Annual Report 2019-2020

Part - I



National Institute of Technology Nagaland

Chumukedima, Dimapur, Nagaland 797 103

1. OVERVIEW

1.1 Introduction

National Institute of Technology Nagaland, a higher education technical *Institute of National importance* is located at Chumukedima (Dimapur), Nagaland. It is one among the ten newly approved NITs of Government of India in the year 2009 under the 11th Five Year Plan. This Institute was started initially to function from the academic year 2010, under the mentorship of NIT Silchar in Assam for two years. At the end of the second year, as per schedule, the first academic session of this Institute started functioning from September 2012 at its permanent campus in Chumukedima, Dimapur.

The Institute is located at a picturesque hilly terrain which was identified for as a permanent campus for the Institute during January 2012. This place has a healthy climate with moderate temperature ranging from 15°C to 33°C and an average annual rainfall of 300 mm. The foundation stone for this Institute was laid by the then Hon'ble Minister of Human Resource Development (and Minister of Communications and Information Technology), Government of India on 13th October, 2012.

This Academic Annual Report is our own report card, providing a transparent measurement of how well we are serving our students' needs and building our continuous improvement.

1.2 Access to the permanent campus

The campus is well-connected by air, train and road. Dimapur Airport is about 14 KM and the nearest Railway Station is about 18 KM from the campus. Convenient air services are available to and from Kolkata. Regular train services are available from Guwahati to Dimapur. National Highway 29 (NH 29) runs through Chumukedima connecting Guwahati in the west, at a distance of about 300 KM. The capital city Kohima in the south east is at a distance of 60 KM. Day and night bus/taxi services are available to these cities from Chumukedima.

1.3 Permanent Campus

The land of 291 acres (which was originally allotted for the Office of the Deputy Commissioner) was handed over by the Government of Nagaland to NIT Nagaland with few buildings for the establishment of its permanent campus. The infrastructure for class rooms, hostel and dining blocks for Boys and Girls were built initially with bamboo structures and thereafter with pre-fabricated structures. Academic and administrative activities were conducted from the existing buildings with necessary refurbishing. Pre-fabricated structures for new class room blocks, laboratories and hostels are complete. The Institute's administration goal is to make NIT Nagaland a 'Green Campus' preventing deforestation, hunting and fishing within its jurisdiction and also actively engaging in 'Tree Plantation' every year on the World Environmental Day i.e. on 5th of June.

1.4 Vision and Mission

Education must evolve to help students succeed in the 21st century economy and NIT Nagaland is trying its best to fulfill its vision by being at the forefront of this movement. We plan to be drivers of innovation in higher education by developing adaptive methodologies that would help our students achieve their educational and professional goals.

Vision

- To advance knowledge through quality education and research
- To cultivate invention improving the human condition and to educate students for a lifetime of professional achievement, service to society and individual fulfillment – moving our world towards a more sustainable path
- To build degree programmes that directly address the shifting economic needs of a skilled workforce and the academic challenges faced by working learners

Mission

The mission is to advance knowledge and educate students in Science, Technology and other areas of scholarship that will not only best serve this region, but also the nation and the world in the 21^{st} century.

NIT Nagaland is committed to generate, disseminate and preserve knowledge and to work with others to bring this knowledge to face the nation's great challenges. NIT Nagaland is dedicated to provide its students with an education that combines rigorous academic study and the excitement of discovery with the support and intellectual stimulation of a diverse campus community.

We seek to develop in each member of the community the ability and passion to work wisely, creatively and effectively for the betterment of humankind.

NIT Nagaland shall strive continuously to:

- 1. Impart and develop the skills of the students in order to shape them as outstanding professionals with high ethical standards to solve the societal problems.
- 2. Achieve academic excellence through dedication to duty, along with team spirit, commitment to research, innovation in learning and faith in human values.
- 3. Prepare the students with the state-of-the-art technology resources to match the expectations of the industry and society.
- 4. Provide intellectually stimulating environment for the development of human potential to its fullest extent so that intellectually capable and imaginatively gifted leaders can emerge in a wide range of professions needed by the nation.
- 5. Provide scientists and technologists, who would be the leaders in research and participate in design, development and technology management of the country to meet global challenges.

1.5 Human Resources

The Institute has since received sanction for faculty and non-faculty posts as per its students' strength. However, the entire process of recruitment could not be completed due to unavailability of qualified candidates willing to serve in this remote area of the country. This problem is not unique. Most of the Centrally-funded Technical Institutes in the

North-Eastern Region are facing similar problem. This issue needs immediate attention and a resolution at the highest level. In spite of these difficulties, the Institute is fortunate enough to start its academic journey with the available human resources, infrastructural facilities etc.

1.6 Road Ahead

The Institute is trying its best to take care of the required academic activities, research work etc. with the existing faculty members, laboratories, library and IT facilities. It has also provided full-fledged hostel facilities located within the campus to all of its students. Due compassion and care is being paid to ensure that the students do not feel that they are staying away from home, which provides a congenial ambience to enable the students to continue their studies in a proper manner.

1.7 Responsibilities

The Institute has been established for imparting technical education to promote multicultural understanding in the State, where students can utilize their skills and proficiency, guiding them into prospective horizons, thereby finding a vocation in which each individual is best fit for. The nobility of the Institute has reframed the mind-set of the people of Nagaland, enabling them to rebuild a better society. NIT Nagaland has indeed raised the hopes of social welfare. Being a premier technological Institute of the State, it aims at promoting the students of Nagaland by advocating scientific and technical pursuits in a rich-resourced topography, which is an excellent measure of learning, understanding and employment.

NIT Nagaland is also responsible for accomplishing a noble task of catering to the needs of the local people and fulfilling the aspirations of the talented youths belonging to the poorest among poor, backward people residing in the remotest areas of the State. In order to ensure that the students can avail the facilities of Technical Education, the Institute has to play a bigger role while providing suitable training programme to the students at 10+2 stage in the schools of the State. The Institute is also striving hard to provide

necessary technological know-how to the local industries so that the overall pace of industrial development of the State is accelerated.

1.8 Conclusion

The Institute has been through many difficulties since its establishment in 2010; but ultimately it has won over all the challenges and is moving forward with more than 550 students on roll, and many excellent members of faculty and competent administrative staff. The Institute is also quite confident to accomplish the entrusted tasks and fulfill its dreams in near future.

2. STATUTORY BODIES

2.1 Board of Governors

The Ministry of Human Resource Development constituted the Board of Governors (BoG) vide its Letter No. F.No.27-3/2012–TS.III dated 05.10.2012. The BoG was constituted with the members as listed below (Table 2.1):

Sl. No	Name & Designation	Position
1	Shri Suparno Moitra, Chairman, Board of Governors, NIT Nagaland	Chairperson
2	Dr. S. Venugopal, Director, NIT Nagaland	Member (Ex- Officio)
3	Additional Secretary, Department of Higher Education (TE), MHRD	Member
4	Joint Secretary (F&A), Department of Higher Education (TE), MHRD	Member
5	Er. Arjun Singh, Director Technical Education, Government of Nagaland	Member
6	Er. H. Kahuto Sema, Additional Chief Engineer, Nagaland Public Works Department (NPWD), Government of Nagaland	Member
7	Dr. G. Venkatesh, Director, Sasken Communication Technologies Ltd, Bangalore	Member
8	Dr. V. Jagadeesh Kumar, Professor, Department of Electrical Engineering, IIT Madras	Member
9	Dr. Ajay S. Kalamdhad, Associate Professor, Department of Civil Engineering, IIT Guwahati	Member
10	Prof P.S. Robi, Deputy Director, IIT Guwahati Nominee of Director IIT Gwahati	Member
11	Shri. Binod Doley, Registrar, NIT Nagaland (Secretary)	Member - Secretary

Table 2.1 Members of the BoG

Shri Suparno Moitra, Former Secretary, Bengal Chamber of Commerce and Industry, Kolkata, was nominated as the second Chairman of the Board of Governors, National Institute of Technology Nagaland.

Dr. S. Venugopal is appointed as the Director of National Institute of Technology Nagaland and he assumed charge on 31st January 2018.

2.2 Finance Committee

The Finance Committee was constituted as per the NIT Act 2007, NIT (amendment) Act 2012 and the First Statutes of the NITs with the approval of the Board of Governors. The members of the Finance Committee are mentioned below in Table 2.2:

Sl. No.	Name & Designation	Position
1	Shri Suparno Moitra, Chairman, BoG NIT Nagaland	Chairman
2	Dr. S. Venugopal, Director, NIT Nagaland	Member (Ex-Officio)
	Dr. V. Jagadeesh Kumar, Professor, Department of Electrical Engineering, IIT Madras	Member
3	Joint Secretaryor His nominee, Department of Higher Education (TE), MHRD	Member
4	Financial Advisor, Department of Higher Education (TE), MHRD	Member
5	Commissioner and Secretary Higher and Technical Education, Government of Nagaland	Member
6	Shri. Binod Doley, Registrar, NIT Nagaland (Member Secretary)	Member -Secretary

 Table 2.2 Members of the Finance Committee

2.3 Building and Works Committee

The Building and Works Committee was constituted with the approval of the Board of Governors and the members are listed below in Table 2.3:

Sl. No.	Name & Designation	Position
1	Dr. S. Venugopal, Director, NIT Nagaland	Chairperson
2	Director (TE), Department of Higher Education, MHRD	Member
3	Director (Finance), Department of Higher Education, Integrated Finance Division, MHRD	Member
4	Dr. V. Jagadeesh Kumar, Professor, Department of Electrical Engineering Director, Central Electronics Centre, IIT Madras	Member
5	Dr. V. Sankaranarayanan, Former Member Secretary, Tamil Nadu State Council for Science and Technology & Former Director, Tamil Virtual University, Director (University Projects), B.S. Abdur Rahman University	Member
6	Chief Engineer, PWD (Housing), Kohima, Nagaland	Member
7	Chief Engineer, Department of Power, Kohima, Nagaland	Member
8	Associate Dean (Planning & Development), NIT Nagaland	Member
9	Shri. Binod Doley, Registrar, NIT Nagaland	Member - Secretary

Table 2.3 Members of the Building and Works Committee

2.4. Senate

As per the approval of the Board of Governors, the Senate of the Institute was constituted. The members of the Senate are mentioned below in Table 2.4:

Sl. No.	Name & Designation	Position
1	Dr. S.Venugopal, Director, NIT Nagaland	Chairperson
2	Dr. V. Sankaranarayanan, Former Member Secretary, Tamil Nadu State Council for Science and Technology, Former Director, Tamil Virtual University, Former Director, Ramanujam Computing Centre, Anna University, Director (University Projects), B. S. Abdur Rahman University	Member
3	Dr. V. Jagadeesh Kumar, Professor, Department of Electrical Engineering, IIT Madras	Member
4	Dr. S. Selvakumar, Professor, Department of Computer Science and Engineering, NIT Tiruchirappalli	Member
5	Dr. B.Venkataramani, Professor, Department of Electronics and Communication Engineering, NIT Tiruchirappalli	Member
6	Dr. N. Ammasai Gounden, Professor, Department of Electrical and Electronics Engineering, NIT Tiruchirappalli	Member
7	Dr. Rowena Robinson, Professor, Department of Humanities and Social Sciences, IIT Guwahati	Member
8	Dr. Narayana Prasad Padhy, Professor, Department of Electrical Engineering, IIT Roorkee	Member
9	Dr. S. R. Mahadeva Prasanna, Professor, Department of Electronics and Electrical Engineering, IIT Guwahati	Member
10	Dr. R.R. Bhargava, Emeritus Professor, Department of Mathematics, IIT Roorkee	Member
11	Dr. R. Kumar, Dean (Academic), NIT Nagaland	Member

 Table 2.4 Members of the Senate

12	Dr. Themrichon Tuithung, Professor and Head, Department of Computer Science and Engineering, NIT Nagaland	Member
13	Dr. Dushmanta Kumar Das, Assistant Professor and Head Department of Electrical and Electronics Engineering, NIT Nagaland	Member
14	Dr. P. Chinnamuthu, Assistant Professor and Head, Department of Electronics and Communication Engineering, NIT Nagaland	Member
15	Dr. Jyoti Prasad Borah, Assistant Professor and Head, Department of Science and Humanities, NIT Nagaland	Member
16	Shri. Nzanthung Ngullie, Assistant Professor, Department of Civil Engineering, NIT Nagaland	Member
17	Shri. Binod Doley, Registrar, NIT Nagaland (Secretary)	Member – Secretary

2.5 Meetings of The Statutory Bodies

The venue and date of various important meetings of the statutory bodies held during the financial year 2019-2020 are mentioned below in Table 2.5:

Sl. No.	Meeting	Venue	Date
1	FC and BoG	Circulation	02-05-2019
2	FC and BoG	Circulation	08-08-2019
3	12 th Meeting of Building and works committee	NIT Nagaland	12-10-2019
4	13 th Meeting of Building and works committee	NIT Nagaland	11-11-2019
5	12 th Meeting of Finance Committee	NIT Nagaland	03-09-2019
6	17 th Meeting of Board of Governors	NIT Nagaland	03-09-2019
7	18 th Meeting of Board of Governors	NIT Nagaland	14-02-2020

Table 2.5 List of Statutory Body meetings held during 2019-2020

2.6 Board of Studies

The meetings of the Board of Studies were convened during September 2018 for the B.Tech 1st year (Physics, Chemistry, Mathematics and English) and BSMS Material Science departments of the institute, in order to revise the syllabus for the UG Programmes.

2.7 Performance Analysis Committee

The Performance Analysis Committee meeting was held for various Departments at NIT Nagaland to analyze the results of the odd semester during the academic year 2018-2019 for all UG, PG and Five year Integrated Dual Degree programmes.

The Dean (Academic) submitted the End Semester Examinations Results and Tabulation Mark Register generated from the Academic Performance Information System (APIS) for the above said batches to the members and the same has been scrutinized and verified.

The question papers for all assessments and end semester examinations were also submitted to the external members for scrutiny. The members gave satisfactory note about the quality of question papers. The randomly selected answer scripts, which were evaluated by the Faculty, had also been submitted to scrutinize the evaluation process. The procedure adopted for moderation of marks in border cases had also been discussed. The members were satisfied and accorded their appreciation that everything is in-line with the academic systems as per expected standards.

3. ADMINISTRATION

3.1 Administrative Officers

Apart from the statutory posts such as Director and Registrar, the following faculty members listed in Table 3.1 are given additional responsibilities to look after various academic and administrative activities of the Institute with the approval of the Senate. Later the same had been intimated to the Board of Governors.

Sl.	Nama	Designation	
No.	1 vanie	Designation	
1	Dr. R. Kumar	Dean (Academic)	
2	Shri. Nzanthung Ngullie	Associate Dean (Planning and Development)	
3	Dr. Arambam Neelima	Associate Dean (Academic)	
4	Dr. Jay Chandra Dhar	Associate Dean (Research)	
5	Dr. Amrit Puzari	Associate Dean (Student Affairs)	
6	Dr. Dushmanta Kumar Das	HoD, Department of Electrical and Electronics Engineering	
7	Dr. Themrichon Tuithung	HoD, Department of Computer Science and Engineering	
8	Dr. P. Chinnamuthu	HoD, Department of Electronics and Communication Engineering, Faculty In-charge Purchase Section	
9	Dr. Jyoti Prasad Borah	HoD, Department of Science and Humanities	
10	Dr. Dipu Sarkar	In-Charge, Training and Placement cell	
11	Dr. Naorem Khelchand Singh	Faculty In-charge, Library, Executive Warden	
12	Dr. Jhimli Bhattacharyya	Deputy Warden (Girls Hostels)	
13	Dr. Shouvik Dey	Deputy Warden (Boys Hostels), Data Center in charge	
14	Dr. Debarun Dhar Purkayastha	Deputy Warden (Boys Hostels)	

Table 3.1 Administrative Officers

3.2 Administrative / Non-Teaching Staff

Administrative / Non-Teaching staff members of National Institute of Technology Nagaland are listed below in Table 3.2.

Sl. No.	Name	Designation
1	Shri. Binod Doley	Registrar
2	Dr. Lairenlakpam Shanta Meitei	Assistant Librarian
3	Mr. Eliyamo Kithan	Superintendent
4	Mr. Mhonthung Ngullie	Accountant
5	Ms. Arenmongla	Nurse
6	Mr. Bikash Sarma	Technical Assistant (CSE)
7	Mr. Kamal Kant Kashyap	Technical Assistant (ECE)
8	Mr. Seizalal Singson	Technical Assistant (ECE)
9	Mr. V. Mathivanan	Laboratory Assistant (CSE)
10	Mr. Yanger. A. Walling	Junior Assistant
11	Mr. Benrio Ngullie	Junior Assistant
12	Ms. Sunita Mazumder	Junior Assistant
13	Mr. Pappu Kumar Sharma	Junior Assistant
14	Mr. Sorenthung Ovung	Library Attendant
15	Ms. Meribeni Ngullie	Library Attendant
16	Mr. Neichuto Kin	Workshop Attendant
17	Ms. Siagailakle	Multitasking Staff
18	Ms. Kevisinuo Shuya	Multitasking Staff
19	Raju Basumatry	Junior Engineer

Table 3.2 Administrative / Non-teaching Staff

3.3 Administrative Structure:



Figure 3.1. Administrative Structure of NIT Nagaland

4. ACADEMIC ACTIVITIES

4.1 National Institute of Technology in Nagaland

With the coming of NIT Nagaland to Chumukedima (Dimapur), the NIT aspirants have been much benefited. The home state reservation is one of the key opportunities where many students from Nagaland may get admission to the Institution. Apart from the increase in technical manpower, development of the locality and the society is conspicuously visible with the establishment of NIT Nagaland.

4.2 Courses Offered

The Institute offers four years under graduate programmes (B.Tech.) in Electrical and Electronics Engineering, Electronics and Communication Engineering, Computer Science and Engineering, Electronics and Instrumentation Engineering, Civil Engineering and Mechanical Engineering. The Institute offers four post graduate programmes (M.Tech.) in Power Systems Engineering, Computer Science and Engineering, VLSI Systems and Communication Engineering. Institute also offers two years M. Sc. Programme in Physics and one 5 years integrated programme in Materials science.

4.3 Students Strength:

Year	CSE	ECE	EEE	EIE	Civil	Mech.	Total
2016-17	17	5	17	6	15	18	78
2017-18	24	12	24	10	28	18	116
2018-19	24	21	28	14	30	21	138
2019-20	34	28	29	23	28	26	168

 Table 4.1 Bachelor of Technology – Student Strength

Year	VLSI	Power Systems	CSE	Commn. Engr.	MSc. (Phy.)	Total
2018-19	3	7	8	3	8	29
2019-20	2	4	3	0	14	23

 Table 4.2 Master of Technology – Student Strength

Table 4.3 B.S.M.S. (Materials Science) – Student Strength

Year	B.S.M.S. (Materials Science)	Total
2016-17	04	04

4.4 Ph.D. Degree Programme

To provide facilities for research activities and to encourage the staff members to pursue research, Ph.D. programme was introduced during the academic year 2012-2013 with special regulations framed in the Departments of Electrical and Electronics Engineering, Electronics and Communication Engineering, Computer Science and Engineering, Electronics and Instrumentation Engineering, Mechanical Engineering, Management Studies, Physics, Chemistry, Mathematics and Humanities and Social Sciences. With the approval of the Senate, research scholars had been admitted into all the departments through regular interview. There are 140 research scholars pursuing their research in the Institute as Full time / Part time (Internal) / Part time (External) candidates. The Ph.D. programme is governed by the Special regulations framed to suit the requirements of the newly established Institute. The following table (Table 4.4) shows the number of candidates admitted (department-wise) till the academic year 2019 – 2020. Eleven candidates were awarded PhD degree in the academic year 2019-20.

Sl. No	Department	No. of scholars admitted
1	Electrical and Electronics Engineering	08
2	Electronics and Communication Engineering	04
3	Computer Science and Engineering	04
4	Electronics and Instrumentation Engineering	06
5	Mechanical Engineering	03
6	Management Studies	0
7	Maths	01
8	Physics	02
9	Chemistry	03
10	Humanities and Social Sciences	4
	Total	35

Table 4.4 Department-wise Research Scholars' Strength

4.5 Details of Guest/ Special Lectures

To cope up with the academic requirements, Guest Faculties were invited and classes were conducted regularly. The details of the guest lecturers delivered during the academic year 2019-20 to meet the academic requirements are furnished below in the Table 4.5:

Sl. No	Department	Name of Guest Faculty	Date of the event	Designation / Resource Person Organization	Course / Lecture Title
1.	Science and Humanities	Dr. Bipul Sarma	October, 2019	Assistant Professor, Department of Chemistry, Tezpur University	Bridge Courses for First year B.Tech
2.	Science and Humanities	Dr. Kishor Barua	October, 2019	Professor, Department of Physics, Tezpur University	Bridge Courses for First year B.Tech
3.	Science and Humanities	Dr. K. P. N. Murthy	October, 2019	Professor, Department of Physics, Central University, Rajasthan	Special Lecture on Mote carlo simulation
4.	Mechanical Engineering Department	Dr. C. Jebaraj	February 2020	Professor Anna University Chennai	Finite Element Analysis

Table 4.5 Details of Guest / Special Lectures

4.6 Result statistics

Results are pending for the year 2020

The fourth batch of B.Tech. Students completed their course and graduated in the academic year 2019-2020. All the grade cards along with their provisional degree certificates, transfer certificates, migration certificates and conduct certificates were provided to those students who have successfully completed their degree programme. The result statistics is mentioned below (Table 4.6):

Result statistics

		(2014-20	18 Batch)	(2015-2019 Batch)		
Sl. No.	Degree Awarded	No. of Students appeared	No. of Students passed	No. of Students appeared	No. of Students passed	
1	B.Tech. in Computer Science and Engineering	22	22	12	10	
2	B.Tech. in Electronics and Communication Engineering	19	19	16	16	
3	B.Tech. in Electrical and Electronics Engineering	21	19	18	14	

Table 4.6: No. of students graduated

The Table 4.7 given below shows the list of students who have topped in the institute and in their respective departments:

 Table 4.7 Institute Topper B.Tech (2014-18 Batch)

Sl. No.	Registration No.	Name of the Student	CGPA	Classification	Department
1	2014103111	Monika Kumari	First Class With Distinction	9.92	EEE

Department Level Toppers B.Tech (2014-2018 Batch)

Sl. No.	Registration No.	Name of the Student	CGPA	Classification	Department
1	2014105099	Pooja Bajaj	9.65	First Class with Distinction	CSE
2	2014104126	Ravi Kumar Verma	9.08	First Class	FCF
3	2014104128	Suraj Kumar	9.08	With Distinction	ECE

4	2014103111	Monika Kumari	9.92	First Class with Distinction	EEE
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Department Level Toppers M.Tech (2017-2019 Batch)

Sl. No.	Registration No.	Name of the Student	CGPA	Classification	Department
1	2016351016	Gloria Vashi	9.36	First Class with Distinction	CSE
2	2016331028	Pankaj Mathpal	9.67	First Class with Distinction	EEE - PS
3	2016341021	Konda Lakshmi Kanthgari Naveen Kumar	9.14	First Class with Distinction	ECE - VLSI
4	2016342002	Jagabandhu Mishra	9.43	First Class with Distinction	ECE - CE

M.Sc. Data Analytics (Batch: 2016 - 2018)

Sl. No.	Registration No.	Name of the Student	CGPA	Classification	Department
1	2016561001	Deepak Yadav	9.42	First Class With Distinction	M.Sc. DA

The Institute recognizes the efforts of the students, who have shown academic excellence, by awarding Gold Medals to the toppers of the Institute and also at Department level. The Table 4.8 below shows the list of students who have been awarded with Gold Medals:

Table 4.8 Institute Topper B.Tech (2015-19 Batch)

SI. No.	Registration No.	Name of the Student	CGPA	Classification	Department
1.	2015103135	Febin John Sam	9.76	First Class With Distinction	EEE

Department Level Toppers B.Tech (2015-2019 Batch)

Sl. No.	Registration No.	Name of the Student	CGPA	Classification	Department
1	2015105121	Riya Sinha	9.68	First Class With Distinction	CSE
2	2015105118	Meraj Ali	9.68	First Class With Distinction	CSE
3	2015104142	Sanjeev Sajjan	8.63	First Class With Distinction	ECE
4	2015103135	Febin John Sam	9.76	First Class With Distinction	EEE

Department Level Toppers M.Tech (2017-2019 Batch)

Sl. No.	Registration No.	Name of the Student	CGPA	Classification	Department
1	2017351021	Imlijungla Longchar	9.76	First Class With Distinction	CSE
2	2017331033	Lilika Sumi	9.49	First Class With	EEE - PS

				Distinction	
3	2017341026	Amit Kr Pandey	9.26	First Class With Distinction	ECE - VLSI
4	2017342007	Pranjal Gogoi	8.87	First Class With Distinction	ECE - CE

B.S.M.S (Batch: 2014 – 2019)

Sl. No.	Registration No.	Name of the Student	CGPA	Classification	Department
1	2014466004	MD Junaid Afsar Jami	9.49	First Class with Distinction	S&H

5. Academic Departments

5.1. Computer Science and Engineering

The list of Faculty / Staff in the Department of Computer Science and Engineering is mentioned below in the Table 5.1:

Table 5.1 Facult	y in Department o	of Computer	Science and	Engineering
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Name of the Faculty	Designation
Dr. Themrichon Tuithung	Professor & HOD
Dr. Shouvik Dey	Assistant Professor
Dr. Neelima Arambam	Assistant Professor
Dr. Arul Valan	Assistant Professor

Dr. Nagaraju	Assistant Professor
Mr. Lithungo Murry	Assistant Professor
Dr. Dilwar Hussian	Assistant Professor
Mr. Sibesh Lodh	Assistant Professor

The list of laboratories available in the Department of Computer Science and Engineering is mentioned below (Table 5.2):

Table 5.2 Department of Computer Science and Engineering – Laboratories

Sl. No.	Name of Laboratory
1	Programming Laboratory
2	Computer Networks Laboratory
3	XML and Web Services Laboratory
4	Computer Graphics Laboratory
5	Operating Systems Laboratory
6	Database Management Systems Laboratory
7	Service Oriented Architecture Laboratory

5.1.1 Publications and Patents by the Faculty of the Department - CSE:

1. Mazumder DH, Veilumuthu R. An enhanced feature selection filter for classification of microarray cancer data. ETRI Journal. 2019;41(3):358–70.

2. A new multi-secret image sharing scheme based on DCT, OB Chanu, A Neelima The Visual Computer, 1-12, 2019.

2. A survey paper on secret image sharing schemes, OB Chanu, A Neelima International Journal of Multimedia Information Retrieval 8 (4), 195-215, 2019.

3. A review on robust video copy detection, A Wary, A Neelima International Journal of Multimedia Information Retrieval 8 (2), 61-78, 2019.

4. A Robust Feature Descriptor for Biomedical Image Retrieval, P Das, A Neelima IRBM, 2020.

5. Ring decomposition based video copy detection using global ordinal measure features and local features, A Wary, A Neelima Multimedia Tools and Applications, 1-37, 2020

6. Murry, L., Kumar, R., Tuithung, T. P. Mohamed Shakeel. "A local decision making technique for reliable service discovery using D2D communications in disaster recovery networks". Peer-to-Peer Netw. Appl. Vol-13, pp-1131–1141, 2020.

7. Manashee Kalita, Themrichon Tuithung &Swanirbhar Majumder "An adaptive color image steganography method using adjacent pixel value differencing and LSB substitution technique", Cryptologia : Taylor & Fransis Online, Volume 43, April 2019 - Issue 5,Pages 414-437 |

8. Kh. Motilal Singh1, Arambam Neelima, T. Tuithung and Kh. Manglem Singh, "Robust perceptual image hashing using SIFT and SVD", CURRENT SCIENCE, VOL. 117, NO. 8, October 2019, Pages 1340-1344

9. Manashee Kalita, Themrichon Tuithung, Swanirbhar Majumder "A New Steganography Method Using Integer Wavelet Transform and Least Significant Bit Substitution", The Computer Journal, Volume 62, Issue 11, November 2019, Pages 1639-1655, https://doi.org/10.1093/comjnl/bxz014

10. Shakila Baskaran and Themrichon Tuithung, "Security Enhancement in Smart Distribution Grid with Light –Weight Dynamic Key Encryption", Journal of Scientific and Industrial Research(JSIR), Vol.78 December. 2019, Pages 847-851.

11. Nagaraju Baydeti, Ramachandran Veilumuthu and Mariappan Vaithilingam, "Scalable Models for Redundant Data Flow Analysis in Online Social Networks", Wireless Personal Communications, Vol. 107, No. 4, pp. 2123 – 2142, 2019. DOI: 10.1007/s11277-019-06375-1.

12. S.K.Sathya Lakshmi Preeth, Dhanalakshmi, R. & Shakeel, P.M. An intelligent approach for energy efficient trajectory design for mobile sink based IoT supported wireless sensor networks. Peer-to-Peer Netw. Appl. 13, 2011–2022 (2020).https://doi.org/10.1007/s12083-019-00798-0

13. B. B. Sinha and R. Dhanalakshmi, "Evolution of recommender system over the time," Soft Computing, Springer, PrintISSN 1432-7643 & Online ISSN 1433- 7479, Vol. 23, no. 23, pp. 12169–12188, 2019. DOI: https://doi.org/10.1007/s00500-019-04143-8 (SCI/SCIE)

14. B. B. Sinha and R. Dhanalakshmi, "Building a fuzzy logic-based artificial neural network to uplift recommendation accuracy," The Computer Journal, Oxford University Press, Print ISSN 0010-4620 & Web ISSN 1460-2067, 2019. DOI: https://doi.org/10.1093/comjnl/bxz086 (SCI/SCIE)

15. R. Dhanalakshmi and B. B. Sinha, "Hybrid Cohort Rating Prediction Technique to leverage Recommender System," Journal of Scientific & Industrial Research, NISCAIR, Print ISSN 0022-4456 & Online ISSN 0975- 1084, Vol. 78, pp. 411-414, 2019. http://nopr.niscair.res.in/handle/123456789/48791. (SCI/SCIE)

16. B. Sinha and R. Dhanalakshmi, "Evolution of recommender paradigm optimization over time," Journal of King Saud University-Computer and Information Sciences, Elsevier, ISSN 1319-1578, 2019. DOI: https://doi.org/10.1016/j.jksuci.2019.06.008. (SCOPUS)

17. Rumpa Hazra, Shouvik Dey, Ananya Kanjilal, Swapan Bhattacharya, "Stack-Based Dynamic Resource Access Control Protocol for Real-Time Systems", IETE Journal of Research, DOI:10.1080/03772063.2019.1676662, Oct, 2019

Book Chapter:

1. Perceptual Hash Function for Images Based on Hierarchical Ordinal Pattern A Neelima, KM Singh, Handbook of Multimedia Information Security: Techniques and Applications. 2019.

2. Content-Based Medical Visual Information Retrieval, P Das, A Neelima Hybrid Machine Intelligence for Medical Image Analysis, 1-19, 2020.

3. Rudranath Banerjee, Sourav De and Shouvik Dey, "A Behavioural Model for Persons with Autism Based on Relevant Case Study", Computational Intelligence for Human Action Recognition, Book Chapter, 2019

5.1.2 Seminar/ Workshops / Conferences / Short-term Courses / organized / attended by the Faculty:

1. J. Arul Valan organized AICTE (ATAL) sponsored 5 Days Workshop on "Artificial Intelligence and Machine Learning" during October $21^{st} - 25^{th}$, 2019.

Invited Talks:

1. Nagaraju Bydeti conducted 4-day Python programming workshop at College of Engineering (Autonomous), Andhra University during Dec 17-20, 2019.

2. Nagaraju Bydeti conducted 2-day workshop on Data Structures using C at Srinivasa Institute of Engineering & Technology, Amalapuram, Andhra Pradesh during Dec 23-24, 2019.

3. Nagaraju Bydeti conducted 3-day Advanced Python Programming workshop at Rise Krishna Sai Prakasam Group of Institutions, Ongole, Andhra Pradesh during Dec 26-28, 2019.

5.1.3 Conference Publications:

1. Lucy Sumi, Imlijungla Lingchar, Shouvik Dey, "IoT-based Fall Prevention and Detection for Senior Citizens, Physically and Intellectually Disabled", International Conference on Information Technology (ICIT 2019), Dec 19-21, 2019, India

5.2 Electronics and Communication Engineering

The list of Faculty/Staff in the Department of Electronics and Communication Engineering is mentioned below (Table 5.3):

Name of the Faculty	Designation
Dr. P. Chinnamuthu	Assistant Professor & HOD
Dr. Debadatta Pati	Assistant Professor

Table 5.3 Faculty in Department of ECE

Dr. Naorem Khelchand Singh	Assistant Professor
Dr. Jay Chandra Dhar	Assistant Professor
Dr. Palungbam Roji Chanu	Assistant Professor
Dr. Madhusudan Singh	Assistant Professor

The list of laboratories available in the Department of Electronics and Communication Engineering is mentioned below (Table 5.4):

Sl. No	Name of Laboratory
1	Basic Electronics Laboratory
2	Digital Principles and System Design Laboratory
3	Electronic Circuits Laboratory
4	Microprocessor and Microcontroller Laboratory
5	Linear Integrated Circuits Laboratory
6	Embedded Systems Laboratory
7	Digital Signal Processing Laboratory
8	Control System Laboratory
9	VLSI Design Laboratory
10	Microwave and Optical Communication Laboratory
11	Digital Communication Laboratory
12	System on Chip Laboratory
13	Semiconductor Devices Laboratory
14	Speech Processing and Pattern Recognition Laboratory
15	Intel Center of Excellence
16	NI Center of Excellence

 Table 5.4 Department of ECE- Laboratories

5.2.1 Publications by the Faculty of the Department of ECE -:

- 1. **P. Roji Chanu** and Kh. Manglem Singh, 2020. Two-Stage Quaternion Vector Median Filter for Removing Impulse Noise in Color Images. Journal of Engineering and Applied Sciences, 15: 350-364.
- Rajkumari, Rajshree, and Naorem Khelchand Singh. "Effect of Annealing on Morphology and Photoluminescence of WO₃ Nanowires Deposited by Glancing Angle Deposition Techniques." Journal of nanoscience and nanotechnology 20.5 (2020): 3274-3282.
- 3. Devi, Ngasepam Monica, and **Naorem Khelchand Singh**. "Plasmon-induced Ag decorated CeO₂ nanorod array for photodetector application." Nanotechnology 31.22 (2020): 225203.
- 4. Devi, Ngasepam Monica, and **Naorem Khelchand Singh**. "Enhanced light detection by annealed vertically aligned CeO₂ nanorods." Materials Research Bulletin 117 (2019): 103-112.
- 5. Priyanka Chetri, **Jay Chandra Dhar** "Au/GLAD-SnO₂ nanowire array-based fast response Schottky UV detector" Appl. Phys. A (April 2019)125:286
- 6. Priyanka Chetri, **Jay Chandra Dhar** "Self-powered UV detection using SnO2 nanowire arrays with Au Schottky contact" Materials Science in Semiconductor Processing 100(2019) 123-129.
- 7. Prasenjit Deb, **Jay Chandra Dhar** "Low Dark Current and High Responsivity UV Detector Based on TiO₂ Nanowire/RGO Thin Film Heterostructure" IEEE transactions on electron devices, Vol 66 (9), pp.3874-3880, July 2019.
- 8. Sarita Panigrahy, **Jay Chandra Dhar** "Non-volatile memory property of Er2O3 doped SnO2 nanowires synthesized using GLAD technique" Journal of Materials Science: Materials in Electronics, pp. 1-9 (2019).
- 9. Priyanka Chetri, **Jay Chandra Dhar** "Improved photodetector performance of SnO2 nanowire by optimized air annealing" Semiconductor Science and Technology,Vol.35(4),p-045014(2020).

- 10. Prasenjit Deb, **Jay Chandra Dhar** "Boosted photoresponsivity using silver nanoparticle decorated TiO₂ nanowire/reduced graphene oxide thin-film heterostructure" Nanotechnology, Vol 31(28),p-285202(2020).
- 11. S Panigrahy, **Jay Chandra Dhar** "Non-volatile memory application of glancing angle deposition synthesized Er2O3 capped SnO2 nanostructures" Semiconductor Science and Technology, Vol 35(5),p-055035 (2020).
- 12. Sarita Panigrahy, **Jay Chandra Dhar** "Design of Er2O3 -capped SnO2 nanostructures using glancing angle deposition technique for enhanced photodetection" Journal of Materials Science: Materials in Electronics, vol. 31(6), pp-4780-4787(2020).
- 13. Singh, Madhusudan, and Debadatta Pati. "Countermeasures to Replay Attacks: A Review." IETE Technical Review (2019): 1-16.
- 14. Singh, Madhusudan, and Debadatta Pati. "Usefulness of linear prediction residual for replay attack detection." AEU-International Journal of Electronics and Communications 110 (2019): 152837.
- 15. Singh, Madhusudan, and Debadatta Pati. "Combining evidences from Hilbert envelope and residual phase for detecting replay attacks." International Journal of Speech Technology 22.2 (2019): 313-326.
- 16. Chanu, P. Roji, and Kh Manglem Singh. "A two-stage switching vector median filter based on quaternion for removing impulse noise in color images." Multimedia Tools and Applications 78.11 (2019): 15375-15401.
- 17. Pheiroijam Pooja, Bijit Choudhuri, V. Saranyan, **P. Chinnamuthu**, "Synthesis of coaxial TiO₂/In₂O₃ nanowire assembly using glancing angle deposition for wettability application" Applied Nanoscience, 9, 529, 2019.

5.2.2 Seminar/ Workshops / Conferences / Short-term Courses / organized / attended by the Faculty:

- 1. Prasenjit Deb, **Jay Chandra Dhar** "TiO₂ Nanowire/ GO Thin Film Hybrid Structure for Photodetection Application" TENCON 2019-2019 IEEE Region 10 Conference (TENCON),pp. 1818-1820(2019).
- 2. Dutta, Krishna, Madhusudan Singh, and Debadatta Pati. "Improved Processing of LP-residual Information for Detection of Replay Signals." 2019 IEEE 16th India Council International Conference (INDICON). IEEE, 2019.
- 3. **Dutta, Krishna, and Debadatta Pati**. "Effective Combination of Multiple Evidences for I-vector Based Limited Data Speaker Verification." 2020 National Conference on Communications (NCC). IEEE, 2020.
- 4. One Week FDP on "Cyber Security" from 14th October 2019 to 19th October 2019, NIT Silchar
- 5. A one week faculty development programme on "Antenna Trends" jointly organized by Electronics and ICT Academies held from 01st-05th July 2019 through national Knowledge Network.
- 6. A one week faculty development programme on "VLSI Chip Design Hands-on using open source EDA" jointly organized by Electronics and ICT Academies held from 01st-05th July 2019 through national Knowledge Network.

5.2.3 Research Projects:

- 1. **P. Chinnamuthu (Principal Investigator):** Project titled as "Synthesis and characterization of TiO₂/MnO₂ NWs assembly for Photodetector Application" funded by SERB (DST), Gov. of India for a duration of 3 years (2017 2020).
- 2. **Dr. Jay Chandra Dhar (Principal Investigator)** Project titled "Study on Impact of Metal Nanoparticle on Axial n-ZnO/p-CuO Heterostructure Nanowire for UV Detector Application" funded by SERB (DST), Gov. of India, Sanctioned amount is Rs.51, 45,680 /-, for a duration of 3 years (2017 2020).

5.3 Electrical and Electronics Engineering

The list of faculty in the Department of Electrical and Electronics Engineering is mentioned below

Name of the Faculty	Designation
Dr. Dipu Sarkar	Assistant Professor
Dr.Dushmanta Kumar Das	Assistant Professor & HOD
Dr. D. Ganga	Assistant Professor
Dr. M. Prakash	Assistant Professor
Dr. B. Shakila	Assistant Professor
Mr. Swaraj Banerjee	Assistant Professor
	On Contractual Basis
Mr. Ankur Rai	Assistant Professor

Table 5.5 Faculty in Department of Electrical and Electronics Engineering

The list of laboratories available in the Department of Electrical and Electronics Engineering is mentioned below (Table 5.6):

Table 5.6 Department of EEE– Laboratories

Sl. No.	Name of the Laboratory
1.	Power System Laboratory
2.	Electrical Machines and Drives Laboratory
3.	Embedded Systems Laboratory
4.	Measurement and Instrumentation Laboratory
5.	Data Acquisition Laboratory
6.	Advance control System Laboratory
7.	Power Electronics Laboratory

5.3.1 Publications in Journals/Conferences by the Faculty of the Department of EEE

- 1. Gandikota Gurumurthy and Dushmanta K. Das, "Terminal Sliding Mode Disturbance Observer based Adaptive Super Twisting Sliding Mode Controller Design for Class of Nonlinear Systems", European Journal of Control (Elsevier), 2020.
- 2. Gandikota Gurumurthy and Dushmanta K. Das, "An FO-I_D1□_ controller design and realization for inverted decoupled Two Input Two Output-Liquid Level System, "International Journal of Dynamics and Control (Springer), 2020.
- 3. Gandikota Gurumurthy and Dushmanta K. Das, "Disturbance Observer based Adaptive Boundary Layer Sliding Mode Controller for a Type of Nonlinear Multi-Input Multi-Output System,"International Journal of Robust and Nonlinear Control (Taylor & Francis), 2019.
- 4. D. Ganga and V. Ramachandran, "Adaptive Prediction Model for Effective Electrical Machine Maintenance", Journal of Quality in Maintenance Engineering, Vol.26, No.1, 2020.
- Maitrayee Chakrabarty, Dipu Sarkar, and Raju Basak, "A comprehensive literature review report on basic issues of power system restoration planning" Journal of The Institution of Engineers (India): Series B: 1-11, 2020 Springer, .https://doi.org/10.1007/s40031-020-00449-6
- 6. Swaraj Banerjee, and Dipu Sarkar, "BFO Based Firefly Algorithm for Multi-Objective Optimal Allocation of Generation by Integrating Renewable Energy Sources" International Journal of Grid and Utility Computing, 2020. Inderscience (in press)
- Swaraj Banerjee, and Dipu Sarkar, "GWO BASED AWDO TECHNIQUE FOR EMISSION CONSTRAINED OPTIMAL GENERATION OF ALLOCATION", U.P.B. Sci. Bull., Series C 81 (4), 83-92, 2019.
- Dipu Sarkar, Sagar Kudkelwar, and Debasree Saha, "Optimal Coordination of Overcurrent Relay Using Crow Search Algorithm" Smart Science 7, no. 4, 282-297,2019.

- Sagar Kudkelwar, and Dipu Sarkar, "Online implementation of time augmentation of over current relay coordination using water cycle algorithm" SN Applied Sciences 1, no. 12, 1628, 2019. Springer, https://link.springer.com/article/10.1007/s42452-019-1661-3
- 10. Dipu Sarkar, and Yanrenthung Odyuo, "An ab initio issues on renewable energy system integration to grid" International Journal of Sustainable Energy Planning and Management 23, 27-28, 2019, Aalborg University Press, E-ISSN:2246-2929
- 11. Chaity Sarkar and Swaraj Banerjee, "Robust Control of Single Machine Infinite Bus System: A Novel Approach", Sadhana Academy Proceedings in Engineering Sciences 45 (1), 2020.

Conference Publications

- Swaraj Banerjee, Dipu Sarkar, Chandan Kumar Chanda, "JOT Based Optimal Allocation of Generation in Biomass Fuelled Micro Grid", 4th International Conference on Electrical Systems, Technology and Information (ICESTI 2019) Bali, Indonesia, October 24-27, 2019
- 2. Ankur Rai and Dushmanta K. Das, Class Topper Optimization (CTO) Algorithm based Load Frequency Control of Multi-Area Interconnected Power System with Non-linearity, IEEE GUCON-2020, India, 2020.
- 3. Somachong Chiphang, Ankur Rai and Dushmanta K. Das, Load Frequency Control of Two-area Inter-Connected Hydro Thermal System using PSO tuned Fuzzy PI Controller, IEEE-ICREISG-2020, India, 2020.
- 4. Ankur Rai, Dushmanta K. Das and M Mhademo Lotha, LabVIEW Platform based Real-time Speed Control of a DC Servo Motor with Fuzzy-PI Controller, IEEE UPCON-2019, India, 2019.
- P. K. Gupta, Dushmanta K. Das, A. Rai, and A. Srivastava, "Solving economic load dispatch problem using class topper optimization algorithm," in 2019 Innovations in Power and Advanced Computing Technologies (i-PACT), vol. 1. IEEE, 2019, pp. 1-5.

- 6. S. Khatsu, A. Srivastava, and Dushmanta K. Das, "An adaptive phasor particle swarm optimization to solve economic load dispatch and combined emission economic load dispatch problem," in 2019 International Conference on Electrical, Electronics and Computer Engineering (UPCON), pp. 1-5, IEEE, 2019.
- C. Roy, Dushmanta K. Das, and A. Srivastava, "Particle swarm optimization based cost optimization for demand side management in smart grid," in 2019 International Conference on Electrical, Electronics and Computer Engineering (UPCON). IEEE, 2019, pp. 1-6.
- 8. Subrat Kumar Pradhan and Dushmanta K. Das, H-infinity performance based static state feedback controller design with actuator saturation for interconnected power system with time-delay using polytopic approach, Second International Conference on Advances in Electrical, Electronic and System Engineering (ICAEESE), 2019, IEEE, 02-03 Nov., 2019
- Subrat Kumar Pradhan and Dushmanta K. Das, H-infinity Performance based Robust State Feedback Controller design for Interconnected Power system with Delay, 2019 2nd International Conference on Innovations in Electronics, Signal Processing and Communication (IESC), IEEE, doi: 10.1109/IESPC.2019 .8902357, 02-03 March, 2019.
- 10. A. Kumar, Subrat Kumar Pradhan and Dushmanta K. Das, H-infinity performance based state feedback controller design for wind integrated interconnected power system with time-delay, 2019 International Conference on Electrical, Electronics and Computer Engineering (UPCON), IEEE, doi: 10.1109/UPCON47278.2019.8980090, 08-10 Nov., 2019.
- 11. Anirban Sengupta and Dushmanta K. Das, Design of 3-DoF PID Stabilizer Using Whale Optimization Algorithm to Eliminate Low Frequency Oscillation in Power System, IEEE conference, UPCON-2019, Kolkata, 2019.
- 12. Subrat Kumar Pradhan and Dushmanta K. Das, Development of H-infinity based static state feedback controller for interconnected power system with time-delay using sector bounding actuator saturation approach, 2019 International

Conference on Electrical, Electronics and Computer Engineering (UPCON), IEEE, doi: 10.1109/UPCON47278.2019.8980161, 08-10 Nov., 2019.

- 13. D Acharya, Dushmanta K. Das and A. Srivastava, "Particle Swarm Optimization based Fractional Order Proportional Integral (FOPI) power system stabilizer for eliminating low frequency oscillations in power system," presented at IEEE conference International Conference on Advances in Electrical, Electronics and System Engineering, 2019.
- 14. Gandikota Gurumurthy and Dushmanta K. Das "A Proportional-Integral (PI) Controller Design and Implementation for Decoupled Two-Input-Two-Output-Coupled Tank System", accepted in IEEE Indian Control Conference (ICC-2019), IIT Hyderabad, Hyderabad, 18-20, December, 2019.
- 15. Gandikota Gurumurthy and Dushmanta K. Das "A semi-Analytical Approach to Design a Fractional Order Proportional-Integral-Derivative (FOPID) Controller for a TITO Coupled Tank System" in IEEE Annual Asia Pacific Conference on Circuits and Systems (APCCAS-2019), Bangkok, Thailand, 11-14 November, 2019.

5.3.2 Seminar/ Workshops / Conferences / Short-term Courses / organized / attended by the Faculty:

- 1. Dr. Dipu Sarkar has organized TEQIP III sponsored 5 days workshop on "Modern Power System Analysis and Its Simulation". during August 19-23, 2019.
- Dr. Dipu Sarkar has organized TEQIP III sponsored 5 days workshop on "POWER SYSTEM SIMULATION WITH CYME" MARCH 11-15, 2020 in collaboration With Trident Techlab
- 3. Dr.B.Shakila and Dr.M.Prakash has organized TEQIP III sponsored 5 days workshop on "Recent Trends in Smart Grids" at NIT Nagaland during February 24-28, 2020.
- 4. Dr.B.Shakila has attended TEQIP III sponsored 5 days workshop on "Computing with Words via Fuzzy Logic and its Applications" at NIT Nagaland during January 13-17, 2020.
- 5. Dr.B.Shakila has attended 5 days Faculty Development Program on "Rural Immersion & Community Engagement"held from 23-28th August 2019, organized by Mahatma Gandhi National Council of Rural Education, Hyderabad in Collaboration with Unnat Bharat Abhiyan, at NIT Nagaland.
- 6. Dr.B.Shakila has attended 5 days Faculty Development Program on "Deep Learning and its Applications" held from 9-13th December 2019, Jointly organized by Electronics and ICT Academics at NIT Nagaland.
- 7. Dr. D. Ganga has organized TEQIP III sponsored 5 days Short Term Course on "Python for Data Science" at NIT Nagaland from 16th October 2019 to 20th October 2019.
- 8. Dr.M.Prakash has attended 5 days Faculty Development Program on "Python Programming with Industry Perspective" held from 2-6th December 2019, Jointly organized by Electronics and ICT Academics at NIT Nagaland.
- Dr. D. K. Das has organized (as a Convener) TEQIP III sponsored 5 days workshop on "Modern Power System Analysis and Its Simulation with ETAP" at NIT Nagaland from Nov. 19th – 23rd, 2019.

5.3.3 Research Project:

- 1. Dr.B.Shakila (Principal Investigator): Project titled as "Development of Framework for Analyzing Residential Load Pattern and Automatic Power Factor Correction Using Advanced Metering Infrastructure", TEQIP III SEED GRANT Project.
- 2. Pranesh Das, Dushmanta Kumar Das (Co-Principal Investigator): Project titled as "Classification and Identification of Parkinson's Disease (PD) Patient for proper treatment", NPIU.

- 3. Dushmanta Kumar Das (Principal Investigator): Project titled as "Automatic Control and Internet of Things (IoT) based Monitoring of Power Factor in Power System", TEQIP seed grant.
- 4. Dushmanta Kumar Das (Co-Principal Investigator): Project titled as "Development of Unmanned Aerial Vehicle to Find and Trace Intruders", TEQIP seed grant project.
- 5. Dr.M.Prakash (Principal Investigator): Project titled as "Performance Evaluation of Different Routing Protocols for Wireless Sensor Networks in Smart Electric Grid Neighborhood Area Network", TEQIP III SEED GRANT Project.
- 6. D. Ganga (Principal Investigator) of Project titled as "IoT Based Condition Monitoring for Energy Management in Electric Vehicles", TEQIP III SEED GRANT Project.
- 7. Dipu Sarkar (Principal Investigator) of Project titled as "Intelligent monitoring and inspection of Turbine Blade Damages by using UAVs and advanced deep learning models", TEQIP III SEED GRANT Project.

5.3.4 Invited as Resource Person

- 1. Dr. D. Dipu Sarkar acted as a session chair in the international conference ESDA2019 during 28th and 29th of December, 2019 at Hotel Celesta, VIP Road, Kolkata-700059.
- Dr. D. Dipu Sarkar acted as a session chair in the International Conference on Renewable Energy (iCORE) 2020 for the first time in Eastern India, at GNIT during 7-8 February 2020.
- 3. Dr. D. Dipu Sarkar acted as a session chair in INTERNATIONAL CONFERENCE ON IMPACT OF CHANGING ENERGY MIX IN THE POWER SECTOR ICIEMPS - 2019 23rd & 24th November, 2019 at Lalit Great Eastern, Kolkata Organized by The Institution of Engineers (India)

 Dr. D. Ganga delivered lectures on "Z-transforms and its applications" in AU – CFD Sponsored Six-Day FDTP on "Digital Signal Processing" held from 6th May to 11th May 2019.

5.3.5 Book Chapter Publication

 Dipu Sarkar, Maitrayee Chakrabarty, Abhinandan De, and Sanjay Goswami, "Emergency Restoration Based on Priority of Load Importance Using Floyd– Warshall Shortest Path Algorithm" In Computational Advancement in Communication Circuits and Systems, pp. 59-72. Springer, Singapore, 2020.https://doi.org/10.1007/978-981-13-8687-9_6

5.3.6 Patent Filed

1. Dr. Dipu Sarkar, Sravan Gunturi, Dr. Abhinandan De, A Node MCU based overcurrent protection system using Internet of Things, IN Patent App. 201,931,038,886, 2019, India.

5.3.7 PhD Thesis guided

 Gandikota Gurumurthy, Development of Fractional Order Controllers for Coupled-tank Multi-Input Multi-Output (MIMO) System under the guidance of Dr. D. K. Das Completed on 29th May 2020

5.4 Electronics and Instrumentation Engineering

The list of faculties in the Department of Electronics and Instrumentation Engineering is mentioned below

Name of the Faculty	Designation
Dr. Dushmanta Kumar Das	Assistant Professor & HOD
Dr. R. Kumar	Professor
	On Contractual Basis
Ms. A. Prasanna Lakshmi	Assistant Professor
Mr. Rituraj Bhattacharjee	Assistant Professor

Table 5.7 Faculty in Department of Electronics and Instrumentation

The list of laboratories available in the Department of Electronics and Instrumentation Engineering is mentioned below in Table 5.8:

Table 5.8 Department of EIE- Laboratories

Sl. No.	Name of the Laboratory
1.	DCS &PLC Laboratory
2.	RTOS Laboratory
3.	Virtual Instrumentation Laboratory
4.	Transducers and Sensors Laboratory
5.	Instrumentation system design Laboratory
6.	Measurement Laboratory
7.	Embedded System Laboratory
8.	Process control Laboratory

Laboratories:





Figure: Process Control Laboratory equipment



Figure: Sensors and transducer laboratory equipment



Figure: Measurement laboratory equipment

5.4.1 Publications in Journals by the Faculty of the Department EIE: -

- Lithungo Murray, R.Kumar, T. Tuithung "A Local Decision Making Techniques for reliable Service Discovery using D2D Communication in Disaster Recovery Networks", Peer-to-Peer Networking and Applications, 13, 1131–1141, December, 2019.
- N. L.Venkataraman and R. Kumar "An Efficient NoC router design by using an enhanced AES with retiming and clock gating techniques", Transactions on Emerging Telecommunications Technologies, Wiley, December 2019. (DOI: https://doi.org/10.1002/ett.3839)
- 3. Siddhanta Borah, **R. Kumar**, Subhradip Mukherjee, Fenil. C.Panwala and A. Prasanna Lakshmi, "An Experimental Analysis of Quad Wheel Autonomous Robot Location and Path Planning Using Borahsid Algorithm (BsA) with GPS and Zigbee", International Journal of Vehicle Information and Communication Systems (IJVICS), Dec-2019. (Accepted)
- 4. S. Mukherjee, **R. Kumar** and S. Borah, "Obstacle-avoiding intelligent algorithm for quad wheel robot path navigation", International Journal of Intelligent Unmanned Systems, 2020. (DOI: https://doi.org/10.1108/IJIUS-12-2019-0074)
- 5. S. Baskar, V. Dhulipala, P. Shakeel, K. Sridhar and **R. Kumar**, "Hybrid fuzzy based spearman rank correlation for cranial nerve palsy detection in MIoT environment", Health and Technology, vol. 10, no. 1, pp. 259-270, 2019.

- 6. S. Baskar, P. Mohamed Shakeel, **R. Kumar**, M. Burhanuddin and R. Sampath, "A dynamic and interoperable communication framework for controlling the operations of wearable sensors in smart healthcare applications", Computer Communications, vol. 149, pp. 17-26, 2020.
- 7. N. Venkataraman, **R. Kumar** and P. Shakeel, "Ant Lion Optimized Bufferless Routing in the Design of Low Power Application Specific Network on Chip", Circuits, Systems, and Signal Processing, vol. 39, no. 2, pp. 961-976, 2019.
- 8. **R. Kumar**, K. Sakthidasan @ Sankaran, R. Sampath and P. Mohamed Shakeel, "Analysis of regional atrophy and prolong adaptive exclusive atlas to detect the alzheimers neuro disorder using medical images", Multimedia Tools and Applications, vol. 79, no. 15-16, pp. 10249-10265, 2019.
- 9. N. Venkataraman and **R. Kumar**, "Design and analysis of application specific network on chip for reliable custom topology", Computer Networks, vol. 158, pp. 69-76, 2019.
- 10. G. Manogaran, S. Baskar, P. Shakeel, N. Chilamkurti and R. Kumar, "Analytics in real time surveillance video using two-bit transform accelerative regressive frame check", Multimedia Tools and Applications, vol. 79, no. 23-24, pp. 16155-16172, 2019.
- 11. F. Panwala, R. Kumar and P. Shakeel, "An analysis of bacteria separation and filtration from blood sample using passive methods", Measurement, vol. 140, pp. 29-46, 2019.
- 12. **R. Kumar**, "Experimental investigation of heat characteristics of composite material for thermal insulation application", International Journal of Ambient Energy, pp. 1-4, 2019.
- 13. K. Nirmal, B. Janet and **R. Kumar**, "Enhancing online security using selective DOM approach to counter phishing attacks", Concurrency and Computation: Practice and Experience, 2019.
- 14. K. Nirmal, B. Janet and **R. Kumar**, "Analyzing and eliminating phishing threats in IoT, network and other Web applications using iterative intersection", Peer-to-Peer Networking and Applications, 2020.

- 15. B. Debnath and **R. Kumar**, "A new Tapered-L shaped springs based MEMS piezoelectric vibration energy harvester designed for small rolling bearing fault detection", *Microsystem Technologies*, Springer, vol. 26, no. 8, pp. 2407-2422, 2020.
- 16. Rituraj Bhattacharjee, Priyanka Dey, Ardhendu Saha, "An efficient DFG induced wavelength-exchanged OPC using only two Ti:PPLN waveguides with single pump configuration", Optik, Elsevier, Volume 202, pp. 163704, February 2020.

5.4.2 Publications in Conference by the Faculty of the Department of EIE: -

1. Subhradip Mukherjee, **R. Kumar**, Siddhanta Borah, Rituraj Bhattacharjee, "An Enhanced Experimental Study of GPS Based Path Tracking Non-holonomic Robot with SAWOA Algorithm", ICCSEA, Gunupur, India, 13-14 March, 2020.

5.4.2 Contribution in a Book & Book Chapter:

- 1. **Dr. R.Kumar**, Mr. Jegan Amarnath, Dr. P. Visu, "Advanced Machine Learning", Notion Press, Product ID: 181437-1335665-NA-NED-TO-ESTH-REG-IND-DIY, ISBN: 978-1-648998560, 2020.
- 2. S. Sundar, V. Balakrishna, **R. Kumar** and Harish M. Kittur "Shortest Path Solution to Wireless Sensor Networks Using Edge-Based Three-Point Steiner Tree Concept" Eds: A.M. Sungeru et.al, Wireless Communication Networks and Internet of Things, Lecture Notes in Electrical Engineering, Volume 493, 2019.

5.4.4 Seminar/ Workshops / Conferences / Short-term Courses / organized / attended by the Faculty:

1. Dr. R. Kumar has organized ATAL sponsored five days workshop on "Internet of Things (IoT)" during March 02-06, 2020.

5.4.5 Research Project:

- 1. Dr. R. Kumar (Principal Investigator): Project titled as "An Experimental Analysis and Implementation of Borahsid Algorithm (BsA) In Autonomous Robotic Vehicle for Path Tracking", TEQIP III SEED GRANT Project.
- 2. Rituraj Bhattacharjee (Principal Investigator) and Dr. R. Kumar (Co-Investigator) of Project titled as "Isolation and Detection of Circulating Tumor Cells Through Microfluidic System", TEQIP III Seed Grant Project.
- 3. A. Prasanna Lakshmi (Principal Investigator) and Dr. R. Kumar (Co-Investigator) of project titled as "An Advanced Deep Learning Approach to Detect Diabetic Retinopathy in Retinal Images", TEQIP III Seed Grant Project.

5.5 Civil Engineering

The list of faculties in the Department of Civil Engineering is mentioned below

Name of the Faculty	Designation
Mr. Nzanthung Ngullie	Assistant Professor & HOD
Mr. Kevinguto Khate	Assistant Professor
Dr. Yagom Gapak	Assistant Professor
Dr. N. Maheshkumar Singh	Assistant Professor
Dr. Pankaj Kumar	Assistant Professor
Mr.Renben Khuvung	Guest Faculty
Ms.Khatele Kenye	Guest Faculty
Ms. Rajkumari Joyshree Devi	Guest Faculty

Table 5.9 Faculty / Staff in Department of Civil Engineering

The list of laboratories available in the Department of Civil Engineering is mentioned below (Table 5.10, Figure 5.1):

Sl. No.	Name of Laboratory
1.	Surveying Laboratory
2.	Concrete Technology Laboratory
3.	Transportation Engineering Laboratory
4.	Fluid Mechanics Laboratory
5.	Environmental Engineering Laboratory
6.	Geotechnical Engineering Laboratory
7.	Computational Engineering Laboratory
8.	Non-Destructive Testing Laboratory

Table 5.10 Department of Civil Engineering – Laboratories

Laboratories:



Figure 5.1: Concrete Technology Laboratory



Figure 5.2: Survey Laboratory



Figure 5.3: Soil Mechanics Laboratory and Concrete Laboratory



Figure 5.4: Departmental Buildings under construction



Figure 5.4: Site visit to Northeast Frontier Railway Tunnel Construction site between Dimapur-Kohima

5.5.1 Research Publications by the Faculty of the Civil Engineering Department:

1. Tadikonda Venkata Bharat and Yagom Gapak (2020), "Soil water characteristic curves of bentonites in Isochoric conditions during wetting: Measurement and prediction." Canadian Geotechnical journal; doi.org/10.1139/cgj-2019-0818

5.5.2 Research Projects by the Faculty of the Civil Engineering Department:

- 2. **Kevinguto Khate** (Principal Investigator): Project titled as "Influences of Cement and Crushed Stone Aggregate used in North East India on Compressive Strength of Concrete" TEQIP Seed Grant
- 3. **N.Maheshkumar Singh** (Principal Investigator): Project titled as "Probabilistic Seismic Hazard Assessment of Kohima City of Northeast India" TEQIP Seed Grant
- 4. **Nzanthung Ngullie** (Principal Investigator): Project titled as "Integrated Municipal solid waste Management system for Dimapur city, India" TEQIP Seed Grant
- 5. **Yagom Gapak** (Principal Investigator): Project titled as "Unsaturated soil characterization of landslide prone soils along National Highway, NH-29 Dimapur-Kohima Highway, Nagaland" TEQIP Seed Grant

5.5.3 Seminar/ Workshops / Conferences / Short-term Courses / organized / attended by the Faculty:

 Nzanthung Ngullie (2020). "Analysis of problems for adopting Public-Private Partnerships in Municipal Solid Waste Management Projects in India" 3rd International Conference on Waste Management, February 13-14 2020, Indian Institute of Technology Guwahati.

5.5.4 Departmental Activities:

 Study visit to the Northeast Frontier Railway Tunnel Construction site on 26th February 2020.

5.5.5 Consultancy Projects:

- 1. **Nzanthung Ngullie (Principal Investigator):** Material testing and investigations for North East Region Power System Improvement Project (NERPSIP) Project undertaken in the state of Nagaland, Power Grid Corporation of India Limited.
- 2. Nzanthung Ngullie & Kevinguto Khate (Principal Investigators): Third Party Inspection and Monitoring (TPIMA) for Rajiv Awas Yojana (RAY) projects in

Nagaland by the Municipal Affairs Cell, Department of Urban Development, Government of Nagaland.

- 3. **Nzanthung Ngullie (Principal Investigator):** Vetting of DPR and Site inspections for projects recommended by the Ministry of Development of North Eastern Region under NESIDS for Department of Public Health Engineering (PHE), Government of Nagaland.
- 4. **Nzanthung Ngullie (Principal Investigator):** Concrete Design Mix, material testing and investigations for various sites in Kohima- Dimapur Railway Line Construction under Northeast Frontier Railway.
- 5. **Nzanthung Ngullie (Principal Investigator):** Material testing and investigations for Dimapur Airport under Airports Authority of India (AAI).

5.6 Mechanical Engineering

The list of faculties in the Department of Mechanical Engineering is mentioned below

Name of the Faculty	Designation		
Dr. Rosang Pongen	Assistant Professor & HOD		
Dr. Thingujam Jackson Singh	Assistant Professor		
Dr. Amit Kumar Singh	Assistant Professor		
Guest Faculty			
Mr. Kamal Kumar Basumatary	Guest Lecturer		

Table 5.11: Fac	culty in Department o	of Mechanical	Engineering
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The lists of laboratories available in the Department of Mechanical Engineering is mentioned below:

Sl.NO	Name of Laboratory
1	Strength of materials laboratory
2	Production process laboratory
3	Thermal engineering laboratory
4	Fluid mechanics and hydraulics laboratory
5	Heat and mass transfer laboratory
6	Dynamics and mechatronics laboratory
7	Workshop

 Table 5.12: Department of ME– Laboratories

Laboratories and Machines:





Figure: Production and Dynamics Laboratory



Figure: Strength of materials and Fluid mechanics Laboratory



Figure: Thermal and Heat transfer Laboratory



Figure: Mechatronics Laboratory

5.6.1 Publications by the Faculty of the Mechanical Engineering Department:

- 1. A. K. Singh, P. K. Patowari, M. Chandrasekaran, "Experimental Study on Drilling Micro Hole through Micro EDM and Optimization of Multiple Performance Characteristics," *Journal of the Brazilian Society of Mechanical Sciences and Engineering*, 2020. Accepted for Publication.
- A. K Singh, M. Ashok Kumar, Rahul Kumar, M. Chandrasekaran, "Optimization of Micro EDM Parameters for Fabrication of Micro Rod", International Conference on Advanced Trends in Mechanical & Aerospace Engineering (ATMA-2019), November 2019, Bengaluru, India.
- A. K. Singh, T. J. Singh, R. Pongen, P. K. Patowari, "MULTI-OPTIMIZATION OF μ-EDMED ARRAYED MICRO RODS USING GREY RELATIONAL ANALYSIS", International Conference on Recent Developments in Mechanical Engineering (ICRAME 2020), February 2020, NIT Silchar, India.
- K. K. Basumatary, G. Kumar G., K. Kalita, and S. K. Kakoty, "Stability Analysis of Rigid Rotors Supported by Gas Foil Bearings Coupled with Electromagnetic Actuators", Proceedings of the Institution of Mechanical Engineers, Part C: Journal of Mechanical Engineering Science, Vol 234(2), pp 427-443, 2020. <u>https://doi.org/10.1177/0954406219877903</u>.
- K. K. Basumatary, S. K. Kakoty, and M. P. Ghosh, "Effect of sinusoidal and nonsinusoidal periodic forces on the stability of Gas Foil Bearing" 6th National Symposium on Rotor Dynamics, CSIR-National Aerospace Laboratories, Bangalore, Paper Id- 25, 2nd July to 3rd July, 2019.
- 6. K. K. Basumatary, K. Kalita K., S. K. Kakoty, and Garvey S. D., "Vibration mitigation of rotors suspended on low-cost hybrid gas foil bearing" ASME Gas Turbine India Conference 2019, Chennai, India, 5th to 6th Dec, 2019, Paper No. GTINDIA2019-2539, pp. V001T05A009; <u>https://doi.org/10.1115/GTINDIA2019-2539</u>

5.7.1 Departmental Activities:

1. 5 days ATAL sponsored workshop on "Augmented Reality and Virtual Reality" from 17/02/2020 to 21/02/2020.

5.7.2 Book Chapter Publication

 A. K. Singh, S. Kar, P. K. Patowari, "Accuracy improvement and precision measurement on micro-EDM" In Book Chapter: Kibria G., Bhattacharyya B. (eds) Accuracy Enhancement Technologies for Micromachining Processes. Lecture Notes in Mechanical Engineering. Springer, Singapore (2020).

Table 5.13: Details of Invited Guest Lectures in Mechanical EngineeringDepartment

Sl. No.	Name of Guest Faculty	Duration	Course Title
1.	Prof. C. Jebraj	24/02/2020- 07/03/2020	Finite Element Analysis
2.	Prof. Rajadurai	29/10/2019- 09/11/2019	Engineering Metallurgy

5.8Science and Humanities

Table 5.14: Faculty / Staff in Department of S& H

Name of the Faculty	Designation
Dr. Jyoti Prasad Borah	Assistant Professor & HOD
Dr. Amrit Puzari	Assistant Professor
Dr. Jhimli Bhattacharya	Assistant Professor
Dr. Debarun Dhar Purakayastha	Assistant Professor
Dr. Manoj Kumar Patel	Assistant Professor
Dr. Prem Prakash Mishra	Assistant Professor
Dr. Wati Walling	Assistant Professor
On Contractual Basis	
Dr. Rosaline Jamir	Visiting Professor
Dr. Anirban Mazumdar	Assistant Professor

Dr. Nibedita Paul	Assistant Professor
Dr. Nirmala Devi	Assistant Professor
Dr. Sweety Supriya	Assistant Professor
Dr. Sandip Paul Choudhury	Assistant Professor

5.7.1 Publications by the Faculty of the Department of S&H:

- SP Tsopoe, C Borgohain, Rushikesh Fopase, Lalit M. Pandey, J P Borah "A comparative investigation of normal and inverted exchange bias effect for Magnetic Fluid Hyperthermia applications" Scientific Report, 10, Article number: 18666 (2020)
- Sarodi Jonak, J.P. Borah, "Correlation between cation distribution and heating efficiency of annealed Fe₃O₄ nanoparticles" Materials Today Communication (In Press), 2020
- 3. D. Saikia, Hemant Kumar, J. P. Borah, "Ferromagnetic coupling and the effect of Fe-d_{t2g} state on ferromagnetism in half metallic ZnO:Fe" International Nano letter, <u>2020</u>
- 4. Riyajul Islam, J.P.Borah, "Prediction of large magnetic anisotropy for non-rareearth based permanent magnet of $Fe_{16-x}Mn_xN_2$ alloys" Journal of Applied Physics 128, 114902 (2020)
- Molongnenla Jamir, Riyajul Islam, Lalit M. Pandey, J.P. Borah, "Effect of surface functionalization on the heating efficiency of magnetite nanoclusters for hyperthermia application" Journal of Alloy and Compounds, <u>Volume 854</u>, 15 February 2021, 157248
- 6. Rushikesh Fopase, Varun Saxena , Papori Seal , J.P. Borah , Lalit M. Pandey, "Yttrium iron garnet for hyperthermia applications: Synthesis, characterization and in-vitro analysis" Materials Science & Engineering C 116 ,111163 (2020)
- Riyajul Islam, J.P.Borah, "Electronic structure and enhancement of magnetocrystalline anisotropy in MnFe₂O₄ for permanent magnet application" Journal of Magnetism and Magnetic Materials Volume 499, 166268 (2020)

- Monalisa Hazarika · P. Chinnamuthu · C. Borgohain · J. P. Borah, "Role of MWCNT concentration in MWCNT/ZnFe2O4 nanocomposites for enhanced photocatalytic performance" Journal of Materials Science: Materials in Electronics, 31:10783–10794 (2020)
- Papori Seal , C. Borgohain , Nibedita Paul , P. D. Babu, J.P. Borah, "Effect of Annealing in tuning Magnetic Hyperthermic Efficiency of MWCNT/CoFe2O4 Nanocomposites" Journal of Physics D: Applied Physics, 53 (37), 375002 (2020)
- 10. C. Borgohain, N.Paul, J P Borah, "CoFe₂O₄–Fe₃O₄bimagneticheterostructure: a versatile core-shell nanoparticle with magnetically recoverable photocatalytic and self heating properties" Material Research Express, 7, 016111 (2020)
- 11. Papori Seal, Dipraj Saikia, J.P.Borah "Magnetic Nanomaterials and Their Biomedical Applications" in "Nanostructured Materials and their Applications", Publisher: springer (2020) (Book Chapter)
- 12. S Baruah, S Kumar, A. Puzari, Optoelectronically suitable Graphene Oxide decorated Titanium oxide /Polyanilin hybrid nanocomposites and their enhanced photocatalytic activity with Methylene Blue and Rhodamine B dye, Polymer Bulletin (2020), DOI: 10.1007/s00289-020-03182-8.
- 13. Merangmenla, APuzari, Microwave-Induced Synthesis of a New Benzodiazepinone Based Chemosensor in Chloroform Under Thermal Agitation: A Potential Fluorescent Sensor for Multi-Signaling Detection of Metal Ions, InorganicaChimica Acta,505 (2020)119520
- 14. P Das, N Sharma, A Puzari, D K Kakati, N Devi, Synthesis and Characterization of Neem (Azadirachtaindica) Seed Oil Based Alkyd Resins for Efficient Anticorrosive Coating Application, Polymer Buletin, (2020) DOI 10.1007/s00289-020-03120-8
- 15. S Baruah, Merangmenla and APuzari, S)-4-(4-Aminobenzyl)-2-oxazolidinone based 2-Azetidinones for antimicrobial application and luminescent sensing of

divalent metal cations, Journal of heterocyclic Chemistry (2020)DOI: 10.1002/jhet.3965

- M Pamei, APuzari, Luminescent transition metal–organic frameworks: An emerging sensor for detecting biologically essential metal ions, <u>Nano-Structures & Nano-ObjectsVolume</u> 19, July 2019, 100364, <u>doi.org/10.1016/j.nanoso.2019.100364</u>
- 17. M Pamei, N Guguloth, D Dutta, APuzari, Accessibility of safe drinking water in greater Dimapur area of Nagaland and related health hazards: An analytical study. International Journal of Energy and Water Resources (2020), DOI:<u>https://doi.org/10.1007/s42108-020-00074-5</u>
- 18. S Baruah, Merangmenla, Amrit Puzari, Fluorescent Probe Sensor Based on (R)-(-)-4-Phenyl-2-oxazolidone for effective detection of divalent cations, Luminiscent (2020) DOI: 10.1002/bio.3830
- 19. Amrit Puzari Chapter 13 (Corresponding Author) for the book titled as "Advances in Nuclear Physics and Condensed Matter" (ISBN: 978 93 88880 00 0).
 Title: 'Cytotoxicity in surface functionalized PAMAM dendrimers'. Publisher:

Eastern Book House (India), Publishing year 2019, Editor: Dr. Lakshmi K. Singh; pp 272 – 28

- 20. A.A. Ovung, J. Bhattacharyya;"Study of binding interactions between myoglobin and sulfamethazine through biophysical tools and computational approach"IEEE Xplore 2019 (accepted).
- 21. Diliraj Upadhaya, Debarun Dhar Purkayastha, Enhanced wettability and photocatalytic activity of seed layer assisted one dimensional ZnO nanorods synthesized by hydrothermal method, Ceramic International 46 (2020) 15831–15839.
- 22. Y. Rajesh, Debarun Dhar Purkayastha, M. Ghanashyam Krishna, Seed layer mediated wettability and wettability transition of ZnO nano/micro-rod arrays, Journal of Alloys and Compounds <u>https://doi.org/10.1016/j.jallcom.2020.157617</u>.

- 23. Diliraj Upadhaya, Debarun Dhar Purkayastha, Robust superhydrophobicity of ZnO thin films for self-cleaning applications, Materials Today: Proceedings <u>https://doi.org/10.1016/j.matpr.2020.05.815</u>.
- 24. Talinungsang, Diliraj Upadhaya, Debarun Dhar Purkayastha, M. Ghanashyam Krishna, Dependence of calcination temperature on wettability and photocatalytic performance of SnO₂–TiO₂ composite thin films, Materials Chemistry and Physics 241 (2020) 122333.
- **25. Mishra, Prem Prakash,** Extended Dissipative Control for Markovian Jump Time-Delayed Systems with Bounded Disturbances, Mathematical Problems in Engineering,pages15, vol. 2020, Hindwai. https://doi.org/10.1155/2020/5685324
- 26. **Mishra, Prem Prakash,** Algorithmic approach to time-cost analysis of queued commodity flowing through critical path, Int. J. Mathematics in Operational Research, Accepted for publication, 2020.
- 27. M. K. Patel (with Jane Roseline), Modules which are Invariant under Idempotent Endomorphisms of their Injective Hulls, Palestine Journal of Mathematics (*Scopus*), Vol. No. 8 (Special issue 1), Page No. 436-443, 2019, ISSN No: 2219-5688.
- 28. M. K. Patel (with S K Choube and L K Das), On Finitely hollow weak lifting modules, *Proceeding of Indian National Science Academy*(*Scopus, SCI Mago*) (Accepted-2020
- 29. A. Majumdar, S. Natesan, A Higher-Order Hybrid Numerical Scheme for Singularly Perturbed Convection-Diffusion Problem with Boundary and Weak Interior Layers, International Journal of Mathematical Modelling and Numerical Optimisation, 10, 68-101, (2020).
- 30. Sandip Paul Choudhury, ZhenyuFeng, CuilingGao, Xicheng Ma, JinhuaZhan,FuchaoJia, "BN quantum dots decorated ZnOnanoplates sensor for enhanced detection of BTEX gases", Journal of Alloys and Compounds (Elsevier), 815:152376, (2020)

- 31. Umesh T. Nakate, Sandip Paul Choudhury, Rafiq Ahmad, PramilaPatil, Yogesh T. Nakate, Yoon-Bong Hahn, Functional Nanomaterials, Graphene Oxide (GO) Nanocomposite"Based Room Temperature Gas Sensor", Springer, Print ISBN 978-981-15-4809-3, Online ISBN 978-981-15-4810-9, (June 2020)
- **32.** Papori Seal, Nibedita Paul, P. D. Babu, J. P. Borah, Hyperthermic efficacy of suitably functionalized MWCNT decorated with MnFe2O4 nanocomposite, Applied Physics A, **125**, **190(1-9)**, **(2019)**.
- 33. Talinungsang, Nibedita Paul, DebarunDharPurkayastha, M. Ghanashyam Krishna, TiO2/SnO2 and SnO2/TiO2 heterostructures as photocatalysts for degradation of stearic acid and methylene blue under UV irradiation, Superlattices and Microstructure, 129, 105-114, (2019)
- 34. Maneesh Tiwaree, Papori Seal, J. P. Borah and Nibedita Paul, "Functionalization of Carbon Nanotubes and its Nanocomposites for Hyperthermia studies" Materials Today Proceeding, 18 (3) 1317–1323 (2019)
- 35. D K Mondol, C. Borgohain, N. Paul, J P Borah, Improved heating efficiency of bifunctional MnFe2O4/ZnS nanocomposite for magnetic hyperthermia application, Physica B:Condensed Matter, 567, 122-128, (2019)
- 36. Papori Seal, ChandanBorgohain, Nibedita Paul, PD Babu, Jyoti Prasad Borah, Effect of Annealing in tuning Magnetic Hyperthermic Efficiency of MWCNT/CoFe2O4 Nanocomposites, Journal of Physics D: Applied Physics, 53 (37), 375002 (2020)

5.7.2 Seminar/ Workshops / Conferences / Short-term Courses / organized /attended by the Faculty:

 Convener: J P Borah, Organized Short term course on "Computational and Mathematical Physics" Under TEQIP-III Scheme held during 29th October -02 November, 2019

- Convener: J P Borah, Organized Workshop with collaboration with UGC-DAE, CSR, Mumbai Centre at NIT Nagaland on "Characterization of Magnetic materials" from 27th to 29th November, 2019
- 3. Convener: A. Wati Walling, Organized 3-day Workshop on Awareness of *Rural Immersion & Community Engagement* at National Institute of Technology (NIT) Nagaland sponsored by the Mahatma Gandhi National Council of Rural Education (MGNCRE) in collaboration with Unnat Bharat Abhiyan (UBA), NIT Nagaland, (8th 10th July 2019)
- Convener: A. Wati Walling, Organized 5-day Faculty Development Programme (FDP) on "*Rural Immersion and Community Engagement Programme*" sponsored by the Mahatma Gandhi National Council of Rural Education (MGNCRE) in collaboration with Unnat Bharat Abhiyan (UBA), NIT Nagaland (23rd – 28th August 2019)
- 5. **Convener: Mishra, Prem Prakash:** A short Term Course on "Computation and Mathematical Physics" Sponsored by TEQIP-III Scheme, 29 oct-02 Nov. 2019.
- Convener/Co-Convener: Mishra, Prem Prakash/Patel, Manoj: National Workshop on Algebra and Optimization-2019 (AAO-2019) Sponsored by TEQIP-III Scheme during 02 to 06-December-2019
- 7. Convener/Co-Convener: Mishra, Prem Prakash//Patel, Manoj: One Week Online National Workshop on Algebra and Optmization-2020, Sponsored by TEQIP-III Scheme, Nov. 23-27, 2020.
- 8. **Patel, Manoj**, Organized three-day INMO Training camp organized in the Department of Science and Humanities (Mathematics), NIT Nagaland during January 06-08, 2020 under HBCSE- TIFR and NBHM.
- Manoj Kumar Patel and Prem Prakash Mishra organized a One-week short term courses on "Algebra and Optimization" organized in the Department of Science and Humanities (Mathematics), NIT Nagaland during December 10-14, 2018 under TEQIP-III.

- 10. **Prem Prakash Mishra** organized **a** One-Week Short Term Bridge Course on Mathematics 21-25 January 2019, Video Conference Hall, NIT Nagaland.
- 11. **Manoj Kumar Patel** attended TEQIP III sponsored active learning programme at IIT Bombay during 11-15 June, 2018.
- 12. Sweety Supriya attended sensitization Workshop on DST Women Scientist Scheme organized by DST, New Delhi and Nagaland University at SASRD Medziphema, 4-5 March, 2019.
- 13. Anirban Majumdar attended a One-Week Short Term Bridge Course on Mathematics 21-25 January 2019, Video Conference Hall, NIT Nagaland.
- 14. **Anirban Majumdar** attended a One-week short term courses on "Algebra and Optimization" organized in the Department of Science and Humanities (Mathematics), NIT Nagaland during December 10-14, 2018 under TEQIP-III.

5.7.3 Invited talk/ Paper Presentation/ Resource Person etc.

- 1. **Jyoti Prasad Borah**, Presented an invited talk on the topic "Magnetic Hyperthermia: Present and Future" National Conference on Smart Materials and its Characterization Techniques (NCSMCT-19), Department of Physics, St. Joseph University, Dimapur, Nagaland from 28-29th November, 2019
- J. Bhattacharyya, Presented an invited talk "On potential toxicity of pharmaceutical wastes in water and possible remedial measures" atWorkshop on "Water: Issues, Challenges & Future Technologies for North East India"Organized by Defense Research Laboratory (DRDO), Tezpur, Assam during May 2019.
- 3. J. Bhattacharyya, Presented an invited talk on "Elucidation of binding interaction of pharmaceutical wastes towards body protein and development of activated carbon based adsorbents for their removal from water" atInternational Conference on Current Trends in Materials Science and Engineering (CTMSE-2019)organized by IEMandS. N. Bose National Centre for Basic Science, Kolkata during July 2019.
- **4. J. Bhattacharyya**, Presented an invited talk on "Ethno-botanical and Biophysical Studies on Plant Alkaloids Derived from Medicinal Plants of Nagaland/North-

eastern India" atInternational Conference on Chemical and Environmental Sciences (ICCAES-2019) organized by Institute of Engineering and Management, Kolkata during September 2019.

- **5. Manoj Kumar Patel:** Delivered a talk entitled on "*A note on Fi-Semi injective modules*" in the "Eighth China-Japan-Korea International Symposium on Ring Theory-2019;" organized by the Graduate School of Mathematics, Nagoya University, Japan, during August, 26-31, 2019.
- 6. Manoj Kumar Patel: Delivered a talk entitled on "On some aspects of Semi projective modules" in the International Conference on Algebra, Analysis and Applications (ICRAAAA-2019) organized by the Department of Mathematics and Statistics, MohanlalSukhadia University, Udaipur, India, during December 20-22, 2019.
- 7. Anirban Majumdar: Presented a paper with a title "Parameter-Uniform Numerical Method for Singularly Perturbed 2D Elliptic Convection-Diffusion Problem with Boundary and Interior Layers" in the International Conference on Advances in Differential Equations and Numerical Analysis, October 12 15, 2020, held at Department of Mathematics, IIT Guwahati, Assam.

5.7.4 Ongoing Research Projects:

- 1. **Jyoti Prasad Borah** (Principal Investigator):, Research project in "UGC-DAE CSR" Mumbai, India on the topic of "Development of CNT/Metal Ferrite Nanocomposites for Biomedical Applications" Sanctioned No. CRS-M-239. (2017-2019)
- 2. **Jyoti Prasad Borah** (Principal Investigator): Research Project under DBT-NECBH, Govt. of India on the topic of "Development of multifunctional rare earth based nanomaterial for biomedical applications in reference to magnetic hyperthermia and imaging" Sanctioned No. NECBH/2019-20/107 (2019-21)
- 3. Jyoti Prasad Borah (Principal Investigator): Research Project under TEQIP-III Seed grant, on the topic of " Development of Bi-functional ferrite/II-VI semiconductor nanocomposites for biomedical application" File No. TEQIP-III/SEED/S&H/08 (2019 -20)

- 4. Amrit Puzari (Principal Investigator): Project Titled as "Study on surface water contamination of South west hilly terrain of Nagaland to find out ways for sustainable management of water resources" is currently undergoing (Principal Investigator). Sponsored by Ministry of Environment, Forest and Energy, Government of India, under National Mission on Himalayan Studies (NMHS). Total amount: Rs. Rs. 16,06,968/- (Rupees Sixteen Lakh Six Thousand Nine Hundred Sixety Eight only), Duration: Three years (Starting Date: June 2018)
- 5. Amrit Puzari (Co-Principal Investigator): Project Titled as "Study of Non-Edible Plant Oils of North-East: Extraction, Compositional Characterization and Analysis for Industrial Application" is currently undergoing (Co-Principal Investigator). Sponsored by North Eastern Council, Government of India. Total amount: Rs. 17.76 Lakhs, Duration: Three years (Starting Date: December2016)
- 6. **Amrit Puzari** (Principal Investigator): TEQIP SEED Grant project: Titled as "Study of the utility of p-Methoxyaniline based dendrimers for detection of toxic pollutants", Duration 1 Year till March 2021
- Walling, Wati (Principal Investigator): "Prevalence and Compliance to Customary Practices: A Sociological Quest on Campus Conflicts in Nagaland" funded by TEQIP –III National Institute of Technology Nagaland [Sept 2019 – March 2021]
- 8. **Jhimli Bhattacharya** (Principal Investigator): "Drug-Gold Nano Particle Bioconjugates: Synthesis, Characterization and Applications under Dilute and Molecular Crowding condition: funded by UGC-DAE, Mumbai Center, BARC, Mumbai [Jan 2017 Dec 2020(tentative)]
- Jhimli Bhattacharya (Co -Principal Investigator): "Study of non-edible plant oils of North-East: Extraction, compositional Characterization and Analysis for Industrial Applications" funded by North Eastern Council, Govt. of India [Jan 2017 – Dec 2019]: (as Co-PI)
- 10. **Jhimli Bhattacharya** (Principal Investigator): "Biophysical Studies of DNA Interaction with Indole Alkaloids Extracted from North East Indian Biodiversity"funded by DBT, Govt. of India under Twinning Program in

collaboration with CSIR-Indian Institute of Chemical Biology, New Delhi. [March 2019 – Feb 2022 (tentative)]: (as PI and overall project coordinator from NER)

- 11. Jhimli Bhattacharya (Principal Investigator): "On Structure-Function Relationship Studies of Protein with Ligands Derived from Medicinal Plants of Nagaland: A Robust Approach for Drug Design" funded by TEQIP –III National Institute of Technology Nagaland [Sept 2019 – March 2021(tentative)]
- 12. **Debarun Dhar Purkayastha** (Principal Investigator): Metal (Cr, Fe, Ni, Cu) doped and buffer layered Tin Oxide thin films as anti-reflecting self-cleaning surfaces for solar cells, Science and Engineering Research Board, SERB-DST India, 2016-2019.
- Debarun Dhar Purkayastha (Principal Investigator): Bioinspired smart selfcleaning membranes for on-demand water purification based on switchable wettability, Science and Engineering Research Board, SERB-DST India, 2019-2022.
- 14. Debarun Dhar Purkayastha (Principal Investigator): Synthesis and characterization of heterogeneous photocatalytic metal oxides thin films for selfcleaning application, funded by TEQIP –III National Institute of Technology Nagaland (Sept 2019 – March 2021).

6. Training and Placements

6.1 Introduction

The Training and Placement Cell of the Institute plays a vital role in counseling and providing guidance to the students of the Institute for their professional growth and successful career placement. The placement is a crucial stage between the completion of academic programme of studies and entry into a suitable employment. In order to provide sufficient opportunities to the students to secure proper placement, the Placement Cell conducts soft skills training, technology boot camp workshops and mock interviews.

The Placement Cell of the Institute centrally handles all aspects of campus placements for the graduating students of all the Departments. The Cell is wellequipped with excellent infrastructure to support at all stages of placement processes. The concerned staff members also assist in arranging pre-placement talks, written tests, group discussions and interviews etc. as per the requirements of the product, service based and public sector organizations.

6.2 Placements for the students

The placement details of the students in the following organizations are listed in the tables given below:

Department	Total Students	Eligible Students	Placed	Higher Studies	Mean Package	Highest Package
CSE	17	14	13	0	6.08	11
ECE	5	5	0	1	0	0
EEE	17	15	7	2	5.25	7.12
EIE	6	6	10	0	5.74	7.95
ME	18	15	4	2	4.56	6
CE	15	11	0	0	0	0
ALL	78	66	34	5	5.32	11

 Table 6.1::2016-2020 Batch students' placement details



7. Central Facilities and Services

7.1 Computer Centre

The Institute has a computer centre that provides campus-wide networking via dedicated NKN connectivity of 1Gbps bandwidth. The Institute also has redundant 8Mbps connectivity from BSNL. All the facilities related to Internet connectivity are taken care of by experienced staff members of the Centre.

7.2 Central Library

The Central Library, NIT Nagaland commenced functioning from its permanent campus at Chumukedima, Dimapur in the year 2012-2013. The library is growing rapidly with exponential increase in collection of knowledge resources in the field of Engineering, Science & Technology. The Central Library of NIT Nagaland supports teaching, learning, research and creative endeavors of the Institute. The Central Library provides modern collection of knowledge resources and innovative information through acquisition, organization and dissemination of knowledge resources and provides on – demand access to the available intellectual resources and research products to NITN's faculty and students, as well as to the greater community of learners beyond NITN with the support of value added services to the users.

The Central Library has a collection of more than 10,000 volumes of books in the area of Engineering, Technology, Physical Sciences, Management, Social Sciences and Humanities including textbooks, reference books. The Central Library is also having 20,000+ e books as well as 2000+ e-journals on Computer Science, Engineering, Materials Science and Physical Science and also large numbers of CDs/DVDs and other electronic resources with the latest collections of periodicals, magazines and newspapers. The library is fully computerized using "i-skool" web-based Campus Management System with RFID Technology. The circulation services and other housekeeping operations of the library are executed through RFID enable operating/smart ID systems. The computerized bibliographic database for the entire collection is available in Machine Readable format and accessibility of the entire electronic resources such as e-books and e-journals have been activated via institute IP addresses. Users can access e- books and e-journals through institute networks as well as Wi-Fi networks within the campus through their gadgets along with the PCs connected inside the library. The library is open from 8.30 A.M to 11.00 P.M. to facilitate the users to utilize the knowledge resources. Photocopy and printing facilities are also available in the library at a nominal rate.



Figure 7.1: Central Library

7.3 Data Centre

NIT Nagaland has built the Campus Network, Data centre, IP Telephony and Wireless Network to enhance the computing facility of the Institute by deploying several dedicated Servers to run various applications which includes the following major components:

Campus networking components - for Data, Voice & Video Communication Network Security - Firewall & Antivirus

Servers & Storage - for enhancing the computing facilities and protecting the data



Figure 7.2: Routers and switches Interface

An appropriate I.T. Infrastructure has been built to build data, voice and video connectivity in the campus and among the users in the campus. With the help of this infrastructure, the Institute aims at distributing high-speed Internet in the campus and connectivity among the users, thus improving teaching effectiveness, student outcomes and administrative efficiency. This will simplify operations and support complex research initiatives for higher education. The infrastructure connects various sections of the campus viz., administrative building, academic blocks and residential parts (staff quarters, Hostels, Guest House, etc.) with high speed wired connectivity and with backup of wireless access as well. The existing backbone allows data, voice and video traffic seamlessly across the various sections of the campus. With the existing I.T. infrastructure, the Smart Classroom facility has been created through which guest faculties / experts deliver lectures over the Internet and recruiters conduct their recruitment process from any part of the country using video-conferencing facilities.

Redundant Optical Fibre Cable communication with strength 1Gbps and 8 Mbps are established by NKN and BSNL. All the students, research scholars can avail the facility to connect to the online video lectures conducted in various reputed Institutes across the globe. The Institute has established the facilities for Video Conferencing to conduct classes of other renowned professors in remote and to view video lectures of NPTEL during the class. The Phase I contents of NPTEL courses were obtained from IIT- Madras for the students and faculty members to refer.

Highlights of Campus Networking (as mentioned above) are brought out hereunder:

- High-speed Campus Network using Single Mode Fiber-optic cabling to connect the various buildings in the campus and Cat 6 A UTP Cabling inside the building to support Gigabit data transfer to the users' desk.
- Network Architecture is designed to support 10 GB bandwidth in the backbone connectivity in future when number of network users increases in the campus.
- Wireless Network in the campus for users helps to connect individual laptops, smart phones, PDA, Tablets, etc for easy access to Internet and network of the Institute.
- Offers video-based professional exchanges.

- Provides a phone number in every LABs, Hostels, and Quarters, Guest House, Administrative staff, faculties and a voicemail account for key personnel.
- Uses digital signs and video to communicate more effectively with outstation faculty and recruiters.
- \circ Automate registration and curriculum sharing, with ease of access to applications and software(s).
- Shares scarce resources across multiple sites.
- Extends beyond college boundaries.

7.4 Dispensary

The Institute has a dispensary facility with a visiting doctor from the District Government hospital, Dimapur on a weekly basis. Due care is being taken towards health of all students. A dedicated Ambulance is available on a 24X7 basis thus students can use this facility to visit the District Hospital in case of emergency.

7.5 Hostel facilities

Staying in hostels is mandatory for all undergraduate students of the Institute. Accommodation is also provided to PG students. NIT Nagaland houses Twelve Hostels, concept of *"Home away from home"*. At present, the hostel capacity is 544 (Table 7.1).

Sl.	Hostel Name	Total	Actual Capacity	Present
No.		number of		strength of the
		Rooms		students
1.	TIYI	32	64	62
2.	DZUKOU (GIRLS)	32	64	65
3.	SARAMATI A,B,C	28	56	55
4.	PATKAI A,B,C	24	48	47
5.	ZANIBU (PG)	16	32	29
6.	JAPFU	32	64	61
7.	NEW BOYS	54	108	114
	HOSTEL-I			
8.	NEW BOYS	54	108	128
	HOSTEL -II			
	Total	272	544	561

 Table 7.1. Capacity of various student's hostels

NIT Nagaland also provides a clean and very wholesome mess facility (Vegetarian and Non- Vegetarian) for all the students, and few faculties and members of staff. NIT Nagaland has also Wi-Fi connectivity in all the hostels giving them ample scope for research and other day-to-day learning activities.



Figure 7.3: New Hostel Blocks

7.6 Other facilities

The Institute has an extension counter of the State Bank of India where the SBI personnel attend three days in a week to offer necessary banking services. The Institute is also equipped with an ATM of the State Bank of India for the convenience of students and staff members. The Institute has a Canteen where healthy and tasty food items are available. A new mess building has been established with modern kitchen facilities for the preparation of food and dining purposes. The Institute has a Dispatch Section which takes care of prompt handing over of letters, parcels to the students and staff members.


Figure 7.4: Treated Bamboo classrooms and Canteen Building



Figure 7.6: Library cum Data Centre under construction



Figure 7.6: New Academic Blocks for Engineering Departments under construction

7.7 Staff Quarters

To provide a homely and productive environment, the Institute has embarked on construction of residential accommodation for faculty and staff in a phased manner. As part of the first phase of providing residential accommodation, 12 (twelve) Quarters of Type IV (Special) have been readied for occupation with all essential amenities in a separate zone of the Campus. It is planned to add 36 more units in the same zone during the next phase of construction.



Figure 7.6: Type IV (Special) Quarters in Quarter Zone, NIT Nagaland Campus

8. Centre of Excellence and IPR activities

8.1.1 Intel Centre of Excellence

Centre of Excellence that supports education vision, can build a robust infrastructure, leading to driving a holistic solution for professors and student's success. The vision of the lab is "To become a Centre for excellence in education and research in VLSI design and technology and meet the needs of fast growing VLSI industries". And mission to reach the vision is "Design and implement VLSI devices in wide range of application areas using state-of-the-art tools and technologies". The Intel FPGA lab with US \$ 2 million worth of industry standard Tools and IP-Cores will help to reach the vision and mission. The Lab will provide quality research, training services and developing new products.

This Intel FPGA- NITN COE lab with complete infrastructure will serve the purpose of

- Regular laboratories in graduate level
- Scholar work with research and development
- Attract and retain eminent professors and researchers
- Sustained linkage with industries
- Research hub for nearby institutions
- Develop new patents and product

8.1.2 Siemens Centre of Excellence

Distributed Control System (DCS) and Programmable Logic Controllers (PLC)

Monitoring and control of all the equipment and machines in all the laboratories in the Institute using Integrated Distributed Control Systems (DCS) and Programmable Logic Controllers (PLC) in order to establish a Centre of Excellence which will cater to the need for higher semester laboratories and Research. The whole idea is to integrate the existing Power Systems, Electrical Machines and Drives, Power Electronics and Control Systems Laboratories and also to establish a private Cloud using the existing networking facilities. However, this laboratory can be used as Distributed control system(DCS) lab, Programmable logic control (PLC) lab, Process control lab, IOT (Internet Of Things) lab, Solar energy lab and extended for project work which will be available for undergraduate(UG) students and postgraduates(PG) students. Same laboratory will be available for research activities related to IOT (Internet Of Things), Process control, Control system and Distributed control system. The DCS and PLC mainly used for branches such as EIE, EEE, CSE, and ECE and it is highly required to conduct Real Time hands on exercise for the embedded system subjects and laboratories. This Laboratory is beneficial for B. Tech, M. Tech. students and Research Scholars.

These initiatives are intended to bridge the gap between industry requirements and technical education system by providing solutions which make technical institutes more aligned with industry needs and graduate students industry ready. We offer programs to foster, empowering students and professionals with state-of-art knowledge and Technological skills with centre of excellence by providing real-world experience (Figure 8.1).

Hardware:

- 1. PCS7 410 STANDARD DCS Controller
- 2. SIMATIC S7-1500 CPU 1511-1 PN PLC

Software:

- 1. COMOS Planet Engineering Software with P&ID, Logical and EI&C modules
- 2. SIMIT Framework: Virtual plant commissioning software





Figure 8.1 DCS Lab

8.2 Intellectual Property Rights Cell:

National Institute of Technology Nagaland inaugurated the Intellectual Property Rights Cell followed by an awareness program for the benefit of B.Tech /M.Tech Students and Research Scholars on 04-Nov-2016. Concepts of IPR, Patenting Procedures and Design, and Copy Rights and related issues were discussed during the session.

9. Student's Activities and other Celebrations

9.1 Literary and Cultural Activities

Usually massive student's participation is noted in many of the literary and cultural events organized at the Institute. Apart from regular institute activities, Institute also participates with great enthusiasm in all national level activities like 'Fit India Movement', 'Kargil vijay diwas, 'Rastriya Ekta Diwas' and the likes. Institute also actively participates in the Govt. of India initiated flagship programme 'Ek Bharat Shreshtha Bharat (EBSB)'. The literary competitions like technical speech, debate, knowledge quiz etc., are organized by institute periodically. The cultural activities are celebrated by the students, faculty and staff members throughout the academic year. Apart from the Farewell programme (Organized in the month of April), Other important cultural events of the Institute are 'EUPHONICS'(Singing competition) and TUNE TO TAP (Dancing competition).



Figure 9.1: EUPHONICS - 19

The literary and cultural activities of the students are supervised by the Literary and Cultural Board, which consists of both the members of faculty and students. The board encourages to provide a platform for the hidden talents amongst students and appreciate their talents through various inter and intra-NIT competitions.



Figure 9.2: EUPHONICS - 19

Important events like 'Fit India Movement', 'Science Day' are organized as per the scheduled date, along with other parts of the nation. Similarly nearly Fifteen calendar events are organized by the Institute as a part of activities under 'Ek Bharat Shrestha Bharat (EBSB)' programme.



Figure 9.3: Ek Bharat Shreshtha Bharat (EBSB) trip to NIT Bhopal.



Figure 9.4: Institute's Foundation Day

9.2 Celebration of YUVA – 19 and Farewell

Every year the student community of NIT Nagaland organize the Fresher's welcome function named as **YUVA**. This year the event **YUVA** – **2019** was organized on 7th September. In true sense, it is an introductory function for the new-students where they receive the opportunity of getting introduced to the culture of the institution and with their seniors.





Figure 9.5: YUVA -19 & Farewell

9.3 Celebration of EKARIKTHIN – 20 and Sports activities.

The grand and much awaited event of the year, also the biggest techno-cultural event of NIT Nagaland, EKARIKTHIN-20 was observed by the students on 6^{TH} and 7^{TH} march 2020.

As always, overwhelming participation by students in Inter -NIT sports events in the current session was noted too. Students from NIT Nagaland took part in two major tournaments in February 2019. Group of 15 students participated in Inter-NIT Cricket Tournament at NIT Surat. Also four students participated in Inter-NIT Shuttle Badminton Cricket organized by NIT Surat, among many other events.





Figure 9.6: EKARIKTHIN – 2020





Figure 9.7: Sports activity.

SL. NO.	Cultural and Technical Activity	DATE
1	Farewell	27 th April 2020
2	Kargil vijay diwas	26 th July 2019
3	Orientation	3 rd August 2019
4	First year Student Induction programme	26 th August 2019 to 31 st August 2019
5	Fit India movement	29 th August 2019
6	Teachers Day	5 th September 2019
7	YUVA – 2019 Chief Guest: Prof. Dilip Shaikia Department of Computer Science and Engineering Tezpur University, Assam	7 th September 2019
8	One-day workshop on 'Career counselling and life skills' by Mount Mary college, Chumukedima Resource persons: Mr. Chandan Kumar Singh Counselling Psychologist Ms. Hiwangi Badsiwal Life Skill Expert	25 th September 2019
9	Mobile Legends Tournament	28 th September 2019
10	Gandhi Jayanti celebration along with swachata abhijan	2 nd October 2019
11	Institute's Foundation Day	14 th October 2019
12	EUPHONICS – 2019 & TUNE TO TAP 2019	14 th October 2019
13	Rastriya Ekta Diwas	31 st October 2019
15	Science Day	28 th February 2020
14	EKARIKTHIN - 2020	6^{TH} and 7^{TH} march 2020

The details of routine literary and cultural activities of the Institute are furnished below: