LDSS) Beams with Web Openings Under Pure Bending, International Journal of Steel Structures, Springer, Page Nos -1-17, 2020. https://doi.org/10.1007/s13296-020-00342-4
5. **H. M. Kalita**, A Numerical Model for 1D Bed Morphology Calculations, Water Resources Management, Vol. 34, Issue No. 15, Page Nos. 4975-4989, 2020
6. K. Bora, **H. M. Kalita**, Best groyne series as countermeasure against river bend scour, Proceedings of ICE-Water Management, doi.org/10.1680/jwama.20.00020, 2020.
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," ASCEASME Journal of Risk and Uncertainty in Engineering Systems, Part A : Civil Engineering (American Society of Civil Engineers (ASCE)), 2020, vol. 6, no. 2, pp. 04020013,
8. **Sahoo, S**., Manna, B. and Sharma, K. G. (2021). "Shaking table tests to evaluate the seismic performance of soil nailing stabilized embankments." International Journal of Geomechanics (ASCE), Volume 21, Issue 4. DOI: 10.1061/(ASCE)GM.1943-5622.0001981.
9. A. Gupta, **D. Podder**, Optimum position of outrigger belt system in a high rise RCC building through pushover analysis, Asian Journal of Civil Engineering, 2020, Accepted, https://doi.org/10.1007/s42107-020-00313-4.
10. A. Gadagi, N.R. Mandal, O.P. Sha, S,Kumar, S. Pujari, R.K. Pentakota, **D.Podder**, P. Akurati, Experimental Investigations on ThermoMechanical Tensioning (TMT), comparison with Heat Sink, and Its Application to a Grillage Structure, JSPD, 2020.
11. S.Dey and **G.C.Dhal**, (2020) Synthesis of CuMnOx catalysts by novel routes for selective catalytic oxidation of carbon monoxide, Computational Toxicology Volume 16, November 2020, 100132
12. Harshwardhsn Singh Chouhan, Ravindra Singh Chouhan, Pawan Kalla, Ravindra Nagar, **Pradeep Kumar Gautam** (2020) Ëffect of Kota stone Slurry on strength properties of cement mortar mixes."Accepted in Materials Today Proceedings
13. **Needhi Kotoky**, Anjan Dutta and Sajal K Deb. (2020) "Mechanical properties of Hybrid Fibre Reinforced Concrete with steel and polypropylene fibres", The Indian Concrete Journal, 94(12), pp. 29-37.
14. **Supratim Kaushik** & Anjan Kumar Siddagangaiah (2020) Characterisation of cement grouted bituminous mixes using marginal aggregates, Road Materials and Pavement Design, DOI: 10.1080/14680629.2020.1828152

b. Book chapters:

Year 2021:

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. **Chakraborty R**., Dey A. (2021) Influence of Toe Cutting on Seismic Response of a Typical Hill Slope in North East India. In: Prof. T. G. Sitharam, Dr. Ravi Jakka, Prof. L. Govindaraju (Eds.). Local Site Effects and Ground Failures. Lecture Notes in Civil Engineering. DOI: 10.1007/978-981-15-9984-2

c. Conferences:

Year 2021:

1. Teekam Singh, B.L. Swami , Pawan Kalla, Harshwardhan Singh Chouhan , **Pradeep Kumar Gautam** (2021) "Effect of Nano particle based anti-stripping agent on moisture-induced damage for bituminous concrete mixes." ICSEEGT 2021 at Jaipur, India

Year 2020:

1. Syiemiong, H. and **Marthong, C.** (2020). Flexural behavior of low strength masonry wallettes strengthened with welded wire mesh, International Conference on Advanced Materials Behavior & Characterization (ICAMBC 2020), Chennai, India, 18th - 20th, JULY 2020.
2. D. Srinivas, C. Hardik, Ch. Srinivasarao, **D. Adak** "A study on partial and full replacement of fine aggregate in high- performance concrete with granulated blast furnace slag," ERTSE 2020 at Chennai, India, 10.1088/1757-899X/989/1/012013
3. H. Bisht, A. Gupta, D. Srinivas, **D. Adak** "Structural performance of nano-silica based blended CFST stub circular column," ERTSE 2020 at Chennai, India, 10.1088/1757-899X/989/1/012003
4. D. Srinivas, **D. Adak**, "Development and Characterization of Process Modified Alkali Activated Concrete for Sustainable Green Construction.", ASCE India Conference on "Challenges of Resilient and Sustainable Infrastructure Development in Emerging Economies", Kolkata, March 02-04, 2020.
5. **Supratim Kaushik**, Abhijit Bairagi, Anjan Kumar S, "Moisture susceptibility assessment of Cement and RBI-81 stabilized subgrade 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
6. **Supratim Kaushik**, Shaikhul Islam Prodhani, Anjan Kumar S, "Characterization of a clayey soil using the cyclic CBR method", 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. Conference/ Workshop/ Seminar Organized:

2021

1. **Dr. Comingstarful Marthong,** Bitumen and Road Construction, 30th March, Online workshop sponsored by Indian oil Corporation, Guwahati Divisional Office.
2. **Dr. H M Kalita**, TEQIP-III SPONSORED ONLINE WORKSHOP on "Importance of Environmental Engineering and Climate Change" on March 12-16, 2021
3. **Dr. G C Dhal**, TEQIP-III SPONSORED ONLINE WORKSHOP on "Importance of Environmental Engineering and Climate Change" on March 12-16, 2021

2020

1. **Dr. C Marthong**, Structural Safety Audit, 16th-20th November, Online Training programme sponsored by District Disaster Management Authority, Govt. of Meghalaya
2. **Dr. C Marthong**, Rapid Visual Screening of Buildings, 7th – 9th Dec 2020, Online Training programme sponsored by District Disaster Management Authority, Govt. of Meghalaya.
3. **Dr. D Adak**, Assessment of RCC structural safety based on the non-destructive testing a five day workshop organized by Organized by Department of Civil Engineering National Institute of Technology Meghalaya in collaboration with District Disaster Management Authority (DDMA), Government of Meghalaya, Shillong.

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

Sl. No.	Name of Faculty	Name of the programme attended	Duration
1.	Dr. Hriday Mani Kalita	Outcome Based Engineering Education and Accreditation (OBEEA 2020), sponsored by TEQIP-III, organized by NIT Meghalaya	21 - 23 September, 2020.
2.	Dr. Hriday Mani Kalita	"Classical and Metaheuristic Optimization Methods for Engineering planning and design" conducted by Department of Civil Engineering under the Technical Education Quality Improvement Programme (TEQIP III)	22 - 26 February, 2021
3.	Dr. D. Adak	Affordable Technology Solutions for Efficient Farming (BRTC KIIT-TBI Webinar).	2020
4.	Dr. D. Adak	Strengthening of Seed System in North East (BRTC KIIT-TBI Webinar).	2020
5.	Dr. D. Adak	IoT Devices for Remote Monitoring and Tracking (BRTC KIIT-TBI Webinar).	2020
6.	Dr. D. Adak	Exit Strategies for Startups (BRTC KIIT-TBI Webinar).	2020
7.	Dr. D. Adak	Hi-tech Organic Farming and City-Eco Village Concept (BRTC KIIT-TBI Webinar).	2020
8.	Dr. D. Adak	Post COVID - 19 Resurgence of Indian Industry and R & D (SRM University AP).	2020
9.	Dr. D. Adak	Emerging Research Trends in Structural Engineering (ERTSE-2020).	2020
10.	Dr. D. Adak	Virtual Conference on Disaster Risk Management VCDRR 2021 (NITK).	2021
11.	Dr. P. K. Gautam	International Conference on Sustainable Energy, Environment and Green Technologies held at Poornima College of Engineering, Jaipur, Rajasthan India.	5 - 6 March 2021
12.	Shri. Suman Kumar	STC on Analytical Mechanics and its Applications, Sponsored by TEQIP, Organised by CET, IIT Guwahati	Dec 14-18 2020
13.	Smt. R Chakraborty	Outcome Based Engineering Education and Accreditation (OBEEA 2020), sponsored by TEQIP-III, organized by NIT Meghalaya	21 - 23 September, 2020
14.	Smt. R Chakraborty	SEISMIC HAZARD & RISK ASSESSMENT-Special attention to North East India organised by Department of CIVIL Engineering, TCEA	12th & 13th September, 2020
15.	Smt. R Chakraborty	Indo-Canadian Workshop on Interactive Design in Geotechnical Engineering: Theory to Practice, Organised by Indian Institute of Technology (IIT) Kanpur, India	24 Sep - 2 Oct, 2020.
16.	Shri. S Kaushik	Outcome Based Engineering Education and Accreditation (OBEEA 2020), sponsored by TEQIP-III, organized by NIT Meghalaya	21st-23rd September, 2020.

7. Invited Talks Delivered

» **Dr. M L Patton**, Invited talk delivered in IIT Indore on "Recent advancement in Structural and Geotechnical Engineering" from 8-13th March 2021

» **Dr. D Adak**, A talk on Antibacterial Activity of fly Ash based Cement Concrete in a technical season organized by The Ramco cements

» **Dr. D Adak**, A talk on Assessment of RCC structural safety based on the non-destructive testing a five days' workshop organized by Organized by Department of Civil Engineering National Institute of Technology Meghalaya in collaboration with District Disaster Management Authority (DDMA), Government of Meghalaya, Shillong.

» **Dr. D Adak**, A talk on Bacterial concrete in a national webinar season organized by Department of Civil Engineering, Haldia Institute of Technology, Kolkata, India.

» **Dr. P Gautam,** Expert talk on "Waste Utilization as Construction Materials" in faculty development

program titled "Sustainable cities and infrastructure" , September 13-15 2020 at Poornima Engineering College Jaipur

» **Dr. P Gautam**, Expert talk on "Advance Testing for Flexible Pavement Materials" in two week short term training program titled "Assessment of Engineering in Infrastructure Development" , October 26 to November 4th at Engineering College Jhalawar

» **Dr. P Gautam,** Expert Talk on "Construction and demolition waste management" at Five day online faculty development program on Recent Advancement in Construction and Demolition Waste Management." February 22-26 2021 at NIT Surathkal

8. Projects

a. Sponsored Project:

Sl. No.	Title of the Project	Investigators (P.I. / Co-P.I.)	Funding Agency	Funding amount	Duration	Status
1	Comparison of Structural behavior of CFST and RCC stub columns	Dr. M Longshithung Patton (PI)	TEQIP – III, NIT Meghalaya, INDIA	Rs. 2,00,000/- (Rs. Two Lakhs Only)	2 years (2019-2021)	Ongoing
2	Instrumentation, Real Time-Monitoring and Remediation of a steep soil slope in Meghalaya	Dr. Smrutirekha 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
3	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
4	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
5	Low-Cost Green Concrete Panels for Assam Type Hou sing	Dibyendu Adak (PI)	TEQIP – III, NIT Meghalaya, INDIA	Rs. 200,,000/- (Rs. Two Lakhs Only)	2 years (2019-2021)	Ongoing
6	Development and Characterization of Ternary Blended Geopolymer Concrete: A Sustainable Material for Green Construction Technology.	Dibyendu Adak (PI)	State Council of Science, Technology and Environment (SCSTE) Meghalaya	Rs. 1,00,000/- (Rs. One Lakh Only)	1 year (2019-2020)	Ongoing

b. Consultancy:

Sl. No.	Tittle	Consultants	Client(s)	Value	Status
1	Testing of materials for construction of open store yard with PCC PAD near switch yard area, 132 KV, Khliehriat, Sub-station	Dr. C Marthong	Power Grid Corporation India Ltd.	67,319	Completed
2	Testing of materials of switch yard road for 230/132/33 KV GIS New Shillong	Dr. C Marthong & Dr. ML Patton	Power Grid Corporation India Ltd.	11,682	Completed

Sl. No.	Tittle	Consultants	Client(s)	Value	Status
3	Testing of construction materials of 220/132 KV GIS Mawngap Sub-station under NERPSIP	Dr. C Marthong	Power Grid Corporation India Ltd.	12,980	Completed
4	Testing of mateials for Shillong International Center for performing Arts & Culture (SICPAC)	Dr. C Marthong & Dr. ML Patton	Hindustan Steels Works Construction Ltd.	12,980	Completed
5	Testing of clay bricks	Dr. C Marthong	Soil and Water Conservation Dept, Govt of Meghalaya	5,900	Completed
6	Quality check of the ongoing construction of the residential building of PH-II-NEIAH, Shillong	Dr. C Marthong & Dr. ML Patton	National Projects Construction Corporation Ltd. NPCC), Shillong	8,99,271	Completed
7	Technical and economic appraisal of DPR for project recommended by DONER under NESIDS (Laying of feeder mains under TURA Phase I & II water supply scheme)	Dr. C Marthong, Dr. ML Patton & Dr. H.M. Kalita	PHED, Govt. of Meghalaya	56,19,872	Completed
8	Testing of materials for const. of 220/132 KV, Mawngap GIS Sub-Station	Dr. C Marthong	Power Grid Corporation India Ltd.	9,735	Completed
9	Mix design for M/s Singla Associate (AGE)	Dr. C Marthong & Dr. ML Patton	MES (AGE), Shillong	89,557	Completed
10	Testing of concrete cubes for construction of 220/132 KV Mawngap Sub-station	Dr. C Marthong	Power Grid Corporation India Ltd.	19,470	Completed
11	Conducting Mix design for const. of Commercial Complex, Polo Bazar, Shillong	Dr. C Marthong	M/s Badri Rai & Co.	44,781	Completed
12	Testing of concrete cubes for const. of Add. Landfill and Ancillary works at Marten, Shillong	Dr. C Marthong	Sri. B.D. Marbaniang, Contractor	1,947	Completed
13	Testing of materials for const. of Regional labour Institute at Shillong	Dr. C Marthong & Dr. ML Patton	CPWD, Shillong	1,52,515	Completed
14	Conducting Mix design (M25 & M30) for IIM Shillong Project	Dr. C Marthong	SOM Project and RITES Ltd.	83,870	Completed
15	Conducting Mix design (M25 & M30) for IIM Shillong Project	Dr. C Marthong & Dr. ML Patton	SOM Project and RITES Ltd.	83,869	Completed
16	Testing of Concrete cubes for const. of Security Barrack at RHQ, Shillong	Dr. C Marthong	Power Grid Corporation India Ltd.	5,841	Completed
17	Testing of concrete cubes for const. of 132/33 KV Ampati (Ext), under NERPSIP, Phulbari	Dr. C Marthong & Dr. ML Patton	Power Grid Corporation India Ltd.	36,993	Completed
18	Testing of materials for const. of IIM Shillong projects	Dr. C Marthong	CPWD, Shillong	36,993	Completed
19	Safety audit of Maraikaphon Dorbar halls, Sohra	Dr. C Marthong	Maraikaphon Dorbar, Sohra	8,850	Completed

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

a. Best Conference Paper Award – Dr. D. Adak

10. Administrative Responsibilities Held:

Sl. No.	Name of Faculty	Responsibilities	Duration
1	Dr. C. Marthong	1. Dean (P&D), NIT Meghalaya 2. Faculty-in-charge of Structural Engineering Laboratory 3. Faculty Advisor for M.Tech Students 4. Chairman under Unnat Bharat Abiyan (UBA) (formerly known as Village adoption committee) in identifying villages for technical support. 5. Chairman, Purchase Committee, TEQIP-III	1. 1 year and continue 2. 2 year and continue 3. 2 year and continue 4. Continue 5. Continue
2	Dr. M. Longshithung Patton	1. Head of Department of Civil Engineering and decision related to academic matters of CE Dept. 2. Chairman, Furniture Committee	1. 3 year 2. 1 year
3	Dr. Hriday Mani Kalita	1. Faculty-in-charge of Water Resource Engineering Laboratory 2. Faculty-in-charge of Hydrology and Water Resource Engineering Laboratory 3. Departmental BTP coordinator 4. Chairman of On Campus Business Committee	1. 1 year 2. – 3. -- 4. 1 year
4	Dr. Smrutirekha Sahoo	1. Faculty-in-charge of Geotechnical Engineering Laboratory 2. Faculty Advisor of B.Tech 3rd year, Civil Engineering 3. Warden of Lapalang Girls Hostel with effect from 01.07.2019 4. Member of Center for Innovation, Incubation and Enterpreneurship of NIT Meghalaya w.e.f 01/07/2019 5. DRC Member in the Department	1. – 2. – 3. 1 year 4. 1 year 5. Continue
5	Dr. Susmita Sharma	1. Faculty-in-charge of Environmental Engineering Laboratory 2. Faculty Advisor for 4th Year B.Tech Students 3. Institute Grievance Committee Member 4. TEQIP Environmental Coordinator	1. 1 year 2. -- 3. 1 year 4. 1 year
6	Dr. D. Podder	1. Faculty-in-charge of Structural Analysis Laboratory 2. Faculty Advisor for 3rd Year B.Tech Students 3. Faculty-in-charge for Library related activities of CE Dept.	1. 1 year 2. 1 year 3. 2 year
7	Dr. D. Adak	1. Vice-President of SAC (Technical) 2. Member of IQAC. 3. Faculty in charge of computational lab. 4. Faculty Advisor for 1st Year B.Tech Students 5. Routine Committee member. 6. Faculty-in-charge of Material Laboratory 7. Departmental placement coordinator. 8. Member of CIF lab development committee.	1. 2 years 2. 1 year 3. 1.5 years 4. 06 months 5. 1 year 6. 1 year 7. 2 year 8. 1 year
8	Dr. P. Gautam	1. Faculty-in-charge of Transportation Engineering Laboratory	1. 06 months
9	Dr. G. C. Dhal	1. Faculty Advisor for 3rd Year B.Tech Students	1. 06 months
10	Supratim Kaushik	1. Faculty-in-charge of Transportation Engineering Laboratory	1. 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, No. M-1476399
3	Dr. Debabrata Podder	Associate Member (ID: AM186488-5), The Institute of Engineers (India).
		Associate Member (ID: 11855874), American Society of Civil Engineers.
4	Rubi Chakraborty	Life member of IGS, Membership for the period of 2018-2021 of ISSMGE
5	Suman Kumar	Member, The IEI, M-1716144
6	Supratim Kaushik	American Society of Civil Engineers (ASCE)
7	Dr. Dibyendu Adak	Associate member of ASCE
		Life member of Institution of Engineers India
8	Rubi Chakraborty	Life membership in IGS, Membership of ISSMGE

12. Any Other Notable Information

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

Faculty	Extension Activity	Role	Contributions
Dr. C. Marthong	Revenue and Disaster Management Department, Government of Meghalaya	Nodal Officer	As an advisory member to State Disaster Management Authority, Govt. of Meghalaya.
	BoG member of Captain Williamson Sangma Technical University, Meghalaya	BoG member nominated by Govt. of Meghalaya	Advisory member in regard to Administration and Academic affairs of Captain Williamson Sangma Technical University, Meghalaya

13. List of achievements and activities in the Civil Dept. during the Year 2020-21:

a. Department of Civil Engineering, NIT Meghalaya, signed an MoU with National Highways Authority of India (NHAI) on 26th of August 2020 for research project collaboration for the faculty and students of Civil Engineering Department.

b. Department of Civil Engineering, NIT Meghalaya, signed an MoU with National Council for Cement and Building Materials (NCCBM) on 1st of October 2020 to facilitate internships/training of NITM Students, sharing of facilities (such as laboratories and library resources), conducting joint seminars/workshops/conferences, provision for Ph.D enrollment from NCCBM, joint research projects as well as provision for NITM faculty as adjunct or visiting scientists to NCCBM.

Department of Computer Science and Engineering

1. Brief Introduction to the Department:

The Department of CSE at NITM has adequate facilities to support each activity 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).

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	2- Full time 1- Part time
Dr. Akhilendra 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, Machine Learning	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. C. Lalengmawia and A. Chakrabarty, "A New Technique for 2D Nearest Neighbour Realization of Quantum Circuits using Weighted Look-ahead", IET Computers and Digital Techniques, vol. 14, no. 6, pp. 281-289, Nov 2020.
2. K. H. K. Reddy, R. K. Behera, A. Chakrabarty and D. S. Roy, "A Service Delay Minimization Scheme for QoS Constrained, Context Aware Unified IoT Applications," IEEE Internet of Things Journal, vol. 7, no. 10, pp. 10527 - 10534, Oct 2020
3. 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)
4. 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)
5. 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.
6. 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)*
7. 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).
8. Physique-based Human Activity Recognition using Ensemble Learning and Smartphone Sensors, NA Choudhury, S Moulik, DS Roy, IEEE Sensors Journal, 2021
9. Image Encryption and Authentication with Elliptic Curve Cryptography and Multidimensional Chaotic Maps, P Parida, C Pradhan, X Gao, DS Roy, RK Barik, IEEE Access, 2021
10. A real-time DWT and traveling waves-based multi-functional scheme for transmission line protection reinforcement, K Jnaneswar, B Mallikarjuna, S Devaraj, DS Roy, MJB Reddy, Electrical Engineering 103 (2), 965-981, 2021
11. Off-line signature verification using elementary combinations of directional codes from boundary pixels, M Ajij, S Pratihar, SR Nayak, T Hanne, DS Roy, Neural Computing and Applications, 1-18, 2021
12. An SDN empowered location aware routing for energy efficient next generation vehicular networks, K Renuka, DS Roy, KHK Reddy, IET Intelligent Transport Systems 15 (2), 308-319, 2021
13. A genetic algorithm based energy efficient group paging approach for IoT over 5G, B Pradhan, V Vijayakumar, S Pratihar, D Kumar, KHK Reddy, DS Roy, Journal of Systems Architecture 113, 101878, 2021
14. A counter based approach for reducer placement with augmented Hadoop rack awareness, MIRW HUSSAIN, KH REDDY, DS ROY, Turkish Journal of Electrical Engineering & Computer Sciences 29 (1), 437-453, 2021
15. A Novel Discrete Firefly Algorithm for Constrained Multi-Objective Software Reliability Assessment of Digital Relay, MR Nalluri, K Kannan, DS Roy, Machine Vision Inspection Systems, Volume 2: Machine Learning-Based, 2021
16. An intrusion detection model using improved convolutional deep belief networks for wireless sensor networks, W Wen, C Shang, Z Dong, HC Keh, DS Roy, International Journal of Ad Hoc and Ubiquitous Computing 36 (1), 20-31, 2021
17. MCDP: Maximizing Cooperative Detection Probability for Barrier Coverage in Rechargeable Wireless Sensor Networks, P Xu, J Wu, CY Chang, C Shang, DS Roy, IEEE Sensors Journal, 2020
18. A genetic algorithm for energy efficient fog layer resource management in context-aware smart cities, KHK Reddy, AK Luhach, B Pradhan, JK Dash, DS Roy, Sustainable Cities and Society 63, 102428, 2020
19. A Novel Patient-Centric Architectural Framework for Blockchain-Enabled Healthcare Applications, AP Singh, NR Pradhan, S Agnihotri, N Jhanjhi, S Verma, U Ghosh, D Roy, IEEE Transactions on Industrial Informatics, 2020

20. Clonal selection algorithm for energy minimization in software defined networks, MW Hussain, B Pradhan, XZ Gao, KHK Reddy, DS Roy, Applied Soft Computing 96, 106617, 2020

21. A Distributed Multilevel Data Collection Mechanism Using Bus in WSNs, CY Chang, CC Lin, WH Liao, DS Roy, IEEE Systems Journal 2020

22. Joint Data Collection and Fusion Using Mobile Sink in Heterogeneous Wireless Sensor Networks, Z Lin, HC Keh, R Wu, DS Roy, IEEE Sensors Journal 21 (2), 2364-2376, 2020

23. Search for resonant pair production of Higgs bosons in the bbZZ channel in proton-proton collisions at root s= 13 TeV, N Van Remortel, HS Chen, Z Liu, J Wang, H Zhang, J Zhao, X Gao, Physical Review D: Particles, Fields, Gravitation and Cosmology, 2020

24. An Indirect Controller-Legacy Switch Forwarding Scheme for Link Discovery in Hybrid SDN, MW Hussain, KHK Reddy, JJPC Rodrigues, DS Roy, IEEE Systems Journal, 2020.

25. Pynbianglut Hadem, Dilip Kumar Saikia, Soumen Moulik, "I-SMITE: An IP Traceback Mechanism for Inter-AS SDN Networks with BGP", Inderscience International Journal of Security and Networks, September 2020, DOI: 10.1504/IJSN.2020.10036629. (Accepted)

26. TD Singh, AFUR Khilji, AV Singh, S Thokchom, S Bandyopadhyay, "Predictive approaches for the UNIX command line: curating and exploiting domain knowledge in semantics deficit data", Multimedia Tools and Applications 80 (6), 9209-9229, 2021.

27. Jaspreet Singh, Satyendra Singh Yadav, Vinay Kanungo, Vipin Pal, Yogita Yogita "A Node Overhaul Scheme for Energy Efficient Clustering in Wireless Sensor Networks" IEEE Sensors Letter, Vol. 5, 2021.

28. Kulkarni, A., Kumar, V., Yadav, S. et al. 3D Modelling of Superconductor Enabled Magnetic Induction Transmitter and Relay Coil for Non-conventional Media Communication. Wireless Pers Commun 111, 2577–2603 (2020).

29. Singh, A.P., Ashish Kr Luhach, Xiao-Zhi Gao, Sandeep Kumar, and Diptendu Sinha Roy. "Evolution of wireless sensor network design from technology centric to user centric: An architectural perspective." International Journal of Distributed Sensor Networks 16, no. 8 (2020)

30. P. Sharma, K. Bora, K. Kasugai, B. K. Balabantaray, 2020, "Two Stage Classification with CNN for Colorectal Cancer Detection", Oncologie, 22(3), 129–145, 2020

31. R. Nayak, D. Patra, and B. K. Balabantaray, 2020. "Super-Resolution Image Reconstruction Using Molecular Docking" IET Image Processing, vol. 14, Issue 12, Pages 2922-2936, https://doi.org/10.1049/iet-ipr.2019.0491. (SCI and Impact Factor 2.004).

32. R. Nayak, B. K. Balabantaray, and D. Patra, 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: https://doi.org/10.1007/s13369-020-04662-9 (SCI and Impact Factor 1.518).

(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, May 2020.

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, July 2020.

3. R. Nayak and Bunil K Balabantaray, 2021, Generative Adversarial Network for Heritage Image Super Resolution, Book: Computer Vision and Image Processing, Springer Singapore, CCIS 1377 ISBN: 978-981-16-1086-8 2021

4. R. Hansda, R. Nayak and Bunil K Balabantaray, 2021, Copy-Move Image Forgery Detection Using Spatio-Structured SIFT Algorithm, Book: Computer Vision and Image Processing, Springer Singapore, CCIS 1376, ISBN: 978-981-16-1086-8.2021

5. R. Nayak and Bunil K Balabantaray, 2021, MoBMGAN: Modified GAN based Transfer learning for automatic detection of COVID-19 cases using Chest X-ray Images, Book: Computational Modelling and data Analysis in COVID-19 Research, CRC Press, ISBN: 9780367680367

6. S. Ch. Barik, S. Mohapatra, B. Das, M. Acharaya, B. K. Balabantaray, 2021, Advanced Colored Image Encryption Method in Using Evolution Function, Advances in Machine Learning and Computational Intelligence, Springer, pp: 869-878.

(c) Conferences: (International)

1. C. Lalengmawia, and A. Chakrabarty, "Optimization of Local Ordering Technique for Nearest Neighbour Circuits", Proc. 2nd International Conference on Machine Learning, Image Processing, Network Security and Data sciences (MIND-2020), Silchar, India, Springer, June 2020, pp. 182-192.
2. 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, April 2020, pp. 1-5.
3. K. Sarkar, B. K. Balabantaray, A. Chakrabarty, B. B. Biswal and B. Mohanty, "Path Planning of Mobile Robots Using Enhanced Particle Swarm Optimization," 2020 3rd International Conference on Energy, Power and Environment: Towards Clean Energy Technologies, IEEE Publications, April 2021, pp. 1-6.
4. 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.
5. 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.
6. 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.
7. 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)*
8. Enabling Indirect Link Discovery Between SDN Switches, MW Hussain, DS Roy, Proceedings of the International Conference on Computing and Communication ,2021
9. S Divakar, R Priyadarshini, RK Barik, DS Roy, "An Intelligent Intrusion Detection Scheme Powered by Boosting Algorithm", 2021 11th International Conference on Cloud Computing, Data Science, 2021
10. HKR Ashu A., Mir Wajahat Hussain, Diptendu Sinha Roy, "Intelligent Data Compression Policy for Hadoop Performance Optimization", Proceedings of the 11th International Conference on Soft Computing and , 2020
11. U Saxena, S Moulik, DS Roy," Prediction of Syncope based on Physiological Data Analysis using Decision Tree Algorithm," 2020 IEEE International Conference on Consumer Electronics-Taiwan, 2020
12. M Reza, S Choudhury, JK Dash, DS Roy," An AI-based Real-Time Roadway-Environment Perception for Autonomous Driving," 2020 IEEE International Conference on Consumer Electronics-Taiwan, 2020.
13. TD Singh, AFUR Khilji, AV Singh, S Thokchom, S Bandyopadhyay, "Seq2Seq and Joint Learning Based Unix Command Line Prediction System", arXiv preprint arXiv:2006.11558, NEHU Shillong, June 2020.
14. Anju Yadav, Vivek Kumar Verma, Vipin Pal, Saumya Singh "Automatic Detection of COVID 19 Infection Using Deep Learning Models from X-Ray Images", IOP Conference Series: Materials Science and Engineering, India, 2021.
15. Anju Yadav, Tarun Jain, Vivek Kumar Verma, Vipin Pal "Evaluation of Machine Learning Algorithms for the Detection of Fake Bank Currency," 11th International Conference on Cloud Computing, Data Science & Engineering (Confluence), India, 2021.
16. A. Yadav, V. K. Verma, V. Pal, V. Jain and V. Garg, "Automated Detection and Classification of Breast Cancer Tumour Cells using Machine Learning and Deep Learning on Histopathological Images," 6th International Conference for Convergence in Technology (I2CT), India, 2021.
17. Nihar Ranjan Pradhan, Anil Kumar, Akhilendra Pratap Singh," Blockchain-Based Smart contract for Transportation of Blood Bank System", International Conference on Recent Trends in IoT and Blockchain, May 2020.
18. 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, July 2020. (Book Chapter)
19. Vinay Kumar, A alxim Prasanna, Dush Nalin, K Jayakody, Akhilendra Pratap Singh, Compressive Data Gathering for MI Based Clustered Non-Conventional WSNs, International Conference on communication and Information Technology ECIT, October 2020.
20. Yadav S., Kumar V., Dhok S.B., Srivastava G., Singh A.P., Gupta M.K. BER Performance Evaluation of Different Modulation Techniques for Underwater

FSO Communication System. In Advances in VLSI, Communication, and Signal Processing. Lecture Notes in Electrical Engineering, vol 587. Springer, Singapore,2020. https://doi.org/10.1007/978-981-32-9775-3_1.

21. R. Hansda, R. Nayak and B.K. Balabantaray, Copy-Move Image Forgery Detection via Combined Pseudo-Zernike Moment Invariants, 3rd International Conference on Energy, Power and Environment: Towards Clean Energy Technologies, IEEE, 2021.
22. Kousik Sarkar, Bunil Kumar Balabantaray, Alok Chakrabarty, Bibhuti Bhusan Biswal, Biswajit Mohanty, 2021, Path Planning of Mobile Robots Using Enhanced Particle Swarm Optimization, 3rd International Conference on Energy, Power and Environment: Towards Clean Energy Technologies, IEEE, 2021.
23. Raimoni Hansda, Rajashree Nayak and Bunil Kumar Balabantaray, 2020, Copy-Move Image Forgery Detection using Spatio-structured SIFT Algorithm, 5th IAPR International Conference on CVIP, IIIT Allahabad, 4-6 December 2020
24. Rajashree Nayak and Bunil Kumar Balabantaray, 2020, Generative Adversarial Network for Heritage Image Super Resolution, 5th IAPR International Conference on CVIP, IIIT Allahabad 2020
25. P. Sharma, K. Bora and B. K. Balabantaray, "Identification of Significant Frames from Colonoscopy Video: An Approach towards Early Detection of Colorectal Cancer," 2020 International Conference on Computational Performance Evaluation (ComPE), Shillong, India, 2020, pp. 316-320, doi: 10.1109/ComPE49325.2020.9200003.
26. B. K. Balabanataray, R. Chakravarty, A. K. Panda and R. Nayak, 2020, Melanoma Classification Through Transfer Learning by the Analysis of Skin Lesion Images, 3rd International Conference on I3CS, NEHU Shillong, 11-12 July 2020
27. Lizia Sahkhar, Bunil Kumar Balabantaray, 2020, 3rd International Conference on I3CS, NEHU Shillong, 11-12 July 2020.

5. Conference /Workshop/ Seminar Organized:

1. Dr. Alok Chakrabarty organized a national seminar on "Contemporary applications of Statistical Natural Language Processing" at NIT Meghalaya in association with Computer Society of India on 07 Nov 2020. (Fig.1)
2. Dr. Alok Chakrabarty organized a five-days AICTE ATAL Faculty Development Programme titled "Internet-of-Things (IoT): From Data Acquisition to Storage and Analysis" at NIT Meghalaya during 14-18 Dec 2020 sponsored by AICTE. (Fig.2, Fig.3 and Fig.4)
3. Dr. Soumen Moulik organized AICTE sponsored Online Short-Term Training Program (STTP) on "Internet of Things (IoT): Building Blocks, Enabling Technologies, and Applications" from 8th March to 12th March, 2021. (Fig.5 and Fig.6)
4. Workshop on "Artificial Intelligence and it's Societal Applications", March 22-26 2021 at the department.
5. Workshop on "Introduction to Artificial Intelligence and Recent Developments", November 02-06-2020 at the department.
6. Dr. A P Singh organized a Faculty Development Programme on "Security in Decentralized Systems and Smart Contracts" from 15-03-2021 to 19-03-2021. (Fig.7)
7. Dr. B K Balabantaray organized a FDP on Artificial Intelligence and Machine Learning Application in Healthcare sponsored by TEQIP-III, NIT Meghalaya, 03rd -07th Sept. 2020.
8. Dr. B K Balabantaray organized a TEQIP-III Sponsored Online Workshop on Applications of Deep Learning Techniques for Communication and Signal Processing held at the Department of ECE and CSE at NIT Meghalaya from 15-19 Sept. 2020.
9. Dr. B K Balabantaray organized a A five day workshop on "Role of Technical Institutions in Fostering Innovation and Entrepreneurship" during 04-09-2020 to 08-09-2020 organized by Centre for Innovation, Incubation and Entrepreneurship, NIT Meghalaya
10. Dr. B K Balabantaray organized a ATAL Five Days Online Faculty Development Program on Introduction to Artificial Intelligence and Recent Developments, sponsored by ATAL academy, AICTE during 02-06, November 2020.
11. Dr. B K Balabantaray organized a National webinar on "Reinventing the Education System in India: Implications from the New Education Policy: 2020", organized by Centre for Professional Development of Teacher Educators, North-Eastern Hill University, Shillong and National Institute of Technology Meghalaya, Shillong on 08 Dec. 2020.
12. Dr. B K Balabantaray organized a Hackathon-2021, 26-27 February, 2021, Organized by CIIE, NIT Meghalaya

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

Sl. No.	Name of Faculty	Name of the programme attended	Duration
1	Dr. Alok Chakrabarty	ICEPE'20 international conference at NIT Meghalaya, Meghalaya, India.	5-7Mar 2021
2	Dr. Surmila Thokchom	Short-term course on Cyber Security and Modern Cryptography, IIT KGP	9-13th November 2020
3	Dr. Surmila Thokchom	Short Term Training Programme (STTP) on Data Security and Privacy (DSP 2020) SV NIT Surat	26th to 30th October, 2020,
4	Dr. Deepak Kumar	AICTE sponsored FDP on recent advances in NLP using Deep Learning, NIT Silchar	8-12 March 2021
5	Dr. Deepak Kumar	TEQIP-III sponsored FDP on Applied Machine Learning and Deep Learning, ASTU, Guwahati	24-27 February, 1st March 2021
6	Dr. Bunil Kumar Balabantaray	2020 International Conference on Computational Performance Evaluation (ComPE), NEHU, Shillong,	02-04, July, 2020
7	Dr. Bunil Kumar Balabantaray	The International Conference on Computing and Communication Systems, I3CS 2020, NEHU, Shillong	10th to 11th August 2020
8	Dr. Bunil Kumar Balabantaray	CVIP-2020, IIIT Allahabad	04-06 December 2020
9	Dr. Bunil Kumar Balabantaray	International conference on Data Science and Management-2021, GIET, Bhubaneswar	19-20, February, 2021
10	Dr. Bunil Kumar Balabantaray	3rd International Conference on Energy, Power and Environment (ICEPE 2020), NIT Meghalaya	05-07, March, 2021

7. Invited Talks Delivered:

Sl. No.	Title	Type	Event/Place	Any other information
1	a) Introduction to Machine Learning, b) Machine Learning on IoT data, c) Hands-on machine learning on IoT data	Technical talk	AICTE ATAL Faculty Development Programme titled "Internet-of-Things (IoT): From Data Acquisition to Storage and Analysis"	Organized at NIT Meghalaya, Shillong, Meghalayaduring14-18 Dec 2020. Speaker: Dr. Alok Chakrabarty
2	a) AI in Healthcare: Dynamics and state-of-the-art, b) AI Impact in Revolutionizing Modern Healthcare	Technical talk	AICTE ATAL Faculty Development Programme titled "AI in Health Dynamics: Conventional Medicare to Intelligent Healthcare"	Organized at KIIT Deemed to be University, Bhubaneswar, Odisha during 21-25 Dec 2020. Speaker: Dr. Alok Chakrabarty
3	Research Challenges in IoT	Technical talk	Vasireddy Venkatadri Institute of Technology	as part of AICTE sponsored STTP, Dec. 2020. Speaker: Dr. Soumen Moulik

Sl. No.	Title	Type	Event/Place	Any other information
4	Building Blocks of IoT	Technical talk	VasireddyVenkatadri Institute of Technology	as part of AICTE sponsored STTP, Dec. 2020. Speaker: Dr. Soumen Moulik
5	Hands-on: Data Acquisition and Communication	Technical talk	NIT Meghalaya	as part of ATAL FDP Program on IoT, Dec. 2020. Speaker: Dr. Soumen Moulik
6	Research Challenges in IoT	Technical talk	NIT Meghalaya	as part of ATAL FDP Program on IoT, Dec. 2020. Speaker: Dr. Soumen Moulik
7	Sensors, Actuators, Interfaces and Communication	Technical talk	NIT Meghalaya	as part of ATAL FDP Program on IoT, Dec. 2020. Speaker: Dr. Soumen Moulik
8	Introduction to IoT	Technical talk	NIT Meghalaya	as part of AICTE sponsoredSTTP Program on IoT, Mar. 2021. Speaker: Dr. Soumen Moulik
9	Cyber Image Analysis	FDP	CET, Bhubaneswar	Speaker: Dr. Bunil Kumar Balabantaray
10	Image Forgery using ML	Short Term Course	RITE, Bhubaneswar	Speaker: Dr. Bunil Kumar Balabantaray
11	Introduction to AI	ATL Community Day Talk	DAV, Unit 8, Bhubaneswar	Speaker: Dr. Bunil Kumar Balabantaray

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: 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.	21.88 Lakhs	3 Years	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

Sl. No.	Title of the Project	Investigators (PI/Co.-PI)	Funding Agency	Funding Amount	Duration	Status
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
5.	A Machine Learning Framework for Deploying Mobile Edge Clouds for Real-Time Analytics on IoT Data over 5G	PI: Dr. D.S. Roy Co-PI: Dr. Vipin Pal and Dr. A P Singh	MeitY	45,00,000/-	March 2020 - March 2024	Ongoing

9. Administrative Responsibilities Held:

Sl. No.	Name of Faculty	Responsibilities	Duration
1	Dr. Yogita	Head of Department	Since July, 2019 to till September 2020
2	Dr. Soumen Moulik	Member, Internal Quality Assurance Committee (IQAC)	1st July 2020 – Present
		Member, Intellectual Property Committee (IPC)	3rd December 2020 – Present
3	Dr. Bunil Kumar Balabantaray	Warden, Kench Trace Hostel	July 2018 to till continuing
		Convener, Videography Sub-Committee, Convocation 2020	Dated: 06.08.2019
		Member, Technical Committee, SAC	From 23.09.2019 till continuing
		Member, CCMT-2020 and CCMT-2021	From April 2020 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
		Member, Institute Innovation Council	October-2020 till continuing
		Member, CIIE, NIT Meghalaya	July 2020 to Till now
4	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
5	Dr. Vipin Pal	PIC (UG-AA)	Sep, 2018 to Till date
		Convener, Ranking and Accreditation	Sep, 2018 to Till Date
		Criteria 10, NBA	July, 2019 to Till date
		Member, Branch Change Committee	July, 2019 to Till date
		Member, Institute Information Committee	July 2019 to Till date
6	Dr. Surmila Thokchom	Convener -Routine committee CS	August 2020 to till date
		Member -COVID response team	Last 6 months
		HoD in-charge	October 2020 to April 2021
7	Akhilendra Pratap Singh	Chairman (Innovation & Entrepreneurship Club) (To enhance the in house entrepreneurial mentor capacity of HEI's)	2020-2021
		Faculty-In-charge, EBSB Club (To manage the student activity)	2021

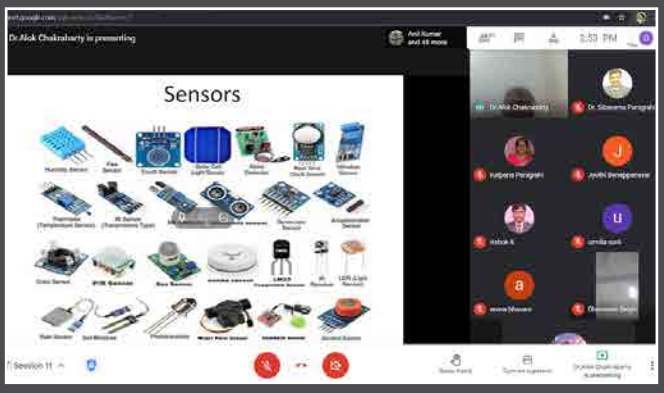
10. Membership of Professional Bodies:

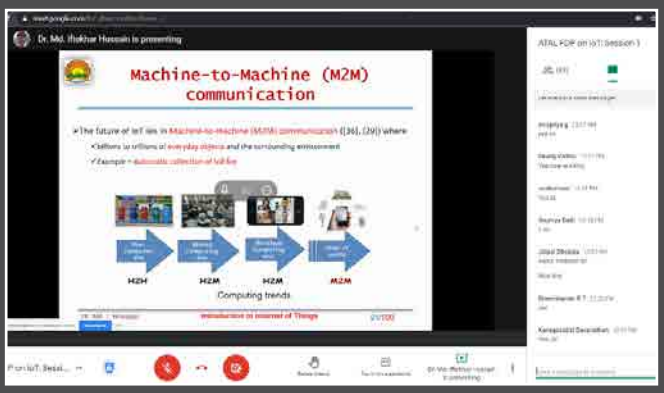
Sl. No.	Name of Faculty	Member of
1	Dr. Diptendu Sinha Roy	IEEE, CSI (LifeMember), ISTE (LifeMember)
2	Dr. Alok Chakrabarty	IEEE, CSI, ACM
3	Dr. Akhilendra Pratap Singh	CSI (LifeMember), ISTE (LifeMember)
4	Dr. Yogita	IEEE
5	Dr. Vipin Pal	IEEE
6	Dr. Bunil Kumar Balabantaray	ISTE(LM), Soft Computing Research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

11. Any other notable information:

1. Dr. Bunil Kumar Balabantaray was Session Chair, The International Conference on Computing and Communication Systems, I3CS 2020, NEHU, Shillong, NEHU, Shillong.
2. Dr. Bunil Kumar Balabantaray was Session Chair, 2020 International Conference on Computational Performance Evaluation (ComPE), Nehu, Shillong, NEHU, Shillong
3. Dr. Bunil Kumar Balabantaray was Session Chair, CVIP-2020, IIT Allahabad, 04-06 December 2020.
4. Dr. Bunil Kumar Balabantaray was Session Chair, AICTE sponsored International E- Conference on Data Analytics, Intelligent Systems and Information Security (ICDIIS '20) held during 11-12 December, 2020, Dr. Mahalingam College of Engineering & Technology, Pollachi-642003, India. [Fig.8]
5. Dr. Bunil Kumar Balabantaray was Editor, Special Issue: 1209 - Recent Advances on Social Media Analytics and Multimedia Systems: Issues and Challenges', Multimedia Tools and Applications Journal, Springer
6. Dr. Bunil Kumar Balabantaray was Editor, Special Issue: The Significance of Machine Learning for COVID-19, International Journal of Computer Applications in Technology, Inderscience

12. Department activities in photographs:





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 PhD 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 PhD 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, Sincal, FLUX, PSPICE, 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 (ongoing)
Dr. S. Debbarma	Assistant Professor	B.E, M.Tech, Ph.D	Power Systems	19 June 2012	03 Ongoing
Dr. P. P. Singh	Assistant Professor	B.Tech, M.Tech, Ph.D	Control Systems	31 May, 2016	02 Ongoing
Dr. Rakesh Roy	Assistant Professor	B.E, M.Tech, PhD	Power Electronics & Electric Machine Drives	03 January 2013	03 Ongoing
Dr. Shaik Affijulla	Assistant Professor	B.Tech, M.Tech, Ph.D	Power Systems	03 January 2013	02 Ongoing
Dr. Ksh Milan Singh	Assistant Professor	B.Tech, M.Tech, PhD	Instrumentation and Signal Processing	24 May 2016	02 Ongoing

Name	Designation	Qualification	Specialization	Date of Joining	Ph.D. guidance (ongoing)
Dr. Atanu Banerjee	Associate Professor	B.E, M.Tech, PhD	Power Electronics & Drives	25 August, 2014	05 Ongoing
Prof. (Dr.) Gayadhar Panda	Professor	Ph.D	Power Electronics	29 January, 2013	01 Guided 06 Ongoing
Dr. Supriyo Das	Assistant Professor	B.Tech, M.Tech, Ph.D	High Voltage Engineering	25th August 2014	01 Guided
Ms. Ramyani Chakrabarty	Trainee Teacher	B.Tech, M.Tech, Ph.D (Pursuing)	Power & Control	21st July, 2014	NIL

4. Staff Profile:

Name	Designation	Qualification	Date of Joining	Nature of Job
Mr. Sushanta Nath	Technical Assistant	B.E (NIT Agartala) M.Tech (NIT Meghalaya)	13/08/2012	Regular
Mr. Melong Bareh	Technician	B.Tech	30/07/2018	Contractual
Mr. Rishandonborlang Mawrie	Technician	B.Tech	28/11/2019	Contractual
Mr. Baskhemlang Rynjah	Technician	B.Tech	28/11/2019	Contractual
Ms. Iohhunlang Suting	Technician	B.Tech	28/11/2019	Contractual

5. List of Publications:

(a) Journals:

1. K S S Balaji Dulipala and **Sanjoy Debbarma**, Energy Scheduling Model Considering Penalty Mechanism in Transactive Energy Markets: A Hybrid Approach, ***International Journal of Electrical Power & Energy Systems***, **Elsevier**, Vol. 129, July 2021, 106742.
2. Ishan Bhand, **Sanjoy Debbarma**, "Transaction-Tracing Based Loss Allocation in Distribution Networks under TE System", ***IEEE Systems Journal***, 2021. doi: 10.1109/JSYST.2020.3038037
3. M. Mazumder and **S. Debbarma**, "EV Charging Stations With a Provision of V2G and Voltage Support in a Distribution Network," ***IEEE Systems Journal***, Vol. 15, No. 1, PP. 662-671, March 2021.
4. Pratikanta Mishra, **Atanu Banerjee**, Mousam Ghosh, "Development of a Cost-Effective ASIC Hardware Architecture for Brushless DC Motor Driver" ***International Journal of Circuit Theory and Applications***, ***Wiley***, accepted for publication, March,2021.
5. Hari Charan Nannam, **Atanu Banerjee**, "A Novel Control Technique for a Single-Phase Grid-Tied Inverter to Extract Peak Power from a Grid Integrated Solar Powered Home Energy Applications", ***AIMS Energy Journal,*** Accepted for publications, February,2021.
6. Pratikanta Mishra, **Atanu Banerjee**, Mousam Ghosh, Sushanta Gogoi, Pramod Kumar Meher, "Implementation and Validation of Quadral-Duty Digital PWM to Develop a Cost-optimized ASIC for BLDC Motor Drive" ***Control Engineering Practice, Elsevier***, vol.109 (104752), January, 2021.
7. Hari Charan Nannam, **Atanu Banerjee,** Joseph G. Guerrero **"**Analysis of an interleaved control scheme employed in split source inverter-based grid-tied photovoltaic systems", ***IET Renewable Power Generation***, DOI: 10.1049/rpg2.12108, Decmber, 2020.
8. Hari Charan Nannam, **Atanu Banerjee, B. Chitti Babu** ***"***Control and analysis of a 3-level diode-clamped split source inverter in the applications of grid-tied photovoltaic systems***" International Transactions on Electrical Energy Systems, Wiley***, Volume 30, Issue 11, August, 2020.
9. Chiranjit Sain, **A Banerjee**, P K Biswas, T Sudhakar Babu "Updated PSO Optimized Fuzzy-PI Controlled Buck Type Multi-Phase Inverter Based PMSM Drive

with an Over-Current Protection Scheme", ***IET Electric Power Applications***, Vol. 14, Issue 12, pp. 2331-2339, August, 2020.

10. Chiranjit Sain, **A Banerjee,** P K Biswas, T Sudhakar Babu, AT Azhar "Design and Optimization of a Fuzzy-PI Controlled Improved Inverter based PMSM Drive Employed in Light Weight Electric Vehicle"- ***International Journal of Automation and Control, Inderscience Publications,*** Accepted for publication (In press), August,2020.
11. Venkata. R. Vakacharla, K. Gnana, P. Xuewei, B. L. Narasimaharaju, Mangu Bhukya, **Atanu Banerjee**, Renu Sharma, and Akshay K Rathore "State-of-the-art Power Electronics Systems for Solar-to-Grid Integration" ***Solar Energy, Elsevier***, pp 128-148, July,2020.
12. Rupam Chakia, Mousam Ghosh, Goutam Kumar Panda, Pradip Kumar Saha, Anubrata Deya, **Atanu Banerjee** *"An Improved Dimmable LED Driving Scheme with Low Flicker Metrics for Low Voltage Application"* ***Electric Power Systems Research, Elsevier***, Vol.187, June,2020.
13. K. P. Panda, P. R. Bana, O. Kiselychnyk, J. Wang and G. Panda, "A Single-Source Switched-Capacitor Based Step-Up Multilevel Inverter with Reduced Components," in ***IEEE Transactions on Industry Applications***, doi: 10.1109/TIA.2021.3068076.
14. P. K. Sorte, K. P. Panda and G. Panda, "Current Reference Control Based MPPT and Investigation of Power Management Algorithm for Grid-Tied Solar PV-Battery System," in ***IEEE Systems Journal***, doi: 10.1109/JSYST.2021.3052959.
15. P. Buduma, N. K. Vulisi and G. Panda, "Robust Control and Kalman MPPT for Grid-Assimilated Wind Energy Conversion System," in ***IEEE Transactions on Industry Applications***, vol. 57, no. 2, pp. 1274-1284, March-April 2021, doi: 10.1109/TIA.2020.3047585.
16. C. Chandraratne, T. Naayagi Ramasamy, T. Logenthiran, and G. Panda, "Adaptive Protection for Microgrid with Distributed Energy Resources," ***Electronics,*** vol. 9, no. 11, p. 1959, Nov. 2020 [Online]. Available: http://dx.doi.org/10.3390/electronics9111959.
17. N. B. P, J. M. Guerrero, P. Siano, R. Peesapati and G. Panda, "A Novel Modified Control Scheme in Grid-tied Photovoltaic System for Power Quality Enhancement," in ***IEEE Transactions on Industrial Electronics***, doi: 10.1109/TIE.2020.3031529.
18. P. R. Bana, K. P. Panda, S. Padmanaban and G. Panda, "Extendable Switched-Capacitor Multilevel Inverter with Reduced Number of Components and Self-Balancing Capacitors," in ***IEEE Transactions on Industry Applications***, doi: 10.1109/TIA.2020.3018422.
19. K. P. Panda, P. R. Bana and G. Panda, "A Reduced Device Count Single DC Hybrid Switched-Capacitor Self-Balanced Inverter," in ***IEEE Transactions on Circuits and Systems II: Express Briefs***, vol. 68, no. 3, pp. 978-982, March 2021, doi: 10.1109/TCSII.2020.3018333.
20. 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. Wiley,*** 2020; 30:e12430. https://doi.org/10.1002/2050-7038.12430.
21. Narendra Babu P, B. C. Babu, P. R. Babu, and G. Panda, "Three-phase Grid-tied Photovoltaic System with an Adaptive Control Scheme in Active Power Filter", *in* ***Energy Sources Part-A- Recovery, Utilization, and Environmental Effects (Taylor & Francis)****. DOI*: 10.1080/15567036.2020.1762807.
22. N. 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.
23. 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.
24. Sahoo S, Subudhi B, Panda G. Torque and pitch angle control of a wind turbine using multiple adaptive neuro-fuzzy control. ***Wind Engineering***. 2020; 44(2):125-141. doi:10.1177/0309524X19849825
25. 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, May 2020.
26. 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, June 2020.
27. Abhisek Anand, Shaik Affijulla, "Hilbert-Huang Transform based Fault Identification and Classification Technique for AC Power Transmission Line Protection", ***International Transactions on Electrical Energy Systems***, vol. 30, no. 10, pp. 1-13, Aug. 2020.

28. Abhisek Anand, Shaik Affijulla, "EEMD based Differential Protection Scheme for Islanded and Grid-tied AC Microgrid", ***IET Generation, Transmission & Distribution***, vol. 14, no. 26, pp. 6674-6681, Dec. 2020.

(b) Book chapters:

1. Chiranjit Sain, **A Banerjee**, P K Biswas "Control Strategies of a Permanent Magnet Synchronous Motor Drives for Electric Vehicles"-***CRC Press, Taylor & Francis***, approved for publication.
2. 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***, ISBN: 978-1-119-68190-8, 2020.
3. Chiranjit Sain, **Atanu Banerjee,** P K Biswas, P Sanjeevikumar, "A Sate 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,2020.
4. 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***, pp.331-364, 2020.
5. Moushumi Patowary, Bimal C. Deka and Gayadhar Panda, "Reliability Analysis of Microgrid Systems Using Hybrid Approaches", ***Advances in RAMS Engineering, Springer***, 2020.
6. P. P. Singh, B. K. Roy, C. Volos, *Memristor based novel 4D chaotic system without equilibria: Analysis and Synchronisation* in Book "***Mem-elements for Neuromorphic Circuits with Artificial Intelligence Applications***" Editors: Christos Volos and Viet-Thanh Pham, ***Elsevier***, October, 2020 (Accepted)

(c) Conferences:

1. S. Deb, B. Chatuanramthrnghaka, S. Datta, **S. Debbarma**, Ksh. Robert Singh, R. Kumar, "Congestion Management by Generator Real Power Rescheduling using Hybrid Grey Wolf Optimizer and Cuckoo Search Optimization", ***2021 1st International Conference on Power Electronics and Energy (ICPEE 2021)***, IEEE Conference (Accepted for Publication).
2. Siddhartha Deb Roy, and **Sanjoy Debbarma** and Subhasish Deb, "A Comparative Analysis of Supervised Classifiers Employing NCA for Feature Selection to Secure Generation Control", ***2021 1st International Conference on Power Electronics and Energy (ICPEE 2021)***, IEEE Conference (Accepted for Publication).
3. Jogendra K S S Balaji Dulipala, Ishan Bhand, **Sanjoy Debbarma**, "Decision Support Model under Transactive Energy Markets for Profit Maximization", ***2021 1st International Conference on Power Electronics and Energy (ICPEE 2021)***, IEEE Conference (Accepted for Publication).
4. **Subhasis Bandopadhyay**, A. Bandyopadhyay, "Harmonics Elimination in 24 Pulse GTO Based STATCOM by Fuzzy Logic Controller with Switching Angle Optimization using Grey Wolf Optimizer" ***2020 IEEE 5th International Conference on Computing Communication and Automation (ICCCA)*** , Greater Noida, 30th -31st October,2020.
5. Chiranjit Sain, A Banerjee, P K Biswas, T Sudhakar Babu, "Different Control Mechanisms of a PMSM Drive for Electrified Transportation-A Survey"- ***International (Virtual) Symposium on Control, Communication and Robotics, SOCCER-2020***, NIT Silchar, 3rd -4th October, 2020.
6. K. P. Panda, P. R. Bana and G. Panda, "Reduced Switch Count Seven-level Self-Balanced Switched-Capacitor Boost Multilevel Inverter," ***2020 IEEE International Conference on Power Electronics, Drives and Energy Systems (PEDES),*** Jaipur, India, 2020, pp. 1-6, doi: 10.1109/PEDES49360.2020.9379866.
7. P. R. Bana, K. Prasad Panda, P. K. Ray and G. Panda, "A Novel Nine-Level Boost Type Multilevel Inverter With Inductive Ability for Photovoltaic System," ***2020 IEEE Industry Applications Society Annual Meeting***, Detroit, MI, USA, 2020, pp. 1-6, doi: 10.1109/IAS44978.2020.9334916.
8. P. K. Sorte, K. P. Panda, R. Peesapati and G. Panda, "An Improved Control Strategy for Single-Phase Single-Stage Grid-Tied PV System With Current Reference MPPT Control***," 2020 IEEE International Conference on Computing, Power and Communication Technologies*** (GUCON), Greater Noida, India, 2020, pp. 461-466, doi: 10.1109/GUCON48875.2020.9231079.
9. K. P. Panda, P. R. Bana and G. Panda, "A Self-Balanced Switched-Capacitor Boost Seven-Level Inverter for Photovoltaic Systems," ***2020 IEEE International***

Conference on Computing, Power and Communication Technologies (GUCON), Greater Noida, India, 2020, pp. 338-343, doi: 10.1109/GUCON48875.2020.9231102.

10. K. P. Panda, P. R. Bana, P. Sanjeevikumar, G. Panda, Z. Leonowicz and M. Mitolo, "A Single-Source High-Gain Switched-Capacitor Multilevel Inverter with Inherent Voltage Balancing," ***2020 IEEE International Conference on Environment and Electrical Engineering and 2020 IEEE Industrial and Commercial Power Systems Europe*** (EEEIC / I&CPS Europe), Madrid, Spain, 2020, pp. 1-6, doi: 10.1109/EEEIC/ICPSEurope49358.2020.9160624.
11. Narendra Babu P, Sanjiba Kumar Bisoyi, Ritula Thakur, P. R. Babu, and G. Panda, "Intermixed Generalized Integrator based Grid-Friendly Inverter Control Scheme for Power Quality Enrichment in Microgrid System Applications", in ***IEEE ICEPE-2020***, NIT Meghalaya, Shillong, 2021 (Presented).
12. Kaibalya Prasad Panda, Narendra Babu P, Sanjiba Kumar Bisoyi, Gayadhar Panda, "Reduced Switch Quadruple Boost Switched-Capacitor based Multilevel Inverter",in ***IEEE ICEPE-2020***, NIT Meghalaya, Shillong, 2021 (Presented).
13. Bharath Maddila, Narendra Babu P, Gayadhar Panda, "Frequency Stability Enhancement of Thermal Power Plant-Integrated Microgrid with Virtual Inertia Emulation" in ***IEEE ICEPE-2020***, NIT Meghalaya, Shillong, 2021 (Presented).
14. Sugandha and Piyush Pratap Singh, Complex State Variables Based Novel Hyperchaotic System with Nine Equilibria, ***17th IEEE India Council Int. Conf. (INDICON)*****,** NSUT Delhi, India, 11-13 December, 2020.
15. Piklu Das and Piyush Pratap Singh, A 4D chaotic system with seventeen equilibria: Synchronization and anti-synchronization, ***1st International Conf. on Power Electronics and Energy (ICPEE)***, KIIT Bhubaneswar, India, 2-3 January, 2021.
16. Piklu Das and Piyush Pratap Singh, Bifurcation, Chaos and PID Sliding Mode Control of 3-Bus Power System, ***3rd IEEE Int. Conf. on Energy, Power and Environment (ICEPE)*****,** NIT Meghalaya, India, 5-7 March, 2021. (Accepted)
17. Piyush Pratap Singh, A Chaotic System with Large Lyapunov Exponent: Nonlinear Observer Design and Circuit Implementation, ***3rd IEEE Int. Conf. on Energy, Power and Environment (ICEPE)*****,** NIT Meghalaya, India, 5-7 March, 2021. (Accepted)
18. R. Gandhi, R. Wilson, A. Kumar and R. Roy, "Comparative Analysis of Vector Controlled PMSM Drive with Particle Swarm Optimization and Ant Colony Optimization Technique," ***2020 International Conference on Computational Performance Evaluation (ComPE)***, Shillong, India, 2020, pp. 744-750, doi: 10.1109/ComPE49325.2020.9200184.
19. R. Wilson, R. Gandhi, A. Kumar and R. Roy, "Optimized Vector Control Strategy for Dual-Rotor Axial Flux Permanent Magnet Synchronous Motor for in-Wheel Electric Drive Applications," ***2020 International Conference on Computational Performance Evaluation (ComPE),*** Shillong, India, 2020, pp. 676-681, doi: 10.1109/ComPE49325.2020.9200186
20. A. Kumar, R. Gandhi, R. Wilson and R. Roy, "The impact of different slot design of BLDC motor in a complete drive system," ***IECON 2020 The 46th Annual Conference of the IEEE Industrial Electronics Society***, Singapore, 2020, pp. 4300-4305.
21. R. Wilson, R. Gandhi, A. Kumar and R. Roy, "Performance Analysis of Twin-Rotor Axial Flux Permanent Magnet Synchronous Motor for In-Wheel Electric Vehicle Applications with Sensorless Optimized Vector Control Strategy," ***2020 IEEE International Conference on Power Electronics, Drives and Energy Systems (PEDES)***, 2020, pp. 1-6, doi: 10.1109/PEDES49360.2020.9379464.
22. R. Gandhi, E. Sankararao, R. Wilson, A. Kumar and R. Roy, "Analysis of Flux Density in PMSM with Constant Mutual Flux Linkage Control Strategy Using FEM Model," ***2020 3rd International Conference on Energy, Power and Environment: Towards Clean Energy Technologies***, 2021, pp. 1-6, doi: 10.1109/ICEPE50861.2021.9404410.
23. Aniruddha Agarwal, Donna Syndor, Dallang M Momin, Shaik Affijulla, "Impact Analysis of Cyber Attack under Stable State of Power Systtem: Voltage Stability", ***IEEE Region 10 Symposium (TENSYMP),*** Dhaka, Bangladesh, pp. 1-4, Jun 2020
24. Gaurav Bhatt, Shaik Affijulla, "Integration of Solar Power into Electric Grid based on Voltage at Critical Contingency", ***IEEE Region 10 Symposium (TENSYMP)***, Dhaka, Bangladesh, pp. 1-6, Jun 2020.
25. R. Chakrabarty and R. Adda, "State-feedback control of grid-connected RSDCHBMLI with LCL filter," ***2020 IEEE International Conference on Power Electronics, Drives and Energy Systems (PEDES)*****,** 2020, pp. 1-6, doi: 10.1109/PEDES49360.2020.9379480.

26. R. Chakrabarty and R. Adda, "Output Voltage Control of Single Phase Reduced Switch Cascaded H-bridge Multilevel Inverter with Constant Switching Frequency Operation," ***IECON 2020 The 46th Annual Conference of the IEEE Industrial Electronics Society*, 2020,** pp. 4115-4120, doi: 10.1109/IECON43393.2020.9254398.
27. R. Chakrabarty and R. Adda, "Case studies for load compensation using RSDCHBMLI based DSTATCOM using predictive current control," ***IECON 2020 The 46th Annual Conference of the IEEE Industrial Electronics Society***, 2020, pp. 2463-2468, doi: 10.1109/IECON43393.2020.9255298.
28. N. Sikder and K. M. Singh, "Performance Enhancement of Optimally Tuned PI Controller for Harmonic Minimization" ***International Conference on Power Electronics and Energy (ICPEE))*,** Jan 2-3, 2021, Bhubaneswar, India.
29. A. P. Vishwakarma and K. M. Singh, "Performance Enhancement of Optimally Tuned PI Controller for Harmonic Minimization" ***International Conference on Computational Performance Evaluation (ComPE)*,** July 2-4 2020, North-Eastern Hill University, Shillong, Meghalaya, India.
30. A. Chauhan, P. Rout, K. M. Singh, "COV Based Classification of PQ Disturbances Using Wavelet and Optimized SVM Hyper-Parameters" ***International Conference on Computational Performance Evaluation (ComPE)*,** July 2-4 2020, North-Eastern Hill University, Shillong, Meghalaya, India.
31. A. Chauhan, P. Rout, K. M. Singh, "Vibration Parameters Estimation using mHDFT Filter in PLL Technique" ***International Conference on Computational Performance Evaluation (ComPE)*,** July 2-4 2020, North-Eastern Hill University, Shillong, Meghalaya, India.

6. Conference/ Workshop/ Seminar Organized:

1. Organized 3rd ***2020 International Conference on Energy, Power & Environment***, Sponsored by IEEE Kolkata, IEEE IAS, at NIT Meghalaya, 05 – 07 March 2021.
2. Organized Five days Online Short-Term Course on "***Smart Electric Grids: Operations, Protection & Control***", Sponsored by TEQIP III (14-18 Sept 2020).
3. AICTE Training and Learning (ATAL) Academy Sponsored Online Faculty Development Programme on "***Advanced Control and Wireless Sensors for Smart Distribution Network with Renewable Energy Integration"*** during Nov 09th – 13th 2020.

3rd International Conference on Energy, Power & Environment geld during 5-7th March 2021.

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	1. 17th IEEE India Council Int. Conf. (INDICON-2020), NSUT Delhi	11-13 Dec, 2020
		2. 1st Int. Conf. on Power Electronics and Energy (ICPEE-2021), KIIT Bhubaneswar, IEEE Conf.	2-3 January, 2021
		3. 3rd IEEE Int. Conf. on Energy, Power and Environment (ICEPE-2020), NIT Meghalaya	5-7 March, 2021
		4. TEQIP-III Sponsored Three Days Online Faculty Development Programme on "Outcome Based Engineering Education and Accreditation (OBEEA 2020)", NIT Meghalaya	21-23 September, 2020
		5. Workshop on "National Education Policy 2020 with a Focus on Higher Education and Research", NIT Meghalaya	Feb. 17, 2021.
2	Dr. S. Debbarma	1. Workshop on "National Education Policy 2020 with a Focus on Higher Education and Research", NIT Meghalaya	Feb. 17, 2021.
		2. 1st Int. Conf. on Power Electronics and Energy (ICPEE-2021), KIIT Bhubaneswar, IEEE Conf.	2-3 January, 2021
		3. Five days Online Short-Term Course on "Smart Electric Grids: Operations, Protection & Control, NIT Meghalaya	14-18 Sept 2020
		4. Lectures on Contemporary Issues in Smart Grids organized by IEEE/ IES Egypt and Guadalajara Chapters.	September 30, 2020
		5. Webinar on IEEE Senior Membership – Benefits and Application Procedure	27 June 2020
3	Dr. A. Banerjee	1. Induction program for Part time CVOs, organized by CBI Academy, Ghaziabad	2 days
4	Dr. R. Roy	1. IECON 2020 The 46th Annual Conference of the IEEE Industrial Electronics Society, Singapore, 2020, Singapore	October 18 – 21, 2020
		2. 2020 IEEE International Conference on Power Electronics, Drives and Energy Systems (PEDES), MNIT Jaipur	December 16 -19, 2020
		3. 3rd International Conference on Energy, Power and Environment: Towards Clean Energy Technologies, 2021, NIT Meghalaya	March 05 – 07, 2021
5	Dr. S. Affijulla	1. Online FDP on AI- Machine Learning & Optimization, IIIT Allahabad	1-5th Feb 2021
		2. e-Workshop on Electrochemical Energy Storage Devices, IIT Delhi	7-11th Dec 2020
		3. Online FDP on Cyber-Physical Systems, IIIT Pune	7-11 Nov 2020
6	Dr. Supriyo Das	1. Challenges, Opportunities, and Emerging Trend in the Field of High Voltage and Electrical Insulation, IIT-BHU	1st to 6th Feb 2021
7	Ms. Ramyani Chakrabarty	1. IECON 2020 The 46th Annual Conference of the IEEE Industrial Electronics Society, 2020, Singapore (held Online)	Oct 18-21
		2. 2020 IEEE International Conference on Power Electronics, Drives and Energy Systems (PEDES), MNIT Jaipur (held online).	Dec 16-19,2020
		3. National Education Policy 2020 With A Focus On "Higher Education and Research" Nit Meghalaya	Feb 17, 2021
		4. Data Analytics and Predictive Technology Driven IoT based Smart Grid Infrastructure, IIT-BHU (held online)	Mar 1- Mar 6, 2021

8. Invited Talks Delivered

I. Dr. S. Debbarma

- Invited Talk *on* ***"Introduction to Transactive Energy System****,* AICTE Sponsored FDP on Advances in Power Electronics for Smart Grid, Renewable Energy Systems, and Electric Vehicle Technology, Agni College of Technology, Chennai (10 DEC 2020).
- Invited Talk *on* ***"Operation & Control of Modern Power Systems Penetrated with Electric Vehicles****,* AICTE Sponsored FDP on Advances in Power Electronics for Smart Grid, Renewable Energy Systems, and Electric Vehicle Technology, Agni College of Technology, Chennai (4 NOV 2020).
- Invited Talk (Webinar) on ***"Modern Power Systems Control & Operation (Transition to Smart Grid)"****,* RIST, Meghalaya (27 June 2020).

II. Dr. R. Roy

- Talk delivered on "National Innovation and startup policy" at College of community science, Tura, Meghalaya on 30th January, 2021.
- Talk delivered in All India Radio on "Nurturing a scientific temperament among children & youth" on 27th February, 2021.

III. Dr. P.P. Singh

- TEQIP-III Sponsored Five days Online Short-Term Course on "Smart Electric Grids: Operations, Protection & Control (SEGOPC)" during September 14th-18th 2020, at NIT Meghalaya. (Topic: Renewable Energy Source (RES) Integrated Power System: Chaos and Control)

IV. Prof. Gayadhar Panda

- "Power quality control of Microgrid Inverters in Renewable energy applications" at NITTTR Chandigarh on 18th December 2020.
- "Islanding detection and control for Microgrid System" at NIT Meghalaya on 11th November 2020.
- "Control for Microgrid System" at JSSTE Noida on 30th November 2020.
- "Renewable based off-Grid/Grid-Interactive Systems and their Control" at IIITDM Kancheepuram on 28th October 2020.
- "Renewable energy Integration via Multilevel inverter (Topologies and power quality aspects)" at NIT Rourkela on 25th September 2020.

V. Dr. S. Das

- Invited lecture on *"Electrical Safety Measures",* during Short Term Training Course on "Structural Safety Audit" at NIT Meghalaya, Shillong – 19th Nov. 2020.
- Invited lecture on "Space Charge Studies on Under Ground Cables", during Short Term Training Program on "Recent Trends in Condition Monitoring of High Voltage Systems" at SONA College of Technology, Tamil Nadu – 15th Dec. 2020.
- Invited lecture on "Condition Monitoring of Lightning Arrester", during Short Term Training Program on "Recent Trends in Condition Monitoring of High Voltage Systems" at SONA College of Technology, Tamil Nadu – 15th Dec. 2020.
- Invited lecture on "Time Domain Assessment of Power Cables", during Short Term Training Program on "Diagnostics in High Voltage Insulation" at IIT Kanpur, UP – 4th March 2021.

9. Projects:

a. Sponsored Project

Sl. No.	Title of the Project	Investigators (P.I. / Co-P.I.)	Funding Agency	Funding amount	Duration	Status
1	Design & Development of High frequency Multilevel Resonant Inverter based New Generation Induction Heated Autoclave System for Sterilization of Surgical Instruments.	PI	MeitY, Govt. of India	25.00 lakh	2020-2022 (2 years)	Ongoing

Sl. No.	Title of the Project	Investigators (P.I. / Co-P.I.)	Funding Agency	Funding amount	Duration	Status
2	Design & Development of a Cost-effective & Energy-efficient Grid –connected Pumped Hydro System employed with Sensor-less PMBLDCM	PI	CPRI, Govt. of India	32.90 lakh	2019-2021 (2 years)	Ongoing
3	Development of e-carrier to transport the goods in rural hilly area	PI	SCSTE, Govt. of Meghalaya	1 Lakh	1.5 year	Ongoing
4	Master Node Design for Wireless Body Area Network	PI	SCSTE, Govt. of Meghalaya	Rs. 99,960.00	1 year	Ongoing
5	Wireless Communication System for Remote Health Monitoring	PI	Minor Research Grant Scheme under TEQIP-III	Rs. 2,00,000	2 Year	Ongoing

b. Consultancy

Sl. No.	Title	Consultant(s)	Client(s)	Value	Status
1	Comprehensive power harmonic study of HT/LT power system of IFCAL plant, Odisha	Prof. Gayadhar Panda	IFCAL plant, Odisha	Rs. 35000.00	Max. 60 Working days
2	Development of TRI in West Garo Hills, Meghalaya (Electrical work).	Dr. S. Debbarma	PWD, Govt. of Meghalaya	Rs. 6 Crores	Sept 2020 - Nov 2020
3	Techno-Commercial opinion on Operation & Maintenance (O&M) of Electric Substations at NEIGRIHMS.	Dr. Sanjoy Debbarma, Dr. A. Banerjee & Dr. S. Affijulla	NEIGRIHMS, Govt. of India	Rs. 90 Lakhs	Dec 2020 - Feb 2021

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

1. Prof. G. Panda: Best Paper award in 3rd ICEPE 2020 conference, organized by the Department of Electrical Engineering, NIT Meghalaya, Shillong, India from 05th-07th March 2021.
2. Awarded third prize in IEEE Covid19 Hackathon Challenge for innovating a hand gloves to protect from corona virus. The event held during March 30th -2nd April 2020 and organized by IEEE Hyderabad Section, India.

11. Administrative Responsibilities Held:

Sl. No.	Name of Faculty	Responsibilities	Duration
1	Dr. S. Debbarma	HOD, EE Dept.	1 July 2020- Till date
		Member, Construction & Development of NIT Meghalaya Permanent Campus	28, Feb 2020 – till date.
		Member, Center of Innovation Incubation & Entrepreneurship	1st July 2019 - Aug 2020
		Member, SC/ST Cell, NIT Meghalaya	28 Jan, 2020 - Till date
		Member, Institute Library Committee	July 2019 - 30 June 2020
		Member, Institute Furniture Committee,	July 2019 - Till date
		Warden, Lapalang V Boys Hostel, NIT Meghalaya	July 2018 to 30 June 2020
		Member, Student's Feedback analysis Committee	31/8/2020 - Till date
		Member, Academic Program Committee (APC)	31/8/2020 - Till date
		Chairman, Departmental Research Committee (DRC), EE Department	1st July 2020- Till date
		Special Invitees, SENATE	1st July 2020 - Till date

Sl. No.	Name of Faculty	Responsibilities	Duration
2	Dr. P. P. Singh	PIC, Security Committee	2019 – till date
3	Dr. Rakesh Roy	Warden, Umpling PG Men's Hostel	July 2018 – till date
4	Dr. Atanu Banerjee	Dean (SW)	
		Part-time CVO	
5	Dr. Ksh Milan Singh	Exam Cell committee member	
6.	Prof. Gayadhar Panda	Dean (Academic Affairs)	From 11/10/2018 to till date
		Member of DC and DRC committee	-do-
		Member of NEP-2020	18/08/2020
		Department promotion committee member for promotion of Group 'A' posts at NEIGRIHMS	24/11/2020
		Part time CVO	From 20/08/2019 to 09/2020
		Chairman of accreditation and ranking committee	22/06/2020
		ACoFAR member	Nov-2017 to 30/06/2021
		BoG member	Nov-2017 to till date
		Senate Member	Nov-2017 to till date
7	Dr. S. Affijulla	Member of Best Thesis Award Committee	Since 01.03.2021
		Convener of Internal Quality Assurance Committee	05.09.2019 -30.06.2021
8	Dr. Ksh. Milan Singh	Vice President, Games & Sports SAC	From 2020 till date
		Exam Cell member	2020 - Till date
		Central Instruments Facility (CIF) member	15 Feb 2021 - till date
9	Dr. S. Das	HOD, EE Department	1st April 2020 – 30th June 2020

12. Membership of Professional Bodies:

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

13. Any Other Information on Profession Activities

I. Dr. P. P. Singh

- **Session Chaired:** Technical Session "S22-Control and Automation" in the 6th IEEE Students' Conference on Engineering & Systems (SCES), during July 10-12, 2020, organised by Department of Electrical Engineering, Motilal Nehru National Institute of Technology (MNNIT) Allahabad, Prayagraj, India.
- **Session Chaired:** Technical Session: 16-Energy Storage Technology & SS-04: Control of Nonlinear and Complex Dynamical Systems in the 1st IEEE International Conference On Power Electronics and Energy (ICPEE-2021), during January 02-03, 2021, organised by School of Electrical Engineering, KIIT Deemed to be University, Bhubaneswar, Orissa, India.
- **Session Chaired**: Technical Session "TS-20-Sustainable Energy Technologies for Rural & Remote Places" in the 3rd IEEE Int. Conference on Energy, Power and Environment (ICEPE), during March 05-07, 2021, organised by Department of Electrical Engineering, NIT Meghalaya, Shillong, India.

II. Prof. G. Panda

- Associate Editor in International Transactions on Electrical and Energy Systems (ITEES), Wiley, from Feb-2021 to till date.
- Editorial Board Member in International Journal of Emerging Electric Power Systems from Feb-2021 to till date.
- Associate Editor in International Journal of Renewable Energy Technology, Inderscience Publishers Ltd from July 2020 to till date.
- Advisory Board member in 3rd International Conference on Machine learning, Advances in computing, Renewable & Communication (MARC 2021) on 10-11 December 2021.

III. Dr. S. Debbarma

- Question paper setter for Meghalaya Public Service Commissions.
- **Reviewed for the Journals during (2020-2021):** IEEE Transactions on Systems, Man, and Cybernetics: Systems, IEEE Transactions on Smart Grid, IEEE Transaction on Sustainable Energy, IEEE Transactions on Industrial Informatics, IEEE Systems Journal, IEEE Transaction on Transportation Electrification, IEEE Access Journal, IEEE Transactions on Reliability, IET Generation, Transmission & Distribution, IET Renewable Power Generation, International Journal of Electrical Power & Energy Systems (Elsevier), Energy (Elsevier), International Transactions on Electrical Energy Systems (Wiley),
- **Reviewed for the IEEE Conferences:** ICPEE 2021 (India), NPSC 2020 and many more.
- External Expert M.Tech Evaluation, KIIT Bhubaneswar, Odisha (May 2020).
- **Session Chair & Technical Program Committee,** IEEE Sponsored 2021 1st International Conference on Power Electronics and Energy (ICPEE-2021), KIIT Bhubaneswar, 2-3 January 2021.

IV. Dr. Ksh. Milan Singh

- Organized an event "**FIT India Freedom Run**" during 15th August - 2nd October 2020 under Games & Sports SAC NIT Meghalaya.
- Session chair in the **3rd International Conference on Energy, Power and Environment Towards Clean Energy Technologies (ICEPE 2020)"** EE Department, NIT Meghalaya.

V. Dr. S. Das

- Reviewed manuscripts for IEEE Access and IEEE Transactions on Dielectrics and Electrical Insulation.

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 objective of the Department is to impart high-quality technical education and research with a strong foundation in Electronics and Communication Engineering.

The major research groups of the department are Microelectronics, Microwave and Communication Signal and Image processing. The major areas of faculty expertise of the department include High Speed and Low Power VLSI Systems, VLSI Architectures, Computer Arithmetic, Microelectronics Device and MEMS, High-Performance Computing, Communication and RF & Microwave Engineering, Antenna design, Signal and Speech Processing, Biomedical Signal Processing and Machine learning.

2. Programmes Offered:

- B. Tech in Electronics and Communication Engineering
- M.Tech in VLSI and Embedded Systems (Full Time & Part Time)
- Ph. D (Full Time & Part Time)

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 –1 Awarded – 7	Regular -8
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 – 4 Awarded –1 Submitted–1	Part time –2 Regular -2 (project-1)
Dr. Prabir Kumar Saha	Assistant Professor	Ph.D	VLSI Design, Computer Arithmetic, Digital Signal Processing, Reconfigurable Computing	13.06.2012	Pursuing –3 Awarded –1	Part time –1 Regular -1, Co supervisor- 1

Name	Designation	Qualification	Specialization	Date of Joining	Ph.D. guidance	Remark
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 –2 Submitted–1	Part time-2 Regular -2 (Project-1) Co supervisor- 1
Dr. Pradeep Kumar Rathore	Assistant Professor	Ph.D	Micro-Electro-Mechanical Systems (MEMS), Microelectronics, Device Fabrication Technology	11.08.2014	Awarded– 1	
Dr. Bishnulatpam Pushpa Devi	Assistant Professor	Ph.D	Image processing	03.01.2013	Pursuing –2	Regular - 2
Dr. Abhishek Sarkhel	Assistant Professor	Ph.D	Microwave metamaterials and its applications, Microwave antennas	23.08.2013	Pursuing – 2	Regular -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-1 Regular -1
Dr. Salam Shuleenda Devi	Assistant Professor	Ph.D	Medical Image Analysis, Cancerous cell analysis, Pattern recognition, machine learning	24.09.2019	Pursuing –1	Part time-1
Dr. Satyendra Singh Yadav	Assistant Professor	Ph.D	Wireless Communication (5G and Beyond), Parallel Computing, Machine Learning	24.10.2019	Pursuing –1	Part time-1
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		

4. List of Publications:

(a) Journals:

1. S.W. Hussain, T. V. Mahendra, S. Mishra, and A. Dandapat, "Low-power Content Addressable Memory Design using Two-layer P-N Match-line Control and Sensing," Integration the VLSI Journal, Elsevier, vol. 75, pp. 73–84, Nov. 2020.
2. S. Mishra, T. V. Mahendra, S. W. Hussain, and A. Dandapat, "Analogy of Matchline Sensing Techniques for Content Addressable Memory (CAM)," IET Computers & Digital Techniques, vol. 14, no. 3, pp. 87–96, 2020.
3. T. V. Mahendra, S. W. Hussain, S. Mishra, and A. Dandapat, "Energy-Efficient Precharge-Free Ternary Content Addressable Memory (TCAM) for High Search Rate Applications," IEEE Trans. Circuits Syst. I: Reg. Papers, vol. 67, no. 7, pp. 2345–2357, July 2020.
4. T. V. Mahendra, S. W. Hussain, S. Mishra, and A. Dandapat, "A Novel Low-Power Matchline Evaluation Technique for Content Addressable Memory (CAM)," Journal of Information Science and Engineering (JISE), vol. 36, no. 5, pp. 1035-1053, 2020.
5. S.W. Hussain, T. V. Mahendra, S. Mishra, and A. Dandapat"Match-Line Control Unit for Power and Delay Reduction in Hybrid CAM", Accepted in IET Circuits, Devices & Systems Nov 2020.
6. Anirban Dutta, Gudmalwar Ashishkumar and Ch V Rama Rao, " Performance analysis of ASR system in hybrid DNNHMM framework using a PWL euclidean activation function," Frontiers of Computer Science, Accepted, 2020
7. R. U. Ahmed, E.A. Vijaykumar, and P. Saha, "Sensitivity Analysis of the UTBSOI Transistor based Two-Stage Operational Transconductance Amplifier", vol. 24, no. 2, pp. 75-80, Dec. 2020.
8. S.D. Thabah, and P. Saha, "Improved Signed Binary Multiplier Through New Partial Product Generation Scheme" *Journal of Circuits, Systems and Computers*, vol. 29, no. 16, 2150162-1-21, 2021.
9. S. K. Beura, A. A. Jawale, B. P. Devi, and P. Saha, "On the Implementation of Multi-bit Inexact Adder Cells and Application towards Image De-noising", *Electronics Journal,* vol. 24, no. 1, pp. 35-44, 2020.
10. S.D. Thabah, and P. Saha, "A Low Quantum Cost Implementation of Reversible Binary-Coded-Decimal Adder", *Periodica Polytechnica Electrical Engineering and Computer Science,* vol. 64, no. 4, pp. 343-351, 2020.
11. R.U. Ahmed, E.A. Vijaykumar, H.S. Ponakala, M. Y. V. Balaji, and P. Saha, "Design of double-gate CMOS based two-stage operational transconductance amplifier using the UTBSOI transistors" U.P.B. Sci. Bull., Series C, vol. 82, no. 2, pp. 173-188, 2020.
12. R. U. Ahamed, and P. Saha, "Revisiting Analytical Models of N-Type Symmetric Double-Gate MOSFETs", *Electronics Journal*, vol. 24, no. 1, pp. 17-34, 2020.
13. N. B. P, J. M. Guerrero, P. Siano, R. Peesapati and G. Panda, "A Novel Modified Control Scheme in Grid-tied Photovoltaic System for Power Quality Enhancement," in *IEEE Transactions on Industrial Electronics*, doi: 10.1109/TIE.2020.3031529.
14. 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.
15. V. Aarthi, V.R. Sarma Dhulipala, P. Rangababu, Attenuation Factor approach to minimize the correlation effect in Soft Output Viterbi Algorithm Physical Communication vol 39 2020, 101021, Apr 2020, https://doi.org/10.1016/j.phycom.2020.101021",
16. J.R.K. Kumar Dabbakuti, Rangababu Peesapati, Sampad Kumar Panda, Srinivasarao Thummala, Modeling and analysis of ionospheric TEC variability from GPS–TEC measurements using the SSA model during 24th solar cycle, Acta Astronautica,2020
17. Anumandla, KK, Sabat, SL, Peesapati, R, A.V., P, Dabbakuti, JRKK, Rout, R. Optimal spectrum and power allocation using evolutionary algorithms for cognitive radio networks. Internet Technology Letters. 2020;e207. https://doi.org/10.1002/itl2.207
18. J. R. K. Kumar Dabbakuti, R. Peesapati, M. Yarrakula, K. K. Anumandla and S. V. Madduri, "Implementation of storm-time ionospheric forecasting algorithm using SSA-ANN model," in *IET Radar, Sonar & Navigation*, vol. 14, no. 8, pp. 1249-1255, 8 2020, DOI: 10.1049/iet-rsn.2019.0551.
19. Swamy Baldev, Pradeep Kumar Rathore, Rangababu Peesapati, Kiran Kumar Anumandla, A directional

and scalable streaming deblocking filter hardware architecture for HEVC decoder, Microprocessors and Microsystems, 2021,104029,ISSN 0141-9331

20. Gogoai S., Peesapati, R. A hybrid hardware oriented motion estimation algorithm for HEVC/H.265. J Real-Time Image Proc (2021). https://doi.org/10.1007/s11554-020-01056-w
21. Shashi kumar, Pradeep Kumar Rathore, Rangababu Peesapati, Jamil akhtar "Design and simulation of a novel dual current mirror based CMOS-MEMS integrated pressure sensor" IET Science, Measurement & Technology, Feb 2021, https://doi.org/10.1049/smt2.12028.
22. Sourav Roy, Ashim Kumar Biswas, Soumendu Ghosh, Ujjal Chakraborty, Abhishek Sarkhel, Isolation Improvement of Dual/Quad-element Textile MIMO Antenna for 5G Application, Taylor Francis: Journal of Electromagnetic Waves and Applications,2021 (Accepted).
23. W. Kim, Shravan Kumar Bandari and B. Shim, "Enhanced Sparse Vector Coding for Ultra-Reliable and Low Latency Communications," IEEE Transactions on Vehicular Technology, vol. 69, no. 5, pp. 5698-5702, May 2020.
24. Sandeep Das, Subhrajit Dutta, Chandrasekhar Putcha, Shubhankar Majumdar, and Dibyendu 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, vol.6 (2), 04020013, June, 2020
25. Hemant Ghayvat, Muhammad Awais, Prosanta Gope, Sharnil Pandya, Shubhankar Majumdar, "ReCognizing SUspect and PredictiNg ThE SpRead of Contagion Based on Mobile Phone LoCation DaTa (COUNTERACT): A system of identifying COVID-19 infectious and hazardous sites, detecting disease outbreaks based on the internet of things, edge computing, and artificial intelligence" Sustainable Cities and Society, Feb 2021, pp. no. -102798 doi: https://doi.org/10.1016/j.scs.2021.102798

(b) Conferences:

1. V. Kuwal, S. S. Yadav, and A. Dandapat, "Analysis of the Universal Gates based on the comparative factors of Delay Propagation, Average Power dissipation, and Logical Effort" in IEEE 2nd International Conference of Emerging Technology, Belgaum, India, Accepted in Mar 2021
2. M. Saha and A. Dandapat, "Modified Baugh Wooley Multiplier using Low Power Compressors," 2021 IEEE International Conference of Emerging Technologies (INCET), Belgaum, India, Accepted in Mar 2021.
3. S. W. Hussain and A. Dandapat, "Match-Line Controlled Content Addressable Memory: Low-Power and High-Speed Searching", in Student Research Forum of IEEE 34th International Conference on VLSI Design & 20th International Conference on Embedded Systems (VLSID) 2021, India (Virtual), 2021
4. Anirban Dutta, G Ashishkumar and Ch V Rama Rao,"Phase based spectro-temporal features for building a robust ASR system", in *Interspeech* 2020, 25 - 29 October, 2020, China.
5. A. Dutta, G. Prabhakar, Ch V Rama Rao, "On the Impact of Gabor Phase for Spectro-Temporal Feature Extraction in Building an ASR System" 11th Annual IEEE Information Technology, Electronics and Mobile Communication Conference (IEMCON), Vancouver, Canada, 4 - 7 November, 2020.
6. P. Saha, R.U. Ahmed, and S. D. Thabah, "Design and Implementation of Multi Operand 2^n-1,2^n and 2^n+1 Modulo Set Adder", ICCDN, Accepted 2020.
7. V. R. Kopparthi, R. Peesapati and S. L. Sabat, "System on Chip Implementation of Low Complex Orthogonal Matching Pursuit Algorithm on FPGA," *2020 6th International Conference on Signal Processing and Communication (ICSC)*, Noida, India, 2020, pp. 178-184, DOI: 10.1109/ICSC48311.2020.9182724.
8. Gogoi, Sushanta, and Rangababu Peesapati. "A Motion Estimation Search Algorithm and its Hardware Implementation for HEVC/H. 265." In *2020 IEEE 10th International Conference on Consumer Electronics (ICCE-Berlin)*, pp. 1-6. IEEE, 2020.
9. Sorte, Priyanka K., Kaibalya Prasad Panda, Rangababu Peesapati, and Gayadhar Panda. "An Improved Control Strategy for Single-Phase Single-Stage Grid-Tied PV System With Current Reference MPPT Control." In *2020 IEEE International Conference on Computing, Power and Communication Technologies (GUCON)*, pp. 461-466. IEEE, 2020.
10. Ropmay, Gaddiella Diengdoh, et al. "A MEMS based blood glucose measurement sensor using twin-cantilever structure." *AIP Conference Proceedings*. Vol. 2294. No. 1. AIP Publishing LLC, 2020.
11. Kumar, Shashi, Gaddiella Diengdoh Ropmay, Pradeep Kumar Rathore, Peesapati Rangababu, and Jamil

Akhtar. "Sensitivity enhancement of P-and N-MOS based current mirror pressure sensor using differential amplifier." In *AIP Conference Proceedings*, vol. 2294, no. 1, p. 020002. AIP Publishing LLC, 2020.

12. 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," 2020 4th IEEE Electron Devices Technology & Manufacturing Conference (EDTM), Penang, Malaysia, april 2020, pp. 1-4, doi: 10.1109/EDTM47692.2020.9117806
13. G. Bhargav, S. Majumdar Design of Telescopic OTA based 6th order Butterworth Low Pass Filter using 0.18um CMOS Technology, IEEE VLSI -DCS, 18- 19 July, Kolkata 10.1109/VLSIDCS47293.2020.9179746
14. K. Das, S. Majumdar, S. Moulik, M. Fujita, "Real-Time Threshold-based Landslide Prediction System for Hilly Region using Wireless Sensor Networks," IEEE International Conference on Consumer Electronics - Taiwan (ICCE-TW) 2020, https://ieeexplore.ieee.org/document/9258181/
15. S. Moulik, S. Majumdar, V. Pal, Yogita, "Water Leakage Detection in Hilly Region PVC Pipes using Wireless Sensors and Machine Learning," IEEE International Conference on Consumer Electronics - Taiwan (ICCE-TW) 2020, https://ieeexplore.ieee.org/document/9258144
16. G. Bhargav, S. Majumdar, "Design of Telescopic OTA based 6th order Butterworth Low Pass Filter using 0.18µm CMOS Technology," VLSI -DCS, Kolkata https://ieeexplore.ieee.org/document/9179746/
17. S. Vodnala, S. Majumdar, P. Nath, "Region of Interest Based Encryption of Biomedical Image," "International Conference on Data Intelligence and Cognitive Informatics, published in Springer's Algorithms for Intelligent Systems https://link.springer.com/chapter/10.1007/978-981-15-8530-2_67

(c) Book Chapter:

1. Narendra Babu Perumallapalli, Baladhandautham Chitti Babu, Rangababu Peesapati & Gayadhar Panda Three-phase grid-tied photovoltaic system with an adaptive current control scheme in active power filter, Energy Sources, Part A: Recovery, Utilization, and Environmental. Taylor and Francis Effects, DOI: 10.1080/15567036.2020.1762807, (2020)
2. Venkata Bhargava Narendra Vennelakanti, Rangababu Peesapati and Bunil Kumar Balabantra"" Low Power U-Net for Semantic Image Segmentation"" MDCWC20 Springer 2020 (Accepted)"
3. Narendra Babu P, Kaibalya Prasad Panda, Chittibabu B, Rangababu P, Gayadhar Panda, Chapter 12 - A novel adaptive fuzzy-based controller design using field programmable gate arrays for grid-connected photovoltaic systems, Editor(s): Anuradha Tomar, Ritu Kandari, Advances in Smart Grid Power System, Academic Press, 2021, Pages 331-364, ISBN 9780128243374,
4. S.S. Devi, V. K. Solanki, R. H. Laskar, "Recent Advances on Big Data Analysis for Malaria Prediction and Various Diagnosis Methodologies", Handbook of Data science Approaches for Biomedical Engineering, https://doi.org/10.1016/B978-0-12-818318-2.00006-4, Pages 153-184, 2020.
5. Design of a 22 W (0.7 A) Current Controlled DC-DC Flyback Converter Operating in DCM Mode by Ananya Bhattacharya, Shubhankar Majumdar, In the book "Emerging Trends in Electrical, Communications, and Information Technologies" (Springer, Singapore Publication) Pages : 247-258 Year : 2020

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

Sl. No.	Name of the faculty member	Title of the Project	Period (From -To)	Sponsoring Organisation	Amount [in Lakhs]	Role [PI/ Co-PI]
1	Dr. 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

Sl. No.	Name of the faculty member	Title of the Project	Period (From -To)	Sponsoring Organisation	Amount [in Lakhs]	Role [PI/ 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 june, 2021	BRNS, DAE	20.03	Co-PI
6	Dr.P. Rangababu	Post-processing of NQR signals in digital domain in FPGA	13 July, 2018 - 30 June, 2021	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	01Aug 2018 - 31 July 2021	SERB	44.56	Co-PI(2)
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	March 2018- 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 Landslide Detector Early Warning System; 5. A portable Wind-Hydro Hybrid Electronic Charger Targeted for Outdoor Activities and Military Applications.	Oct 2019- March 2021	SCSTE (State Government of Meghalaya)	2.65	PI

Sl. No.	Name of the faculty member	Title of the Project	Period (From -To)	Sponsoring Organisation	Amount [in Lakhs]	Role [PI/ Co-PI]
14	Dr. Shubhankar Majumdar	Development of E-mode III-Nitride devices for Energy Optimized Agile Power Electronics Indo-Czech Project with Alice Hospodkov https://www.fzu.cz/en/research/projects/development-e-mode-iii-nitride-devices-energy-optimized-agile-power-electronics	2020-2023	Department of Science & Technology (International Bilateral Co-operation Division)	27.76 + 26.75 (CEERI PILLANI) + euro 3,00,000 (czech side)	PI
15	1.Dr.P. Rangababu 2.Dr.Ch. V Rama Rao 3.Dr. Abhishek Sarkhel 4.Dr. B. Shravan Kumar 5.Dr. Shubhankar Majumdar 6.Dr. Satyendra Singh yadav 7.Dr. B. Pushpa Devi 8.Dr. Pradeep Kumar Rathore 9.Dr. Prabir Saha 10. Dr. Anup Dandapat 11. Dr. Salam Shuleenda Devi	AI Empowered Advanced Wireless Communication Systems	Sanctioned on March 5th, 2021 2021-2026	DST -FIST 2020	80.00 Lakhs	Dept

6. Conference/ Workshop/ Seminar Organized:

» Dr. Shubhakar Majumdar Organized a Five Day Online Faculty Development Program under the MOU with AICTE on "Emerging Trends in RF and Energy device and Circuits" from 22nd February – 26th February, 2021

» Dr. Satydendra Singh Yadav conducted a TEQIP-III sponsored 5-Day online workshop on **"Application of ML/DL in Communication and Signal Processing"** at NIT Meghalaya from 15-09-2020 to 19-09-2020.

» Dr. Satydendra Singh Yadav Conducted a TEQIP-III sponsored 5-Day online workshop "Artificial Intelligence and Machine Learning Application in Healthcare" at NIT Meghalaya from Sep.03 to 07, 2020"

» Dr.P. Rangababu, one of the convenor, conducted 2-Day "Research Conclave" at NIT Meghalaya from 28-02-2021 to 01-03-2021.

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

Sl. No.	Name of Faculty	Name of the Programme attended	Duration
1	Dr. Anup Dandapat	1. Short Term Training Programme (STTP) on "Advanced VLSI Design and Applications with hands-on CADENCE Tools" with subtopic "Analog Integrated Circuit Design" organised by the Department of Electronics & Communication on Engineering, ABES Engineering College, Ghaziabad.	27th July to 1st August, 2020
		2. TEQIP-III Sponsored Three Days Faculty Development Program on "Outcome Based Engineering Education and Accreditation" held Online at NIT Meghalaya	21st – 23rd September, 2020
		3. 2020 IEEE Region 10 Symposium (TENSYMP), Dhaka, Bangladesh.	5-7 June, 2020
2	Dr Ch V Rama Rao	1. Presented paper in the 11th Annual IEEE Information Technology, Electronics and Mobile Communication Conference (IEMCON), Vancouver, Canada, 4 - 7 November, 2020	4 - 7 November, 2020
		2. Presented paper in the Interspeech 2020, China, 25 - 29 October, 2020	25 - 29 October, 2020
3	Dr P. Rangababu	1. Attended TEQIP-III Sponsored Workshop on TEQIP Course titled "Image Processing Using VISI Architectures"	17th Dec & 20-21 Dec 2020
		2. Attended an online workshop on Financial Data modeling using Python organized by NITIE Mumbai	Oct 10-11 & 16-18 Oct 2020
4	Dr. Prabir Kumar Saha	1. TEQIP-III Sponsored Three Days Faculty Development Program on "Outcome Based Engineering Education and Accreditation" held Online at NIT Meghalaya	5-7 June, 2020
		2. Presented a paper in ICCDN-2020	19-20 December, 2020
5	Dr. Abhishek Sarkhel	1. TEQIP-III Sponsored Three Days Faculty Development Program on "Outcome Based Engineering Education and Accreditation" held Online at NIT Meghalaya	
6	Dr. Bishnulatpam Pushpa Devi	1. International research workshop on advances in deep learning and applications	22-26 February 2021
7	Dr. Shubhankar Majumdar	1. Participated in the Online Short Term Course on Nanotechnology for Electronics and Photonic Devices (NanoDev 2010), organized by Electronics & Communication Engineering Department of Punjab Engineering College, Chandigarh, supported by TEQIP-III	15-19 June 2020
		2. Successfully completed professional development course on "RF measurement challenges for emerging 5G and millimeter wave devices" under IEEE continuing education (CEU)	24th June 2020
		3. Attended a webinar on "The people and the principles behind nature- the what, the why and the how" by Dr. Magdalena Skipper (Editor in Chief, Nature)	18th June 2020
		4. Attended a webinar on "Printed and Flexible electronics and devices" by Dr, Jin-Woo Han (Research Scientist NASA)	24th June 2020
		5. Attended a webinar on "IoT Devices for Remote Monitoring and Tracking" under the BRTC Agri and Livestock.	25th June 2020
		6. Attended a webinar on "Indo-German bilateral funding programmes for advanced industrial research" organized by NIT Jalandhar	26th June 2020

Sl. No.	Name of Faculty	Name of the Programme attended	Duration
8	Dr. Satyendra Singh Yadav	1. TEQIP III sponsored Short-term course on "Fundamentals of Effective Manuscript Writing" in the Centre for Advanced Electronics at IIT Indore.	December 02, 2020 to December 04, 2020
		2. TEQIP III sponsored E-Training Program/Short -term course on "Artificial Intelligence, Blockchain and Internet of Things for 6G Communications" in the Centre for Advance Electronics at IIT Indore.	03 December, 2020 to 05 December, 2020
		3. TEQIP III sponsored E-Training Program/Short -term course on 5G and Beyond Wireless Technologies: Modelling and Simulations using MATLAB in the Department of Electrical Engineering at IIT Indore	24 Dec 2020 to 26 Dec 2020

8. Invited Talks Delivered:

1. Dr. B Shravan Kumar. Delivered invited talk titled, "Introduction to GFDM for 5G applications", in the online faculty development program on "Recent Trends in Communication Technologies (RTCT-2020)" organized by Vaagdevi College of Engineering (Autonomous, JNTU Hyderabad), India, 10-14 October 2020.
2. Dr. B Shravan Kumar. Delivered invited talk titled, "Compressed sensing for beyond 5G applications using deep learning", in the online faculty development program on "Recent Trends in Communication Technologies" (RTCT-2020) organized by Vaagdevi College of Engineering (Autonomous, JNTU Hyderabad), India, 10-14 October 2020.
3. Dr. B Shravan Kumar. served as Session chair for workshop on "Machine learning, Deep learning and Computational Intelligence for wireless communication (MDCWC-2020)", NIT Tiruchirapalli, India, 22-24 October 2020.
4. Dr. Shubhankar Majumdar A talk on Compound semiconductor-based power amplifier design in AICTE Sponsored Short Term Training Programme on " Mixed Signal and Radio Frequency VLSI Design" on 24/11/2020
5. A. Dandapat. Short Term Training Programme (STTP) from 27th July to 1st August, 2020 on "Advanced VLSI Design and Applications with hands-on CADENCE Tools" with subtopic "Analog Integrated Circuit Design" organised by the Department of Electronics & Communication Engineering, ABES Engineering College, Ghaziabad.
6. Dr. S. Majumdar delivered a talk in 5 Days workshop on "Recent trends in VLSI Devices/Circuits and Applications" at MNIT Jaipur on 4th October 2020
7. Dr. S. Majumdar delivered a talk in. Short Term Training Programme (STTP) from 19th Oct to 24th October, 2020 on "Advanced VLSI Design and Applicaons with hands-on CADENCE Tools" with subtopic "Design and Simulation of Semiconductor Device" organised by the Department of Electronics & Communication Engineering, ABES Engineering College, Ghaziabad.
8. Dr. S. Majumdar delivered a talk in Online Workshop (e-workshop) on "Emerging CMOS Technologies and Beyond: Trends and Challenges" at MNIT Jaipur from 26th-30th November 2020
9. Dr. S. Majumdar delivered a talk in AICTE Sponsored Short Term Training Programme on " Mixed Signal and Radio Frequency VLSI Design" on 24/11/2020 in SGSITS Indore
10. Dr. S. Majumdar delivered a talk in AICTE Sponsored Short Term Training Programme on " Mixed Signal and Radio Frequency VLSI Design" on 14/12/2020 in SGSITS Indore
11. Dr. S. Majumdar delivered two Expert talk in E Workshop On "Design Challenges of IoT with AI & ML Applications" November 30th –December 04th 2020, NIT Hamirpur, Case Study of IoT Usage in Hilly region for Landslide Prediction and Water Leakage Prediction
12. Dr. P. Rangababu. Delivered an Expert talk on "Design of Dynamic Reconfigurable secure Hardware accelerators" National Conference on Secure Intelligent Systems (NCSIS-2020) orgniazed by KL University on 21 Jan 21
13. Dr. S. Majumdar. Delivered a lecture in the ATAL FDP (NEHU) during 8th-12th February, 2021 on "Sensors Implementation for Non-Invasive Pipe Water Leakage Detection and Monitoring of Soil Properties for Agriculture".

14. Dr. S. Majumdar delivered a lecture in the AICTE sponsored workshop VLSI BASED SYSTEM DESIGN during 12th - 14th March, 2021 on "Gallium Nitride based HEMT models and its use for RF circuit design".
15. Dr. Pradeep Kumar Rathore, Deliver a lecture in the ATAL FDP (NEHU) during 8th-12th February, 2021 on "MEMS and Integrated Pressure Sensors".
16. Dr, Ch. V Rama Rao Delivered invited talk on "Research on Interpretation of Signals and Processing", in the online faculty development program on "Recent Trends in Communication and Signal Processing" organized by Tirumala Engineering College (Autonomous), India, 12-16 June 2020.
17. Dr. Abhishek Sarkhel delivered a talk at Vignan's Institute of Information Technology, Visakhapatnam during 21st July-31st July, 2021 on "Electromagnetic Metamaterials and Its Application in the Microwave Frequency Region".
18. Dr. B. Shravan Kumar Delivered a talk in AICTE sponsored Six Days Online Short Term Training Program on "Advanced Next Generation Wireless Technique" from 27th July, 2020 - 1st August 2020 on "Machine Learning Applications for Next Generation Wireless Systems" at Department of Electronics & Communication Engineering, United College of Engineering & Research, Prayagraj.
19. Dr. B. Shravan Kumar Delivered a talk in AICTE-sponsored five-day online Short Term Training Program (STTP) on "Artificial Intelligence and its Societal Applications" from 22nd March to 26th March 2021 at Department of CSE, National Institute of Technology Meghalaya, India.

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

» Dr. Shubhankar Majumdar enlisted in the Golden List of Reviewers for 2020 of IEEE Transaction of Electronics Devices

10. Laboratories Setup:

Sl. No.	Laboratory	Major Equipment & Software	Location	Cost (Rupees in lakhs)
1	MEMS Laboratory	Experimental Setup for Sensor and Transducer Lab	Communication System Lab	Rs. 16,68,450.00 (Funded by TEQIP)

11. Administrative Responsibilities Held:

Sl. No.	Name of Faculty	Responsibilities	Duration
1	Dr Ch V Rama Rao	Liaison officer for SC/ST Cell	Since March 2016 to April 2020
		Chairman, Centre for Innovation Incubation and Entrepreneurship	July 2019-Till date
		Startup Coordinator, TEQIP III	01-07-2021-Till Date
		Coordinator, BTech Admission 2020	2020-21 Academic Year
		Coordinator, coordination committee to implement the activities under the MoU signed between NESAC and NIT Meghalaya	16-03-2021 to Till Date
		Digital Signal Processing Laboratory	14-06-2017 to Till Date
2	Dr.P. Rangababu	PIC (PG&PhD-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

Sl. No.	Name of Faculty	Responsibilities	Duration
4	Dr. Shubhankar Majumdar	Warden of Lapalang-1 Boys Hostel	July 2018- till date
		Faculty Incharge of Departmental Stationary	July 2018- till date
		In Departmental NBA Committee	July 2018- till date
		Member of Startup Cell	July 2018- till date
		Institute level IQAC member - Criteria 9 NBA	July 2019- till date
5	Dr. Abhishek Sarkhel	Member of UG PEC	June 2019 to till date
		Member of Library Committee	June 2018 to till date
6	Dr. Satyendra Singh Yadav	Deputy Faculty In-Charge, Computer Center	February 2020- till date
7	Dr. Prabir Kumar Saha	Member of PG PEC DSD Lab Incharge	June 2019 to Till Date July 2018 to till date
8	Dr. Bishnulatapm Pushpa Devi	High Performance computing Lab In-charge Departmental website maintenance In-charge	Jan 2020 - Till date Jan 2020- Till Date

12. Membership of Professional Bodies:

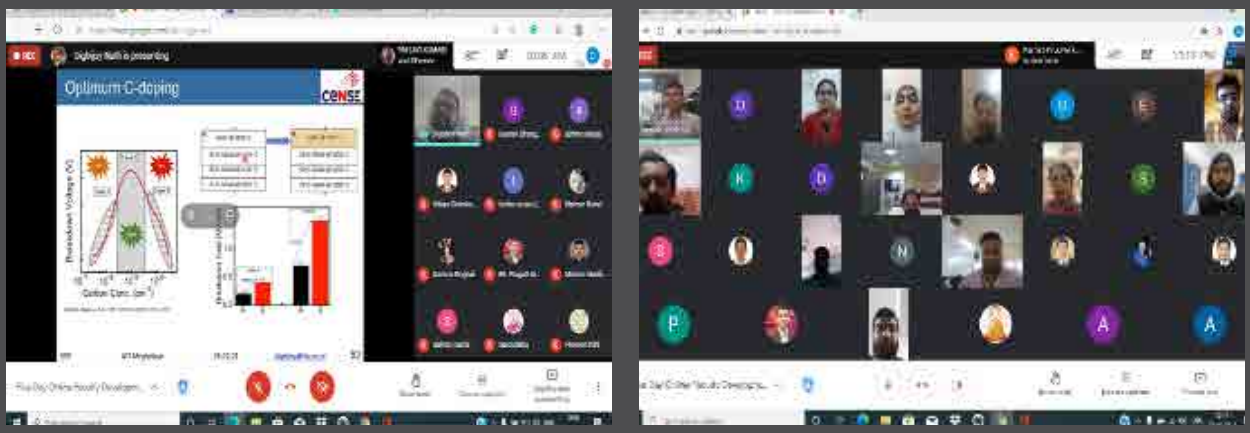
Sl. No.	Name of Faculty	Membership
1	Dr. Anup Dandapat	IEEE
2	Dr. Ch. V. Rama Rao	IEEE, IETE and ISCA
3	Dr. P. Rangababu	IEEE, IETE, IEI
4	Dr. Prabir Saha	IEEE, IETE, IAENG
5	Dr. Abhishek Sarkhel	IEEE
6	Dr. Pradeep Kumar Rathore	IEEE
7	Dr. Shubhankar Majumdar	IEEE , URSI, IEI

13. Any Other Notable Information:

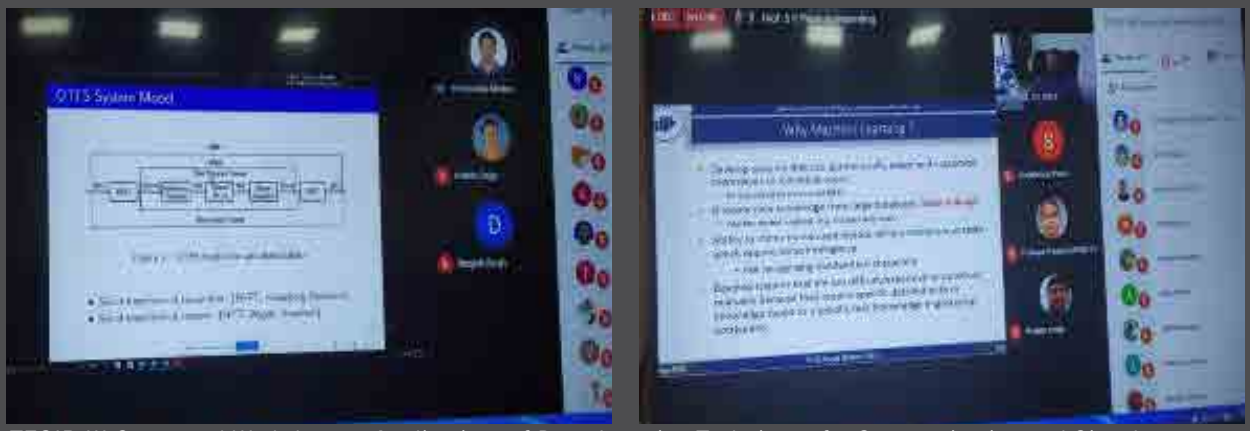
Sl. No.	Name of Faculty	Technical Assistance	Name of Journal/Conference
1	Dr. A. Dandapat	Reviewer Reviewer Reviewer Reviewer	a) IEEE b) IET c) Elsevier d) Taylor & Francis
2	Dr Ch V Rama Rao	Reviewer Reviewer	a) Interspeech 2020 b) IET Signal Processing
3	Dr. P. Rangababu	Reviewer	a) IEEE ACCESS b) IEEE BROADCAST c) IEEE TCAS-I
4	Dr. Prabir Kumar Saha	Reviewer	a) Elsevier b) Springer c) Electronics Journal d) Ain Shams Engineering Journal

Sl. No.	Name of Faculty	Technical Assistance	Name of Journal/Conference
5	Dr. Shubhankar Majumdar	Program Chair & Reviewer for the conference Reviewer for the journals	a) VLSI-DCS 2020 conference b) IEEE TED c) IEEE Access d) Wiley IJNM, RFCAD e) Springer JCEL, Silicon f) Elsevier Microelectronics Journal
6.	Dr. Abhishek Sarkhel	Reviewer	a) Willy International Journal of RF and Microwave Computer-Aided Engineering
7	Dr. Shravan Kumar Bandari	Reviewer	a) Springer
8	Dr. Satyendra Singh Yadav	Reviewer & TPC Member	a) IEEE Access b) Wiley c) IEEE Conference (ICCCS-2020) at IIT Patna d) IEEE Conference (CVIP-2020) at IIIT Allahabad e) IEEE Conference (IEEE-iSSSC 2020) at GIET Gunupur

14. Department activities in photographs:



AICTE Sponsored Online Faculty Development Program on "Emerging Trends in RF and Energy device and Circuits"



TEQIP-III Sponsored Workshop on Applications of Deep Learning Techniques for Communication and Signal Processing

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	Product Design and Manufacturing, Robotics	May 18, 2017	1	ongoing
Prof. Harish Chandra Das	Professor	PhD	Thermal	December 28, 2017	6	ongoing
Dr. Rabindra Narayan Mahapatra	Associate Professor	PhD	Design and manufacturing	December 28, 2017	5	1 awarded and 4 ongoing
Dr. Subhendu Maity	Assistant Professor	PhD	Fluid Mechanics	July 16, 2012	3	(one with Dr. Bikash Kr Sarkar)
Dr. Deba Kumar Sarma	Associate Professor & Dean (Planning & Development)	PhD	Manufacturing	August 23, 2013	5	2 awarded 3 continuing (one co-guide with Dr.K. Debnath)
Dr. Bikash Kumar Sarkar	Assistant Professor	PhD	Fluid Power and Control	August 21, 2013	4	2 Shared with (Dr. S. Maity and Dr. R. S. Das)

Name	Designation	Qualification	Specialization	Date of Joining	Ph.D. guidance	Remarks
Dr. Biplab Kumar Debnath	Assistant Professor	PhD	Thermal	July 30, 2014	1	1 awarded, 2 Continuing (one co-guided with Dr. R.S. Das)
Dr. Koushik Das	Assistant Professor	PhD	Thermal	July 31, 2014	3	1 completed, 2 ongoing
Dr. Rajat Subhra Das	Assistant Professor	PhD	Thermal	July 16, 2015	3	All ongoing/Shared with Dr. B.K. Debnath, Dr. B.K. Sarkar & Dr. K. Das
Dr. Kishore Debnath	Assistant Professor	PhD	Manufacturing	July 16, 2015	4	1 Awarded, 1 Submitted, 2 ongoing/ Shared with Dr. D.K. Sarma, Dr. T. Bose, & Dr. R.N. Mahapatra
Dr. Pallekonda Ramesh Babu	Assistant Professor	PhD	Machine Design	July 27, 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	June 06, 2016	2	1 Shared with Dr. Pallekonda Ramesh Babu
Dr. Tanmoy Bose	Assistant Professor	PhD	Machine Design	June 17, 2016	3 Student	All ongoing, 1 Co-guidance with Dr. Kishore Debnath
Avilash Sahoo	Trainee Teacher	M.TECH	Machine Design	July 21, 2014		
Dr. Md Nur Alom	Trainee Teacher	PhD	Fluids and Thermal	July 21, 2014		
Sambit Majumder	Trainee Teacher	M.TECH	Fluids and Thermal	July 20, 2015		

4. List of Publications:

a. Journals:

1. Hrishikesh Dutta, Kishore Debnath, Deba Kumar Sarma, Investigation on Cutting of thin carbon fiber reinforced polymer composite plate using sandwich electrode-assisted wire electrical discharge machining, Proceedings of the Institution of Mechanical Engineers, Part E: Journal of Process Mechanical Engineering, (SAGE), DOI: 10.1177/09544089211013318, Vol., No., Page nos. 1-11, 2021
2. H. Dutta, K. Debnath, D.K. Sarma (2020) Multi-objective Optimization of Hole Dilation at Inlet and Outlet during Machining of CFRP by µEDM Using Assisting-Electrode and Rotating Tool, International Journal of Advanced Manufacturing Technology, Vol. 110, No. (9-10), Page nos. 2305-2322, 2020
3. H. Dutta, K. Debnath, D.K. Sarma, Improving the Performance of µED-Milling using Assisting Electrode for Fabricating Micro-Channels in CFRP Composites, Materials Today: Proceedings, Elsevier, Vol. 28, Page nos. 755-760, 2020
4. 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

5. 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

6. Rashed Mustafa Mazarbhuiya, Maneswar Rahang, Reverse EDM process for pattern generation using powder metallurgical green compact tool, Materials and Manufacturing Processes, 35(15), 2020, 1741-1748.

7. Maneswar Rahang and Promod Kumar Patowari, Selective Area Deposition for Pattern Generation in EDM Using Masking Technique, Surface Review and Letters, 27(10), 2020, 1950218.

8. Deka, S., Babu, P.R. and Rahang, M., 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, p.0142331219895645.

9. Mazarbhuiya, R.M., Dutta, H., Debnath, K. and Rahang, M., 2020. Surface modification of CFRP composite using reverse- EDM method. Surfaces and Interfaces, p.100457.

10. M. Rahang, PK Patowari, Pattern generation by selective area deposition of material in EDM, Materials and Manufacturing Processes, 34(16), 2019, 1847-1854

11. Rashed Mustafa Mazarbhuiya, Bhargab Madhab Barua and Maneswar Rahang, Taguchi Grey Relational Multi-Response Experimental Optimization on Modification of Al-6061 Surface Using Si–Cu Green Compact Tool in EDM, Surface Review and Letters, 2021, https://doi.org/10.1142/S0218625X21500736

12. Deka, S., Kamal, A., Pallekonda, R.B., Rahang, M. and Kulkarni, V., 2021. Measurement technique for ideal selection of sensors and accurate force recovery on aerodynamic models. Experimental Techniques, https://doi.org/10.1007/s40799-021-00472-2

13. S. Das, B. K. Debnath, R. S. Das, Experimental investigation of porous media combustion applied on the piston bowl of diesel engine. Journal of the Brazilian Society of Mechanical Sciences and Engineering, 2021, Vol. 43, Page Nos. 154 (1-14), DOI: 10.1007/s40430-021-02865-1.

14. A. B. Khelkar, B. K. Debnath, K. Debnath, 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, 2020, Vol. 141, Page Nos. 2589–2597, 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: 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, Vol. 141, Page Nos. pages2295–2309. DOI: 10.1007/s10973-020-095911.

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. Sushmita Deka, Ramesh Babu Pallekonda, Maneswar Rahang, Comparative assessment of modified deconvolution and neuro-fuzzy technique for force prediction using an accelerometer balance system, Measurement, Volume 171,2021 https://doi.org/10.1016/j.measurement.2020.108770.

19. Vinod J, Bikash Kumar Sarkar, Francis turbine electrohydraulic inlet guide vane control by artificial neural network 2 degree-of-freedom PID controller with actuator fault, Proc IMechE Part I: J Systems and Control Engineering. DOI: 10.1177/0959651820973797

20. P. Venkaiah, Bikash K Sarkar, Hydraulically actuated horizontal axis wind turbine pitch control by model free adaptive controller, Renewable Energy Volume 147, Part 1, March 2020, Pages 55-68, https://www.sciencedirect.com/science/article/pii/S096014811931314X

21. Neeraj Kumar,, Rahul Kumar, Bikash Kumar Sarkar, Subhendu Maity, Condition monitoring of hydraulic transmission system with variable displacement axial piston pump and fixed displacement motor, Materials Today: Proceedings. https://www.sciencedirect.com/science/article/pii/S2214785320370371

22. Alom, N., Saha, U. K., and Dewan, A., 2021. In the Quest of an Appropriate Turbulence Model for Analyzing the Aerodynamics of a Conventional Savonius (S-type) Wind Rotor, Journal of Renewable and Sustainable Energy, Vol. 13, issue 2, p. 023313

23. Alom, N., 2021. Influence of Curtain Plates on the Aerodynamic Performance of an Elliptical Bladed Savonius Rotor (S-rotor), Energy Systems, Vol.12, issue. 2, pages: 1-16

24. PJ Bezbaruah, RS Das, BK Sarkar, Overall performance analysis and GRA optimization of solar air heater with truncated half conical vortex generators, Solar Energy, 2020, Vol- 196, pp. 637-652.

25. PJ Bezbaruah, RS Das, BK Sarkar, Solar air heater with finned absorber plate and helical flow path: A CFD analysis, Applied Solar Energy, 2020, Vol- 56, pp. 35-41.

26. N. Hanuman, S. Roy, T. Bose, Resonant activation of different intermodulation frequencies using dual excitations, Ultrasonics, vol.-106, 106138, 2020. https://doi.org/10.1016/j.ultras.2020.106138

b. Book chapters:

Sl No.	Author Name	Title	Publisher	ISBN No	Pages	Year
1	Meinam Annebushan Singh, Deba Kumar Sarma, Sanjib Kr Rajbongshi, Ondrej Hanzel and Pavol Sajgalik	Investigation of Machining Capabilities of 2.5 vol.%MWCNT Al2O3 Composites in μ-EDM	Lecture Notes in Mechanical Engineering, Advances in Mechanical Engineering, Springer	doi. org/10.1007/978-981-15-0124-1_41	459-465	2020
2	Sanjib Kr Rajbongshi, Deba Kumar Sarma	Application of Taguchi's Orthogonal Array and Overall Evaluation Criteria in Turning of AISI D2 Steel in Dry and Forced Air-Cooled Environment	Lecture Notes in Mechanical Engineering, Emerging Trends in Mechanical Engineering, Springer	doi. org/10.1007/978-981-32-9931-3_18	177-186	2020
3	K. Debnath, H. Dutta and D.K. Sarma	Influence of Different Tool Materials on the Machining Performance in μED-Milling of CFRP Composites	Machining and Machinability of Fibre Reinforced Polymer Composites, Composites Science and Technology, Springer-Nature Pte. Ltd.	doi. org/10.1007/978-981-33-4153-1_8	207-224	2021
4	Rashed Mustafa Mazarbhuiya, Maneswar Rahang	Deposition of Tungsten and Copper Particle on CFRP Composite	Recent Advances in Mechanical Engineering, Springer		815-822	2021
5	Rashed Mustafa Mazarbhuiya, Maneswar Rahang	Parametric Study of Photochemical Machining of Aluminium Using Taguchi Approach	Advances in Mechanical Engineering, Springer		497-504	2020
6	Sushmita Deka, Pallekonda Ramesh Babu, Maneswar Rahang	Dynamic Calibration of Three-Component Accelerometer Force Balance System Using Deconvolution	Advances in Mechanical Engineering, Springer		1675-1683	2020
7	Sushmita Deka, Pallekonda Ramesh Babu, Maneswar Rahang	Influence of Stress Bar Length on the Response of a Stress Wave Force Balance Using Finite Element Analysis	Advances in Mechanical Engineering, Springer		263-270	2020

Sl No.	Author Name	Title	Publisher	ISBN No	Pages	Year
8	Rashed Mustafa Mazarbhuiya, Maneswar Rahang	Multi-objective Optimization of Photochemical Machining Parameters Using Taguchi Grey Relational Analysis	Emerging Trends in Mechanical Engineering, Springer		283-291	2019
9	A.C. Chandekar, and B.K. Debnath	Design and Optimization of Air–Biogas Mixing Device for Dual Fuel Diesel Engines. Editors: S. Singh, and V. Ramadesigan	Advances in Energy Research, Springer	ISBN: 978-981-15-2662-6	515-527	2020
10	P.J. Bezbaruah, A. Das, R.S. Das, B.K. Sarkar	Numerical investigation on triangular fin based solar air heater	Advances in Energy Research	http://doi.org/10.1007/978-981-15-2662-6_31		2020
11	P.J. Bezbaruah, R.S. Das, B. K. Sarkar	CFD-based study on thermal and fluid flow dynamics due to miller teeth shaped ribs over absorber plate of solar air collector	Advances in Mechanical Engineering	http://doi.org/10.1007/978-981-15-0124-1_93		2020
12	H Barman, RS Das	Simultaneous Heat and Mass Transfer Analysis in Falling Film Absorber	Advances in Mechanical Engineering	https://doi.org/10.1007/978-981-15-0124-1_89		2020
13	S. Roy, T. Bose, K. Debnath	Detection of Local Defect Resonance Frequencies for Defect Imaging: A Nonlinear Ultrasound-Based Approach	Advances in Mechanical Engineering, Springer		1163-1172	2020
14	M. Vashum, S. Roy, T. Bose	Shear Behaviour of the Delaminated Glass Fibre Reinforced Composite Laminates	Advances in Mechanical Engineering, Springer		617-625	2020
15	T. Bose, N. Hanuman, S. Roy	Non-Destructive Testing of Carbon Fibre Reinforced Polymer (CFRP) Composite Using Thermosonic Technique	Handbook of Research on Developments and Trends in Industrial and Materials Engineering, IGI Global		348-365	2020

(c) Conferences:

1. Deka, S., Babu, P.R. and Rahang, M., 2020. Dynamic Calibration of Three-Component Accelerometer Force Balance System Using Deconvolution. In *Advances in Mechanical Engineering* (pp. 1675-1683). Springer, Singapore.
2. 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. In *International Conference on Advances in Mechanical Engineering (ICAME-2020).*
3. Deka, S., Babu, P.R. and Rahang, M., 2020. Dynamic Calibration of a Single Component Accelerometer Force Balance Using Delta Wing Model for Impulse Loads. In *International Heat and Mass Transfer Conference (IHMTC-2019).*

4. 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.

5. 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.

6. Deka, S., Ramesh Babu, P. and Rahang, M., 2019. Dynamic calibration of a stress wave force balance under various supports and loads using finite element analysis. In *32nd International Symposium on Shock Waves (ISSW32)* (pp. 2979-2985).

7. 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.

8. Jaswant Singh, Nur Alom, Bikash Kumar Sarkar, Computational Assessment Of Cross Flow Hydro Turbine By Changing The Rotational Speed, 8th International and 47th National Conference on Fluid Mechanics and Fluid Power, December 9-11, 2020, IIT Guwahati

9. Ankush Chandrakant Bhandarkar, Parag Jyoti Bezbaruah, Bikash Kumar Sarkar, Solar air heater system control for office building room heating application in Shillong, 8th International and 47th National Conference on Fluid Mechanics and Fluid Power, December 9-11, 2020, IIT Guwahati.

10. Francis Kurbah, Shemphang Marwein, Teiborlin Marngar, Bikash Kumar Sarkar, Design and development of the pineapple harvesting robotic gripper, SOCCER 2020, 3rd to 4th October 2020, NIT Silchar.

11. J. Vinod, B. K. Sarkar, Integral Sliding Mode Controller Design for Francis Turbine Electrohydraulic Igv System, *Proceedings Of The* International Conference On Recent Trendsin Developments Of Thermo-Fluids And Renewable Energy *Nit Arunachal Pradesh, Yupia, India November 26 – 28, 2020*

12. Talukdar P.K., Alom N., Rathod U.H., Kulkarni V., Saikia P., and Rava, D. K., 2020. Wind Tunnel Experiments to Estimate the Performance of a Novel Arc-elliptical-bladed Savonius Wind Rotor, International Conference on Recent Trends in Developments of Thermo-fluid and Renewable Energy, November 26 – 28, 2020, NIT Arunachal Pradesh, Yupia, India.

13. A. Sahoo, S. K. Dwivedy, and P. S. Robi, "Adaptive Fuzzy PID Controller for A Compact Autonomous Underwater Vehicle," in Proceedings of the Virtual Global OCEANS 2020: Singapore – U.S. Gulf Coast, Oct 5-14, 2020.

14. S. Majumder, A. Ghosh, D. N. Basu and G. Natarajan, "Computational Assessment of Immersed Boundary-Lattice Boltzmann Method for Complex Moving Boundary Problems" in Proceedings of the 8th International and 47th National Conference on Fluid Mechanics and Fluid Power (FMFP), December 09-11, 2020, IIT Guwahati, Guwahati-781039, Assam, India

15. K. Sarkar, B. K. Balabantaray, A. Chakrabarty, B B Biswal and B. Mohanty, 2020, "Path Planning of Mobile Robots Using Enhanced Particle Swarm Optimization", 3rd International Conference on Energy, Power and Environment: Towards Clean Energy Technologies held at NIT Meghalaya,

16. A Rout, G B Mahanta, B M Gunji, B. B. V. L. Deepak, and B B Biswal. "Kinematic and Dynamic Optimal Trajectory Planning of Industrial Robot Using Multi-objective Ant Lion Optimizer." In Advances in Mechanical Engineering, pp. 1475-1486. Springer, Singapore, 2020.

17. G B Mahanta, A Rout, B M Gunji, B. B. V. L. Deepak, and B B Biswal. "Multi-objective design optimization of a bioinspired underactuated robotic gripper using multi-objective Grey wolf optimizer." In Advances in Mechanical Engineering, pp. 1497-1509. Springer, Singapore, 2020.

18. A. Rout, G B Mahanta, B. B. V. L. Deepak, and B B Biswal. "Application of PCA-TOPSIS Method for Selecting Optimal Welding Conditions in GMAW to Improve the Weld Quality." In Innovative Product Design and Intelligent Manufacturing Systems, pp. 579-587. Springer, Singapore, 2020.

19. G B Mahanta, A Rout, B. B. V. L. Deepak, and B B Biswal. "Conceptual Design and Analysis of Three Jaw Robotic Gripper with Flexural Joints." In Innovative Product Design and Intelligent Manufacturing Systems, pp. 1035-1042. Springer, Singapore, 2020.

5. Workshops Organized:

Sl. No.	Title	Sponsors	National/ International	Duration	Faculty responsibility
1	Short Term Course on Green Technologies for Sustainable Growth	NIT Meghalaya	National	14-09-2020 to 18-09-2020	Finance Secretary
2	National Education Policy 2020 with a focus on "Higher Education and Research"	TEQIP-III	National	17-02-2021	Organizing Committee member

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

Sl. No.	Name of Faculty	Name of the programme attended	Duration
1	Dr. D.K. Sarma	Short Term Course on Analytical Mechanics and its Applications, Department of Mechanical Engineering, IITGuwahati.	14-12-2020 to 18-12-2020
2	Dr. D.K. Sarma	National Education Policy 2020 with a focus on "Higher Education and Research", NIT Meghalaya, conducted by TEQIP-III	17-02-2021
3	Dr. BK Debnath	National Education Policy 2020 with a focus on "Higher Education and Research", NIT Meghalaya, conducted by TEQIP-III	17-02-2021
4	Mr. Avilash Sahoo	Virtual Global OCEANS 2020: Singapore – U.S. Gulf Coast	5-10-2020 to 14-10-2020
5	Mr. Avilash Sahoo	Webinar on "Design, Modeling, and Simulation of Autonomous Underwater Vehicles" by MathWorks	22-01-2021
6	Sambit Majumder	8th International and 47th National Conference on Fluid Mechanics and Fluid Power (FMFP), December 09-11, 2020, IIT Guwahati, Guwahati-781039, Assam, India	09.12.2020 to 11.12.2020
7	Sambit Majumder	National workshop on "Virtual Experiments in Mechanical Engineering", organised by Department of Mechanical Engineering, IIT Guwahati, sponsored by TEQIP	02.11.2020 to 06.11.2020
8	Sambit Majumder	Symposium on "Biomicrofluidics", organised by Department of Mechanical Engineering, IIT Guwahati, sponsored by TEQIP	19.02.2021 to 20.02.2021
9	Sambit Majumder	Short Term Course on "Aerospace Technology: Theory and Practice", organised by Department of Mechanical Engineering, IIT Guwahati, sponsored by TEQIP	17.02.2021 to 21.02.2021
10	Dr. Md Nur Alom	Short Term Course on "Aerospace Technology: Theory and Practice", organised by Department of Mechanical Engineering, IIT Guwahati, sponsored by TEQIP	17.02.2021 to 21.02.2021

7. Projects

a. Sponsored Project

Sl. No.	Title of the Project	Investigators (P.I. / Co-P.I.)	Funding Agency	Funding amount	Duration	Status
1	Development of a novel solar driven dedicated outdoor air system (DOAS) for space heating and liquid desiccant dehumidification with direct/indirect contact heat/mass exchangers for Meghalaya region	Dr. Rajat Subhra Das (PI)	SERB	32,41,700/-	3 yrs	Ongoing

Sl. No.	Title of the Project	Investigators (P.I. / Co-P.I.)	Funding Agency	Funding amount	Duration	Status
2	Aerodynamic performance evaluation of Savonius vertical axis rotor for small-scale power generation	Dr. Md Nur Alom (Co-PI)	TEQIP-III	10.48 Lakhs	1 yr	Completed
3	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
4	Non-destructive inspection of low velocity impact damage in composite plate using ultrasound phased arrayDesign Innovation Center	Dr. Tanmoy Bose (PI)	TEQIP-III Ministry of Education, Govt. of India (through DIC, IITG)	2 Lakhs	2 yrs	Ongoing
5	Application of Masking Technique and Reverse EDM Technique for Pattern Generation by Selective Area Deposition of Material using Powder Metallurgical Green Compact Tool and Sintered Tool Electrode	Dr. Maneswar Rahang (PI)	SERB	27.84 Lacs	3 years	Completed
6	Design and Fabrication of Coconut Deshelling Machine for Domestic and Small-Scale Industry Applications	Dr. Maneswar Rahang (PI)	DIC NIT Meghalaya	3.244 Lakhs	1.5 years	
7	Design and Fabrication of Hand and Foot Powered Grain Segregator	Dr. Maneswar Rahang (PI)	State Council of Science Technology & Environment (SCSTE), Govt. of Meghalaya	72,600.00	1 year	
8	Design and Fabrication of Grain Dryer Machine	Dr. Maneswar Rahang (PI)	Design and Fabrication of Grain Dryer Machine	95,700.00	1 year	
9	Developing emission inventory for non-attainment cities in India (Meghalaya)	Dr. Ganesh Chandra Dhal (PI) Dr. Rabindra Narayan Mahapatra (Co-PI)	Center for study of Science, Technology and Policy	1.925 lakhs	6 months	Ongoing
10	Surveillance and monitoring of industrial equipment, industrial erections and buildings using hybrid ground mobile aerial robot with the help of AI techniques, image processing and sensors inputs.	Prof. H. C. Das	Hindalco Industries Limited (UNIT - Aditya Aluminium)	9 lakhs	3 year	ongoing
11	Industrial and mining environment surveillance and monitoring of structures and material handling using neural-fuzzy AI embedded sensor based hybrid land-aerial mobile robot.	Prof. H. C. Das	M/s Jindal Steel & Power Ltd.	16.224	3 years	Ongoing

(b) Consultancy

Sl. No.	Title	Consultant(s)	Client(s)	Value	Status
1	Testing of materials	Dr. D. K. Sarma	CPWD, Shillong	77,880	Completed
2	Testing of materials	Dr. D. K. Sarma	CPWD, Shillong	35,400	Completed
3	Testing of materials	Dr. D. K. Sarma	CPWD, Shillong	28,320	Completed
4	Testing of materials	Dr. D. K. Sarma	CPWD, Shillong	2,73,760	Completed
5	Work Time Motion Study	Dr. R. N. Mahapatra	State Rural Employment Society, Meghalaya	15.93 lakhs	On going

8. Laboratories Setup:

Sl. No.	Laboratory	Major Equipment & Software	Location	Cost (Rupees in lakhs)
1	Thermal Science Lab	Twin Cylinder CRDi, Turbocharged, Automotive Dual Fuel Research Engine Test Set-up with Open ECU (TEQIP-III funded)	NIT Meghalaya	27,15,237
2	Computational Laboratory	Materialize MIMICS Implants Design Software		27,49,267
		Ansys Granta Edu Pack		17,32,500
		COMSOL Multiphysics Software		20,87,000
		3D Experience Engineer		29,85,905
3	Material Science Laboratory	Spark Based OES		40,32,000
4	Robotics Lab.	MARKFORGED x7 3D-PRINTER	Centre for Robotics & Mechatronics	52,26,500.00

9. Administrative Responsibilities Held:

Sl. No.	Name of Faculty	Responsibilities	Duration
1	Dr. D. K. Sarma	Dean (P&D)	01-07-2019 to 30-06-2020
2	Dr. D. K. Sarma	Nodal Officer (Procurement), TEQIP-III	01-04-2018 to 31-03-2021
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
7	Dr. D.K. Sarma	Chairman, Library Committee	01-07-2020 to till date
8.	Dr. Maneswar Rahang	Warden, L-3 Hostel	01-06-2018- till date
9.	Dr. Biplab Kumar Debnath	Vice President, Cultural Committee, SAC	14-08-2020-till date

10. Membership of Professional Bodies:

Name	Professional Body	Membership No. and status
Dr. Md Nur Alom	ASME	102089520, Member
Dr. Rajat Subhra Das	ASHRAE	8225241, Member
Dr. D.K. Sarma	Indian Welding Society	Life member
Mr. Avilash Sahoo	ASME	102607760, Member
	IEEE	94145936

Name	Professional Body	Membership No. and status
Dr. Bikash Kumar Sarkar	ASME	100784361, Member
	IEEE	92662020, Member
	NSFMFP	LM631, Life member
	ISHMT	1064, Life member
Dr. Subhendu Maity	ASME	100732582, Member
	IEEE	93088281, Member
	NSFMFP	LM635, Life member
	ISHMT	1064, Life member
	ISTE	LM 111112, Life member
	ISTAM	L/1067, Life member
	IEI	AM166945-4, Associate Member
	SAISE	20151124001, Life Member
Dr. Biplab Kumar Debnath	ASME	Member (101982384)
	IEI	Associate Member (AM159023-8)
	ASCE	Associate Member (9783236)
Sambit Majumder	IEI	Associate Member (AM159672-4)

11. Any Other Notable Information:

a) Dr. D.K. Sarma was Invited to Asansol Institute of Engineering and Management – Polytechnic, Asansol, WB to deliver Expert talk through online mode at FDP on "Environment-Friendly Machining" on 28-12-2020.

b) Dr. D.K. Sarma was appointed as Chairman, Project Review Committee (PEC), DSIR, GOI, at IITGuwahtai, 23-12-2020.

c) Dr. D. K. Sarma was nominated as Member, Construction Review Committee by NIT Arunachal Pradesh, 01-02-2020.

d) Dr. B. K. Sarkar, AICTE Sponsored Six Days Online Short Term Training Program (STTP) On "Recent Advances in Industrial Robotics and Applications" [07 - 12, December - 2020] Organized by Department of Electrical Engineering SHREE RAMCHANDRA COLLEGE OF ENGINEERING. Title of the lecture, **Electrohydraulic control of Industrial Robots** and **Sensor integration and error analysis of the industrial robots.**

e) Dr. N. Alom was invited to give an expert talk on '**Use of CFD Tools**' Department of Mechanical Engineering, IIT Guwahati, Assam, India, 17-21 February, 2021

f) Dr. N. Alom was invited to give an expert talk on the topic of **Computational Analysis of Various Savonius Rotor Blade Profiles in the** Refresher Program on **Small Wind Turbines: Design, Development and Testing organized by** Trinity College of Engineering and Research, Pune during 31st March-6th April 2021

g) Dr. N. Alom was invited to give an expert talk on the topic of **Application of commercial CFD tools in small-scale Savonius vertical axis wind turbine in the** Refresher Program on **Small Wind Turbines: Design, Development and Testing organized by** Trinity College of Engineering and Research, Pune during 31st March-6th April 2021

h) Dr. N. Alom was invited to give an expert talk on the topic of **Evolution of Vertical Axis Wind Turbines and Its Applications in the** STTP on **Recent Developments in Renewable Energy organized by Government Engineering College Bharuch, Gujrat** during 4-9th April 2021

i) Dr. N. Alom was invited to give an expert talk on the topic of **CFD Investigation of Drag Based Vertical Axis Wind Turbine in the** Refresher Program on **Small Wind Turbines: Design, Development and Testing phase-II organized by** Trinity College of Engineering and Research, Pune during 28th April-4th May 2021

j) Dr. N. Alom was invited to give an expert talk on the topic of **Experimental Analysis of Savonius Wind Rotors** in the Refresher Program on **Small Wind Turbines: Design, Development and Testing phase-II organized by** Trinity College of Engineering and Research, Pune during 28th April-4th May 2021

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. programme 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 nineteen (19) 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:

i. M.Sc. in Chemistry (2 years) and

ii. Ph.D. (Full-time and Part-time)

3. Faculty Profile:

Name	Designation	Qualification	Specialization	Date of Joining	Ph.D. guidance (ongoing)
Dr. Gitish K. Dutta	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	04
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	05
Dr. Naba Kamal Nath	Assistant Professor	Ph.D.	Crystal Engineering and Energy Converting Smart Materials (Inorganic Chemistry)	28-07-2015	03

4. List of Publications

(a) International Journals

1. S. Das, L. Langbang, M. Haque, V. Belwal, K. Aguan, A. Singha Roy, Biocompatible silver nanoparticles: An investigation into their protein binding efficacies, anti-bacterial effects and cell cytotoxicity studies, **Journal of Pharmaceutical Analysis**, 2020 (Accepted Article), https://doi.org/10.1016/j.jpha.2020.12.003.
2. S. Sarmah, S. Das, A. Singha Roy, Protective actions of bioactive flavonoids chrysin and luteolin on the glyoxal induced formation of advanced glycation end products and aggregation of human serum albumin: iIn vitro and molecular docking analysis, **International Journal of Biological Macromolecules**, 165, **2020**, 2275-2285. DOI: doi.org/10.1016/j.ijbiomac.2020.10.023.
3. S. Sarmah, S. Pahari, V. K. Belwal, M. Jana, A. Singha Roy, Elucidation of molecular interaction of bioactive flavonoid luteolin with human serum albumin and its glycated analogue using multi-spectroscopic and computational studies, **Journal of Molecular Liquids** (Accepted article), **2020,** DOI: https://doi.org/10.1016/j.molliq.2020.114147.
4. S Das, S Sarmah, S Lyndem, A Singha Roy, An investigation into the identification of potential inhibitors of SARS-CoV-2 main protease using molecular docking study, **Journal of Biomolecular Structure and Dynamics** (Accepted article), **2020**, DOI: doi.org/10.1080/07391102.2020.1763201.
5. Poonam Gupta, Suryanarayana Allu, Durga Prasad Karothu, Tamas Panda, and Naba K. Nath, Organic Molecular Crystals with Dual Stress-Induced Mechanical Response: Elastic and Plastic Flexibility, Cryst. Growth Des. 2021, 21, 1931–1938.
6. N. Deka, J. Barman, P. Gawas, H. B. Parse, B. Kakade, V. Nutalapati, G. K. Dutta, Nitrogen-Doped Microporous Carbons Synthesized from Indole-Based Copolymer Spheres for Supercapacitors and Metal-Free Electrocatalysis, *Energy Fuels*, **2021**,*35*, 2785-2794. DOI: 10.1021/acs.energyfuels.0c03854.
7. J Deka, K Saha, R Gogoi, GK Dutta, K Raidongia, Fabrication of Pressure-Responsive Energy Device from Nanofluidic Vanadium Pentoxide and Polymeric Hydrogel; ACS Appl. Electron. Mater. 2021, 3, 1, 277–284
8. G. Kalita, N. Deka, D. Paul, L. Thapa, G. K. Dutta, P. N. Chatterjee, Sulfonated Tetraphenylethylene-Based Hypercrosslinked Polymer as a Heterogeneous Catalyst for the Synthesis of Symmetrical Triarylmethanes via a Dual C–C Bond-Cleaving Path, *Synlett,* **2020**, *32*, 304-308. DOI: 10.1055/a-1277-3995.
9. N. Deka, J. Barman, S. Kasthuri, V. Nutalapati, Gitish K Dutta, Transforming waste polystyrene foam into N-doped porous carbon for capacitive energy storage and deionization applications, *Appl. Surf. Sci.* **2020**, *511*, 145576. DOI:doi.org/10.1016/j.apsusc.2020.145576.
10. Kalita, G.; Paul, D.; Khatua, S.; Chatterjee, P. N., para-Toluenesulfonic Acid Catalyzed Synthesis of Indenes a Tandem Friedel–Crafts Alkylation/Hydroarylation of Tertiary Propargylic Alcohols with Electron-Rich Arenes. *Catalysis Letters* **2020**, 1-8.
11. Kalita, G.; Deka, N.; Paul, D.; Thapa, L.; Dutta, G. K.; Chatterjee, P. N., Sulfonated Tetraphenylethylene-Based Hypercrosslinked Polymer as a Heterogeneous Catalyst for the Synthesis of Symmetrical Triarylmethanes via a Dual C–C Bond Cleaving Path. *Synlett* **2020,** 1-12.
12. Paul, D.; Chatterjee, P. N. Exploring the labile nature of 2,4,6-trimethoxyphenyl moiety in allylic systems under acidic conditions. *Eur. J. Org. Chem.* **2020**, 4705-4712.
13. Rishika Chakraborty, Pradip K. Maji, Chhavi Verma, Arpan Kumar Nayak, Shib Shankar Singha and Mukul Pradhan. 'Inherent Oxygen- and Nitrogen-Doped Porous Carbon Derived from Biomass of Tamarind Leaf for High□Performance Supercapacitor Application', *Energy Technology*, **2020**, *9*, 2000734 *(Hot Topic: Sustainable Chemistry)*
14. Mukul Pradhan, Rishika Chakraborty, Siddheswar Rudra, Sudipta Koley, Pradip K. Maji, Arpan Kumar Nayak, Sutanu Das and Upendranath Nandi. 'Intercalation pseudocapacitance in Bi2Se3–MnO2 nanotube composite for high electrochemical energy storage', *Electrochimica Acta*, **2021**, *367*, 137531.
15. Ahamed, S. S.; Kim, H.: Paul, A. K.; West, N. A.; Winner, J. D.; Donzis, D. A.; North, S. W.; Hase, W. L. Comparison of Intermolecular Energy Transfer from Vibrationally Excited Benzene in Mixed Nitrogen-Benzene Baths at 140 and 300 K, *J. Chem. Phys.* **2020**, *153*, 144116.
16. Ahamed, S. S.; Kumar, P.; Kalita, H.; Paul, A. K. Mode-to-Mode Collision Energy Transfer from Vibrationally Excited C_6F_6 to NO/N_2 Mixed Bath with the Development of New Potential EnergyFunctions, *Chem. Select.* **2020**, *5*, 10475-10487.

17. Mahanta, H.; N., S.; Mishra, R.; Paul, A. K. Unimolecular Dissociation Dynamics of C_6H_6-C_6Cl_6 Complex and the Effect of Anharmonicity, *Int. J. Mass Spectrom.*, **2020**, *456*, 116392.

(b) Book Chapters

1. Rishika Chakraborty, Mukul Pradhan. Phosphides and Nitrides for Visible-Light-Photocatalysis (Accepted book chapter, **2021**, ISBN: 9780128230183, *Elsevier*).
2. **Atanu Singha Roy**, Sharat Sarmah and Sourav Das, Chapter Title: Effects of Glycation on Serum Albumins, **2021** (Accepted), Nova Science Publishers, Inc. USA (ISBN: 978-1-53619-176-9) [Book Title: A closer look at glycation].

5. Invited Talks (as resource person)

Title of the talk	Faculty Name	Event/Institute/University/Place	Duration
The unexplored chemistry of 1,3,5-trimethoxybenzene	Dr. P. N. Chatterjee	Recent Trends in Chemical Sciences, Department of Chemistry, NIT Manipur	October 12-16, 2020
Synthesis of active tin(0) and its applications in selective propragylation of aldehydes in water at room temperature	Dr. P. N. Chatterjee	57th Annual Convention of Chemists 2020 & International Conference on Recent Trends in Chemical Sciences, Indian Chemical Society & Jadavpur University.	December 26-29, 2020
An investigation to understand the lability of 2,4,6-trimethoxyphenyl group in benzylic & allylic systems	Dr. P. N. Chatterjee	International Webinar on Recent Trends in Chemical & Material Sciences, Department of Chemistry, Kazi Nazrul Islam University, Asansol, WB	June 3-4, 2020
Exploring the lability of electron-rich aryl groups in benzylic and allylic substrates for selective C–C bond cleavage	Dr. P. N. Chatterjee	Advancement in Molecular World: Materials & Catalysis, Department of Chemistry, NIT Surathkal	February 15-19, 2021
Synthesis of active tin, bismuth & cuprous oxide for applications in mediating organic reactions in water	Dr. P. N. Chatterjee	Exploring Recent Advancement in Organic & Environmental Chemistry: Scope & Prospect, Department of Chemistry, Dinabandhu Mahavidyalaya, Bongaon, WB	July 25, 2020

6. Projects

Sponsored Project (Received/Ongoing/Completed)

Sl. No.	Title of the Project	Investigators (P.I. & Co-P.I.)	Funding Agency	Funding amount	Duration	Status
1.	An investigation into the molecular interaction of dietary polyphenols with hen egg white lysozyme using biophysical techniques	Dr. Atanu Singha Roy	SERB (ECR)	Rs. 36,69,000/-	2016-2019	Completed
2.	Molecular interactions of the antioxidant polyphenols and their copper complexes with human serum albumin and its glycated analogues	Dr. Atanu Singha Roy	CSIR (EMR)	Rs. 6,90,000/-	2017-2020	Ongoing
3	Transition metal catalyzed cleavage of carbon-carbon bonds: synthetic, mechanistic and theoretical studies	Dr. Paresh Nath Chatterjee	SERB	Rs. 24,70,000/-	2015-2018	Completed

Sl. No.	Title of the Project	Investigators (P.I. & Co-P.I.)	Funding Agency	Funding amount	Duration	Status
4	Assessment of climate change impact on soils and various water basins of Meghalaya using existing and newer techniques	Dr. Paresh Nath Chatterjee (PI) + 4 Co-PIs (Dr. Mukul Pradhan, Dr. Snehadri khatua, Dr. Anup Dandapat, Dr. Susmita Sharma)	DST	Rs. 66,45,175/-	2019-2022	Ongoing
5	QM + MM Chemical Dynamics on Chemical Reactions and Non-Adiabatic Processes in Condensed Phase Molecular Systems	Dr. Amit K. Paul	SERB, DST	Rs. 36,58,000	2018-2021	Ongoing
6	Development of 3-D Supramolecular Structure-Based Optoelectronic Materials Towards Photovoltaic Devices	Dr. Gitish K Dutta	DST_Indo_ Korea	Rs 27,65560	2015-2018	Completed
7	Diketopyrrolopyrrole and isoindigo based luminescent conjugated polymers for colorimetric and fluorogenic sensors	Dr. Gitish K Dutta	SERB-DST	Rs 22,38,000	2015-2018	Completed
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

7. Administrative Responsibilities Held:

Sl. No.	Name of Faculty	Responsibilities	Duration
1	Dr. Atanu Singha Roy	Head of the Department, Chemistry	July 2018-till date
2	Dr. Atanu Singha Roy	Member, Examination Committee	01-04-2017-till date
3	Dr. Atanu Singha Roy	DRC, Chairman	July 2018-till date
4	Dr. Naba Kamal Nath	Chairman, Routine committee	29/05/2020-till date
5.	Dr. Naba Kamal Nath	Member, Institute ethics committee	15/10/2020- till date
6.	Dr. Naba Kamal Nath	Member, Purchase committee, Department of Chemistry	22/12/2020- till date
7.	Dr. Naba Kamal Nath	Member, departmental screening committee for screening of applications with regard to the post of technical assistant, technician and laboratory assistant	
8.	Dr. Naba Kamal Nath	Member, Institute's intellectual property committee	3/12/2020-till date
9.	Dr. Naba Kamal Nath	Patron, team to work for drug addiction eradication campaign	12/09/2019-till date

Sl. No.	Name of Faculty	Responsibilities	Duration
10.	Dr. Naba Kamal Nath	Convener, Rehearsal and academic procession sub-committee, 7th convocation of NIT Meghalaya	23/09/2020
11.	Dr. Naba Kamal Nath	Member, post-graduate programme evaluation committee,	14/08/2019-till date
12.	Dr. Naba Kamal Nath	OBC liaison officer	2019 till date
13.	Dr. Naba Kamal Nath	External Member, Department research committee, Physics	2/12/2020-till date
14	Dr. Naba Kamal Nath	Member, Department research committee, Humanities and social science	2/12/2020-till date
15	Dr. Atanu Singha Roy	Member, Medical Facilitation Committee	14/05/2019-till date
16	Dr. Atanu Singha Roy	Convener, Best Thesis Award & Best Project Award Committee	01/03/2021-till date
17	Dr. Atanu Singha Roy	Chairman, CIF NIT Meghalaya	15/02/2021-till date
18	Dr. Paresh Nath Chatterjee	President, Student Activity Center	26/06/2018-till date
19	Dr. Paresh Nath Chatterjee	Nodal Officer, EBSB	05/09/2018-till date
20	Dr. Gitish Kishor Dutta	Dean R & C	1/7/2020 till date
21	Dr. Gitish K. Dutta	Member Secretary, Institute's intellectual property committee	3/12/2020-till date

8. Any Other Notable Information:

a. Achievements, awards and recognition of the student and staff

(i) Faculty Members

Sl. No.	Faculty Name	Role/Technical Assistance	Journal Name/Conference
1	Dr. Atanu Singha Roy	Reviewer	1. Spectrochimica Acta A 2. Journal of Molecular Liquids 3. ACS Omega 4. Journal of Physical Chemistry Letters 5. RSC Advances 6. Journal of Biomolecular Structure and Dynamics 7. Colloids and Surfaces B: Biointerfaces 8. BioMetals 9. Colombian Journal of Chemistry 10. Biocatalysis and Biotransformation
2	Dr. Paresh Nath Chatterjee	Reviewer	1. Journal of Heterocyclic Chemistry 2. New Journal of Chemistry 3. Journal of Organic Chemistry
3	Dr. Gitish Kishor Dutta	Reviewer	1. Applied Nanoscience 2. Journal of Nanostructure in Chemistry 3. ACS Applied Nano Materials 4. Langmuir
4	Dr. Naba Kamal Nath	Reviewer	1. Crystal engineering communication (Royal society of chemistry) 2. Chemical reviews (Royal society of chemistry) 3. Acta crystallographica, Section B

(ii) Ph.D. Students (Best Poster/Paper Awards)

1. **Poonam Gupta:** Best Research Work Demonstration Award in the Research Conclave-2021 organized on 28th February-1st March at NIT Meghalaya, Shillong, India.
2. **Poonam Gupta:** Best Oral Presentation Award in the Research Conclave-2021 organized on 28th February-1st March at NIT Meghalaya, Shillong, India.
3. **Rishika Chakraborty:** Best Poster Presentation Award in the Research Conclave-2021 organized on 28th February-1st March at NIT Meghalaya, Shillong, India.
4. **Sourav Das** for receiving research excellence award (in oral presentation category) in RACMS 2020 (Indian Chemical Society).

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

Name of the student	Name of the conference/ symposium/workshop	Organizer(s)	Duration	Title of poster/oral presentation
Sharat Sarmah	1. Innovations in Chemical Sciences-2020	Division of Chemistry, VIT Chennai	21st and 22nd August, 2020	Non-enzymatic glycation alters the binding of bio-active flavonoids with human serum albumin: effects of flavonoids on protein modifications. Influence of non-enzymatice glycation on the binding of 6-hydroxyflavone with human serum albumin: A biophysical study
	2. International Seminar on Recent Advances in Chemistry & Material Sciences (2020)	Indian Chemical Society to commemorate the 159th Birth Anniversary of Acharya Prafulla Chandra Ray.	2, 3, 8, 15, 22 and 29th August, 2020	
	3. ACS science talk in Oxidative damage in proteins	American Chemical Society	22nd January, 2021	
	4. Webinar on "Basics of Gas Adsorption: Physisorption Technique	Anton Paar	29th January, 2021	
	5. Research Conclave 2021	NIT Meghalaya	28th February-1st March, 2021	
	6. International conference on recent developments in chemistry	NIT Durgapur		
	7. One day Seminar on Theoretical and Computational Chemistry, STCC-2021.	NIT Meghalaya	3-5th March, 2021 13th March	
	8. Workshop on Recent Advances in Organic and Biomolecular Chemistry (RAOBC - 21)	NIT Sikkim	22nd-26th of March, 2021	

Name of the student	Name of the conference/ symposium/workshop	Organizer(s)	Duration	Title of poster/oral presentation
Mahabul Haque	1. Innovations in Chemical Sciences-2020	Division of Chemistry, VIT Chennai	21st and 22nd August, 2020	Synthesis of water soluble CdSe quantum dots: An investigation into their binding properties with HSA and detection of antibiotic lomefloxacin
	2. ACS science talk in Oxidative damage in proteins	American Chemical Society	22nd January, 2021	
	3. ACS science talk in Covalent Organic Frameworks and the Morphology	American Chemical Society	29 January, 2021	
	4. Webinar on "Basics of Gas Adsorption: Physisorption Technique	Anton Paar	29th January, 2021	
	5. Research Conclave 2021	NIT Meghalaya	28th February-1st March, 2021	
Ankita Agarwal	1. Supporting Chemistry Research with modern DFT: software, techniques and applications.	Sankalchand Patel University, Visnagar, Gujrat.	5-16th Feb, 2021.	
	2. Research Conclave 2021.	NIT Meghalaya, Shillong.	28th Feb-1st March, 2021.	
	3. A three day International Conference on Recent Developments in Chemistry, RDC-2021.	NIT Durgapur.	3-5th March, 2021.	
	4. One day Seminar on Theoretical and Computational Chemistry, STCC-2021.	NIT Meghalaya.	13th March, 2021.	
Kakali Baruah	1. Innovations in Chemical Sciences-2020	Division of Chemistry, VIT Chennai	21st and 22nd August, 2020	*Ocimum sanctum* mediated green synthesis of silver nanoparticles: A biophysical study towards lysozyme binding and anti-bacterial activity.
	2. Webinar on Recent Developments from Molecular Pathogenesis to Theranostics (RMDT -2020)	Department of Applied sciences, IIIT Allahabad	7-8th November, 2020	
	3. Online workshop on Powder X-Ray Diffraction Techniques and its Applications.	NECBH, IIT Guwahati.	20th and 21st January, 2021	
	4. Webinar on "Basics of Gas Adsorption: Physisorption Technique.	Anton Paar	29th January, 2021.	
	5. Research Conclave 2021	NIT Meghalaya	28th February-1st March, 2021	
	6. International conference on recent developments in chemistry.	NIT Durgapur	3-5th March, 2021	
	7. One day Seminar on Theoretical and Computational Chemistry, STCC-2021	NIT Meghalaya	13th March, 2021	

Name of the student	Name of the conference/ symposium/workshop	Organizer(s)	Duration	Title of poster/oral presentation
Gitumoni Kalita	1. Webinar on "Basics of Gas Adsorption: Physisorption Technique. 2. Research Conclave 2021. 3. International conference on recent developments in chemistry. 4. One day Seminar on Theoretical and Computational Chemistry, STCC-2021. 5. Workshop on Recent Advances in Organic and Biomolecular Chemistry (RAOBC - 21).	Anton Paar NIT Meghalaya NIT Durgapur NIT Meghalaya NIT Sikkim	29th January, 2021 28th February-1st March, 2021 3-5th March, 2021 13th March, 2021 22nd-26th of March, 2021	Synthesis of Benzopyran Derivatives using Heterogeneous Organocatalyst and their Interaction with Human Serum Albumin.
Poonam Gupta	1. Research Conclave 2021. 2. One day Seminar on Theoretical and Computational Chemistry, STCC-2021.	NIT Meghalaya NIT Meghalaya	28th February-1st March, 2021 13th March, 2021.	Discovery of Single, Dual and Multi-Stimuli Responsive Materials. Biomimetic Smart Artificial Muscle Driven by Light and Heat. Cocrystallization as a Strategy to Develop A Versatile Multifunctional Smart Organic Molecular Crystal.
Jayshree Barman	1) Webinar on "Basics of Gas Adsorption: Physisorption Technique. 2) Research Conclave 2021. 3) One day Seminar on Theoretical and Computational Chemistry, STCC-2021.	Anton Paar NIT Meghalaya NIT Meghalaya	29th January, 2021 28th February-1st March, 2021 13th March, 2021	Heteroatom doped porous carbon material derived from hyper-crosslinked polymer as an Oxygen Reduction Electrocatalyst.
Sk Samir Ahamed	1. Supporting Chemistry Research with modern DFT: software, techniques and applications. 2. Research Conclave 2021. 3. A three day International Conference on Recent Developments in Chemistry, RDC-2021. 4. One day Seminar on Theoretical and Computational Chemistry, STCC-2021.	Sankalchand Patel University, Visnagar, Gujrat. NIT Meghalaya, Shillong. NIT Durgapur. NIT Meghalaya.	5-16th Feb, 2021. 28th Feb-1st March, 2021. 3-5th March, 2021. 13th March, 2021.	Vibrational Relaxation of Excited Benzene Molecules in a Benzene-Nitrogen Mixed Bath. Comparison of Experiments and Simulations

Name of the student	Name of the conference/ symposium/workshop	Organizer(s)	Duration	Title of poster/oral presentation
Himashree Mahanta	1. Supporting Chemistry Research with modern DFT: software, techniques and applications. 2. Research Conclave 2021 3. A three day International Conference on Recent Developments in Chemistry, RDC-2021 4. One day Seminar on Theoretical and Computational Chemistry, STCC-2021	Sankalchand Patel University, Visnagar, Gujrat. NIT Meghalaya, Shillong. NIT Durgapur NIT Meghalaya	5-16th Feb, 2021 28th Feb-1st March, 2021 3-5th March, 2021. 13th March, 2021	Detailed Understanding of Unimolecular Dissociation of Aromatic Complexes: Benzene-Hexafluorobenzene and Benzene-Hexachlorobenzene at high temperatures
Siddheswar Rudra	1. Webinar on "Basics of Gas Adsorption: Physisorption Technique. 2. Research Conclave 2021. 3. One day Seminar on Theoretical and Computational Chemistry, STCC-2021. 4. International conference on recent developments in chemistry, RDC-2021	Anton Paar NIT Meghalaya NIT Meghalaya NIT Durgapur	29th January, 2021 28th February-1st March, 2021 13th March, 2021 3-5th March 2021	Synthesis of Au-V2O5-MnO2 composite nanoflower for energy storage application
Namrata Deka	1. Webinar on "Basics of Gas Adsorption: Physisorption Technique 2. ACS science talk in Covalent Organic Frameworks and the Morphology 3. Research Conclave 2021 4. One day Seminar on Theoretical and Computational Chemistry, STCC-2021 5. Online workshop on Powder X-Ray Diffraction Techniques and its Applications	Anton Paar American Chemical Society NIT Meghalaya NIT Meghalaya NCBH, IIT Guwahati	29th January 2021 29 January, 2021 28th February-1st March, 2021 13th March, 2021 20th - 21st January 2021	

Name of the student	Name of the conference/ symposium/workshop	Organizer(s)	Duration	Title of poster/oral presentation
Dipankar Paul	1. Online workshop on Powder X-Ray Diffraction Techniques and its Applications	NCBH, IIT Guwahati	20th - 21st January 2021	
	2. Webinar on "Basics of Gas Adsorption: Physisorption Technique	Anton Paar	29th January 2021	
	3. Research Conclave 2021	NIT Meghalaya	28th February -1st March 2021	
	4. One day Seminar on Theoretical and Computational Chemistry, STCC-2021	NIT Meghalaya	13th March 2021	
Rishika Chakraborty	1. Virtual National Conference on Catalysis and Photocatalysis for Clean Energy (CPCE2020).	NIT Jamshedpur	9th - 10th October, 2020.	
	2. Virtual International Conference on Molecules to Materials– 2020 (MTM-2020).	Sardar Vallabhbhai National Institute of Technology	Gujarat, 17th -18th December, 2020.	
	3. Online workshop on Powder X-Ray Diffraction Techniques and its Applications	NCBH, IIT Guwahati	20th - 21st January 2021	
	4. Webinar on "Basics of Gas Adsorption: Physisorption Technique	Anton Paar	29th January 2021	
	5. Research Conclave 2021	NIT Meghalaya	28th February -1st March 2021	
	6. One day Seminar on Theoretical and Computational Chemistry, STCC-2021	NIT Meghalaya	13th March 2021	
	7. Recent Developments in Chemistry (RDC-2021),	NIT Durgapur	March 3rd-5th, 2021	
	8. ACS Science Talk on Designing a Green Chemistry Future	ACS	26 March 2021	
	9. India-UK International Virtual Conference on Advanced Nanomaterials for Energy and Environmental Applications (ICANEE-2020).	Alagappa University, Tamil Nadu	16th-18th September, 2020	
	10. A Three-Day National Webinar on Frontiers in Chemistry: From Fundamentals to Applications (FCFA-2020)	Presidency University, Kolkata	25th-28th September, 2020	

Name of the student	Name of the conference/ symposium/workshop	Organizer(s)	Duration	Title of poster/oral presentation
Sona Lyndem	1. Research Conclave 2021	NIT Meghalaya	28th February to 1st March 2021	Investigation into binding interaction of coumarin derivatives with hen egg white lysozyme using multispectroscopic and molecular docking approach
	2. Innovation in Chemical Sciences 2020	Division of Chemistry, VIT, Chennai	21st and 22nd August 2020	
	3. Webinar on Characterizing Viruses: From deadly pathogens to the workhorses of gene therapy	LabRoots	7th August 2020	
	4. International web conference on recent advances in science	Dept. of Physics and IQAC, Don Bosco College Tura	30th and 31st July 2020	
	5. Webinar on Antibiotic Resistance	Mizoram University	17th July 2020	

(c). GATE 2021 Results

Sl. No.	Name of the student	GATE Rank (AIR)	Remarks
1	PRIYA GURUNG	1236	GATE 2021 (Chemistry)
2	PLABON SAIKIA	3542	GATE 2021 (Chemistry)

(d). Ph.D Defense Seminar

Sourav Das (P16CH001): Thesis title - An investigation into the biological interactions of dietary polyphenols with the targets: Binding properties and the inhibitory potential of the polyphenols towards protein modification, 2016-2021 [Date: 15-03-2021, Supervisor: Dr. Atanu Singha Roy].

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	2 completed, 3 Ongoing
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
	Chairman, Departmental Academic 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	Whole Year
	Member, Library Committee	Whole Year
	Member, Routine Committee	Whole Year
	Member, Non-Faculty Selection Committee 2020-21	2020-2021
	Chief Editor of NITM Chronicle	Whole Year

5. Membership of Professional Bodies:

Name of Faculty	Member of
P. S. Mangang	Member of English Literary Circle Manipur
	Member of English Language Teachers' Association of India
	Member of English Language Teachers' Association of India, Meghalaya Chapter

6. Ph.D. Scholars Profile:

Name	Specialization	Supervisor	Remarks
Mr. Amal Dev Sarma	Management	Dr. B. Roychoudhury (IIM Shillong)	Advanced Stage
Ms. B. Samita Devi	Literature	Dr. P. S. Mangang	Completed
Mr. Rangehbok Lyngwa	Literature		Completed
Ms. Arundhati Ashangbam	Literature		Registration Completed
Ms. Ankita Bhowmick	Literature		Registration Completed
Ms. Amanda Basaiawmoit	Literature		Comprehensive Exam Cleared

7. List of Publications in Journals:

1. M. L. Gayang, P. S. Mangang, "Using e-Writers for Teaching Writing Skills to a Slow Learner (Special Student)", Spectrum: An International Journal of Humanities and Social Sciences. Vol. 8, 2020.

8. List of Presentations in Conferences:

1. A. Ashangbam & P. S. Mangang, 'Exordium of a Dystopian World: Analysing Holocaust in the Writings of Primo Levi', 2nd Annual Research Conclave, NIT Meghalaya, 28th February & 1st March 2021.
2. A. Bhowmick & P. S. Mangang, 'Oppression of Disabled People as Reflected in the Works of Toni Morrison', 2nd Annual Research Conclave, NIT Meghalaya, 28th February & 1st March 2021.
3. A. Ashangbam & P. S. Mangang, 'Facets of Masculinity: A Discourse from Toxic to Effeminate Men', 2nd Annual Research Conclave, NIT Meghalaya, 28th February & 1st March 2021. (Poster)
4. A. Bhowmick & P. S. Mangang, 'Treatment of Black War Veterans in Toni Morrison's *Sula*', 2nd Annual Research Conclave, NIT Meghalaya, 28th February & 1st March 2021. (Poster)
5. P. S. Mangang, Keynote Address – 'Interdisciplinary Interpretation of Literature', Online International Conference on Interdisciplinary Interpretation of Literature (COIN-2020), NIT Meghalaya, 14th to 18th December 2020.
6. R. Lyngwa & P. S. Mangang, 'Literature as a Platform for Social Issues: Indigenous Oppression in Tendulkar's *Encounter in Umbugland*', Online International Conference on Interdisciplinary Interpretation of Literature (COIN-2020), NIT Meghalaya, 14th to 18th December 2020.
7. A. Basaiawmoit, 'Belongingness among Contemporary Shillong Poets', Online International Conference on Interdisciplinary Interpretation of Literature (COIN-2020), NIT Meghalaya, 14th to 18th December 2020.
8. A. Ashangbam, P. S. Mangang, 'Man Trouble: An Analysis of the Life and Works of Primo Levi', Online International Conference on Interdisciplinary Interpretation of Literature (COIN-2020), NIT Meghalaya, 14th to 18th December 2020.
9. A. Bhowmick & P. S. Mangang 'Violence, Hate-Crime, and Oppression on Disabled People as Reflected in Modern Literature', Online International Conference on Interdisciplinary Interpretation of Literature (COIN-2020), NIT Meghalaya, 14th to 18th December 2020.
10. A. Ashangbam & P. S. Mangang, 'The Vitality of Verbalised Tribal Literature: Then and Now', Two Day National Webinar on Tribal Literature and Philosophy of North East India, Poorvangan and ICSSR, NERC Shillong, 2nd & 3rd October 2020.

11. R. Lyngwa & P. S. Mangang, 'KaLikai: The Representation of the 'Other Woman' in the Khasi Society', Two Day National Webinar on Tribal Literature and Philosophy of North East India, Poorvangan and ICSSR, NERC Shillong, 2nd & 3rd October 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 Dwar Jingkyrmen	Dr. P. S. Mangang	ICSSR, New Delhi	Rs. 4,00,000/-	December 2019 – December 2020	Completing soon

10. Invited Talks (as resource person):

1. P. S. Mangang, 'The Need for Translating Vernacular North-East Literature into English', Two Day National Webinar on Tribal Literature and Philosophy of North East India, Poorvangan and ICSSR, NERC Shillong, 2nd & 3rd October 2020.

11. Workshops/Conferences Organised:

1. TEQIP Sponsored Online Workshop on Corporate Communication, 1st February to 5th February 2021.
2. An Online International Conference on Interdisciplinary Interpretation of Literature (COIN-2020), 14th December to 18th December 2020.
3. TEQIP Sponsored Online Workshop on Economics and Professional Ethics, 7th September to 12th September 2020.

12. Resource Persons Invited (Online Presence):

1. Prof. Ahmed Ahsanuzzaman, Professor, Independent University, Dhaka, Bangladesh
2. Dr. Maxim Demchenko, Associate Professor, Moscow State Linguistic University
3. Dr. Reena Sanasam, Associate Professor and Head, Department of Humanities and Social Sciences, NIT Silchar
4. Dr. Mousumi Guha Banerjee, Associate Professor and Head, Department of English Literature, EFLU, Shillong Campus
5. Dr. Rosy Yumnam, Assistant Professor, Department of English Language Education, EFLU, Shillong Campus
6. Dr. Gyanabati Khuraijam, Assistant Professor, Department of Humanities and Social Sciences, NIT Agartala
7. Dr. Deepak Basumatary, Assistant Professor, P.G. Department of English, Kokrajhar Govt. College, Assam
8. Dr. Naomi C. Nonglait, Assistant Professor, Department of English, St. Mary's College, Shillong
9. Dr. Thiyiesinuo Keditsu, Assistant Professor, Department of English, Kohima College, Kohima
10. Dr. Suranjana Choudhury, Assistant Professor, Department of English, NEHU
11. Dr. Khelsoril Wanbe, Assistant Professor, Department of English, Highland National College, Kanglatongbi, Manipur
12. Dr. Haobam Subrata Singh, Assistant Professor, Department of English, Dhanamanjuri University, Imphal
13. Rajesh Dutta, Associate Professor and HoD, Department of Economics, St. Edmund's College, Shillong
14. Dr. Sunildro LS Akoijam, Assistant Professor, Department of Management, NEHU

13. Awards/Achievements:

1. Mr. Rangehbok Lyngwa (P15HS001) successfully completed his Ph.D. in December 2020.
2. Ms. Arundhati Ashangbam (P17HS001) received the Award for the Best Presentation (Runners-up) at the 2nd Annual Research Conclave, NIT Meghalaya, 28th February & 1st March 2021.

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. programmes 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 works. 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	1 completed and 03 ongoing	
Dr. Tikaram Subedi	Asst. Professor	Ph.D	Abstract Algebra	01-06-2012	1 completed and 02 ongoing	
Dr. Manideepa Saha	Asst. Professor	Ph.D	Linear Algebra	22-07-2013	04 ongoing	01 as Co-supervisor
Dr. Bidyasagar Kumbhakar	Asst. Professor	Ph.D	Fluid Dynamics	20-07-2015	03 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	--	

4. List of Publications:

(a) Journals:

1. S. Nandi, B. Kumbhakar, G. S. Seth and A. J. Chamkha, Features of 3D magneto-convective nonlinear radiative Williamson nanofluid flow with activation energy, multiple slips and Hall effect, *Physica Scripta*, Vol. 96, 2021. doi: 10.1088/1402-4896/abf009.
2. S. Nandi and B. Kumbhakar, Hall current and thermo-diffusion effects on Magnetohydrodynamic convective flow near an oscillatory plate with ramped type thermal and solutal boundary conditions, *Indian Journal of Physics*, 2021. doi: 10.1007/s12648-020-02001-0, 2021.
3. S. Nandi and B. Kumbhakar, Navier's slip effect on Carreau nanofluid flow past a convectively heated wedge in the presence of nonlinear thermal radiation and magnetic field, *Int. Commun. Heat Mass Transf.*, Vol. 118, Article ID: 104813, 2020.
4. S. Nandi and B. Kumbhakar, Unsteady MHD free convective flow past a permeable vertical plate with periodic movement and slippage in the presence of Hall current and rotation, *Thermal Science and Engineering Progress*, Vol. 19, Article ID: 100561, 2020.
5. T. Siva, B. Kumbhakar, S. Jangili and P. K. Mandal, Unsteady electro-osmotic flow of couple stress fluid in a rotating microchannel: An analytical solution, *Physics of Fluids*, Vol. 32, Article ID: 102013, 2020.
6. Tikaram Subedi and Debraj Roy, On a common generalization of symmetric rings and quasi duo rings, *Algebra and Discrete Mathematics*, Vol. 29 (2) (2020), 249-258.
7. Debraj Roy and Tikaram Subedi, On semireversible rings, *Asian European Journal of Mathematics,* Vol. 14 (2), 2150018 (2021).
8. Debraj Roy and Tikaram Subedi, Symmetricity of rings relative to the prime radical, *Boletim da Sociedade. Paranaense de Matematica,* Published online, November 2020, doi: http://dx.doi.org/10.5269/bspm.51713.
9. A. Bhandari, S. Mukherjee, Perturbations on K-fusion Frames, *Journal of Applied Analysis*, Published online, February, 2021. doi: 10.1515/jaa-2021-2044.
10. A. Bhandari, S. Mukherjee, Atomic Subspaces for Operators, *Ind. J. of Pure and Applied Mathematics*, Vol. 51(3), 1039–1052, 2020. doi: 10.1007/s13226-020-0448-y
11. A. Bhandari, S. Mukherjee, Characterizations of Woven Frames, *Int. J. of Wavelets, Multiresolution and Information Processing,* Vol. 18(5), 2050033, 2020. doi: 10.1142/S0219691320500332.
12. A. Bhandari, D. Borah, S. Mukherjee, Characterizations of weaving K-frames, *Proc. Japan Acad. Ser. A Math. Sci.,* Vol. 96(5), 39-43, 2020. doi: 10.3792/pjaa.96.008
13. M. Saha and J. Chakravarty, Generalized SOR, Jacobi and Gauss–Seidel Methods for Linear Systems. *Int. J. Appl. Comput. Math.* 6, 77 (2020). https://doi.org/10.1007/s40819-020-00830-5
14. A. Hisabia and M. Saha, On Properties of Semipositive Cones and Simplicial Cones, Electron. *J. Linear Al.*, Vol. 36 (2020), 764-772

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

Sl. No.	Name of Faculty	Name of the programme attended	Duration
1	Dr. Saikat Mukherjee	Three Days online Faculty Development Programme on 'Outcome Based Engineering Education and Accreditation (OBEEA 2020) organized by NIT Meghalaya	September 21-23, 2020
		National Education Policy 2020 with a Focus on "Higher Education And Research" organized by NIT Meghalaya.	February 17, 2021
2	Dr. Tikaram Subedi	Three Days online Faculty Development Programme on 'Outcome Based Engineering Education and Accreditation (OBEEA 2020) organized by NIT Meghalaya	September 21-23, 2020
		National Education Policy 2020 with a Focus on "Higher Education And Research" organized by NIT Meghalaya.	February 17, 2021

Sl. No.	Name of Faculty	Name of the programme attended	Duration
3	Dr. Manideepa Saha	Alumni Symposium on Mathematics and Computing (Online), IIT Guwahati	September 19-20, 2020
		Three Days online Faculty Development Programme on 'Outcome Based Engineering Education and Accreditation (OBEEA 2020), NIT Meghalaya	September 21-23, 2020
		National Education Policy 2020 with a Focus on "Higher Education And Research", NIT Meghalaya.	February 17, 2021
4	Dr. Bidyasagar Kumbhakar	Role of Digital Library & its Impact on Professionals and Researchers in Covid-19 Period, McGraw Hill.	July 25, 2020
		5-Day National Webinar on "Fluid Dynamics from Mathematicians Viewpoint" organized by Department of Mathematics, School of Science, GITAM , Hyderabad.	August 9-13, 2020
		Three Days online Faculty Development Programme on 'Outcome Based Engineering Education and Accreditation (OBEEA 2020) organized by NIT Meghalaya	September 21-23, 2020
		5-Day FDP on Examination Reforms organized by NIT Mizoram	February 15-19, 2021
		National Education Policy 2020 with a Focus on "Higher Education And Research" organized by NIT Meghalaya.	February 17, 2021
5	Dr. Adarsha K. Jena	Three Days online Faculty Development Programme on 'Outcome Based Engineering Education and Accreditation (OBEEA 2020) organized by NIT Meghalaya	September 21-23, 2020
		National Education Policy 2020 with a Focus on "Higher Education And Research" organized by NIT Meghalaya.	February 17, 2021
		Three Days workshop (Online) on the topic "Multivariate Data Analysis for Management and Social Sciences using R" organized by TWY Academy in association with IQAC, University of Rajasthan, Jaipur	March 24-26, 2021
6	Dr. Timir Karmakar	Three Days online Faculty Development Programme on 'Outcome Based Engineering Education and Accreditation (OBEEA 2020) organized by NIT Meghalaya	September 21-23, 2020
		National Education Policy 2020 with a Focus on "Higher Education And Research" organized by NIT Meghalaya.	February 17, 2021

6. Invited Talks Delivered:

1. **B. Kumbhakar:** Delivered an invited talk on "Applications of Ordinary Differential Equations in Real World Phenomena" in **International Webinar on Mathematics and Mathematicians: From Vedic to Present Pandemic** organized by B.B. College, Asansol, West Bengal during July 11-12, 2020.
2. **B. Kumbhakar:** Delivered an invited talk on "Numerical Computation with MATLAB" in **One Day National Webinar on MATLAB** and Its Applications organized by Kharagpur College, Kharagpur, West Bengal on October 17, 2020.
3. **T. Karmakar:** Delivered an invited talk on "Elementary solutions method for PDEs and its applications" in One Day National Webinar on **Algebra and Partial Differential Equations: Applications and Research Motivation** on July 17, 2020 organized by The Department of Mathematics & IQAC, Sir Gurudas Mahavidyalaya, Kolkata, West Bengal.
4. **S. Mukherjee:** Participated as a subject resource person in the **Virtual Workshop on Collating Mathematics Resources for Teachers in Higher Education** organized by National Institute of Education Planning and

Administration (NIEPA) and delivered a talk on analysis, October 6-7, 2020.

5. **M. Saha:** Delivered a talk (online) on **Algebra** as a subject resource person in the **Virtual Workshop on Collating Mathematics Resources for Teachers in Higher Education** organized by National Institute of Education Planning and Administration (NIEPA) during October 6-7, 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	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

8. Administrative Responsibilities Held:

Sl. No.	Name of Faculty	Responsibilities	Duration
1	Dr. Saikat Mukherjee	Chief Warden	Full Year
2	Dr. Manideepa Saha	Head of the Department, Mathematics	3 months
		Professor-In-Charge, Centre of International Relations	Full Year
3	Dr. Bidyasagar Kumbhakar	Vice-President, Cultural	4 months
		Head of the Department, Mathematics	9 months

9. Membership of Professional Bodies:

Sl. No.	Name of Faculty	Member of
1	Dr. Saikat Mukherjee	» Society for Industrial and Applied Mathematics (SIAM), » American Mathematical Society (AMS), » Indian Mathematical Society (IMS).
2	Dr. Manideepa Saha	» Society for Industrial and Applied Mathematics (SIAM), » SIAM Activity Group on Linear Algebra, » American Mathematical Society (AMS), » Indian Mathematical Society (IMS).
3	Dr. Bidyasagar Kumbhakar	» Indian Society of Theoretical and Applied Mechanics (ISTAM) » Society of Applied Mathematics, IIT(ISM) Dhanbad
4	Dr. Timir Karmakar	» Indian Society of Theoretical and Applied Mechanics (ISTAM) » Indian Mathematical Society (IMS)

10. List of achievements and activities during the Year 2020-21:

1. M. Saha: Reviewed two journal papers.
2. B. Kumbhakar: Reviewed three journal papers and one conference paper.
3. T. Karmakar: Reviewed one SERB-DST project under CRG scheme.
4. Faculty members of the department have published 14 research articles.
5. Research Scholars of the department have published 14 research articles, presented 7 posters, attended 14 workshops and 21 seminars/webinars.

11. Any Other Notable Information:

1. Two Research Scholars (Animesh Bhandari & Debraj Roy) have been awarded Ph.D. degree.
2. Research Scholar Ms. Binandita Barman won the 2nd prize in poster presentation under Science and Humanities category in 2nd Research Conclave 2021 organized by NIT Meghalaya.
3. Research Scholar Mr. Susmay Nandi won the 3rd prize in oral presentation under Science and Humanities category in 2nd Research Conclave 2021 organized by NIT Meghalaya.

12. Department activities in photographs:

Department of Physics

1. Brief Introduction to the Department:

The Department of Physics with its induction has evolved by offering two years full time Master of Science programme. The department has also progressed in furnishing the Doctor of Philosophy programme and so far the degree has been awarded to 2 nos. of aspirants. In addition, the department supports the engineering branches of the institute by floating the foundation courses for B.Tech (1st year) and advanced science electives for B.Tech (2nd Year onwards) students.

The department is well equipped with experimental laboratories which make corroboration with classroom physics for both under graduate and post graduate level. The functionality and progressiveness of the department is accredited to young, dynamic and potential faculty pool with necessary support from the staff.

2. Programmes Offered:

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

3. Faculty Profile:

Name	Designation	Qualification	Specialization	Date of Joining	Ph.D. guidance
Prof. Ayon Bhattacharjee	Professor	PhD	Experimental Condensed Matter Physics	24 July 2013	7 awarded 1 submitted 4 ongoing
Dr. Arpita Nath	Assistant Professor	PhD	Laser Matter Interaction	03 October 2013	2 ongoing
Dr. K. Senthilkumar	Assistant Professor	PhD	Condensed Matter Physics	14 July 2015	2 ongoing
Dr. Tribedi Bora	Assistant Professor	PhD	Experimental Condensed Matter Physics	06 July 2015	2 ongoing
Dr. W. L. Reenbohn	Assistant Professor	PhD	Nonequilibrium Statistical Mechanics	02 November 2015	1 ongoing
Dr Alekha. C. Nayak	Assistant Professor	PhD	Particle Physics, Astroparticle Physics	16 October 2019	

4. List of Publications:

(a) Journal Publication

1. Very special relativity induced phase due to neutrino magnetic moment in neutrino oscillation, Alekha C. Nayak (Accepted in International Journal of Modern Physics A)
2. Prospects of charged lepton flavor violation in very special relativity, Tripurari Srivastava & Alekha C. Nayak, Eur.Phys.J. Plus 135 (2020) 8, 679
3. Impact of ELKO fermion on Higgs mass, Alekha C. Nayak & Tripurari Srivastava, Eur.Phys.J.ST 229 (2020) 11, 2035-2041 (Invited)
4. Baryon-Dark matter interaction in presence of magnetic fields in light of EDGES signal, Jitesh R. Bhatt, Pravin Kumar Natwariya Alekha C. Nayak & Arun K. Pandey, Eur.Phys.J.C 80 (2020) 4, 334
5. Effect on cation distribution and temperature variation on dielectric and magnetic properties of manganese substituted Cobalt ferrite. Sikha Sarmah, Aakansha, P. K. Maji, S. Ravi and Tribedi Bora, Solid State Communications 324(2021) 114146
6. VZn–H complex defect induced ferromagnetic behaviour of unintentional hydrogen doped ZnO nanoparticles, E Ahmed, K Senthilkumar, Materials Science in Semiconductor Processing 123, 105593
7. Role of fluid mechanical effects in activating phase transition of laser-induced TiO2 nanoparticles, P Sharma and A Nath, Laser Physics, Volume 30, Number 8
8. Mesomorphic, electro-optic and dielectric behaviour of a semi-fluorinated chiral liquid crystalline material forming polar smectic phases, Deepak Gupta, Przemyslaw Kula, Ayon Bhattacharjee, Volume 1219, 5 November 2020, 128557
9. Computational, dielectric and electro-optical analysis of an orthoconic antiferroelectric mesogen having superstructure in its reduced symmetry phase, Deepak Gupta, Przemyslaw Kula, Ayon Bhattacharjee, Ferroelectrics, Volume 572, 2021 - Issue 1

(b) Conferences:

1. Particle Size effect on the suppression of the ferromagnetism in Nd0.8K0.2MnO3, Tribedi Bora, AIP Proceeding 2265 (1) 030508, 2020
2. Chitosan encapsulated ZnO nanoparticles for labeling applications, O Senthilkumar, K Senthilkumar, C Revathi, S Morito, T Ohba, M Sato Journal of Physics: Conference Series 1706 (1), 012016, 2020.

5. Conference/ Workshop/ Seminar Organized:

1. TEQIP III sponsored workshop on Astroparticle Physics and Cosmology
2. TEQIP III sponsored Five days Webinar Series in Recent Advances in Physics, 14-18 Sept 2020

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

Sl. No.	Name of Faculty	Name of the programme attended	Duration
1	Dr. Alekha C. Nayak	Less Travelled Path of Dark Matter: Axions and Primordial Black Holes (ONLINE)	09 November-13 November 2020
2	Dr Tribedi Bora	Online workshop on Reitveld Refinement Technique	22-24 Sept 2020
		National Virtual Conference on Condensed Matter Days 2020	11-13 Dec 2020
3	Dr. K. Senthilkumar	International Conference on Nanoelectronics, Nanophotonics, Nanomaterials, Nanobioscience & Nanotechnology	23rd & 24th April, 2020
		33rd International Microprocesses and Nanotechnology Conference (MNC 2020).	Nov. 9-12, 2020

7. Invited Talks Delivered:

Contributory talk on XXI National Seminar on Ferroelectrics and Dielectrics 2021, 10- 13 Jan 2021

8. 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	21,71,730/-	36 months	Ongoing
2	Fabrication of 2D Materials for Energy Harvesting Devices	Dr. K. Senthilkumar (Project Coordinator)	DST-FIST	160 Lakhs	5 years	Sanctioned
3	Studies on Orthoconic Antiferreoelectric liquid crystals	Prof. A Bhattacharjee	DST - SERB	2,00,208.00	3 years	Completed
4	Lab in a Shoebox	Prof. A Bhattacharjee	DIC	1,10,000.00	1 year	Completed
5	A study SnO2 nanoflakes doped liquid crystals	Prof. A Bhattacharjee	TEQIP Minor Project	1,95,000.00	2 years	Ongoing

9. Administrative Responsibilities Held:

Sl. No.	Name of Faculty	Responsibilities	Duration
1	Dr. Tribedi Bora	To conduct EBSB events	July -Nov 2020
2	Dr. K. Senthilkumar	a. PIC (Exam) b. Chairman MSc Admission	July 2020- Continuing
3	Dr Ayon Bhattacharjee	TEQIP Coordinator, NIT Meghalaya	Continuing
		Chairman, Grievance Redressal Cell, NIT Meghalaya	Continuing
4	Dr. W. L. Reenbohn	NSS (Chairperson)	Continuing

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. Arpita Nath	1. Plasma Science and Society of India (PSSI) 2. Indian Society of Atomic and Molecular Physics (ISAMP)
3.	Dr Ayon Bhattacharjee	1. IEEE 2. Indian Liquid Crystal Society 3. International Liquid Crystal Society
4	Dr. Tribedi Bora	1. Life member of Magnetic Society of India 2. Life member of Physics Academy of North East

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,
    c. Chemical Science International Journal
2. Prof. A. Bhattacharjee is a member of the Senate of NIT Arunachal Pradesh
3. Prof. A. Bhattacharjee is a member of the Finance Committee of GKCIET, Malda, West Bengal.
4. Prof A. Bhattacharjee acted as a moderator for a Public Service Commission.
5. Prof A. Bhattacharjee nominated as a NAAC Assessor
6. Prof A. Bhattacharjee acted as a reviewer for projects for DST and AICTE.
7. 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
8. Dr. Alekha C. Nayak reviewed a journal paper of EPJST
9. Dr. Arpita Nath worked as a reviewer for Journal of Applied Physics

Centre for International Relations

1. Brief Introduction to the Department:

The Center for International Relations at NIT Meghalaya was established in 2017. The center is a comprehensive unit committed to developing, promoting and implementing international education initiatives for our students, faculty members and staffs. The center also takes cares of admission of international students through various agencies like ICCR, Study-in-India, DASA etc. There are 25 international students currently studying undergraduate and postgraduate program(s) in various departments of NIT Meghalaya.

2. Courses Offered:

- Two Short Term Bridge courses under SII - UKIERI programme:
- Finishing college training program for engineers (6 weeks)
- Industrial Robotics & Mechatronics (4 weeks)

3. Faculty Profile:

Name	Designation	Qualification	Specialization
Dr. Manideepa Saha	Faculty-in-Charge	Ph.D	Mathematics

4. List of achievements and activities during the Year 2020-21:

- Five international students got admission at NIT Meghalaya in various program at NIT Meghalaya, among which two got through Study in India and three got through ICCR, during AY 2020-21.

Computer Centre

Computer center functions as a core of NIT Meghalaya. It provides support to all departments and sections which is predominant for them to function smoothly. It provides central facilities and technical services and support to all end –user.

1. Facility Management

It manages central computing facilities including the campus network, central host servers, computing facilities like computers in the center. It also carries out assessment of facilities, both software and hardware, based on the needs of its users, and makes recommendations for new facilities as necessary for the enhancement of the existing facilities.

2. Administrative Data Processing Systems

It provides infrastructure and technical support for maintenance of all electronic data processing systems used in administrative offices and departments.

3. Learning, Teaching and Research

Many educational packages and computer aided learning software are used to enhance the learning capabilities of the students through online mode and delivering lectures and conducting interviews.

CC Resource Person Utilization Year 2020-21

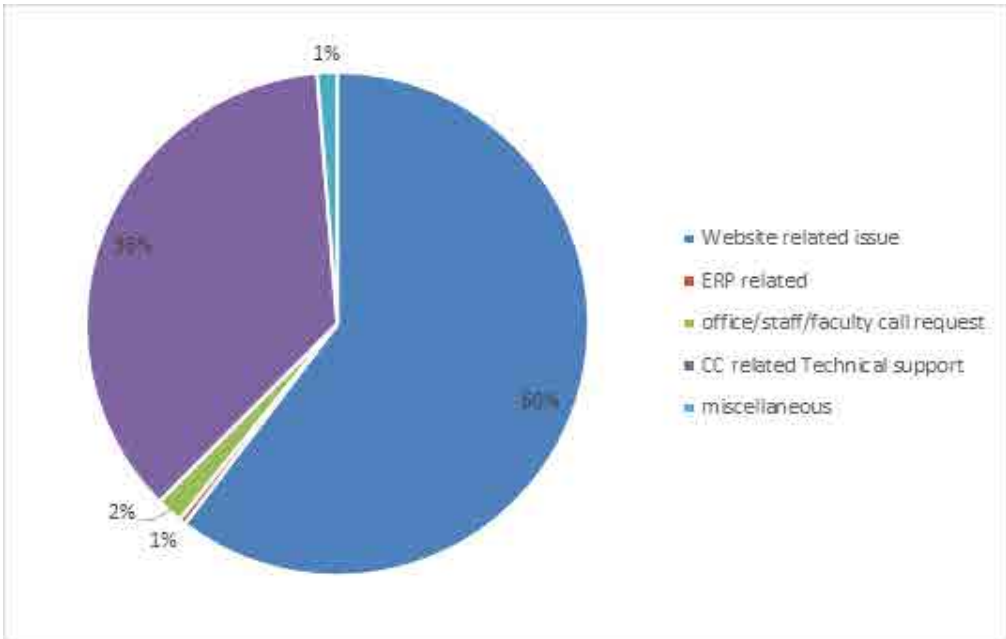


Fig: Category wise delivery of services/request provided by CC 2020-2021

4. Facilities

» 1Gbps provided by NKN (National Knowledge Network)

Table 1: The list of servers housed in the Computer Center is as given below:

Sl. No.	Name of device	Details
1	Sophos Firewall XG 550rev with full guard subscription	No of GE Ports: 1x8 Flexi port modules Firewall Throughput: 75Gbps Processor: 2x8Cores CPU RAM: 24GB DDR4 Concurrent Internet user at time: 2500 +users
2	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 1GbE Fiber /4 x 10GbE Fiber)
3	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
4	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
5	PARAM SHAVAK SUPERCOMPUTER	1 No CENTOS 6.7 Arch:X64, Processor: Intel Xeon, 24 cores , 64GB memory, 6TB HDD
6	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 uoto 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 Computer Center.

1	ERP	The Enterprise Resource Planning is implemented with modules consisting of Academics, Human Resource Management System (HRMS) and the Campus Administration. It has integrated all the functions from staff management, admission to maintaining the student data in a single database.
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 Government of India's National Informatics Center. Certification of clearance for security audit was issued on the 26th 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 staffs via an admin panel. This helps in keep tracking the status of the problems and the reports regarding the problems.
6	Supplementary Registration	Students register for Supplementary subject 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	PhD Registration	Online Registration for Ph.D. Programme
14	Attendance Management System	Manage attendance of students in PG and PhD programs.
15	Gsuite for Education	Workspace, classroom etc.

5. Staffs

1. Mrs. Medarisha H Thangkhiew, ***Technical Assistant***
2. Mr. Bandonlang Wahlang, ***Technical Assistant***
3. Mr. Arkinsan Wankhar, ***Technician***
4. Mr. Khrawkupar Hadia, ***Technician (Outsourced)***
5. Ms. Ribakor Ksanieng, ***Technician (Outsourced)***

Centre for Innovation Incubation and Entrepreneurship

The Centre for Innovation Incubation and Entrepreneurship has been established in 2018 in order to promote the innovation activities among the students, alumni and faculty of NIT Meghalaya. It also aims at sensitizing the stakeholders about the benefits and positive challenges and bringing out their creativity for the benefit of the society in general. The key targets of the centre are:

i. To provide infrastructure and expertise support to those interested in any kind of innovation and also to solve the industrial problems.

ii. To create strategic partnerships with various Industries, National and International organizations working towards promoting innovation.

iii. To develop various skills among students required for successful implementation of ideas.

iv. To develop entrepreneurs in the North Eastern region of India.

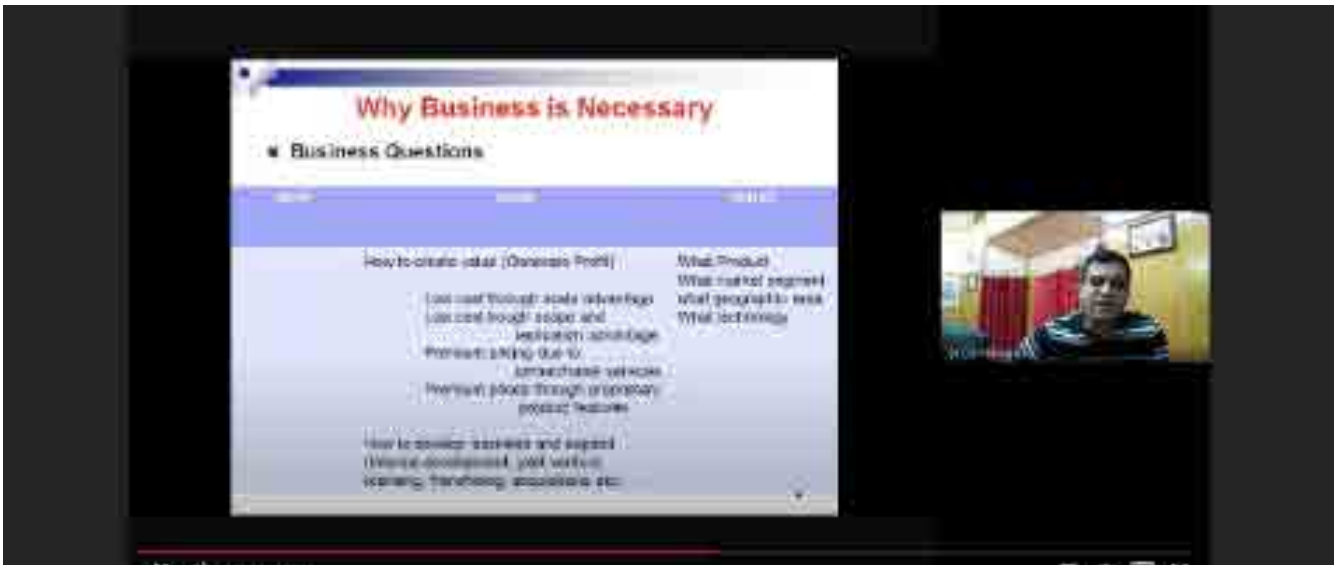
The ideas generated through the Centre can be used by the industry to meet its challenges. Besides this, the Centre also endeavours to see that some of the students of the Institute would become employment – givers than mere employment – seekers with innovative ideas and minimal investments with the support of all the stake holders.

Members:

Name of the faculty member	Department	Role
Dr. Ch V Rama Rao	Electronics and Communication Engineering	Chairman
Dr. Smrutirekha Sahoo	Civil Engineering	Member
Dr. Pallekonda Ramesh Babu	Mechanical Engineering	Member
Dr. Bunil Balabantaray	Computer Science & Engineering	Member
Dr. Ksh. Milan Singh	Electrical Engineering	Member

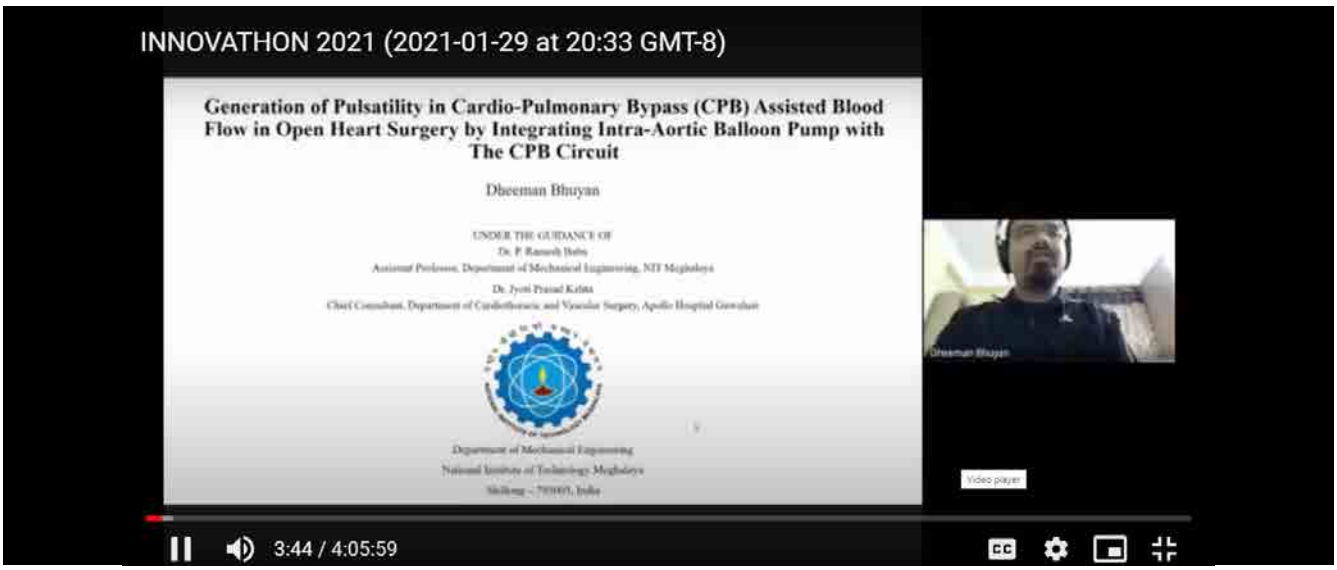
The following events has been conducted during 2020 - 2021:

» The Centre organized a five days workshop on "Role of Technical Institutions in Fostering Innovation and Entrepreneurship" during 04-09-2020 to 08-09-2020 in online mode for students and faculty members of various institutions.



Prof. Debasisha Mishra, IIM Shillong delivering the lecture during the workshop

- The Centre celebrated the 15th October 2020 as Innovation Day to mark Dr. A.P.J. Abdul Kalam's Birth Anniversary through online mode. As part of the celebration, the following expert lectures are arranged:
  - » Talk on opportunities to young entrepreneurs and startup activities in the state of Meghalaya, for which areas of startups will be supported and also what are the opportunities for financial assistance at Meghalaya by Shri. B. K. Sohliya, Director, Meghalaya Institute of Entrepreneurship, Meghalaya.
  - » Talk on opportunities and financial support for young entrepreneurs and startup activities from the Banks in India by Shri. Sushanta Nayak, Regional Head-RetailShillong Region (NENB)
- The Centre organized an event of "INNOVATHON 2021" at NIT Meghalaya with the support of TEQIP on 30-01-2021 through online mode. In this event around 15 proposals were presented by students of B.Tech., M.Tech., M.Sc., and Ph.D. scholars. Out of the presented proposals 8 projects were shortlisted and finance support of Rs. 1,46,000.00 has been provided by TEQIP-III for implementation.



One of the participants presenting his idea

One of the participants presenting her idea

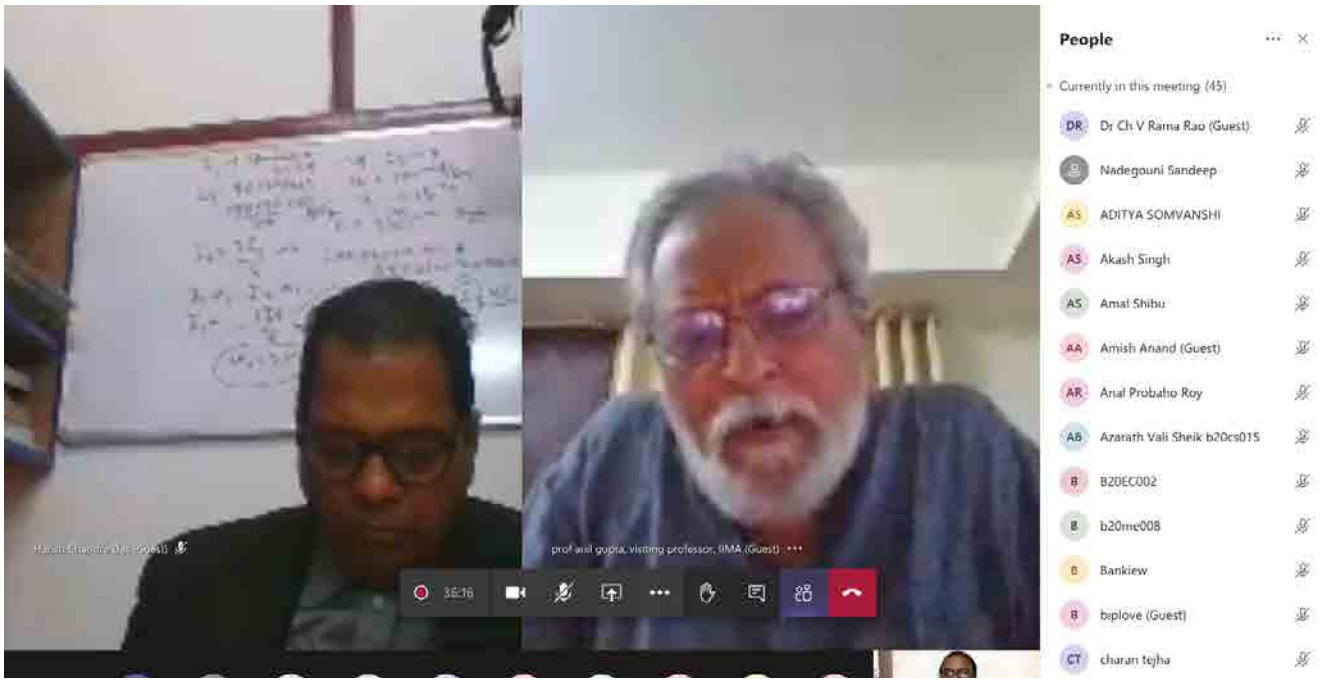
- The Centre organized an event of "HACKATHON 2021" at NIT Meghalaya with the support of TEQIP during 26 and 27 February 2021 through online mode. In this event students of UG and PG from various institutions were demonstrated their solutions for solving the problems in the following areas:
  - » Agriculture and Rural Development.
  - » Healthcare and Bio-medical Devices.
  - » Smart Systems.
  - » Renewable Energy Sources for
  - » Rural Development.
  - » Waste Management.

  In each area two best proposals have been awarded with an amount Rs. 20,000.00 and Rs. 10,000.00. The total an amount Rs. 1,50,000.00 has been distributed to the winners of the event.

Inaugural session of HACKATHON 2021

One of the participants demonstrating the model/solution through virtual mode

- The Centre organized National Science Day celebrations on 28 February 2021 and as part of the celebrations Prof. Anil Kumar Gupta delivered a lecture on "Innovation and Entrepreneurship" to faculty members, staff, scholars, UG and PG students of NIT Meghalaya.



Prof. Anil Kumar Gupta delivering the talk on "Innovation and Entrepreneurship."

Center for Robotics and Mechatronics

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 programs 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	PhD	Design and manufacturing	17-05-2017	01	Nil
Dr. Rabindra Narayan Mahapatra	Associate Professor, HoD, ME	PhD	Design and manufacturing	28-12-2017	02	Nil
Dr. Bikash Kumar Sarkar	Assistant Professor and PIC	PhD	Fluid Power and Control	21-08-2013	03	One Project Scholar, One shared with Dr. S. Maity
Dr. Kishore Debnath	Assistant Professor, ME	PhD	Manufacturing	16-07-2015	03	3 Sponsored projects
Dr. P. Rangababu	Assistant Professor, EC	PhD	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, EC	PhD	Micro-Electro-Mechanical Systems (MEMS), Microelectronics, Device Fabrication Technology	11-08-2014	02	1 sponsored project
Dr. Satyendra Singh Yadav	Assistant Professor, EC	PhD	Wireless Communications, Signal Processing for 5G Systems and Beyond, Machine Learning, Parallel (GPU) Computing	10-2019	Nil	Nil
Dr. Shubhankar Majumdar	Assistant Professor, EC	PhD	Microelectronics Device fabrication, Sensor	13-12-2017	02	3 Sponsored projects 5 State Government Projects 2 Ongoing PhD

Name	Designation	Qualification	Specialization	Date of Joining	Ph.D. guidance	Remarks
Dr. Prabir Saha	Assistant Professor, EC	PhD	VLSI Design, Computer Arithmetic	13-06-2012	02	Nil
Dr. Ch V Rama Rao	Assistant Professor, EC	PhD	Acoustics sensor signal processing, Human robot interfacing	28-08-2014	03	3 Sponsored projects
Dr. Bunil Kumar Balabantaray	Assistant Professor, CSE	PhD	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	PhD	Computational Intelligence, Pattern Recognition	20-06-2012	02	
Dr. Piyush Pratap Singh	Assistant Professor, EE	PhD	Control Systems, Nonlinear Dynamics and Chaos	31-05-2016	01	1 sponsored project
Dr. Sanjoy Debbarma	Assistant Professor, EE	PhD	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, ME	M. Tech.	Machine Design, Dynamics, Trajectory Tracking Control of Underwater Robots	July 21, 2014		

4. List of Publications:

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4. GS Rao, K Debnath, RN Mahapatra, Finite element analysis of low-velocity impact behavior of green composites, Materials Today: Proceedings 2021
5. MR Choudhury, GS Rao, K Debnath, RN Mahapatra, Analysis of Force, Temperature, and Surface Roughness during End Milling of Green Composites, Journal of Natural Fibers, 1-15,2021.
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7. K Debnath, MR Choudhury, GS Rao, RN Mahapatra, Milling Behavior of Injection Molded Short Fiber-Reinforced Green Composites, Machining and Machinability of Fiber Reinforced Polymer Composites, 149-171, 2021
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11. 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
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13. 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
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111. A. Das, S. R. Das, S. K. Patel, and B. B. Biswal, 2020, "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.

112. S. Panda, D. Mishra and B. B. Biswal, 2020, "An approach for design optimization of 3R manipulator using Adaptive Cuckoo Search algorithm", Mechanics Based Design of Structures and Machines, 48(6), 773-798.

113. B. P. Mishra, B. B. Biswal, A. K. Behera, H. C. Das, 2020, "Effect of big data analytics on improvement of corporate social/green performance", Journal of Modelling in Management. (In Press), DoI: 10.1108/JM2-02-2020-0045.

114. B. M. Gunji, S. K. Pabba, I. Raj S. Rajaram, P. S. Sorakayala, A. Dubey, B. B. V. L. Deepak, B. B. Biswal, and MVA Raju Bahubalendruni, 2021, "Optimal disassembly sequence generation and disposal of parts using stability graph cut-set method for End-of-Life product." Sādhanā 46, no. 1, 1-15.

115. A. Rout, B. B. V. L. Deepak, B. B. Biswal and G. Mahanta, 2021, "Weld seam detection, finding and setting of process parameters for varying weld gap by the utilization of laser and vision sensor in robotic arc welding," in IEEE Transactions on Industrial Electronics, doi: 10.1109/TIE.2021.3050368.

116. A. Das, S. K. Patel, M. Arakha, A. Dey and B. B. Biswal, 2021, "Processing of hardened steel by MQL technique using nano cutting fluids", Materials and Manufacturing Processes, 36:3, 316-328.

(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. G Panda, S Mishra - ieeexplore.ieee.org BB Biswal, 2020 3rd International Conference on Energy, Power and Environment: Towards Clean Energy Technologies, 10.1109/ICEPE50861.2021.9404510, Publisher: IEEE

6. Gunji Bala Murali, Bijaya Kumar Khamari, Surya Narayan Panda, Bibhuti Bhusan Biswal. An Efficient Robotic Manipulator Trajectory Planning Using Modified Firefly Algorithm…, Conference paper. 10 January 2020

7. B. B. V. L. Deepak, Bibhuti Bhusan Biswal, Y. Karun Kumar, Robotic Assembly Sequence Generation Using Improved Fruit Fly Algorithm…, Conference paper. 10 January 2020

8. Bijaya Kumar Khamari, Swapan Kumar Karak, Pradip Kumar Sahu, Surya Narayan Panda, Bibhuti Bhusan Biswal, Analysis of Different Types of Micro Grains in Stick Welded Mild Steel Plates…, Conference paper. 10 January 2020

9. 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

10. 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

11. V. R. Kopparthi, R. Peesapati and S. L. Sabat, "System on Chip Implementation of Low Complex Orthogonal Matching Pursuit Algorithm on FPGA," 2020 6th International Conference on Signal Processing and Communication (ICSC), Noida, India, 2020, pp. 178-184, DOI: 10.1109/ICSC48311.2020.9182724.

12. S Gogoi, R Peesapati, A Hybrid Motion Estimation Search Algorithm for HEVC/H. 265, 2019 IEEE International Symposium on Smart Electronic Systems (iSES …

13. R Peesapati, SL Sabat, Programmable Auxiliary Co-Processing Unit for H. 264 Decoder, 2019 IEEE International Symposium on Smart Electronic Systems (iSES …

14. S Gogoi, R Peesapati, Design and Implementation of low power 4× 4/8× 8 2D-DTT architecture for image and video compression, 2019 Women Institute of Technology Conference on Electrical and Computer …

15. 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

16. 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

17. 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

18. 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

19. 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

20. SJ Pinto, N Babu, RB Peesapati, G Panda, Monitoring and control of multibus microgrid system using FPGA platform, 2019 IEEE Region 10 Symposium (TENSYMP), 260-265.

21. 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

22. 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).

23. 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).

24. N Shafi, JS Parmaar, 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.

25. K. Das, S. Majumdar, S. Moulik, M. Fujita, "Real-Time Threshold-based Landslide Prediction System for Hilly Region using Wireless Sensor Networks," IEEE International Conference on Consumer Electronics - Taiwan (ICCE-TW) 2020, 28 -30 Sept 2020 (To be published in IEEE Explorer)

26. S. Moulik, S. Majumdar, V. Pal, Yogita, "Water Leakage Detection in Hilly Region PVC Pipes using Wireless Sensors and Machine Learning," IEEE International Conference on Consumer Electronics - Taiwan (ICCE-TW) 2020, 28 -30 Sept 2020 (To be published in IEEE Explorer)

27. G. Bhargav, S. Majumdar, Design of Telescopic OTA based 6th order Butterworth Low Pass Filter using 0.18um CMOS Technology by IEEE VLSI -DCS, 18- 19 July, Kolkata 10.1109/VLSIDCS47293.2020.9179746

28. 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

29. G. Ashishkumar, Dutta A. and Ch V Rama Rao, Estimation of Fundamental Frequency of Noisy Speech Signals using Correlogram based on Subband Filtering, IEEE 6th International Conference on Engineering Technologies and Applied …

30. G. Ashishkumar, Dutta A. and Ch V Rama Rao, Auditory Inspired Acoustic Model for Hybrid ASR System Using Gammatone Based Gabor Filters, 19th IEEE International Symposium on Signal Processing and Information (ISSPIT)

31. C Lalengmawia, A Chakrabarty, Optimization of Local Ordering Technique for Nearest Neighbour Circuits, Machine Learning, Image Processing, Network Security and Data Sciences (MIND 2020)

32. 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.

33. 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.

34. 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.

35. Sugandha and Piyush Pratap Singh, Complex State Variables Based Novel Hyperchaotic System with Nine Equilibria, 17th IEEE India Council International Conference (INDICON), NSUT Delhi, India, 11-13 December, 2020.

36. Piklu Das and Piyush Pratap Singh, A 4D chaotic system with seventeen equilibria: Synchronization and anti-synchronization, 1st International Conference on Power Electronics and Energy (ICPEE), KIIT Bhubaneswar, India, 02-03 January, 2021.

37. Piklu Das and Piyush Pratap Singh, Bifurcation, Chaos and PID Sliding Mode Control of 3-Bus Power System, 3rd IEEE Int. Conference on Energy, Power and Environment (ICEPE), NIT Meghalaya, India, 5-7 March, 2021.

38. Piyush Pratap Singh, A Chaotic System with Large Lyapunov Exponent: Nonlinear Observer Design and Circuit Implementation, 3rd IEEE Int. Conference on Energy, Power and Environment (ICEPE), NIT Meghalaya, India, 5-7 March, 2021.

39. S. Deb, B. Chatuanramthrnghaka, S. Datta, S. Debbarma, Ksh. Robert Singh, R. Kumar, "Congestion Management by Generator Real Power Rescheduling using Hybrid Grey Wolf Optimizer and Cuckoo Search Optimization", 2021 1st International Conference on Power Electronics and Energy (ICPEE 2021), IEEE Conference (Accepted for Publication).

40. Siddhartha Deb Roy, and Sanjoy Debbarma and Subhasish Deb, "A Comparative Analysis of Supervised Classifiers Employing NCA for Feature Selection to Secure Generation Control", 2021 1st International Conference on Power Electronics and Energy (ICPEE 2021), IEEE Conference (Accepted for Publication).

41. Jogendra K S S Balaji Dulipala, Ishan Bhand, Sanjoy Debbarma, "Decision Support Model under Transactive Energy Markets for Profit Maximization", 2021 1st International Conference on Powewr Electronics and Energy (ICPEE 2021), IEEE Conference (Accepted for Publication).

42. SD Roy, S Debbarma, Mitigation of Intrusions to ACE Signals in Power System Networks, 2020 IEEE International Conference on Power Electronics, Smart Grid.

43. 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.

44. N. Shafi, J.S. Parmaar, A. Porwal, A.M. Bhat, C. Sahu, C. Periasamy, S. Majumdar "Back Gate Tunable Thin Film $\alpha $–Si Nanowire BioFET for pH Detection By Compatible CMOS Fabrication Process." In2020 4th IEEE Electron Devices Technology & Manufacturing Conference (EDTM) 2020 Apr 6 (pp. 1-4). IEEE.

45. 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.

46. 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.

47. 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.

48. B. K. Balabanataray, 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).

49. B K Balabantaray and B B Biswal, "Image based Visual Servoing using Non-Orthogonal Moment Invariants", Innovative Product Design and Intelligent Manufacturing Systems: Select Proceedings of ICIPDIMS 2019, Department of Industrial Design, NIT Rourkela, 17-18 May, 2019.

50. 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).

51. 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).

5. Patents:

1. P Singh, V Kumar, S Gupta, N Jha, N Arya, R Gupta, Sketch completion using machine learning, 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. Projects:

(a) Sponsored Projects

Sl. No.	Title of the Project	Investigators (P.I. / Co-P.I.)	Funding Agency	Funding amount (INR)	Duration	Status
1	Development of Green Composites-based Products using Injection Moulding	Dr. K. Debnath	TEQIP-III	2,00,550/-	2 years	On-going
2	Development of Low-Cost Fully-Biodegradable Plastic–Bamboo Board for Structural Applications	Dr. K. Debnath	SCSTE	1,00,000/-	1 year	On-going
3	Standalone solar Tea/Coffee Maker Cum multipurpose Water Heating System	Dr. K. Debnath	DIC-Ministry of Education, Govt. of India	8,57,200.00	2 years	On-going
4	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
5	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
6	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
7	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
8	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
9	Tensiometer based automated IoT system for irrigation	Dr. Shubhankar Majumdar	DST-DDP	16,84,941.00	2 Year	On-going
10	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
11	Phonetic and Prosodic Analysis of Khasi Language	Dr. Ch. V. Rama Rao	DST-SERB	16,13,280.00		On-going
12	Post-Processing of NQR Signals in Digital Domain in FPGA	Dr. Ch. V. Rama Rao	BRNS, DAE, GoI	20,03,000.00		On-going

Sl. No.	Title of the Project	Investigators (P.I. / Co-P.I.)	Funding Agency	Funding amount (INR)	Duration	Status
13	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
14	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 Landslide Detector Early Warning System 5. 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
15	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

7. 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

8. Laboratories Setup:

Sl. No.	Laboratory	Major Equipment & Software	Location	Cost (Rupees in lakhs)
1	Centre for Robotics & Mechatronics	SEIMENS INDUSTRIAL INTERNET OF THINGS	Centre for Robotics & Mechatronics	1,98,45,00.00
2	Centre for Robotics & Mechatronics	SMART FACTORY AUTOMATION INDUSTRIAL 4.O	Centre for Robotics & Mechatronics	96,49,500.00
3	Centre for Robotics & Mechatronics	RM__100 INDUSTRIAL GRADE MOBILE ROBOT	Centre for Robotics & Mechatronics	9,76,500.00

9. Administrative Responsibilities Held:

Sl. No.	Name of Faculty	Responsibilities	Duration
1.	Dr. B. K. Sarkar	1. Lab-In-Charge, Theory of Machines Lab & HoD, ME 2. Centre-In-Charge, Centre for Robotics & Mechatronics	
2.	Dr. Pradeep Kumar Rathore	1. Professor-in-charge, Centre for Technology Enabled Learning 2. Vice-President (Sports), Student Activity Center 3. Coordinator, Summer Internship Program 2019	Jan 2019 - till date July 2018 - till date Session 2019
3	Dr. R. N. Mahapatra	1. Chairman, On campus business committee 2. Convener, CPDA committee 3. Chairman, Food committee, Convocation	
4	Dr. K. Debnath	1. Faculty-In-Charge, Mechanical Workshop	July 2015 - till date
5	Dr. P. Rangababu	1. Microprocessors Microcontrollers Lab 2. Hod, EC 3. PIC(PG&PhD -AA) 4. Academic coordinator TEIQIP-III, from 5. NBA coordinator, ECE Dept	2016-till date July 2019-till date Sep 2018-till date May 2019-till date July 2018 -19
6	Dr. Shubhankar Majumdar	1. NBA Departmental Committee. 2. Warden of Lapalang Boy's Hostel-1. 3. Faculty Advisor of B. Tech. EC-2018 batch	On-going
7	Dr. Ch. V. Rama Rao	1. Taking care of administrative issues in the Library, Library Chairman. 2. Preparing and monitoring of class routine for ECE Department. 3. Member in Class Routine Committee.	2015 - till date 2015-2016
8	Dr. Piyush Pratap Singh	1. Institute Technical Committee 2. CSAB Admission Committee 3. Institute Cultural Committee 4. TEQIP Start-Up Committee 5. UG-Programme Evaluation Committee 6. Security Committee	2017 2018 2018 2018 2019 2019
9	Dr. Sanjoy Debbarma	1. Associate Warden, Associate Warden, Boys Hostel, Bamboo Hut, NIT Meghalaya 2. Warden, Lapalang V Boys Hostel, NIT Meghalaya 3. Member, Construction & Development of NIT Meghalaya Permanent Campus, Sohra 4. Member, Center of Innovation Incubation & Entrepreneurship, NIT Meghalaya 5. 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	1. Member, Library committee 2. Member, PG-Programme Evaluation Committee 3. Faculty Advisor of B. Tech. CS-2018 batch	July 2019 - till date
11	Dr. Bunil Kumar Balabantaray	1. Institute Internship 2. Warden, KT Hostel 3. Convener, Volunteer Sub-Committee, Convocation 2019 4. Member, Technical Committee, SAC 5. Convener, NBA Preparation Committee 6. Member, CCMT-2019 and CCMT-2020 7. Member, Outcome Based Education, Steering Committee 8. Member, Institute Start-up Committee under TEQIP-III	1. July 2018 to till continuing 2. Dated: 06.08.2019 3. From 23.09.2019 till continuing 4. From 23.01.2018 to till continuing 5. From April 2019 to till continuing 6. From 04.12.2018 to till continuing 7. From 08.09.2018 to till continuing 8. From 08.09.2018 to till continuing

10. Membership of Professional Bodies:

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

11. Any Other Notable Information:

(a) Lecture delivered:

1. Dr. B. K. Sarkar, 'How to prepare SAR for NBA accreditation' , NIT Arunachal Pradesh.
2. Dr. B. K. Sarkar, AICTE Sponsored Six Days Online Short Term Training Program (STTP) On "Recent Advances in Industrial Robotics and Applications" [07 - 12, December - 2020] Organized by Department of Electrical Engineering SHREE RAMCHANDRA COLLEGE OFENGINEERING. Title of the lecture, Electrohydraulic control of Industrial Robots and Sensor integration and error analysis of the industrial robots.

Centre for Technology Enabled Learning

1. Brief Introduction to the CTEL:

The fantastic growth of Information technology (IT) over the last few decades has changed almost every part of our daily life. 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 government and non-government educational institutes and research organizations.

As the first step in this direction, the Centre for Technology Enabled Learning (CTEL) has been set up in the NIT Meghalaya Campus, allows faculty members of the Institute as well eminent experts from other institutions and organizations to develop course materials including high-quality video contents, which will be made available to the students through on-line streaming technology. 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. The CTEL recording facility is equipped with the following advanced electronic systems: Panasonic SMART LED Screen Display cum White Board, Digital Wireless Hand-held Head-worn Microphone Sets (Sennheiser, DU-3-EU-R), Lumens PTZ Cameras (Lumens, VCA50P), Crestron Air board Whiteboard Capture System (Crestron, CCS-WB-1), Digital Graphics Engine (Crestron, DGE-100), HDMI Switcher (Crestron, HD-MD6x2-4K-E), HD Scaling Auto Switcher and HDMI (Crestron, HD-MD-300C-EW), Media Presentation Controller along with Table-top Kit (Crestron, MPC3-302W), Magnetic Whiteboard, Digital Metallic Podium and LED Light Fixtures (Crompton, LTCSN36CDL). 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. More than 600 hours video lectures have been recorded at CTEL till date.

Staff details:

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

Activities in CTEL:

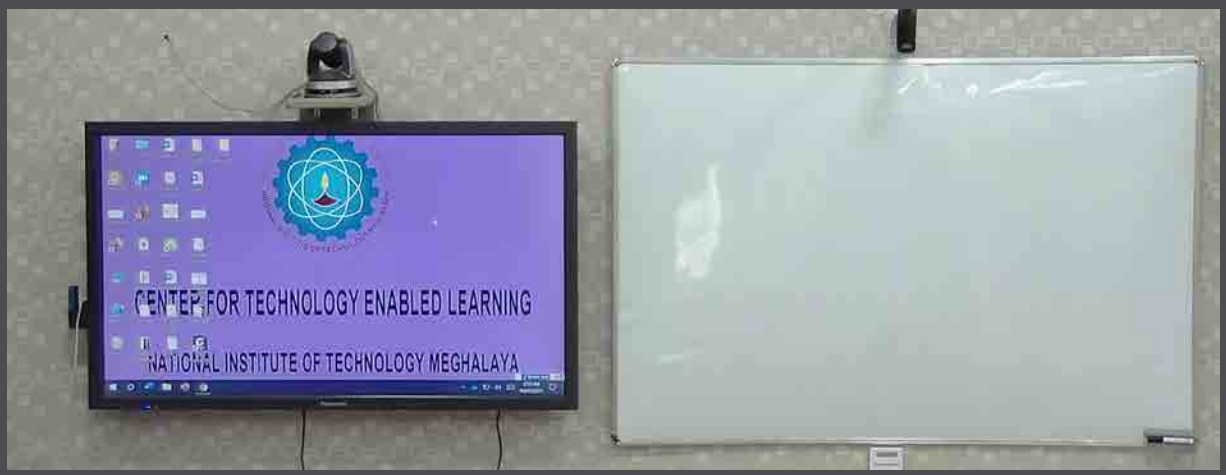
I. Course Lecture Recording

II. Ph.D. Defense Seminar

III. Invite Talk/ Guest Lecture

IV. Other Activities.

CTEL Recording Room:

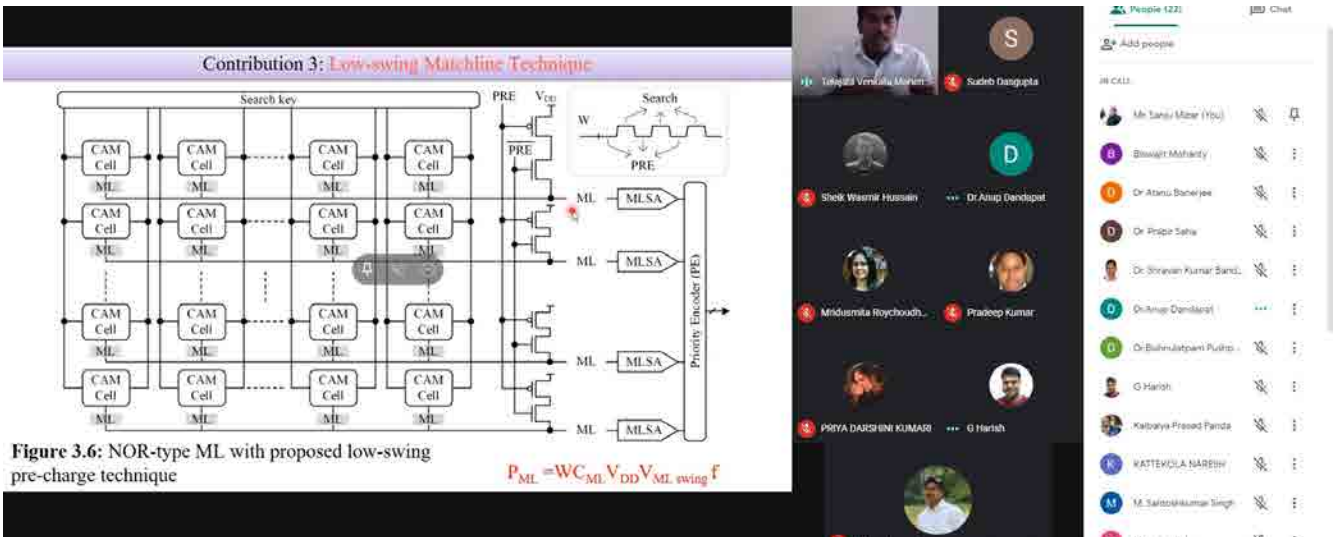


CTEL Details Of Lecture Recorded (Completed One Module)

Sl. No.	Date	Name of The Faculty	Department	Course Code	No. of Classes to be recorded
1	13-10-2020	Dr. Abhishek Sarkhel	EC	EC-412	4
2	09-12-2020	Dr. Harish Chandra Das	ME	ME-206	6
3	10-12-2020	Dr. Anup Dandapat	EC	EC-503 & EC-205	60
4	15-12-2020	Dr. Alekha C. Nayak	PH	PH-407 & PH-101	20
5	16-12-2020	Dr. Prabir Kumar Saha	EC	EC-205, EC-513, EC-504 & EC-302	46
6	18-12-2020	Dr. Vipin Pal	CS	CS-206, C-517 & CS-301	50
7	02-03-2021	Dr. Ganesh Chandra Dhal	CE	CE-204 & CE-202	8
8	22-03-2021	Dr. Rangababu P.	EC	EC-528	2
9	23-03-2021	Dr. Vipin Pal	CS	CS-206 & CS-510	35
10	23-03-2021	Dr. Alekha C. Nayak	PH	PH-407, PH-402 & PH-101	69
11	25-03-2021	Dr. Harish Chandra Das	ME	ME-206	25
12	26-03-2021	Dr. Prabir Kumar Saha	EC	EC-302, EC-504 & EC-513	50
13	30-03-2021	Dr. Anup Dandapat	EC	EC-518 & EC-224	21
14	30-03-2021	Dr. Bunil Balabantaray	CS	CS-312	2
			Total		**398**

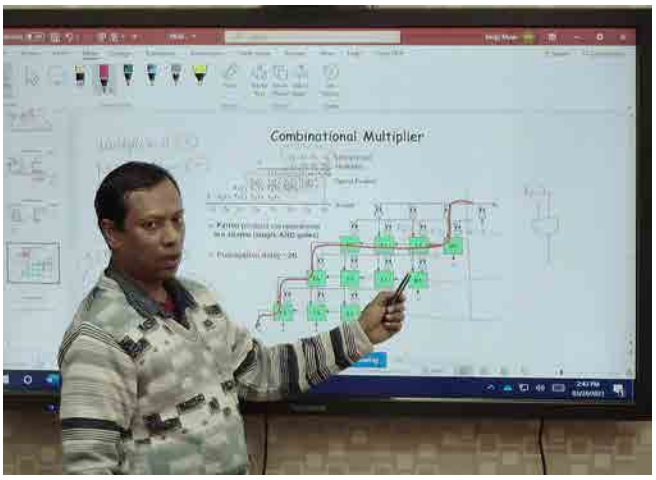
List of Other Activities

Sl. No.	Date	Name of the Student/ Faculty/Staff	Department	Activities
1	21-08-2020	Mr. Amrit Raj	CSE	Lab Presentation
2	06-11-2020	Dr. Bunil Balabantaray	CSE	ATAL FDP on AI
3	05th -Mar -07th Mar-2021	Mr. Kaibalya Prasad Panda	EE	3rd ICEPE Conference
4	10-03-2021	Mr. B Parusharamulu	EE	PhD Defense Seminar
5	15-03-2021	Mr. Sourav Das	CY	PhD Defense Seminar
6	17-03-2021	Mr. Mahendra	EC	PhD Defense Seminar

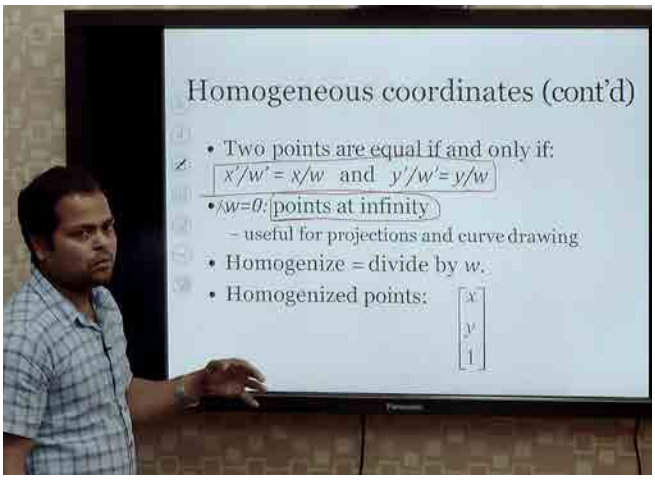


Mr. Telajala Venkata Mahendra- PhD Defense Seminar Department of Electronics & Communication Engineering

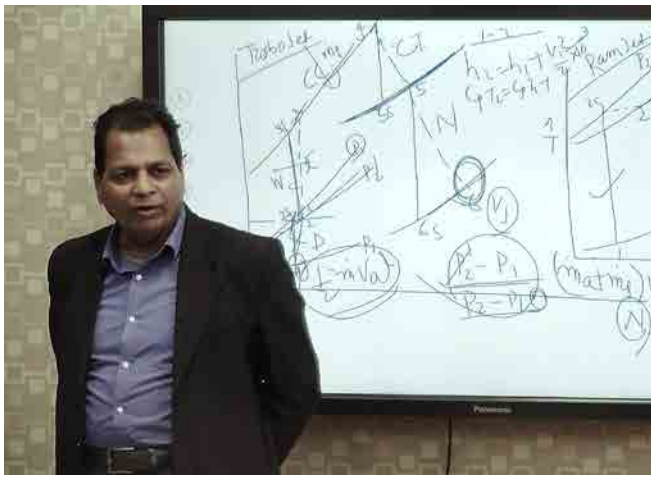
Dr. Anup Dandapat (Online Class), Department of Electronics & Communication Engineering



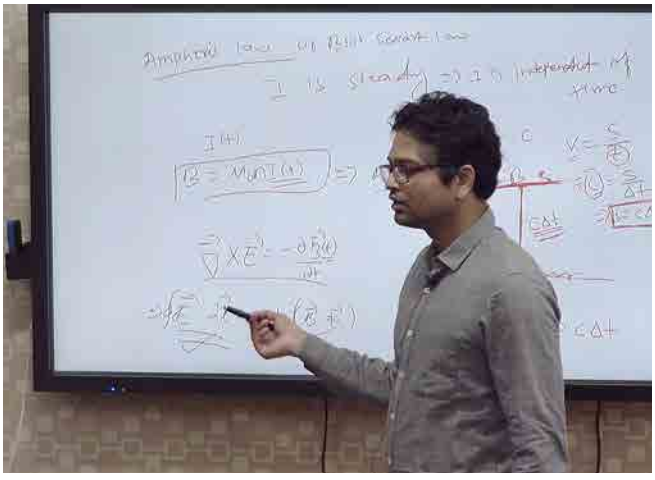
Dr. Prabir Kumar Saha, Department of Electronics & Communication Engineering



Dr. Bunil Balabantaray, Department of Computer Science & Engineering



Dr. Harish Chandra Das, Department of Mechanical Engineering



Dr. Alekha C. Nayak, Department of Physics

Students attending offline class

Annual Accounts 2020-2021

स्पीड पोस्ट/ Speed Post

सत्यमेव जयते

कार्यालय महालेखाकार) लेखापरीक्षा(
मेघालय ,शिलांग · 793 001
OFFICE OF THE
ACCOUNTANT GENERAL (AUDIT),
MEGHALAYA, SHILLONG – 793 001.

No. AMG-I/NIT/8-4/2021-22/942 **Dated: 28 February 2022**

To, 01 MAR 2022

The Director,
National Institute of Technology, Meghalaya,
Bijini Complex, Laitumkhrah,
Shillong - 793003

Sub: ***Management Letter on Separate Audit Report on the Accounts of the National Institute of Technology (NIT), Meghalaya, Shillong for the year 2020-21.***

Sir,

I am to invite a reference to the subject above and to state that during the course of **Financial Audit of National Institute of Technology, Meghalaya, Shillong,** it was observed as follows:

A1: Fixed Assets (Sch-4)
i. Capital Work –in- Progress: ₹ 246.72 crore

The above does not include an amount of ₹ 0.05 crore being the pending bill against M/s Rites (Project Management Consultancy) of ₹ 5.75 crore for the work done as on 31 March 2021. The Institute made a provision of ₹ 5.70 crore and the remaining above amount of ₹ 0.05 crore (₹ 5.75 crore - ₹ 5.70 crore) was neither accounted nor provided in the books of Accounts. Non-accounting of the same has resulted in understatement of CWIP and Current Liabilities by ₹ 0.05 crore.

I therefore, request you to kindly take necessary corrective steps on the above observation.

Yours faithfully,

28/02

Deputy Accountant General
Audit Management Group-I

स्पीड पोस्ट/ Speed Post

सत्यमेव जयते

कार्यालय महालेखाकार) लेखापरीक्षा(
मेघालय ,शिलांग · 793 001
OFFICE OF THE
ACCOUNTANT GENERAL (AUDIT),
MEGHALAYA, SHILLONG – 793 001.

No. AMG-I/NIT/8-4/2021-22/943 Date: 28 February 2022

To, 01 MAR 2022

The Secretary to the Government of India,
Ministry of Education,
(Department of Higher Education),
Room No-127, 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 2021.

Sir,

I am to forward herewith the Separate Audit Reports on the accounts of the National Institute of Technology (NIT), Meghalaya for the year 2020-21 and a set of audited Annual Accounts of NIT for the year 2020-21.

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)

स्पीड पोस्ट/ Speed Post

Memo No. AMG-I/NIT/8-4/2021-22/944 **Date: 28 February 2022**

01 MAR 2022

Copy of the Separate Audit Report on the accounts of the **National Institute of Technology (NIT), Meghalaya** for the year **2020-21** 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.

Sagarkar 28/02

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 2021

We have audited the attached Balance Sheet of the National Institute of Technology (NIT), Meghalaya as at 31 March 2021, 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): ₹ 138.07 crore

The above includes liabilities to the tune of ₹ 1.48 crore which do not relate to the current financial year and have been carried forward since many years.

As these liabilities have been carried forward since 2012-13, writing-back/adjustment should have been made on case to case basis so as to ascertain whether the actual liability still exists in order to exhibit true and fair picture in the Annual Accounts. This observation was made during the Financial Audit for the year 2019-20, however, despite assurance made by the management to rectify in the Annual Account of 2020-21, the same was not rectified.

B: Income and Expenditure Account

B1: Transport Expenses (Sch 18): ₹ 0.41 crore

The above does not include ₹ 0.06 crore being charges on vehicles taken on hire for the month of March 2021 to Synroplang SHG. The same was not provided for nor accounted in the book of Account. This has resulted in understatement of Transport Expenses (Vehicle taken on hire) and corresponding understatement of Current Liabilities for the year by ₹ 0.06 crore. The Surplus for the year is also overstated by the same amount.

B2: Repairs and Maintenance (Schedule-19)
Others-Repairs and Maintenance: ₹ 1.06 crore

The above includes expenses on AMC for three years paid towards intellisense software range (Feb 2021), Hue Service Pvt Ltd (March 2021) and Ark Info solutions for Ansys Academic software (Dec 2020) amounting to ₹ 0.05 crore, ₹ 0.02 crore and ₹ 0.55 crore respectively. As the amount of AMC is for three years, the expense should have been apportioned for each year separately. Full accounting of the same for the year 2020-21 has resulted in overstatement of Repair and Maintenance expense (AMC expense) and corresponding understatement of Current Assets (Prepaid Expense) by ₹ 0.42 crore[1] . Consequently, Surplus for the year is also understated by the same amount.

[1](₹5,25,000+₹2,43,764+₹55,43,050)/3*2= ₹42,07,876

B3: Prior Period Expenses (Shedule-22) - ₹ 1211695.56

The above does not include payment of ₹ 0.22 core being the expenses towards employees as reimbursement of rent adjustment which was deducted from their salary w.e.f 01 July 2017 on account of new HRA as per 7th CPC vide approval of the Director for ₹ 0.14 crore (₹ 2,60,661[2] + ₹ 11,84,822[3]) , Research Conclaves (February 2020) and Synroplang SHG of vehicle taken on hire for ₹ 0.08 crore (₹ 0.02 crore + ₹ 0.06 crore)[4] . As this relates to period prior to 2020-21, this should have been booked as Prior Period Expenses. However, the same was not done resulting in understatement of Prior Period Expenses by ₹ 0.22 crore. Also Rent, Academic Expense and Transport Expense are overstated by ₹ 0.14 crore and ₹ 0.08 crore respectively.

C: General:

C1: Schedule 24: Notes on Accounts

The following works are pending for execution as on 31 March 2021 as shown below:

Sl. No.	Name of the works	Project cost (₹ in crore)	Amount of work (₹ in crore) already executed and payment made	Value of work pending execution(₹ in crore)
1.	Construction of water storage Reservoir at NIT, Meghalaya, Cherrapunjee	7.99	3.25	4.74
2.	Construction of Boundary wall for the additional land of NIT, Meghalaya, Cherrapunjee (Plot No. 258)	1.75	0.65	1.1
3.	Construction works of various buildings under Package I, II and III under M/s RITES (PMC)	330.10	204.39	125.71
Total				**131.55**

The above contracts pending to be executed amounting to ₹ 131.55 crore as on 31 March 2021 should be disclosed as Capital Commitment under point No. 2 of Schedule-24 – Contingent Liabilities and Notes to Accounts.

Non-disclosure of the above has resulted in understatement of Capital Commitment by ₹ 131.55crore.

D: Grants-in-Aid:

The opening balance of Grants-in–Aid was ₹ 110.80 crore. During the year 2020-21, an amount of ₹ 90.130 crore was received. Out of available balance, an amount of ₹ 52.85 crore was utilised for Capital expenditure and ₹ 37.06 crore was utilised for Revenue expenditure, leaving an unspent balance of ₹ 111.01 crore as on 31 March 2021 as depicted in the books of account.

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

---

[2] Relinquished employees

[3] Existing employees

[4] 2,21,190 payment (June 2020) in connection with Research conclaves held in Feb 20 and ₹ 6,28,106 payment made (July 20) to Synroplang SHG in connection with vehicle taken on hire

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 2021; and

(b) In so far as it relates to Income and Expenditure Account of the Surplus for the year ended on that date.

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

Place: Shillong
Date: 31 MAR 2022

(Shefali Srivastava Andaleeb),
Accountant General (Audit)

Annexure I to Separate Audit Report

Adequacy of Internal Control Mechanism

The deficiencies observed in the Internal Control Mechanism of the NIT, Meghalaya, Shillong during 2020-21 are detailed in the succeeding paragraphs:

1. Adequacy of Internal Audit System:

1.1 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.

1.2 No Internal Audit Manual has also been prepared by the Institute.

1.3 The Institute has not developed any manual relating to Accounts and Audit.

2. Adequacy of Internal Control System:

2.1 No major deficiencies were noticed in the Internal Control System.

3. System of Physical Verification of Fixed Assets:

3.1 NIT, Meghalaya had conducted Physical Verification of its assets as on 31 March 2021.

4. System of physical verification of Inventory:

4.1 NIT, Meghalaya had conducted Physical Verification of Inventory as on 31 March 2021.

5. Regularity in payment of statutory dues:

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

Sr. Audit Officer/AMG-I

NATIONAL INSTITUTE OF TECHNOLOGY MEGHALAYA
SHILLONG, MEGHALAYA

Balance Sheet as at 31st March 2021

[Amount in ₹]

Sources of Funds	Schedule	Current Year	Previous Year
CORPUS/Capital FUND	1	2699003378.62	2155209032.00
DESIGNATED/ EARMARKED / ENDOWMENT FUNDS	2	114039838.00	101086038.00
CURRENT LIABILITIES & PROVISIONS	3	1380720167.96	1396994106.00
TOTAL		**4193763384.58**	**3653289176.00**

[Amount in ₹]

Application of Funds	Schedule	Current Year	Previous Year
FIXED ASSETS	4		
▪ Tangible Assets		214815963.49	194127390.67
▪ Intangible Assets		6722824.33	11376857.00
▪ Capital Works-In-Progress		2467195492.60	2004434163.33
INVESTMENTS FROM EARMARKED / ENDOWMENT FUNDS	5		
▪ Long Term			0.00
▪ Short Term			0.00
INVESTMENTS - OTHERS	6	0.00	0.00
CURRENT ASSETS	7	1480075659.13	707247207.00
LOANS, ADVANCES & DEPOSITS	8	24953445.03	736103558.00
TOTAL		**4193763384.58**	**3653289176.00**

SIGNIFICANT ACCOUNTING POLICIES	23
CONTINGENT LIABILITIES AND NOTES TO ACCOUNTS	24

For NIT Meghalaya

Registrar Director

NATIONAL INSTITUTE OF TECHNOLOGY MEGHALAYA
SHILLONG, MEGHALAYA

Income and Expenditure Account for the Year Ended 31st March 2021

[Amount in ₹]

Particulars	Schedule	Current Year	Previous Year
INCOME			
▪ Academic Receipts	9	22610958.50	11354473.00
▪ Grants / Subsidies	10	370574698.14	452650700.00
▪ Income from investments	11	29181245.00	11758869.00
▪ Interest earned	12	252780.00	252649.00
▪ Other Income	13	10792244.68	10608308.00
▪ Prior Period Income	14	987673.00	0.00
TOTAL (A)		**434399599.32**	**486624999.00**
EXPENDITURE			
▪ Staff Payments & Benefits (Establishment expenses)	15	197727700.92	229433196.00
▪ Academic Expenses	16	44005643.00	56655758.00
▪ Administrative and General Expenses	17	55826753.00	60549676.00
▪ Transportation Expenses	18	4131842.00	9398134.00
▪ Repairs & Maintenance	19	67647946.00	63798137.00
▪ Finance costs	20	23117.66	22306.00
▪ Depreciation	4	55927220.56	64805990.00
▪ Other Expenses	21	0.00	0.00
▪ Prior Period Expenses	22	1211695.56	1927943.00
TOTAL (B)		**426501918.70**	**486591140.00**
Balance being excess of Income over Expenditure (A-B)		7897680.62	33859.00
Transfer to / from Designated Fund			
Building fund			
Others (specify)			
Balance Being Surplus / (Deficit) Carried to Capital Fund		7897680.62	33859.00

SIGNIFICANT ACCOUNTING POLICIES	23
CONTINGENT LIABILITIES AND NOTES TO ACCOUNTS	24

For NIT Meghalaya

Registrar Director

NATIONAL INSTITUTE OF TECHNOLOGY MEGHALAYA
SHILLONG, MEGHALAYA

SCHEDULE - 1 : Corpus/Capital Fund

[Amount in ₹]

	Particulars	Current Year	Previous Year
	Balance at the beginning of the year	2155209032.00	2205616346.00
Add:	Contributions towards Corpus/Capital Fund	528503902.00	0.00
Add:	Adjustments of Previous years	7392764.00	
Add:	Grants from UGC, Government of India and State Government to the extent utilized for Capital expenditure	0.00	22952731.00
Add:	Assets Purchased out of IRG		3818198.00
Add:	Assets Purchased out of Sponsored Projects, where ownership vests in the institution	0.00	0.00
Add:	Assets Donated/Gifts Received	0.00	0.00
Add:	Depreciation for prior period	0.00	0.00
Add:	Excess of Income over expenditure trasferred from the Income & Expenditure Account	7897680.62	0.00
(Deduct)	B/F Unutilized Grant transferred to Current Liabilities	0.00	0.00
	Total	**2699003378.62**	**2232387275.00**
(Deduct)	Deficit transferred from the Income & expenditure Account	0.00	77178243.00
	Balance at the year end	**2699003378.62**	**2155209032.00**

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.	**A1**	**A2**	**(A1+A2)**	
a) Opening balance	94017762.00	7068276.00	101086038.00	76140691.00
b) Additions during the year		9607412.00	9607412.00	36548456.00
c) Income from investments made of the funds	0.00	3346388.00	3346388.00	0.00
d) Accrued Interest on investments/Advances	0.00	0.00	0.00	0.00
e) Interest on Savings Bank a/c	0.00	0.00	0.00	0.00
f) Other additions (Specify nature)	0.00	0.00	0.00	0.00
Total (A)	**94017762.00**	**20022076.00**	**114039838.00**	**112689147.00**
B.				
Utilisation/Expenditure towards objectives of funds				
i) Capital Expenditure	0.00	0.00	0.00	3818198.00
ii) Revenue Expenditure	0.00	0.00	0.00	7784911.00
Total (B)	**0.00**	**0.00**	**0.00**	**11603109.00**
Closing balance at the year end (A - B)	**94017762.00**	**20022076.00**	**114039838.00**	**101086038.00**

NATIONAL INSTITUTE OF TECHNOLOGY MEGHALAYA
SHILLONG, MEGHALAYA

SCHEDULE - 3 : Current Liabilities & Provisions

[Amount in ₹]

Particulars	Current Year	Previous Year
A. CURRENT LIABILITIES		
1. Deposits from staff	2874568.25	307861.00
2. Deposits from students	12191408.50	7472301.00
3. Sundry Creditors		
a) For Goods & Services	0.00	0.00
b) Others	0.00	0.00
4. Deposit-Others (including EMD, Security Deposit) (As per Annexure 'A')	11950784.05	12204096.00
5. Statutory Liabilities (GPF, TDS, WC TAX, CPF, GIS, NPS): (As per Annexure 'B')		
a) Overdue	0.00	0.00
b) Others	2519769.25	1111451.00
6. Other Current Liabilities		
a) Salaries	0.00	0.00
b) Receipts against sponsored projects (As Per Annexure 3a)	56905642.60	47410716.00
c) Receipts against sponsored fellowships & scholarships	2868930.00	2632430.00
d) Unutilised Grants (As Per Annexure 3c)	1110161182.86	1107960783.00
e) Grants in advance	0.00	0.00
f) Other funds	2402456.00	1487456.00
g) Other liabilities (As per Annexure 'C')	126060775.45	160486393.00
Total (A)	**1327935516.96**	**1341073487.00**
B. PROVISIONS		
1. For Taxation	0.00	0.00
2. Gratuity	14925279.00	21568204.00
3. Superannuation Pension	0.00	0.00
4. Accumulated Leave Encashment	37859372.00	34352415.00
5. Trade Warranties/Claims	0.00	0.00
6. Others - Provision for Expenses	0.00	0.00
Total (B)	**52784651.00**	**55920619.00**
Total (A+ B)	**1380720167.96**	**1396994106.00**

NATIONAL INSTITUTE OF TECHNOLOGY MEGHALAYA

SHILLONG, MEGHALAYA

SCHEDULE - 3(a) : Sponsored Projects

[Amount in ₹]

Sl. 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	39422701.00	0.00	45000629.28	84423330.28	37942967.72	51092838.15	0.00
2	Sponsored Project/NMHS-PMU/ Vipin	113553.30	0.00	0.00	113553.30	0.00	113553.30	0.00
3	Sponsored Project - CE/02 (Khwirakpam)	5995.50	0.00	383.00	6378.50	0.00	6378.50	0.00
4	PHD-Visvesvaraya	1355056.00	0.00	25991.00	1381047.00	1065790.41	315256.59	0.00
6	Sponsored Project/Chem/Paresh	32530.39	0.00	46486.50	79016.89	79489.25	0.00	-472.36
8	Sponsored Project/DeITY/K. Datta	328.00	0.00	37.00	365.00	222.00	1207.00	0.00
11	Sponsored Project/SMDP/ Dandapat	3503210.00	0.00	84805.00	3588015.00	854000.00	2734015.00	0.00
12	RECPTL	2976172.00	0.00	101433.00	3077605.00	434738.58	2642866.42	0.00
	Total	**47409546.19**	**0.00**	**45259764.78**	**92669310.97**	**40377207.96**	**56906114.96**	**-472.36**

Notes:

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

NATIONAL INSTITUTE OF TECHNOLOGY MEGHALAYA

SHILLONG, MEGHALAYA

SCHEDULE - 3(b) : Sponsored Fellowships and Scholarships

[Amount in ₹]

Sl. No.	Name of Sponsor	Opening Balance		Transactions during the year		Closing Balance	
		Credit	Debit	Credit	Debit	Credit	Debit
1	2	3	4	5	6	7	8
1	Scholarship - Top Class	1789769.00	0.00	0.00	0.00	1789769.00	0.00
2	External Individual Scholarships	842661.00	0.00	236500.00		1079161.00	0.00
		0.00	0.00	0.00	0.00	0.00	0.00
	Total	**2632430.00**	**0.00**	**236500.00**	**0.00**	**2868930.00**	**0.00**

NATIONAL INSTITUTE OF TECHNOLOGY MEGHALAYA

SHILLONG, MEGHALAYA

SCHEDULE - 3(c) : Unutilized Grants from UGC, Government of India and State Governments

[Amount in ₹]

	Particulars	Current Year	Previous Year
A	**Recurring Grants: Government of India**		
	▪ Balance B/F	48730148.69	196388544.00
	▪ Add: Receipts during the year	224300000.00	1305575000.00
	Total (a)	**273030148.69**	**1501963544.00**
	▪ Less: Refunds	0.00	0.00
	▪ Less: Utilized for Revenue Expenditure	190786978.22	371050030.00
	▪ Less: Utilized for Capital Expenditure	0.00	22952731.00
	Total (b)	**190786978.22**	**394002761.00**
	▪ Unutilized carried forward (a-b)	82243170.47	1107960783.00
B	**Capital Grants: Government of India**		
	▪ Balance B/F	1001263274.06	0.00
	▪ Add: Receipts during the year	537800000.00	0.00
	Total (a)	**1539063274.06**	**0.00**
	▪ Less: Refunds	0.00	0.00
	▪ Less: Utilized for Revenue Expenditure	0.00	0.00
	▪ Less: Utilized for Capital Expenditure	528503902.00	0.00
	Total (b)	**528503902.00**	**0.00**
	Unutilized carried forward (a-b)	1010559372.06	0.00
C	**Salary Grants: Government of India**		
	▪ Balance B/F	57967360.25	0.00
	▪ Add: Receipts during the year	139179000.00	0.00
	Total (a)	**197146360.25**	**0.00**
	▪ Less: Refunds	0.00	0.00
	▪ Less: Utilized for Revenue Expenditure	179787719.92	0.00
	▪ Less: Utilized for Capital Expenditure	0.00	0.00
	Total (b)	**179787719.92**	**0.00**
	▪ Unutilized carried forward (a-b)	17358640.33	0.00
	Grand Total (A+B+C+D)	**1110161182.86**	**1107960783.00**

Capital Grant :

» Deductions from assets have been reduced to the tune of 136744/-, 1592907 (1622907-30000) and 10364374/- as the expenditures were already booked against grants in the previous years.

» Library books' adjustment of 6528533/- have not been reduced from Capital expenditure as in the previous year, such adjustment was made frm IRG and added to Capital.

Recurring Grant :

» Employer's share towards NPS has been added to Recurring Grant as per budget given by Ministry.

Salary Grant:

» Employer's share towards NPS has been subtracted from Salary Grant as per budget given by Ministry.

» Expenses have been taken after reduction of credits made to respective heads.

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SCHEDULE - 4 : Fixed Assets

Sl. No.	Assets Heads	Gross Block					
		Opening Balance	Additions	Deductions/ Adjustment	Prior Period Adjustments	Net Addition	Closing Balance
1	Land	2000000.00	0.00	0.00	0.00	0.00	2000000.00
2	Site Development	0.00	0.00	0.00	0.00	0.00	0.00
3	Buildings	0.00		23115500.00	0.00	23115500.00	23115500.00
4	Roads & Bridges	0.00	0.00	0.00	0.00	0.00	0.00
5	Tubewells & Water Supply	446375.00	0.00	0.00	0.00	0.00	446375.00
6	Sewerage & Drainage	0.00		0.00	0.00	0.00	0.00
7	Electrical Installation and equipment	8941214.00	4735303.00		0.00	4735303.00	13676517.00
8	Plant & Machinery	0.00		0.00	0.00	0.00	0.00
9	Scientific & Laboratory Equipment	178552400.00	22612218.00	-1622907.00	0.00	20989311.00	199541711.00
10	Office Equipment	58150705.00	356282.00	0.00	0.00	356282.00	58506987.00
11	Audio Visual Equipment	0.00		0.00	0.00	0.00	0.00
12	Computers & Peripherals	83973591.00	3661612.00	0.00	0.00	3661612.00	87635203.00
13	Furniture, Fixtures & Fittings	64832352.00	122002.00	0.00	0.00	122002.00	64954354.00
14	Vehicles	3243960.00	0.00	0.00	0.00	0.00	3243960.00
15	Lib. Books & Scientific Journals	15551681.00	0.00	-136744.00	-6528533.00	-6665277.00	15414937.00
16	Small Value Assets	0.00	0.00	0.00	0.00	0.00	0.00
	Total (A)	**415692278.00**	**31487417.00**	**21355849.00**	**-6528533.00**	**46314733.00**	**468535544.00**
17	Capital Work in Progress (B)	2004434163.23	485876829.00	-23115500.00	0.00	462761329.00	2467195492.23

Sl. No.	Intangible Assets	Opening Balance	Additions	Deductions	Prior Period Adjustments	Net Addition	Closing Balance
18	Computer Software	60367579.00	11435224.00	0.00	0.00	11435224.00	71802803.00
19	E-Journals	64838275.00	11798457.00	-10364374.00	6528533.00	7962616.00	66272358.00
20	Patents	249800.00	0.00	0.00	0.00	0.00	249800.00
	Total (C]	**125455654.00**	**23233681.00**	**-10364374.00**	**6528533.00**	**19397840.00**	**138324961.00**
	Grand Total (A+B+C)	**2545582095.23**	**540597927.00**	**-12124025.00**	**0.00**	**528473902.00**	**3074055997.23**

Note:

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

[Amount in ₹]

Depreciation					Net Block	
Opening Balance	Prior Period Depreciation	Depreciation for the Year	Deductions/ Adjustment	Closing Balance	31.03.2021	31.03.2020
0.00	0.00	0.00	0.00	0.00	2000000.00	2000000.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	924620.00	462310.00	0.00	1386930.00	21728570.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00
44638.00	0.00	8928.00	0.00	53566.00	392809.00	401737.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00
1291250.00	0.00	683826.00	0.00	1975076.00	11701441.00	7649964.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00
60622756.00	2400.00	15960937.00	0.00	76586093.00	122955618.00	117929644.00
30065756.90	0.00	4388024.00	0.00	34453780.90	24053206.10	28084948.10
0.00	0.00	0.00	0.00	0.00	0.00	0.00
91177554.80	0.00	3661611.00	-7203964.00	87635201.80	1.20	-7203963.80
29358095.93	0.00	4871577.00	0.00	34229672.93	30724681.07	35474256.07
1760598.00	0.00	324396.00	0.00	2084994.00	1158966.00	1483362.00
7244238.90	0.00	1541494.00		8785732.90	100671.10	8307442.10
0.00	0.00	0.00	0.00	0.00	0.00	0.00
221564888.53	**927020.00**	**31903103.00**	**-7203964.00**	**254395011.53**	**214815963.49**	**194127390.67**
0.00		0.00	0.00	0.00	2467195492.60	2004434163.33

Opening Balance	Prior Period Depreciation	Amortization for the Year	Deductions/ Adjustments	Closing Balance	Balance as on 31.03.2021	Balance as on 31.03.2020
57073781.00	0.00	14729021.00	0.00	71802802.00	1.00	3293798.00
57005016.00	0.00	9267341.00		66272357.00	6528534.00	7833259.00
0.00	27755.56	27755.56	0.00	55511.11	194288.89	249800.00
114078797.00	**27755.56**	**24024117.56**	**0.00**	**138130670.11**	**6722824.33**	**11376857.00**
335643685.53	**954775.56**	**55927220.56**	**-7203964.00**	**392525681.64**	**2688734280.42**	**2209938411.00**

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SCHEDULE - 5 : Investments from Earmarked/ Endowment Funds

[Amount in ₹]

Sl. No.	Particulars	Current Year	Previous Year
1	In Central Government Securities	0.00	0.00
2	In State Government Securities	0.00	0.00
3	Other approved Securities	0.00	0.00
4	Shares	0.00	0.00
5	Debentures and Bonds	0.00	0.00
6	Term Deposits with Banks	0.00	0.00
7	Others (to be specified)	0.00	0.00
	Total	**0.00**	**0.00**

SCHEDULE - 6 : Investments – Others

[Amount in ₹]

Sl. No.	Particulars	Current Year	Previous Year
1	In Central Government Securities	0.00	0.00
2	In State Government Securities	0.00	0.00
3	Other approved Securities	0.00	0.00
4	Shares	0.00	0.00
5	Debentures and Bonds	0.00	0.00
6	Others	0.00	0.00
	TOTAL	**0.00**	**0.00**

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SCHEDULE - 7 : Current Assets

[Amount in ₹]

Particulars	Current Year	Previous Year
1. Stock:		
a) Stores and Spares	0.00	0.00
b) Loose Tools	0.00	0.00
c) Publications	0.00	0.00
d) Laboratory chemicals, consumables and glass ware	0.00	0.00
e) Building Material	0.00	0.00
f) Electrical Material	0.00	0.00
g) Stationery	0.00	0.00
h) Water supply material	0.00	0.00
2. Sundry Debtors:		
a) Debts Outstanding for a period exceeding six months	0.00	0.00
b) Others	0.00	0.00
3. Cash and Bank Balances		
a) With Scheduled Banks:		
▪ In Current Accounts	122280855.11	397991659.00
▪ In term deposit Accounts	1023848616.00	108001726.00
▪ In Savings Accounts	333946188.02	201080116.00
b) With non-Scheduled Banks:		
▪ In term deposit Accounts	0.00	0.00
▪ In Savings Accounts	0.00	0.00
c) Cash in hand:		173706.00
4. Post Office- Savings Accounts	0.00	0.00
TOTAL	**1480075659.13**	**707247207.00**

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SCHEDULE - 8 : Loans, Advances & Deposits

[Amount in ₹]

Particulars	Current Year	Previous Year
1. Advances to employees: (Non-interest bearing)		
a) Salary	0.00	0.00
b) Festival	0.00	0.00
c) Medical Advance	0.00	0.00
d) Other - PDA Advance	571802.93	686585.00
e) Other - LTC Advance	17000.00	42770.00
2. Long Term Advances to employees: (Interest bearing)		
a) Vehicle loan	0.00	0.00
b) Home loan	0.00	0.00
c) Others (to be specified)	0.00	0.00
3. Advances and other amounts recoverable in cash or in kind or for value to be received:		
a) On Capital Account	13321052.10	7309857.00
b) To Suppliers	0.00	0.00
c) Others - Travelling Advance	0.00	0.00
d) Others - Temporary Advance	0.00	2381468.00
e) Advance against Rent	0.00	2820978.00
f) Advance against Projects	0.00	0.00
4. Prepaid Expenses		
a) Insurance	0.00	0.00
b) Other expenses -Leased Line Charges	198540.00	198540.00
5. Deposits		
a) Telephone	0.00	0.00
b) Lease Rent	0.00	0.00
c) Electricity	0.00	0.00
d) AICTE, if applicable	0.00	0.00
f) Others	2779947.00	1434940.00
6. Income Accrued:		
a) On Investments from Earmarked/ Endowment Funds	0.00	0.00
b) On Investments-Others	0.00	0.00
c) On Loans and Advances	0.00	0.00
d) Others (includes income due unrealized) (Term Deposits)	5592909.00	2290887.00
7. Other - Current assets receivable from UGC/sponsored projects		
a) Debit balances in Sponsored Projects	0.00	0.00
b) Debit balances in Sponsored Fellowships & Scholarships	0.00	0.00
c) Grants Receivable	0.00	716500000.00
d) Other receivables from UGC	0.00	0.00
e) Caution Money - B Tech	9000.00	0.00
f) CCMT 2017	300.00	0.00
g) CCMT Admission Expenses 2016	25361.00	0.00
8. Claims Receivable	0.00	0.00
▪ Sundry Receivables	2437533.00	2437533.00
TOTAL	**24953445.03**	**736103558.00**

Note:

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

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SCHEDULE - 9 : Academic Receipts

[Amount in ₹]

	Particulars	Current Year	Previous Year
A.	**FEES FROM STUDENTS**		
A.	**Academic**		
1	Admission Fee	0.00	0.00
2	Enrollment and Registration Fee	1100400.00	1034011.00
3	Application Fee	97652.00	1321050.00
4	Summer Term Course Fee	88000.00	657000.00
5	Laboratory and Internet Fee	3428000.00	3577000.00
6	Library Fee	838200.00	536400.00
7	Provisional Certificate Fee	222900.00	31100.00
8	Student Activity Fee	2609500.00	2677500.00
9	Book Purchase	0.00	0.00
10	Student Welfare Fund	0.00	0.00
11	CCMT/CSAB Fee	3614200.00	0.00
12	Tuition Fees	7762822.50	0.00
	Total (A)	**19761674.50**	**9834061.00**
B.	**Examinations**		
1	Examination Fee and Grade Fee	1447134.00	1127050.00
	Total (B)	**1447134.00**	**1127050.00**
C.	**Other Fees**		
1	Identity Card Fee	34650.00	46650.00
2	Hostel Admission Fee	20000.00	102000.00
3	Fine	42000.00	244712.00
4	Transportation Fee	1155500.00	0.00
5	Thesis Submission Fee	150000.00	0.00
	Total (C)	**1402150.00**	**393362.00**
D.	**Sale of Publications**		
1.	Sale of Admission forms	0.00	0.00
2.	Sale of syllabus and Question Paper, etc.	0.00	0.00
3.	Sale of prospectus including admission forms	0.00	0.00
	Total (D)	**0.00**	**0.00**
E.	**Other Academic Receipts**		
1.	Registration fee for workshops, programmes	0.00	0.00
2.	Registration fees (Academic Staff College)	0.00	0.00
	Total (E)	**0.00**	**0.00**
	Grand Total (A+B+C+D+E)	**22610958.50**	**11354473.00**

Note:

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

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SCHEDULE - 10 : Grants / Subsidies (Irrevocable Grants Received)

[Amount in ₹]

Particulars	Recurring	Capital	Salary	Total	Previous Year Total
	Govt. of India	Govt. of India	Govt. of India		
Balance B/F	48730148.69	1001263274.06	57967360.25	1107960783.00	196388544.00
Add: Receipts during the year	224300000.00	537800000.00	139179000.00	901279000.00	1305575000.00
Total	**273030148.69**	**1539063274.06**	**197146360.25**	**2009239783.00**	**1501963544.00**
Less: Refund to UGC Balance	0.00	0.00	0.00	0.00	0.00
Less: Utilised for Capital expenditure (A)	0.00	528503902.00	0.00	528503902.00	527338126.00
Balance	**273030148.69**	**1010559372.06**	**197146360.25**	**1480735881.00**	**974625418.00**
Less: Utilized for Revenue Expenditure (B)- Amount transferred to Income & Expenditure Account	190786978.22	0.00	179787719.92	370574698.14	452650700.00
Balance C/F (C)	**82243170.47**	**1010559372.06**	**17358640.33**	**1110161182.86**	**521974718.00**

A. Appears as addition to Corpus/Capital Fund (Schedule-1)as well as additions to Fixed Assets during the year.

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

C. (I) Appears under Current Liabilities-Unspent Grant in the Balance Sheet and will become the opening balance next year (Schedule 3).

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

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SCHEDULE - 11 : Income from Investments

[Amount in ₹]

Particulars	Earmarked / Endowment Funds		Other Investments	
	Current Year	Previous Year	Current Year	Previous Year
1. Interest				
a. On Government Securities	0.00	0.00	0.00	0.00
b. Other Bonds/Debentures	0.00	0.00	0.00	0.00
2. Interest on Term Deposits	0.00	0.00	29181245.00	10038318.00
3. Income accrued but not due on Term Deposits/Interest bearing advances to employees	0.00	0.00		1720551.00
4. Interest on Savings Bank Accounts	0.00	0.00	0.00	0.00
5. Others (Specify)	0.00	0.00	0.00	0.00
Total	**0.00**	**0.00**	**29181245.00**	**11758869.00**
Transferred to Earmarked/Endowment Funds	0.00	0.00		
Balance	**0.00**	**0.00**		

Note:

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

SCHEDULE - 12 : Investments – Others

Particulars	Current Year	Previous Year
1. On Savings Accounts with scheduled banks	252780.00	252649.00
2. On Loans		
a. Employees/Staff	0.00	0.00
b. Others	0.00	0.00
3. On Debtors and Other Receivables	0.00	0.00
Total	**252780.00**	**252649.00**

Note:

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

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SCHEDULE - 13 : Other Income

[Amount in ₹]

	Current Year	Previous Year
A. Income from Land & Buildings		
1. Hostel Seat Rent	6717800.00	6234091.00
2. License fee		8045.00
3. Hostel Electricity and Water Charges	1609000.00	1818000.00
4. Hostel Establishment Fee	2439000.00	2542500.00
5. Electricity charges recovered	0.00	0.00
6. Water charges recovered	0.00	0.00
7. House Rent - Staff	0.00	0.00
Total	**10765800.00**	**10602636.00**
B. Sale of Institute's publications	0.00	0.00
C. Income from holding events		
1. Gross Receipts from annual function/ sports carnival	0.00	0.00
Less: Direct expenditure incurred on the annual function/ sports carnival	0.00	0.00
2. Gross Receipts from fetes	0.00	0.00
Less: Direct expenditure incurred on the fetes	0.00	0.00
3. Gross Receipts for educational tours	0.00	0.00
Less: Direct expenditure incurred on the tours	0.00	0.00
4. Overhead Charges	0.00	0.00
Total	**0.00**	**0.00**
D. Others		
1. Income from consultancy	0.00	0.00
2. RTI fees	108.00	672.00
3. Income from Royalty	0.00	0.00
4. Sale of application form (recruitment)	0.00	0.00
5. Misc. receipts (Sale of tender form)	0.00	0.00
6. Profit on Sale/disposal of Assets	0.00	0.00
a) Owned assets	0.00	0.00
b) Assets received free of cost	0.00	0.00
7. Grants/Donations from Institutions, Welfare Bodies and International Organizations	0.00	0.00
8. Others		
a) Miscellaneous	26336.68	5000.00
b) External Scholarship	0.00	0.00
c) Liquidated Damages	0.00	0.00
Total	**26444.68**	**5672.00**
Grand Total (A+B+C+D)	**10792244.68**	**10608308.00**

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SCHEDULE - 14 : Prior Period Income

[Amount in ₹]

Particulars	Current Year	Previous Year
1. Academic Receipts	78000.00	0.00
2. Income from Investments	0.00	0.00
3. Interest earned	909673.00	0.00
4. Other Income	0.00	0.00
Total	**987673.00**	**0.00**

SCHEDULE - 15 : Staff Payments & Benefits (Establishment Expenses)

[Amount in ₹]

	Current Year			Previous Year		
	Revenue	Capital	Total	Revenue	Capital	Total
a) Salaries and Wages	172973147.00	0.00	172973147.00	201793373.00	0.00	201793373.00
b) Allowances and Bonus	1258225.00	0.00	1258225.00	0.00	0.00	0.00
c) Contribution to Provident Fund	0.00	0.00	0.00	0.00	0.00	0.00
d) Contribution to Other Fund (specify)	0.00	0.00	0.00	0.00	0.00	0.00
e) Staff Welfare Expenses	0.00	0.00	0.00	0.00	0.00	0.00
f) Retirement and Terminal Benefits	21617011.00	0.00	21617011.00	18441049.00	0.00	18441049.00
g) LTC facility	5814259.00	0.00	5814259.00	1652888.00	0.00	1652888.00
h) Medical facility		0.00	0.00	0.00	0.00	0.00
i) Children Education Allowance	0.00	0.00	0.00	0.00	0.00	0.00
j) Honorarium	766357.92	0.00	766357.92	0.00	0.00	0.00
k) Gratuity (Provision)	-6642925.00	0.00	-6642925.00	6147542.00	0.00	6147542.00
l) Others - Medical Expenses	1941626.00	0.00	1941626.00	1398344.00	0.00	1398344.00
TOTAL	**197727700.92**	**0.00**	**197727700.92**	**229433196.00**	**0.00**	**229433196.00**

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SCHEDULE - 16 : Academic Expenses

[Amount in ₹]

	Current Year			Previous Year		
	Revenue	Capital	Total	Revenue	Capital	Total
a) Laboratory expenses	0.00	0.00	0.00	0.00	0.00	0.00
b) Field work/ Participation in Conferences	0.00	0.00	0.00	0.00	0.00	0.00
c) Expenses on Seminars/Workshops	24781.00	0.00	24781.00	55019.00	0.00	55019.00
d) Payment to visiting faculty	0.00	0.00	0.00	46500.00	0.00	46500.00
e) Examination	0.00	0.00	0.00	0.00	0.00	0.00
f) Student Welfare expenses	0.00	0.00	0.00	0.00	0.00	0.00
g) Admission expenses	0.00	0.00	0.00	0.00	0.00	0.00
h) Convocation expenses	788054.00	0.00	788054.00	1795477.00	0.00	1795477.00
i) Publications	0.00	0.00	0.00	0.00	0.00	0.00
j) Stipend/means-cum-merit scholarship	41596916.00	0.00	41596916.00	43953100.00	0.00	43953100.00
k) Subscription Expenses	0.00	0.00	0.00	0.00	0.00	0.00
l) Others						
i) Recurring Contingency	52219.00	0.00	52219.00	4001451.00	0.00	4001451.00
ii) Students Activities	510215.00	0.00	510215.00	2104161.00	0.00	2104161.00
iii) Other Academic Activities	103744.00	0.00	103744.00	4463690.00	0.00	4463690.00
iv) Consumables	807548.00	0.00	807548.00	232580.00	0.00	232580.00
v) Startup Project	45379.00	0.00	45379.00	3780.00	0.00	3780.00
vi) Medical Expenses - Students	76787.00	0.00	76787.00			
TOTAL	**44005643.00**	**0.00**	**44005643.00**	**56655758.00**	**0.00**	**56655758.00**

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SCHEDULE - 17 : Administrative and General Expenses

[Amount in ₹]

	Current Year			Previous Year		
	Revenue	Capital	Total	Revenue	Capital	Total
A. Infrastructure						
a) Electricity and power	4566665.00	0.00	4566665.00	5430349.00	0.00	5430349.00
b) Water charges	803240.00	0.00	803240.00	545480.00	0.00	545480.00
c) Insurance	0.00	0.00	0.00	0.00	0.00	0.00
d) Rent, Rates and Taxes (including property tax)	44820468.00	0.00	44820468.00	41292898.00	0.00	41292898.00
Total (A)	**50190373.00**	**0.00**	**50190373.00**	**47268727.00**	**0.00**	**47268727.00**
B. Communication						
e) Communication and Transportation	1981415.00	0.00	1981415.00	0.00	0.00	0.00
f) Telephone, Fax and Internet Charges	603575.00	0.00	603575.00	1290652.00	0.00	1290652.00
Total (B)	**2584990.00**	**0.00**	**2584990.00**	**1290652.00**	**0.00**	**1290652.00**
C. Others						
g) Printing and Stationery (consumption)	534596.00	0.00	534596.00	0.00	0.00	0.00
h) Travelling and Conveyance Expenses/TA/DA	214240.00	0.00	214240.00	1056149.00	0.00	1056149.00
i) Meeting Expenses	151285.00	0.00	151285.00	0.00	0.00	0.00
j) Auditors Remuneration	382500.00	0.00	382500.00	300000.00	0.00	300000.00
k) Professional Charges	385718.00	0.00	385718.00	20000.00	0.00	20000.00
l) Advertisement and Publicity	286827.00	0.00	286827.00	0.00	0.00	0.00
m) Magazines & Journals	1724.00	0.00	1724.00	0.00	0.00	0.00
n) Others (as per details below)						
▪ Contingencies	292050.00	0.00	292050.00	7473319.00	0.00	7473319.00
▪ Recruitment Expenses	10736.00	0.00	10736.00	1551310.00	0.00	1551310.00
▪ Miscellaneous Expenses	269590.00	0.00	269590.00	1589519.00	0.00	1589519.00
▪ Institute Day expenses (Annual Day)	24500.00	0.00	24500.00	0.00	0.00	0.00
▪ Recuuring expenses for departments	458625.00	0.00	458625.00	0.00	0.00	0.00
▪ Institute Overhead	38999.00		38999.00			
Total (C)	**3051390.00**	**0.00**	**3051390.00**	**11990297.00**	**0.00**	**11990297.00**
TOTAL (A+B+C)	**55826753.00**	**0.00**	**55826753.00**	**60549676.00**	**0.00**	**60549676.00**

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SCHEDULE - 18 : Transportation Expenses

[Amount in ₹]

Particulars	Current Year			Previous Year		
	Revenue	Capital	Total	Revenue	Capital	Total
1. Vehicles (owned by Institution)						
a) Running expenses	125063.00	0.00	125063.00	147353.00	0.00	147353.00
b) Repairs & maintenance		0.00	0.00	0.00	0.00	0.00
c) Insurance expenses		0.00	0.00	0.00	0.00	0.00
2. Vehicles taken on rent/lease						
a) Rent/lease expenses	4006779.00	0.00	4006779.00	9250781.00	0.00	9250781.00
3. Vehicle (Taxi) hiring expenses	0.00	0.00	0.00	0.00	0.00	0.00
Total	**4131842.00**	**0.00**	**4131842.00**	**9398134.00**	**0.00**	**9398134.00**

SCHEDULE - 19 : Repairs & Maintenance

[Amount in ₹]

Sl. No.	Particulars	Current Year			Previous Year		
		Revenue	Capital	Total	Revenue	Capital	Total
a)	Buildings	0.00	0.00	0.00	0.00	0.00	0.00
b)	Furniture & Fixtures	0.00	0.00	0.00	0.00	0.00	0.00
c)	Plant & Machinery	0.00	0.00	0.00	0.00	0.00	0.00
d)	Office Equipment	0.00	0.00	0.00	0.00	0.00	0.00
e)	Computers	0.00	0.00	0.00	0.00	0.00	0.00
f)	Laboratory & Scientific equipment	0.00	0.00	0.00	0.00	0.00	0.00
g)	Audio Visual equipment	0.00	0.00	0.00	0.00	0.00	0.00
h)	Cleaning Material & Services	0.00	0.00	0.00	0.00	0.00	0.00
i)	Book binding charges	0.00	0.00	0.00	0.00	0.00	0.00
j)	Gardening	0.00	0.00	0.00	0.00	0.00	0.00
k)	Estate Maintenance	0.00	0.00	0.00	0.00	0.00	0.00
l)	Others - Security and Cleaning	57011253.00	0.00	57011253.00	50306676.00	0.00	50306676.00
m)	Others - Repairs and Maintenance	10636693.00	0.00	10636693.00	13491461.00	0.00	13491461.00
	Total	**67647946.00**	**0.00**	**67647946.00**	**63798137.00**	**0.00**	**63798137.00**

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SCHEDULE - 20 : Finance Costs

[Amount in ₹]

Particulars	Current Year			Previous Year		
	Revenue	Capital	Total	Revenue	Capital	Total
a) Bank charges	23117.66	0.00	23117.66	22306.00	0.00	22306.00
b) Others (specify)	0.00	0.00	0.00	0.00	0.00	0.00
Total	**23117.66**	**0.00**	**23117.66**	**22306.00**	**0.00**	**22306.00**

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	0.00	0.00	0.00	0.00	0.00	0.00
b) Irrecoverable Balances Written - off	0.00	0.00	0.00	0.00	0.00	0.00
c) Grants/Subsidies to other institutions/organizations	0.00	0.00	0.00	0.00	0.00	0.00
d) Others (specify)	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

SCHEDULE - 22 : Prior Period Expenses

[Amount in ₹]

Sl. No.	Particulars	Current Year			Previous Year		
		Revenue	Capital	Total	Revenue	Capital	Total
1.	Establishment expenses	0.00	0.00	0.00		0.00	0.00
2.	Academic expenses	0.00	0.00	0.00	0.00	0.00	0.00
3.	Administrative expenses	256920.00	0.00	256920.00	-30617.00	0.00	-30617.00
4.	Transportation expenses	0.00	0.00	0.00	0.00	0.00	0.00
5.	Repairs & Maintenance	0.00	0.00	0.00		0.00	0.00
6.	Communication and Transport	0.00	0.00	0.00	0.00	0.00	0.00
7.	Depreciation- As per Schedule 4	2400.00	0.00	954775.56	1958560.00	0.00	1958560.00
	Total	**259320.00**	**0.00**	**1211695.56**	**1927943.00**	**0.00**	**1927943.00**

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SCHEDULE - 23 : Significant Accounting Policies

1. Basis for Preparation of Accounts

The accounts are prepared under the Historical Cost Convention unless otherwise stated and generally on the Accrual method of accounting.

2. Revenue Recognition

2.1 Fees from Students (except Tuition Fees), Sale of Admission Forms, Royalty and Interest on Savings Bank account are accounted on cash basis. Tuition Fees collected separately for each semester is accounted on accrual basis.

2.2 Income from Land, Buildings and Other Property and Interest on Investments are accounted on accrual basis.

3. Fixed Assets and Depreciation

3.1 Fixed assets are stated at cost of acquisition including inward freight, duties and taxes and incidental and direct expenses related to acquisition, installation and commissioning.

3.2 Gifted / Donated assets are valued at the declared value where available; if not available, the value is estimated based on the present market value adjusted with reference to the physical condition of the asset. They are set-up by credit to Capital Fund and merged with the Fixed Assets of the Institution. Depreciation is charged at the rates applicable to the respective assets.

3.3 Books received as gifts, are valued at selling prices printed on the books. Where they are not printed, the value is based on assessment.

3.4 Fixed assets are valued at cost less accumulated depreciation. Depreciation on fixed assets is provided on Straight line method, at the following rates:

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

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

3.6 Where an asset is fully depreciated, it will be carried at a residual value of Re.1 in the Balance Sheet and will not be further depreciated.

3.7 Assets created out of Earmarked Funds and funds of Sponsored Projects, where the ownership of such assets vests in the Institution, are setup by credit to Capital Fund and merged with the Fixed Assets of the Institution. Depreciation is charged at the rates applicable to the respective assets. Assets created out of Sponsored Project funds, where the ownership is retained by the sponsors but held and used by the Institution are separately disclosed in the Notes on Accounts.

3.8 Assets, the individual value of each of which is Rs. 2000 or less (except Library Books) are treated as Small Value Assets, 100% depreciation is provided in respect of such assets at the time of their acquisition. However physical accounting and control are continued by the holders of such assets.

4. Intangible Assets:

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

4.1 Patents: The expenditure incurred from time- to time (application fees, legal expenses etc.) for obtaining Patents is temporarily Capitalised and shown as part of Intangible Assets in Balance Sheet. If application for patents is rejected, the cumulative expenditure incurred on the particular patents is written off to the Income & Expenditure Account in the year the application is rejected.

The expenditure on Patents granted is written off over a life of 9 years on a conservative basis.

4.2 Electronic Journals (E- Journals) are separated from Library Books in view of the limited benefit that could be derived from the on-line access provided. E-Journals are not in a tangible form, but temporarily Capitalized and in view of the magnitude of the expenditure and the benefits derived in terms of perpetual knowledge acquired by the Academic Departments, Teachers and Research Scholars; Depreciation is provide in respect of E-Journals at a higher rate of 40% as against depreciation of 10% provided in respect of Library Books.

4.3 Expenditure on acquisition of software has been separated from computers and peripherals, as apart from being intangible assets, the rate of obsolescence in respect of these is very high. Depreciation is provided in respect of software at a higher rate of 40% as against depreciation of 20% provided in respect of Computers & Peripherals.

5. Retirement Benefits

Retirement benefits i.e., gratuity and leave encashment are provided on the basis of actuarial valuation. Capitalized Value of pension and gratuity received from previous employers of the Institution's employees, who have been absorbed in the Institution, is credited to the respective Provision Accounts. Pension contribution received in respect of employees on deputation is also credited to the Provision for Pension Account. The Actual payments of Pension, Gratuity and Leave encashment are debited in the Accounts to the respective provisions. Other retirement benefits viz. Deposit Linked Insurance, Contribution to New Pension Scheme, Medical reimbursement to retired employees and Travel to Home Town on retirement is accounted on accrual basis (actual payments plus outstanding bills at the end of the year).

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SCHEDULE - 23 : Significant Accounting Policies

6. Investments

a. Long term investments are carried at their cost or face value whichever is lower. However any permanent diminution in their value as on the date of the Balance Sheet is provided for.

b. Short term investments are carried at their cost or market value (if quoted) whichever is lower.

7. Earmarked/Endowment Funds

The following long terms funds are earmarked for specific purposes. Each of the funds has a separate bank account. Those with large balances also have investments in Government Securities, Debentures and Bonds and Term Deposits with Banks. The assets created out of Earmarked Funds where the ownership Vests in the Institution, are merged with the assets of the Institution by crediting an equal amount to the Capital Fund. The balance in the respective funds is carried forward and is represented on the assets side by the balance at Bank, Investments and accrued interest.

7.1 Corpus Fund was established in 2012. Institution's share of Consultancy fees and contributions from Research Projects are treated as additions to Corpus Fund. Income from investments of the fund is added to the Fund. The Corpus Fund is utilized for both Revenue and Capital expenditure based on the guidelines issued by the Board of Governor of the Institution from time to time. The assets created out of the Corpus Fund are merged with the assets of the Institution by crediting an equal amount to the Capital Fund. The balance in the Corpus Fund which is carried forward is represented by the balance in Bank Accounts, Investment in Fixed Deposits and Accrued Interest on Investment.

8. Government and GOI Grants

8.1 Government Grants are accounted on realization basis. However, where a sanction for release of grant pertaining to the financial year is received before 31 '' March and the grant is actually received in the next financial year, the grant is accounted on accrual basis and an equal amount is shown as recoverable from the Grantor.

8.2 To the extent utilized towards Capital expenditure, (on accrual basis) government grants and grants from GOI are transferred to the Capital Fund.

8.3 Government and GOI grants for meeting Revenue Expenditure (on accrual basis) are treated, to the extent utilized, as income of the year in which they are realized.

8.4 Unutilized grants (including advances paid out of such grants) are carried forward and exhibited as a liability in the Balance Sheet.

9. Investments of Earmarked Funds and Interest Income Accrued on Such Investments:

To the extent not immediately required for expenditure, the amounts available against such funds are invested in approved Securities & Bonds or deposited for fixed term with Banks, leaving the balance in Savings Bank Accounts.

Interest received, interest accrued and due and interest accrued but not due on such investments are added to the respective funds and not treated as income of the Institution.

10. SPONSORED PROJECTS

10.1 In respect of ongoing Sponsored Projects, the amounts received from sponsors are credited to the head "Current Liabilities and Provisions -Current Liabilities -Other Liabilities -Receipts against ongoing sponsored projects." As and when expenditure is incurred /advances are paid against such projects, or the concerned project account is debited with allocated overhead charges, the liability account is debited. Overhead charges recovered from projects are credited to the corpus fund in accordance with the decision of the Board of Governors and Finance Committee of the Institute.

10.2 In addition to the Earmarked Fund for the Junior Research Fellowships funded by the Institute Grants Commission, Fellowships and Scholarships are also sponsored by various organizations. These are accounted in the same way as Sponsored Projects except that the expenditure generally is only on disbursement of Fellowships and Scholarships, which may include allowances for contingent expenditure by the Fellows and scholars.

10.3 The Institution itself also awards Fellowships and Scholarships, which are accounted as Academic expenses.

11. INCOME TAX

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

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SCHEDULE - 24 : Contingent Liabilities and Notes to Accounts

1. Contingent Liabilitiues:

1.1 As on 31st March, 2021, 1 numbers of Court Case filed against the Institution, by former / present employees, tenants and contractors and arbitration cases with contractors, were pending for decisions. The suits filed by employees were establishment - related viz promotions, increments, pay scales, termination etc. The quantum of the claims is not ascertainable. The Claim in the suits and arbitration cases by contractors amounted To Rs. 5.06 lakhs (Previous Year Rs. NIL)

1.2. Letters of credit established by the Bank on behalf of the Institution and outstanding on 31.03.21 Rs.NIL

1.3 Disputed demands in respect of Income Tax Rs. NIL (Previous Year Rs NIL).

2. Fixed Assets:

2.1 Additions in the year to Fixed Assets in Schedule 4 include Assets purchased out of Capital Grants Government of India (OS- 35)The Assets have been created by establishing Credit to Capital Fund to the tune of equivalent fund.

2.2 Fixed assets as set out in Schedule 4 do not include assets purchased out of funds of sponsored projects, held and used by the Institution, as project contracts include stipulations that all such assets purchased out of projects funds will remain the property of the sponsors.

The details of such assets are:-

Assets	Rate of Depreciation	Original cost as on 1.4.2020	Additions during the year	Total	Notional Depreciation on opening balance	Notional Depreciation on additions during the year	Total Notional Depreciation	Total Book value on 31. 3. 2021
		A	B	C=A+B	D	E	F=D+E	G=C-F
Tangible Assets								
Scientific Equipment	8%	50,06,912.00	-	50,06,912.00	4,00,552.96	-	4,00,552.96	46,06,359.04
Computer	20%	8,650.00	-	8,650.00	1,730.00	-	1,730.00	6,920.00
Furniture	7.50%	10,830.00	-	10,830.00	812.25	-	812.25	10,017.75
Total		**50,26,392.00**	**-**	**50,26,392.00**	**4,03,095.21**	**-**	**4,03,095.21**	**46,23,296.79**

3. Patents:

An accounting policy in respect of expenditure on Patents is in place as approved by the Board of Governors of the Institute. The accounting for patents have been done as per the policy and depreciation provided for as per rates prescribed.

4. Deposit Liabilities:

The amount outstanding as Earnest Money Deposit & Security Deposits amounts to Rs.11950784.05 as on 31.03.2021.

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SCHEDULE - 24 : Contingent Liabilities and Notes to Accounts

5. Expenditure in Foreign Currency:

a. Travel– Nil

b. Others – 4.06 lakhs

6. Suspense Account

As on 31st March,2021 Rs.330947.28/- (Previous Year – 330947.28) declared as Suspense Account in Schedule 3: Current liabilities & Provisions.

7. Current Assets, Loans, Advances and Deposits

In the opinion of the Management, the current assets, Loans, Advances and Deposits have a value on realization in the ordinary course, equal at least to the aggregate amount shown in the Balance Sheet.

8. The details of balances in Saving Bank Accounts, Current Accounts and Fixed Deposit Accounts with Banks are enclosed as attachment 'D' to the Schedule of Current Assets.

9. Previous year's figures have been regrouped and re-classified wherever necessary.

10. Figures in the Final accounts have been rounded off to the nearest rupee.

11. Schedules 1 to 22 and underlying annexures are annexed to and form an integral part of the Balance Sheet at 31stMarch, 2021 and the Income & Expenditure account for the year ended on that date.

12. Current Liabilities:

Tuition Fee received in advance for the month of April 2021 to June 2021 has been shown as "Fees received in Advance-Tuition Fee" under Current liabilities in Schedule - 9. All other Academic Receipts have been booked on cash basis.

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ANNEXURE A : Details of EMD & Security Deposit as on 31-03-2021

Sl. No.	Name of the Firm / Company	Amount
1.	Earnest Money Deposit	4555815.00
2.	Security Deposit	7394969.05
	Total	**11950784.05**

ANNEXURE B : Details of Statutory Liabilities as on 31-03-2021

Sl.No.	Particulars	Amount
1	TDS - Contracts	22557.48
2	VAT	27967.00
3	TDS - Pay and Allowances	1239844.00
4	Professional Tax	583050.00
5	Labour Cess	479768.47
6	GST	166582.30
	Total	**2519769.25**

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ANNEXURE C : Details of Other Liabilities as on 31-03-2021

Sl. No.	Particulars	Amount
1	Audit Remunaration Payable	900000.00
2	B. Tech Remuneration	42000.00
3	Book Purchase	4094000.00
4	CCMT / CSAB Admission Expenses	39873.00
5	Communication and Trasportation Payable	145063.00
6	CSAB Administrative Charges	465642.00
7	Electricity Charges Payable	2424937.00
8	Excess Fee Refundable	1024408.00
9	External Agency Funds- For exams, conference, seminar, etc.	1057890.07
10	Hostel Mess Fees	26299059.00
11	NIT Mess Account	1138500.00
12	NMEICT	14166.00
13	NSDL Service Charges	22006.00
14	Other Current Liabilities	57483850.00
15	PDA Advance (2018-19)	400.00
16	Rent Payable	13895232.00
17	Returned Cheques	734800.10
18	Salary Payable	1087000.00
19	Security, Cleaning Charges Payable	4539876.00
20	Stale Cheques	812738.00
21	Sundry Receipts	262760.00
22	Suspense Account	330947.28
23	SVNIT Surat	124375.00
24	Telephone Expenses Payable	25451.00
25	Temporary Advance (2016-17)	1440.00
26	Tuition Fee Refundable to SC/ST	8958342.00
27	Water Charges Payable	136020.00
	Total	**126060775.45**

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ANNEXURE D : Details of Balances in Savings Bank / Current / Fixed Deposit Accounts With Banks as on 31-03-2021

Sl.No.	Particulars	Purpose	Account No.	Amount
	Current Bank Accounts			
	Bank of India	Project		113553.30
	State Bank of India	Main Account	32047142365	122167301.81
		Total (A)		**122280855.11**
	Savings Bank Accounts			
	Canara Bank	General Account	1184101015456	2277940.00
	ICICI Bank	NITM Fee (IRG)	332701000053	29469802.00
	ICICI Bank	Corpus Fund	747701000081	83505532.00
	State Bank of India	SBI Collect - Fees Collection	35711256956	34915204.04
	State Bank of India	Hostel Mess Account	37768297245	27614454.49
	State Bank of India	SBI FITI	40036592826	296131.00
	State Bank of India	SBI Power Jyoti - Fees Collection	34973520929	429729.00
	State Bank of India	Recruitment	38070817950	1741603.14
	State Bank of India	Project and Consultancy	37935741794	2734015.00
	UCO Bank	Fees Account	23730110003381	5071702.95
	UCO Bank	Project - Khwairakam	23730110013106	6378.50
	UCO Bank	Project - Paresh	23730110015872	-472.36
	UCO Bank	Project - K Dutta	23730110016640	1207.00
	UCO Bank	Project- RECPTL	23730110019580	2642866.42
	UCO Bank	Project - Visvesvaraya	23730110015353	315256.69
	UCO Bank	Research and Development	23730110010280	50924838.15
	Indian Overseas Bank	General Account	05410001042010	92000000.00
	Total (B)			**333946188.02**
	Term Deposits			
	UCO Bank			16359998.00
	Canara Bank			404488618.00
	ICICI Bank			532000000.00
	Indian Overseas Bank			38000000.00
	State Bank of India			33000000.00
	Total (C)			**1023848616.00**
	Total (A+B+C)			**1480075659.13**

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Receipts and Payments Account for the Year Ended 31st March 2021

Amount in Rupees

RECEIPTS		Current Year	Previous Year	PAYMENTS		Current Year	Previous Year
I.	Opening Balance			I.	Expenses		
	a) Cash Balances	173706.00	0.00		a) Staff Payments & Benefits	200938395.92	215107618.00
	b) Bank Balance				b) Academic Expenses	47839836.00	56655758.00
	i. In Current accounts	397991659.30	96245639.00		c) Administrative Expenses	49944989.00	60549676.00
	ii. In Deposit accounts	108001726.27	85900061.00		d) Transportation Expenses	5296628.00	9398134.00
	iii. Savings accounts	201080116.00	244062633.00		e) Repairs & Maintenance	67961079.00	63798137.00
II.	Grants Received				f) Prior period expenses	0.00	-30617.00
	a) From Government of India	901279000.00	1305575000.00		g) Finance Cost	23117.66	22306.00
	b) From State Government	0.00	0.00	II.	Payments against Earmarked/ Endowment Funds	0.00	7784911.00
	c) From others	71491685.18	0.00	III.	Payments against Sponsored Projects/Schemes	2434346.24	35627652.00
				IV.	Payments against Sponsored Fellowships/Scholarships	272500.00	1879044.00
				V.	Investments and Deposits made		
III.	Academic Receipts	64277623.00	11354473.00		a) Out of Earmarked/ Endowments funds	0.00	0.00
IV.	Receipts against Earmarked/ Endowment Funds	12953800.00	36548456.00		b) Out of own funds (Investments- Others}	0.00	0.00
V.	Receipts against Sponsored Projects/Schemes	0.00	36799692.00	VI.	Term Deposits with Scheduled Banks	0.00	0.00
VI.	Receipts against sponsored Fellowships and Scholarships	0.00	1575000.00	VII.	Expenditure on Fixed Assets and Capital Works - in- Progress		
VII.	Income on Investments from				a) Fixed Assets	54472384.00	23770929.00
	a) Earmarked/Endowment funds	0.00	0.00		b) Capital Works- in- Progress	485876829.00	3000000.00
	b) Other investments	0.00	0.00	VIII.	Other Payments including statutory payments	94204152.55	0.00
VIII.	Interest received on						
	a) Bank Deposits	252780.00	10038318.00	IX.	Refunds of Grants	0.00	0.00
	b) Loans and Advances			X.	Deposits and Advances	5591190.00	719015543.00
	c) Savings Bank Accounts	0.00	729333.00	XI.	Other Payments	15600915.00	0.00
	d) Term deposits	3309799.00					
IX.	Investments encashed	18933530.00	0.00	XII.	Closing balances		
X.	Term Deposits with Scheduled Banks encashed	0.00	0.00		a) Cash in hand	0.00	173706.00
XI.	Other income (including Prior Period Income)	1185917.68	10608308.00		b) Bank balances		
XII.	Deposits and Advances	723034369.07	64389387.00		In Current Accounts	122280855.11	397991659.30
XIII.	Miscellaneous Receipts including Statutory Receipts	0.00	0.00		In Savings Accounts	333946188.02	201080116.27
XIV	Any Other Receipts	6484738.00	0.00		In Deposit Accounts	1023848616.00	108001726.00
XV	Provisions	81572.00					
	TOTAL	**2510532021.50**	**1903826300.00**		**TOTAL**	**2510532021.50**	**1903826298.57**

For NIT Meghalaya

Registrar Director

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